AGENDA ITEM NO 5

REPORT NO 122/25

ANGUS COUNCIL

DEVELOPMENT MANAGEMENT REVIEW COMMITTEE - 1 APRIL 2025

BURNBANK, 33 SOUTH STREET, NEWTYLE

REPORT BY ALISON WATSON, ACTING DIRECTOR OF LEGAL, GOVERNANCE & CHANGE

1. ABSTRACT

1.1 The Committee is asked to consider an application for a review of the decision taken by the planning authority in respect of the refusal of planning permission for erection of dwellinghouse in garden ground, application No 21/01000/FULL, at Burnbank, 33 South Street, Newtyle.

2. ALIGNMENT TO THE COUNCIL PLAN AND COUNCIL POLICIES

This Report contributes to the following local outcomes contained within the Angus Council Plan 2023-2028:

- Caring for our people
- Caring for our place

3. RECOMMENDATIONS

It is recommended that the Committee:-

(i) consider and determine if further procedure is required as detailed at Section 4;

(ii) if further procedure is required, the manner in which the review is to be conducted;

(iii) if no further procedure is required:

(a) review the case submitted by the Planning Authority **(Appendix 1)**;

(b) review the case submitted by the Applicant **(Appendix 2)**

(c) consider the further lodged representations **(Appendix 3)**; and

(d) consider the Applicant's response to the further lodged representations. **(Appendix 4)**.

4. CURRENT POSITION

4.1 The Development Management Review Committee is required to determine if they have sufficient information to determine the Review without further procedure. If members do not determine the review without further procedure, the Review Committee must determine the manner in which the review is to be conducted. The procedures available in terms of the regulations are: written submissions, hearing sessions or inspection of the land to which the review relates.

5. FINANCIAL IMPLICATIONS

5.1 There are no direct financial implications arising from the recommendations in this Report.

6. RISK MANAGEMENT

6.1 There are no issues arising from the recommendations of this Report.

7. ENVIRONMENTAL IMPLICATIONS

7.1 There are no direct environmental implications arising from the recommendations of this report.

8. EQUALITY IMPACT ASSESSMENT, HUMAN RIGHTS AND FAIRER SCOTLAND DUTY

8.1 A screening assessment has been undertaken and a full equality impact assessment is not required.

9. CHILDRENS RIGHTS AND WELLBEING IMPACT ASSESSMENT

9.1 A Children's Rights and Wellbeing Impact Assessment is not required as the "General Principles" do not apply to this proposal.

NOTE: No background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973, (other than any containing confidential or exempt information) were relied on to any material extent in preparing the above Report.

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Appendix 3 – Further Lodged Representations
Appendix 4 – Applicant's Response to Further Representations

ANGUS COUNCIL'S SUBMISSION ON GROUNDS OF REFUSAL

APPLICATION NUMBER – 21/01000/FULL

APPLICANT- Mrs Maria Jemicz

PROPOSAL & ADDRESS – Erection of Dwellinghouse in Garden Ground at Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

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Angus Council

Application Number:	21/01000/FULL
Description of Development:	Erection of Dwellinghouse in Garden Ground
Site Address:	Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Grid Ref:	329937 : 741266
Applicant Name:	Mrs Maria Jemicz

Report of Handling

Proposal

The application site measures approximately 1500sqm and is located in the settlement of Newtyle to the southeast of South Street. The site is located within a predominantly residential area and forms part of the large garden ground associated with Burnbank Cottage. A small burn (Newtyle Burn) bounds the site to the east, with the driveway to Burnbank Cottage to the south / southwest. The proposed dwellinghouse is to be sited in a clearing on the partially wooded site.

The application seeks planning permission for the erection of a 1¾ storey dwellinghouse with integral double garage. The building has an overall height of approximately 7.15m. The external materials comprise an anthracite grey standing seam metal roof and a mix of anthracite grey standing seam metal vertical cladding, timber cladding and natural stone cladding on the walls. The submitted drawings indicate proposed hedging and some additional planting and that the existing hedge and shrub planting to the border with South Street would be retained as existing. It is indicated that the house would connect to the public water supply, with the foul drainage directed to the public sewer and surface water being dealt with by sustainable drainage. Vehicular access from South Street is already place (approved as part of application 23/00612/FULL).

Amended Existing Site Plan (drawing number 2039 EX 001 Rev) submitted on the 20/04/23; Amended Proposed First Floor Plans (drawing number 2039PA002 Rev A) submitted on 18.10.24; Amended Proposed Elevations (drawing number 2039-PA-005 Rev C); Proposed Ground Floor plan (drawing number 2039PA001 Rev D); Amended Proposed Site Plan (drawing number 2039/PA/003 Rev B) and Proposed Visibility Splay & Driveway Diagram submitted on 11.11.24 supersede the drawings previously submitted. These drawings changed the house design, location and access point and correct some errors on the drawings to reflect tree locations.

Publicity

The application was subject to normal neighbour notification procedures.

The application was advertised in the Dundee Courier on 21 January 2022.

The nature of the proposal did not require a site notice to be posted.

Planning History

23/00612/FULL for Formation of new vehicle access and driveway was determined as "approved subject to conditions" on 4 December 2023.

21/00292/PPPL for Erection of a dwellinghouse was determined as "Application Withdrawn" on 18 August 2021.

Applicant's Case

Letter from Agent - James Paul Associates- Dated March 2022

- States that the proposal has been designed to use the natural setting to its advantage in maximising daylight influx.
- Having trees on site would not disadvantage the dwelling. Tree-lined elevation could be seen as an advantage and a natural screen for greater privacy.
- The site represents an opportunity for a modest, quiet and tranquil home in a natural setting.
- States the trees within the south bounds of the site do not have extensive canopy spread, rather they are 'tall and thin' by virtue of their species.
- The site has an abundance of amenity space, around 3 times greater than the recommended minimum. Even in the winter months with the sun being lower and shadows subsequently cast longer, shadows cast would still allow an un-shadowed amenity space of several hundred square meters.

Report on Tree Survey at Burnbank Cottage, Newtyle by Keith Logie MICFor Revised 12 October 2023

- Surveys 53 trees within and near to the site boundary and includes a tree protection plan.
- It states that other than the foundations for a house proposed on the site there should be no excavations, and the striping of turf should be done by hand.
- In order to protect the roots from compaction during construction an area near the access would be protected by a 3 dimensional cellular confinement system, such as Cellweb or similar, as recommended in BS 5837. The 3 dimensional cellular confinement system will remain permanently in place and forms the sub-base of the finished porous surface.
- It states that where employed, kerbs will be haunched up at ground level and surfaces will comprise of material which is porous to air and water. The specification for the road and finished surfaces will be detailed in the Construction Method Statement.
- All new surfacing will be set back from trunks and buttress roots by at least 50cm, unless otherwise agreed by the supervising arboriculturist. There will therefore be no raising of soil levels above existing ground level at or on the trunks of trees to be retained. This is critically important for long-term tree survival.

Note: it should be noted that some works proposed in the tree survey relate also to the vehicular access from South Street that is already place (approved as part of application 23/00612/FULL and the same tree survey considered).

Flood Risk Assessment by Millards Dated April 2024:

- Concludes that the majority of the site is outwith the predicted 1 in 200 year + climate change flood extent, and hence the site is developable with respect to flood risk. Flood free egress from the site is also predicted to be available during the aforementioned flood event.
- Stated the following mitigation measures should be incorporated into the development:
    - The new house should be set outwith the flood extent shown on drawing 18518/21/001;
    - The new house should have a finished floor level no lower than 84.8m AOD, while the floor should also be set with a suitable upstand above finished surrounding ground levels. An upstand of no less than 0.3m is suggested.
    - Flood resilient materials and construction methods are recommended for the proposed development given it is to be located close to the flood plain of the Newtyle Burn. In particular, the use of a solid floor construction is recommended.
- Engineers have used their best engineering judgement in this Assessment, and the calculations have been carried out using the Flood Estimation Handbook, WINFAP, Flood Modeller and other standard hydrological methods. Note that as with all such Flood Risk Assessments the accuracy of the results is only as good as the data and statistical techniques used.

Planning Consultations Response - Flood Risk by Millard Consulting - dated 22 August 2024:

- Provides additional information to address comments made by SEPA on flood risk such as;
- A porosity cannot be applied to the boundary wall, hence it has been modelled as partially solid. The results demonstrate that with a large blockage of the culvert running beneath the driveway of Dalnaglack and high impermeability of the wall, floodwater could flow along the driveway of Dalnaglack. It is important to note however that the scenario whereby the culvert running beneath the driveway of Dalnaglack is 25% blocked and the boundary wall to the east of the watercourse is modelled as being 50% solid, does not predict any floodwater flowing along the driveway of Dalnaglack and through the site.

- When modelling a high impermeability to the boundary wall, shallow floodwater could flow along driveway of Dalnaglack. This is not unexpected given it would have no other route to flow. Should this occur and floodwater entered the site, the flow would be very shallow.
- During a flood event floodwater would firstly overtop the right bank of the Newtyle Burn and flow in a north easterly direction. If floodwater did build up behind the boundary wall, this would be most significant in the northern corner of Dalnaglack, and hence should there be a collapse of the wall, it is expected that this would be the most likely location. Should a wall collapse occur in this location, floodwater would flow through the grounds of Burnbank and back into the Newtyle Burn.
- Considering all the information, the engineers suggest it is reasonable to conclude the site is not within the 1 in 200 year + climate change flood extent of the Newtyle Burn. It can be said however that proposed levels are such that should any shallow overland flow enter the site, the proposed upstand from adjacent ground to the floor level of the building would mean the house itself is not predicted to flood, with overland flow returning to the Newtyle Burn.

Design Statement & Policy Consideration Response Revision D, Nov 24
- Provides a background to the proposals, describes the site and the proposed design and associated changes and also provides an overview of the other submissions.
- Notes revised plans were submitted with a small reduction to the footprint and repositioning of the house to be outwith the worst case scenario flood event - i.e. 75% culvert blockage and 75% solid boundary wall, as representative of the 1 in 200-year plus climate change flood extent for the proposed site were submitted.
- Since submission of the application storms Arwen and Babet resulted in tree damage at the site, where clearance of fallen/dangerous trees as a best practice approach has been required.
- States the materials proposed are of a natural and high-quality nature, being of treated natural timber, natural stone cladding and standing seam metal.
- States siting the house perpendicular to the Newtyle Burn has a number of distinct advantages including daylight considerations.
- States the proposal does not seek to remove any mature trees or existing hedgerow cover.
- Indicates the proposed dwelling seeks to provide an environmentally and contextually sensitive and modest dwelling with associated high-quality landscaping.
- Provides additional comments on daylight and overshadowing and states shadows vary in position at different times of the day and year. In the winter months, with shadows cast longer there remains to be areas of the site un-shadowed and surrounding houses are overshadowed to a greater extent by other houses and existing trees.
- Notes sunpath diagrams utilise a generic deciduous tree type and in the winter months the canopy cover would be shed, thus casting a vastly reduced shadow. In the cases of coniferous trees the canopy is much narrower than as illustrated, throughout the year. Should the site have been bordered by existing dwellings, as is most common, the overshadowing would of course be far greater.
- States that ultimately the degree of tree cover/shadow is subjective and of course personal choice.

Shadow Analysis Diagrams for July, March and October were submitted to illustrate impacts likely shadowing of the site from existing trees.

Various 3D and aerial images of the site were submitted illustrating the site context with the proposed dwelling in situ.

Consultations

Roads (Traffic and flooding) - No objection.

Environmental Health - No objection subject to a condition requiring specific details of the air source heat pump to be submitted and approved in relation to noise emissions.

Scottish Environmental Protection Agency - Withdrew an initial holding objection, offering no objection as the revised proposal relocated the dwelling outwith an area identified as being at risk of flooding.

Aberdeenshire Council Archaeology Service - This consultee has advised that no archaeological mitigation is required.

Community Council - There was no response from this consultee at the time of report preparation.

Scottish Water - No objection.

Representations

30 letters of representation (22 in objection, 7 in support and 1 offering general comment) have been received from 11 households. The main points raised are summarised below.

Objection:
- Development plan already allocates housing in Newtyle;
- Conflict with planning policies and flood risk guidance;
- Amenity impacts on neighbouring housing (overlooking, loss of privacy, outlook, sunlight, daylight and light pollution);
- Proposal would not be of an appropriate scale, would impact upon visual amenity, and would not be consistent with character and pattern in surrounding area
- Impacts on existing trees and roots and impacts of trees on the proposed development;
- Flood risk concerns (fluvial and surface water) on and off site, including loss of floodplain, lack of surface water drainage details, and inclusion of flood mitigation measures in proposal reinforces position that house is a vulnerable position;
- Concerns regarding maintenance of existing trees and the Newtyle burn;
- Poor amenity for proposed house as a result of overshadowing and flood risk;
- Environmental impacts including loss of green space and impacts upon wildlife;
- Impacts upon road and pedestrian safety and traffic including concerns regarding the suitability of the site access;
- Concerns regarding existing fence erected at site;
- Errors in information submitted in support of the application;
- Lack of appropriate neighbour notification.

Support:
- Proposal satisfies building and planning standards;
- Well designed house, complies with relevant policies and is an example of sustainable building;
- The new building and associated landscaping would be sympathetic and compliment the surrounding environment;
- Well established hedge and trees to be retained and would protect privacy;
- All paving materials consist of either porous paving setts or gravel allowing the percolation of rainwater" again reducing any additional run off;
- New property is intended to be long term residence of applicant, not short term let;
- No impacts from traffic and parking.

General comment:
- Notes the applicants stated commitment to the area but also recognise some of the concerns expressed by other representations and reflect some of these (with specific reference to flood risk).

Development Plan Policies

NPF4 – national planning policies
Policy 1 Tackling the climate and nature crises
Policy 2 Climate mitigation and adaptation
Policy 3 Biodiversity
Policy 4 Natural places
Policy 6 Forestry, woodland and trees
Policy 7 Historic assets and places
Policy 9 Brownfield, vacant and derelict land and empty buildings
Policy 14 Design, quality and place
Policy 15 Local Living and 20 minute neighbourhoods
Policy 16 Quality homes
Policy 17 Rural homes
Policy 18 Infrastructure first

Policy 22 Flood risk and water management
Policy 23 Health and Safety

Angus Local Development Plan 2016
Policy DS1 : Development Boundaries and Priorities
Policy DS3 : Design Quality and Placemaking
Policy DS4 : Amenity
Policy TC2 : Residential Development
Policy PV5 : Protected Species
Policy PV7 : Woodland, Trees and Hedges
Policy PV8 : Built and Cultural Heritage
Policy PV12 : Managing Flood Risk
Policy PV15 : Drainage Infrastructure

The full text of the relevant development plan policies can be viewed at Appendix 1 to this report.

Assessment

Sections 25 and 37(2) of the Town and Country Planning (Scotland) Act 1997 require that planning decisions be made in accordance with the development plan unless material considerations indicate otherwise.

In this case the development plan comprises: -

- National Planning Framework 4 (NPF4) (Published 2023)
- Angus Local Development Plan (ALDP) (Adopted 2016)

The development plan policies relevant to the determination of the planning application are reproduced at Appendix 1 and have been taken into account in preparing this report.

The ALDP was adopted in September 2016 while NPF4 was adopted in February 2023. Planning legislation indicates that where there is any incompatibility between the provision of the national planning framework and the provision of a local development plan, whichever of them is the later in date is to prevail.

The application site consists of garden ground forming part of the curtilage of an existing dwelling, Burnbank Cottage, located within the settlement of Newtyle. Policy DS1 in the ALDP states that for unidentified sites within development boundaries, proposals will be supported where they are of a scale and nature appropriate to the location and where they accord with other relevant policies in the LDP. Both the ALDP and NPF4 encourage the reuse of brownfield land in preference to the use of greenfield land.

NPF4 Policy 16 ‘quality homes’ seeks to encourage, promote and facilitate the delivery of more high quality, affordable and sustainable homes, in the right locations. Policy 16 offers support to proposals for new homes on land allocated for housing in the LDP. It indicates that on land not allocated for housing in the LDP proposals for new homes will only be supported in limited circumstances where (amongst other things) the proposal is for smaller scale opportunities within an existing settlement boundary. Policy 17 deals with new housing in rural areas and amongst other things, requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area.

Policy TC2 of the ALDP indicates that within development boundaries, proposal for residential development will be supported where the site is not protected for another use and is consistent with the character and pattern of development in the surrounding area. Policy TC2 also requires all proposals for new residential development to be compatible in terms of land use; to provide a satisfactory residential environment; to not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and to include provision for affordable housing in accordance with Policy TC3 Affordable Housing.

NPF4 Policy 14 states development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale. It indicates that development proposals that are poorly

designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported. ALDP Policy DS3 indicates that development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located, and the council's Design and Placemaking Supplementary Guidance provides relevant considerations when applying this policy.

Policy DS4 of the ALDP states that development will not be permitted where there is an unacceptable adverse impact on the surrounding area or the environment or amenity of existing or future occupiers of adjoining or nearby properties, including impacts upon the availability of sunlight, daylight and overshadowing.

Policy PV7 of the ALDP and Policy 6 of NPF4 seek to protect and enhance woodland, trees and hedges that contribute to the nature conservation, heritage, amenity, townscape or landscape value of the area.

NPF4 Policy 22 relates to flood risk and water management and the policy intent is to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. The policy states that development proposals at risk of flooding or in a flood risk area will only be supported if they are for: essential infrastructure where the location is required for operational reasons; water compatible uses; redevelopment of an existing building or site for an equal or less vulnerable use; or redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long term safety and resilience can be secured in accordance with relevant SEPA advice. The ALDP states that the avoidance and mitigation of flood risk in new and existing development will be an important factor in determining development proposals.

The application site is not protected for another use, is located in a predominantly residential area, and residential development would be compatible with surrounding land uses. The principle of developing a site of this nature within a development boundary attracts some support from development plan policy.

The plot is of an acceptable size given the context of the area and the proposal would generally comply with recommended separation distances provided in council guidance. There is no reason to conclude the new dwelling would result in an unacceptable impact upon the availability of sunlight or daylight to neighbouring properties when assessed against relevant guidance. An existing access would be utilised, and parking and waste storage provision would be provided within the site. The roads service has offered no objection to the development in terms of traffic likely to be generated by it and potential impacts upon the road network. The principle of the proposed water supply and drainage arrangements are acceptable and Scottish Water has offered no objection.

A flood risk assessment has been submitted which indicates an area of the site may be at risk from flooding from the Newtyle Burn which runs to the southeast of the site. The application has been amended to relocate the dwelling to a position outwith any area identified as being at risk from flooding. Both SEPA and the roads service in its capacity as flood prevention authority, have considered all available information and are satisfied the dwelling would not be at an unacceptable risk from flooding and the proposal would not increase flood risk elsewhere.

There is no reason to consider that the proposal would adversely impact on infrastructure, having regard to the consultation responses received.

In terms of the built and natural environment, the site is within an area with archaeological potential, but the archaeology service has reviewed the proposal and offers no objection. The site is not within an area designated for natural heritage reasons, but it does contain a large number of mature trees. The submitted information suggests that no trees would require to be felled to accommodate the development (one tree is to be felled due to its condition) and that only a small root area of one tree would be affected by the house foundations. It is suggested that this could be protected during construction and the safeguarding of trees during the construction process could be dealt with by planning condition. There is no reasonable basis to conclude that the construction of a house on the site would give rise to unacceptable impact on the built or natural environment.

There are several aspects of the proposal which are compatible with development plan or could be made compatible subject to relevant planning conditions.

However, development plan policy also requires development proposals to provide a good residential environment and level of amenity for prospective occupants of any dwelling, and it also requires development proposals to provide a high quality of design, contributing positively to the character and sense of place of an area and to fit with the character and pattern of development in the area.

In this case, the application site is located adjacent to a watercourse and in an area characterised by large trees that contribute significantly to the character of the village. While the proposed house has been carefully located such that it would not be at unacceptable flood risk, submitted information indicates that a reasonably significant area of the garden ground amounting to around 25-30% of the plot area, would be at flood risk. In addition, while the proposed house has been carefully positioned to minimise potential impact on existing trees, information submitted with the application demonstrates that most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year. Dappled shade provided by a woodland setting can add to the amenity of a garden area and can be regarded as a desirable feature. However, trees within the site and those close to it are large and have potential to give rise to significant shading. The trees that lie outwith but adjacent to the site, particularly those that effectively form a line along the south and southwest boundary, which include trees in the region of 20m in height, would constitute a high hedge in terms of high ledge legislation. With that in mind, guidance provided in the 'Hedge Height and Light Loss' document published in 2005 by the Office of the Deputy Prime Minister (ODPM) would suggest that the trees in that area could be required to be reduced in height if an application was made under high hedge legislation. That may not be the current applicant's intention, but it does indicate that the trees, which are otherwise of importance to the character of the area could be susceptible to future pressure for lopping, topping, or felling. It is also a strong indication that the overshadowing associated with the trees could be regarded as adversely affecting the enjoyment of the domestic property which an occupant of that property could reasonably expect to have. The individual and cumulative impact on amenity associated with potential flood risk to a significant area of the garden ground and the overshadowing of much of the garden area by large trees is such that the proposed plot is not considered to provide a good level of residential amenity and the proposal does not comply with relevant policy in that respect.

It would not be unreasonable to anticipate that occupants of the property might take steps to minimise flood risk to the garden area, and that might include temporary works that would not require planning permission. Such works might increase flood risk elsewhere. Similarly, and as discussed above, given the preliminary calculations that have been undertaken using the hedge height and light loss guidance, it is not unreasonable to anticipate that future occupants of the property might seek to have works done to trees within or adjacent to the site to reduce the impact of overshadowing. The submitted tree survey recognises that many of the trees are of significant value and any such work would be likely to have a detrimental impact on the character of the area.

The constraints associated with flood risk as well as root protection zones and overshadowing associated with trees limit the developable area of the site and has resulted in amendment to the position of the proposed building during consideration of the application. In particular, the house was initially proposed closer to the burn and therefore further from South Street. However, following revision to address flood risk, the proposed house would now be positioned closer to South Street and it would be visible from the street. The L-shaped plan and orientation of the proposed building would be such that both ridges of the roof would be set an angle relative to the carriageway of South Street. However, Newtyle is a planned village, and it generally follows a rigid grid iron street pattern. Buildings are typically orientated such that their ridges run parallel or at right angles to the adjacent streets. While existing properties at Burnbank and Milton depart from that pattern, they are set back from South Street by significant distance and landscape planting reduces their visibility from the street. The current sizeable and undeveloped garden areas associated with those properties that sit adjacent to South Street add to the character and appearance of the area. The orientation of the proposed building relative to the street would depart markedly from the character of the area, and development of the existing woodland garden area would erode the chatter and established pattern of development in the area. It would not respect and respond to the local context where this makes a positive contribution to the existing character of the area and it would not integrate with the surrounding development pattern as required by the council's design guidance. The proposal is not compatible with relevant development plan design policies.

In addition, Newtyle is in a rural area as defined by the Scottish Government's Urban Rural Classification 2020. As such policy 17 of NPF4 is relevant to determination of the application. It requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. The application is not consistent with that requirement for the reasons set out above.

While the proposal is compatible with some aspects of development plan policy, it is not consistent with those that require a new house to provide a good living environment, or with those aspects that require it to be in keeping and contribute positively to the character and sense of place of the area. In overall terms, the proposal is contrary to the development plan.

In addition to development plan policy, it is necessary to have regard to other material considerations. In this case those are the information submitted in support of the application, and the comments submitted both in support of and in objection to the proposal.

The information submitted in support of the application has been considered and taken into account in the assessment set out above. While that information suggests that the proposal complies with relevant policy, that position is not supported for the reasons set out above. There is nothing in the supporting information that justifies approval of the application in circumstances where it is contrary to development plan policy.

The representations submitted in support of the application are noted. However, for the reasons set out above it is concluded that the proposal is contrary to development plan policy. The identity of the applicant and whether they intend to live in the property as a long term residence is not a material consideration.

The representations submitted in objection to the proposal support refusal of the application in so far as they raise concern regarding conflict with the character and pattern of development in the area, and the quality of the residential environment that would be created due to flood risk and overshadowing from trees. However, it is relevant to note that while there may be other areas in Newtyle allocated for residential development, that does not preclude the grant of permission for additional small-scale residential development. Lack of historic or future maintenance of the existing trees or the Newtyle Burn is not a matter material to the consideration of this application. The information submitted in support of the application is considered adequate to allow proper determination of the application. Neighbour notification has been undertaken in accordance with relevant statutory requirements.

In conclusion, while aspects of the proposal attract some support from the development plan, the erection of a dwelling on the site in the manner proposed does not comply with the policies of the development plan for the reasons set out above. It would not be in keeping and contribute positively to the character and sense of place of the area and it would not provide a good living environment as its garden area would be subject to flood risk and significant overshadowing from trees that are otherwise important to the townscape of the area. Account has been had for all information and representations submitted both in support of and in objection to the proposal. However, the application is contrary to the development plan and there are no material considerations which justify approval of planning permission contrary to the provisions of the development plan.

Human Rights Implications

The decision to refuse this application has potential implications for the applicant in terms of his entitlement to peaceful enjoyment of his possessions (First Protocol, Article 1). For the reasons referred to elsewhere in this report justifying the decision in planning terms, it is considered that any actual or apprehended infringement of such Convention Rights, is justified. Any interference with the applicant's right to peaceful enjoyment of his possessions by refusal of the present application is in compliance with the Council's legal duties to determine this planning application under the Planning Acts and such refusal constitutes a justified and proportionate control of the use of property in accordance with the general interest and is necessary in the public interest with reference to the Development Plan and other material planning considerations as referred to in the report.

Decision

The application is Refused

Reason(s) for Decision:

1. The proposal is contrary to National Planning Framework 4 policies 14 and 17, and Angus Local Development Plan policies TC2 and DS3 and its associated Design Quality and Placemaking Supplementary Guidance, as it is not sited and designed to be in keeping with the character of the area, it would not contribute positively to the character and sense of place of the area, and as it would be detrimental to the amenity of the surrounding area.

2. The proposal is contrary to Angus Local Development Plan policies TC2 and DS4 as it would fail to provide a satisfactory residential environment for occupants of the proposed dwelling and as it would not maintain or improve environmental quality of the area.

3. The proposal is contrary to Angus Local Development Plan policy DS1 because the proposal is not in accordance with relevant policies of the development plan.

Notes:

Case Officer: James Wright
Date: 7 January 2025

Appendix 1 - Development Plan Policies

NPF4 – national planning policies

Policy 1 Tackling the climate and nature crises
When considering all development proposals significant weight will be given to the global climate and nature crises.

Policy 2 Climate mitigation and adaptation
a) Development proposals will be sited and designed to minimise lifecycle greenhouse gas emissions as far as possible.
b) Development proposals will be sited and designed to adapt to current and future risks from climate change.
c) Development proposals to retrofit measures to existing developments that reduce emissions or support adaptation to climate change will be supported.

Policy 3 Biodiversity
a) Development proposals will contribute to the enhancement of biodiversity, including where relevant, restoring degraded habitats and building and strengthening nature networks and the connections between them. Proposals should also integrate nature-based solutions, where possible.

b) Development proposals for national or major development, or for development that requires an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used. Proposals within these categories will demonstrate how they have met all of the following criteria:
i. the proposal is based on an understanding of the existing characteristics of the site and its local, regional and national ecological context prior to development, including the presence of any irreplaceable habitats;
ii. wherever feasible, nature-based solutions have been integrated and made best use of;
iii. an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;
iv. significant biodiversity enhancements are provided, in addition to any proposed mitigation. This should include nature networks, linking to and strengthening habitat connectivity within and beyond the development, secured within a reasonable timescale and with reasonable certainty. Management arrangements for their long- term retention and monitoring should be included, wherever appropriate; and
v. local community benefits of the biodiversity and/or nature networks have been considered.

c) Proposals for local development will include appropriate measures to conserve, restore and enhance biodiversity, in accordance with national and local guidance. Measures should be proportionate to the nature and scale of development. Applications for individual householder development, or which fall within scope of (b) above, are excluded from this requirement.

d) Any potential adverse impacts, including cumulative impacts, of development proposals on biodiversity, nature networks and the natural environment will be minimised through careful planning and design. This will take into account the need to reverse biodiversity loss, safeguard the ecosystem services that the natural environment provides, and build resilience by enhancing nature networks and maximising the potential for restoration.

Policy 4 Natural places
a) Development proposals which by virtue of type, location or scale will have an unacceptable impact on the natural environment, will not be supported.

b) Development proposals that are likely to have a significant effect on an existing or proposed European site (Special Area of Conservation or Special Protection Areas) and are not directly connected with or necessary to their conservation management are required to be subject to an "appropriate assessment" of the implications for the conservation objectives.

c) Development proposals that will affect a National Park, National Scenic Area, Site of Special Scientific Interest or a National Nature Reserve will only be supported where:
i. The objectives of designation and the overall integrity of the areas will not be compromised; or
ii. Any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by social, environmental or economic benefits of national importance.

All Ramsar sites are also European sites and/ or Sites of Special Scientific Interest and
are extended protection under the relevant statutory regimes.

d) Development proposals that affect a site designated as a local nature conservation site or landscape area in the LDP will only be supported where:
i. Development will not have significant adverse effects on the integrity of the area or the qualities for which it has been identified; or
ii. Any significant adverse effects on the integrity of the area are clearly outweighed by social, environmental or economic benefits of at least local importance.

e) The precautionary principle will be applied in accordance with relevant legislation and Scottish Government guidance.

f) Development proposals that are likely to have an adverse effect on species protected by legislation will only be supported where the proposal meets the relevant statutory tests. If there is reasonable evidence to suggest that a protected species is present on a site or may be affected by a proposed development, steps must be taken to establish its presence. The level of protection required by legislation must be factored into the planning and design of development, and potential impacts must be fully considered prior to the determination of any application.

g) Development proposals in areas identified as wild land in the Nature Scot Wild Land Areas map will only be supported where the proposal:
i) will support meeting renewable energy targets; or,
ii) is for small scale development directly linked to a rural business or croft, or is required to support a fragile community in a rural area.

All such proposals must be accompanied by a wild land impact assessment which sets out how design, siting, or other mitigation measures have been and will be used to minimise significant impacts on the qualities of the wild land, as well as any management and monitoring arrangements where appropriate. Buffer zones around wild land will not be applied, and effects of development outwith wild land areas will not be a significant consideration.

Policy 7 Historic assets and places
a) Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place. The assessment should identify the likely visual or physical impact of any proposals for change, including cumulative effects and provide a sound basis for managing the impacts of change.

Proposals should also be informed by national policy and guidance on managing change in the historic environment, and information held within Historic Environment Records.

b) Development proposals for the demolition of listed buildings will not be supported unless it has been demonstrated that there are exceptional circumstances and that all reasonable efforts have been made to retain, reuse and/or adapt the listed building. Considerations include whether the:
i. building is no longer of special interest;
ii. building is incapable of physical repair and re-use as verified through a detailed structural condition survey report;
iii. repair of the building is not economically viable and there has been adequate marketing for existing and/or new uses at a price reflecting its location and condition for a reasonable period to attract interest from potential restoring purchasers; or
iv. demolition of the building is essential to delivering significant benefits to economic growth or the wider community.

c) Development proposals for the reuse, alteration or extension of a listed building will only be supported where they will preserve its character, special architectural or historic interest and setting. Development proposals affecting the setting of a listed building should preserve its character, and its special architectural or historic interest.

d) Development proposals in or affecting conservation areas will only be supported where the character and appearance of the conservation area and its setting is preserved or enhanced. Relevant considerations include the:
i. architectural and historic character of the area;
ii. existing density, built form and layout; and
iii. context and siting, quality of design and suitable materials.

e) Development proposals in conservation areas will ensure that existing natural and built features which contribute to the character of the conservation area and its setting, including structures, boundary walls, railings, trees and hedges, are retained.

f) Demolition of buildings in a conservation area which make a positive contribution to its character will only be supported where it has been demonstrated that:
i. reasonable efforts have been made to retain, repair and reuse the building;
ii. the building is of little townscape value;
iii. the structural condition of the building prevents its retention at a reasonable cost; or
iv. the form or location of the building makes its reuse extremely difficult.

g) Where demolition within a conservation area is to be followed by redevelopment, consent to demolish will only be supported when an acceptable design, layout and materials are being used for the replacement development.

h) Development proposals affecting scheduled monuments will only be supported where:
i. direct impacts on the scheduled monument are avoided;
ii. significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or
iii. exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.

i) Development proposals affecting nationally important Gardens and Designed Landscapes will be supported where they protect, preserve or enhance their cultural significance, character and integrity and where proposals will not significantly impact on important views to, from and within the site, or its setting.

j) Development proposals affecting nationally important Historic Battlefields will only be supported where they protect and, where appropriate, enhance their cultural significance, key landscape characteristics, physical remains and special qualities.

k) Development proposals at the coast edge or that extend offshore will only be supported where proposals do not significantly hinder the preservation objectives of Historic Marine Protected Areas.

l) Development proposals affecting a World Heritage Site or its setting will only be supported where their Outstanding Universal Value is protected and preserved.

m) Development proposals which sensitively repair, enhance and bring historic buildings, as identified as being at risk locally or on the national Buildings at Risk Register, back into beneficial use will be supported.

n) Enabling development for historic environment assets or places that would otherwise be unacceptable in planning terms, will only be supported when it has been demonstrated that the enabling development proposed is:
i. essential to secure the future of an historic environment asset or place which is at risk of serious deterioration or loss; and
ii. the minimum necessary to secure the restoration, adaptation and long-term future of the historic

environment asset or place.

The beneficial outcomes for the historic environment asset or place should be secured early in the phasing of the development, and will be ensured through the use of conditions and/or legal agreements.

o) Non-designated historic environment assets, places and their setting should be protected and preserved in situ wherever feasible. Where there is potential for non-designated buried archaeological remains to exist below a site, developers will provide an evaluation of the archaeological resource at an early stage so that planning authorities can assess impacts. Historic buildings may also have archaeological significance which is not understood and may require assessment.

Where impacts cannot be avoided they should be minimised. Where it has been demonstrated that avoidance or retention is not possible, excavation, recording, analysis, archiving, publication and activities to provide public benefit may be required through the use of conditions or legal/planning obligations.

When new archaeological discoveries are made during the course of development works, they must be reported to the planning authority to enable agreement on appropriate inspection, recording and mitigation measures.

Policy 9 Brownfield, vacant and derelict land and empty buildings
a) Development proposals that will result in the sustainable reuse of brownfield land including vacant and derelict land and buildings, whether permanent or temporary, will be supported. In determining whether the reuse is sustainable, the biodiversity value of brownfield land which has naturalised should be taken into account.
b) Proposals on greenfield sites will not be supported unless the site has been allocated for development or the proposal is explicitly supported by policies in the LDP.
c) Where land is known or suspected to be unstable or contaminated, development proposals will demonstrate that the land is, or can be made, safe and suitable for the proposed new use.
d) Development proposals for the reuse of existing buildings will be supported, taking into account their suitability for conversion to other uses. Given the need to conserve
embodied energy, demolition will be regarded as the least preferred option.

Policy 14 Design, quality and place
a) Development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale.

b) Development proposals will be supported where they are consistent with the six qualities of successful places:

Healthy: Supporting the prioritisation of women's safety and improving physical and mental health.

Pleasant: Supporting attractive natural and built spaces.

Connected: Supporting well connected networks that make moving around easy and reduce car dependency

Distinctive: Supporting attention to detail of local architectural styles and natural landscapes to be interpreted, literally or creatively, into designs to reinforce identity.

Sustainable: Supporting the efficient use of resources that will allow people to live, play, work and stay in their area, ensuring climate resilience, and integrating nature positive, biodiversity solutions.

Adaptable: Supporting commitment to investing in the long-term value of buildings, streets and spaces by allowing for flexibility so that they can be changed quickly to accommodate different uses as well as maintained over time.

Further details on delivering the six qualities of successful places are set out in Annex D.

c) Development proposals that are poorly designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported.

Policy 16 Quality homes

a) Development proposals for new homes on land allocated for housing in LDPs will be supported.

b) Development proposals that include 50 or more homes, and smaller developments if required by local policy or guidance, should be accompanied by a Statement of Community Benefit. The statement will explain the contribution of the proposed development to:

i. meeting local housing requirements, including affordable homes;
ii. providing or enhancing local infrastructure, facilities and services; and
iii. improving the residential amenity of the surrounding area.

c) Development proposals for new homes that improve affordability and choice by being adaptable to changing and diverse needs, and which address identified gaps in provision, will be supported. This could include:

i. self-provided homes;
ii. accessible, adaptable and wheelchair accessible homes;
iii. build to rent;
iv. affordable homes;
v. a range of size of homes such as those for larger families;
vi. homes for older people, including supported accommodation, care homes and sheltered housing;
vii. homes for people undertaking further and higher education; and
viii. homes for other specialist groups such as service personnel.

d) Development proposals for public or private, permanent or temporary, Gypsy/Travellers sites and family yards and Travelling Showpeople yards, including on land not specifically allocated for this use in the LDP, should be supported where a need is identified and the proposal is otherwise consistent with the plan spatial strategy and other relevant policies, including human rights and equality.

e) Development proposals for new homes will be supported where they make provision for affordable homes to meet an identified need. Proposals for market homes will only be supported where the contribution to the provision of affordable homes on a site will be at least 25% of the total number of homes, unless the LDP sets out locations or circumstances where:

i. a higher contribution is justified by evidence of need, or
ii. a lower contribution is justified, for example, by evidence of impact on viability,

where proposals are small in scale, or to incentivise particular types of homes that are needed to diversify the supply, such as self-build or wheelchair accessible homes.

The contribution is to be provided in accordance with local policy or guidance.

f) Development proposals for new homes on land not allocated for housing in the LDP will only be supported in limited circumstances where:

i. the proposal is supported by an agreed timescale for build-out; and
ii. the proposal is otherwise consistent with the plan spatial strategy and other relevant policies including local living and 20 minute neighbourhoods;
iii. and either:

o delivery of sites is happening earlier than identified in the deliverable housing land pipeline. This will be determined by reference to two consecutive years of the Housing Land Audit evidencing substantial delivery earlier than pipeline timescales and that general trend being sustained; or
o the proposal is consistent with policy on rural homes; or
o the proposal is for smaller scale opportunities within an existing settlement boundary; or
o the proposal is for the delivery of less than 50 affordable homes as part of a local authority supported affordable housing plan.

g) Householder development proposals will be supported where they:

i. do not have a detrimental impact on the character or environmental quality of the home and the surrounding area in terms of size, design and materials; and
ii. do not have a detrimental effect on the neighbouring properties in terms of physical impact,

overshadowing or overlooking.

h) Householder development proposals that provide adaptations in response to risks from a changing climate, or relating to people with health conditions that lead to particular accommodation needs will be supported.

Policy 17 Rural homes

a) Development proposals for new homes in rural areas will be supported where the development is suitably scaled, sited and designed to be in keeping with the character of the area and the development:

i. is on a site allocated for housing within the LDP;

ii. reuses brownfield land where a return to a natural state has not or will not happen without intervention;

iii. reuses a redundant or unused building;

iv. is an appropriate use of a historic environment asset or is appropriate enabling development to secure the future of historic environment assets;

v. is demonstrated to be necessary to support the sustainable management of a viable rural business or croft, and there is an essential need for a worker (including those taking majority control of a farm business) to live permanently at or near their place of work;

vi. is for a single home for the retirement succession of a viable farm holding;

vii. is for the subdivision of an existing residential dwelling; the scale of which is in keeping with the character and infrastructure provision in the area; or

viii. reinstates a former dwelling house or is a one-for-one replacement of an existing permanent house.

b) Development proposals for new homes in rural areas will consider how the development will contribute towards local living and take into account identified local housing needs (including affordable housing), economic considerations and the transport needs of
the development as appropriate for the rural location.

c) Development proposals for new homes in remote rural areas will be supported where the proposal:

i. supports and sustains existing fragile communities;

ii. supports identified local housing outcomes; and

iii. is suitable in terms of location, access, and environmental impact.

d) Development proposals for new homes that support the resettlement of previously
inhabited areas will be supported where the proposal:

i. is in an area identified in the LDP as suitable for resettlement;

ii. is designed to a high standard;

iii. responds to its rural location; and

iv. is designed to minimise greenhouse gas emissions as far as possible.

Policy 18 Infrastructure first

a) Development proposals which provide (or contribute to) infrastructure in line with that identified as necessary in LDPs and their delivery programmes will be supported.

b) The impacts of development proposals on infrastructure should be mitigated. Development proposals will only be supported where it can be demonstrated that provision is made to address the impacts on infrastructure. Where planning conditions, planning obligations, or other legal agreements are to be used, the relevant tests will apply.

Where planning obligations are entered into, they should meet the following tests:

- be necessary to make the proposed development acceptable in planning terms
- serve a planning purpose
- relate to the impacts of the proposed development
- fairly and reasonably relate in scale and kind to the proposed development
- be reasonable in all other respects

Planning conditions should only be imposed where they meet all of the following tests. They should be:

- necessary
- relevant to planning
- relevant to the development to be permitted
- enforceable
- precise
- reasonable in all other respects

Policy 22 Flood risk and water management
a) Development proposals at risk of flooding or in a flood risk area will only be supported if they are for:
i. essential infrastructure where the location is required for operational reasons;
ii. water compatible uses;
iii. redevelopment of an existing building or site for an equal or less vulnerable use; or.
iv. redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long- term safety and resilience can be secured in accordance with relevant SEPA advice.

The protection offered by an existing formal flood protection scheme or one under construction can be taken into account when determining flood risk.

In such cases, it will be demonstrated by the applicant that:
o all risks of flooding are understood and addressed;
o there is no reduction in floodplain capacity, increased risk for others, or a need for future flood protection schemes;
o the development remains safe and operational during floods;
o flood resistant and resilient materials and construction methods are used; and
o future adaptations can be made to accommodate the effects of climate change.

Additionally, for development proposals meeting criteria part iv), where flood risk is managed at the site rather than avoided these will also require:
o the first occupied/utilised floor, and the underside of the development if relevant, to be above the flood risk level and have an additional allowance for freeboard; and
o that the proposal does not create an island of development and that safe access/ egress can be achieved.

b) Small scale extensions and alterations to existing buildings will only be supported where they will not significantly increase flood risk.

c) Development proposals will:
i. not increase the risk of surface water flooding to others, or itself be at risk.
ii. manage all rain and surface water through sustainable urban drainage systems (SUDS), which should form part of and integrate with proposed and existing blue- green infrastructure. All proposals should presume no surface water connection to the combined sewer;
iii. seek to minimise the area of impermeable surface.

d) Development proposals will be supported if they can be connected to the public water mains. If connection is not feasible, the applicant will need to demonstrate that water for drinking water purposes will be sourced from a sustainable water source that is resilient to periods of water scarcity.

e) Development proposals which create, expand or enhance opportunities for natural flood risk management, including blue and green infrastructure, will be supported.

Angus Local Development Plan 2016

Policy DS1 : Development Boundaries and Priorities
All proposals will be expected to support delivery of the Development Strategy.

The focus of development will be sites allocated or otherwise identified for development within the Angus

Local Development Plan, which will be safeguarded for the use(s) set out. Proposals for alternative uses will only be acceptable if they do not undermine the provision of a range of sites to meet the development needs of the plan area.

Proposals on sites not allocated or otherwise identified for development, but within development boundaries will be supported where they are of an appropriate scale and nature and are in accordance with relevant policies of the ALDP.

Proposals for sites outwith but contiguous* with a development boundary will only be acceptable where it is in the public interest and social, economic, environmental or operational considerations confirm there is a need for the proposed development that cannot be met within a development boundary.

Outwith development boundaries proposals will be supported where they are of a scale and nature appropriate to their location and where they are in accordance with relevant policies of the ALDP.

In all locations, proposals that re-use or make better use of vacant, derelict or under-used brownfield land or buildings will be supported where they are in accordance with relevant policies of the ALDP.

Development of greenfield sites (with the exception of sites allocated, identified or considered appropriate for development by policies in the ALDP) will only be supported where there are no suitable and available brownfield sites capable of accommodating the proposed development.

Development proposals should not result in adverse impacts, either alone or in combination with other proposals or projects, on the integrity of any European designated site, in accordance with Policy PV4 Sites Designated for Natural Heritage and Biodiversity Value.

*Sharing an edge or boundary, neighbouring or adjacent

Policy DS3 : Design Quality and Placemaking
Development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located. Development proposals should create buildings and places which are:

- Distinct in Character and Identity: Where development fits with the character and pattern of development in the surrounding area, provides a coherent structure of streets, spaces and buildings and retains and sensitively integrates important townscape and landscape features.
- Safe and Pleasant: Where all buildings, public spaces and routes are designed to be accessible, safe and attractive, where public and private spaces are clearly defined and appropriate new areas of landscaping and open space are incorporated and linked to existing green space wherever possible.
- Well Connected: Where development connects pedestrians, cyclists and vehicles with the surrounding area and public transport, the access and parking requirements of the Roads Authority are met and the principles set out in 'Designing Streets' are addressed.
- Adaptable: Where development is designed to support a mix of compatible uses and accommodate changing needs.
- Resource Efficient: Where development makes good use of existing resources and is sited and designed to minimise environmental impacts and maximise the use of local climate and landform.

Supplementary guidance will set out the principles expected in all development, more detailed guidance on the design aspects of different proposals and how to achieve the qualities set out above. Further details on the type of developments requiring a design statement and the issues that should be addressed will also be set out in supplementary guidance.

Policy DS4 : Amenity
All proposed development must have full regard to opportunities for maintaining and improving environmental quality. Development will not be permitted where there is an unacceptable adverse impact on the surrounding area or the environment or amenity of existing or future occupiers of adjoining or nearby properties.
Angus Council will consider the impacts of development on:

- Air quality;
- Noise and vibration levels and times when such disturbances are likely to occur;
- Levels of light pollution;
- Levels of odours, fumes and dust;
- Suitable provision for refuse collection / storage and recycling;
- The effect and timing of traffic movement to, from and within the site, car parking and impacts on highway safety; and
- Residential amenity in relation to overlooking and loss of privacy, outlook, sunlight, daylight and overshadowing.

Angus Council may support development which is considered to have an impact on such considerations, if the use of conditions or planning obligations will ensure that appropriate mitigation and / or compensatory measures are secured.

Applicants may be required to submit detailed assessments in relation to any of the above criteria to the Council for consideration.

Where a site is known or suspected to be contaminated, applicants will be required to undertake investigation and, where appropriate, remediation measures relevant to the current or proposed use to prevent unacceptable risks to human health.

Policy TC2 : Residential Development
All proposals for new residential development*, including the conversion of non-residential buildings must:

- be compatible with current and proposed land uses in the surrounding area;
- provide a satisfactory residential environment for the proposed dwelling(s);
- not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and
- include as appropriate a mix of house sizes, types and tenures and provision for affordable housing in accordance with Policy TC3 Affordable Housing.

Within development boundaries Angus Council will support proposals for new residential development where:

- the site is not allocated or protected for another use; and
- the proposal is consistent with the character and pattern of development in the surrounding area.

In countryside locations Angus Council will support proposals for the development of houses which fall into at least one of the following categories:

- retention, renovation or acceptable replacement of existing houses;
- conversion of non-residential buildings;
- regeneration or redevelopment of a brownfield site that delivers significant visual or environmental improvement through the removal of derelict buildings, contamination or an incompatible land use;
- single new houses where development would:
- round off an established building group of 3 or more existing dwellings; or
- meet an essential worker requirement for the management of land or other rural business.
- in Rural Settlement Units (RSUs)**, fill a gap between the curtilages of two houses, or the curtilage of one house and a metalled road, or between the curtilage of one house and an existing substantial building such as a church, a shop or a community facility; and
- in Category 2 Rural Settlement Units (RSUs), as shown on the Proposals Map, gap sites (as defined in the Glossary) may be developed for up to two houses.

Further information and guidance on the detailed application of the policy on new residential development in countryside locations will be provided in supplementary planning guidance, and will address:

- the types of other buildings which could be considered suitable in identifying appropriate gap sites for the development of single houses in Category 1 Rural Settlement Units, or for the development of up

to two houses in Category 2 Rural Settlement Units.
- the restoration or replacement of traditional buildings.
- the development of new large country houses.

*includes houses in multiple occupation, non-mainstream housing for people with particular needs, such as specialist housing for the elderly, people with disabilities, supported housing care and nursing homes.
**Rural Settlement Units are defined in the Glossary and their role is further explained on Page 9.

Policy PV5 : Protected Species
Angus Council will work with partner agencies and developers to protect and enhance all wildlife including its habitats, important roost or nesting places. Development proposals which are likely to affect protected species will be assessed to ensure compatibility with the appropriate regulatory regime.

European Protected Species
Development proposals that would, either individually or cumulatively, be likely to have an unacceptable adverse impact on European protected species as defined by Annex 1V of the Habitats Directive (Directive 92/24/EEC) will only be permitted where it can be demonstrated to the satisfaction of Angus Council as planning authority that:

- there is no satisfactory alternative; and
- there are imperative reasons of overriding public health and/or safety, nature, social or economic interest and beneficial consequences for the environment, and
- the development would not be detrimental to the maintenance of the population of a European protected species at a favourable conservation status in its natural range

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Other Protected Species
Development proposals that would be likely to have an unacceptable adverse effect on protected species unless justified in accordance with relevant species legislation (Wildlife and Countryside Act 1981 and the Protection of Badgers Act 1992) subject to any consequent amendment or replacement.

Further information on protected sites and species and their influence on proposed development will be set out in a Planning Advice Note.

Policy PV7 : Woodland, Trees and Hedges
Ancient semi-natural woodland is an irreplaceable resource and should be protected from removal and potential adverse impacts of development. The council will identify and seek to enhance woodlands of high nature conservation value. Individual trees, especially veteran trees or small groups of trees which contribute to landscape and townscape settings may be protected through the application of Tree Preservation Orders (TPO).

Woodland, trees and hedges that contribute to the nature conservation, heritage, amenity, townscape or landscape value of Angus will be protected and enhanced. Development and planting proposals should:

- protect and retain woodland, trees and hedges to avoid fragmentation of existing provision;
- be considered within the context of the Angus Woodland and Forestry Framework where woodland planting and management is planned;
- ensure new planting enhances biodiversity and landscape value through integration with and contribution to improving connectivity with existing and proposed green infrastructure and use appropriate species;
- ensure new woodland is established in advance of major developments;
- undertake a Tree Survey where appropriate; and
- identify and agree appropriate mitigation, implementation of an approved woodland management plan and re-instatement or alternative planting.

Angus Council will follow the Scottish Government Control of Woodland Removal Policy when considering proposals for the felling of woodland.

Policy PV8 : Built and Cultural Heritage
Angus Council will work with partner agencies and developers to protect and enhance areas designated

for their built and cultural heritage value. Development proposals which are likely to affect protected sites, their setting or the integrity of their designation will be assessed within the context of the appropriate regulatory regime.

National Sites
Development proposals which affect Scheduled Monuments, Listed Buildings and Inventory Gardens and Designed Landscapes will only be supported where:

- the proposed development will not adversely affect the integrity of the site or the reasons for which it was designated;
- any significant adverse effects on the site or its setting are significantly outweighed by social, environmental and/or economic benefits; and
- appropriate measures are provided to mitigate any identified adverse impacts.

Proposals for enabling development which is necessary to secure the preservation of a listed building may be acceptable where it can be clearly shown to be the only means of preventing its loss and securing its long term future. Any development should be the minimum necessary to achieve these aims. The resultant development should be designed and sited carefully in order to preserve or enhance the character and setting of the listed building.

Regional and Local Sites
Development proposals which affect local historic environment sites as identified by Angus Council (such as Conservation Areas, sites of archaeological interest) will only be permitted where:

- supporting information commensurate with the site's status demonstrates that the integrity of the historic environment value of the site will not be compromised; or
- the economic and social benefits significantly outweigh the historic environment value of the site.

Angus Council will continue to review Conservation Area boundaries and will include Conservation Area Appraisals and further information on planning and the built and cultural heritage in a Planning Advice Note.

Policy PV12 : Managing Flood Risk
To reduce potential risk from flooding there will be a general presumption against built development proposals:

- on the functional floodplain;
- which involve land raising resulting in the loss of the functional flood plain; or
- which would materially increase the probability of flooding to existing or planned development.

Development in areas known or suspected to be at the upper end of low to medium risk or of medium to high flood risk (as defined in Scottish Planning Policy (2014), see Table 4) may be required to undertake a flood risk assessment. This should demonstrate:

- that flood risk can be adequately managed both within and outwith the site;
- that a freeboard allowance of at least 500-600mm in all circumstances can be provided;
- access and egress to the site can be provided that is free of flood risk; and
- where appropriate that water-resistant materials and construction will be utilised.

Where appropriate development proposals will be:

- assessed within the context of the Shoreline Management Plan, Strategic Flood Risk Assessments and Flood Management Plans; and
- considered within the context of SEPA flood maps to assess and mitigate surface water flood potential.

Built development should avoid areas of ground instability (landslip) coastal erosion and storm surges. In areas prone to landslip a geomorphological assessment may be requested in support of a planning application to assess degree of risk and any remediation measures if required to make the site suitable for use.

Policy PV15 : Drainage Infrastructure
Development proposals within Development Boundaries will be required to connect to the public sewer where available.

Where there is limited capacity at the treatment works Scottish Water will provide additional wastewater capacity to accommodate development if the Developer can meet the 5 Criteria*. Scottish Water will instigate a growth project upon receipt of the 5 Criteria and will work with the developer, SEPA and Angus Council to identify solutions for the development to proceed.

Outwith areas served by public sewers or where there is no viable connection for economic or technical reasons private provision of waste water treatment must meet the requirements of SEPA and/or The Building Standards (Scotland) Regulations. A private drainage system will only be considered as a means towards achieving connection to the public sewer system, and when it forms part of a specific development proposal which meets the necessary criteria to trigger a Scottish Water growth project.

All new development (except single dwelling and developments that discharge directly to coastal waters) will be required to provide Sustainable Drainage Systems (SUDs) to accommodate surface water drainage and long term maintenance must be agreed with the local authority. SUDs schemes can contribute to local green networks, biodiversity and provision of amenity open space and should form an integral part of the design process.

Drainage Impact Assessment (DIA) will be required for new development where appropriate to identify potential network issues and minimise any reduction in existing levels of service.

*Enabling Development and our 5 Criteria (http://scotland.gov.uk/Resource/0040/00409361.pdf)

Subject:FW: 21/01000/FULL - Burnbank, 33 South Street, Newtyle

From: Andrew Brown [redacted]
Sent: 20 April 2022 12:01
To: James Wright [redacted]
Cc: Georgia Kirtsi-Mathieson [redacted]
Subject: RE: 21/01000/FULL - Burnbank, 33 South Street, Newtyle

Dear James,

I have reviewed the above application and made the following observations with regard to flood risk;

- The application is for the erection of a dwellinghouse.
- The application site is Garden Ground at Burnbank, 33 South Street, Newtyle.
- The proposed dwellinghouse is in close proximity (3.6m) to the Newtyle Burn and as such may be at risk of flooding from this source.
- The Newtyle Burn enters a culvert approximately 40-50m downstream of the site.
- The SEPA flood maps do not indicate that the site is at risk of fluvial flooding, however, this area is outwith the extent modelled and shown on the SEPA flood maps as the catchment of the Newtyle Burn is less than 3 square kilometres at this location. As such it is considered that the proposed development may be at risk of fluvial flooding.
- SEPA's latest standing advice indicates that a 6m undeveloped buffer strip should be left between any existing watercourse and new development. https://www.sepa.org.uk/media/535237/sepa-standing-advice-for-planning-authorities-and-developers-lups-gu8-v11-web.pdf

Requirements

In order to make final comment on the application I will require the following information;

1. Information to be supplied demonstrating that the proposed development will not be at risk of flooding up to and including a 1 in 200 (0.5% annual probability) event inclusive of a 35% allowance for climate change and factoring in various culvert blockage scenarios.

Should you require any further information, please do not hesitate to contact me.

Kind regards,

Andrew

Andrew Brown | Design Engineer – Coastal, Flood Risk and Structures Team | Angus Council | Tel: [redacted] | www.angus.gov.uk

Remember FACTS:

Face coverings, Avoid crowded places, Clean hands regularly, Two metre distance, Self isolate and test if you have symptoms

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Think green – please do not print this email

From: Andrew Brown
Sent:25 Jul 2023 12:08:49 +0100
To: James Wright
Subject: Further Consultation for Burnbank Newtyle - 21/01000/FULL

Dear James,

I note that the applicant has amended their proposals since my previous consultation dated 20/04/2022.

My previous response was as follows:

" I have reviewed the above application and made the following observations with regard to flood risk;

- *The application is for the erection of a dwellinghouse.*
- *The application site is Garden Ground at Burnbank, 33 South Street, Newtyle.*
- *The proposed dwellinghouse is in close proximity (3.6m) to the Newtyle Burn and as such may be at risk of flooding from this source.*
- *The Newtyle Burn enters a culvert approximately 40-50m downstream of the site.*
- *The SEPA flood maps do not indicate that the site is at risk of fluvial flooding, however, this area is outwith the extent modelled and shown on the SEPA flood maps as the catchment of the Newtyle Burn is less than 3 square kilometres at this location. As such it is considered that the proposed development may be at risk of fluvial flooding.*
- *SEPA's latest standing advice indicates that a 6m undeveloped buffer strip should be left between any existing watercourse and new development. https://www.sepa.org.uk/media/535237/sepa-standing-advice-for-planning-authoritiesand-developers-lups-gu8-v11-web.pdf*

Requirements

In order to make final comment on the application I will require the following information; 1. Information to be supplied demonstrating that the proposed development will not be at risk of flooding up to and including a 1 in 200 (0.5% annual probability) event inclusive of a 35% allowance for climate change and factoring in various culvert blockage scenarios. Should you require any further information, please do not hesitate to contact me."

The new proposals have included re-siting of the proposed development so that it is now 6m from the Newtyle Burn. This change is positive as it provides a 6m undeveloped buffer strip as per SEPA's standing advice. However, the above change does not negate any potential flood risk and I note that the rest of my previous observations and requirements are still applicable.

Kind regards,

Andrew

Andrew Brown | Design Engineer – Coastal, Flood Risk and Structures Team | Angus Council | Tel: [redacted] | www.angus.gov.uk


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From: Andrew Brown
Sent: Fri, 29 Nov 2024 17:29:03 +0000
To: James Wright
Subject:RE: PCS-20003388 SEPA Response to 21/01000/FULL
Attachments:PCS-20003388 SEPA Response.docx

Dear James,

Please accept my apologies for the delay,

I have reviewed SEPA's response along with the revised proposals and made the following observations;

- The applicant has prepared a Flood Risk Assessment which identifies the 1 in 200 year flood extent along with an uplift for climate change and 75% blockage scenarios.
- The applicant has re-sited there proposed development to outwith the 1 in 200 year flood envelope and provided 600mm of freeboard above this level, therefore I am content that the applicant has demonstrated that the site is unlikely to be at risk of fluvial flooding.
- The position of the proposed dwelling is now 8m from the top of the bank of watercourse.

As such I confirm that I do not object to the proposed application.

Kind regards,

Andrew

Andrew Brown | Team Leader – Coastal, Flood Risk and Structures | Angus Council | Tel: [redacted] | [redacted] | www.angus.gov.uk

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Think green – please do not print this email

From: James Wright [redacted]
Sent: Tuesday, November 5, 2024 1:46 PM
To: Andrew Brown [redacted]
Subject: FW: PCS-20003388 SEPA Response to 21/01000/FULL

Hi Andrew,

Please see the attached response. Are you now in a position to provide your final comments?

Regards

James Wright | Planning Officer (Development Standards) | Angus Council | [redacted] | [redacted] | www.angus.gov.uk

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From: Planning South <Planning.South@sepa.org.uk>
Sent: Tuesday, November 5, 2024 1:09 PM
To: PLNProcessing <PLNProcessing@angus.gov.uk>
Cc: James Wright [redacted]
Subject: PCS-20003388 SEPA Response to 21/01000/FULL

ANGUS COUNCIL

PLANNING

CONSULTATION SHEET

PLANNING APPLICATION NO	21/01000/FULL

Tick boxes as appropriate

ROADS	No Objection		
	Interest	✓	(Comments to follow within 14 days)
	Date	20 01 22	

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ELECTRONIC SUBMISSION DRAWINGS TO BE VIEWED VIA IDOX

Angus Council
Comhairle Aonghais

Memorandum

Infrastructure
Roads & Transportation

TO: DEVELOPMENT STANDARDS MANAGER, PLANNING

FROM: TRAFFIC MANAGER, ROADS

YOUR REF:

OUR REF: CH/AG/ TD1.3

DATE: 25 FEBRUARY 2022

SUBJECT: PLANNING APPLICATION REF. NO. 21/01000/FULL – PROPOSED ERECTION OF DWELLING HOUSE WITHIN GARDEN GROUND OF BURNBANK, 33 SOUTH STREET, NEWTYLE

I refer to the above planning application, which is similar to a previous application, reference number 21/00292/PPPL, which was withdrawn.

The National Roads Development Guide, adopted by the Council as its road standards, is relative to the consideration of the application and the following comments take due cognisance of that document.

The site is located on the south-east side of South Street mid-way between its junctions with Dunarn Street and Commercial Street.

To provide a safe and satisfactory access, minimum visibility sightlines of 2.4 x 43 metres should be provided on both sides of the proposed access at its junction with the public road.

I have considered the application in terms of the traffic likely to be generated by it, and its impact on the public road network. As a result, I do not object to the application but would recommend that any consent granted shall be subject to the following conditions:

1 That, prior to the commencement of development, visibility splays shall be provided at the junction of the proposed access with South Street giving a minimum sight distance of 43 metres in each direction at a point 2.4 metres from the nearside channel line of South Street.
Reason: to enable drivers of vehicles leaving the site to have a clear view over a length of road sufficient to allow safe exit.

2 That, within the above visibility splays nothing shall be erected, or planting permitted to grow to a height in excess of 1050 millimetres above the adjacent road channel level.
Reason: to enable drivers of vehicles leaving the site to have a clear view over a length of road sufficient to allow safe exit.

3 That, an advisory, informative note be added to the decision notice to inform the applicant that the verge crossing at the proposed access must be formed and constructed in accordance with the standards of Angus Council. An application form can be downloaded from the Angus Council website for the purpose.
Reason: to maintain the integrity and condition of the public road.

I trust the above comments are of assistance but should you have any queries, please contact Adrian Gwynne on extension 2036.

Veronica Caney

From: Adrian G Gwynne
Sent: 26 April 2024 10:24
To: PLNProcessing
Subject: FW: Planning Application Consultation 21/01000/FULL

No objections

-----Original Message-----
From: PLNProcessing@angus.gov.uk <PLNProcessing@angus.gov.uk>
Sent: Tuesday, April 16, 2024 3:10 PM
To: Rdspln <rdspln@angus.gov.uk>
Subject: Planning Application Consultation 21/01000/FULL

Please see attached document.

From: Iain H Graham
Sent: Wed, 2 Feb 2022 09:48:42 +0000
To: James Wright
Cc: Steven D Thomson
Subject:21/01000/FULL Erection of Dwellinghouse in Garden Ground at Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

James

Thank you for consulting this Service on the proposal to include a stove and associated flue within the above application. I have looked at the information submitted and note that the proposed flue would terminate above the highest roof ridge level. In addition the horizontal distances between the flue position and neighbouring dwellinghouses and associated amenity areas exceed the minimum requirements of the latest guidance used by this Service. I am therefore satisfied that there should be adequate dispersion and dilution of emissions to avoid any significant amenity impacts affecting neighbouring properties and accordingly would not object to this application proceeding to consent.

I trust you find the above comments acceptable but please do not hesitate to contact me if you wish to discuss anything further.

Regards

Iain

Iain Graham | Environmental Health Officer | Angus Council - Place | Housing, Regulatory and Protective Services | Angus House, Orchardbank Business Park, Forfar, DD8 1AN | ☎[redacted]

From: Iain H Graham
Sent: Wed, 4 Dec 2024 10:34:14 +0000
To: James Wright
Subject:21/01000/FULL Erection of Dwellinghouse in Garden Ground at Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

Hi James

Thank you for drawing to my attention that the above proposals make provision for the installation of an air source heat pump. I have looked at the submitted information and I note that there isn't any noise data provided in respect of the ASHP. Notwithstanding I am satisfied that there are ASHP units that could comply with our standard condition noise limits at the proposed location given the separation distances to neighbouring boundaries and properties. Therefore in the event that planning consent is issued in respect of this application I would suggest that the following condition is a suitable safeguard to ensure that an appropriate ASHP unit is installed that doesn't significantly impact on the amenity levels currently afforded to neighbouring residences:

1. That notwithstanding the plans accompanying this permission the proposed air source heat pump is not approved by this planning permission unless detailed information demonstrating that noise emissions from the units will not individually or cumulatively exceed:

    a. NR Curve 25 between 2300 and 0700 and NR Curve 35 at all other times as measured within any dwelling or noise sensitive premises with the windows open at least 50mm,

    b. 50 dB(A) Leq(1hr) as measured within the external amenity space of any noise sensitive premises,

    are submitted to and approved in writing by the planning authority. Thereafter only Air Source Heat pumps that comply with the required emissions levels shall be installed in accordance with details and at locations approved in writing by the planning authority.

I trust that you find the above to be satisfactory but please do not hesitate to contact me if you wish to discuss anything further.

Regards

Iain

Iain Graham | Environmental Health Officer | Angus Council - Place | Housing, Regulatory and Protective Services | Angus House, Orchardbank Business Park, Forfar, DD8 1AN | ☎ [redacted]

Scottish Environment Protection Agency
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James Wright
Planning Department
Angus Council

By email only to: PLNProcessing@angus.gov.uk

Our Ref: PCS-20001261
Your Ref: 21/01000/FULL

SEPA Email Contact:
planning.south@sepa.org.uk

17 May 2024

Dear James Wright

Town and Country Planning (Scotland) Acts
21/01000/FULL
Erection of Dwellinghouse Garden Ground
Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

Thank you for your consultation which was received by SEPA on 16 April 2024 in relation to the above application. We understand the reason for consultation is flood risk.

Advice for the planning authority

The information supplied with this planning application is insufficient to allow us to determine the potential impacts. We therefore submit a **holding objection** and request that determination be deferred until the information outlined below has been provided for our assessment.

If the planning authority proposes to grant planning permission contrary to this advice on flood risk, the Town and Country Planning (Notification of Applications) (Scotland) Direction

SEPA
Unit 6
4 Parklands Avenue
Holytown
Motherwell
ML1 4WQ

Tel: 03000 99 66 99
www.sepa.org.uk

2009 provides criteria for the referral to the Scottish Ministers of such cases. You may therefore wish to consider if this proposal falls within the scope of this Direction.

1. Flood risk

1.1 In line with National Planning Framework 4 (Policy 22) a precautionary approach to flood risk should be taken by avoiding development within areas at risk of flooding (land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change).

1.2 A Flood Risk Assessment (FRA) was undertaken by Millard in April 2024 (Ref: 18518/AB/941). This provided 1D-2D linked outputs for a 1 in 200-year flood event plus an allowance for climate change on the Newtyle Burn. The FRA concluded that the proposed site of the development is not at risk of flooding, but we will require further information to appropriately assess the flood risk on site.

1.3 We have reviewed the FRA and found most aspects to be based on appropriate methods and parameters for the site. There are a few aspects of the assessment that require some further clarification, as it is not clear that they give the best representation of flood risk. This results in a high level of uncertainty, and it is not clear if the proposals may place development at risk of flooding. The information required is outlined below.

- We require the topographic survey undertaken in preparation for the FRA, clearly showing elevations across the site and the opposite bank, to demonstrate that the site of the proposed development is elevated above potential flood risk. Further photographs showing the site of the proposed development and its relation to the burn would also be helpful to build a greater picture of the ground conditions at the site.

- We request that blockage scenarios be run for the culverts and bridge on the site. We hold records of significant flooding in other areas where blockages have been the main cause and it is recommended that a range of blockage scenarios

be tested, these being: 25%, 50% and 75% blockages. In the event the upstream culvert is blocked, it may cause water to take a pathway which causes inundation of the proposed development. Additionally, we request that a 100% blockage scenario be modelled on the downstream culvert, owing to its small aperture, length, and potentially significant consequences of a blockage here.

- The model treated the drystone wall on the site as porous and having no bearing on flood water, but past flood events have demonstrated that drystone walls can restrict flows and collapse, leading to rapid downstream inundation. As such, we request that differing scenarios of porosity and collapse are modelled, in a similar manner to the above blockage scenarios, to assess the impact of the drystone wall on flooding at the site.

- The FRA also includes multiple flood extents which appear to differ in the area of inundation shown for 1 in 200-year plus climate change events (i.e. Figure 7 output compared to that shown in Appendix: Plans). Please could the correct flood extent output be confirmed. The flood output extents within the report (Figures 7, 8, 9, 10 and 11) also seem to be shifted to the east of the channel – we request confirmation if this is a georeferencing discrepancy between the output and the displayed extent.

- We require the proposed location of the proposed building overlaid onto a map showing the modelled flood extents. The proposed building must be outside of the flood risk area.

- We note that some of the flood outputs have mass balance values of greater than ±1%. This falls outside of our normally accepted error range and so requires further clarification. We require model diagnostics such as zzd info, warnings, outputs from key cross sections such as stage plots etc.

- We require a clear summary of the modelling numerical outputs, preferably in tabular format, of the modelled velocities, Froude numbers and stage ratings to

ensure that the modelled water levels have not been underestimated. Providing such outputs is standard practice and outlined in SEPA's Technical Flood Risk Guidance.

1.4 The applicant should also be aware that we would object to any land raising within the flood risk area. We also advise that the proposed building be situated sufficiently far away from the watercourse so that they have a minimum buffer strip of 6m (as outlined in SEPA's Buffer Strip Guidance), so that the building are not impacted by undercutting of the river banks.

2. Other planning matters

2.1 For all other planning matters, please see our triage framework and standing advice which are available on our website: www.sepa.org.uk/environment/land/planning/

Advice for the applicant

3. Regulatory advice

3.1 Details of regulatory requirements and good practice advice, for example in relation to private drainage, can be found on the regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the local compliance team at FAD@sepa.org.uk

If you have queries relating to this letter, please contact us at planning.south@sepa.org.uk including our reference number in the email subject.

Yours sincerely
Jessica Taylor
Senior Planning Officer
Planning Service

Ecopy to: [redacted]

Disclaimer: This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our website planning pages - www.sepa.org.uk/environment/land/planning/

Scottish Environment Protection Agency
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James Wright
Planning Department
Angus Council

By email only to:
PLNProcessing@angus.gov.uk

Our Ref: PCS-20002795
Your Ref: 21/01000/FULL

SEPA Email Contact:
planning.south@sepa.org.uk

13 September 2024

Dear James Wright

Town and Country Planning (Scotland) Acts
21/01000/FULL
Erection of Dwellinghouse Garden Ground
Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

Thank you for your consultation which was received by SEPA on 27 August 2024 in relation to the above application. We understand the reason for consultation is flood risk.

Advice for the planning authority

The information supplied with this planning application is insufficient to allow us to determine the potential impacts. Unfortunately, we therefore maintain our **holding objection** to the development, and request that the information outlined below is provided for our assessment.

1. Flood risk

1.1 In line with National Planning Framework 4 (Policy 22) a precautionary approach to

SEPA
Unit 6
4 Parklands Avenue
Holytown
Motherwell
ML1 4WQ

Tel: 03000 99 66 99
www.sepa.org.uk

flood risk should be taken by avoiding development within areas at risk of flooding (land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change).

1.2 We thank the applicant for the further technical information provided in response to our request for further information. The modelling at the site is subject to uncertainty, particularly due to the number and variety of structures in the channel near the site. Given the structures present, we accept Figure 4 from the latest technical note, with 75% culvert blockage and 75% solid boundary wall, as representative of the 1 in 200-year plus climate change flood extent for the proposed site.

1.3 Figure 4 demonstrates that part of the proposed site, and the south-eastern aspect of the proposed building footprint, falls within the flood risk area. Additionally, there are anecdotal reports of flooding on this site from members of the public. As such, we **maintain our holding objection** to development in the current proposed layout on grounds of flood risk.

1.4 However, Figure 4 also demonstrates that there is space available within the red line boundary, to the west and south-west of the current proposed location, which falls outwith the 1 in 200-year plus climate change flood extent. If the applicant submitted revised site plans, with all built development lying outwith the flood risk area as laid out in Figure 4, then we would be able to remove our objection on flood risk grounds.

2. Other planning matters

2.1 For all other planning matters, please see our triage framework and standing advice which are available on our website: www.sepa.org.uk/environment/land/planning/

Advice for the applicant

3. Regulatory advice

3.1 Details of regulatory requirements and good practice advice, for example in relation to private drainage, can be found on the regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a

member of the local compliance team at FAD@sepa.org.uk

If you have queries relating to this letter, please contact us at planning.south@sepa.org.uk including our reference number in the email subject.

Yours sincerely
Jessica Taylor
Senior Planning Officer
Planning Service

Ecopy to: [redacted]

Disclaimer: This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our website planning pages - www.sepa.org.uk/environment/land/planning/

Scottish Environment Protection Agency
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James Wright
Planning Department
Angus Council

By email only to:
PLNProcessing@angus.gov.uk

Our Ref: PCS-20003388
Your Ref: 21/01000/FULL

SEPA Email Contact:
planning.south@sepa.org.uk

05 November 2024

Dear James Wright

Town and Country Planning (Scotland) Acts
21/01000/FULL
Erection of Dwellinghouse Garden Ground
Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

Thank you for your consultation which was received by SEPA on 21 October 2024 in relation to the above application. We understand the reason for consultation is flood risk.

Advice for the planning authority

We are now in a position to **withdraw our objection** to the proposed development on flood risk grounds. Please note our advice provided below.

1. Flood risk advice

1.1 In line with National Planning Framework 4 (Policy 22), a precautionary approach to flood risk should be taken by avoiding development within areas at risk of flooding

SEPA
Unit 6
4 Parklands Avenue
Holytown
Motherwell
ML1 4WQ

Tel: 03000 99 66 99
www.sepa.org.uk

(land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change).

1.2 The revised site plans submitted by the applicant (Drawing No. 2039/PA/003) show that the development is now located outwith the flood risk area, shown in Figure 4 of the Flood Risk Assessment, as requested in our previous response. We are therefore able to **withdraw our objection** to the proposed development on grounds of flood risk.

1.3 We note that the revised elevation drawings (Drawing No. 2039-PA-05) show the proposed building fitted with removable flood gates and a private flood warning system installed on the Newtyle Burn. It is unclear why these measures are necessary given that the building has been shown to be outwith the flood risk area. We suggest that the local planning authority review the revised plans and determine if they deem it appropriate for a new dwelling to be constructed with measures which anticipate flooding of the building.

1.4 We advise that there is still space available in the red line boundary which lies further from the flood risk area than the position of the proposed property in the revised plans, and therefore the building could be distanced even further from potential flood risk if desired. Additionally, as the proposed building now lies outwith the flood risk area, landraising of the property would be possible, and may provide more reliable protection than the proposed removable barriers.

2. Other planning matters

2.1 For all other planning matters, please see our triage framework and standing advice which are available on our website: www.sepa.org.uk/environment/land/planning/

Advice for the applicant

3. Regulatory advice

3.1 Details of regulatory requirements and good practice advice, for example in relation to private drainage, can be found on the regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a

member of the local compliance team at FAD@sepa.org.uk

If you have queries relating to this letter, please contact us at planning.south@sepa.org.uk including our reference number in the email subject.

Yours sincerely
Jessica Taylor
Senior Planning Officer
Planning Service

Ecopy to: [redacted]

Disclaimer: This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our website planning pages - www.sepa.org.uk/environment/land/planning/

From: Claire Herbert
To: PLNProcessing
Cc: James Wright
Subject: Planning Application Consultation 21/01000/FULL - Archaeology response
Date: 31 January 2022 11:16:20

Planning Reference: 21/01000/FULL
Case Officer Name: James Wright
Proposal: Erection of Dwellinghouse Garden Ground
Site Address: Burnbank 33 South Street Newtyle Blairgowrie
Site Post Code: PH12 8UQ
Grid Reference: NO 2993 4126

Thank you for consulting us on the above application. I can advise that in this particular instance no archaeological mitigation is required.

Should you have any comments or queries regarding the above, please do not hesitate to contact me.

Kind regards,
Claire

Claire Herbert MA(Hons) MA MCIfA

Archaeologist
Archaeology Service, Planning and Economy, Environment and Infrastructure Services
Aberdeenshire Council

T: [redacted]
E: [redacted]
W: https://www.aberdeenshire.gov.uk/leisure-sport-and-culture/archaeology
W: https://online.aberdeenshire.gov.uk/smrpub

Archaeology Service for Aberdeenshire, Moray, Angus & Aberdeen City Councils

Your feedback is important to us and helps us to improve our service – we value your comments.

Please note office working hours: Monday - Friday, 9.30am – 5.30pm

Explore the historic environment - find and follow the Archaeology Service on social media:

Instagram @abshire_archaeology
Twitter @AbshireArch_CH
YouTube Aberdeenshire Council Archaeology Service

Aberdeenshire Council.

Dh’fhaodadh fiosrachadh sochaire, a tha a-mhàin airson an neach gu bheil am post-dealain air a chur, a bhith an seo. Ma tha thu air am post-dealain fhaighinn mar mhearachd, gabh ar leisgeul agus cuir fios chun an neach a chuir am post-dealain agus dubh às am post-dealain an dèidh sin. ’S e beachdan an neach a chuir am post-dealain a tha ann an gin sam bith a thèid a chur an cèill agus chan eil e a’ ciallachadh gu bheil iad a’ riochdachadh beachdan Chomhairle Shiorrachd Obar Dheathain.

www.aberdeenshire.gov.uk

Planning Consultation Response from Aberdeenshire Council Archaeology Service	
Planning Application No	21/01000/FULL
Planning Officer	James Wright
Proposal	Erection of Dwellinghouse Garden Ground
Address	Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Grid Reference	NO 2993 4126

I have the following comments to make on the application:

(a)	I OBJECT to the application for the reason(s) as stated below	❑
(b)	I have NO OBJECTIONS to the application and have no condition(s) and/or comment(s) to make on the proposal	X
(c)	I have NO OBJECTIONS to the application subject to condition(s) and/or comment(s) about the proposal as set out below	❑
(d)	Further information is required in order to consider the application as set out below	❑

Reason(s) for objection

None

Condition(s)

None

Further comment(s) to be passed to applicant

Further information required to consider the application

Contact: Claire Herbert
email address:
archaeology@aberdeenshire.gov.uk

Date: 02/06/2023
Phone No: [redacted]

Planning Consultation Response from Aberdeenshire Council Archaeology Service	
Planning Application No	21/01000/FULL
Planning Officer	James Wright
Description	Erection of Dwellinghouse Garden Ground
Address	Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Grid Reference	NO29934126

I have the following comments to make on the application:

(a)	I OBJECT to the application for the reason(s) as stated below	❑
(b)	I have NO OBJECTIONS to the application and have no condition(s) and/or comment(s) to make on the proposal	X
(c)	I have NO OBJECTIONS to the application subject to condition(s) and/or comment(s) about the proposal as set out below	❑
(d)	Further information is required in order to consider the application as set out below	❑

Reason(s) for objection

None

Condition(s)

None

Further comment(s) to be passed to applicant

Further information required to consider the application

Contact: Claire Herbert
email address:
archaeology@aberdeenshire.gov.uk

Date: 25/04/2024
Phone No: [redacted]

Wednesday, 19 January 2022

Scottish Water
Trusted to serve Scotland

Local Planner
Planning Service
Angus Council
Forfar
DD8 1AN

Development Operations
The Bridge
Buchanan Gate Business Park
Cumbernauld Road
Stepps
Glasgow
G33 6FB

Development Operations
Freephone Number - 0800 3890379
E-Mail - DevelopmentOperations@scottishwater.co.uk
www.scottishwater.co.uk
Follow Us

Dear Customer,

Burnbank 33 South Street, Newtyle, Blairgowrie, PH12 8UQ
Planning Ref: 21/01000/FULL
Our Ref: DSCAS-0056458-NFM
Proposal: Erection of Dwelling House Garden Ground

Please quote our reference in all future correspondence

Audit of Proposal

Scottish Water has no objection to this planning application; however, the applicant should be aware that this does not confirm that the proposed development can currently be serviced and would advise the following:

Water Capacity Assessment

Scottish Water has carried out a Capacity review and we can confirm the following:

- There is currently sufficient capacity in the LINTRATHEN WTW NO273538 Water Treatment Works to service your development. However, please note that further investigations may be required to be carried out once a formal application has been submitted to us.

Waste Water Capacity Assessment

- There is currently sufficient capacity for a foul only connection in the NEWTYLE WWTW 1973 NO301416 Waste Water Treatment works to service your development. However, please note that further investigations may be required to be carried out once a formal application has been submitted to us.

Please Note

- The applicant should be aware that we are unable to reserve capacity at our water and/or waste water treatment works for their proposed development. Once a formal connection application is submitted to Scottish Water after full planning permission has been granted, we will review the availability of capacity at that time and advise the applicant accordingly.

Surface Water

For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system.

There may be limited exceptional circumstances where we would allow such a connection for brownfield sites only, however this will require significant justification from the customer taking account of various factors including legal, physical, and technical challenges.

In order to avoid costs and delays where a surface water discharge to our combined sewer system is anticipated, the developer should contact Scottish Water at the earliest opportunity with strong evidence to support the intended drainage plan prior to making a connection request. We will assess this evidence in a robust manner and provide a decision that reflects the best option from environmental and customer perspectives.

General notes:

- Scottish Water asset plans can be obtained from our appointed asset plan providers:
    - Site Investigation Services (UK) Ltd
    - Tel: 0333 123 1223
    - Email: sw@sisplan.co.uk
    - www.sisplan.co.uk
- Scottish Water's current minimum level of service for water pressure is 1.0 bar or 10m head at the customer's boundary internal outlet. Any property which cannot be adequately serviced from the available pressure may require private pumping arrangements to be installed, subject to compliance with Water Byelaws. If the developer wishes to enquire about Scottish Water's procedure for checking the water pressure in the area, then they should write to the Customer Connections department at the above address.
- If the connection to the public sewer and/or water main requires to be laid through land out-with public ownership, the developer must provide evidence of formal approval from the affected landowner(s) by way of a deed of servitude.
- Scottish Water may only vest new water or waste water infrastructure which is to be laid through land out with public ownership where a Deed of Servitude has been obtained in our favour by the developer.
- The developer should also be aware that Scottish Water requires land title to the area of land where a pumping station and/or SUDS proposed to vest in Scottish Water is constructed.

- Please find information on how to submit application to Scottish Water at our Customer Portal.

Next Steps:

All Proposed Developments

All proposed developments require to submit a Pre-Development Enquiry (PDE) Form to be submitted directly to Scottish Water via our Customer Portal prior to any formal Technical Application being submitted. This will allow us to fully appraise the proposals.

Where it is confirmed through the PDE process that mitigation works are necessary to support a development, the cost of these works is to be met by the developer, which Scottish Water can contribute towards through Reasonable Cost Contribution regulations.

Non Domestic/Commercial Property:

Since the introduction of the Water Services (Scotland) Act 2005 in April 2008 the water industry in Scotland has opened to market competition for non-domestic customers. All Non-domestic Household customers now require a Licensed Provider to act on their behalf for new water and waste water connections. Further details can be obtained at www.scotlandontap.gov.uk

Trade Effluent Discharge from Non Dom Property:

- Certain discharges from non-domestic premises may constitute a trade effluent in terms of the Sewerage (Scotland) Act 1968. Trade effluent arises from activities including; manufacturing, production and engineering; vehicle, plant and equipment washing, waste and leachate management. It covers both large and small premises, including activities such as car washing and launderettes. Activities not covered include hotels, caravan sites or restaurants.
- If you are in any doubt as to whether the discharge from your premises is likely to be trade effluent, please contact us on 0800 778 0778 or email TEQ@scottishwater.co.uk using the subject “Is this Trade Effluent?". Discharges that are deemed to be trade effluent need to apply separately for permission to discharge to the sewerage system. The forms and application guidance notes can be found here.
- Trade effluent must never be discharged into surface water drainage systems as these are solely for draining rainfall run off.
- For food services establishments, Scottish Water recommends a suitably sized grease trap is fitted within the food preparation areas, so the development complies with Standard 3.7 a) of the Building Standards Technical Handbook and for best management and housekeeping practices to be followed which

prevent food waste, fat oil and grease from being disposed into sinks and drains.

- The Waste (Scotland) Regulations which require all non-rural food businesses, producing more than 50kg of food waste per week, to segregate that waste for separate collection. The regulations also ban the use of food waste disposal units that dispose of food waste to the public sewer. Further information can be found at www.resourceefficientscotland.com

I trust the above is acceptable however if you require any further information regarding this matter please contact me on **0800 389 0379** or via the e-mail address below or at planningconsultations@scottishwater.co.uk.

Yours sincerely,

Planning Application Team
Development Operations Analyst
Tel: 0800 389 0379
developmentoperations@scottishwater.co.uk

Scottish Water Disclaimer:

"It is important to note that the information on any such plan provided on Scottish Water's infrastructure, is for indicative purposes only and its accuracy cannot be relied upon. When the exact location and the nature of the infrastructure on the plan is a material requirement then you should undertake an appropriate site investigation to confirm its actual position in the ground and to determine if it is suitable for its intended purpose. By using the plan you agree that Scottish Water will not be liable for any loss, damage or costs caused by relying upon it or from carrying out any such site investigation."

Monday, 29 May 2023

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Planning Service
Angus Council
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DD8 1AN

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Our Ref: DSCAS-0087511-F7B
Proposal: Erection of Dwellinghouse Garden Ground

Please quote our reference in all future correspondence

Audit of Proposal

Scottish Water has no objection to this planning application; however, the applicant should be aware that this does not confirm that the proposed development can currently be serviced. Please read the following carefully as there may be further action required. Scottish Water would advise the following:

Water Capacity Assessment

Scottish Water has carried out a Capacity review and we can confirm the following:

- This proposed development will be fed from Lintrathen Water Treatment Works. Unfortunately, Scottish Water is unable to confirm capacity currently so to allow us to fully appraise the proposals we suggest that the applicant completes a Pre-Development Enquiry (PDE) Form and submits it directly to Scottish Water via our Customer Portal or contact Development Operations.

Waste Water Capacity Assessment

- There is currently sufficient capacity for a foul only connection in the Newtyle Waste Water Treatment works to service your development. However, please note that further investigations may be required to be carried out once a formal application has been submitted to us.

Please Note

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development complies with Standard 3.7 a) of the Building Standards Technical Handbook and for best management and housekeeping practices to be followed which prevent food waste, fat oil and grease from being disposed into sinks and drains.

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I trust the above is acceptable however if you require any further information regarding this matter please contact me on **0800 389 0379** or via the e-mail address below or at planningconsultations@scottishwater.co.uk.

Yours sincerely,

Ruth Kerr.
Development Services Analyst
PlanningConsultations@scottishwater.co.uk

Objections to Application for Planning Permission Reference 21/01000/FULL (Burnbank, 33 South Street, Newtyle)

From Marianne Mitchelson & James Robertson, Sidlaw House, 24 South Street, Newtyle (31st January 2022)

We have lived directly opposite the site of the proposed new house for nineteen years, and strongly object on the following grounds:

1. We note that this Application follows a previous Application for Planning Permission in Principle for the same location (Reference 21/00292/PPPL), submitted in May 2021. The present Application states that, after consultation with the Planning Officer, it was decided to withdraw that application 'in order to produce a full detailed design that utilised a bespoke and tailored approach to the site' (Design Statement, p.11).

2. Whilst we acknowledge that the applicant has attempted to 'address all relevant concerns raised in the provision of this Full Planning Application' (ibid.), we think the new proposals do little to mitigate some of the issues we raised previously, and fail to address other concerns entirely.

3. We contest some of the language in the Application: for example, on p.1 of the accompanying Design Statement submitted by James Paul Associates we dispute that the site occupies a 'gap': it in fact occupies a mature garden space with a very long history (more than 100 years) as such.

4. The Design Statement (p.5) describes the proposed new house as being of 'a linear, single storey form' which would be 'virtually indetectable from South Street'. We strongly contest this assertion. The proposed structure would be approximately 27 metres in length, the entirety of this set to the North West, i.e. directly facing our home, Sidlaw House. Our main living room and bedroom are on the first floor to the front (South East-facing) and the new house, with all its proposed lights and terraced area, would be unavoidably visible from these and other parts of our home. The first photograph on p.4 of the Design Statement clearly shows the direct sightlines between the proposed site and our home. Furthermore, the high-roofed part of the proposed new house, where the living accommodation would be sited, is at the western end of the structure, the most visible part of the site from Sidlaw House and indeed from South Street. This represents a definite loss of amenity and privacy to us.

The Application repeatedly refers to the proposed house as a single-storey structure, but the height of the living accommodation's roof would be 6.55m or over 21ft (an average height for a modern two-storey home). That the wall-head height of 3.95m (13ft) has been set to match that of, for example, 20 South Street (itself a two-storey home), as stated on p.9 of the Design Statement, seems irrelevant to the fact that the roof height of the most visible section of the structure would be 6.55m. This would have a negative impact on the existing visual amenity.

5. The Application does not address traffic concerns raised when the previous PPPL application was made in 2021. The proposed new driveway access would create additional, dangerous traffic issues on the already heavily used South Street. The photograph of South Street on p.1 of the Design Statement is completely atypical of normal conditions, as it shows no moving traffic and no cars parked on the North West side of the street. There are usually at least five and often eight or more vehicles parked between the entrance to Burnbank Cottage and the Commercial Hotel. The street is not wide enough to allow for parking on the South East side.

   Significant traffic already enters South Street from Commercial Street, Knox's Close and Kinpurnie Gardens. Six new homes are currently being built at the Railway Shed on Commercial Street, with parking for twelve vehicles. The proposed new driveway would further congest and complicate traffic movement on this already busy street. It would reduce and restrict residents' parking and impact upon customer parking at the Commercial Hotel.

   Moreover, it would increase risk of accident to pedestrians, especially children who walk, cycle or scoot to and from school along this route and who are actively encouraged to do so.

6. On p. 6 of the Design Statement, it is stated that 'the decision was made to align the footprint of the house to the Newtyle Burn'. Elsewhere (p.1), the Burn is described as a 'small watercourse', which does not adequately describe the extremely high volume of water that it carries at peak times, for example after heavy rain and/or winter thawing. This alignment would place the entire house and its curtilage very close to the edge of the Burn. Excavation of the site and installation of services is likely to lead to destabilisation of the Burn with possibly serious flooding or leakage consequences on or under the road and for nearby properties. We note that no Flood Risk Assessment has been undertaken but, given the ever-increasing number of flooding incidents due to climate change, including recent events in this area, we question the viability of a new home built so close to a burn carrying such amounts of water.

7. On p.3 of the Design Statement, there is mention of the grounds at Burnbank Cottage, prior to the present owner's purchase, having been in a 'state of semi-dereliction, overgrown and undermaintained… as was recorded in the Community Council minutes at the time' (June, 2019). We acknowledge and applaud that the present owner undertook clearance and landscaping work to, as the Application says, 'restore the site back to a well-maintained private garden'. However, the Community Council minutes of that time (May 2019) actually refer to the lack of maintenance of the very large lime trees bordering South Street, viz: 'The crow population has increased, and [the] trees are also blocking light. Every windy day there are broken limbs and trapped debris falling from these trees.' Regrettably, there has been no maintenance of these lime trees since the change of ownership in 2019, while the problems with crows and falling debris have become considerably worse.

   The present Application extends the proposed site to include these and other large trees, and it is stated that this would ensure 'the necessary maintenance is ongoing (and practical), enhancing the visual amenity of the streetscape' (p.5). But no such maintenance can be ensured by this statement: all that can be inferred from it is that the burden of responsibility for these trees would transfer to any new owner should the proposed site be sold and the house be built. This burden of responsibility, together with the siting of the house adjacent to the Burn and the proximity to the proposed house site of the tall conifers T5, T6, T7 and T8, and on the South side of the Burn T28 and T29, raises serious questions as to the site's viability.

   The Design Statement states (p.6) that 'an expanse of South facing quality amenity space…is provided to the front of the property not overshadowed by existing tree cover'. We believe that this should read 'North West facing', and that on this orientation the space referred to is substantially affected by overshadowing from existing tree cover. (We also question the accuracy of some other orientations given in the Design Statement.)

   We remain concerned that the extensive root systems of the various very tall and old trees on the site may be disturbed or damaged during construction work, with long-term negative consequences for the health and safety of the trees.

8. The Design Statement (p.13) says that the Application supports 'another "cottage like" development, of the same proportions to those seen throughout Newtyle, in an area where such house types are in (well-documented) shortage.' It claims that the proposed home would be 'of Affordable Housing type, and presents an opportunity to re-use an existing residential site with pre-existing infrastructure'.

   We reiterate that the site is *not* an existing residential site and never has been, and we question whether the term 'Affordable Housing' as it is usually understood can be

reasonably applied to a house constructed to this 'bespoke' design on this site, bearing in mind the likely costs involved.

Furthermore, as stated in the current Angus Local Development Plan, sites elsewhere in Newtyle are already allocated for housing development. For example, a number of three-bedroomed detached and semi-detached houses have recently been completed at The Heathers on Coupar Angus Road, and six new homes are being built at the Railway Shed. We believe that this Application is contrary to the Plan's intention of 'safeguarding and enhancing the natural and built features which are a key part of the character and identity of the village'.

9. The site is in a long-established, mature garden, a significant green space within the village, frequented by a range of wildlife. The site has never been built on. It lies adjacent to the powerful Newtyle Burn. Specific to these points, the Application represents a significant change of use which is contrary to the broad principles of the Angus Local Development Plan (2016), and which may specifically go against Policy PV1, 'Green Networks and Infrastructure', which seeks to 'protect, enhance and extend the wildlife, recreational, amenity, landscape, access and flood management value of the Green Network'.

10. We believe that the Application is contrary to Policy DS4 of the Plan as it would have a detrimental impact on 'residential amenity in relation to overlooking and loss of privacy, outlook, sunlight, daylight and overshadowing', in relation to our own and neighbouring homes.

11. We also believe it is contrary to Policy TC2 as it would have an unacceptable impact on 'the built and natural environment, surrounding amenity, access and infrastructure' and is not 'consistent with the character and pattern of development in the surrounding area'.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mrs Vicky Campbell
Address: 2 Kinpurnie Gardens Newtyle Blairgowrie

Comment Details

Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:In looking at the proposed plans for this house I have two concerns.
Firstly - the siting of the house so close to the burn. This area is an important amphibian route and the siting of the property and also the disruption during the building of the property would have a significant detrimental effect on the amphibians. I would also question whether siting the house here and the building work would cause flooding issues.
Secondly - the entrance picture shows hedging right up to the edge of the driveway, meaning that drivers would have to exit the property without good visibility. This would be extremely hazardous. The road is busy and only wide enough for cars to park on one side. In all the eighteen years I have lived here I don't think I have ever seen the road with no cars parked in it as in the picture on the planning statement.

Comments for Planning Application 21/01000/FULL

Application Summary
Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details
Name: Dr Michael Lean
Address: Hatton Castle, Newtyle Blairgowrie

Comment Details
Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:
I write as a long-term resident of Newtyle, with several generations of family in the area, and as a direct neighbour across small field, to object, strongly, to this property development planning application.

Newtyle is a historic model 'planned village', one of very few in Scotland. It was originally designed in the early 19th century to support and celebrate the first railway station in Scotland, the Dundee to Newtyle line. The main local activity was horticulture. Many Newtyle residents have lived here life-long, indeed for generations.

The village has seen extensive recent rapid development, building out-of-character modern houses (mainly to benefit a remote and unconnected wealthy estate-owner). However, the centre and south side of Newtyle has retained its original character, with some beautiful old stone-built houses and large graceful gardens along the Newtyle burn. Burnbank is one of these, set among other older properties whose owners have maintained the charm of this area.

The new owner of Burnbank, with no roots in the village, arrived apparently attracted by the quiet, and grace of the village, and neighbours with contributions to help her work on her beautiful garden. But within a year she has submitted plans to build a modern house on that garden, plainly with little intention of remaining here. Sadly, this seems to be a pattern of asset-stripping, developing, and moving on.

The plans would permanently destroy a very attractive feature of a village whose property owners, and planning authorities, should have a responsibility to preserve. This is the kind of opportunistic attempt to exploit property ownership which Planning Departments should be opposing, in favour

of properly planned expansion of residential accommodation, and responsible stewardship of existing property.

Incidentally, the proposed development is very close to the Newtyle burn. Since so many of the trees and woodlands upstream have been rem

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Dr Michael Lean
Address: Hatton Castle, Newtyle Blairgowrie

Comment Details

Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:(continued)
Incidentally, the proposed development is very close to the Newtyle burn. Since so many of the trees and woodlands upstream have been removed, this burn now floods dramatically after heavy rain, and the current tree felling along the Den of Newtyle has aggravated the flooding. So I would not think this a sensible place to build anyway. The old houses, including Burnbank, are already well set back from the burn for that reason.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mr Michael (Mike) Lean
Address: Hatton Castle, Newtyle Blairgowrie PH12 8UN

Comment Details

Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:I am a close neighbour (across a field) of this property. I know I speak for many others in this historic village who may not voice their feelings, that this this proposal is a sickening example of attempted property exploitation for financial gain.

Newtyle is a rare example of a Scottish 19th century planned village, with a stable mix of street-houses and several large graceful properties with large semi-wild gardens on its south side. Burnbank is one of those, with a rather beautiful small-scale 'English Garden'. Erecting tall fences and breaking down a hedge for access has already damaged the character of the property and the village, and to build on the garden is the complete opposite of a planned development. The north side of Newtyle has been exploited for needed accommodation, but as planned developments. This Burnbank proposal is simply wrong.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mr Michael (Mike) Lean
Address: Hatton Castle Newtyle Blairgowrie PH12 8UN

Comment Details

Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:My main reason for objecting to the planning proposal, as a near-neighbour for almost 30 years, is that it is destructive opportunistic exploitation of a very pleasant village garden. It is not part of planned development, in a village which is undergoing very substantial properly-planned enlargement. However, I am interested in the issues raised about flooding, and the changing risks with ongoing climate and environment change. These have not been captured by the SEPA report, or the responses. When the Newtyle burn floods in the Burnbank garden, it is quite exciting. It happens for a day or perhaps two with major rainstorms. However, both frequency and severity of such storms have been increasing, now occurring 3 or 4 times in a year (over 0.5%). Average total annual rainfall has increased by 50% over the last 20 years, and the surrounding land is increasingly waterlogged, increasing run-off into the burn. Additionally, upstream tree-felling and canalisation of the Newtyle burn (eg in the field immediately below Hatton farm), plus blockage of land drains in waterlogged land, mean that heavy rain now results in flash-flooding, and more frequent blockage of bridges and culverts with debris. The garden of Burnbank has always flooded, more often lately, and that is set to grow more of a problem.

Objections to Application for Planning Permission Ref 21/01000/FULL.

Application address; Burnbank,33 South Street, Newtyle.

Submitted by Jonathan Fenwick and Astrid Leeson, Denend cottage, 26 South Street, Newtyle, PH12 8UQ.

We strongly object to this proposed planning application and list our objections as follows.

The planning application states that this is an “affordable family home” which meets an identified need in Newtyle. The Angus Local Development Plan (ALDP) has already allocated numerous specific areas for housing development within Newtyle to address the local need for affordable housing. We draw your attention to the recent social housing on Dundee Road, construction in Castle Street, 6 new homes in the former railway shed (a brownfield site) and the eco houses site close to the cemetery. This already exceeds the 50 new homes planned for the village (ALDP) while still maintaining the integrity of the village. Therefore there is, in fact, a full range of affordable family homes under construction to meet local needs. This proposal, in truth, is actually for a bespoke design using high-end finishing materials that are likely to make the product far from affordable for most people.

The planning documents state that this project will have “little or no impact on (our) adjacent properties”. Clearly this is not an objective assessment and we contend that the proposed property , with its attendant “intrusive light” features would have a severe detrimental impact on our privacy, on our personal comfort and, conceivably, on our mental health.
Further more the latest plans appear to deliberately mislead by showing the proposed driveway not directly in front of our living room and bedroom windows. However tree T4, is still in full view which means the whole drive will be, after all, directly in front of our windows with the resulting cars exiting the drive causing direct light disturbance into our living room, causing stress.
Plans also propose that this drive is lit, unnecessarily, further adding to the light intrusion and subsequent stress. This additional light is not only harmful to wildlife but also a drain on energy when we are all seeking to reduce our carbon footprint.
There will be a lack of privacy inflicted upon our cottage, and our neighbours as a result of this building's large north facing windows, (Policy DS4) the open plan terrace, and the subsequent car lights facing directly into our home and living space.
We have lived on South Street for 21 years, and South Street is probably the busiest road in Newtyle as it provides access for pedestrians and vehicles to the hotel, the school and to the main Dundee road. Photographs recording South Street empty of parked vehicles have clearly been selected and presented to suit a

purpose and do not reflect the morning, evening and weekend congestion in a very busy street.

During the pandemic there was a notable increase in families, dog walkers & cyclists of all ages but particularly the young using South Street. The proposed additional driveway is sited at a position that increases risk for vulnerable road users including school children, dog walkers and cyclists. "Our streets cannot afford more congestion and air pollution and our children cannot afford more inactivity after months of homeschooling." (Sustrans Scotland 2020)

The proposed new build will destroy the last large Mature Garden on the south-side of the village degrading the character and integrity of the local environment. This garden is neither a brownfield site nor merely, as incorrectly described in the proposal, 'a gap' but an extensive garden that greatly enhances this area. Witness evidence confirms the space as a thoroughfare for wild animals, a secure habitat for bats, squirrels, woodpeckers, long-tailed tits etc.This is an important green network and must be safeguarded. Indeed the local authority has indicated it's duty to 'protect the biodiversity of Angus'. (ALDP 2005)

The proposal describes the development as aligned to 'a small watercourse' The Newtyle Burn is in fact a more significant water course than suggested. The volume of water this carries during frequent heavy rainfall occurs with the winter thaw can and does cause local flooding. We have video footage of the drain cover opposite the hotel lifted by surge of excess water.

Any building works on the surface or underground would destabilize the bank along the site's length. The mature tree's roots have a vital role in keeping the ground secure and absorbing rainfall.

Please note that no flood risk assessment has been included in the planning application.

It would seem that the submitted tree report, for this mature garden, is no longer relevant to the the amended positioning of the house. Therefore, this application requires an updated survey. The lime trees aligned to South Street have seen no maintenance since the change in owners in 2019 and considering the two most recent and severe storms we have experienced they would be a concern for the viability to site a new build in this area.

Although modern buildings with glass and stone and fancy materials can be appreciated the design statement included with this application is at times confusing and inconsistent.

The design is unlike any other house nearby. The proposed design, is described as "Virtually invisible". This is not a design that sits quietly in the landscape with a nod to the local heritage of the built environment, rather a design that screams 'look at

me' and will in fact be clearly visible with it's runway lights, copper roof and large double height windows facing (North) us and our neighbours. ALDP 2016 demands 'safeguarding & enhancing the natural & built features which are a key part of the character & identity of the village.' (ALDP (2016) Policy TC2)

Additionally vast majority of houses on the north side of South street are set back from the road to allow natural light to reach the houses opposite, The design statement lists the front Tree T4 as requiring removal on safety grounds, stated in the tree report – if this tree was really a danger, then surely it's negligent not to have addressed this before now? The now outdated tree report does not list this as a tree requiring removal on grounds of poor condition but rather as an obstacle for the proposed drive, therefore requiring removal for the development.

The development is contradictorily described as a "cottage like development" when it appears to be over 20m in length and states 'room for further growth'.(upwards?) The plan's orientation noted on page 6 is incorrect so the property will not benefit from the winter sun's warmth. Finally we are confused as why the proposed new house is described as a single-storey when part of the build is as high as a two-storey dwelling nearby. (no. 20 south street)

Astrid leeson and Jonathan Fenwick Denend Cottage 26 South Street, Newtyle.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Dr Jamie Wilson
Address: Dalnaglack 31 South Street Newtyle

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments neither objecting to or supporting the Planning Application
Comment Reasons:
Comment:Dear All,
We have discussed this with the applicant and have raised concerns we have directly with her, and would also like to raise these with the planners. In particular, we are concerned that there might be some increased risk of flooding given that there has been water above the level of the culvert upstream of Burnbank and Dalnaglack, though in the 4 years living here the burn within Dalnaglack has never looked close to breaching, despite very heavy rainfall. Might the increased hard standing and roof run off also be an issue? It would be good to see any mitigation is put in place rather than that a downstream problem is created that needs a later remedial situation. Road water around Newtyle has been an issue recently, e.g. with a friend's car being written off due to surface water getting into the air intake. Could this be reduced, e.g. by sharing part of a drive with Burnbank? We are also concerned that the garden is impacted as little as possible to try to look after the local wildlife, including bats and birds. Considering this, it is noted and appreciated that the applicants plans look to have listened and responded to a number of the concerns raised previously, and the property does seem orientated to avail of the amenity value of this part of Newtyle. Nevertheless we recognise some of the concerns expressed by others and reflect some of these here. However, we also note the applicants stated commitment to the area and what seems a reasonable ambition that is of a kind that might interest us in the future, and in particular to develop the Dalnaglack garage adjacent to Burnbank as a potential property we might want to one day move to.
Sincerely,
Jamie

Dr Jamie Wilson
[redacted]

30 April 2024

I object to the renewed planning application (21/01000/FULL) in front of 33 South Street on the following basis:

1. A previous detailed flood risk assessment with mapping exists for Dalnaglack, 31 South Street, and can be viewed at previous application 17/00551/PPPL supporting document labelled “flood risk assessment”. This accords with recent experience. For example, on 19th October 2023 the burn breached its bank, bypassed the culvert between Dalnaglack and Burnbank, and fully flooded the area of the workshop adjacent to the original Burnbank property. Water inside the workshop was measured at 6” depth. Water surrounded the outside of this building abutted the wall adjacent to Burnbank. These significant risks are therefore not just a statistical possibility, but are becoming a physical concern in need of active mitigation.

2. The applicant directly raised this concern with me on the above date by coming over to complain about flooding encroaching the Burnbank property, understandably concerned for this not to happen. The applicant suggested that I needed to address a putative issue of drainage contributing to this flooding. This appears to be mentioned in the applicant’s flood risk assessment, which is why I make reference to this here. I would like to note that there is drainage around the workshop, and at this time, on direct inspection, the drainage was clear with large wide whirlpools indicating significant active drainage with no obvious obstruction. It should, however, be noted, that though functional, this drainage is historic, draining through a pipe that tracks through to Burnbank, and presumably though to the burn. Therefore, some of the infrastructure of this cited drainage was at the time physically within the applicant’s land. To actually, address the acute flooding on this occasion, a temporary bund had to be created to divert breached burn water back towards the culvert. This temporary bund remains in place awaiting a more permanent solution.

3. The new flood risk assessment clearly adds to the understanding of the flood risk in the immediate areas on mutually affected properties. Mitigation will therefore require active management to protect extant properties. Any assessment undertaken by the council to understand the broader risk and liabilities should therefore take account of what is necessary mitigation required to protect these properties, and this should be taken on board before any additional property is added.

4. The property could add to surface run off and reduce the potential localised buffering, and potentially exacerbates an issue that already exists at the junction of South St, Commercial St and Knox Close. This surface water accumulates and can run the length of Commercial Street to North Street, and implicate properties in Knox close which already require some sandbag mitigation. The culvert at this intersection is a pinch point which gets saturated by existing excess water, despite the

best efforts of a local resident to keep the grate clear. Is there mitigation of this by the council or related authority already scheduled? If not, should a known problem be potentially increased?

5. To highlight the surface water and burn flooding and how they are combining, please see video, present in the public domain of the Newtyle Facebook page, which highlights the flooding referred to in (4), from November 2022. This also highlights the flooding coming from the burn and land under discussion in this planning application:
https://www.facebook.com/778220143/videos/1968018580238258/

Sincerely,

Jamie Wilson

Objections to Application for Planning Permission Reference 21/01000/FULL
(Burnbank, 33 South Street, Newtyle)

From Marianne Mitchelson & James Robertson, Sidlaw House, 24 South Street, Newtyle

We have lived directly opposite the site of the proposed new dwellinghouse for twenty years, and strongly object on the following grounds:

1. We note that this Application follows a previous Application for Planning Permission in Principle for the same location (Reference 21/00292/PPPL), submitted in May 2021, and is an amended version of Application 21/01000/FULL made in January 2022. The Design Statement submitted by Wilson Paul Architects LLP states that, while the applicant 'still intend(s) to build an eco-home on the property, the scale and re-positioning of the revised proposals [have] been amended'. It states that 'the footprint of the site has moved further Northwards at a distance of some 20 metres', which effectively returns the proposed dwellinghouse to the location in Application 21/00292/PPPL albeit on a different orientation. This location is much closer to our home and represents a loss of amenity and privacy to us.

2. The Design Statement proposes (p.4) 'a new driveway of approximately 10 metres in length from the South Street entrance to the proposed [dwellinghouse]'. The plans clearly show that this proposed driveway's egress on to South Street has moved some 15 metres to the west since the previous version of the Application. Despite this the Design Statement retains exactly the same wording as before, i.e. that 'the proposed application does not seek to remove any mature trees or existing hedgerow cover' and that 'the only tree to be removed is Tree 4, as identified in the Tree Report; this tree is categorised as requiring removal due to its poor condition. It is in this location that the driveway access has been proposed.'

The plans in fact show that this driveway would exit on to South Street not at that location but between Trees 2 and 3 (two of the very large lime trees discussed at 5, below). These trees would inhibit clear sightlines for any vehicle leaving the proposed site. It would also be necessary to remove a substantial section of the existing beech hedge to create this driveway, contrary to the wording noted above. Because of the contradictory wording it is uncertain whether it is really intended to remove Tree 4 (the most easterly of the four lime trees) because of its poor condition.

The proposed exit would also be directly opposite the driveways of 24 South Street and 26 South Street, which does not seem a sensible place to introduce new traffic onto the already busy South Street.

Additionally, the 3d Visualisation showing a 'post-development arial view' on p.12 of the Design Statement presents a highly unrealistic picture of how the proposed new dwellinghouse and access would actually fit into the existing street and landscape.

3. The Design Statement states (p.1) that the site occupies a 'gap'. We contest this: in fact it occupies a mature garden space with a very long history (more than 100 years) as such. The site has never been built on and, if it is, one of the last green spaces of significant size in the village will be gone. The erection, within the past month, of a wooden fence along the west side of the Burn and extending round the perimeter of the proposed site, already compromises this space, but at least a fence is not an irreversible construction.

   It is also stated that the homeowner has noted (p.4) that the size of the garden is 'not practical in terms of ongoing maintenance due to its sheer size, its lack of use by them and the fact that the garden is annexed naturally by the watercourse.' The fact that the Newtyle Burn crosses the garden as it does, with the ground on both sides forming a natural floodplain, is in fact one of its best and most important features. The proposed development will have a negative impact on the site's environmental integrity and reduce its ability to cope with possible future flooding scenarios.

4. The Design Statement (p.1) describes the Newtyle Burn as a 'small watercourse', which does not adequately describe the extremely high volumes of water that it carries at peak times, for example after heavy rain and/or winter thawing. Despite the proposed moving of the dwellinghouse's footprint further from the Burn, we are still of the view that a property on this site would be highly vulnerable to flooding given the ever-increasing number of flooding incidents due to climate change. We note that in his letter of 20th April 2022 Mr Andrew Brown, Design Engineer for Angus Council's Coastal, Flood Risk and Structures Team, requested information to be supplied demonstrating that 'the proposed development will not be at risk of flooding up to and including a 1 in 200 (0.5% annual probability) event inclusive of a 35% allowance for climate change and factoring in various culvert blockage scenarios.' We see no evidence in the Application demonstrating or addressing this issue, particularly with regard to culvert blockage scenarios. The image below, showing the Burn in spate in November 2022 after heavy but not exceptional rainfall, gives a good indication of the potential risk. Building a house on the proposed site would in our view be irresponsible.

5. On p.4 of the Design Statement, it is stated that 'no mature trees are proposed to be removed' from the site. This does not address the issue of the lack of maintenance of the four very substantial lime trees bordering South Street, which block light to 24 and 26 South Street, and from which broken limbs and trapped debris fall onto the road and into the same properties whenever the wind blows. There is also a very large crow population in these trees, so the proposed new dwellinghouse will be subjected to the same issues of falling debris and large quantities of crow droppings as affect this section of South Street.

   The Design Statement repeats the assertion from its previous version that apportioning these trees to the new property would ensure 'the necessary maintenance is ongoing (and practical), enhancing the visual amenity of the streetscape' (p.4). In fact this would simply offload responsibility for these trees to any new owner/occupier of the new dwellinghouse should it be built, and we doubt that this enhances the site's viability.

6. The Application does not address traffic concerns raised when the previous versions of this Application were submitted. The proposed new driveway access, wherever it is placed, will create additional, dangerous traffic issues on the already heavily used South Street. There are usually at least five and often eight or more vehicles parked on the north side of South Street between the entrance to Burnbank and the Commercial Hotel. The street is not wide enough to allow for parking on the south side. Traffic enters South Street from Commercial Street, Knox's Close and Kinpurnie Gardens, and in addition six new homes are being built at the Railway Shed on Commercial Street, with parking for twelve vehicles. We note also that planning permission has just been granted for a property at The Stables, next to 26 South Street, with a new driveway (and capacity for two vehicles) accessing South Street. Another driveway on the south side of the street as proposed would further congest and complicate traffic movement on this busy street. It would also increase risk of accident to pedestrians, especially children who walk, cycle or scoot to and from school along this route (including along the grassed verge on the south

side of the street where the proposed driveway would be sited), and who are actively encouraged to do so.

7. The Design Statement (p.11) repeats the assertion that the Application supports 'another "cottage like" development, of the same proportions to those seen throughout Newtyle, in an area where such house types are in (well-documented) shortage.' It goes on to claim that the proposed home would be 'of Affordable Housing type, and presents an opportunity to re-use an existing residential site with pre-existing infrastructure'. We reiterate that the site is *not* an existing residential site and never has been, and we believe that the likely cost of building a house to this design would put it well outwith the scope of 'Affordable Housing' as that term is usually understood.

   Furthermore, as stated in the current Angus Local Development Plan, sites elsewhere in Newtyle are already allocated for housing development: a number of new three-bedroomed detached and semi-detached houses have recently been completed on Coupar Angus Road, and a further 39 houses are proposed at the Newtyle Glebe on North Street. We believe that this application is contrary to the Plan's intention of 'safeguarding and enhancing the natural and built features which are a key part of the character and identity of the village'.

8. The site is in a long-established, mature garden, a significant green space within the village. The site has never been built on. It lies adjacent to the powerful Newtyle Burn. Specific to these points, the application represents a significant change of use which we believe is contrary to the broad principles of the Angus Local Development Plan (2016), and which may specifically go against Policy PV1, 'Green Networks and Infrastructure', which seeks to 'protect, enhance and extend the wildlife, recreational, amenity, landscape, access and flood management value of the Green Network'.

9. We believe that the application is contrary to Policy DS4 of the Angus Local Development Plan as it will have a detrimental impact on 'residential amenity in relation to overlooking

and loss of privacy, outlook, sunlight, daylight and overshadowing', in relation to our own and neighbouring homes.

10. We also believe it is contrary to Policy TC2 as it will have an unacceptable impact on 'the built and natural environment, surrounding amenity, access and infrastructure' and is not 'consistent with the character and pattern of development in the surrounding area'.

We refer to the Planning Consultation Response from Millard Consulting, dated 22nd August 2024, to comments from SEPA, dated 17th May 2024, in relation to flood risk planning for Planning Application 21/01000/FULL (Burnbank, Newtyle).

In our view, the Response from Millard Consulting does not satisfactorily address all the matters raised by SEPA, in particular for the following reasons:

(a) SEPA require the topographical survey to clearly show elevations across the site and opposite bank of the Newtyle Burn, 'to demonstrate that the site of the proposed development is elevated above potential flood risk' and asked for 'further photographs showing the site of the proposed development and its relation to the burn'.

Their Response is that the topographical survey of the site and surrounding area is included in drawing 18518/21/002. This drawing is identical to drawing 18518/21/2001, submitted on 15th April 2024, only with the proposed house site overlain. However, this drawing is no clearer in showing elevations and contours than its previous iteration. Furthermore, it seems to be at odds with the flood scenario depicted in Figure 4 [see (c) below].

(b) Four further photographs have been submitted by Millard Consulting as per SEPA's request. However, photographs A, B and C are all taken outside of, and do not show, the proposed development site, and therefore are not relevant to the development site and proposed house's relation to the burn. Photograph D is taken from the furthermost (north-west) point within the proposed site from the burn: the proposed dwelling-house would be at the far end of this view, much closer to the fence (and the burn beyond it) than the point from which this image is taken.

Below is a photograph, taken some years ago, showing the site before the fence was erected; we believe this gives a more accurate picture of the site of the proposed house in relation to the burn. The house is proposed to occupy space to the left of the flower-bed seen in the middle of the image. It can be seen that the burn runs diagonally behind it, and there are two large trees on the far side of the burn.

(c) SEPA have requested that 'a 100% blockage scenario be modelled on the downstream culvert, owing to its small aperture, length, and potentially significant consequences of a blockage here'. This has not been provided.

(d) Millard Consulting's Response states that in the event of a 75% blockage of the culvert beneath the driveway of Dalnaglack, floodwater could flow into the site. Figure 4 shows that the flood area would include part of the proposed dwelling-house's footprint. SEPA requires that 'the proposed building must be outside of the flood risk area'.

It is clear to us, having lived directly opposite the proposed site for more than 20 years, that it forms part of the natural flood plain of the Newtyle Burn and that, as we have previously stated, building a house and associated infrastructure in this location runs counter to all reasonable predictions of the impact of likely climate-change-related scenarios.

We do not believe that SEPA's concerns have been adequately addressed by the Applicant's agents and we therefore continue to object to the development.

James Robertson & Marianne Mitchelson,
Sidlaw House, 24 South Street, Newtyle, PH12 8UQ.

Further comments on Planning Application 21/01000/FULL (Burnbank, 33 South Street, Newtyle)

We note the latest documents (dated 18th October 2024) provided by the applicant's agent for the above planning application.

In the Design Statement ('Revision C, October 24'), the proposed dwellinghouse is referred to as a 'single-storey dwelling'. The plans submitted clearly show that this is not the case, and that it consists of two storeys. Furthermore, the roof height in these latest drawings is given as 9.214 metres, whereas previously the roof height was 7.84 metres. It appears that different datums have been used in the April 2023 drawing and the October 2024 revised drawing. The roof height has risen by between 0.3 metres and 1.374 metres, and the footprint of the dwellinghouse has moved approximately 2 metres closer to South Street, both of which would affect the amenity of our home and that of Denend Cottage (no.26).

This movement of the proposed house's footprint also means that it encroaches further onto the root system area of Tree 6397, one of the large lime trees on the northwest boundary of the site. This tree has disappeared without explanation on the revised proposed site plan (dated 17.10.24) whereas it is present on the previous site plan (dated 22.08.23). We query why the tree is missing on the revised plan and ask what impact the moved footprint may have on the health of the tree and its root system, despite the unchanged note on the plan which states 'all proposed development is outwith tree root protection areas (RPAs) and as such will not adversely impact existing trees'.

With regard to the Flood Risk Assessment (FRA) and the applicant's response to SEPA's comments, the Design Statement itself states that 'the proposed finished floor level is 300mm higher than the adjacent ground level, as a further additional precautionary measure' and proposes a Flood Early Warning System 'with audible and visual sounders to alert the occupier should the water level begin to encroach on the top of the existing bank. The proposed [word missing: dwellinghouse?] has also been designed to facilitate flood barriers to doors, should they be necessary…'

The inclusion of such measures reinforces our belief that the new house would be in a vulnerable position with regard to flooding, as climate change effects worsen as they are predicted to do. The Design Statement states that 'the proposed [word missing: dwellinghouse?] is also now sited 1 mere [sic: metre] from the extents of the worst-case scenario of a 1 in 200-year Flood event with climate change and blockage scenario.' As the location for a new dwellinghouse this seems remarkably close to a possible future flood event.

The Design Statement states that 'it has been demonstrated that the construction of the dwellinghouse would not increase flood risk elsewhere in the area', but we contend that this has only been asserted, not demonstrated.

As we previously noted, the FRA clearly states that there is a flood risk to properties neighbouring the proposed site. The owners of these properties may need to take measures, such as construction of bunds, to mitigate flood risk, and these measures would in all probability affect directional flows and volumes of water and consequently the accuracy of flood predictions in and around the site. This has not been addressed in the application. Nor has the fact that the present or any future owner of the site of the proposed dwellinghouse will not have a proprietary interest in the Newtyle Burn, despite the site (formerly part of the garden grounds of Burnbank) being adjacent to it. They therefore would have no responsibility for, but equally no control over, maintenance of the Burn's flow, clearance of debris, prevention of blockage of culverts etc. Such responsibilities will presumably lie with neighbouring properties and, where the Burn flows under South Street, Knox Close and Kinpurnie Gardens, Angus Council. This separation of responsibility for the Burn's maintenance from the ownership of a new home built in such proximity to it, on its floodplain, is a further concern and another reason why we think it is not a wise location for a dwellinghouse.

We therefore repeat our previous objection, that the site forms part of the natural flood plain of the Newtyle Burn and that the proposed construction of a house and associated infrastructure will have a negative impact on the site's environmental integrity as well as reduce its ability to cope with possible future flooding scenarios. Building a new house in this location goes against all reasonable predictions of the impact of likely climate change-related scenarios.

James Robertson & Marianne Mitchelson (1st November 2024)

Objections to Application for Planning Permission Ref 21/01000/FULL.

Application address; Burnbank,33 South Street, Newtyle.

Submitted by Jonathan Fenwick and Astrid Leeson, [redacted]

We strongly object to this proposed planning re- application 21/01000/FULL and list our objections as follows.

1. The Angus Local Development Plan (ALDP 2016) has already allocated specific areas for housing development in Newtyle - North of Coupar Road, the railway sheds are presently being converted into 6 homes, eco houses at Kirkton Road, plus a newly proposed site on North Street, so there is plenty available for affordable family homes. In addition, conditional planning consent has already been granted for a new property in this busy end of South Street, at the Stables.
2. The proposed 21/01000/FULL new build will destroy the last large mature garden on the south-side of the village, degrading the character and integrity of the local environment. The garden, which is proposed for the build, is neither a brownfield site nor merely, as incorrectly described in the proposal ‘a gap’, but is an extensive garden that greatly enhances this area. Although it is not open to the public, locals are well aware how much wildlife is attracted to the area while walking and cycling past. Witness evidence confirms the space as a thoroughfare for wild animals, a secure habitat for bats, squirrels, heron, woodpeckers, long-tailed tits etc.This is an important green network and must be safeguarded. Indeed the local authority has indicated it’s duty to ‘protect the biodiversity of Angus’. (ALDP 2005) This area of garden has lacked the correct ongoing maintenance and does not guarantee future care regardless of owner but the existing green space should be maintained because the proposed site is a natural barrier of woodland and grass between houses on South Street (no 24 and no 26) and the large house, Burnbank.

3. We are disappointed to see on the plans that the position of the proposed new build is actually nearer to houses at 26 South Street and no 24. We will be affected by more light pollution and motorised vehicle traffic.

4. The proposed access does not utilise or combine with the existing driveway instead will create extra traffic to an already busy South Street. Residents and patrons of the Commercial Inn parking their cars on South Street create a single lane from the corner of Commercial Street continuing up South Street. Therefore introducing another driveway entrance would be adding another dangerous aspect to driving up or down the street. The safety of local vehicle drivers, pedestrians and children cycling to and from the school will be jeopardised if this proposal is granted. With conditional planning

consent at The Stables given recently an additional driveway will already be exiting onto South Street.

5. The proposed site is situated next to the Newtyle burn. This has been left undeveloped because it is a necessary flood plain. This has previously been described as a 'small water course' on the previous planning application. This is incorrect. We have seen first hand the volume of water carried down the burn during heavy rain and snow thaw and we feel that the ground works of this build could destabilise the area around the burn leading to increased risk of flooding. The mature trees, whose roots extend over the bank to keep it secure, would be damaged by the ground works.
6. The flood risk report states that the plot area 'may be at risk to fluvial flooding'. Our concern is when it floods where does the water go when almost half of the developed land is hard ground. The water would be directed onto the road and possibly over to the north side. Currently the undeveloped plot is a natural soak-away reducing this risk.
7. The Scottish Water assessment report states that there will not be a surface water connection into the combined sewer system. We therefore think this land is unsuitable for the proposed development regarding the dealing with excess water from rainfall.
8. The plan shows the creation of a Resin bound gravel driveway. We have an additional concern about where the water goes when it has passed through the porous surface. Once again the mature tree roots would become unstable regardless of where the water drains away. Is this plot suitable to be S.U.D.S compliant?
9. We have found the aerial view report to be a confusing picture of the site. The tree report shows inconsistencies between the design report and the tree survey. The tree report is also out of date. T4 tree has been removed from the aerial view contradicting the suggestion that 'no trees are needing to be removed'.

From: Jonny[redacted]
Sent: Tuesday, April 30, 2024 1:10 PM
To: PLANNING <PLANNING@angus.gov.uk>
Subject: Objections to planning application:21/01000/full

Dear sirs,

We update our initial objections to the application 21/01000/FULL and list our objections to the proposed dwelling in the garden of Burnbank House South Street, Newtyle. These original objections still stand, however we would question if this was indeed a new application. The proposed house has moved and is of different shape and structure to the last application, if not, the older submissions confuse/ muddle the reading of the current documents.

1. The Angus Local Development Plan (ALDP 2016) has already allocated significant specific areas for housing development in Newtyle. New houses have been built off Coupar Angus Road, with space for more identified. Construction is presently underway in North street of 29 3 + 4 bed affordable modern family living so there is plenty available for affordable family homes. In addition, planning consent has already been granted for a new property in this busy end of South Street, at the Stables.

2. The revised report states that this latest plan "allows for a greater distance to existing properties of number 20 and Sidlaw House to the northwest, where, to maximise South facing daylighting, the living accommodation is sited. Consequently, the living areas are a minimum distance of 41 metres from Sidlaw house, again negating issues of privacy or potential impact on existing visual amenity." However this statement is completely failing to consider us at number 26 (Denend cottage) directly opposite. South Street has a history of wide pace between houses; the houses on the south side have always been set back from the road, giving us on the opposite north side plenty of light. This 1.5 storey high house will in fact be closer than others in the street.

3. For a long time we have had major concerns over the lack of maintenance of the limes and hedges along the North side of the property, the limes are tall (23m+) and regularly drop dead branches, notwithstanding the building techniques of the resident rooks, who drop sticks and faeces
The Western Red Cedars (trees 6398 & 6399) have now outgrown their role of filling a hole in the hedge and have become trees in their own right and now block all low winter light from our living room. There is also a real concern about the potential damage that this proposed construction could have upon the root systems of all the lime trees and western red cedars and the subsequent impact this could have on our property, our neighbours or even this proposed house. The recently constructed entrance has revealed tree roots which caused a delay in completion.

4. The proposed front area of the build and its drive covers a large area that the tree report calls a RPA (Root Protection Area) and this report states that this requires careful control; after all concrete is toxic to trees, and the compressing of the ground in construction also creates damage that trees cannot recover from. Therefore if this was to go ahead then who is responsible for enforcing this Root (tree) Protection?

5. The flood report states that it is only as good as the data available, understandably, but is this the same data/ computer model that failed to predict the Brechin flooding disaster and what are the potential implications?
As our climate becomes wetter, does this report take into consideration the impact of the larger footprint of the proposed house rather than the slower soak-away that the garden has been? And also the subsequent impact of this further down the street into Knox Close and the corner of Commercial Street which has been flooded regularly in recent years ?

6. We are not averse to good design, and its associated benefits, but would question if this proposal does indeed fit with Angus's Local Development Plan 2016 Policy DS3 : that states that "development should fit with the character and pattern of development in the surrounding area."
We would question whether the proposed mix of natural (not local) stone, metal cladding and wood are indeed part of the character of South Street.

7. We are concerned that there are inconsistencies between the supporting statement REV_B-3479932pdf and PA003/ PA001 Site Plan, with the proposed dwelling being either a single storey or 1.5 storey, hedges being retained as existing or being replanted etc. What other inconsistencies are contained in these documents?

For your Consideration
Jonathan Fenwick and Astrid Leeson
[redacted]

From: Jonny[redacted]
Sent: Tuesday, April 30, 2024 1:10 PM
To: PLANNING <PLANNING@angus.gov.uk>
Subject: Objections to planning application:21/01000/full

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The Western Red Cedars (trees 6398 & 6399) have now outgrown their role of filling a hole in the hedge and have become trees in their own right and now block all low winter light from our living room. There is also a real concern about the potential damage that this proposed construction could have upon the root systems of all the lime trees and western red cedars and the subsequent impact this could have on our property, our neighbours or even this proposed house. The recently constructed entrance has revealed tree roots which caused a delay in completion.

4. The proposed front area of the build and its drive covers a large area that the tree report calls a RPA (Root Protection Area) and this report states that this requires careful control; after all concrete is toxic to trees, and the compressing of the ground in construction also creates damage that trees cannot recover from. Therefore if this was to go ahead then who is responsible for enforcing this Root (tree) Protection?

5. The flood report states that it is only as good as the data available, understandably, but is this the same data/ computer model that failed to predict the Brechin flooding disaster and what are the potential implications?
As our climate becomes wetter, does this report take into consideration the impact of the larger footprint of the proposed house rather than the slower soak-away that the garden has been? And also the subsequent impact of this further down the street into Knox Close and the corner of Commercial Street which has been flooded regularly in recent years ?

6. We are not averse to good design, and its associated benefits, but would question if this proposal does indeed fit with Angus's Local Development Plan 2016 Policy DS3 : that states that "development should fit with the character and pattern of development in the surrounding area."
We would question whether the proposed mix of natural (not local) stone, metal cladding and wood are indeed part of the character of South Street.

7. We are concerned that there are inconsistencies between the supporting statement REV_B-3479932pdf and PA003/ PA001 Site Plan, with the proposed dwelling being either a single storey or 1.5 storey, hedges being retained as existing or being replanted etc. What other inconsistencies are contained in these documents?

For your Consideration
Jonathan Fenwick and Astrid Leeson
[redacted]

From: Jonny [redacted]
Sent: Tuesday, September 10, 2024 3:03 PM
To: PLANNING <PLANNING@angus.gov.uk>
Subject: Comments and objection to planning no. 21/01000/FULL

https://photos.app.goo.gl/onKFoUka2XuANdw96

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We refer to the Planning Consultation Response from Millard Consulting, dated 22nd August 2024, to comments from SEPA, dated 17th May 2024, in relation to flood risk planning for Planning Application 21/01000/FULL (Burnbank, Newtyle).

We have taken a great deal of time to digest the latest information with regard to the flooding scenarios involving the Newtyle Burn and surrounding area. We believe that Millard Consulting's latest document fails to address the issues raised by the SEPA report and additionally fails to take into consideration the impact of a compromised flood plain on Newtyle Burn and the area outside the garden (in particular the corner of South Street)

1. SEPA required 'further photographs showing the site of the proposed development and its relation to the burn'. Millard Consulting have submitted four, however three of the four pictures are not actually taken on the proposed site and only show the land surrounding the site and therefore we would question the significance of these photographs and their proposed use. *little or no relation to the proposed building site*

1. In section 1.4 SEPA states they would object to any land raising within the flood risk area -Millard Consulting's report (figure 3) states "suitably formed ground levels would ensure the return of overland flow into the Newtyle Burn'

1. (figure 7) shows the house plan overlaid on a flooded area, despite being 6m away from the burn. SEPA states all houses should be out with a flood area. We believe that building a house on a flood soak up area will be detrimental to the Burnbank Garden area, will only lead to problems for that building and will impact further on the surrounding area.

1. Figure 4 shows flooding spreading into South street via Dalnaglack drive, but takes no account for the impact at the bottom of South Street/ commercial street /Knox close. (see photograph after floods from October 2023) further rainfall on the hard and compressed surfaces of the proposed building will add to this scenario.

Photo: former train station now residential property corner of south St/ commercial St/ Knox close showing tide line from initial flood.

Our initial objections to the proposed building on this garden, a natural flood barrier, stand.

Jonathan Fenwick and Astrid Leeson
Denend Cottage,26 South Street,Newtyle,PH128UQ

From: Jonny[redacted]
Sent: Thursday, November 7, 2024 11:00 PM
To: PLANNING <PLANNING@angus.gov.uk>
Subject: Objection to planning application 21/01000/FULl

Dear sir/ madam
Re: planning application 21/01000/FULL (Burnbank, 33 South Street, Newtyle)

Here are our latest/ additional objections to the planning application 21/01000/FULL (Burnbank, 33 South Street, Newtyle) following the latest documents submitted on the 18th of October.

1. Nobody would wish a flood on anybody, or any property and this current report goes some way to addressing this: moving the property, higher floor levels, flood gates, and an early warning system but what it fails to do is address the impact on current residents and current properties. All recent storms (Arwen, Babette, Ashley) have created flooding in and around the bottom of South Street, Knox Close, Kinpurnie Gardens and the converted railway station- now residential homes. All while this mature garden acts as a natural floodplain and soak-away. Adding additional hard surfaces and the effects of a large rain catching roof will surely only exacerbate this fragile ecosystem in the years to come. We would also question if the current modelling of the 1-in-200-year scenario is going to be relevant in the recent history of climate change and several “once in a lifetime” storms. In all the documents, the potential flooding projections were only demonstrated for the actual plot and not the surrounding area.

2. Scottish Water also stated in an earlier report (May 31st, 2023) that Newtyle Wastewater Treatment works only has capacity for foul water and not run-off water, so where will this water go?

3. If a house requires the floors to be higher than the minimum requirement and is further supplemented with flood barriers and an early warning flood system, then we would question not only the actual suitability of the proposed plot but also the impact of a large (waterproof) concrete foundation slab will have on the trees in this mature garden.

4. The design statement (revision C October 2024) is misleading; it calls this a “single-story dwelling”. It is in fact not. The drawings clearly show two bedrooms upstairs, and windows facing our upstairs bedroom windows. The proposal fails to include our porch and instead measures the distance to the slightly further away Sidlaw house. While the latest positioning of the current design brings the proposed house and garage in fact closer to us at 26 South Street, impacting our privacy with car lights shining into the front living room and bedroom. Plus, the additional height of the building, increasing from 7.84 to 9.24 metres subtly between documents will not only negatively impact on our available daylight during these winter months but also our mental health.

5. This repositioning of the property to nearer the North perimeter, potentially creates other problems. Despite stating that this proposal is now out of the

flood plain area and does not impact on the tree root protection areas we would question this moving the planned build near the Tree 6397, which is no longer marked on the current site plan (PA003) It also endangers the root systems of the mature limes during building foundation work. Undamaged roots cannot be guaranteed. Root cutting was required when building the new entrance to the plot earlier this year

6. SEPA now states they would not object to any land raising as the proposed dwelling is now out-with the flood risk area surely this will create run off water affecting current properties?

7. SEPA's proposed land raising will add additional height to the property and together block even more of our much need light.

8. To conclude our original objections still stand and in light of SEPA's latest comments, it seems contradictory to want to build a new house on the floodplain of a watercourse which is known to flood, and to say that the house will be safe from flooding yet include flood warnings and flood protection in the design. We strongly object to the idea of moving the house's footprint around the site and possibly land-raising in order to mitigate against flood risk, as doing either or both of these things would affect the amenity of our home and increase the risk of flood water being diverted onto South Street.

From Jonathan Fenwick and Astrid Leeson.
Denend cottage, 26 South Street,
Newtyle.

Further objections to Application for Planning Permission Reference 21/01000/FULL (Burnbank, 33 South Street, Newtyle)

From Marianne Mitchelson & James Robertson, [redacted]

After reading the new tree survey and report, prepared for the applicant by Keith Logie MICFor, dated 17 May 2023, we wish to make further objections to this planning application.

1. The new tree report states (p.4) that 'trees can be badly damaged or killed by construction operations, and particular care is required to protect them from damage. The ability of trees to recover from damage to roots is often very limited. Root systems can be damaged by ground excavations, soil compaction, contamination or spillages of e.g. diesel or cement, and changes in soil moisture content (both drying and waterlogging).'

   It goes on to state that five trees, including tree 6400, would need to be removed in order for the proposed house to be built. Tree 6400 is the large lime tree (designated T4 in the earlier tree survey, dated 23 June 2021) which on p.12 of the Design Report is said to be in 'poor' condition and therefore needing to be removed. The Design Report erroneously states that 'it is in this location that the driveway access has been proposed'. This statement pertains to an earlier application, whereas it is now proposed that the driveway access would be located some 15 metres to the west. Given this relocation, and since the present tree survey describes tree 6400/T4 as being in 'fair' condition, it is not clear why this tree would need to be removed.

   On p.6 of the present tree report it is stated that trees 6396 and 6397 (two more of the very large lime trees on the frontage with South Street, previously designated T2 and T3, will need to have their roots protected against damage during construction. It is now proposed to construct the driveway between these two trees. We are concerned that this will damage the roots of trees, with potentially disastrous results given their size and proximity to our home.

2. An additional reason given for the proposed removal of tree 6400/T4 in the earlier application was that it 'conflicts with the requirement for a visibility splay and the

radial rooting area covers the proposed driveway – this could be overcome with cellweb but the tree will require removal for visibility.'

This issue of visibility is even more relevant to trees 6396/T2 and 6397/T3, which are even larger than 6400/T4 and are close together. It is hard to see how safe visibility splays could be created without removing or altering these trees. In fact we do not see how a new driveway onto this section of South Street could be constructed whilst complying with the necessary safety regulations.

3. On the document titled 'Proposed site plan with updated root protection area' it is stated that 'no mature trees are proposed to be removed or altered in this application' and that 'existing hedgerow and shrub growth to the border with South Street will be retained as existing.' We do not think that either of these statements can be correct for the reasons given above.

   Furthermore, although the present tree report recommends that all retained trees are inspected on an ongoing five-year cycle, it is evident that the lime trees on the frontage with South Street have not been managed at all in recent years and have consequently grown far too big, resulting, whenever the wind blows, in large amounts of debris falling onto the street, into the gardens of 24 and 26 South Street, and on occasion striking windows and doors. The applicant's recent fencing-in and apparent abandonment of the site of the proposed dwellinghouse, so that it is being allowed to return to (as described on p.3 of the Design Report) the 'state of semi-dereliction, overgrown and undermaintained with a mass of low-quality vegetative growth' it was in prior to the applicant's purchase of the property, does not augur well for future good management of these trees.

4. We note that the present tree report states, 'The proposed footprint for the house is not the shadiest spot in the garden, but nevertheless it will still be in partial shade much of the time.' This is correct, and is borne out by the new shadow analysis images, but does not take into account the continued growth of the afore-mentioned huge lime trees which overshadow not only the footprint of the proposed dwellinghouse but also, to a very great extent, the street itself and properties (24 and 26) directly opposite the proposed site.

All of these points reinforce our view that the application is misleading, unclear and contains several contradictions which have not been satisfactorily addressed.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mr Edward Treffry
Address: 20 South Street Newtyle Blairgowrie PH12 8UQ

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:My wife and I have lived across the road from the proposed new house for 48 years. We have enjoyed having the large garden of 33 South Street, with its trees, birds and bushes, opposite us.

Having inspected the plans, sketches, etc., and talked to the applicant at length, we are impressed both by the quality of the proposal and the meticulous attention paid to environmental sensitivities.

As regards traffic/safety, there are numerous vehicular entrances on the full length of the street, which is straight with clear sight lines in each direction. One more will make no difference. The pavement is not interfered with in this plan.

As the former planning rep for our Community Council, I have until now opted to be neutral in respect of this application on our doorstep. With what I now know about all the circumstances, however, we would like to be included in the requested community feedback and to endorse the Revision B statement submitted by Wilson Paul.

The favourable conclusions and recommendations of the Full Flood Risk Assessment have also influenced us to positively support the proposal. We believe the envisaged house on this site will blend in well with the village and help promote a better and more exacting standard of modern local new build.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mrs Rhona Barrie
Address: 10B North Street Newtyle Newtyle PH12 8TT

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:Dear Sirs,

As a resident of Newtyle with long term associations with the South Street area of the village going back some 40 years to the point my parents first moved to the area I wish to make comment in support of planning application 21/01000/FULL, Burnbank, 33 South Street Newtyle, Blairgowrie, PH12 8UQ.
Having reviewed the professional documentation associated with the application and had direct discussions with the applicant I believe that every effort had has been made to meet previous concerns raised by the planning authority and to minimise the environmental impact of the development.
As I understand it the new property is intended to be the long-term residence of the applicant who will continue to maintain the garden area and associated trees as has been the case since they purchased the larger property which the site in question forms part of. Rather than being an upscale development created for short term sell on as some other comments have suggested.
The vehicular access to the property should have negligible impact on pedestrian safety in the area as there is no formal footpath on that side of South Street, only a relatively narrow grass verge with the full width footpath being on the north side of the street opposite the proposed access and often shielded by parked cars.
The South Street boundary of the property is bordered by a well established hedge and trees which should continue to provide privacy from direct view to both the proposed new property and those properties opposite.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Olaf Hindmarsh
Address: 1 Coupar Angus Road Newtyle PH12 8TP

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:I believe that this planning application satisfies the required building and planning standards of Angus Council.

Its evident that the applicant has been careful to address any concerns and made adjustments to the original plans accordingly.

Wilson Paul Architects (Design Statement April 2024), is comprehensive and provides a thorough overview of the development.

This sustainable development will contribute to the reduction of carbon emissions.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Miss Alison Ashfield
Address: Rhubarb Cottage Coupar Angus Road, Newtyle Blairgowrie PH12 8TP

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:This is a well-designed eco-house, using available ground within Newtyle. It appears to comply with all the relevant planning policies. We (Dr. Jonathan Berg and I) feel that such a development in very important in the village as it provides an example of sustainable building within the permitted development zone. The design is visually appealing and clearly addresses the requirement to build effective accommodation without the need to rely on fossil fuel heating.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mrs Mairead Wilson
Address: Dalnglack 31 South St Newtyle PH12 8UQ

Comment Details

Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:I object to the proposed development as I think the proposed building and associated site development could increase the flood risk at neighbouring houses and houses downstream.

Objection to planning Application 21/01000 FULL from Mairead Wilson [redacted]

Increased Flood Impact

I object to the proposed development, planning application 21/01000, because I think it will increase flooding at existing properties in Newtyle. The flood risk assessment (Millard 2024) shows a flooded area biased to the right-hand side of the Newtyle burn (looking downstream). The proposed development as per the site plan (2039 PA003 SITE PLAN REV A 22/08/2023) sits between the 84.0-84.5m contour on the left-hand bank whilst the same level on the opposite bank is flooded (Figure 1). The Scottish Water response indicates that run-off will not be taken into their sewer system, so it will have to go back into the Newtyle Burn at the nearest point that it will run to probably the northeast corner of the plot. My objection is on the basis that the proposed development would reduce the extent of the natural floodplain at this location and will also increase the rate of run off into the Newtyle burn.

Figure 1 The contours in the proposed development area are similar to that in the flooded area of Burnbank garden.

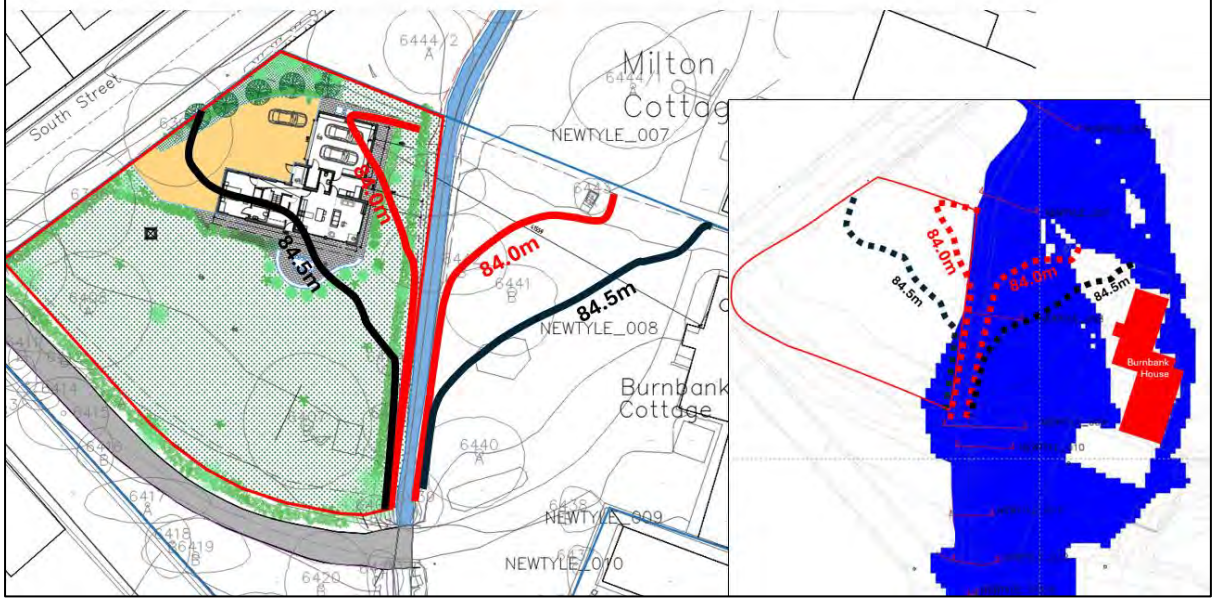


Figure 1

The net effect of reducing the floodplain and increasing runoff is that there would be an increase in frequency and severity of flooding at immediately neighbouring properties and other properties downstream.

Flood Risk Assessment

The representation of the flood area at Figure 7 of the flood risk assessment is not easy to interpret because:

- The flood area is overlain onto an aerial photograph which may not match well with topographic maps due to technical issues with the photographs.
- The proposed development area is not indicated.
- It is not clear if the development area has been correctly located for the purposes of the FRA.
- It is not clear if the proposed development area and all the associated hard standing has been included in the flood modelling.
- The shadow cast by the trees is very confusing.
- The burn appears to be excluded and to the left of the inundated area,
- The shading of the flooded area obscures the photographic detail that might facilitate orientation of the site plan.

The plan at the end of the document (18518/21/001) is also difficult to interpret because:

- The contours are not labelled.

- The site plan is not overlain onto this map.
- The shading of the flooded area obscures the contours and detail that might facilitate orientation of the site plan.

The flood risk assessment does not show the impact at the culvert at the junction of South St. Commercial St and Knox close. The site plan is not easy to read, significant zoom was required to read the contours and the fence along the eastern boundary parallel to the burn is not apparent. The flood risk assessment does not discuss if the fence has been included in the assessment and what impact the fence might have on the flood area and the neighbouring properties. For these reasons, I object to the planning application.

Existing Flooding Status

Flooding has occurred at the junction of Commercial Street, South Street and Knox Close (as noted in section 3 of the Flood Risk Assessment Millard 2024 and personal observation), which does not appear on the SEPA flood maps (Figure 2).

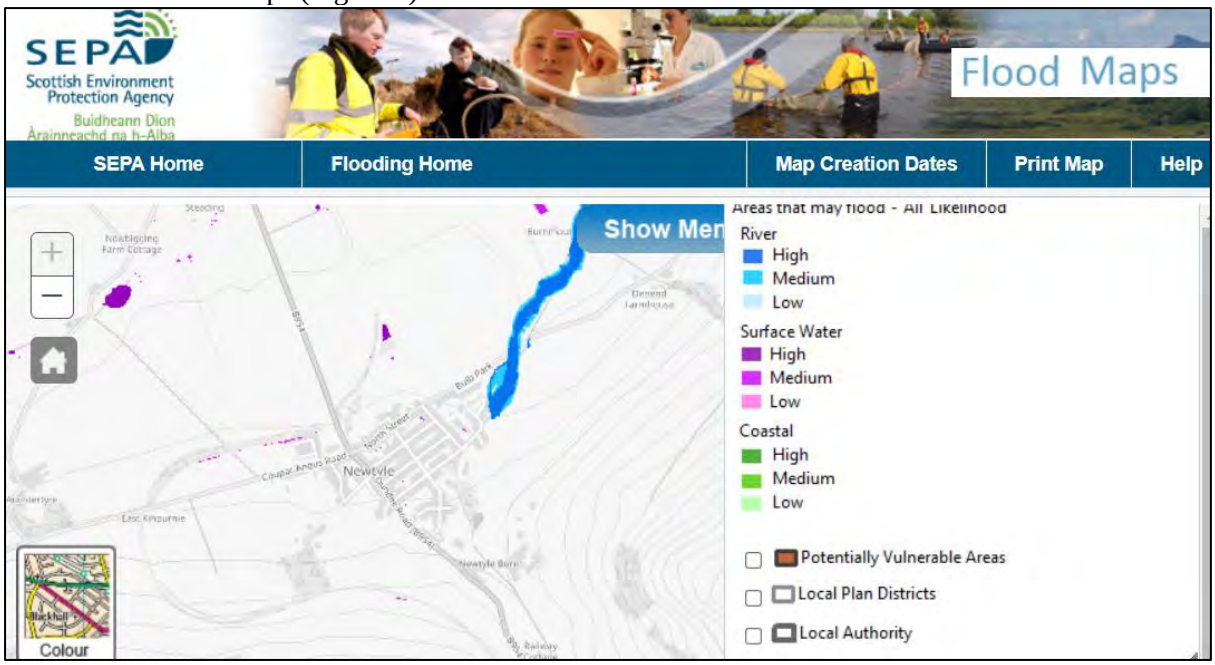


Figure 2

Whilst the proposed new property itself may be constructed with current flood mitigation; older neighbouring properties would be put at greater risk as a result of this development. For this reason, I object to the planning application.

Flood Risk Assessment Uncertainty

There are some uncertainties in flood risk modelling and the Newtyle Burn has a small catchment, contains springs which are evidence of ground water close to the surface, has had significant woodland removal within the last 4 years which can increase the rate of runoff, carries significant sediment during flood events, possibly due to woodland removal and has a 122m culvert within the urban area with flooding evident at both ends. In my thirteen years of professional experience measuring and analysing watercourse catchments for run-of-river hydro schemes, small catchments with little historical rainfall or flow data often display extreme differences from larger catchments where historical data exists. This level of uncertainty specific to Newtyle, should be factored into the flood avoidance precautions as recommended by SEPA and for this reason I object to the planning application.

Changes

Several changes have been made since the original planning application was submitted. A fence has been built on the southern and eastern boundary which could be in a floodplain, could obstruct flood flow and could have a significant impact on neighbouring properties (See SEPA

guidance below). The ownership key on the site plan still includes Burnbank House which has been sold and is no longer owned by the applicant. The new residents are not listed on the neighbour notification list. These changes are not discussed in the updated design statement (April 2024) and are not clearly indicated on the site plan. I object to this application, and I think this application should include a baseline flood risk assessment based on the 2021 conditions without a fence and driveway (see figure 3a and 3b). If the fence lies within the natural floodplain, then the appropriate planning application for a fence within a floodplain should be sought.

Figure 3a and 3b

https://www.sepa.org.uk/media/534740/sepa-flood-risk-standing-advice-for-planning-authorities-and-developers.pdf

Any type of development that involves landraising in the functional floodplain is not covered by this standing advice, and SEPA should therefore still be consulted on such proposals. Landraising is the process of raising ground levels in order to remove or partially remove a site from an area of flood risk. Doing so reduces the ability of the functional floodplain to store or convey water and can increase flood risk elsewhere.

Extract from SEPA Guidance

Comment

Comment on photographs

1. It is still difficult to see if there is a height difference on either side of the new fence which was erected on the river bank within the last few years.
2. What porosity/solidity has been used for the fence in the model.

Comment on Drawing 18518/21/002

1. The contours on drawing 18518/21/002 are not visible
2. On drawing 18518/21/002 It looks like the flooded area goes right up to the new fence but the fence is not indicated.
3. Transects Newtyle 007 and 008 are at the extreme edge of the proposed development
4. Transects Newtyle 007 ad 008 are very limited on the westerly extent 2m and 1m respectively vs 6m on the easterly side.

I don't think the issues raised in the SEPA response right have been resolved. Consequently, I think there is a risk that this location could be part of the floodplain and developing here could put the proposed house and/or existing houses at increased flood risk and therefore I object to the proposal.

SEPA Response

1.3 We have reviewed the FRA and found most aspects to be based on appropriate methods and parameters for the site. There are a few aspects of the assessment that require some further clarification, as it is not clear that they give the best representation of flood risk. This results in a high level of uncertainty, and it is not clear if the proposals may place development at risk of flooding. The information required is outlined below.

- We require the topographic survey undertaken in preparation for the FRA, clearly showing elevations across the site and the opposite bank, to demonstrate that the site of the proposed development is elevated above potential flood risk. Further photographs showing the site of the proposed development and its relation to the burn would also be helpful to build a greater picture of the ground conditions at the site.

Figure	Upstream Culvert	Bridge	Downstream Culvert	Solidity of dry stone dyke	Solidity of new fence on site boundary
1	Not indicated	75%	Not indicated	Not indicated	Not indicated
2	75%	Not Indicated	Not indicated	Not indicated	Not indicated
3	Not indicated	Not indicated	Not indicated	75%	Not indicated
4	75%	Not indicated	Not indicated	75%	Not indicated

Comment

1. Scenarios don't include for all the blockage permutations and no wall collapse has been modelled.
2. Only one wall porosity was modelled and other parameters have not been indicated.
3. 100% blockage on downstream culvert has not been modelled with or without other blockages and porosities/collapse.
4. Scenarios do not show what solidity has been used for the fence.
5. Scenarios do not consider the drains that run underground from Dalnglack garage area through Burnbank to Newtyle Burn.
6. Scenarios do not consider any future drainage or flood protection that might be installed to protect existing properties.
7. Is 75% solidity 25% porosity?
8. In the last flood the upstream culvert (19th October 2023) was not obstructed so it should probably be modelled at 0% blockage as well.

I don't think the issues raised in the SEPA response right have been resolved. Consequently, I think there is a risk that this location could be part of the floodplain and developing here could put the proposed house and/or existing houses at increased flood risk and therefore I object to the proposal.

SEPA Response

- We request that blockage scenarios be run for the culverts and bridge on the site. We hold records of significant flooding in other areas where blockages have been the main cause and it is recommended that a range of blockage scenarios be tested, these being: 25%, 50% and 75% blockages. In the event the upstream culvert is blocked, it may cause water to take a pathway which causes inundation of the proposed development. Additionally, we request that a 100% blockage scenario be modelled on the downstream culvert, owing to its small aperture, length, and potentially significant consequences of a blockage here.

- The model treated the drystone wall on the site as porous and having no bearing on flood water, but past flood events have demonstrated that drystone walls can restrict flows and collapse, leading to rapid downstream inundation. As such, we request that differing scenarios of porosity and collapse are modelled, in a similar manner to the above blockage scenarios, to assess the impact of the drystone wall on flooding at the site.

From: Mairead and Jamie [redacted]
Sent: Monday, September 16, 2024 9:36 AM
To: PLANNING <PLANNING@angus.gov.uk>
Cc: James Wright <[redacted]
Subject: Burnbank

I would like to make the following objections relating to the proposed development in what was formerly the garden of Burnbank Newtyle.
1. My understanding is that planning is required for fences that might interact with flood zones. The fence that was installed in the last 4years has not been consented under planning. If this fence is limiting the extent of the flood zone, this could increase the extent of flooding in nearby properties. If the planning status of the fence is not resolved, Angus Council could be legally liable for increased flooding in nearby existing properties.
2. I think a site visit is required to fully understand the impact of the new unconsented fence at this location.
3. Normally at least 12 months of site-specific flow hydrology would be required to provide some statistical certainty about flows in an ungauged catchment like Newtyle Burn. This is particularly true of small catchments where the extremes of high flow can be very different from that predicted by larger catchments in the SEPA database. Without this I don't think we can fully understand the impact of the unconsented fence and the proposed development on flooding in neighbouring properties.
4. The unconsented fence and/ or the proposed development has the potential to increase the frequency and depth of flooding at existing neighbouring properties. My understanding of the SEPA guidance is that this flooding potential and any associated distress is a material consideration.
Best regards
Mairead Wilson

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mrs Mairead Wilson
Address: Dalnaglack 31 South St Newtyle Blairgowrie ph128UQ

Comment Details

Commenter Type: Member of Public
Stance: Customer objects to the Planning Application
Comment Reasons:
Comment:I maintain my original objection that the proposed development could have a negative impact on flooding and add that the proposed changes (181024) will cause overshadowing. The adjusted ground level throughout the development site of 85m AOD is 0.5-1m higher than the originally surveyed ground level of 84-84.5m AOD (2039PA001 & PA005 17/10/2024). The proposed development is raised out of the flood risk which appears inconsistent with flood risk guidance. Scottish Water has stated that it will not accept any surface water connections into its combined sewer system. Will the rainwater collected from the roof run onto the road or back into the Newtyle Burn? The red line boundary excludes the burn, which is no longer owned by the applicant so discharging back to the burn may not be possible. This surface water could exacerbate flooding on South St. The application does not show how this surface water would be managed. If drainage is required outside of the current red line boundary then this should be the subject of a new planning application because of the adjusted ground level and elevation of the proposed development and any change in the red line boundary. The changes in elevation and position of the proposed development mean that it is more likely to cast a significant shadow. The ground level on the road near no. 26 South St is 83.81m AOD and it has an east-facing porch protruding about 1m beyond the extents shown on the site plan. The proposed development lies 19m away, and the apex is at 92.14m. During winter the morning sun has an angle of 15degrees or less. Consequently, the proposed development would cast a shadow of 2-4m on the front of no. 26 South St for 126 days during the darkest part of the year from October 15th to February 18th. Even the lower roof of the garage area could cast a shadow onto the windows of no. 26 and the shadow could persist for 3 hours. I object to this application because it could significantly overshadow no. 26 South street.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mrs Sandra Rennie
Address: 6 Dunarn Street Newtyle BLAIRGOWRIE PH12 8UH

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:My husband and i have no objections to this application. Our house is to the back of property and i feel it wouldnt cause us any problems at all. I cant see any impact it would cause to the volume of traffic travelling up and down South St.

Objections to Planning Application 21/01000/FULL
(Burnbank, 33 South Street, Newtyle PH12 8UQ)

From James Robertson & Marianne Mitchelson, [redacted]

We note herewith our further objections to this planning application. In doing so, we restrict our comments to the additional supporting information recently submitted (15th April 2024) by the applicant.

We are not reiterating objections previously made, but remain unconvinced that all of our concerns have been fully allayed.

The additional supporting information which we wish to comment on relates to the updated tree survey (February 2023, revised 22nd September 2023) and the flood risk assessment (dated April 2024).

With regard to the tree survey we note that the latest version (revised September 2023) differs from the previous survey (revised May 2023) in relation to the large lime trees 6396 and 6397. Whereas in the May report the root protection areas of both trees are discussed, in the September report there is no discussion at all of tree 6396, despite this tree's roots having been equally exposed to possible damage by the creation of the driveway access to the plot from South Street.

We have long been concerned about the lack of management of these and the two other lime trees on the northern boundary of the plot. All of these trees exceed 23m in height. We still feel that any weakening of the root structures of, especially, trees 6396 and 6397 as a result of present or future construction could have potentially disastrous consequences for nearby properties, including ours, our immediate neighbours', and, should it be built, the proposed new house.

With regard to the flood risk assessment (FRA), we acknowledge that it is comprehensive and detailed. We do not have the expertise to dispute its methodology or the conclusions it draws. However, we would point out that the modelling of flood scenarios depends on data, and that some of the available data is lagging behind the rapidity with which climate change is happening, especially in terms of causing heavier, more persistent rainfall and more frequent storms in Angus. The FRA itself notes this at 1.1 (p.1): 'This assessment is prepared using our best engineering judgement but there are levels of uncertainty implicit in the historical data and methods of analysis'; and again, at 7.0 (p.27): 'as with all such Flood Risk Assessments the accuracy of the results is only as good as the data and statistical techniques used'.

As the FRA also makes clear, there have been several recent incidents of the Newtyle Burn flooding on adjacent properties to the south and to the north of the proposed plot. The FRA makes certain recommendations regarding the siting and structure of the proposed house, in order to mitigate against potential flood impact. The applicant's agent has commented that these mitigation measures are incorporated into the plans, and also proposes a Flood Early Warning System near the Burn, 'with audible and visual sounders to alert the occupier should the water level begin to encroach on the top of the existing bank'.

The fact that the above mitigation measures are recommended reinforces our belief that the new house would be in a vulnerable position with regard to flooding, as climate change effects worsen as they are predicted to do. The plot's boundaries are not clearly delineated either on the FRA's aerial images or on drawing 18518/21/001; however, the modelling certainly shows risk of flooding extending onto the plot.

We would also emphasise that the plot forms part of the natural floodplain of the Newtyle Burn, and that the proposed development will have a negative impact on the site's environmental integrity as well as reduce its ability to cope with possible future flooding scenarios.

The FRA clearly states that there is a flood risk to Dalnaglack, Burnbank and Milton, the adjacent properties. The owners of these properties may need to take measures, such as construction of bunds, to mitigate flood risk, and these measures would in all probability affect directional flows and volumes of water and consequently the accuracy of flood predictions in the adjacent areas.

Furthermore, the FRA's purpose is 'to assess the 1 in 200 year flood risk to the site' (p.1). It therefore does not take any account of increased flood risk that might occur *as a result* of the proposed house being built. The risk of flooding does not pertain only to the proposed house. Surface water run-off would be increased by the construction of a new property with associated hard surfaces, and would have to go somewhere. This part of the village of Newtyle (the east end of South Street, Knox's Close and the south end of Commercial Street) is already subject to flooding events (several in the last two years) and we believe that a new property on a site so close to the Newtyle Burn would only exacerbate these problems.

Comments for Planning Application 21/01000/FULL

Application Summary

Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details

Name: Mr Sam Sutcliffe
Address: 35 South Street Newtyle PH12 8UQ

Comment Details

Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:We wish to support the application and highlight our own views and observations regarding any disputed flood risk associated with the property.

As I understand from a previous flood risk assessment associated with historical planning application 17/00551/PPPL for an adjacent property the catchment area of the Newtyle Burn is approximately 2.7sq/km. The total area of the building plot being less than 0.002sq/km and the foot print of the proposed building being much less than that then any increase in run off to the adjacent burn would be negligible. The application states that " All paving materials consist of either porous paving setts or gravel allowing the percolation of rainwater" again reducing any additional run off.

The village has been subject to flood events in the past and they manifest themselves in the same way during each occurrence. During these flood events, the most recent in November 2022 being the most extreme, the culverts in both our own garden and at the outflow at downstream end near Kinpurnie Gardens usually become blocked with debris and other detritus being carried downstream, this is then compounded by a historical reduction in size of the culvert presumably during the construction of Knox Close. The cumulative effect of these things is for the water to overflow the burn onto and out of our drive down Commercial Street and down towards Knox Close. On each of the occasions it is our observation that the water has only every pooled in the lower 1/4 of our garden adjacent to the culvert before making it's way down the natural slope of the surrounding ground and in the opposite direction to the proposed property. This area in our garden prone to flooding, according to the most recent flood risk assessment ref 18518/AB/941, sits approximately 1m below the proposed development site.

Comments for Planning Application 21/01000/FULL

Application Summary
Application Number: 21/01000/FULL
Address: Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ
Proposal: Erection of Dwellinghouse Garden Ground
Case Officer: James Wright

Customer Details
Name: Mrs Nicola Sutcliffe
Address: Milton House 35 South Street Newtyle PH12 8UQ

Comment Details
Commenter Type: Member of Public
Stance: Customer made comments in support of the Planning Application
Comment Reasons:
Comment:We wish to support the application for the following reasons;

Prior to the applicant segregating the plot and moving from the property in the original garden we had discussion about their desire to downsize from a building which was in extreme for a single occupant and to move to a more manageable property and garden area. The applicant had advised at the time that they had no desire to leave Newtyle and wished to remain close to the property they had originally planned on settling in. As we understand it this wish remains the same with the applicant seeing the new property as their future long term residence.

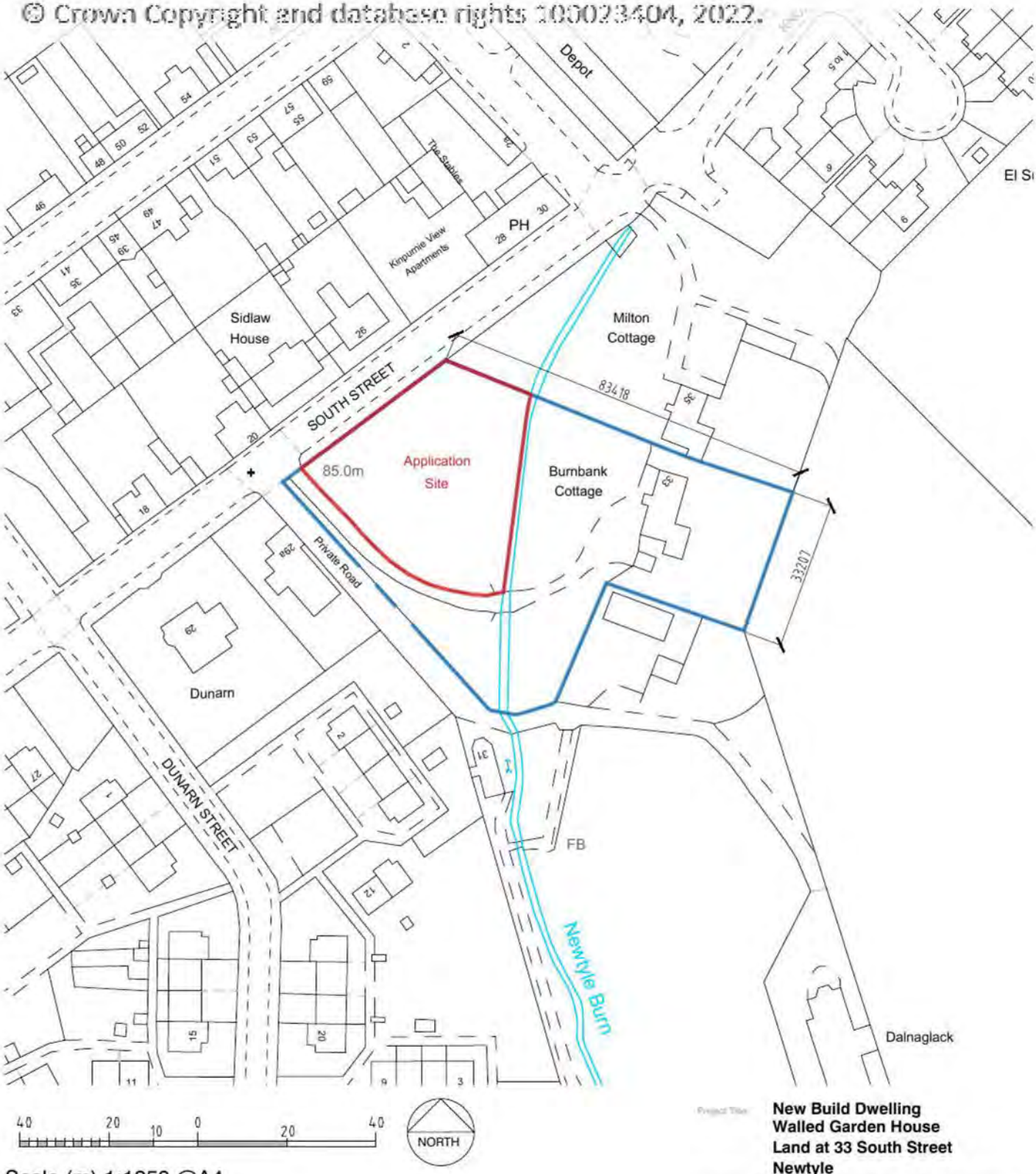
Design and sustainability;

Having seen the plans and discussed at length the design and style of the proposed property with the applicant we feel that the new building and associated landscaping will blend a mixture of modern and traditional building materials together in a style that will be sympathetic and compliment the surrounding environment. South Street already has a mixture of traditional and modern properties along its length and the site is flanked to its south west at number 31 by a more contemporary build. We understand from the application and by direct discussion with the applicant that the construction is designed to be highly energy efficient and sustainable, reducing both energy consumption and their carbon footprint. This falls in line with our own aspirations to become more energy efficient and reducing our impact on the environment.

Traffic and parking;

The potential addition of one more vehicle to South Street who's access to the site is on the unpaved side of the street flanked either side by a grassy verge does not in our opinion create any

greater threat to members of the public than the vehicles which already use the street as a thoroughfare. In addition to this the on street parking at the east end of south street is relatively quiet compared to its opposite end where there is less off street parking outside of properties.



Scale (m) 1:1250 @A4

Key:

Existing house ownership site boundary

Application site

New Build Dwelling
Walled Garden House
Land at 33 South Street
Newtyle

Sheet Contents: **Existing Location Plan**

Designed by:		Drawing Number:
Drawn by:	SB	**2039 EX 002**
Date:	30.11.21	
Scale:	1:1250 @ A4	Revision:

JPA
4 Brook Street
Broughty Ferry
Dundee
DD5 1DP

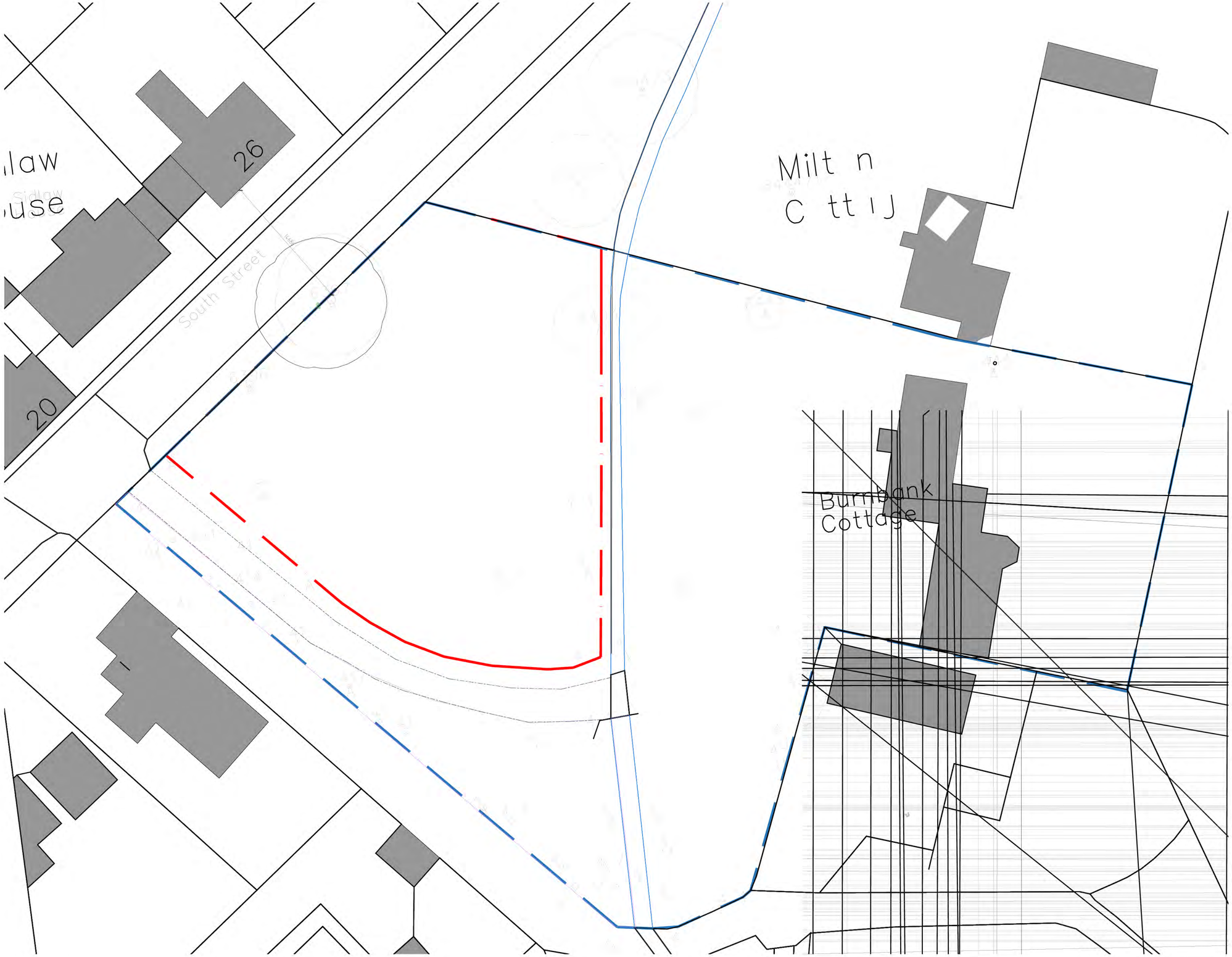
T 01382 737868

James Paul Associates

www.jamespaul-associates.co.uk

NOTE
(Please refer to tree survey information for further details of trees)

NO MATURE TREES ARE PROPOSED TO BE REMOVED OR ALTERED IN THIS APPLICATION.



PROPOSED SITE PLAN 1:200

Scale 1:200 @ A1

Ownership Key

EXISTING SITE

PROPOSED DWELLING SITE

GENERAL AREA BREAKDOWN
(All figures below are approximate subject to full site survey & design development)

EXISTING TOTAL SITE AREA:
4849 M2

PROPOSED DWELLING SITE AREA:
1584 M2

PLANNING ISSUE

Project Title: **New Build Dwelling**
33 South Street Newtyle

Sheet Contents :	**Existing Site Plan**		
Designed by:	**SW**	Drawing Number :	**2039 EX 001**
Drawn by :	**JD**		
Date :	**26/01/2023**		
Scale :	**1:200 @ A1**	Revision :	

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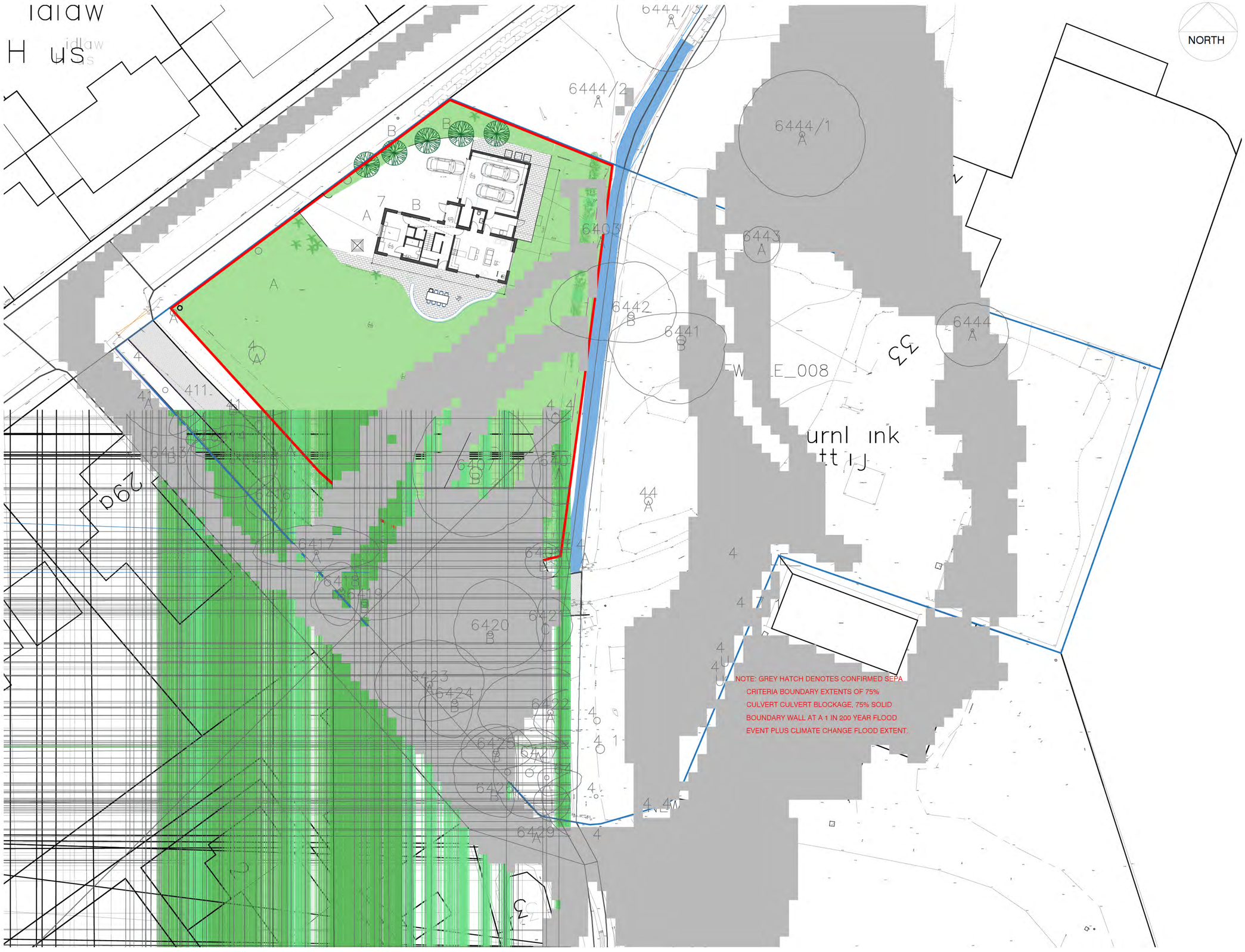

Scale (m)
1:200@A1

NOTE
(Please refer to tree survey information for further details of trees)

ALL PROPOSED DEVELOPMENT IS OUTWITH TREE ROOT PROTECTION AREAS (RPAs) AND AS SUCH WILL NOT ADVERSELY IMPACT EXISTING TREES.

EXISTING HEDGEROW AND SHRUB GROWTH TO THE BORDER WITH SOUTH STREET WILL BE RETAINED AS EXISTING.

ALL WINDOWS INCLUDED WITHIN THE PROPOSED ARE A DISTANCE GREATER THAN 18m FROM EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

THE PROPOSED IS AT A DISTANCE, ORIENTATION AND POSITIONING THAT NEGATES POTENTIAL OVERSHADOWING OF EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

Ownership Key

EXISTING SITE

PROPOSED DWELLING SITE

GENERAL AREA BREAKDOWN
(All figures below are approximate subject to full site survey & design development)

EXISTING TOTAL SITE AREA:
4849 M2

PROPOSED DWELLING SITE AREA:
1584 M2

PROPOSED DWELLING BREAKDOWN:

PROPOSED FOOTPRINT APRX. 185 M2

AMENITY SPACE. 1173 M2 (Excluding driveway & pathways)

(Amenity space provided significantly Angus Council's minimum requirement of 100 Square Meters)

NOTE: GREY HATCH DENOTES CONFIRMED SEPA CRITERIA BOUNDARY EXTENTS OF 75% CULVERT CULVERT BLOCKAGE, 75% SOLID BOUNDARY WALL AT A 1 IN 200 YEAR FLOOD EVENT PLUS CLIMATE CHANGE FLOOD EXTENT.

Project Title : **Road Access**
33 South Street Newtyle

Sheet Contents :	**Proposed Site Plan**		
Designed by:	SW	Drawing Number :	**2039/PA/003**
Drawn by :	JV		
Date :	22/08/2023		
Scale :	1:200 @ A1	Revision :	B 05.11.24 SEPA Comments

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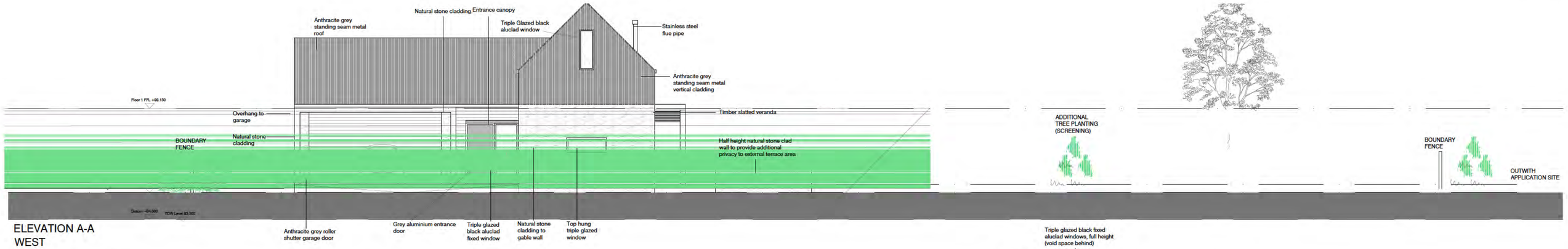
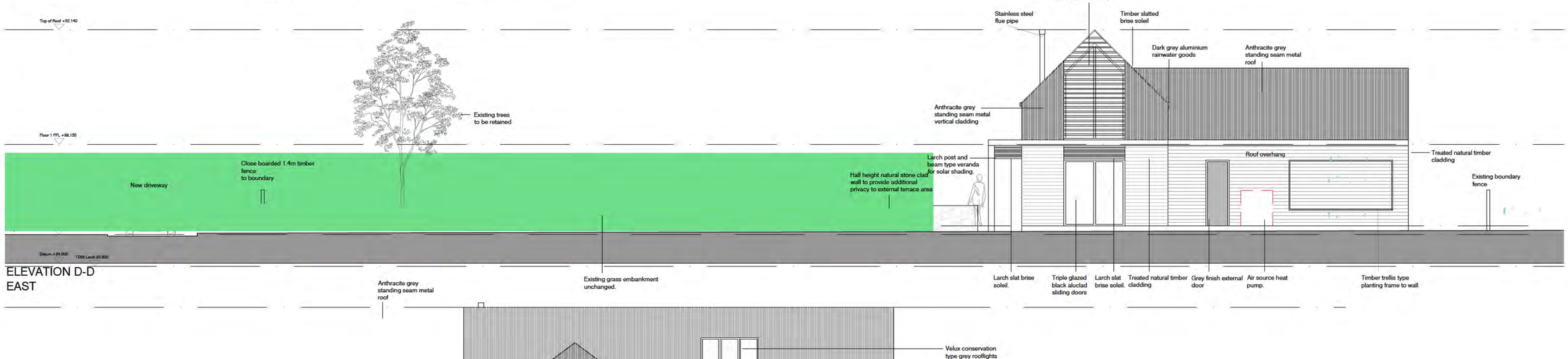
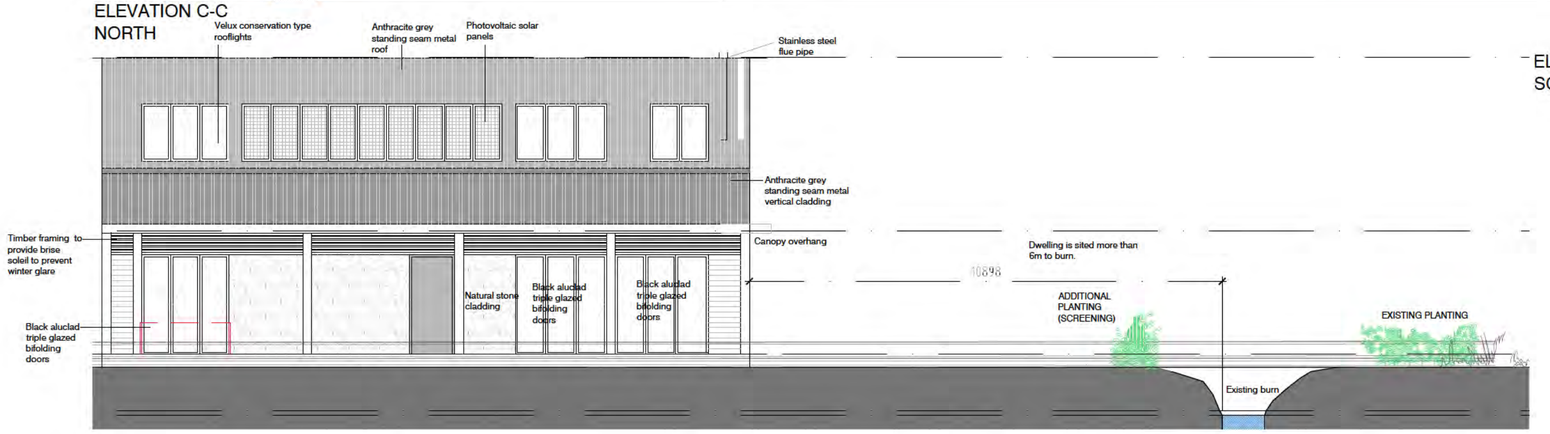


ELEVATION A-A
WEST



ELEVATION D-D
EAST

ELEVATION C-C
NORTH



ELEVATION B-B
SOUTH

2 1 0.5 0 2 4 6 8

SCALE 1:100 @ A3

GENERAL NOTE. FINISHED FLOOR LEVEL HAS BEEN RAISED AN ADDITIONAL 150MM TO A TOTAL OF 300MM.

PLANNING ISSUE

Project Title: **New Build Eco Dwelling**

Land at 33 South Street
Newtyle

Sheet Contents :	Proposed elevations		
Designed by:	SW	Drawing Number :	2039-PA-005
Drawn by :			
Date :	01.04.23		
Scale :	1:100 @ A3	Revision :	C 05.11.24 Fld Meas Removed

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NOTE
(Please refer to tree survey information for further details of trees)

EXISTING HEDGEROW AND SHRUB GROWTH TO THE BORDER WITH SOUTH STREET WILL BE RETAINED AS EXISTING.

ALL WINDOWS INCLUDED WITHIN THE PROPOSED ARE A DISTANCE GREATER THAN 18m FROM EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

THE PROPOSED IS AT A DISTANCE, ORIENTATION AND POSITIONING THAT NEGATES POTENTIAL OVERSHADOWING OF EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

THE PROPOSED DWELLING IS SITED AT A DISTANCE GREATER THAN 6M FROM THE WATERCOURSE AS PER RECOMMENDATIONS.

GROUND FLOOR CONSTRUCTION TO BE OF SOLID TYPE - REFER TO FLOOD RISK ASSESSMENT FOR FURTHER DETAILS.

NOTE: GREY HATCH DENOTES CONFIRMED SEPA CRITERIA BOUNDARY EXTENTS OF 75% CULVERT CULVERT BLOCKAGE, 75% SOLID BOUNDARY WALL AT A 1 IN 200 YEAR FLOOD EVENT PLUS CLIMATE CHANGE FLOOD EXTENT.

Scale (m)
1:50@A1

2 1 0.5 0 2 4 6 8

Project Title : **New Build Dwelling**
33 South Street Newtyle

Sheet Contents :	**Proposed Ground Floor Plan**
Designed by:	SW
Drawn by :	JD
Date :	26/02/2023
Scale :	1:50 @ A1
Drawing Number :	**2039PA001**
Revision :	D - 11.11.24 SEPA CMTS

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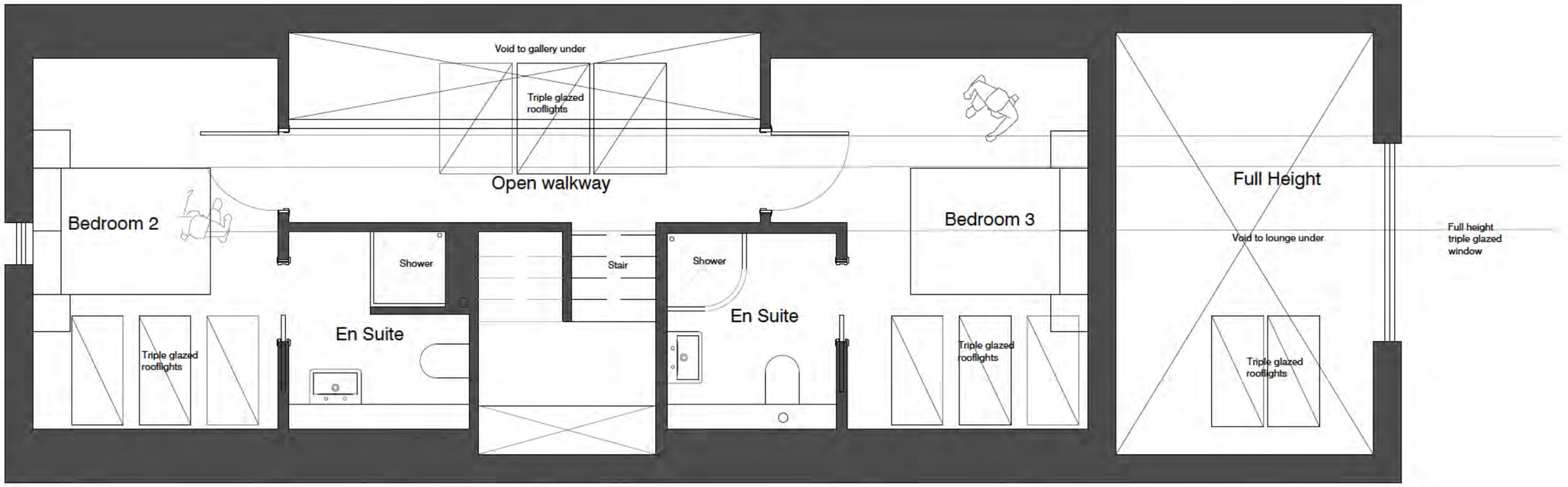

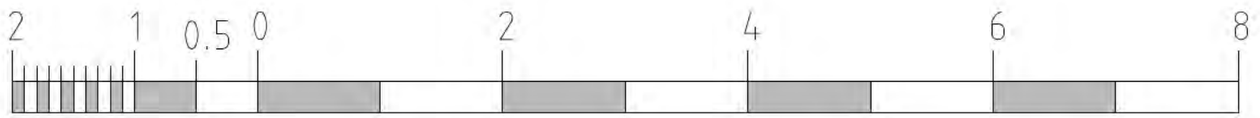

Project Title : **New Build Dwelling**
33 South Street Newtyle

Sheet Contents :	**Proposed First Floor Plan**		
Designed by:	**SW**	Drawing Number :	**2039PA002**
Drawn by :	**JD**		
Date :	**26/03/2023**		
Scale :	**1:50 @ A3**	Revision :	**A 17.10.24**

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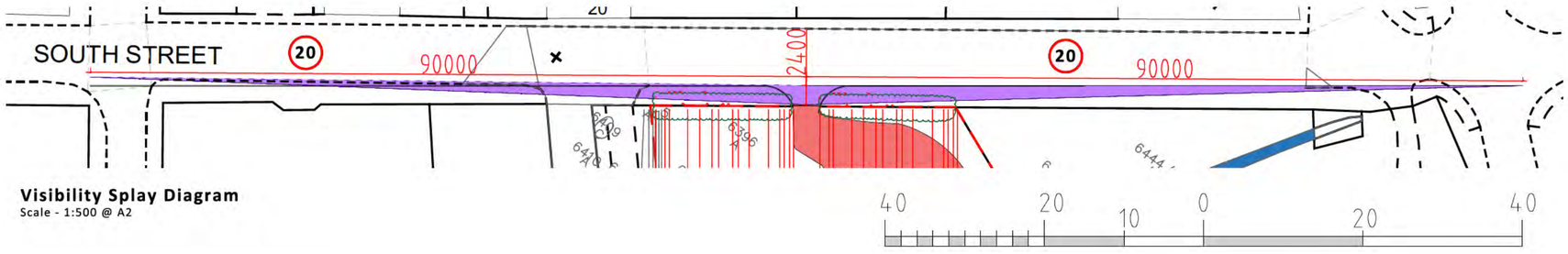
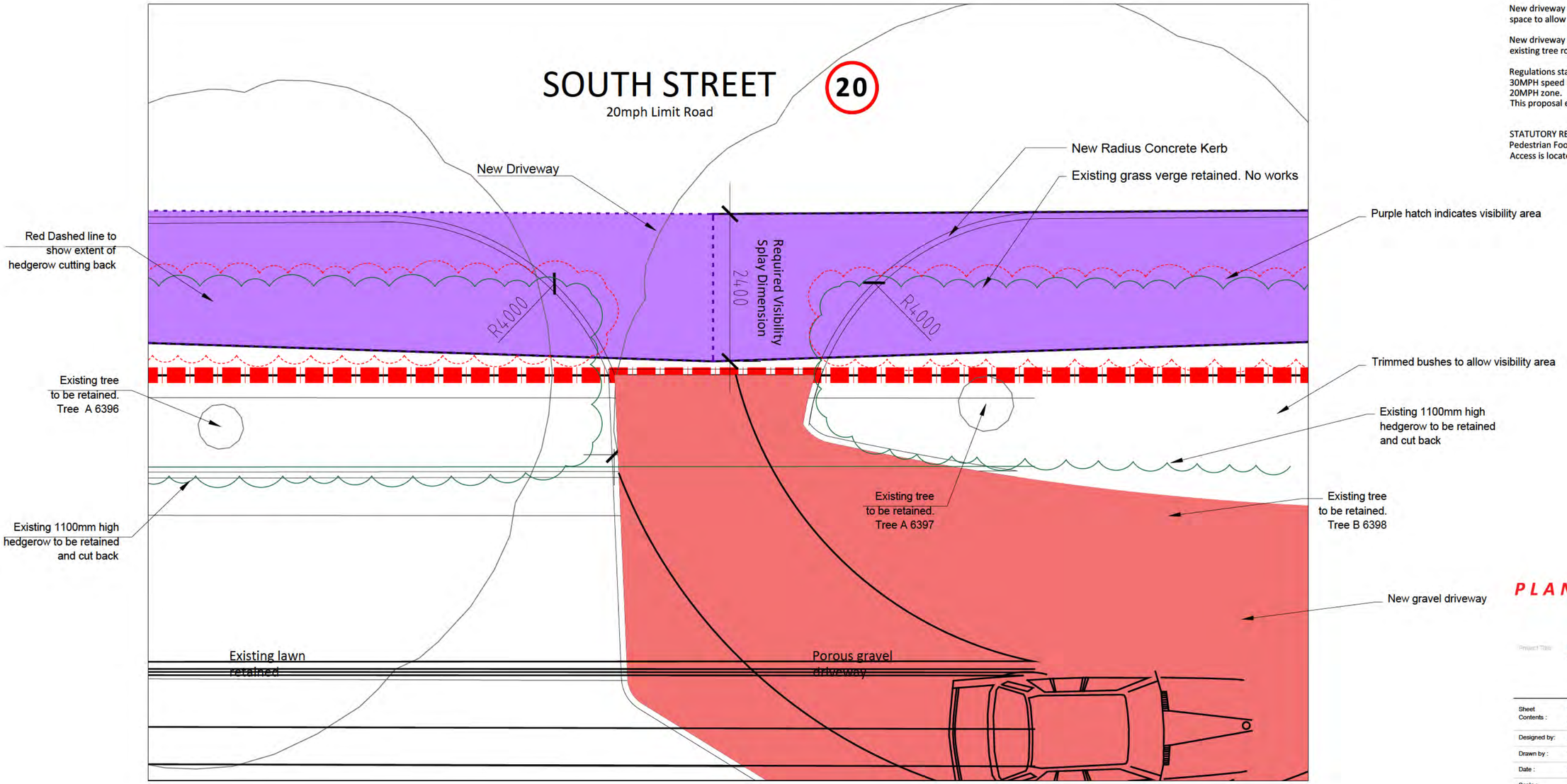


Visibility Splay Diagram
Scale - 1:500 @ A2



Vehicle Access
Scale - 1:50 @ A2

1 0.5 0 1 2 3 4

NOTES;

Do not scale from drawing. Dimensions should be requested in writing to the project Architect.

KEY

Denotes Visibility Spay

NOTES;

New driveway comprises required vehicle maneuvering space to allow access and egress in forward gear.

New driveway to use substrate protection to protect existing tree roots . Refer to tree report for details.

Regulations state that 90mm visibility be achieves for 30MPH speed limit roads. South street is a designated 20MPH zone.
This proposal exceed.

STATUTORY REQUIREMENTS:
Pedestrian Footway
Access is located on opposite side of street.

PLANNING ISSUE

Project Title: **Formation of New Driveway 33 South Street Newtyle**

Sheet Contents :	**Proposed Visibility Splay & Driveway Diagram Access Diagram**
Designed by:	**SW**
Drawn by :	**JV**
Date :	**22/08/2023**
Scale :	**As noted @ A2**
Drawing Number :	**2039/PA/03**
Revision :	

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ANGUS COUNCIL

TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997
(AS AMENDED)
TOWN AND COUNTRY PLANNING (DEVELOPMENT MANAGEMENT PROCEDURE)
(SCOTLAND)
REGULATIONS 2013

PLANNING PERMISSION REFUSAL
REFERENCE : 21/01000/FULL

To Mrs Maria Jemicz
c/o James Paul Associates
4 Brook Street
Broughty Ferry
Dundee
DD5 1DP

With reference to your application dated 11 January 2022 for planning permission under the above mentioned Acts and Regulations for the following development, viz.:-

Erection of Dwellinghouse in Garden Ground at Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ for Mrs Maria Jemicz

The Angus Council in exercise of their powers under the above mentioned Acts and Regulations hereby Refuse Planning Permission (Delegated Decision) for the said development in accordance with the particulars given in the application and plans docqueted as relative hereto in paper or identified as refused on the Public Access portal.

The reasons for the Council's decision are:-

1. The proposal is contrary to National Planning Framework 4 policies 14 and 17, and Angus Local Development Plan policies TC2 and DS3 and its associated Design Quality and Placemaking Supplementary Guidance, as it is not sited and designed to be in keeping with the character of the area, it would not contribute positively to the character and sense of place of the area, and as it would be detrimental to the amenity of the surrounding area.

2. The proposal is contrary to Angus Local Development Plan policies TC2 and DS4 as it would fail to provide a satisfactory residential environment for occupants of the proposed dwelling and as it would not maintain or improve environmental quality of the area.

3. The proposal is contrary to Angus Local Development Plan policy DS1 because the proposal is not in accordance with relevant policies of the development plan.

Amendments:

1 Amended Existing Site Plan (drawing number 2039 EX 001 Rev) submitted on the 20/04/23; Amended Proposed First Floor Plans (drawing number 2039PA002 Rev A) submitted on 18.10.24; Amended Proposed Elevations (drawing number 2039-PA-005 Rev C); Proposed Ground Floor plan (drawing number 2039PA001 Rev D); Amended Proposed Site Plan (drawing number 2039/PA/003 Rev B) and Proposed Visibility Splay & Driveway Diagram submitted on 11.11.24 supersede the drawings previously submitted. These drawings changed the house design, location and access point and correct some errors on the drawings to reflect tree locations.

Dated this 9 January 2025
Jill Paterson
Service Lead
Planning and Sustainable Growth
Angus Council
Angus House
Orchardbank Business Park
Forfar
DD8 1AN

Planning Decisions – Guidance Note

Please retain – this guidance forms part of your Decision Notice

You have now received your Decision Notice. This guidance note sets out important information regarding appealing or reviewing your decision. There are also new requirements in terms of notifications to the Planning Authority and display notices on-site for certain types of application. You will also find details on how to vary or renew your permission.

Please read the notes carefully to ensure effective compliance with the new regulations.

DURATION

The duration of any permission granted is set out in conditions attached to the permission. Where no conditions are attached the duration of the permission will be in accordance with sections 58 and 59 of the Town and Country Planning (Scotland) Act 1997 (as amended).

PLANNING DECISIONS

Decision Types and Appeal/Review Routes

The 'decision type' as specified in your decision letter determines the appeal or review route. The route to do this is dependent on the how the application was determined. Please check your decision letter and choose the appropriate appeal/review route in accordance with the table below. Details of how to do this are included in the guidance.

Determination Type	What does this mean?	Appeal/Review Route
Development Standards Committee/Full Council	National developments, major developments and local developments determined at a meeting of the Development Standards Committee or Full Council whereby relevant parties and the applicant were given the opportunity to present their cases before a decision was reached.	***DPEA (appeal to Scottish Ministers) – See details on attached Form 1***
Delegated Decision	Local developments determined by the Service Manager through delegated powers under the statutory scheme of delegation. These applications may have been subject to less than five representations, minor breaches of policy or may be refusals.	***Local Review Body – See details on attached Form 2***
Other Decision	All decisions other than planning permission or approval of matters specified in condition. These include decisions relating to Listed Building Consent, Advertisement Consent, Conservation Area Consent and Hazardous Substances Consent.	***DPEA (appeal to Scottish Ministers) – See details on attached Form 1***

NOTICES

Notification of initiation of development (NID)

Once planning permission has been granted and the applicant has decided the date they will commence that development they must inform the Planning Authority of that date. The notice must be submitted before development commences – failure to do so would be a breach of planning control. The relevant form is included with this guidance note.

Notification of completion of development (NCD)

Once a development for which planning permission has been given has been completed the applicant must, as soon as practicable, submit a notice of completion to the planning authority. Where development is carried out in phases there is a requirement for a notice to be submitted at the conclusion of each phase. The relevant form is included with this guidance note.

Display of Notice while development is carried out

For national, major or 'bad neighbour' developments (such as public houses, hot food shops or scrap yards), the developer must, for the duration of the development, display a sign or signs containing prescribed information.

The notice must be in the prescribed form and:-

- displayed in a prominent place at or in the vicinity of the site of the development;
- readily visible to the public; and
- printed on durable material.

A display notice is included with this guidance note.

Should you have any queries in relation to any of the above, please contact:

Angus Council
Angus House
Orchardbank Business Park
Forfar
DD8 1AN

Telephone 03452 777 780
E-mail: planning@angus.gov.uk
Website: www.angus.gov.uk

FORM 1

TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997 (AS AMENDED)

The Town & Country Planning (Development Management Procedure) (Scotland) Regulations 2013 – Schedule to Form 1

Notification to be sent to applicant on refusal of planning permission or on the grant of permission subject to conditions decided by Angus Council

1. If the applicant is aggrieved by the decision of the planning authority-

a) to refuse permission for the proposed development;
b) to refuse approval, consent or agreement required by condition imposed on a grant of planning permission;
c) to grant planning permission or any approval, consent or agreement subject to conditions,

the applicant may appeal to the Scottish Ministers to review the case under section 47 of the Town and Country Planning (Scotland) Act 1997 within three months beginning with the date of this notice. The notice of appeal should be addressed to The Planning and Environmental Appeals Division, Scottish Government, Ground Floor, Hadrian House, Callendar Business Park, Callendar Road, Falkirk, FK1 1XR. Alternatively you can submit your appeal directly to DPEA using the national e-planning web site https://eplanning.scotland.gov.uk.

2. If permission to develop land is refused or granted subject to conditions and the owner of the land claims that the land has become incapable of reasonably beneficial use in its existing state and cannot be rendered capable of reasonably beneficial use by the carrying out of any development which has been or would be permitted, the owner of the land may serve on the planning authority a purchase notice requiring the purchase of the owner of the land's interest in the land in accordance with Part 5 of the Town and Country Planning (Scotland) Act 1997.

FORM 2

TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997 (AS AMENDED)

The Town & Country Planning (Development Management Procedure) (Scotland) Regulations 2013 – Schedule to Form 2

Notification to be sent to applicant on refusal of planning permission or on the grant of permission subject to conditions decided through Angus Council's Scheme of Delegation

1. If the applicant is aggrieved by the decision of the planning authority-

   a) to refuse permission for the proposed development;
   b) to refuse approval, consent or agreement required by condition imposed on a grant of planning permission;
   c) to grant planning permission or any approval, consent or agreement subject to conditions,

   the applicant may require the planning authority to review the case under section 43A of the Town and Country Planning (Scotland) Act 1997 within three months beginning with the date of this notice. The notice of review should be addressed to Committee Officer, Angus Council, Resources, Legal & Democratic Services, Angus House, Orchardbank Business Park, Forfar, DD8 1AN.

   A Notice of Review Form and guidance can be found on the national e-planning website https://eplanning.scotland.gov.uk. Alternatively you can return your Notice of Review directly to the local planning authority online on the same web site.

2. If permission to develop land is refused or granted subject to conditions and the owner of the land claims that the land has become incapable of reasonably beneficial use in its existing state and cannot be rendered capable of reasonably beneficial use by the carrying out of any development which has been or would be permitted, the owner of the land may serve on the planning authority a purchase notice requiring the purchase of the owner of the land's interest in the land in accordance with Part 5 of the Town and Country Planning (Scotland) Act 1997.

March 2022

21/01000/FULL
Erection of Dwellinghouse Garden Ground at Burnbank, 33 South Street, Newtyle, Blairgowrie

Dear James,

As you are aware the proposals previously submitted for the full Planning Permission application have been completely and comprehensively designed around the site and seek to integrate fully within the site environs. As has been covered throughout the design report, the proposed home and associated site landscaping/layout has an entirely bespoke design that has been designed to use the natural setting to its advantage and in maximising daylight influx.

Having trees present on the site we do not feel would disadvantage the dwelling; as you can see by the appended photographs the site is not at any point in the day fully or excessively overshadowed. We would re-iterate again that the Google streetview images of the site are not representative of the site's current condition (the photogrammetry being undertaken in 2008). The main body of the site is open space and there is a great deal of sunlight within the site. Whilst we recognise and understand the concerns put forward, we would also suggest that there are a great many people who would see the tree-lined elevation as an advantage and a natural screen for greater privacy. The decision was made at the outset not to remove the existing trees – in our view this would not be necessary by the nature of the tree cover and the ample size of the site, at 1584 m2. It must be said that those living within a town setting would experience overshadowing by virtue of neighbouring buildings, indeed the vast majority of trees present on the site overshadow properties to the North side of South Street – not the site. In our opinion the site represents an opportunity for modest, quiet and tranquil home in a natural setting, which is what we have aimed to demonstrate in our design proposals. In short, we feel the existing trees should be celebrated as part of the site, in contrast to many recent large housing developments which have little or no tree cover.

<u>Tree cover</u>
It is important to state that the majority of the trees within the South bounds of the site do not have extensive canopy spread, rather they are 'tall and thin' by virtue of their species. This can be clearly seen on the appended photographs. The shadows cast are obviously representative of this. Whilst we have produced the requested plan diagrams and shadow studies the above must be taken into account.

As outlined, the tree growth is not representative as it was in 2008, we would suggest that a visit to site would confirm this.

The trees lining the West elevation of the site are generously spaced and do not prevent sunlight entering the site

<u>Amenity</u>

As can be seen throughout the appended additional information, the site has an abundance of amenity space, around 3 times greater than the recommended minimum. Even in the winter months with the sun being lower and shadows subsequently cast longer, shadows cast would still allow an un-shadowed amenity space of several hundred square meters.

Various external terraces and decked areas have been provided in order to take advantage of the views offered by the site and take into account the travelling shadows throughout the day.

As outlined above, we have completed the additional diagrams and studies requested. Having produced assessed the appended information we remain of the opinion that the site would not suffer from a lack of amenity nor be excessively in shadow.

We attach below recent photographs of the site taken on different days in the last 6 months, along with the revised floorplan drawing and sunlight studies.

We trust this information is clear, though please don't hesitate to contact me to discuss further.

Kind regards

James Paul Associates

Report on tree survey at Burnbank Cottage, Newtyle

Commissioned by Dr Maria Jemicz

By Keith Logie MICFor

13 February 2023

Revised 12 Oct 2023

Keith Logie MICFor BSc (Hons)
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38/4 Temple Park Crescent
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1. General introduction and summary

This tree survey has been carried out for Dr Maria Jemicz. It relates to 53 trees within and near to the survey boundary shown on the plans supplied. The survey has been commissioned because a proposal is being drawn up to construct a new residential unit on the northern part of the site. If development were to proceed on the site, the existing trees will be retained, and the impact in arboricultural terms would be nil or neglible. Care will be required in construction of the proposed house and access road if trees proposed for retention are to be adequately protected. The report consists of:

- this written section;
- the schedule;
- 2 no drawings showing: an overview of tree positions and a tree protection plan showing root protection areas.

2. Site description

The site as a whole comprises roughly 0.49 hectares in total. To the north-west is South Street, a residential street, to the south-west an access lane then residential units, to the north-east another residential unit, and to the south is a light industrial unit set in woodland. The site is more or less flat but slopes gently from south-west down to north-east. The site is divided by the Newtyle burn. Most of the area is garden ground. Elevation is about 85m above sea level with a fairly sheltered aspect. The site is not believed to be within a Conservation Area or subject to a Tree Preservation Order.

3. Tree survey and methodology

53 trees within and close to the site have been recorded and assessed, and where required tagged with a numbered disc, fixed to the trunk at about 1.8m on the north side or where practicable. Tag numbers run sequentially from 6395 to 6444. Trees standing outside the site were not tagged. Trees smaller than 7.5 cm DBH and bushes were not tagged or recorded in detail. Some trees were assessed and plotted but not tagged. Fieldwork was done on 30 January 2023.

The location of most of the trees has been plotted according to the topo supplied or by using handheld GPS with an accuracy of 1 – 3m. Prior to construction, locations should be adjusted if required according to a topographic survey of suitable accuracy. Information on each numbered tree is provided in the attached Tree Survey Schedule. The position of the trees is shown on the attached drawings.

All trees within the site have been ascribed a Retention Category. In line with the recommendations contained within BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations", this takes account of the health, condition and future life expectancy of the tree, as well as its amenity and landscape value. The retention category for each tree is shown in the Tree Survey Schedule which records relevant data and comments on condition.

A – High category: trees whose retention is most desirable

B – Moderate category; trees where retention is desirable
C – Low category; trees which could be retained
U – Unsuitable for retention; trees which should be removed

Recommendations are made, where appropriate, on appropriate remedial action as regards tree surgery or felling works. These are specified where there is a significant current risk to public safety or tree health and are consistent with sound arboricultural practice. All tree work recommendations, where made, are in line with BS 3998: 2010 "Tree work recommendations".

The felling of more than 5 cubic metres of timber will require a felling license from Scottish Forestry unless the felling forms part of the granted Planning Permission.

4. Survey results and discussion

53 trees of at least 7.5cm DBH within and close to the site were plotted and assessed. Details of the trees are shown in the Schedule below. Some trees are part of the woodland group which has been assessed in detail below. Note that the Schedule is a summary of the data gathered and assessments made.

The **BS 5837 retention categories** of the 53 trees assessed in detail on and around the site were as follows:

Category A	20
Category B	21
Category C	10
Category U	2

In terms of their **condition,** they are as follows:

Good	23
Fair	25
Poor	3
Dead/dying	2

The **species** mix is as follows, by number

Beech	1
Birch, Silver	5
Cherry, Flowering	1
Cedar, Deodar	1
Cypress, Lawson	15
Fir, Douglas	3
Hemlock – Western	1
Laburnum	3

Larch	1
Lime, common	10
Maple, Japanese	1
Maple, Norway	3
Oak, pedunculate	1
Rowan	2
Western Red Cedar	2
Willow, weeping	1

Findings:

Overall, the garden is very well stocked with a wide variety of trees. There is a broad range of species, but the garden is dominated by mature common limes which are of a similar age, and conifers, some of which are very large. There are also ornamental trees of a smaller scale orientated towards the burn, which makes a nice feature in the garden.

There is a row of lime trees along the frontage with South Street, and another row running south along the western boundary, interspersed with Douglas fir. There has been underplanting with conifers in places too. There are large conifers further into the garden, including two very large and old Lawson cypress, and nearer the cottage, a large western hemlock and a deodar.

A number of trees have been removed fairly recently, prior to the survey, it is understood due to structural weakness or disease. Nevertheless, the effect of so many very large trees in the garden is fairly dramatic, particularly along the western boundary where the trees are very closely spaced.

There are trees in neighbouring properties – in Mill Cottage garden to the north there is a mature oak, a weeping willow and plum fairly close to the proposed development. In the grounds of the light industrial unit to the south-west of the site is a conifer woodland comprising mainly mature spruce. Trees standing outside the site to the south and to the north in neighbouring gardens will be unaffected by the proposed development.

Details of each tree surveyed are contained in the Schedule below. Positions are shown in drawing 1 below.

5. Constraints posed by existing trees - considerations

Trees can be badly damaged or killed by construction operations, and particular care is required to protect them from damage. The ability of trees to recover from damage to roots is often very limited. Root systems can be damaged by ground excavations, soil compaction, contamination or spillages of e.g. diesel or cement, and changes in soil moisture content (both drying and waterlogging).

Drawing 2 below shows a Root Protection Area (RPA) for each tree, shown as a hatched circle, which shows the area near to the trees where activity needs to be carefully controlled during construction if the tree is to be retained. Only trees which are to be retained are shown on this drawing.

The development proposals involve construction of a new house at the north-east part of the site, and a new access to serve it. Most trees on site and those on neighbouring properties will be unaffected by the proposed development. The tree protection plan drawing shows Root Protection Areas (RPA's) for trees to be retained.

The proposed construction footprint overlaps with the Root Protection Area (RPA) of lime 6397 which has a theoretical RPA of 367 sq m. As drawn, this would mean the loss of about 15.3 sq m of the potential rootable area of this tree, or 4.2%. Given that limes are relatively tolerant of incursions into the rooting zone this is not considered likely to cause significant harm to the tree. There is a larger area of the RPA where construction work will take place, which will ultimately form the front apron of the house, and in this area (shown pink on the Tree Protection Plan) work needs to be carefully controlled. A method statement to guide work in this area has been included below, with a more detailed drawing.

Other trees, including those located south of the burn are unlikely to be affected by the development proposals.

6. Tree protection plan

In general terms, where trees are recommended for retention they must be protected by barriers and/or ground protection prior to commencement of any development works, including demolition. Where there is work within RPAs, Cellweb or similar geotextile will be used to prevent root compaction, as detailed below.

Work within RPA's. The nature of this proposal means that, in order to retain the good quality trees close to both proposed dwelling house and the proposed access road, there will be work within the RPA's. The principles that will be applied to work with the RPA's are as described in the Barrell Tree Care "Manual for managing trees on development sites", which represents the industry standard, expanding and detailing the text in BS5837:2012. The manual can be found here: https://www.barrelltreecare.co.uk/resources/technical-guidance/sgn9-v3/

Work in the proximity of trees **6397, 6398, 6399 & 6400** (see detail drawing): These trees are all to be retained and care will be required to ensure that they are not damaged during construction. There are two aspects to the work here, creation of building foundations and laying of surfaces outside the proposed building.

1. In terms of the foundation work: only tree **6397** is affected here. The proportion of the tree's roots likely to be affected here is very small (less than 5%) , but it is anticipated that some small roots will require to be severed. Excavations are to be carried out by hand in this area. Wet concrete is toxic to tree roots and care must be taken when pouring. It is recommended that the foundation trench be lined with Visqueen or similar DPC type membrane to protect tree roots until the concrete is dry.

2. The following applies to the RPAs of trees **6397, 6398, 6399 and 6400**. Away from the foundations there should be no excavations, other than to strip off turf, which should be done by hand. In order to protect the roots from compaction during construction and thereafter, the area shaded pink will be protected by a 3 dimensional cellular confinement system, such as Cellweb or similar (see photo below), as recommended in BS 5837. Where employed, kerbs will be haunched up at ground level. Surfaces will be comprised of material which is porous to air and water. The specification for the road and finished surfaces will be detailed in the Construction Method Statement.

3. All new surfacing will be set back from trunks and buttress roots by at least 50cm, unless otherwise agreed by the supervising arboriculturalist. There will therefore be no raising of soil levels above existing ground level at or on the trunks of trees to be retained. This is critically important for long-term tree survival.

Photo – Cellweb being installed in a tree root protection area.
http://www.geosyn.co.uk/product/cellweb-tree-root-protection

4. The 3 dimensional cellular confinement system will remain permanently in place and forms the sub-base of the finished porous surface.

Temporary protective fencing - specification. This specification applies to all tree protection fences referred to below. Fencing to consist of 2m high welded mesh panels (Heras or similar) on rubber or concrete feet joined with a minimum of two anti-tamper couplings. The distance between the couplings should be at least 1m and should be uniform throughout the fence line. The panels should be supported on the inner side by stabiliser struts, which should be anchored at ground level by a block tray or stakes driven into the soil. All-weather notices should be

affixed to the fence with the wording “Construction exclusion zone – no access.” The position of temporary protective fencing is shown on the Tree Protection Plan drawing below.

7. Recommendations

1. **Implement the tree protection plan detailed above.**
2. **Excavation of surface within root protection areas and the installation of 3 D cellular confinement system to be supervised by a suitable qualified and experienced arboriculturalist.**
3. **Implement the detailed recommendations contained the schedule below.**
4. **Inspect the retained trees on an ongoing 5 year cycle.**

STANDARD CONDITIONS RELATING TO TREE SURVEY INFORMATION

1. Unless otherwise stated in the report, inspection has been carried in accordance with Visual Tree Assessment (VTA) Stage 1.

2. The survey has been carried out in accordance with the recommendations of BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations”.

3. Recommendations for tree works assume that they will be carried out in accordance with BS 3998: 2010 “Tree work recommendations” by suitably qualified and experienced persons.

4. Unless otherwise stated, tree surveys are undertaken from ground level using established visual assessment methodology. The inspection is designed to determine the following:

   a. The presence of fungal disease in the root, stem, or branch structure that may give rise to a risk of structural failure of part or all of the tree;

   b. The presence of structural defects, such as root heave, cavities, weak forks, hazard beams, included bark, cracks, and the like, that may give rise to a risk of structural failure of part or all of the tree;

   c. The presence of soil disturbance, excavations, infilling, compaction, or other changes in the surrounding environment, such as adjacent tree removal or erection of new structures, that may give rise to a risk of structural failure of part or all of the tree;

   d. The presence of any of the above or another factor not specifically referred to, which may give rise to a decline or death of the tree.

4. Where further investigation is recommended, whether by climbing, the use of specialised decay detection equipment or the exposure of roots, this is identified in the report.

5. The findings and recommendations contained within this report are valid for a period of twelve months. Trees are living organisms subject to change and it is strongly recommended that they are inspected at regular intervals for reasons of safety.

6. The recommendations relate to the site as it exists at present, and to the level and pattern of usage it currently enjoys. The degree of risk and hazard may alter if the site is developed or significantly changed, and as such will require regular re-inspection and re-appraisal.

7. Whilst every effort has been made to detect defects within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. Extreme weather conditions can cause damage to apparently healthy trees, and phenomena such as summer branch drop may occur and are difficult to predict. In particular caution must be exercised if inferring or assuming matters relating to tree roots in the case where they cannot be visually assessed, as is normal and likely. It should be assumed that underground roots cannot be seen unless otherwise stated.

8. This report in no way constitutes a professional opinion on the integrity or status of buildings. Its primary purpose is to report on the status of trees. The status of built structures, if in doubt, should be reviewed by a suitably qualified person.

9. This report has been prepared for the sole use of Dr Maria Jemicz and her appointed agents. Any third party referring to this report or relying on information contained within it does so entirely at their own risk.

Explanation of terms used in the schedule

Tag	Identification number of tree
Species	Common name of species.
DBH	Trunk diameter in metres measured at 1.5m.
Crown	Radial tree crown spread in metres.
Height	Estimated height of tree in metres.
Age	Age class category. **Y** Young, **E-M** Early Mature, **M** Mature, **M-A** Advanced mature, **Vet** Veteran.
Stems	Single stemmed or multi-stemmed
Condition	Condition category (**Good**, **Fair**, **Poor**, **Dying** or **Dead**).
SULE	The tree's safe useful life expectancy, estimated in years. Note that this may be less than the tree's biological life expectancy.
BS Cat	BS 5837 Retention category (**A, B, C or U** – see explanation above)
Comments	General comments on tree health, condition and form, highlighting any defects or areas of concern and any **recommendations**.

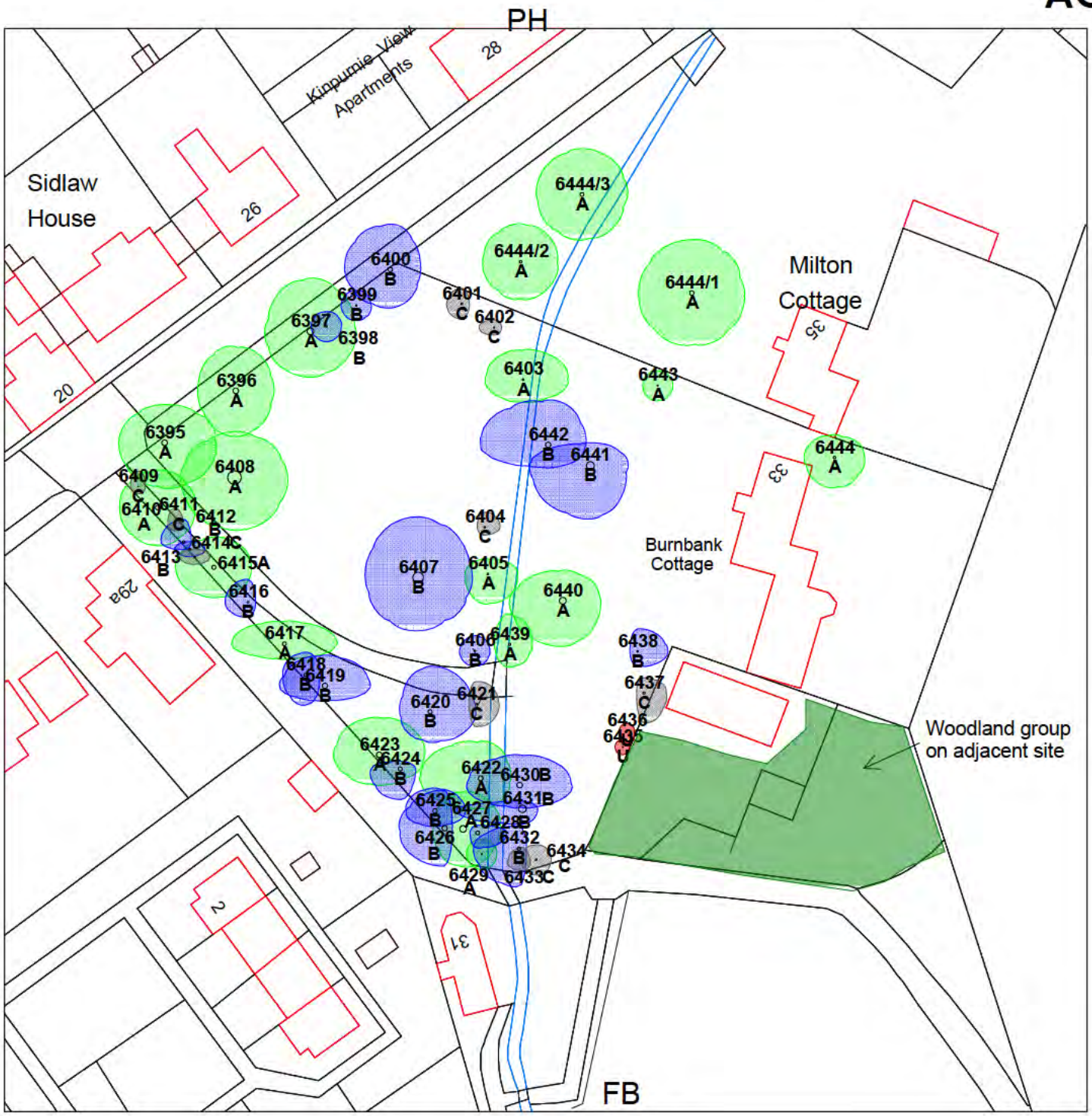
Tree condition categories

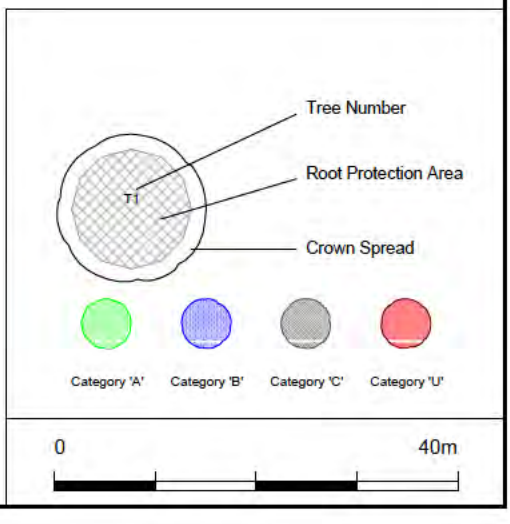
Good (1) Healthy trees with no major defects
(2) Trees with a considerable life expectancy
(3) Trees of good shape and form

Fair (1) Healthy trees with small or easily remedied defects
(2) Trees with a shorter life expectancy
(3) Trees of reasonable shape and form

Poor (1) Trees with significant structural defects and/or decay
(2) Trees of low vigour and under stress
(3) Trees with a limited life expectancy
(4) Trees of inferior shape and form

Dead (1) Dead, dying and dangerous trees
(2) Trees of very low vigour and with a severely limited life expectancy
(3) Trees with serious structural defects and/or decay
(4) Trees of exceptionally poor shape and form.

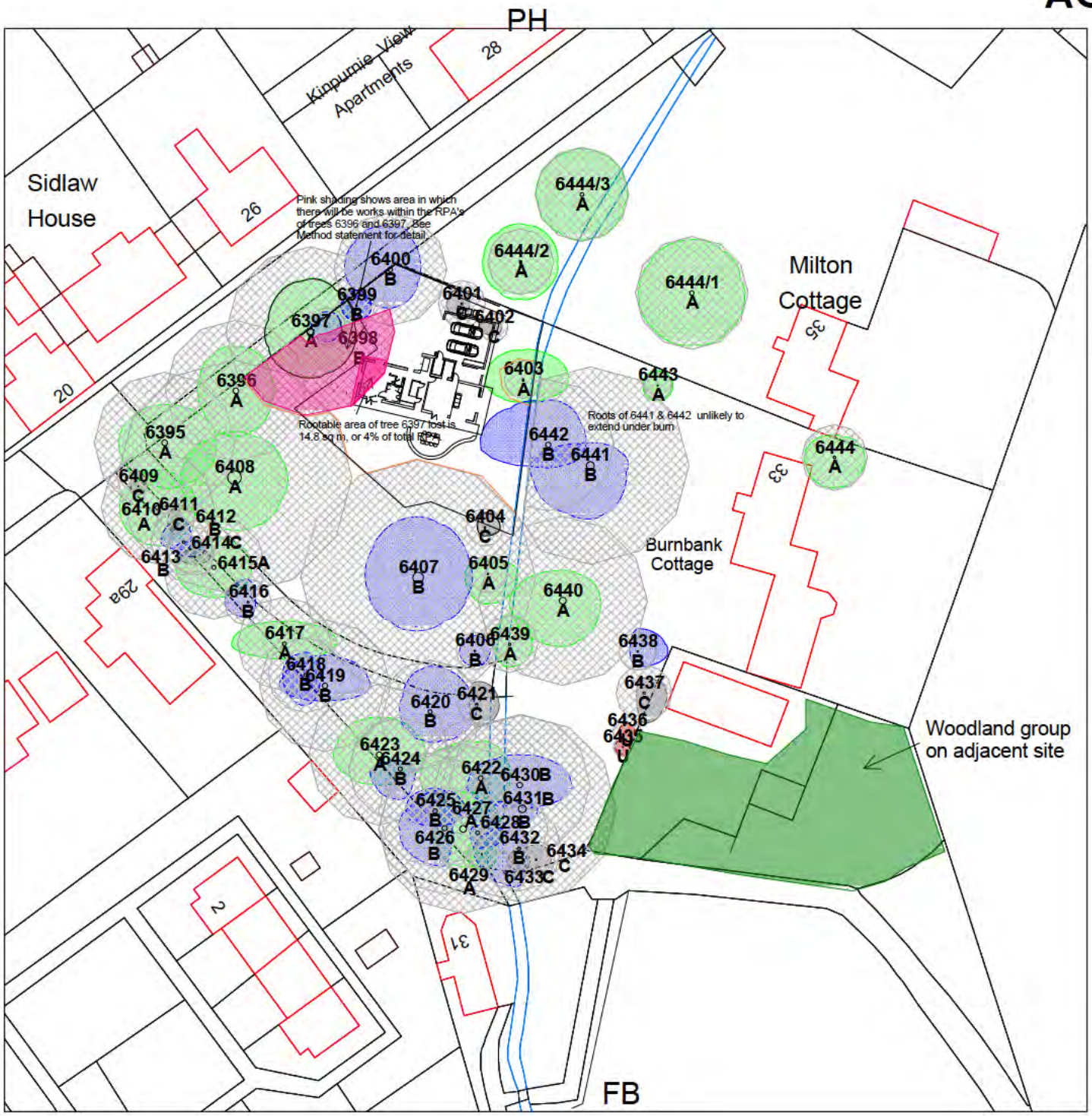


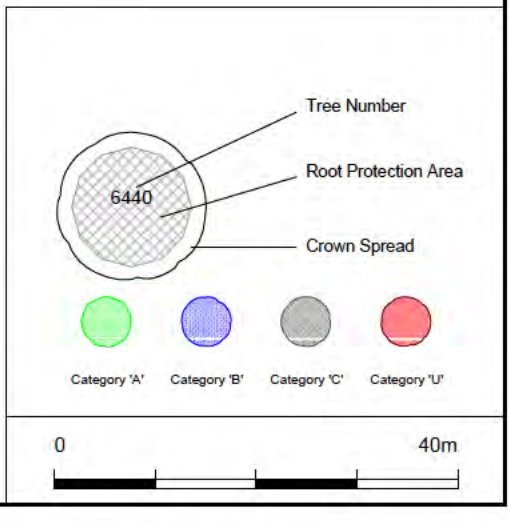


Keith Logie MICFor
Chartered Forester

Burnbank - Tree Positions

SCALE : 1 : 750 @ A4	DATE : 2/13/2023	N
MAP FILENAME : Newtyle tree positions		



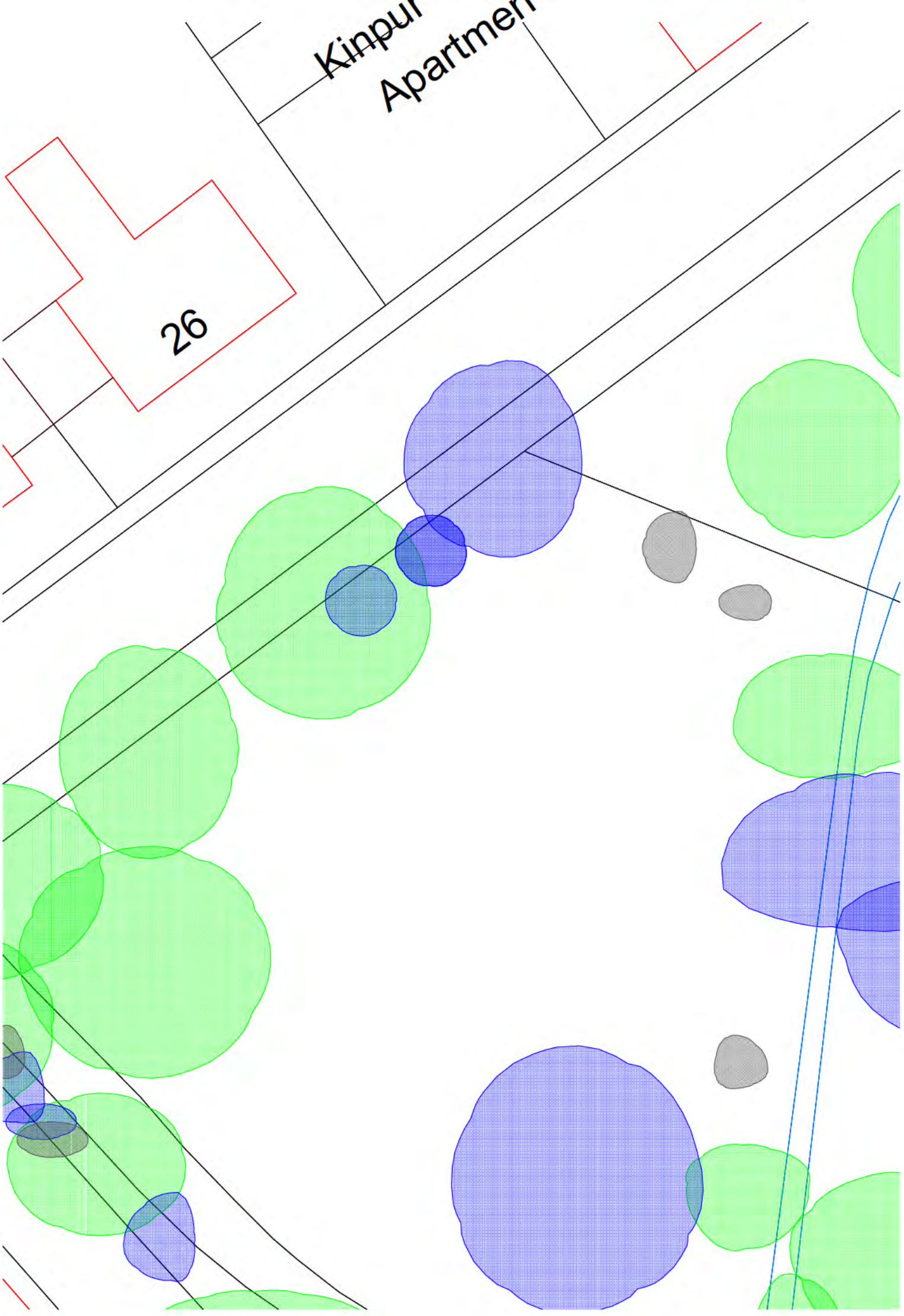


Keith Logie MICFor

Chartered Forester

Burnbank - Tree Protection rev B

SCALE : 1 : 750 @ A4	DATE : 9/22/2023	N
MAP FILENAME : Newtyle tree protection rev B		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Burnbank - Schedule

Tag no	Species	DBH	Canopy	Height	BSCat	Condition	Age	Stems	SULE	Comments	Recommendation
6395	Lime-common	0.75	7	23	A1	Good	M-A	1	>40	Restricted rooting.Minor dead wood (<50mm dia).Small amounts of dead wood. Hard against wall	Complete dead-wooding.
6396	Lime-common	0.75	6	23	A1	Good	M-A	1	>40	Ivy growth obscuring detailed assessment.Minor dead wood (<50mm dia).Very upright.	
6397	Lime-common	0.9	7	24	A1	Good	M-A	1	>40	Ivy growth obscuring detailed assessment.Minor dead wood (<50mm dia).Ded wood is quite minor and confined to a few branch tips. Several bird nests high in	
6398	Western red cedar	0.2	2	6	B1	Good	E-M	1	20 to 40	Young tree 1.5m from base of lime	
6399	Western red cedar	0.2	2	7	B1	Good	E-M	1	20 to 40	Young tree4m from 6398. 7 m from 6400	
6400	Lime-common	0.6	6	21	B1	Fair	M	1	20 to 40	Excessive epicormic growth.Minor dead wood (<50mm dia).Minor cavity/decay in main scaffold limb.Massive epicormic growth at base. Some decay on branches at old pruning wounds	Complete dead-wooding.
6401	Laburnum	0.25	2	<5	C1	Poor	M	1	10 to 20	Stem lean.Minor dead wood (<50mm dia).Has been pollarded.	
6402	Rowan	0.15	1	<5	C1	Poor	E-M	1	10 to 20	Topped at 4m	
6403	Maple-Japanese	0.2	6	5	A1	Good	M	3	>40	By nurn, spreading. Crown close to BT I/h line	
6404	Cherry-flowering	0.2	2	5	C1	Poor	M	3	10 to 20	Poor crown structure.Topped at 4m	
6405	Willow-weeping	0.2	4	<5	A1	Good	E-M	1	>40	Branch stubs from past pruning/storm damage.Nice salix alba tristis o/h burn	
6406	Cypress-Lawson cv	0.2	2	<5	B1	Good	E-M	1	20 to 40		
6407	Cypress-Lawson	1.4	8	26	B1	Fair	M-A	1	20 to 40	Minor decay in buttress.Included bark, compression fork.Min decay between buttresses n side. Forks into 3 at 7m, bigger union ok, smaller is compressed	Monitor decay at regular intervals.

Tag no	Species	DBH	Canopy	Height	BSCat	Condition	Age	Stems	SULE	Comments	Recommendation
6408	Cypress-Lawson	1.8	7	27	A1	Good	M-A	1	>40	Included bark, compression fork.2 main stems fork at 1.8m, forks again 6m. 7m from drive. Dbh 1.8m	
6409	Cypress-Lawson	0.1	2	<5	C1	Fair	Y	1	10 to 20	Canopy 1-sided.	
6410	Lime-common	0.6	5	22	A1	Fair	M	1	>40	Major dead wood (>50mm dia).D/w over drive and lane	Complete dead-wooding.
6411	Laburnum	0.2	2	5	C1	Fair	E-M	1	10 to 20	Topped at 4m. Remove chip piled at base	
6412	Cypress-Lawson	0.35	3	14	B1	Fair	M	1	20 to 40	Canopy 1-sided.Hard against wall	
6413	Cypress-Lawson	0.25	1	14	B1	Fair	M	1	20 to 40	Canopy suppressed.	
6414	Cypress-Lawson	0.2	1	12	C1	Fair	E-M	1	10 to 20	Canopy suppressed.Hard against wall	
6415	Lime-common	0.55	5	22	A1	Good	M	1	>40	Minor cavity/decay in stem.at 5m.Minor dead wood (<50mm dia).Poss cavity 5m west. Pile of chipped woody material at base	
6416	Cypress-Lawson	0.25	3	12	B1	Good	E-M	1	20 to 40	Hard against wall	
6417	Lime-common	0.5	7	21	A1	Good	M	1	>40	Minor dead wood (<50mm dia).Canopy compressed. Dead wood quite minor	
6418	Cypress-Lawson	0.4	4	13	B1	Fair	M	1	20 to 40	Co crowned with lime. 2 limbs through canopy. hard against wall	
6419	Lime-common	0.7	6	21	B1	Good	M	1	20 to 40	Damaged, hanging branch.Canopy compressed. 2 Doug fir removed to south.	Remove damaged branch.
6420	Beech	0.55	6	19	B1	Fair	M	1	20 to 40	Significant cavity/decay in stem.at 1m.Slight lean east. Decay 1-2m north. Reaction wood . Saprophyte colonising dead wood	Monitor decay at regular intervals.
6421	Laburnum	0.2	3	5	C1	Fair	M	1	10 to 20	Stem lean.Minor dead wood (<50mm dia).	
6422	Maple-Norway	0.65	8	20	A1	Fair	M	1	>40	Minor cavity/decay in stem.Minor dead wood (<50mm dia).	
6423	Lime-common	0.75	6	22	A1	Fair	M-A	1	>40	Excessive epicormic growth.Minor dead wood (<50mm dia).Damaged, hanging branch.Hard against wall . Bulge in wall to west	Remove damaged branch.
6424	Fir-Douglas	0.55	4	22	B1	Fair	M	1	20 to 40	Canopy suppressed.Stem has a kink in it, could remove	
6425	Fir-Douglas	0.6	4	23	B1	Fair	M	1	>40	Minor dead wood (<50mm dia).Canopy suppressed.Interlocking crowns	

Tag no	Species	DBH	Canopy	Height	BSCat	Condition	Age	Stems	SULE	Comments	Recommendation
6427	Fir-Douglas	0.9	5	24	A1	Fair	M-A	1	>40	Major dead wood (>50mm dia).Damaged, hanging branch.	Crown clean, remove dead wood, weak, broken branches.
6428	Larch	0.5	4	19	B1	Fair	M	1	20 to 40	Canopy suppressed.Canopy very 1 sided. Could remove	
6429	Cypress-Lawson	0.15	2	<5	A1	Good	E-M	1	>40		
6430	Maple-Norway	0.75	7	21	B1	Fair	M-A	1	20 to 40	Bark necrosis.Branch stubs from past pruning/storm damage.2 bird nests in crown.	
6431	Maple-Norway	1	9	20	B1	Fair	M-A	1	20 to 40	Bark necrosis.Canopy 1-sided.One main limb cut at 8m leaving other going west, unbalanced. Recent pruning here.	
6432	Birch-silver	0.45	6	14	B1	Good	M	1	20 to 40	Stem lean.Canopy 1-sided.	
6433	Cypress-Lawson	0.15	2	<5	C1	Fair	E-M	1	10 to 20		
6434	Cypress-Lawson	0.2	2	<5	C1	Fair	E-M	1	10 to 20	Maybe topped at 4m	
6435	Cypress-Lawson	0.1	1	<5	U	Dead	E-M	1	0		
6436	Cypress-Lawson	0.15	2	6	U	Dead	E-M	1	0		
6437	Cypress-Lawson	0.3	4	7	C1	Fair	E-M	1	10 to 20	Stem lean.Canopy 1-sided.Hard against wall. Maybe topped at 4m and regrown,	
6438	Kashmir rowan	0.2	4	5	B1	Fair	M	1	20 to 40	Canopy 1-sided.White berries	
6439	Birch-silver	0.3	4	13	A1	Good	M	1	>40	Excavations/level changes in root zone.Stem lean.Right by burn on slope but nice tree	
6440	Hemlock-western	0.9	6	27	A1	Good	M-A	1	>40	Fork at 4m union looks good. Well balanced crown. good tree	
6441	Cedar-deodar	1.05	7	23	B1	Fair	M-A	1	20 to 40	Minor dead wood (<50mm dia).Canopy suppressed.Canopy suppressed to north by birch. V straight. Decay in buttress to east up to 2m, bark becoming detached.	Carry out further investigation. Monitor decay at regular intervals.
6442	Birch-silver	0.7	9	18	B1	Good	M-A	1	20 to 40	Stem lean.Exceptionally large birch	
6443	Birch-silver	0.15	2	7	A1	Good	E-M	1	>40		
6444	Birch-silver	0.35	4	15	A1	Good	M	1	>40		
6444/1	Oak-pedunculate	0.6	7	12	A1	Good	M-A	1	>40	In neighbouring garden to north	
6444/2	Plum-purple leafed	0.35	5	8	A1	Good	M-A	1	>40	In neighbouring garden to north	
6444/3	Willow-weeping	0.5	6	12	A1	Good	M-A	1	>40	In neighbouring garden to north	

AC30

Millard
More than civil engineers

Proposed House on land at Burnbank, Newtyle, Angus

Flood Risk Assessment

Ref: 18518/AB/941

April 2024

REGISTRATION OF AMENDMENTS

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By

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CONTENTS

PLANS

1.0 Introduction

Millard Consulting have been instructed by Ms Maria Jemicz to carry out a Flood Risk Assessment on land at Burnbank, South Street, Newtyle in Angus. The site was previously part of the garden ground for a residential property at Burnbank. It is proposed to construct one new house on the site.

1.1 Scope and Methodology

The purpose of this assessment is to assess the 1 in 200 year flood risk to the site.

There is one watercourse in the vicinity of the site from which flood risk is to be considered; the Newtyle Burn. A 1D-2D linked hydraulic model of the watercourse and its flood plain has been constructed using Flood Modeller, and this will be utilised to predict the 1 in 200 year flood extent (including climate change) in the vicinity of the site.

The potential impact of climate change will also be quantified as part of the assessment. An appropriate climate change allowance will be applied in line with the SEPA document “Climate change allowances for flood risk assessment in land use planning” (SEPA, 2023). As part of this guidance, climate change allowances vary dependent on site location and catchment size, with specific values for each identified river basin region. The specific allowance applied and the associated modelling results are outlined in Section 5 of this report.

To enable the hydraulic model to be constructed cross sections have been surveyed by Douglas Land Surveys (DLS). DLS have also undertaken a topographical survey of the site and selected offsite areas.

This Flood Risk Assessment is carried out in accordance with the requirements of National Planning Framework 4 *(Scottish Government, 2023)*. This assessment uses a set of procedures originally set out in the Flood Estimation Handbook *(Institute of Hydrology, 1999)* and embodied in the FEH and WINFAP software packages currently used.

The assessment is prepared using our best engineering judgement but there are levels of uncertainty implicit in the historical data and methods of analysis. Details of the range of possible error in the methods of flood estimation are given in the Flood Estimation Handbook (FEH).

2.0 General Description of Site

The site at Burnbank is located at Ordnance Survey grid reference 329940, 741268, on the eastern edge of the village of Newtyle in Angus. The site location is shown in Figure 1 below:

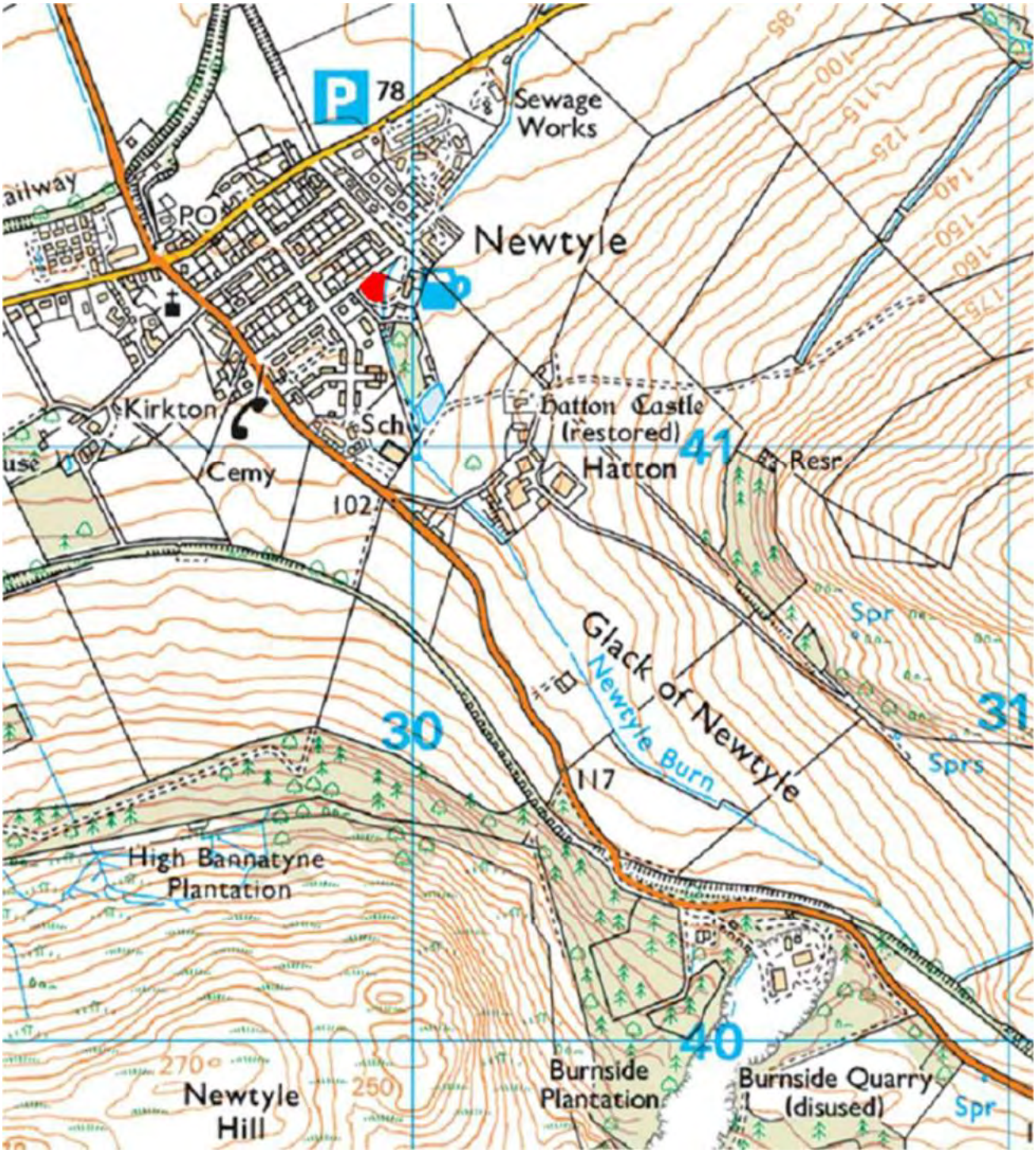


Figure 1 – Site Location Plan

The site is approximately 1700m^2 in size and is irregular in shape. Formerly part of the garden ground of Burnbank, the site is mainly covered with grass, with occasional trees. The site is bounded to the north west by South Street, to the south west by the driveway into Burnbank, to the south east by the Newtyle Burn and to the north east by neighbouring garden ground. A new access is to be formed from the site onto South Street.

A small outbuilding is the only building located on site at present.

The topography of the site slopes generally in a north easterly direction. The level difference across the site is approximately 1.6m from the higher, south western boundary to the lowest part of the site at its north eastern corner.

The Newtyle Burn flows along a straight course past the south eastern boundary of the site. The burn flows from higher ground in the Sidlaw Hills to the south east of the site and has an estimated catchment size of 3.3km^2 at the location of the site. As it passes the site the banks are generally covered with short grass.

There are several structures on the Newtyle Burn in the vicinity of the site which require to be considered as part of this flood risk assessment. They are listed below as follows:

- At the upstream end of the ground of Burnbank the Newtyle Burn is culverted for a length of approximately 6.5m. The culvert is of an old masonry form, and is rectangular in shape, approximately 1.5m wide and a varying height depending on bed level. At the centre of the downstream end of the culvert the soffit is approximately 0.9m above the bed of the watercourse. This culvert runs beneath the vehicular access into the neighbouring property of Dalnaglack. Above the downstream end of this culvert there is a high drystone boundary wall which runs between the grounds of Burnbank and Dalnaglack.
- Adjacent to the south eastern corner of the site the Newtyle Burn is bridged by the driveway into Burnbank. This bridge is a single span bridge with concrete abutments and an arched, drystone parapet. This bridge spans 1.86m, and the soffit was measured as being approximately 1m above the bed of the watercourse at its upstream side. At the downstream side of this bridge there is a step in the bed level of the channel of approximately 0.5m.
- 88m downstream of the Burnbank driveway bridge the watercourse enters a culvert. This culvert runs beneath Knox Close, which runs from South Street in a north easterly direction. The culvert is approximately 122m long, outfalling into another open section of the Newtyle Burn, flowing is a north easterly direction. This culvert changes form along its length, with the surveyed cross sections showing a sprung arch arrangement at the upstream end, and twin pipes at the downstream end. The sprung arch has been surveyed as being approximately 2m wide, with the centre of the arch 0.95m above the bed of the watercourse. A metal inlet grille was noted on the upstream side of the culvert, however it has been significantly damaged, likely by debris flowing along the watercourse, and it is now sitting at a 45 degree angle into the culvert inlet. The downstream end of the culvert is formed by twin pipes, surveyed as being 0.65m diameter. The culvert outfall is also protected by a metal grille which at the time of walkover in January 2024 was also damaged. The point at which the culvert cross section changes along its length is not known.
- In addition the bridge and culverts a weir is located approximately 1.1m upstream of the long culvert downstream of the site.

Ground levels above the inlet to the culvert beneath Knox Close sit at approximately 82.8m to 82.9m, approximately 1m below the lowest part of the site.

Photograph 1 – downstream end of the culvert which runs under the driveway of Dalnaglack. This photograph shows the Newtyle Burn as it enters the grounds of Burnbank.

Photograph 2 – looking downstream on the Newtyle Burn towards the bridge which takes the driveway of Burnbank over the watercourse. This photograph is taken from the same location as Photograph 1.

Photograph 3 – looking downstream on the Newtyle Burn from the driveway of Burnbank. The site is located beyond the green fence.

Photograph 4 – looking upstream from the upstream end of the culvert which runs beneath Knox Close. Sediment can be seen on the banks of the watercourse, assumed to have been deposited during a previous high flow event.

Photograph 5 – a view of the upstream end of the culvert which runs beneath Knox Close.

Photograph 6 – looking north east along Knox Close from South Street. The entrance to the culvert shown in Photograph 5 is located in the vicinity of the telegraph pole in the top right of this picture.

Photograph 7 – looking downstream on the Newtyle Burn at the downstream end of the long culvert running beneath Knox Close.

3.0 General Observations

A site visit was undertaken on 12th January 2024. During the site visit evidence of backing up at the upstream end of the long culvert downstream of the site was identified by sediment which had been left by floodwater in the vicinity of the culvert inlet. During the same walkover discussions with the client and another local resident confirmed anecdotally that floodwater has overtopped the culvert in the past, and that when this occurs, floodwater continues in a north easterly direction along Knox Close, away from the site.

The client advised that previously floodwater has flowed through the boundary wall between Burnbank and Dalnaglack in the vicinity of the house at Burnbank. According to the client this was likely due to a drainage issue within Dalnaglack.

From consideration of the topographical survey it can be said that if floodwater built up upstream of the culvert running beneath the access within the grounds of Dalnaglack, it would firstly overtop the right bank. Similarly at the bridge providing vehicular access to Burnbank, the right bank is lower.

4.0 Estimation of Flood Flows

In order to define the extent and water surface level of the applicable floodplain, we have made an assessment of 1 in 200 year flood flows in the Newtyle Burn using the FEH Rainfall Runoff Method outlined in the Flood Estimation Handbook (FEH), and the Revitalised Flood Hydrograph Method (ReFH2). The FEH Statistical Method has not been applied given the very small catchment size of the watercourse.

Catchment descriptors for the Newtyle Burn were downloaded from the FEH Web Service. The catchment size provided by the FEH Web Service was 2.94km^2, however the manual inspection of Ordnance Survey mapping found that the applicable catchment size was larger at 3.314km^2. As outlined in the Flood Estimation Handbook, the DPLBAR descriptor was recalculated for the larger catchment area. DLBAR was recalculated as follows:

AREA$^{0.548}$ = adjusted DPLBAR
$3.314^{0.548} = 1.928$

Final catchment descriptors are shown in Figure 2 below, while the watercourse catchment is shown in Figure 3 overleaf.

VERSION	"FEH CD-ROM"	Version	5.0.1	exported	14:01:22
CATCHMENT	GB	329950	741250	NO 29950	41250
CENTROID	GB	330521	740135	NO 30521	40135
AREA	3.314				
ALTBAR	180				
ASPBAR	355				
ASPVAR	0.17				
BFIHOST	0.636				
BFIHOST19	0.559				
DPLBAR	1.928				
DPSBAR	132.7				
FARL	1				
FPEXT	0.0255				
FPDBAR	0.216				
FPLOC	0.642				
LDP	3.23				
PROPWET	0.46				
RMED-1H	8.3				
RMED-1D	35.6				
RMED-2D	45.1				
SAAR	835				
SAAR4170	866				
SPRHOST	28.55				
URBCONC1990	0.094				
URBEXT1990	0.004				
URBLOC1990	0.048				
URBCONC2000	-999999				
URBEXT2000	0.0018				
URBLOC2000	-999999				
C	-0.01587				
D1	0.47436				
D2	0.39177				
D3	0.30912				
E	0.24541				
F	2.1781				
C(1km)	-0.015				
D1(1km)	0.473				
D2(1km)	0.389				
D3(1km)	0.324				
E(1km)	0.245				
F(1km)	2.168				

Figure 2 – Final catchment descriptors for the Newtyle Burn

Figure 3 – Manually derived Newtyle Burn catchment

The flow estimation process is outlined below.

4.1 FEH Rainfall Runoff Method

The Rainfall Runoff method relies on rainfall records rather than river flow records. Hence, if catchment characteristics are known or estimated, the method converts the theoretical design rainfall event of a known return period into a design flood event, with a peak of a known return period.

Flood Modeller software was used to undertake the Rainfall Runoff analysis, and a 1 in 200 year flood flow of 4.66m^3/s was estimated.

4.2 Revitalised Flood Hydrograph Method (ReFH2)

The second method utilised for the assessment of flood flows in the Newtyle Burn was the Revitalised Flood Hydrograph Method.

The ReFH2 model is comprised of three components; a loss model, a routing model and a baseflow model. The total rainfall, less the losses is input into the routing model, with results from the routing and baseflow models combined to provide a prediction of flow. The ReFH2 model is used in conjunction with a depth-duration-frequency model. In this instance, the FEH22 model was used to provide the rainfall input.

Using the ReFH2 software, a 1 in 200 year flood flow of 2.56m^3/s was calculated.

4.3 Flood Flows including Climate Change

The flood risk area applicable to the site is established through modelling the 1 in 200 year + climate change flood flow. As the site is within the “Tay” region in the document “Climate change allowances for flood risk assessment in land use planning Version 3 (SEPA, 2023), and the subject catchments are less than 30km^2 in size, an additional 39% should be applied to the rainfall estimated for the flood event.

In this instance the highest, most conservative flood flow estimate will be applied in the modelling analysis. The FEH Rainfall Runoff Method results in the highest estimated flood flows, hence an additional 39% has been applied to rainfall estimates generated by Flood Modeller. The addition of the climate change allowance results in a 1 in 200 year + climate change flood flow of 6.45m^3/s.

5.0 Predicted Flood Levels

5.1 Initial Model

Having estimated the 1 in 200 year + climate change flood flow in the Newtyle Burn, it is necessary to analyse the watercourses to establish predicted 1 in 200 year + climate change flood levels.

To establish predicted flood levels a 1D-2D linked hydraulic model has been developed using Flood Modeller software. Cross sections in the 1D domain were surveyed by Douglas Land Surveys, as was the topography which has been utilised to create the digital terrain model for the 2D domain.

Manning's n coefficients were selected for the site based on inspection of existing conditions, and comparison with tabulated descriptors in tables of Manning's values. The selected values for the 1D model were as follows:

Channels:

- Channel: 0.035
- Banks/floodplain: applied at various locations, as appropriate, were 0.03, 0.05 and 0.06

For the 2D model a global roughness of 0.1 was applied. This value is high for a significant proportion of the floodplain, however floodwater would flow through a drystone wall and occasional areas of shrubs. The boundary wall is drystone and hence porous. The model has therefore been run without the wall impeding flood flows. It has been assumed however that the house at Burnbank and the building in the north eastern corner of the grounds of Dalnaglack would be defended, with all floodwater having to flow across the floodplain, outwith the buildings.

Once appropriate Manning's values had been selected, boundary conditions at the downstream and upstream ends of the modelled length were applied. The model was run in an unsteady state, hence a flow hydrograph was applied at the upstream end of both watercourse, with the hydrograph having been generated using Flood Modeller software. At the downstream end a known water level of 82.8m has been applied, i.e. approximately the relief level above the upstream end of the downstream culvert. It has therefore been assumed in the model that floodwater has exceeded the capacity of the downstream culvert.

Figures 4 to 6 overleaf show model node locations, as well as the 2D model extent.

Figure 4 – Node locations, 1 of 2

Figure 5 – Node locations, 2 of 2

Figure 6 – 2D Active Area

Table 5.1 overleaf shows the predicted flood levels for a 1 in 200 year + climate change flood event. The model mass balance figures for this run were -0.28% and -1.2% for the 1D and 2D domains respectively, at the peak of the flood event.

Location	Flood Level (m AOD)
Newtyle_004	82.8
Newtyle_005	82.83
Newtyle_006	83.02
Newtyle_007	83.5
Newtyle_008	84.14
Newtyle_009	85.09
Newtyle_010	85.28
Newtyle_011	85.8
Newtyle_012	86.04
Newtyle_012.5	86.91
Newtyle_013	86.89
Newtyle_014	87.45
Newtyle_015	89.66

Table 5.1 – Predicted 1 in 200 year + CC flood levels

Figure 7 below shows the predicted 1 in 200 year + climate change flood extent from the 2D model domain in the vicinity of the site.

Figure 7 – Predicted 1 in 200 year + climate change flood extent from 2D model domain

The modelling results predict the majority of the site being flood free during a 1 in 200yr + climate change flood event, with the majority of out of bank flow predicted over the right bank of the watercourse. Mass balance figures from the model for this analysis were -0.28% and -1.2% for the 1D and 2D domains respectively, at the peak of the flood event.

5.2 Sensitivity Analysis

Sensitivity analyses were carried out to check the effect of a variation in flow rate, of variation in Manning's 'n' values, and of variation in downstream boundary condition.

5.2.1 Variation in Flowrate

The potential impact of an increase in 200 year + climate change flood flow of 20% has been assessed. Mass balance figures from the model for this analysis were -0.85% and -0.3% for the 1D and 2D domains respectively at the peak of the flood event. The results of this analysis are compared directly with the 1 in 200 year + climate change results in Table 5.2 below:

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC + 20% Flood Level (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.84	0.01
Newtyle_006	83.02	83.06	0.04
Newtyle_007	83.5	83.55	0.05
Newtyle_008	84.14	84.22	0.08
Newtyle_009	85.09	85.22	0.13
Newtyle_010	85.28	85.42	0.14
Newtyle_011	85.8	85.92	0.12
Newtyle_012	86.04	86.15	0.11
Newtyle_012.5	86.91	87.03	0.12
Newtyle_013	86.89	86.96	0.07
Newtyle_014	87.45	87.53	0.08
Newtyle_015	89.66	89.72	0.06

Table 5.2 – Comparison between predicted 1 in 200 Year + CC and 1 in 200 year + CC + 20% flood levels

The above table shows a predicted increase in flood level with an increase in flood flow of 20%. The predicted increase in flood level is small however, with a maximum level variation of 0.14m.

Predicted 2D flood extents in the vicinity of the site from this analysis are shown in Figure 8 overleaf.

Figure 8 – Predicted 1 in 200yr + CC + 20% 2D flood extents

5.2.2 Variation in Manning's n

Sensitivity of the model to changes in Manning's n were tested, by increasing the initial values by 20%. Mass balance figures from the model for this analysis were -0.84% and -0.6% for the 1D and 2D domains respectively, at the peak of the flood event. The results of this analysis are shown in Table 5.3 overleaf:

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with increased roughness (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.84	0.01
Newtyle_006	83.02	83.06	0.04
Newtyle_007	83.5	83.55	0.05
Newtyle_008	84.14	84.22	0.08
Newtyle_009	85.09	85.19	0.1
Newtyle_010	85.28	85.39	0.11
Newtyle_011	85.8	85.88	0.08
Newtyle_012	86.04	86.1	0.06
Newtyle_012.5	86.91	86.96	0.05
Newtyle_013	86.89	86.97	0.08
Newtyle_014	87.45	87.51	0.06
Newtyle_015	89.66	89.72	0.06

Table 5.3 – Assessment of potential impact of increased roughness

2D flood extents predicted in the vicinity of the site for the roughness sensitivity model are shown in Figure 9 overleaf.

Figure 9 – Predicted 1 in 200yr + CC flood extent from 2D model domain with an increase in roughness of 20%

5.2.3 Variation in Downstream Boundary Level

Sensitivity of the model to changes in downstream boundary level were tested, by increasing the level from 82.8m to 83m. Mass balance figures from the model for this analysis were -0.28% and 0.3% for the 1D and 2D domains respectively at the peak of the flood event. The results of this analysis are shown in Table 5.4 below. It should be noted that the 2D active area was reduced at its downstream end for this analysis to improve mass balance and model stability.

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with adjusted downstream boundary level (m AOD)	Variation (m)
Newtyle_004	82.8	83	0.2
Newtyle_005	82.83	83	0.17
Newtyle_006	83.02	83.06	0.04
Newtyle_007	83.5	83.5	0
Newtyle_008	84.14	84.14	0
Newtyle_009	85.09	85.09	0
Newtyle_010	85.28	85.28	0
Newtyle_011	85.8	85.8	0
Newtyle_012	86.04	86.04	0
Newtyle_012.5	86.91	86.91	0
Newtyle_013	86.89	86.89	0
Newtyle_014	87.45	87.45	0
Newtyle_015	89.66	89.66	0

Table 5.4 – Assessment of potential impact of decreased downstream boundary slope

5.3 Flood Levels including Blockage

The potential impact of a reduction in culvert opening of 25% at the culvert running beneath the driveway of Dalnaglack has been assessed. Mass balance figures from the model for this analysis were -0.29% and -0.4% for the 1D and 2D domains respectively, at the peak of the flood event. The results of this analysis are shown in the table below.

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with 25% reduction in span on culvert running beneath driveway into Dalnaglack (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.83	0
Newtyle_006	83.02	83.02	0
Newtyle_007	83.5	83.5	0
Newtyle_008	84.14	84.14	0
Newtyle_009	85.09	85.1	0.01
Newtyle_010	85.28	85.3	0.02
Newtyle_011	85.8	85.82	0.02
Newtyle_012	86.04	86.04	0
Newtyle_012.5	86.91	87.02	0.11
Newtyle_013	86.89	86.95	0.06
Newtyle_014	87.45	87.46	0.01
Newtyle_015	89.66	89.66	0

Table 5.5 – 200yr + CC Flood Levels with 25% reduction in span of culvert at node Newtyle_012.5

2D flood extents in the vicinity of the site predicted for the blockage model are shown in Figure 10 overleaf.

Figure 10 – Predicted 1 in 200yr + CC flood extent from 2D model domain with a 25% reduction in span in the culvert running beneath the driveway of Dalnaglack

The potential impact of a reduction in culvert opening of 25% at the bridge crossing the watercourse at the driveway to Burnbank has been assessed. Mass balance figures from the model for this analysis were -1.49% and -1.1% for the 1D and 2D domains respectively, at the peak of the flood event. The results of this analysis are shown in the table overleaf.

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with 25% reduction in span on bridge crossing driveway into Burnbank (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.83	0
Newtyle_006	83.02	83.02	0
Newtyle_007	83.5	83.5	0
Newtyle_008	84.14	84.14	0
Newtyle_009	85.09	85.09	0
Newtyle_010	85.28	85.91	0.63
Newtyle_011	85.8	85.96	0.16
Newtyle_012	86.04	86.09	0.05
Newtyle_012.5	86.91	86.93	0.02
Newtyle_013	86.89	86.9	0.01
Newtyle_014	87.45	87.45	0
Newtyle_015	89.66	89.66	0

Table 5.6 – 200yr + CC Flood Levels with 25% reduction in span of culvert at node Newtyle_010

Figure 11 below shows the predicted 2D 1 in 200 year + climate change flood extents including the 25% reduction in span at the bridge crossing the Newtyle Burn at the driveway to Burnbank.

Figure 11 – Predicted 1 in 200yr + CC flood extent from 2D model domain with a 25% reduction in span at the bridge crossing the watercourse at the driveway to Burnbank

6.0 Discussion and Proposed Mitigation

As noted earlier in this report, there is a high, drystone boundary wall which separates the garden ground of Burnbank from that of Dalnaglack to the south. The model predicts that floodwater would overtop the banks of the Newtyle Burn, with the majority flowing in a north easterly direction, and not impacting the development site. The boundary wall is clearly not a flood defence feature, and is porous, hence the model has been run without the wall in place. Anecdotally it has been mentioned that water has flowed through the wall in the past, thought to be due to a drainage issue within the grounds of Dalnaglack. The baseline modelling therefore does not include flow impedance from the boundary wall. The predicted 1 in 200 year + climate change flood extent, including modelled blockages at the Burnbank driveway bridge and the Dalnaglack driveway culvert, are shown on drawing 18518/21/001, enclosed within the “Plans” section of this report.

With the baseline model results the vast majority of the site is predicted to be flood free, and a flood free egress route is available via South Street.

The driveway of Dalnaglack rises slightly from where it crosses the Newtyle Burn, in a north westerly direction. Should however the boundary wall provide significant impedance to flood flows, it is acknowledged that floodwater could potentially flow down the driveway of Dalnaglack and onto South Street. In the event that this scenario occurred, there would be a shallow flow of water flowing in a north easterly direction along South Street. The site itself sits higher than South Street, and hence would not be flooded from the public road.

The site is deemed developable with respect to flood risk, however mitigation measures are still required. The proposed house must be situated outwith the predicted flood extent. Additionally there should be no landraising within the predicted flood extent.

The new house should have a finished floor level no lower than 84.8m AOD.

It is recommended that flood resilient materials and construction methods should be utilised for the development, and the floor level should be set with an upstand to surrounding finished ground levels. A minimum upstand of 0.3m is suggested. The use of solid floor construction is recommended.

Surface water from the development should be drained using sustainable drainage systems.

7.0 Conclusions

It is concluded that the majority of the site is outwith the predicted 1 in 200 year + climate change flood extent, and hence site is developable with respect to flood risk. Flood free egress from the site is also predicted to be available during the aforementioned flood event.

The following mitigation measures should be incorporated into the development:

- The new house should be set outwith the flood extent shown on drawing 18518/21/001
- The new house should have a finished floor level no lower than 84.8m AOD, while the floor should also be set with a suitable upstand above finished surrounding ground levels. An upstand of no less than 0.3m is suggested.
- Flood resilient materials and construction methods are recommended for the proposed development given it is to be located close to the flood plain of the Newtyle Burn. In particular, the use of a solid floor construction is recommended.

We have used our best engineering judgement in this Assessment, and our calculations have been carried out using the Flood Estimation Handbook, WINFAP, Flood Modeller and other standard hydrological methods. We note that as with all such Flood Risk Assessments the accuracy of the results is only as good as the data and statistical techniques used.

8.0 References

i. Flood Estimation Handbook, Duncan Reed, CEH Institute of Hydrology, Wallingford, 1999.

ii. National Planning Framework 4, Scottish Government, 2023

iii. ReFH 2.3, Wallingford Hydrosolutions, 2019

iv. Climate change allowances for flood risk assessment in land use planning Version 3, SEPA, 2023

v. FEH Web Service, UK Centre for Ecology and Hydrology, 2023

vi. Flood Modeller, Jacobs, Version 7.0.8774.19121

Appendix A: Results from ReFH2 Flow Estimation

UK Design Flood Estimation

Generated on 29 February 2024 20:34:46 by abraid
Printed from the ReFH2 Flood Modelling software package, version 4.0.8560.23190

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

Site details Checksum: F610-2262

Site name: FEH_Catchment_Descriptors_329950_741250_v5_0_1

Easting: 329950

Northing: 741250

Country: Scotland

Catchment Area (km²): 3.31 [2.94]*

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 200 year 1.39 CC

Summary of results

Rainfall - FEH22 (mm):	79.72	Total runoff (ML):	42.39
Total Rainfall (mm):	52.85	Total flow (ML):	123.13
Peak Rainfall (mm):	10.30	Peak flow (m³/s):	3.77

Parameters

Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.
** Indicates that the user locked the duration/timestep*

Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	03:15:00	No
Timestep (hh:mm:ss)	00:15:00	No
SCF (Seasonal correction factor)	0.69	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Winter	No
Climate change factor	1.39	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	90.17	No
Cmax (mm)	482.97	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	1.78	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m^3/s)	0.06	No
BL (hr)	27.98	No
BR	1.91	No

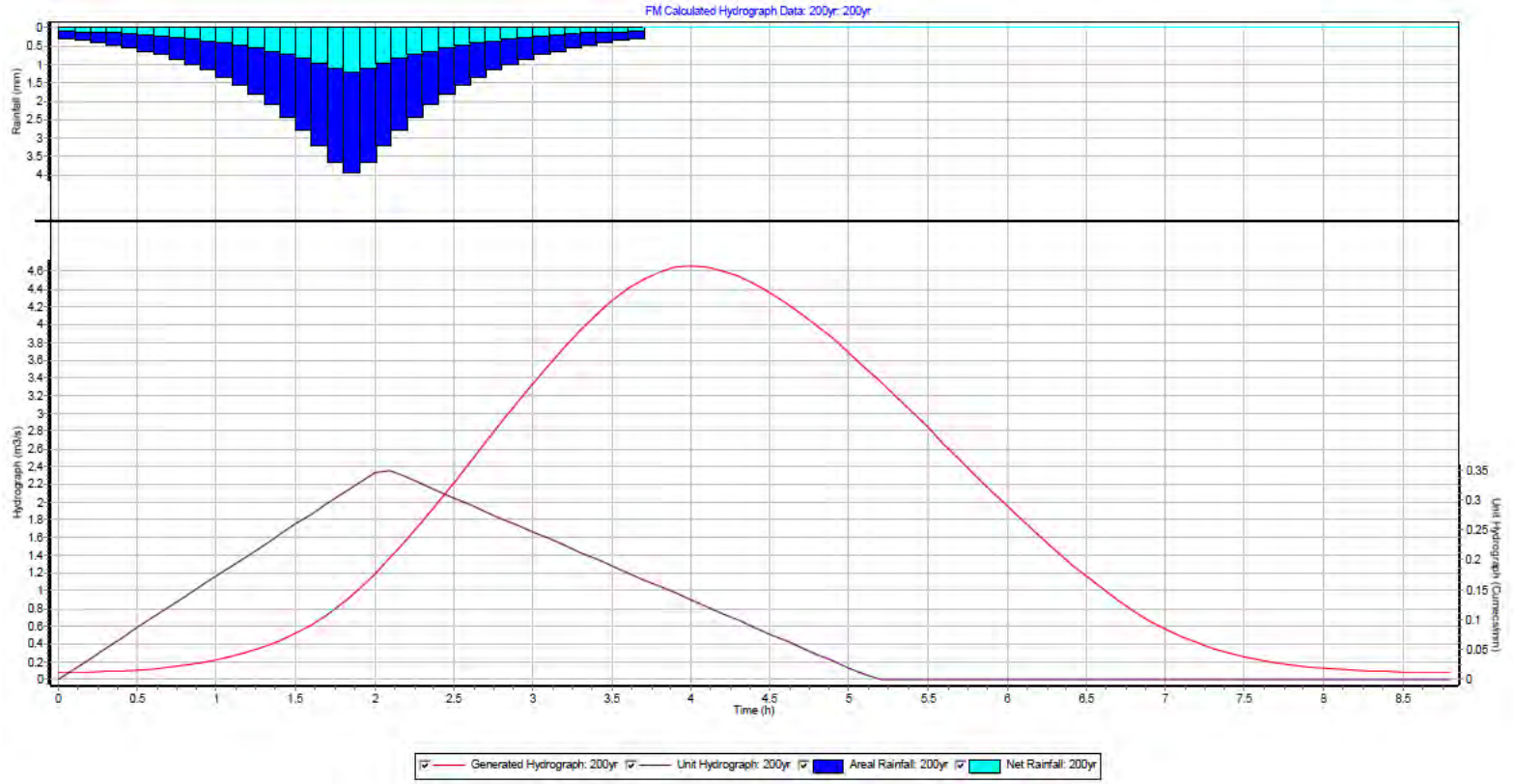
Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m^3/s)	0	No
Exporting drained area (km^2)	0	No
Urban area (km^2)	0.01	No
Urbext 2000	0	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Appendix B: Results from FEH Rainfall Runoff Flow Estimation

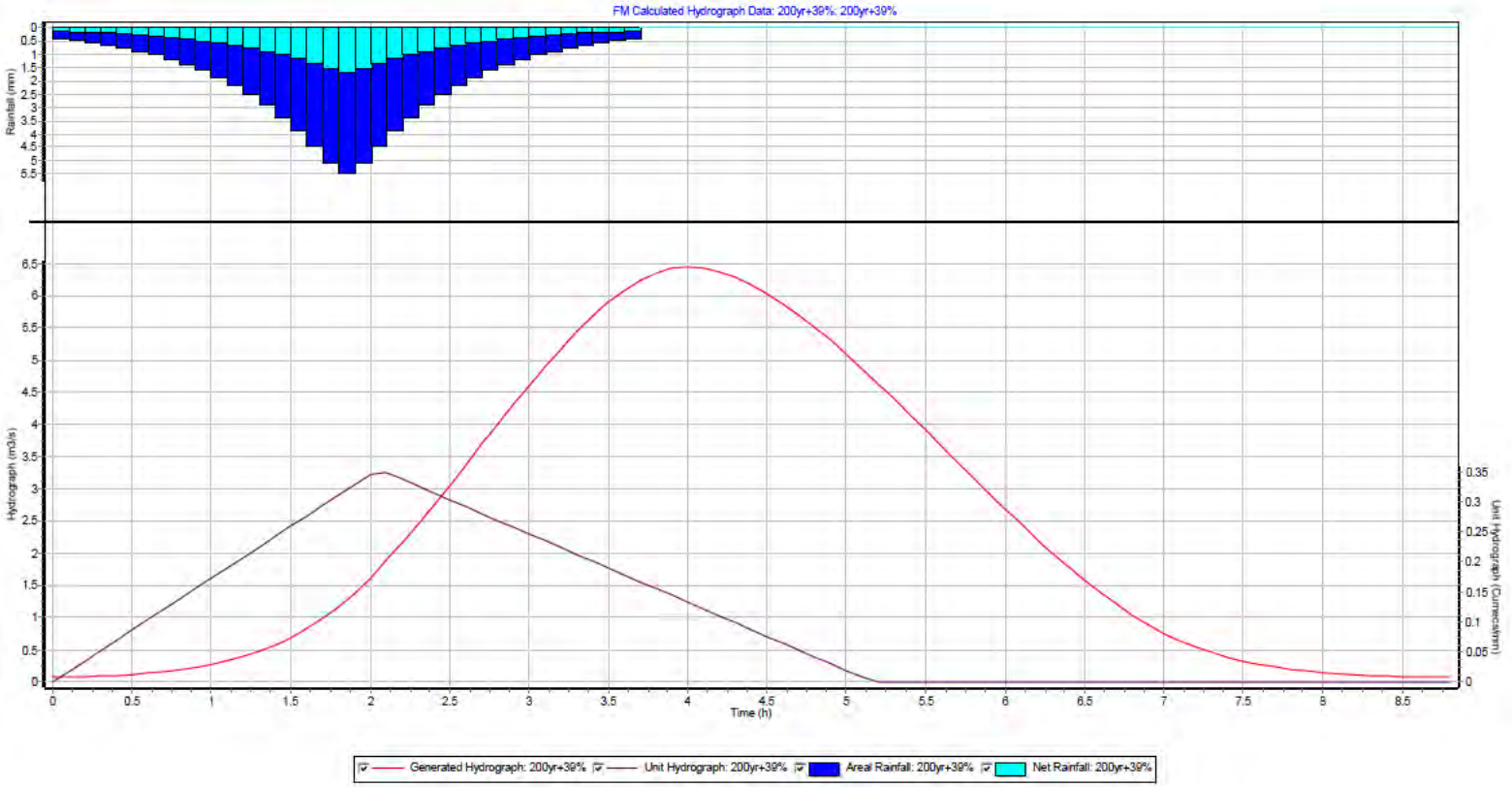
```
FILE=2825.dat Flood Modeller VER=5.1.0.8423
 ************************************************************
 Flood Modeller
 ************************************************************

 HYDROLOGICAL DATA

 Catchment: 200yr
 ************************************************************
 Catchment Descriptors
 ************************************************************
 Easting        :    329950 Northing       :    741250
 Area           :     3.314 km2
 DPLBAR         :     1.928 km
 DPSBAR         :   132.700 m/km
 PROPWET        :     0.460
 SAAR           :   835.000 mm
 Urban Extent   :     0.004
 c              :    -0.016
 d1             :     0.474
 d2             :     0.392
 d3             :     0.309
 e              :     0.245
 f              :     2.178
 SPR            :    28.550 %
 ************************************************************
 Summary of estimate using Flood Estimation Handbook rainfall-runoff method
 ************************************************************
 Estimation of T-year flood
 ==========================
 Unit hydrograph time to peak   :     2.051 hours
 Instantaneous UH time to peak  :     2.001 hours
 Data interval                  :     0.100 hours
 Design storm duration          :     3.700 hours
 Critical storm duration        :     3.763 hours
 Return period for design flood :   200.000 years
 requires rain return period    :   246.667 years
 ARF                            :     0.963
 Design storm depth             :    54.491 mm
 CWI                            :   119.500
 Standard Percentage Runoff     :    28.550 %
 Percentage runoff              :    30.197 %
 Snowmelt rate                  :     0.000 mm/day
 Unit hydrograph peak           :     0.356 (m3/s/mm)
 Quick response hydrograph peak :     4.582 m3/s
 Baseflow                       :     0.077 m3/s
 Baseflow adjustment            :     0.000 m3/s
 Hydrograph peak                :     4.660 m3/s
 Hydrograph adjustment factor   :     1.000

 Flags
 =====
 Unit hydrograph flag           : FSRUH
```

```
Tp flag                         : FEHTP
Event rainfall flag             : FEHER
Rainfall profile flag           : WINRP
Percentage Runoff flag          : FEHPR
Baseflow flag                   : F16BF
CWI flag                        : FSRCW
************************************************************
```

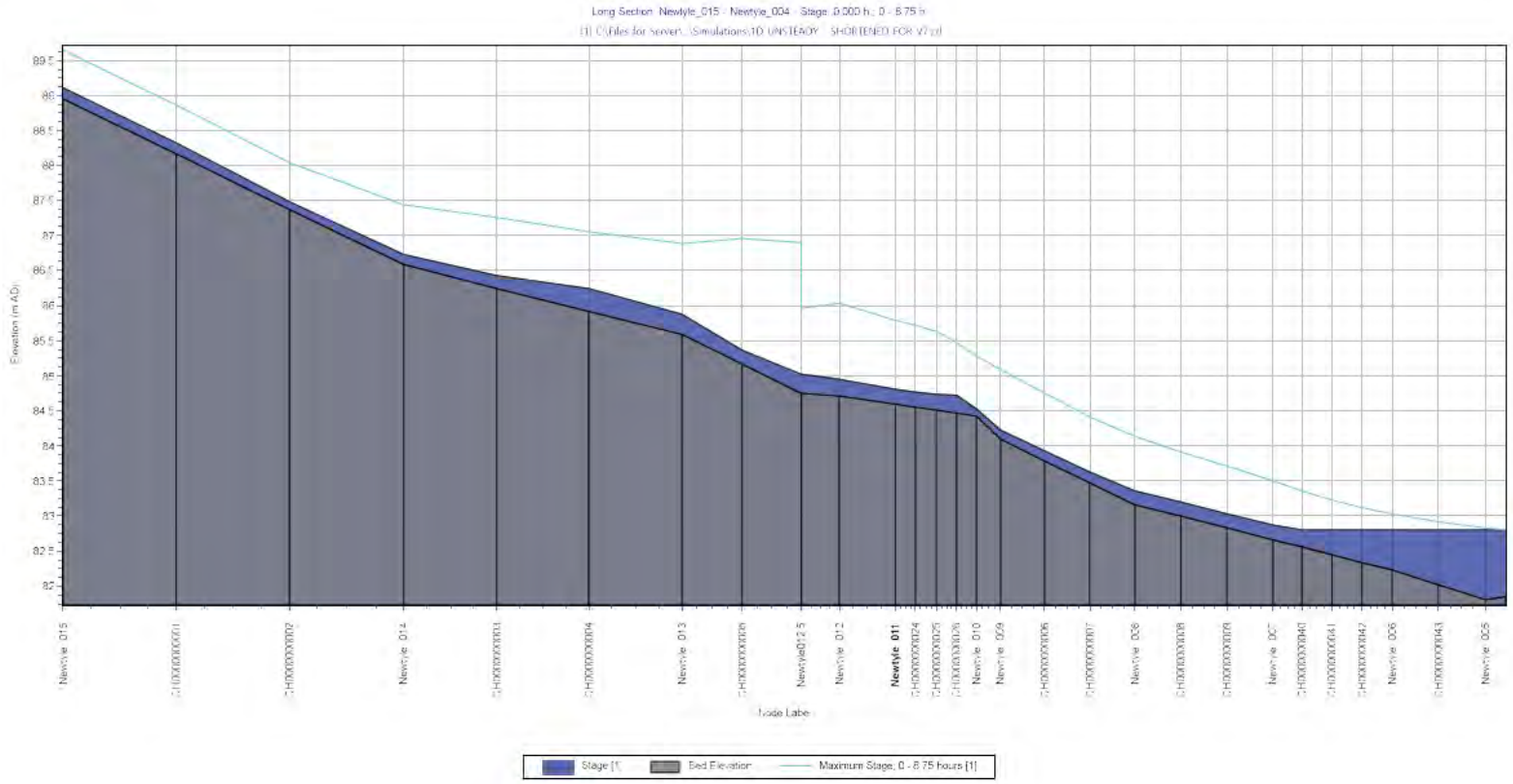

FM Calculated Hydrograph Data: 200yr: 200yr
Rainfall (mm)
Hydrograph (m3/s)
Unit Hydrograph (Cumecs/mm)
Time (h)
Generated Hydrograph: 200yr
Unit Hydrograph: 200yr
Areal Rainfall: 200yr
Net Rainfall: 200yr

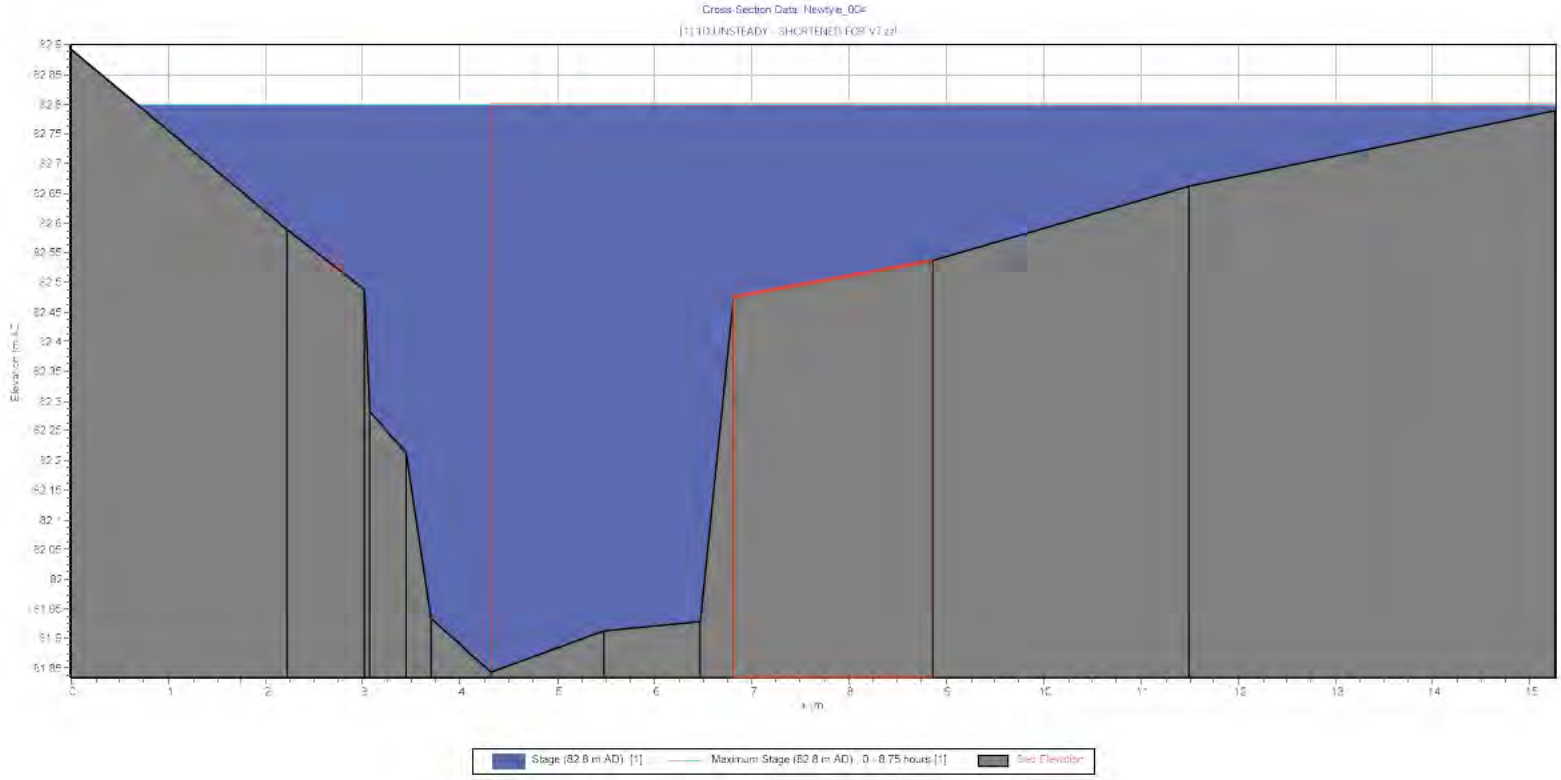
```
FILE=D33D.dat Flood Modeller VER=5.1.0.8423
 ************************************************************
 Flood Modeller
 ************************************************************

 HYDROLOGICAL DATA

 Catchment: 200yr+39%
 ************************************************************
 Catchment Descriptors
 ************************************************************
 Easting        :    329950 Northing       :    741250
 Area           :     3.314 km2
 DPLBAR         :     1.928 km
 DPSBAR         :   132.700 m/km
 PROPWET        :     0.460
 SAAR           :   835.000 mm
 Urban Extent   :     0.004
 c              :    -0.016
 d1             :     0.474
 d2             :     0.392
 d3             :     0.309
 e              :     0.245
 f              :     2.178
 SPR            :    28.550 %
 ************************************************************
 Summary of estimate using Flood Estimation Handbook rainfall-runoff method
 ************************************************************
 Estimation of T-year flood
 ==========================
 Unit hydrograph time to peak   :     2.051 hours
 Instantaneous UH time to peak  :     2.001 hours
 Data interval                  :     0.100 hours
 Design storm duration          :     3.700 hours
 Critical storm duration        :     3.763 hours
 Return period for design flood :   200.000 years
 requires rain return period    :   246.667 years
 ARF                            :     0.963
 Design storm depth             :    54.491 mm
 CWI                            :   119.500
 Standard Percentage Runoff     :    28.550 %
 Percentage runoff              :    30.197 %
 Snowmelt rate                  :     0.000 mm/day
 Unit hydrograph peak           :     0.356 (m3/s/mm)
 Quick response hydrograph peak :     6.369 m3/s
 Baseflow                       :     0.077 m3/s
 Baseflow adjustment            :     0.000 m3/s
 Hydrograph peak                :     6.446 m3/s
 Hydrograph adjustment factor   :     1.000

 Flags
 =====
 Unit hydrograph flag           : FSRUH
```

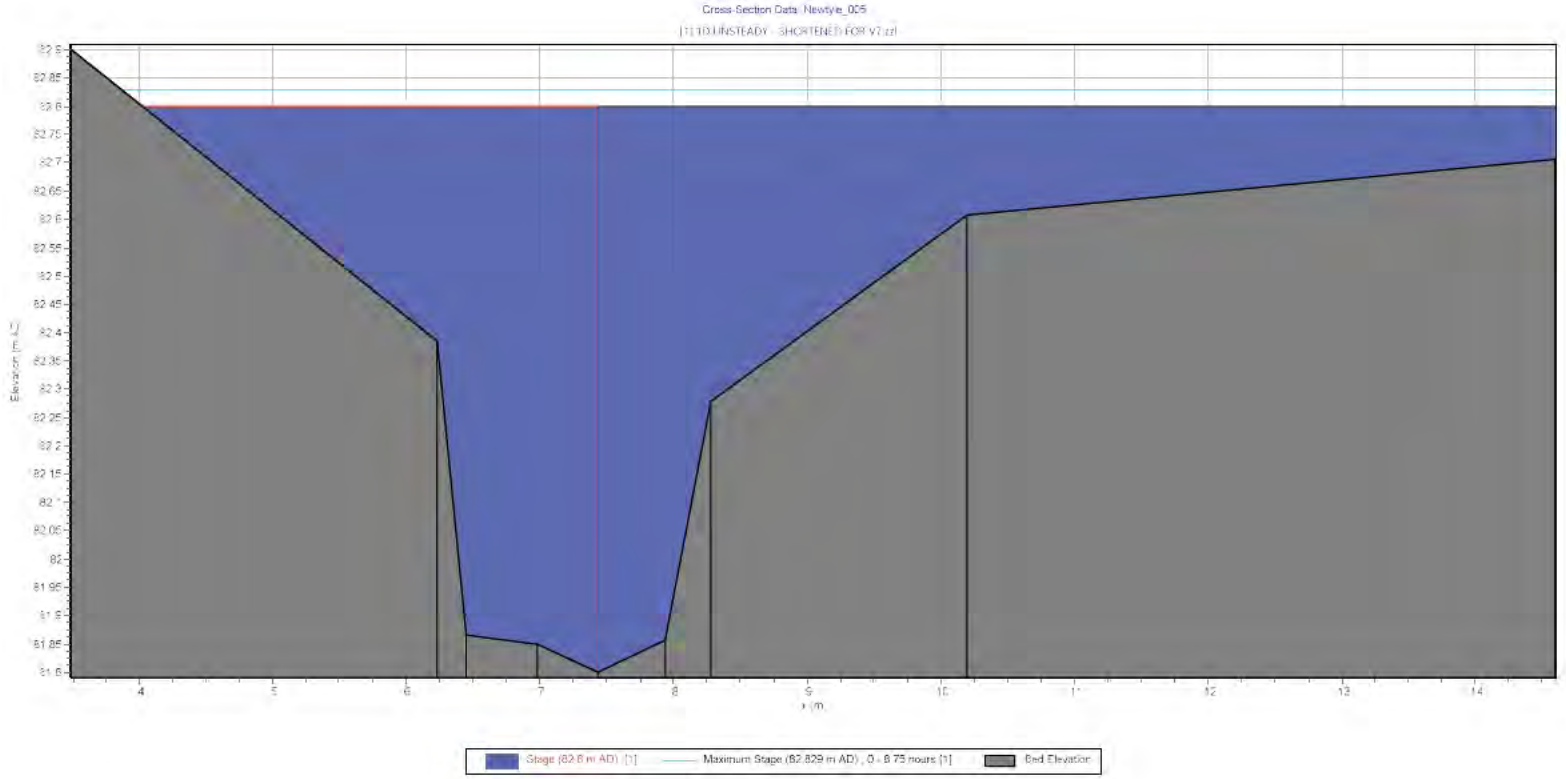
```
Tp flag                         : FEHTP
Event rainfall flag             : FEHER
Rainfall profile flag           : OBSRP
Percentage Runoff flag          : FEHPR
Baseflow flag                   : F16BF
CWI flag                        : FSRCW
************************************************************
```

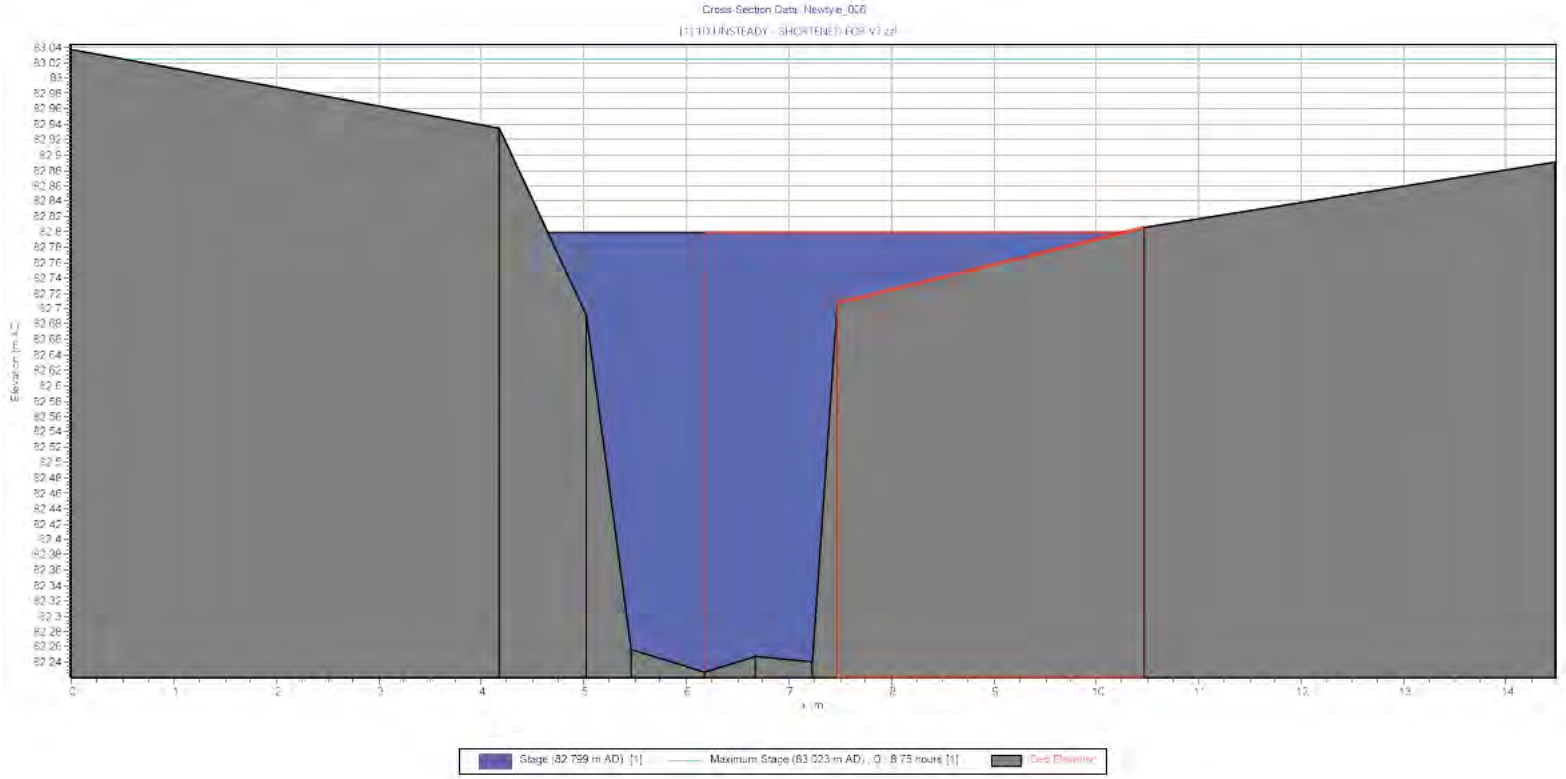

FM Calculated Hydrograph Data: 200yr+39%: 200yr+39%
Rainfall (mm)
Hydrograph (m3/s)
Unit Hydrograph (Cumecs/mm)
Time (h)
Generated Hydrograph: 200yr+39%
Unit Hydrograph: 200yr+39%
Areal Rainfall: 200yr+39%
Net Rainfall: 200yr+39%

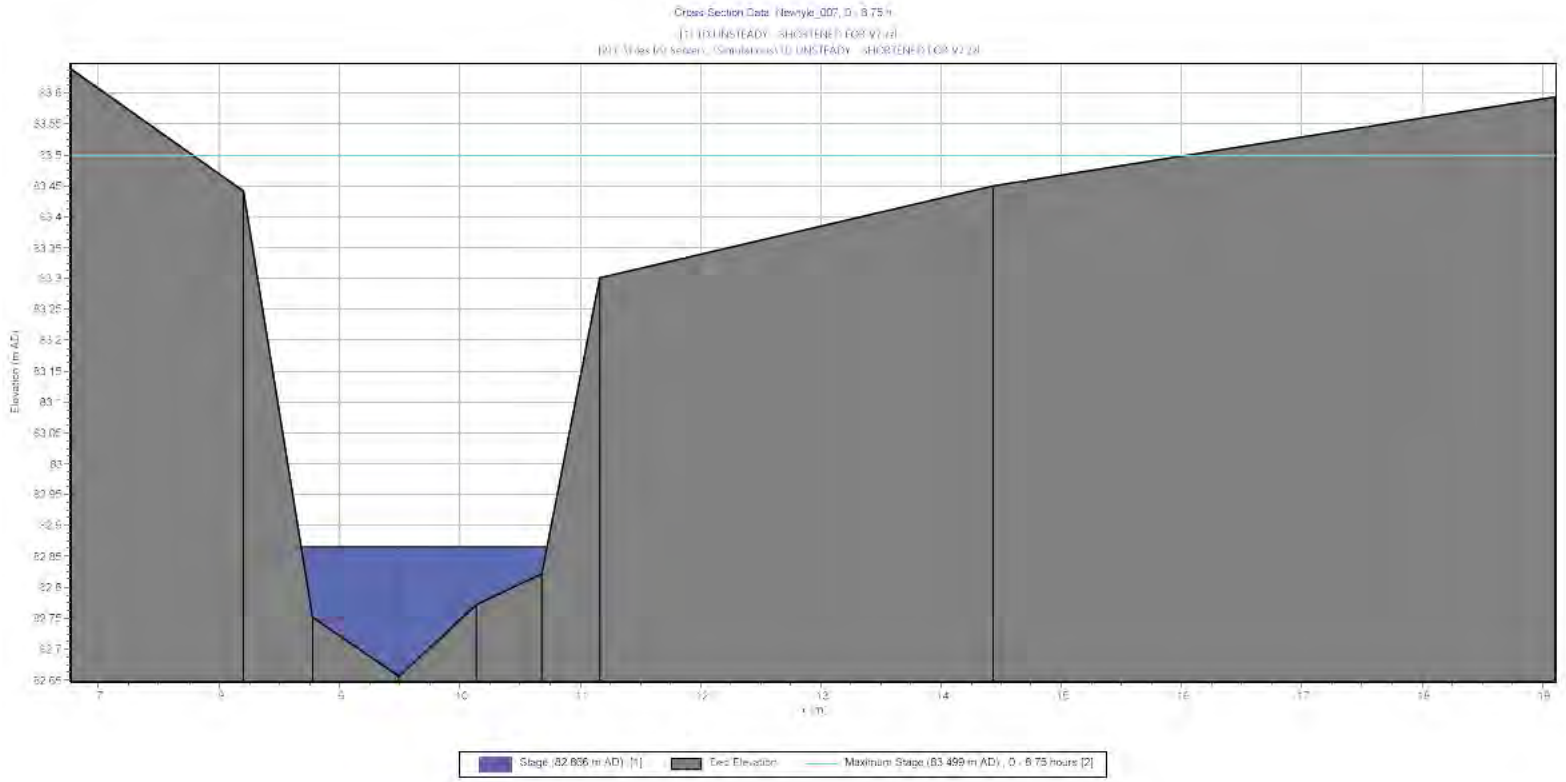
Appendix C: Output from Hydraulic Model

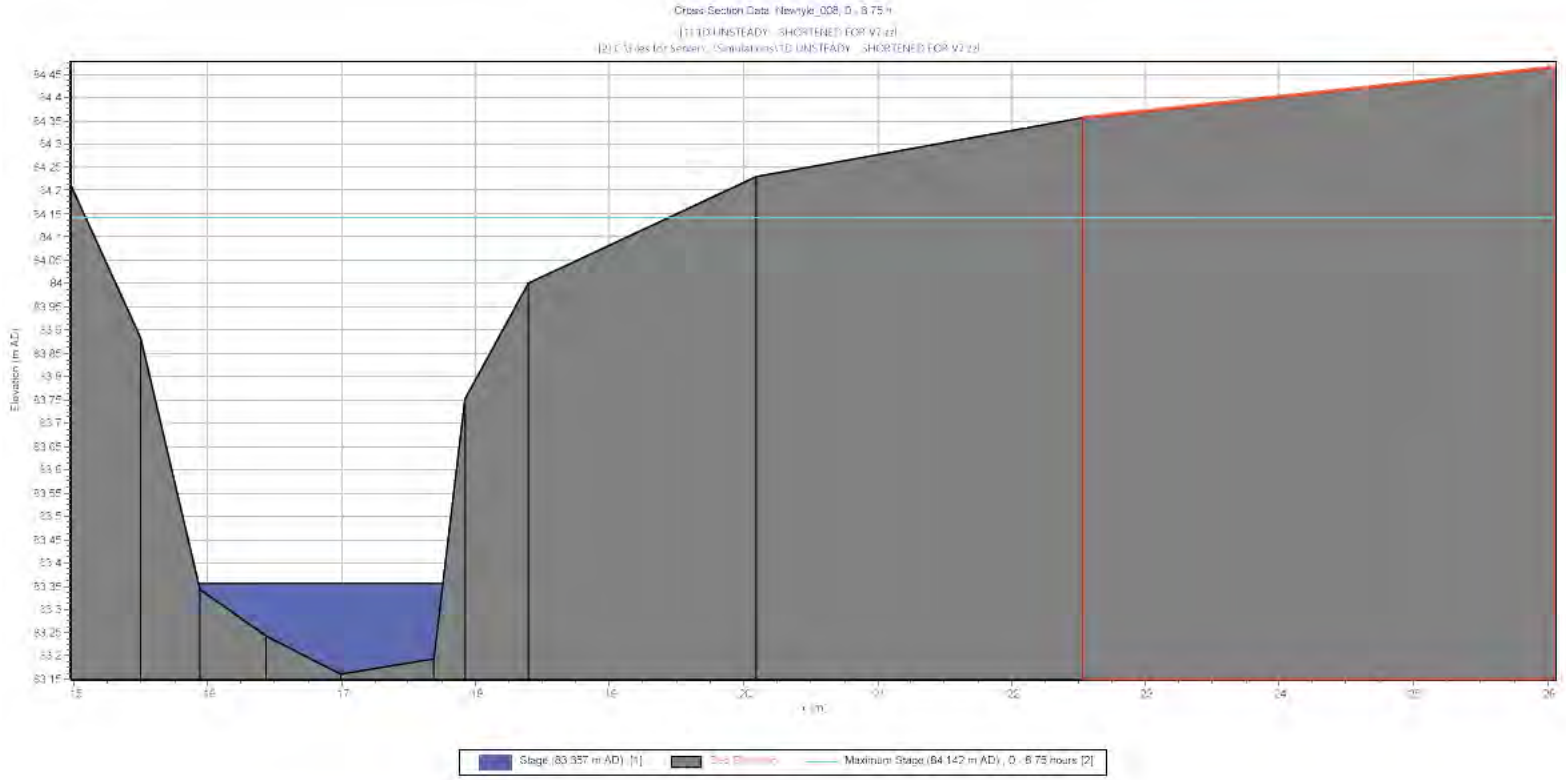

Long Section: Newlyle_015 - Newlyle_004 - Stage: 0.000 h, 0 - 8.75 h
[1] C:\Files for Server\...\Simulations\1D UNSTEADY - SHORTENED FOR V7.ief
Elevation (m AD)
Node Label
Newlyle 015
Newlyle 014
Newlyle 013
Newlyle012.5
Newlyle 012
Newlyle 011
Newlyle 010
Newlyle 009
Newlyle 008
Newlyle 007
Newlyle 006
Newlyle 005
Stage [1
Bed Elevation
Maximum Stage, 0 - 8.75 hours [1]

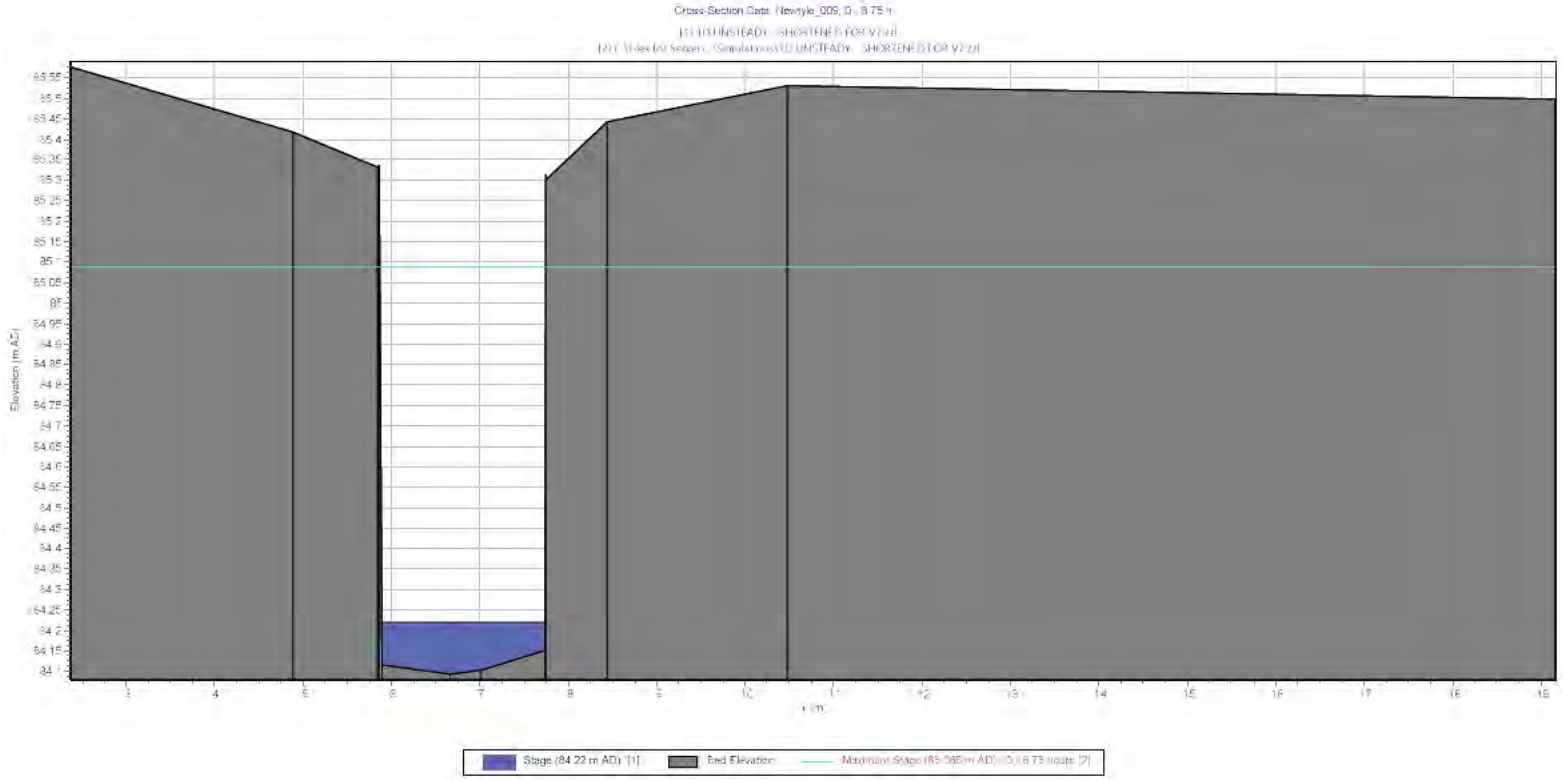

Cross-Section Data: Newtyle_00=
[1] TO UNSTEADY - SHORTENED FOR V1.zsf
Elevation (m AD)
x (m)
Stage (82.8 m AD) [1]
Maximum Stage (82.8 m AD) - 0 - 8.75 hours [1]
Bed Elevation

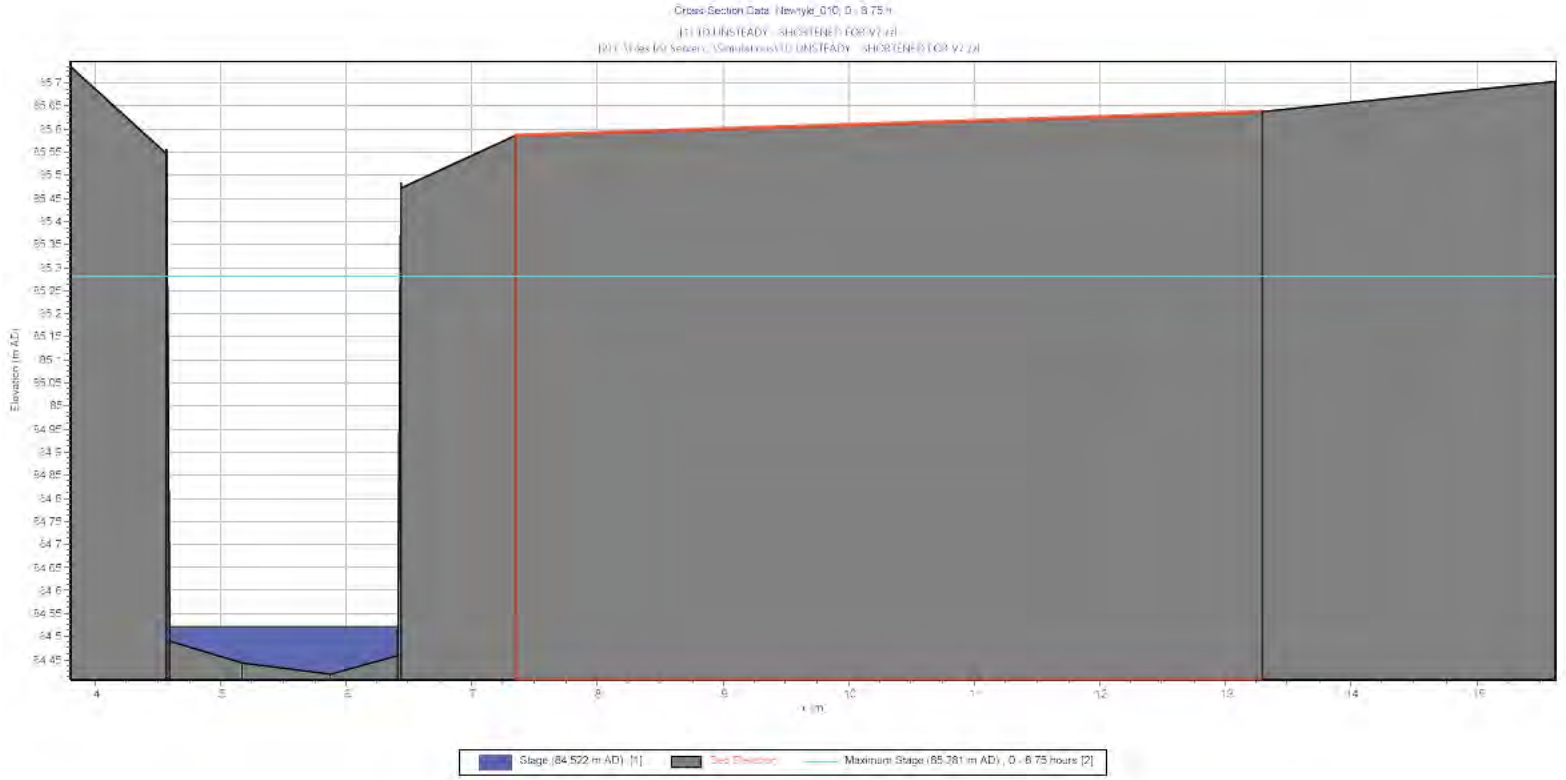

Cross-Section Data: Newtyle_005
[1] TO UNSTEADY - SHORTENED FOR V7.prj
Elevation (m AD)
x (m)
Stage (82.8 m AD) [1]
Maximum Stage (82.829 m AD) , 0 - 8.75 hours [1]
Bed Elevation

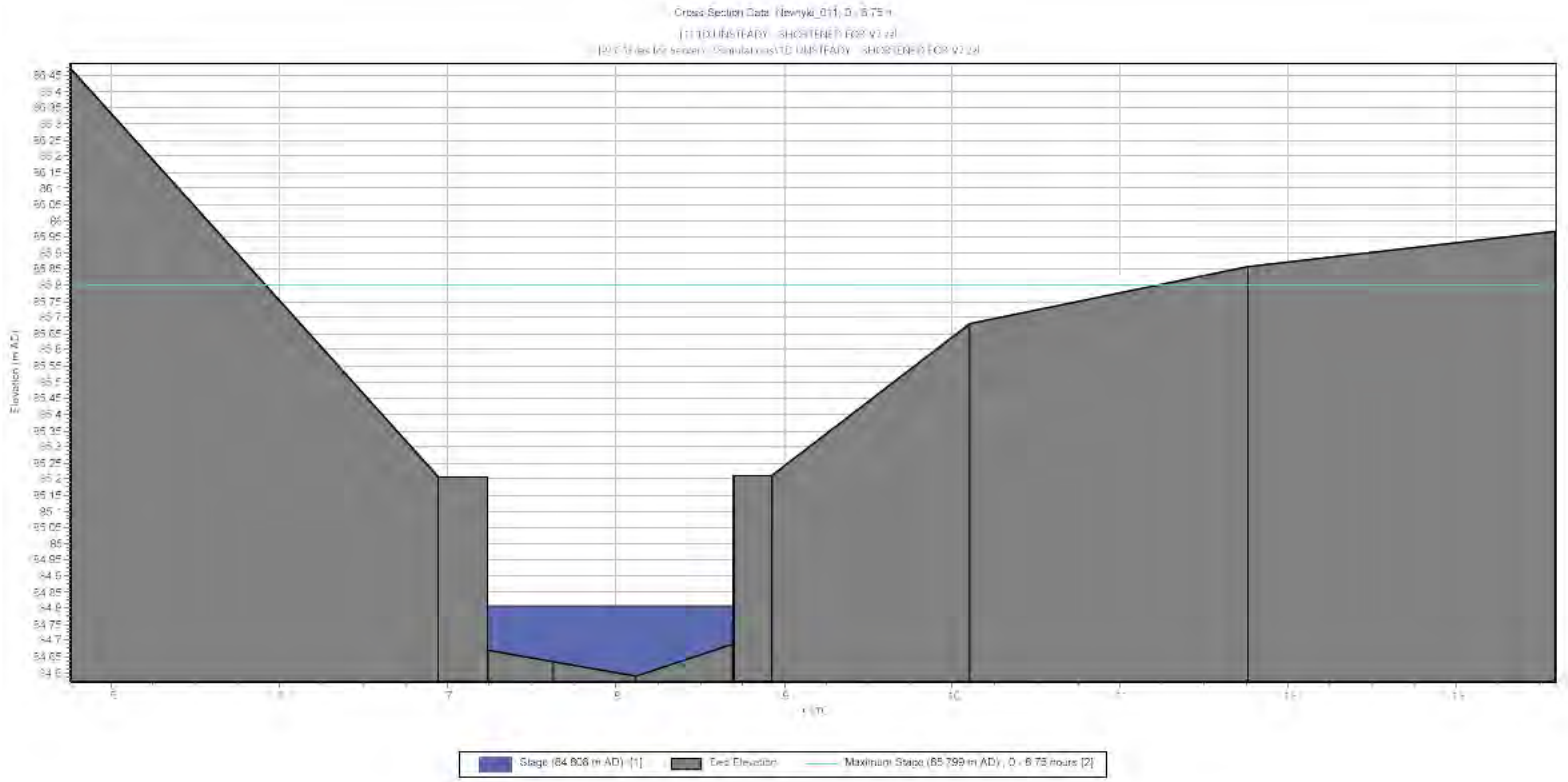

Cross-Section Data: Newtyle_026
[1] TO UNSTEADY - SHORTENED FOR V1.zpl
Elevation (m AD)
x (m)
Stage (82.799 m AD) [1]
Maximum Stage (83.023 m AD) , Q = 8.75 hours [1]
Bed Elevation

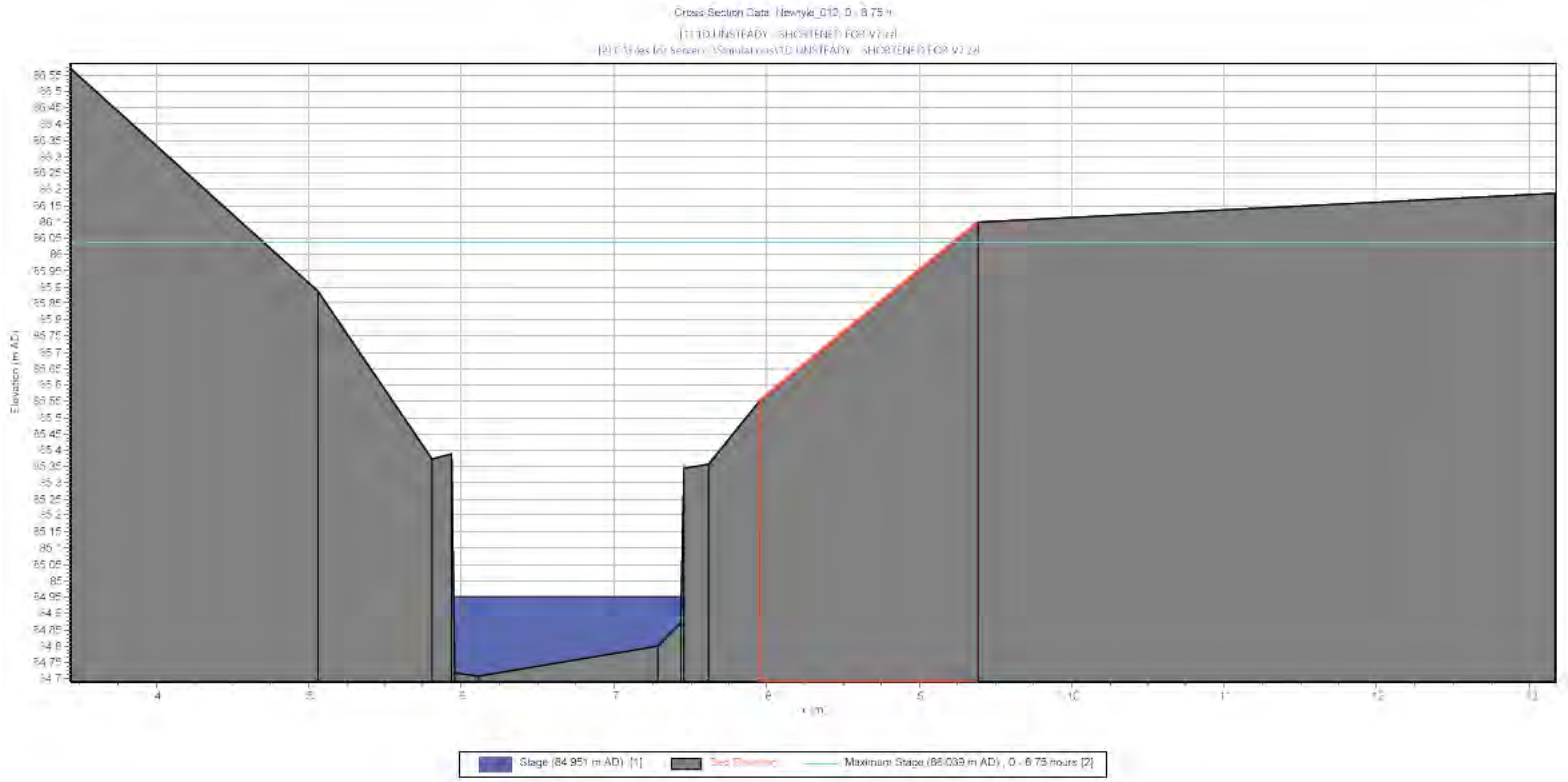

Cross Section Data: Newtyle_007, D = 8.75 h
[1] 1D UNSTEADY - SHORTENED FOR V7.22
[2] C:\Files (x)\Jacobs\...\Simulations\1D UNSTEADY - SHORTENED FOR V7.22\
Elevation (m AD)
x (m)
Stage (82.896 m AD) - [1]
Bed Elevation
Maximum Stage (83.499 m AD) - D = 8.75 hours [2]

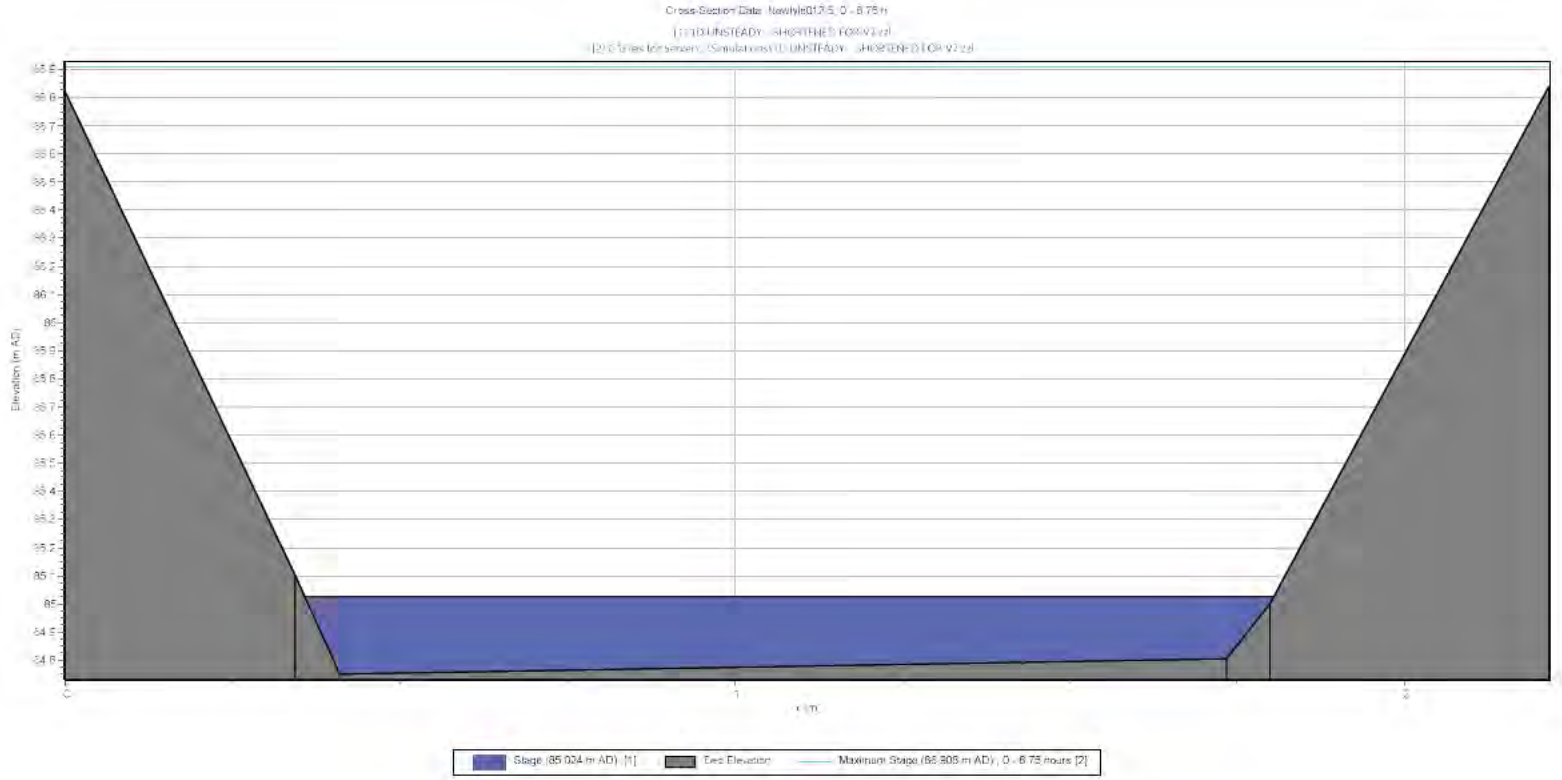

Cross Section Data: Newryle_008, D = 8.75 h
[1] 1D UNSTEADY - SHORTENED FOR V2.zpl
[2] C:\Files for Seniors_Simulations\1D UNSTEADY - SHORTENED FOR V2.zpl
Elevation (m AD)
x (m)
Stage (83.357 m AD) - [1]
Maximum Stage (84.142 m AD) - D = 8.75 hours [2]

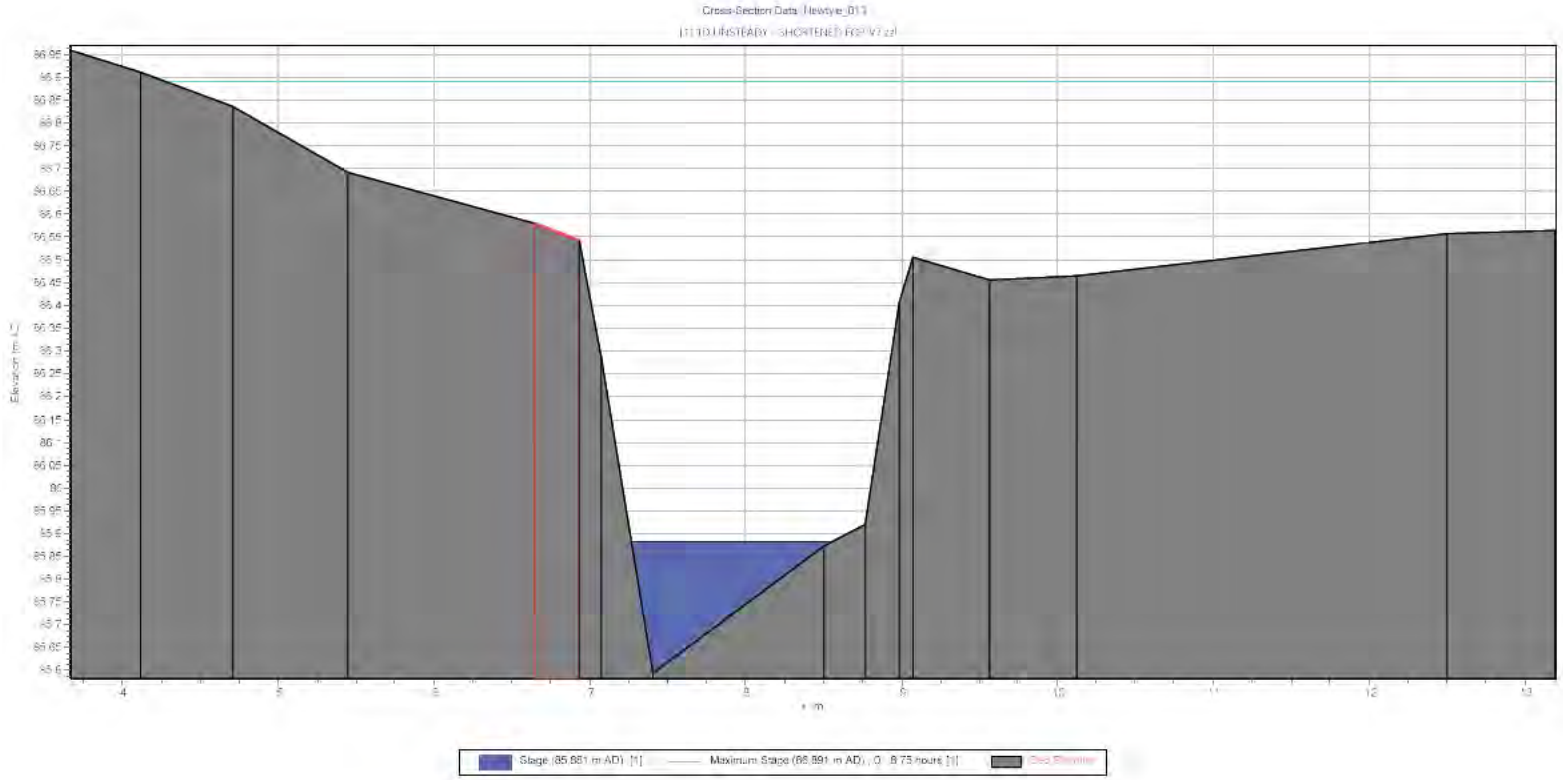

Cross Section Data: Newtyle_009_D = 8.75 h
[1] 1D UNSTEADY - SHORTENED FOR V7.22
D:\7 Wales by Season\...\Simulations\1D UNSTEADY - SHORTENED FOR V7.22\
Elevation (m AD)
x (m)
Stage (84.22 m AD) [1]
Bed Elevation
Maximum Stage (85.386m AD) @ 8.75 hours [2]

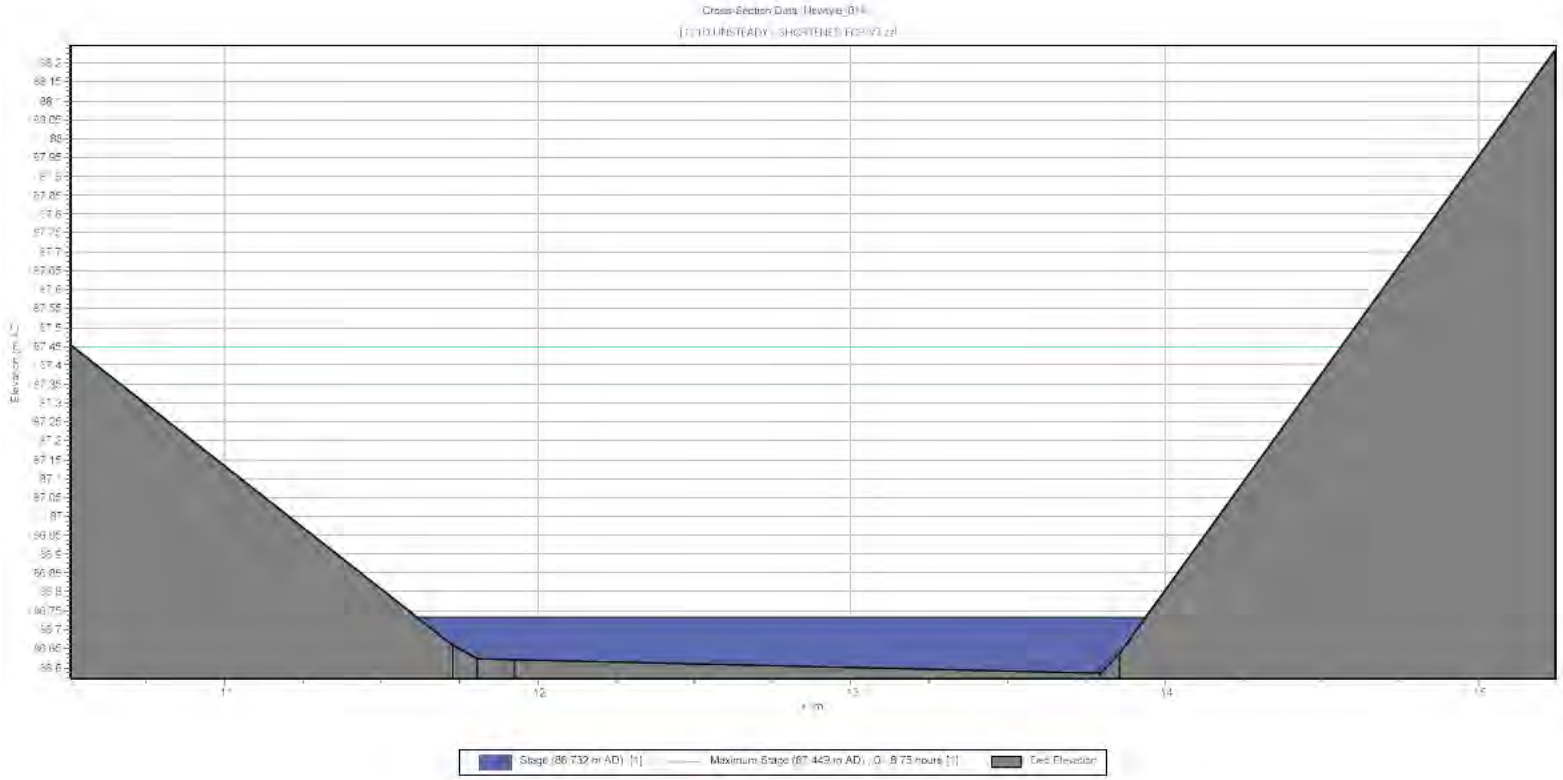

Cross-Section Data: Newryle_010; 0 - 6.75 h
Elevation (m AD)
x (m)
Stage (84.522 m AD) - [1]
Maximum Stage (85.281 m AD) ; 0 - 6.75 hours [2]

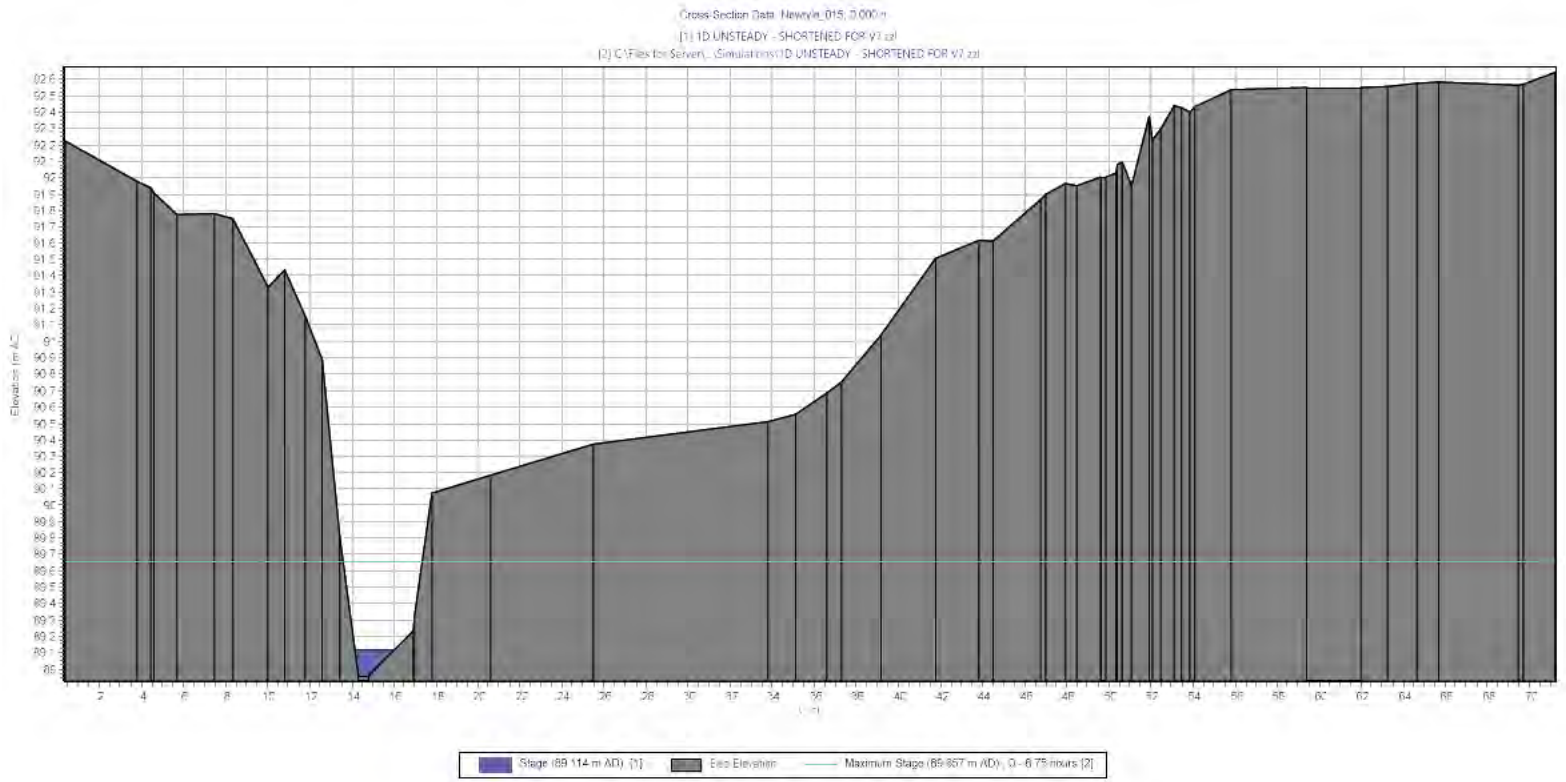

Cross Section Data: Newnyki_011, D = 6.75 h
Elevation (m AD)
x (m)
Stage (84.806 m AD) - [1]
Bed Elevation
Maximum Stage (85.799 m AD) , D = 6.75 hours [2]


Cross Section Data: Newtyle_012, 0 - 6.75 h
[1] TD UNSTEADY - SHORTENED FOR V7.zdl
[2] C:\Files for Severn - \Simulations\TD UNSTEADY - SHORTENED FOR V7.zdl
Elevation (m AD)
x (m)
Stage (84.951 m AD) [1]
Bed Elevation
Maximum Stage (86.039 m AD) , 0 - 6.75 hours [2]


Cross-Section Data: Newlyle01.2.5_0 - 6.75 h
[1] 1D UNSTEADY - SHOOTING 5 FOR V7.prj
[2] C:\Files for servers\...\Simulations\1D UNSTEADY - SHOOTING 5 FOR V7.prj
Elevation (m AD)
x (m)
Stage (85.024 m AD) - [1]
Bed Elevation
Maximum Stage (85.805 m AD) - 0 - 6.75 hours [2]


Cross-Section Data - Newbye_013
Elevation (m AD)
x (m)
Stage (85.661 m AD) [1]
Maximum Stage (86.891 m AD) - 0 - 8.75 hours [1]
Bed Elevation


Cross-Section Data - Newbye_01
Elevation (m AD)
x (m)
Stage (86.732 m AD) [1]
Maximum Stage (87.443 m AD) at 8.75 hours [1]
Bed Elevation


Cross Section Data: Newyle_015, 0.000 m
[1] 1D UNSTEADY - SHORTENED FOR V7.zpl
[2] C:\Files for Server\...\Simulations\1D UNSTEADY - SHORTENED FOR V7.zpl
Elevation (m AD)
Stage (89.114 m AD) [1]
Bed Elevation
Maximum Stage (89.857 m AD), 0 - 6.75 hours [2]

Appendix D: SEPA Checklist

Flood Risk Assessment (FRA) Checklist

(SS-NFR-F-001 - Version 13 - Last updated 15/04/2015

This document hould be attached within the front cover of any flood risk assessments issued to Local Planning Authorities (LPA) in support of a development proposal which may be at risk of flooding. The document will take only a few minutes to complete and will assist SEPA in reviewing FRAs, when consulted by LPAs. This document should not be a substitute for a FRA.

Development Proposal

Site Name		Burnbank, Newtyle				
Grid Reference	Easting:	329940	Northing:	741268		
Local Authority		Angus Council				
Planning Reference number (if known)						
Nature of the development		Residential		If residential, state type:	Single house	
Size of the development site		0.17	Ha			
Identified Flood Risk	urce:	Fluvial		Source name:	Newtyle Burn	

Supporting Information

Have clear maps / plans been provided within the FRA (including topographic and flood inundation plans)	Yes			
Has a historic flood search been undertaken?	m List			
Is a formal flood prevention scheme present?	t	If known, state the standard of protection offered		
Current / historical site use				

Hydrology

Area of catchment		km^2		
Qmed estimate		m^3/s	Method:	Select from List
Estimate of 200 year design flood flow		m^3/s		
Estimation method(s) used *		If other (please specify methodology used):		
		If Pooled analysis have group details been included		Selec

Hydraulics

Hydraulic modelling method		Software used:	ISIS	
If other please specify				
Modelled reach length		m		
Any structures within the modelled length?		Specify, if combination	Bridge and culvert	
Brief summary of sensitivity tests, and range:				
variation on flow (%)		%		
variation on channel roughness				
blockage of structure (range of % blocked)				
boundary conditions:	**pstream**		**Dow**	
(1) type	Flow		Other	
	Specify if other	Specify if other	Relief level	
(2) does it influence water levels at the site?	Yes		No	
Has model been calibrated (gauge data / flood records)?	No			
Is the hydraulic model available to SEPA?	Select from List			
Design flood levels	200 year	m AOD	200 year plus climate change	84.14 m AOD

Flood Risk Assessment (FRA) Checklist

(SS-NFR-F-001 - Version 13 - Last updated 15/04/2015

Coastal					
Estimate of 200 year design flood level		m			
Estimation method(s) used	Select from List				
Allowance for climate change (m)		m			
Allowance for wave action etc (m)					
Overall design flood level					
Development					
Is any of the site within the functional floodplain? (refer to SPP para 255)			If yes,		m^3
Is the site brownfield or greenfield					
Freeboard on design water level (m)		m			
Is the development for essential civil infrastructure or vulnerable groups?			If yes, has conside 1000 ye		
Is safe / dry access and egress available?			Min access		m AOD
If there is no dry access, what return period is dry access available?		years			
If there is no dry access, what is the impact on the access routes?		m	Max Flood Velocity:		m/s
Design levels		m AOD	Min FFL:	84	mAOD
Mitigation					
Can development be designed to avoid all areas at risk of flooding?					
Is mitigation proposed?	List				
If yes, is compenstory storage necessary?	m List				
Demonstration of compensatory storage on a "like for like" basis?	t from List				
Should water resistant materials and forms of construction be used?	Yes				
Comments					
Any additional comments:					

Approved by: Andrew Braid
Organisation: Millard Consulting
Date: 11/04/2024

Note: Further details and guidance is provided in 'Technical Flood Risk Guidance for Stakeholders' which can be accesssed here:- **CLICK HERE**

**** ReFH2 is now accepted by SEPA for flow estimates in Scotland. Any use of this method should be compared with other accepted methods.***

Plans

GENERAL:

1. COPYRIGHT – T.A. MILLARD SCOTLAND LIMITED, CONSULTING ENGINEERS.
2. DO NOT SCALE THIS DRAWING – WRITTEN DIMENSIONS ONLY SHALL BE USED.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.

LEGEND:

– PREDICTED 1 IN 200YR + CC FLOOD EXTENTS

REV	AMENDMENT DETAILS	DRAWN	APPROVED	DATE

PROJECT: BURNBANK, NEWTYLE, ANGUS	DESIGNED BY	DRAWN BY: ASB	SCALE: 1:500
	CHECKED BY	APPROVED BY	
DRAWING TITLE: PREDICTED 1 IN 200YR + CC FLOOD EXTENT	DRAWING STATUS		DATE: 23.03.24
CLIENT: MS M JEMICZ	DRAWING NUMBER: 18518/21/001		REVISION

Dundee Office
Seabraes
18 Greenmarket
Dundee
DD1 4QB

tel: 01382 227380
email: dundee@millardconsulting.co.uk
web: millardconsulting.co.uk

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More than civil engineers

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Planning Consultation Response
Flood Risk – Burnbank, Newtyle

Ref: Application 21/01000/FULL

Date: 22nd August 2024

Subject: Burnbank, Newtyle – Response to SEPA comments dated 17th May 2024

This statement addresses comments received from SEPA in relation to flood risk for the above planning application, dated 17th May 2024. Each relevant section of the Planning Consultation is copied below in *italics*, followed with the Design Team's response.

SEPA Comment

"We require the topographic survey undertaken in preparation for the FRA, clearly showing elevations across the site and the opposite bank, to demonstrate that the site of the proposed development is elevated above potential flood risk. Further photographs showing the site of the proposed development and its relation to the burn would also be helpful to build a greater picture of the ground conditions at the site."

Response

The topographical survey of the site and surrounding area is included on drawing 18518/21/002, attached. The survey was undertaken by Douglas Land Surveys. Additional photographs of the site are shown overleaf. We do not hold photographs of the Newtyle Burn within the grounds of Dalnaglack upstream of the site as we did not have access to the land.

Photograph A – Looking north west, approximately from the location of cross section Newtyle_012. The site is situated beyond the green, timber fence in the centre right of the picture.

Photograph B – Taken from approximately the location of cross section Newtyle_012, looking north east along the boundary between Burnbank and Dalnaglack.

Photograph C – A further photograph looking north east along the boundary between Burnbank and Dalnaglack, taken from a similar location to Photograph B.

Photograph D – Looking north east along the north western boundary of the site. The Newtyle Burn is located just beyond the timber fence in the top right of the picture.

SEPA Comment

"We request that blockage scenarios be run for the culverts and bridge on the site. We hold records of significant flooding in other areas where blockages have been the main cause and it is recommended that a range of blockage scenarios be tested, these being: 25%, 50% and 75% blockages. In the event the upstream culvert is blocked, it may cause water to take a pathway which causes inundation of the proposed development. Additionally, we request that a 100% blockage scenario be modelled on the downstream culvert, owing to its small aperture, length, and potentially significant consequences of a blockage here."

Response

Our modelling analysis shows that with 75% blockages of the bridge and culvert upstream of the site (at nodes Newtyle012.5 and Newtyle_010) additional floodwater would leave the watercourse, however this would not impact the footprint of the proposed house when no boundary wall is modelled. The predicted 2D flood extents for 75% blockages at the aforementioned structures, modelled independently, are shown in Figures 1 and 2 overleaf.

Figure 1 – Predicted 2D 200yr + CC flood extents including a 75% blockage of the bridge providing vehicular access to Burnbank (node Newtyle_010) (MB Error at peak 1D = -0.41%, 2D = -0.7%)

Figure 2 - Predicted 2D 200yr + CC flood extents including a 75% blockage of the culvert running beneath the driveway of Dalnaglack (node Newtyle012.5) (MB Error at peak 1D = -0.51%, 2D = -0.1%)

With respect to the downstream culvert, it has not been included in the model, however a water surface level provided at the downstream end of the model (at the location of the culvert inlet) assumes floodwater is exceeding the capacity of the culvert and flowing overland in a north easterly direction. The relief level of ground above the inlet to the long culvert is approximately 82.8m, 1m lower than the lowest existing ground level across the footprint of the proposed house.

SEPA Comment

"The model treated the drystone wall on the site as porous and having no bearing on flood water, but past flood events have demonstrated that drystone walls can restrict flows and collapse, leading to rapid downstream inundation. As such, we request that differing scenarios of porosity and collapse are modelled, in a similar manner to the above blockage scenarios, to assess the impact of the drystone wall on flooding at the site."

Response

Given existing ground levels upstream of the drystone wall are lower on the right bank of the watercourse at the upstream end of the culvert running beneath Dalnaglack driveway, and as borne out by the hydraulic model, flood flows exceeding the capacity of the culvert running beneath the drystone wall are predicted to flow in an easterly/north easterly direction, beyond the right bank of the watercourse. Should a collapse of the wall on this side of the watercourse (to the east) occur, floodwater would return to the watercourse rather than flowing across the site. Existing ground levels to the east of the watercourse, within the grounds of Dalnaglack, gradually reduce down to the north eastern corner of the property. At its lowest, the garden ground of Dalnaglack, behind the drystone wall sits at a level of 85.7m, approximately 1.2m lower than the level water would need to reach to flow down the driveway of Dalnaglack towards South Street. Any collapse would therefore be more likely to the east of the watercourse where floodwater could potentially build up behind the wall.

A "porosity" cannot be applied to the wall in the model, however we can model solid sections and open sections. When modelling 50% and 75% of the wall to the east of the watercourse as solid, no floodwater was predicted to flow along the driveway of Dalnaglack. The maximum predicted flood extent for the 75% solid model is shown in Figure 3, overleaf.

Please not the global roughness value applied in the 2D model was reduced to 0.06 where the wall was modelled with partial impermeability, as the previously applied roughness of 0.1 was artificially high in an attempt to recreate additional roughness provided by the wall itself.

Figure 3 - Predicted 2D 200yr + CC flood extents including 75% of the boundary wall to the east of the watercourse being modelled as solid (MB Error at peak 1D = -0.3%, 2D = -0.7%)

The above output was modelled with no blockage in any structures on the watercourse.

In the instance that the wall withstood floodwater building behind it, and impeded flow to an extent whereby floodwater could flow along the driveway of Dalnaglack, towards South Street, the majority of flow would be expected to flow onto South Street. It is however accepted that a limited flow could potentially, in that scenario, penetrate the wall running between the driveway of Dalnaglack and the grounds of Burnbank, and flow towards the site. Any flow in this situation would be shallow, and hence suitably formed ground levels would ensure the return of overland flow into the Newtyle Burn and would occur pre-development. The proposed finished floor level for the new house is 85.3m, approximately 0.6m above the highest existing ground level around the footprint of the proposed house, while finished ground levels along the south western side of the proposed property will be no lower than 85m, providing a minimum upstand of approximately 0.3m from existing ground levels.

A model run of the extreme scenario whereby the culvert running beneath the driveway of Dalnaglack is blocked by 75%, and the boundary wall to the east of the Newtyle Burn is 75% impermeable has been run. The predicted flood extents from the 2D domain are shown in Figure 4 overleaf. As can be seen flooding, as would be expected, is shown within the site, however it is predicted to be very shallow generally (less than 0.05m).

Figure 4 - Predicted 2D 200yr + CC flood extents including 75% of the boundary wall to the east of the watercourse being modelled as solid, and a 75% blockage in the culvert running beneath the driveway of Dalnaglack (MB Error at peak 1D = -0.49%, 2D = 2.2%). Final MB figure in 1D zzd file = 2.83% - please see 1D mass balance summary from zzd file overleaf. Final 2D MB figure = 4.37% - please see 2D mass balance summary overleaf.

```
 ***********************************************

Simulation time elapsed (s):          436

run completed

 Number of unconverged timesteps:         6
 Proportion of simulation unconverged:   0.02%

 ********* Mass balance summary *********
 Mass balance calculated every    300.0s

 Initial volume:           103.046    m3
 Final volume:             509.148    m3
-----------------------
 Total boundary inflow  :   64709.3    m3
 Total boundary outflow :   63836.5    m3
 Total lat. link inflow :   48660.0    m3
 Total lat. link outflow:   49146.6    m3
-----------------------
 Max. system volume:       702.088    m3
 Max. |volume| increase:    599.042    m3
 Max. boundary inflow:     6.44642    m3/s
 Max. boundary outflow:    6.59142    m3/s
-----------------------
 Net increase in volume:   406.102    m3
 Net inflow volume:        386.262    m3
 Volume discrepancy:      -19.8406    m3
 Mass balance error:          2.83% (of peak system volume)
 Mass balance error [2]:      0.02% (of boundary inflow volume)

 ******* End mass balance summary *******
```

Figure 5 – 1D mass balance summary from zzd file for model run for 75% blockage of Dalnaglack drivewa culvert, and 75% of wall to the east of the watercourse modelled as being solid. 5.5hr run duration.

```
Maximum Courant number:2.7
Wet cell count:
   Total number of cells wetted:       4299
   Maximum number of wet cells :       4216 at time       4.07hr
   Final number of wet cells   :       3151
   Final mass error            :       3.73%
Volumes:
   Maximum volume :  595.156    m3 at time       3.90hr
   Final volume   :  322.822    m3
Vertical/horizontal extents:
   Bounding rectangle : ( 329901.56, 741140.69), ( 330007.56, 741321.69)
   Wet bounding cells : 17.84% (154 out of          863   )

-------------------------------------------------------------------------
Entire Model Volume Summary:
                        1D RIVER          2D        Combined
  Initial volume (m3):     103.046       0.136490E-01     103.059
    Final volume (m3):     522.922        442.227         965.150
 Boundary inflow (m3):     872.934       -70.6626         802.271
   Linked inflow (m3):    -486.664        490.661         3.99701

 Combined volume error (m3):   59.8195
    Combined mass error (%):          4.37%
-------------------------------------------------------------------------
```

Figure 6 - 2D mass balance summary from zzd file for model run for 75% blockage of Dalnaglack drivewa culvert, and 75% of wall to the east of the watercourse modelled as being solid. 5.5hr run duration.

Figure 7 below shows the same flood extent as Figure 4, with the proposed house location overlain:

Figure 4 - Predicted 2D 200yr + CC flood extents including 75% of the boundary wall to the east of the watercourse being modelled as solid, and a 75% blockage in the culvert running beneath the driveway of Dalnaglack, with proposed house location overlain.

The above figure shows that with a 75% blockage of the culvert running beneath the driveway of Dalnaglack, and 75% of the wall to the east of the Newtyle Burn being modelled as solid, floodwater could flow into the site. As part of the proposal the house floor level will however be set higher than existing ground, at a level of 85.3m AOD. This level is 0.6m above the existing ground level in the vicinity of the south western corner of the house, and approximately 1m above the existing ground level in the vicinity of the south western corner of the house. Finished ground levels along the south western side of the house will be set no lower than 85m AOD.

Figure 7, overleaf shows the predicted flood extents from the 2D model domain for the 1 in 200 year + climate change flood extents with a 25% blockage of the culvert running beneath the driveway of Dalnaglack, and 50% of the boundary wall to the east of the watercourse being modelled as solid.

Figure 7 – Predicted 2D 200yr + CC flood extents including 50% of the boundary wall to the east of the watercourse being modelled as solid, and a 25% blockage in the culvert running beneath the driveway of Dalnaglack (MB Error at peak 1D = -0.24%, 2D = 0.5%)

SEPA Comment

"The FRA also includes multiple flood extents which appear to differ in the area of inundation shown for 1 in 200-year plus climate change events (i.e. Figure 7 output compared to that shown in Appendix: Plans). Please could the correct flood extent output be confirmed. The flood output extents within the report (Figures 7, 8, 9, 10 and 11) also seem to be shifted to the east of the channel – we request confirmation if this is a georeferencing discrepancy between the output and the displayed extent."

Response

Drawing 18518/21/001 shows the full 1 in 200 year + climate change flood extent. The figures in the report show the 2D extents only.

SEPA Comment

"We require the proposed location of the proposed building overlaid onto a map showing the modelled flood extents. The proposed building must be outside of the flood risk area."

Response

Please see drawing 18518/21/002, attached, which shows the predicted 1 in 200 year + climate change flood extents from the original flood risk assessment report with the proposed house location overlain.

SEPA Comment

"We note that some of the flood outputs have mass balance values of greater than ±1%. This falls outside of our normally accepted error range and so requires further clarification. We require model diagnostics such as zzd info, warnings, outputs from key cross sections such as stage plots etc."

Response

From the updated runs undertaken as part of this response, only one has mass balance errors at the peak of the event, with a variance larger than 1%. This was for the most extreme scenario whereby the wall to the east of the watercourse is modelled 75% solid, and the culvert running beneath the driveway of Dalnaglack is blocked by 75%. Additional mass balance information for this run is provided in Figures 5 and 6, and stage plots for cross sections Newtyle_006 to Newtyle_014 are enclosed.

SEPA Comment

"We require a clear summary of the modelling numerical outputs, preferably in tabular format, of the modelled velocities, Froude numbers and stage ratings to ensure that the modelled water levels have not been underestimated. Providing such outputs is standard practice and outlined in SEPA's Technical Flood Risk Guidance."

Response

Please find enclosed modelling summaries for the following model runs:

- baseline 200yr + CC scenario with no blockages or wall
- 75% blockage at 12.5 and 75% of wall to the east of the watercourse impermeable

Summary

A porosity cannot be applied to the boundary wall, hence we have modelled it partially solid. The results demonstrate that with a large blockage of the culvert running beneath the driveway of Dalnaglack and high impermeability of the wall, floodwater could flow along the driveway of Dalnaglack. It's important to note however that the scenario whereby the culvert running beneath the driveway of Dalnaglack is 25% blocked and the boundary wall to the east of the watercourse is modelled as being 50% solid, does not predict any floodwater flowing along the driveway of Dalnaglack and through the site.

When modelling a high impermeability to the boundary wall, shallow floodwater could flow along driveway of Dalnaglack. This is not unexpected given it would have no other route to flow. Should this occur and floodwater entered the site, the flow would be very shallow.

During a flood event floodwater would firstly overtop the right bank of the Newtyle Burn and flow in a north easterly direction. If floodwater did build up behind the boundary wall, this would be most significant in the northern corner of Dalnaglack, and hence should there be a collapse of the wall, it is expected that this would be the most likely location. Should a wall collapse occur in this location, floodwater would flow through the grounds of Burnbank and back into the Newtyle Burn.

Considering all the information, we would suggest its reasonable to conclude the site is not within the 1 in 200 year + climate change flood extent of the Newtyle Burn. It can be said however that proposed levels are such that should any shallow overland flow enter the site, the proposed upstand from adjacent ground to the floor level of the building would mean the house itself is not predicted to flood, with overland flow returning to the Newtyle Burn.

Enc

Drawing 18518/21/002 Predicted 1 in 200yr + CC flood extent with proposed house location overlain

Stage Time Series Plots for 75% blockage of Dalnaglack driveway culvert and boundary wall 75% solid

Modelling summary output

Drawing 18518/21/002

Predicted 1 in 200yr + CC flood extent with proposed house location overlain

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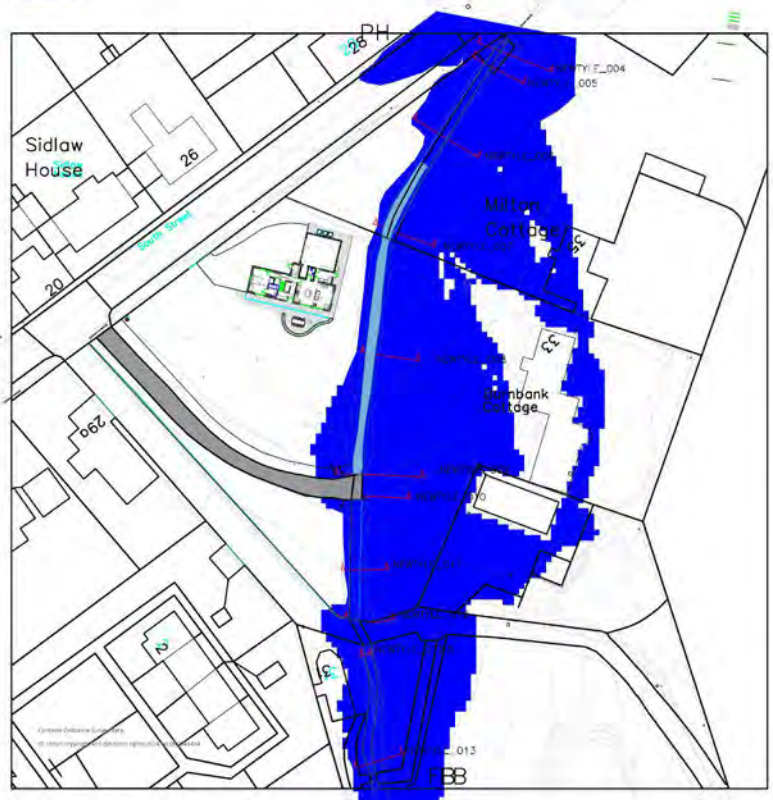
4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.

LEGEND:

– PREDICTED 1 IN 200YR + CC FLOOD EXTENTS



REV	AMENDMENT DETAILS	DRAWN	APPROVED	DATE

PROJECT: BURNBANK, NEWTYLE, ANGUS	DESIGNED BY:	DRAWN BY: ASB	SCALE: 1:500
	CHECKED BY:	APPROVED BY:	
DRAWING TITLE: PREDICTED 1 IN 200YR + CC FLOOD EXTENT WITH PROPOSED HOUSE LOCATION OVERLAIN	DRAWING STATUS:		DATE: 22.08.24
CLIENT: MS M JEMICZ	DRAWING NUMBER: 18518/21/002		REVISION:

Dundee Office
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18 Greenmarket
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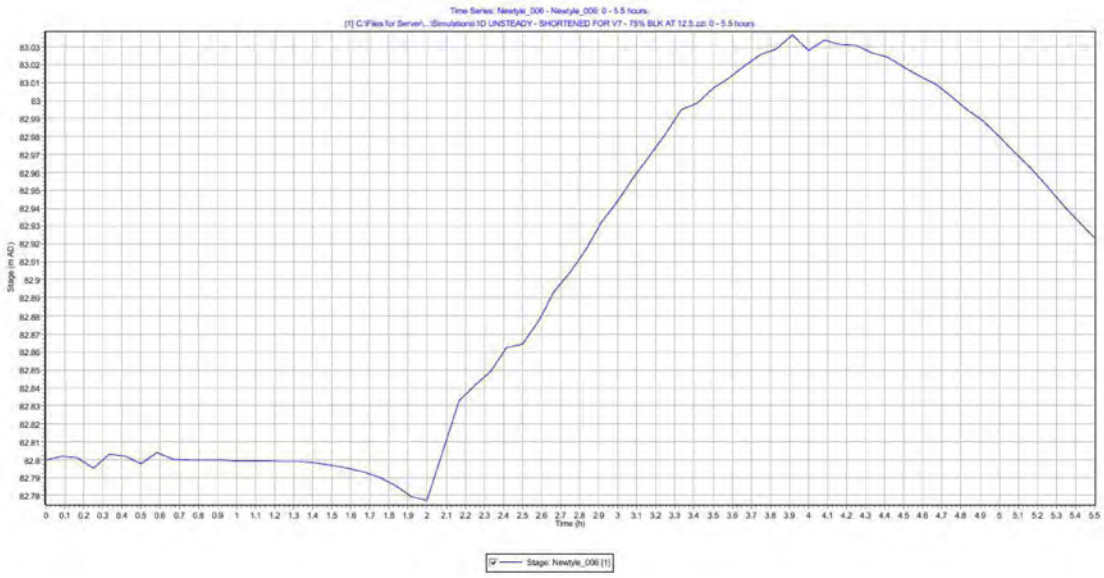
email: dundee@millardconsulting.co.uk
web: millardconsulting.co.uk

Millard
More than civil engineers

Stage Time Series Plots

Model Scenario – 75% blockage of Dalnaglack driveway culvert and boundary wall 75% solid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Time (h)
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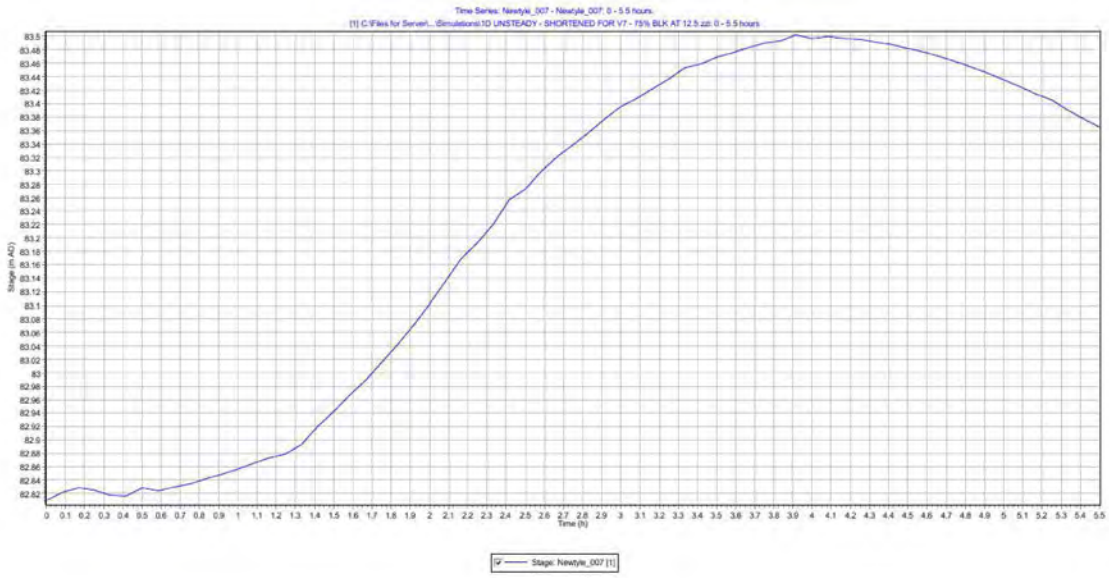
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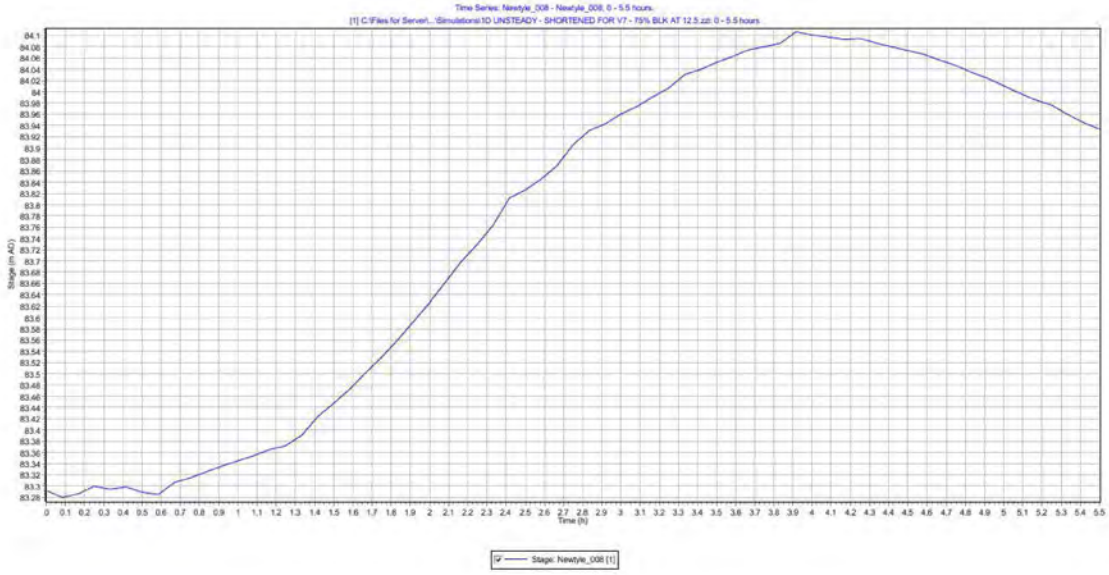
Time (h)
Stage: Newtyle_007 [1]


Time Series: Newtyle_008 - Newtyle_008, 0 - 5.5 hours.
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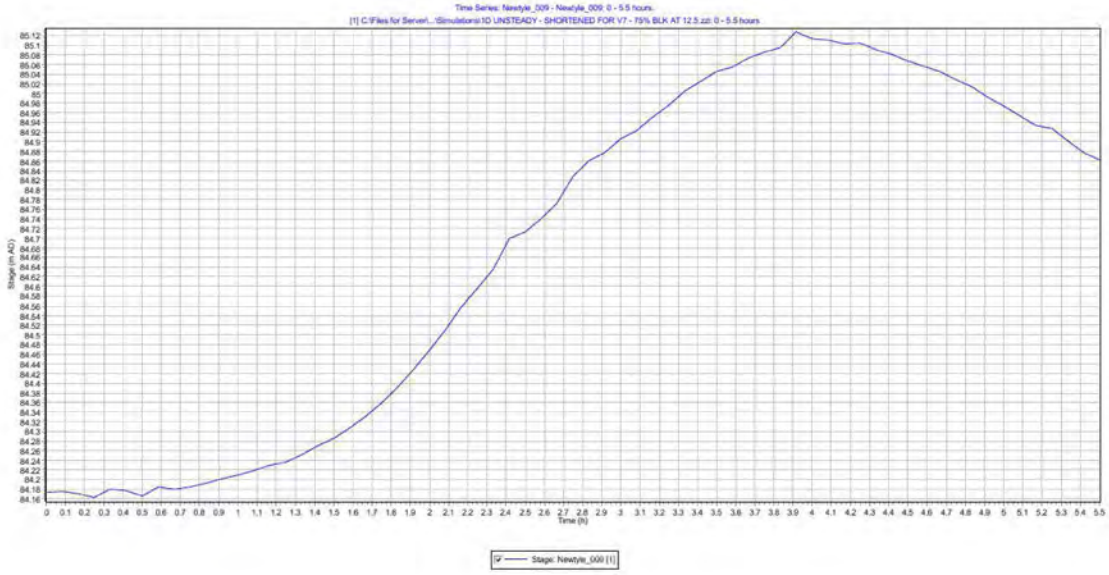
Time (h)
Stage: Newtyle_008 [1]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Stage (m AD)
Time (h)
Stage: Newtyle_009 [1]


Time Series: Newtyle_010 - Newtyle_010: 0 - 5.5 hours.
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Time (h)
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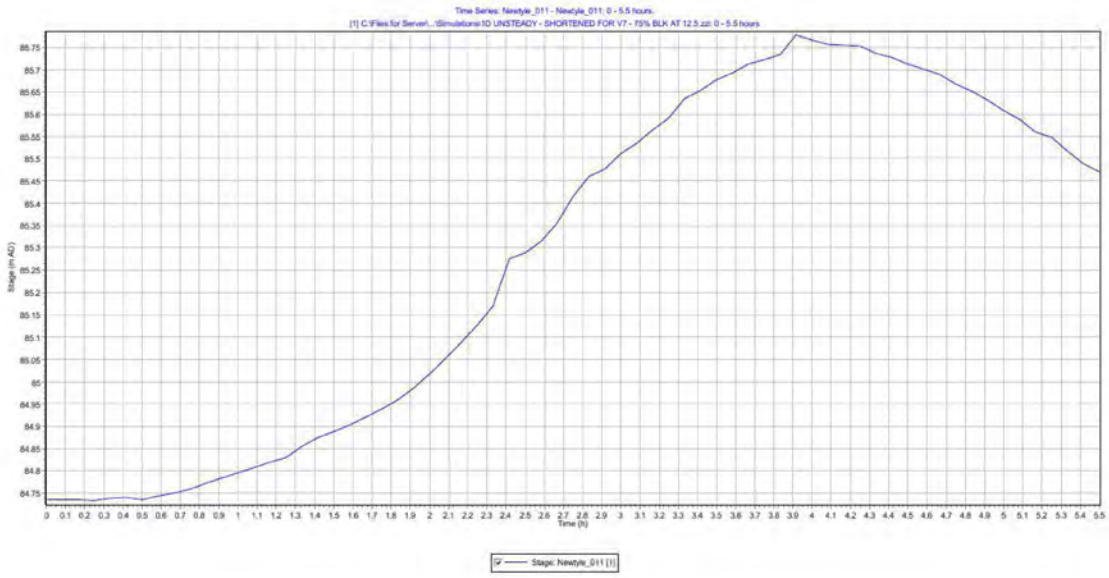
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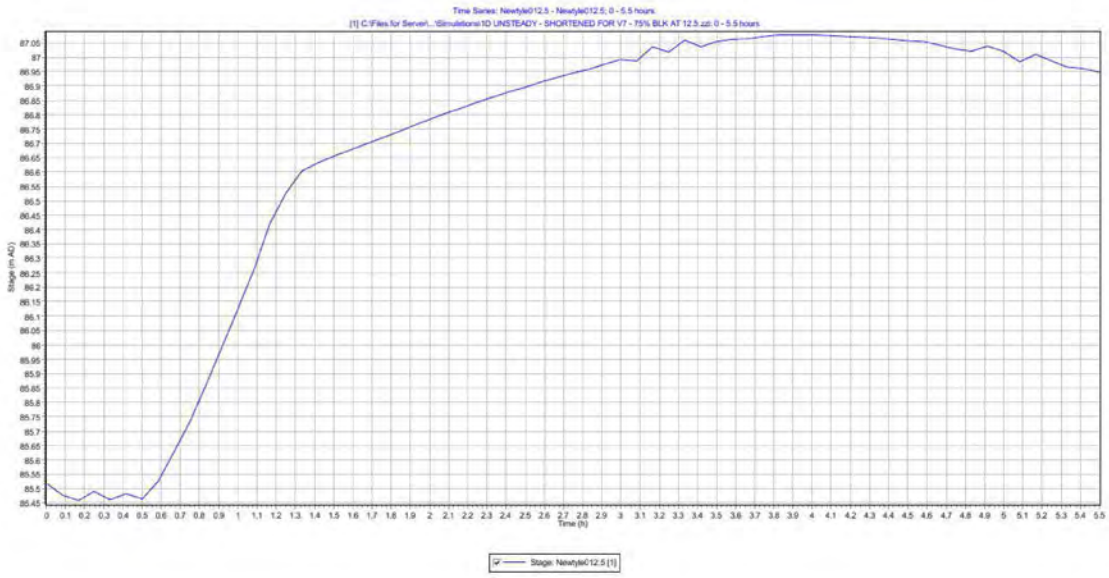
Stage (m AD)
Time (h)
Stage: Newtyle_011 [1]


Time Series: Newtyle012.5 - Newtyle012.5; 0 - 5.5 hours
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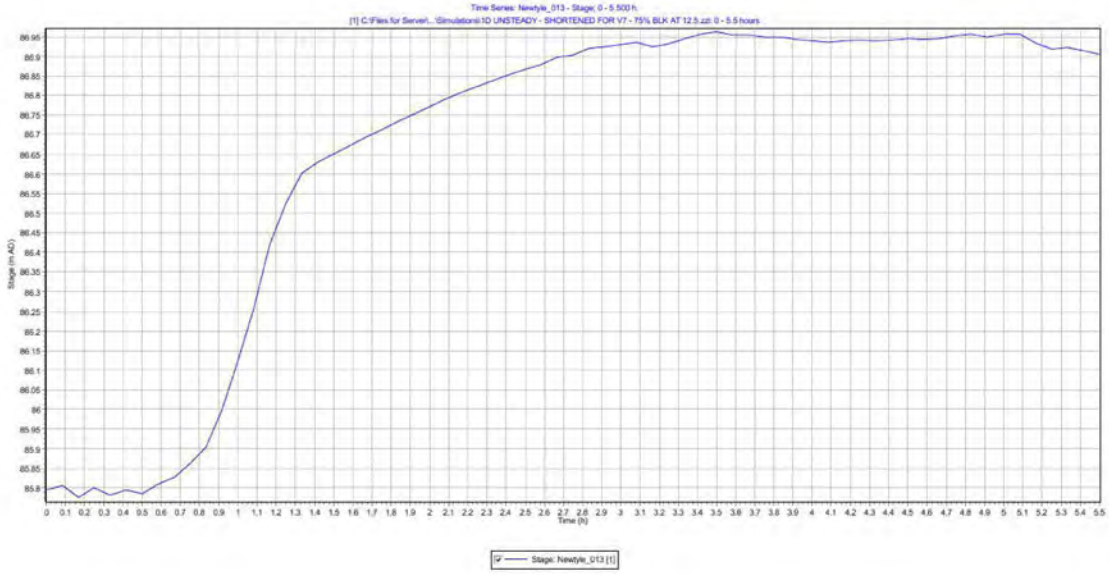
Stage (m AD)
Time (h)
Stage: Newtyle012.5 [1]


Time Series: Newtyle_012 - Stage; 0 - 5.500 h
[1] C:\Files for Server\...\Simulations\1D UNSTEADY - SHORTENED FOR V7 - 75% BLK AT 12.5 zz\; 0 - 5.5 hours
Stage (m AD)
Time (h)
Stage: Newtyle_012 [1]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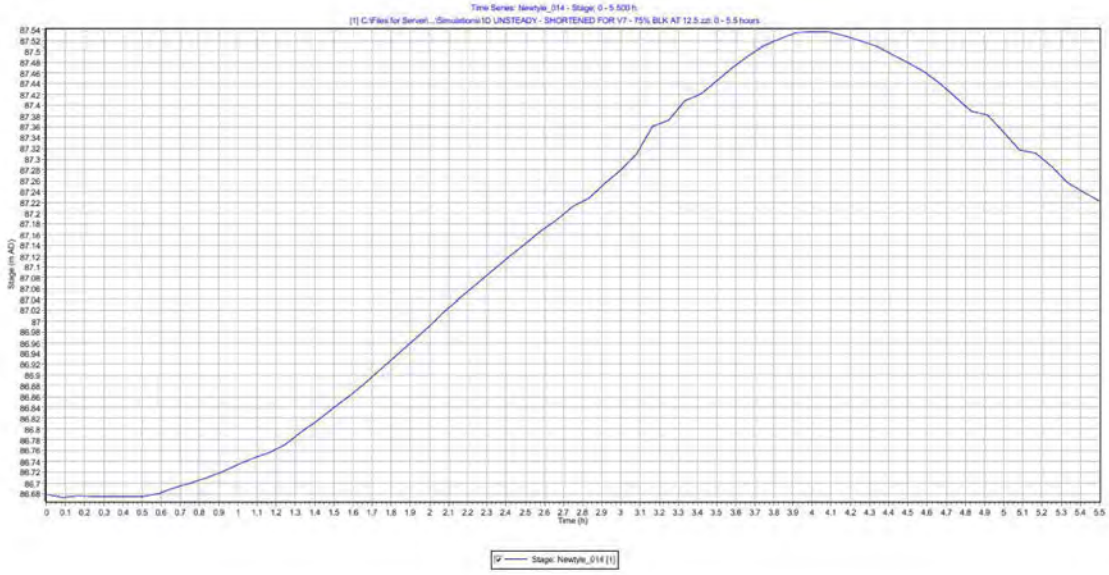
Stage (m AD)
Time (h)
Stage: Newtyle_013 [1]


Time Series: Newtyle_014 - Stage; 0 - 5.500 h
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Stage (m AD)
Time (h)
Stage: Newtyle_014 [1]

Modelling Summary Output

- Baseline 200yr + CC scenario with no blockages or wall
- 75% blockage at 12.5 and 75% of wall to the east of the watercourse impermeable

Baseline 200yr + CC scenario with no blockages or wall

AC31

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7.ZZN
Selected output data from time (hr): 0
to time (hr): 8.75

Stage

Time (hr)	Newtyle_0:	CH000000	CH000000	Newtyle_0:	CH000000	CH000000	Newtyle_0:	CH000000	Newtyle01:	Bridge1_U	Newtyle12.	Newtyle_0:	Newtyle_0:	CH000000	CH000000	CH000000	Newtyle_0:
0	89.114	88.329	87.491	86.732	86.433	86.253	85.881	85.362	85.024	85.024	85.024	84.951	84.808	84.759	84.731	84.719	84.522
0.083	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.293	84.936	84.936	84.935	84.872	84.734	84.702	84.694	84.692	84.487
0.167	89.06	88.273	87.441	86.681	86.358	86.135	85.809	85.295	84.938	84.938	84.938	84.867	84.74	84.7	84.67	84.659	84.502
0.25	89.06	88.273	87.441	86.68	86.359	86.134	85.809	85.292	84.936	84.936	84.936	84.874	84.733	84.697	84.69	84.689	84.485
0.333	89.059	88.273	87.441	86.681	86.359	86.134	85.81	85.294	84.938	84.938	84.938	84.867	84.741	84.706	84.677	84.662	84.504
0.417	89.06	88.273	87.441	86.681	86.359	86.135	85.808	85.293	84.935	84.935	84.935	84.875	84.733	84.69	84.685	84.684	84.483
0.5	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.293	84.938	84.938	84.938	84.869	84.738	84.712	84.688	84.668	84.505
0.583	89.065	88.279	87.449	86.685	86.365	86.144	85.815	85.3	84.942	84.942	84.942	84.881	84.738	84.696	84.691	84.689	84.486
0.667	89.071	88.287	87.459	86.692	86.375	86.157	85.826	85.312	84.955	84.955	84.955	84.888	84.751	84.701	84.674	84.663	84.502
0.75	89.079	88.297	87.47	86.7	86.387	86.179	85.837	85.321	84.968	84.968	84.968	84.901	84.763	84.71	84.675	84.66	84.507
0.833	89.088	88.306	87.476	86.709	86.401	86.202	85.85	85.332	84.984	84.984	84.984	84.916	84.778	84.724	84.68	84.66	84.515
0.917	89.1	88.317	87.482	86.721	86.418	86.228	85.864	85.345	85.003	85.003	85.003	84.931	84.792	84.739	84.701	84.686	84.518
1	89.114	88.329	87.491	86.733	86.433	86.253	85.881	85.362	85.024	85.024	85.024	84.951	84.808	84.759	84.731	84.72	84.522
1.083	89.13	88.343	87.501	86.747	86.449	86.275	85.897	85.381	85.047	85.047	85.047	84.972	84.826	84.772	84.725	84.701	84.539
1.167	89.145	88.357	87.513	86.76	86.469	86.305	85.915	85.399	85.072	85.072	85.072	84.995	84.847	84.795	84.756	84.738	84.542
1.25	89.156	88.37	87.526	86.775	86.49	86.329	85.931	85.419	85.1	85.1	85.1	85.02	84.87	84.815	84.767	84.741	84.559
1.333	89.169	88.385	87.541	86.792	86.512	86.35	85.947	85.443	85.13	85.13	85.129	85.047	84.894	84.839	84.792	84.768	84.568
1.417	89.184	88.402	87.558	86.81	86.534	86.375	85.966	85.468	85.162	85.162	85.162	85.076	84.92	84.863	84.811	84.773	84.583
1.5	89.201	88.419	87.571	86.832	86.56	86.403	85.987	85.496	85.199	85.199	85.198	85.11	84.95	84.891	84.836	84.791	84.597
1.583	89.222	88.44	87.586	86.854	86.59	86.435	86.007	85.523	85.239	85.239	85.237	85.145	84.981	84.921	84.862	84.808	84.613
1.667	89.239	88.456	87.604	86.877	86.618	86.466	86.03	85.556	85.283	85.283	85.281	85.184	85.016	84.953	84.891	84.829	84.632
1.75	89.255	88.474	87.623	86.904	86.649	86.499	86.056	85.591	85.329	85.329	85.326	85.225	85.052	84.986	84.919	84.851	84.653
1.833	89.272	88.495	87.646	86.933	86.683	86.532	86.083	85.63	85.38	85.38	85.375	85.268	85.09	85.019	84.947	84.871	84.676
1.917	89.293	88.516	87.665	86.961	86.717	86.565	86.112	85.672	85.434	85.434	85.428	85.314	85.13	85.055	84.978	84.895	84.7
2	89.314	88.536	87.685	86.993	86.754	86.598	86.146	85.718	85.488	85.488	85.48	85.361	85.172	85.093	85.012	84.923	84.727
2.083	89.333	88.556	87.707	87.026	86.791	86.63	86.179	85.757	85.521	85.521	85.509	85.403	85.215	85.132	85.046	84.95	84.755
2.167	89.353	88.577	87.731	87.057	86.827	86.664	86.215	85.799	85.561	85.561	85.547	85.444	85.255	85.17	85.08	84.979	84.783
2.25	89.374	88.597	87.751	87.091	86.865	86.696	86.249	85.844	85.612	85.612	85.586	85.485	85.293	85.208	85.115	85.008	84.813
2.333	89.396	88.617	87.772	87.122	86.9	86.727	86.287	85.906	85.695	85.695	85.626	85.523	85.33	85.244	85.149	85.037	84.842
2.417	89.418	88.638	87.793	87.154	86.935	86.755	86.328	85.98	85.8	85.8	85.666	85.561	85.366	85.279	85.182	85.067	84.872
2.5	89.44	88.657	87.815	87.186	86.97	86.78	86.377	86.073	85.926	85.926	85.706	85.597	85.401	85.314	85.215	85.097	84.902
2.583	89.458	88.676	87.837	87.215	87	86.806	86.431	86.174	86.061	86.061	85.743	85.631	85.434	85.346	85.246	85.125	84.931
2.667	89.476	88.694	87.859	87.244	87.03	86.833	86.492	86.283	86.211	86.211	85.778	85.663	85.466	85.378	85.277	85.154	84.96
2.75	89.495	88.711	87.878	87.271	87.056	86.852	86.579	86.439	86.362	86.362	85.81	85.693	85.495	85.407	85.305	85.18	84.987
2.833	89.513	88.728	87.896	87.296	87.082	86.877	86.65	86.559	86.479	86.479	85.833	85.714	85.516	85.428	85.325	85.199	85.007
2.917	89.531	88.745	87.914	87.313	87.107	86.912	86.732	86.691	86.618	86.618	85.871	85.763	85.546	85.456	85.353	85.225	85.033
3	89.549	88.762	87.932	87.334	87.13	86.935	86.761	86.754	86.684	86.684	85.889	85.819	85.58	85.488	85.386	85.255	85.064
3.083	89.565	88.778	87.949	87.352	87.15	86.954	86.779	86.784	86.712	86.712	85.883	85.858	85.616	85.527	85.43	85.291	85.1
3.167	89.578	88.791	87.967	87.369	87.169	86.97	86.795	86.811	86.738	86.738	85.883	85.891	85.644	85.556	85.46	85.316	85.125
3.25	89.576	88.819	87.971	87.393	87.19	86.98	86.83	86.835	86.782	86.782	85.894	85.922	85.671	85.585	85.489	85.341	85.15
3.333	89.608	88.814	87.994	87.406	87.188	87.021	86.806	86.859	86.802	86.802	85.905	85.956	85.703	85.617	85.52	85.366	85.174
3.417	89.616	88.825	88.01	87.409	87.228	87.001	86.851	86.885	86.805	86.805	85.91	85.981	85.729	85.645	85.549	85.393	85.202
3.5	89.624	88.839	88.015	87.429	87.221	87.032	86.841	86.898	86.84	86.84	85.921	86.007	85.752	85.668	85.571	85.413	85.222
3.583	89.633	88.847	88.025	87.438	87.236	87.037	86.855	86.914	86.854	86.854	85.933	86.027	85.772	85.689	85.591	85.431	85.241
3.667	89.64	88.855	88.033	87.449	87.246	87.047	86.864	86.932	86.878	86.878	85.967	86.04	85.79	85.709	85.611	85.449	85.26
3.75	89.648	88.859	88.042	87.458	87.256	87.054	86.872	86.948	86.891	86.891	85.987	86.058	85.807	85.726	85.627	85.464	85.275
3.833	89.653	88.864	88.046	87.465	87.262	87.061	86.877	86.958	86.903	86.903	86.002	86.068	85.818	85.738	85.64	85.475	85.287
3.917	89.656	88.867	88.049	87.471	87.266	87.065	86.88	86.964	86.91	86.91	86.014	86.076	85.826	85.747	85.648	85.483	85.296
4	89.658	88.866	88.052	87.471	87.27	87.064	86.884	86.966	86.911	86.911	86.019	86.083	85.83	85.751	85.652	85.486	85.299
4.083	89.656	88.867	88.05	87.471	87.268	87.064	86.883	86.966	86.912	86.912	86.019	86.081	85.829	85.751	85.652	85.486	85.299
4.167	89.655	88.863	88.049	87.467	87.266	87.061	86.881	86.962	86.907	86.907	86.014	86.077	85.826	85.747	85.649	85.483	85.295
4.25	89.65	88.862	88.043	87.464	87.26	87.059	86.877	86.957	86.903	86.903	86.005	86.068	85.82	85.74	85.642	85.477	85.29
4.333	89.645	88.857	88.039	87.457	87.255	87.053	86.872	86.948	86.892	86.892	85.992	86.06	85.811	85.731	85.632	85.468	85.28
4.417	89.64	88.851	88.033	87.448	87.247	87.046	86.866	86.937	86.878	86.878	85.973	86.051	85.8	85.719	85.62	85.457	85.269
4.5	89.634	88.844	88.027	87.438	87.24	87.038	86.86	86.924	86.861	86.861	85.951	86.037	85.785	85.703	85.605	85.443	85.254
4.583	89.626	88.837	88.019	87.427	87.232	87.027	86.853	86.907	86.84	86.84	85.924	86.021	85.768	85.686	85.589	85.429	85.239
4.667	89.617	88.831	88.009	87.42	87.219	87.021	86.842	86.893	86.83	86.83	85.918	86.001	85.749	85.666	85.569	85.41	85.22
4.75	89.609	88.821	88	87.409	87.209	87.012	86.832	86.879	86.813	86.813	85.912	85.981	85.731	85.647	85.55	85.394	85.203
4.833	89.601	88.81	87.993	87.394	87.205	86.993	86.83	86.865	86.787	86.787	85.903	85.961	85.711	85.627	85.531	85.376	85.185
4.917	89.587	88.808	87.973	87.397	87.166	87.013	86.795	86.839	86.798	86.798	85.902	85.941	85.689	85.604	85.507	85.355	85.163
5	89.57	88.8	87.965	87.372	87.185	86.961	86.826	86.822	86.756	86.756	85.889	85.912	85.666	85.581	85.485	85.337	85.146
5.083	89.568	88.78	87.96	87.351	87.176	86.944	86.81	86.802	86.714	86.714	85.878	85.884	85.643	85.557	85.462	85.317	85.127
5.167	89.557	88.77	87.941	87.345	87.142	86.949	86.774	86.777	86.707	86.707	85.883	85.856	85.618	85.531	85.435	85.293	85.102
5.25	89.543	88.757	87.927	87.33	87.127	86.934	86.761	86.755	86.684	86.684	85.887	85.829	85.595	85.508	85.411	85.272	85.081
5.333	89.529	88.744	87.913	87.313	87.11	86.918	86.745	86.727	86.656	86.656	85.886	85.799	85.573	85.485	85.387	85.251	85.06
5.417	89.514	88.73	87.899	87.296	87.091	86.9	86.725	86.682	86.609	86.609	85.872	85.765	85.552	85.463	85.364	85.231	85.041
5.5	89.5	88.716	87.884	87.279	87.072	86.879	86.689	86.607	86.528	86.528	85.847	85.731	85.53	85.442	85.34	85.211	85.021
5.583	89.485	88.703	87.869	87.262	87.049	86.85	86.612	86.492	86.411	86.411	85.821	85.703	85.505	85.418	85.316	85.19	84.998
5.667	89.471	88.689	87.854	87.24	87.026	86.831	86.514	86.322	86.251	86.251	85.788	85.672	85.475	85.387	85.286	85.162	84.969
5.75	89.456	88.675	87.837	87.217	87.003	86.808	86.451	86.213	86.109	86.109	85.755	85.643	85.446	85.358	85.257	85.136	84.942
5.833	89.442	88.66	87.819	87.194	86.979	86.787	86.401	86.122	85.988	85.988	85.724	85.615	85.419	85.331	85.231	85.112	84.918
5.917	89.426	88.646	87.802	87.17	86.952	86.767	86.358	86.042	85.882	85.882	85.693	85.587	85.391	85.304	85.206	85.088	84.894
6	89.408	88.629	87.785	87.145	86.926	86.747	86.32	85.969	85.784	85.784	85.662	85.557	85.363	85.276	85.179	85.064	84.87
6.083	89.391	88.613	87.768	87.12	86.898	86.725	86.288	85.91	85.703	85.703	85.629	85.527	85.334	85.248	85.152	85.04	84.846
6.167	89.374	88.597	87.753	87.095	86.87	86.701	86.258	85.861	85.636	85.636	85.599	85.497	85.305	85.22	85.126	85.018	84.822
6.25	89.357	88.581	87.737	87.069	86.841	86.676	86.23	85.819	85.583	85.583	85.567	85.465	85.275	85.19	85.098	84.994	84.798
6.333	89.341	88.565	87.719	87.043	86.812	86.651	86.203	85.785	85.549	85.549	85.536	85.432	85.244	85.16	85.071	84.971	84.776
6.417	89.326	88.548	87.701	87.019	86.783	86.625	86.175	85.752	85.517	85.517	85.506	85.399	85.212	85.129	85.044	84.948	84.754

Time (hr)	Bridge2_U	Newtyle_0:	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	CH000000	Newtyle_0(	CH000000	Newtyle_0(	Newtyle_0(	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	84.522	84.522	84.22	83.931	83.619	83.357	83.192	83.026	82.866	82.802	82.799	82.799	82.799	82.8	82.8	82.8	85.024	-9999.99	84.522	-9999.99
0.083	84.487	84.487	84.164	83.863	83.554	83.297	83.141	82.975	82.826	82.798	82.793	82.793	82.793	82.796	82.799	82.8	84.936	-9999.99	84.487	-9999.99
0.167	84.502	84.498	84.182	83.884	83.564	83.288	83.122	82.962	82.821	82.799	82.801	82.804	82.805	82.803	82.801	82.8	84.938	-9999.99	84.502	-9999.99
0.25	84.485	84.485	84.163	83.865	83.559	83.302	83.143	82.972	82.826	82.8	82.796	82.795	82.795	82.797	82.799	82.8	84.936	-9999.99	84.485	-9999.99
0.333	84.504	84.5	84.183	83.88	83.558	83.282	83.124	82.966	82.823	82.8	82.801	82.803	82.804	82.803	82.801	82.8	84.938	-9999.99	84.504	-9999.99
0.417	84.483	84.483	84.163	83.87	83.565	83.305	83.143	82.967	82.823	82.799	82.796	82.796	82.796	82.798	82.799	82.8	84.935	-9999.99	84.483	-9999.99
0.5	84.505	84.5	84.181	83.873	83.552	83.282	83.128	82.968	82.825	82.801	82.801	82.802	82.803	82.802	82.801	82.8	84.938	-9999.99	84.505	-9999.99
0.583	84.486	84.486	84.164	83.869	83.564	83.307	83.147	82.974	82.828	82.802	82.797	82.795	82.795	82.797	82.799	82.8	84.942	-9999.99	84.486	-9999.99
0.667	84.502	84.498	84.181	83.884	83.571	83.308	83.145	82.98	82.831	82.8	82.799	82.799	82.8	82.8	82.8	82.8	84.955	-9999.99	84.502	-9999.99
0.75	84.507	84.502	84.188	83.893	83.58	83.318	83.155	82.989	82.837	82.801	82.8	82.8	82.8	82.8	82.8	82.8	84.968	-9999.99	84.507	-9999.99
0.833	84.515	84.507	84.197	83.903	83.591	83.33	83.168	83.001	82.845	82.801	82.799	82.799	82.8	82.8	82.8	82.8	84.984	-9999.99	84.515	-9999.99
0.917	84.518	84.513	84.207	83.915	83.604	83.343	83.179	83.012	82.854	82.802	82.799	82.799	82.8	82.8	82.8	82.8	85.003	-9999.99	84.518	-9999.99
1	84.522	84.522	84.22	83.931	83.619	83.356	83.191	83.025	82.866	82.802	82.799	82.799	82.799	82.8	82.8	82.8	85.024	-9999.99	84.522	-9999.99
1.083	84.539	84.531	84.234	83.941	83.629	83.37	83.204	83.04	82.877	82.803	82.798	82.798	82.799	82.8	82.8	82.8	85.047	-9999.99	84.539	-9999.99
1.167	84.542	84.542	84.248	83.953	83.642	83.385	83.218	83.056	82.889	82.804	82.798	82.798	82.799	82.8	82.8	82.8	85.072	-9999.99	84.542	-9999.99
1.25	84.559	84.554	84.262	83.967	83.657	83.404	83.237	83.073	82.904	82.811	82.797	82.797	82.798	82.8	82.8	82.8	85.1	-9999.99	84.559	-9999.99
1.333	84.568	84.568	84.277	83.983	83.673	83.424	83.257	83.091	82.92	82.825	82.795	82.796	82.798	82.8	82.8	82.8	85.13	-9999.99	84.568	-9999.99
1.417	84.583	84.581	84.295	84.001	83.692	83.443	83.275	83.109	82.939	82.84	82.793	82.794	82.797	82.8	82.8	82.8	85.162	-9999.99	84.583	-9999.99
1.5	84.597	84.596	84.316	84.022	83.713	83.465	83.296	83.131	82.96	82.857	82.791	82.791	82.796	82.8	82.799	82.8	85.199	-9999.99	84.597	-9999.99
1.583	84.613	84.612	84.338	84.041	83.733	83.489	83.321	83.153	82.98	82.871	82.791	82.787	82.794	82.8	82.799	82.8	85.239	-9999.99	84.613	-9999.99
1.667	84.632	84.632	84.361	84.063	83.757	83.517	83.347	83.178	83.004	82.894	82.808	82.782	82.792	82.799	82.799	82.8	85.283	-9999.99	84.632	-9999.99
1.75	84.653	84.653	84.386	84.088	83.783	83.543	83.372	83.203	83.029	82.918	82.826	82.775	82.788	82.799	82.799	82.8	85.329	-9999.99	84.653	-9999.99
1.833	84.676	84.675	84.415	84.115	83.81	83.573	83.401	83.23	83.054	82.941	82.842	82.768	82.783	82.799	82.798	82.8	85.38	-9999.99	84.676	-9999.99
1.917	84.7	84.699	84.443	84.142	83.84	83.605	83.432	83.26	83.083	82.971	82.871	82.793	82.775	82.798	82.798	82.8	85.434	-9999.99	84.7	-9999.99
2	84.727	84.726	84.475	84.173	83.871	83.637	83.463	83.29	83.114	83.003	82.904	82.827	82.788	82.797	82.797	82.8	85.488	-9999.99	84.727	-9999.99
2.083	84.755	84.754	84.508	84.204	83.904	83.671	83.496	83.321	83.146	83.036	82.939	82.863	82.814	82.796	82.796	82.8	85.521	-9999.99	84.755	-9999.99
2.167	84.783	84.783	84.54	84.234	83.935	83.704	83.527	83.352	83.175	83.064	82.966	82.888	82.837	82.795	82.794	82.8	85.561	-9999.99	84.783	-9999.99
2.25	84.813	84.813	84.573	84.267	83.968	83.736	83.558	83.381	83.202	83.09	82.987	82.903	82.844	82.794	82.793	82.8	85.612	-9999.99	84.813	-9999.99
2.333	84.842	84.842	84.606	84.297	84	83.769	83.59	83.411	83.23	83.114	83.008	82.918	82.852	82.792	82.791	82.8	85.695	-9999.99	84.842	-9999.99
2.417	84.872	84.872	84.638	84.328	84.032	83.802	83.619	83.439	83.255	83.137	83.027	82.932	82.859	82.791	82.788	82.8	85.8	-9999.99	84.872	-9999.99
2.5	84.902	84.902	84.671	84.36	84.064	83.833	83.649	83.466	83.279	83.159	83.045	82.946	82.867	82.788	82.786	82.8	85.926	-9999.99	84.902	-9999.99
2.583	84.931	84.931	84.702	84.389	84.093	83.862	83.676	83.492	83.303	83.18	83.065	82.962	82.881	82.798	82.782	82.8	86.061	-9999.99	84.931	-9999.99
2.667	84.96	84.96	84.733	84.419	84.122	83.889	83.701	83.514	83.324	83.2	83.084	82.979	82.895	82.808	82.778	82.8	86.211	-9999.99	84.96	-9999.99
2.75	84.987	84.987	84.761	84.446	84.148	83.914	83.723	83.535	83.341	83.216	83.098	82.992	82.907	82.816	82.773	82.8	86.362	-9999.99	84.987	-9999.99
2.833	85.007	85.007	84.783	84.466	84.167	83.932	83.74	83.55	83.354	83.227	83.108	83.001	82.915	82.822	82.768	82.8	86.479	-9999.99	85.007	-9999.99
2.917	85.033	85.033	84.81	84.491	84.192	83.955	83.761	83.569	83.371	83.242	83.121	83.013	82.926	82.83	82.768	82.8	86.618	-9999.99	85.033	-9999.99
3	85.064	85.063	84.844	84.52	84.218	83.979	83.783	83.589	83.389	83.258	83.136	83.027	82.939	82.842	82.776	82.8	86.684	-9999.99	85.064	-9999.99
3.083	85.1	85.1	84.887	84.56	84.251	84.008	83.808	83.613	83.41	83.278	83.154	83.043	82.954	82.855	82.785	82.8	86.712	-9999.99	85.1	-9999.99
3.167	85.125	85.125	84.914	84.583	84.274	84.029	83.824	83.628	83.423	83.29	83.166	83.054	82.964	82.864	82.792	82.8	86.738	-9999.99	85.125	-9999.99
3.25	85.15	85.15	84.942	84.609	84.297	84.048	83.84	83.642	83.435	83.3	83.175	83.063	82.974	82.872	82.798	82.8	86.782	-9999.99	85.15	-9999.99
3.333	85.174	85.174	84.967	84.63	84.318	84.069	83.856	83.657	83.448	83.311	83.185	83.072	82.984	82.88	82.804	82.8	86.802	-9999.99	85.174	-9999.99
3.417	85.202	85.202	84.996	84.654	84.338	84.085	83.87	83.669	83.46	83.322	83.195	83.081	82.993	82.888	82.81	82.8	86.805	-9999.99	85.202	-9999.99
3.5	85.222	85.222	85.017	84.673	84.355	84.101	83.883	83.679	83.469	83.331	83.202	83.088	83.001	82.896	82.815	82.8	86.84	-9999.99	85.222	-9999.99
3.583	85.241	85.241	85.036	84.69	84.369	84.113	83.893	83.688	83.477	83.338	83.209	83.095	83.007	82.902	82.82	82.8	86.854	-9999.99	85.241	-9999.99
3.667	85.26	85.26	85.055	84.704	84.382	84.123	83.901	83.695	83.483	83.344	83.215	83.099	83.012	82.906	82.823	82.8	86.878	-9999.99	85.26	-9999.99
3.75	85.275	85.275	85.07	84.717	84.392	84.132	83.909	83.702	83.489	83.35	83.22	83.104	83.017	82.91	82.826	82.8	86.891	-9999.99	85.275	-9999.99
3.833	85.287	85.287	85.081	84.727	84.4	84.138	83.914	83.707	83.493	83.354	83.224	83.108	83.02	82.913	82.829	82.8	86.903	-9999.99	85.287	-9999.99
3.917	85.296	85.295	85.089	84.733	84.406	84.142	83.918	83.71	83.496	83.357	83.227	83.11	83.022	82.915	82.829	82.8	86.91	-9999.99	85.296	-9999.99
4	85.299	85.299	85.092	84.735	84.408	84.145	83.92	83.712	83.498	83.358	83.228	83.111	83.023	82.916	82.83	82.8	86.911	-9999.99	85.299	-9999.99
4.083	85.299	85.299	85.092	84.735	84.408	84.144	83.92	83.712	83.498	83.358	83.228	83.111	83.023	82.916	82.83	82.8	86.912	-9999.99	85.299	-9999.99
4.167	85.295	85.295	85.089	84.732	84.406	84.143	83.919	83.711	83.496	83.357	83.227	83.11	83.023	82.915	82.829	82.8	86.907	-9999.99	85.295	-9999.99
4.25	85.29	85.29	85.084	84.728	84.402	84.139	83.916	83.708	83.494	83.355	83.225	83.109	83.021	82.914	82.829	82.8	86.903	-9999.99	85.29	-9999.99
4.333	85.28	85.28	85.075	84.721	84.396	84.135	83.912	83.704	83.491	83.352	83.222	83.106	83.018	82.912	82.828	82.8	86.892	-9999.99	85.28	-9999.99
4.417	85.269	85.269	85.063	84.712	84.388	84.129	83.906	83.7	83.487	83.348	83.219	83.103	83.015	82.909	82.825	82.8	86.878	-9999.99	85.269	-9999.99
4.5	85.254	85.254	85.049	84.7	84.378	84.121	83.9	83.694	83.482	83.343	83.214	83.099	83.011	82.906	82.823	82.8	86.861	-9999.99	85.254	-9999.99
4.583	85.239	85.239	85.034	84.688	84.368	84.112	83.892	83.687	83.477	83.338	83.209	83.094	83.007	82.901	82.82	82.8	86.84	-9999.99	85.239	-9999.99
4.667	85.22	85.22	85.016	84.672	84.354	84.1	83.882	83.679	83.469	83.331	83.203	83.089	83.001	82.896	82.815	82.8	86.83	-9999.99	85.22	-9999.99
4.75	85.203	85.203	84.998	84.656	84.341	84.088	83.873	83.671	83.461	83.324	83.196	83.083	82.995	82.891	82.811	82.8	86.813	-9999.99	85.203	-9999.99
4.833	85.185	85.185	84.979	84.64	84.326	84.075	83.862	83.662	83.453	83.316	83.19	83.077	82.989	82.884	82.807	82.8	86.787	-9999.99	85.185	-9999.99
4.917	85.163	85.163	84.957	84.621	84.311	84.062	83.851	83.652	83.444	83.308	83.182	83.07	82.982	82.878	82.803	82.8	86.798	-9999.99	85.163	-9999.99
5	85.146	85.146	84.939	84.605	84.294	84.046	83.838	83.641	83.435	83.3	83.175	83.063	82.974	82.872	82.797	82.8	86.756	-9999.99	85.146	-9999.99
5.083	85.127	85.127	84.917	84.586	84.276	84.03	83.825	83.629	83.424	83.291	83.167	83.056	82.966	82.865	82.792	82.8	86.714	-9999.99	85.127	-9999.99
5.167	85.102	85.102	84.891	84.563	84.254	84.012	83.811	83.616	83.413	83.28	83.157	83.046	82.957	82.857	82.787	82.8	86.707	-9999.99	85.102	-9999.99
5.25	85.081	85.081	84.868	84.543	84.235	83.995	83.797	83.603	83.401	83.27	83.147	83.037	82.948	82.85	82.781	82.8	86.684	-9999.99	85.081	-9999.99
5.333	85.06	85.06	84.845	84.522	84.217	83.978	83.782	83.589	83.389	83.259	83.137	83.028	82.94	82.843	82.776	82.8	86.656	-9999.99	85.06	-9999.99
5.417	85.041	85.041	84.822	84.502	84.199	83.962	83.768	83.576	83.377	83.248	83.127	83.019	82.931	82.835	82.771	82.8	86.609	-9999.99	85.041	-9999.99
5.5	85.021	85.021	84.8	84.482	84.181	83.945	83.752	83.562	83.365	83.236	83.117	83.009	82.922	82.827	82.766	82.8	86.528	-9999.99	85.021	-9999.99
5.583	84.998	84.998	84.775	84.459	84.16	83.925	83.735	83.545	83.35	83.224	83.105	82.999	82.913	82.82	82.769	82.8	86.411	-9999.99	84.998	-9999.99
5.667	84.969	84.969	84.744	84.429	84.132	83.899	83.711	83.523	83.332	83.208	83.091	82.985	82.901	82.812	82.775	82.8	86.251	-9999.99	84.969	-9999.99
5.75	84.942	84.942	84.715	84.401	84.105	83.874	83.687	83.502	83.313	83.191	83.075	82.971	82.888	82.803	82.78	82.8	86.109	-9999.99	84.942	-9999.99
5.833	84.918	84.918	84.689	84.377	84.081	83.85	83.666	83.482	83.294	83.173	83.059	82.957	82.876	82.794	82.783	82.8	85.988	-9999.99	84.918	-9999.99
5.917	84.894	84.894	84.662	84.352	84.056	83.826	83.643	83.46	83.275	83.155	83.042	82.943	82.865	82.788	82.786	82.8	85.882	-9999.99	84.894	-9999.99
6	84.87	84.869	84.636	84.326	84.03	83.8	83.619	83.438	83.255	83.138	83.027	82.932	82.859	82.79	82.788	82.8	85.784	-9999.99	84.87	-9999.99
6.083	84.846	84.845	84.61	84.302	84.005	83.775	83.595	83.417	83.236	83.12	83.012	82.92	82.853	82.791	82.79	82.8	85.703	-9999.99	84.846	-9999.99
6.167	84.822	84.822	84.584	84.278	83.98	83.749	83.571	83.393	83.214	83.1	82.997	82.91	82.847	82.793	82.792	82.8	85.636	-9999.99	84.822	-9999.99
6.25	84.798	84.798	84.558	84.252	83.954	83.723	83.546	83.37	83.192	83.08	82.979	82.898	82.841	82.794	82.793	82.8	85.583	-9999.99	84.798	-9999.99
6.333	84.776	84.775	84.532	84.227	83.928	83.697	83.522	83.347	83.171	83.061	82.963	82.885	82.834	82.795	82.794	82.8	85.549	-9999.99	84.776	-9999.99
6.417	84.754	84.753	84.507	84.203	83.903	83.672	83.497	83.322	83.147	83.038	82.941	82.865	82.816	82.796	82.795	82.8	85.517	-9999.99	84.754	-9999.99

6.5	89.311	88.533	87.683	86.993	86.754	86.599	86.148	85.723	85.494	85.494	85.486	85.368	85.178	85.099	85.017	84.927	84.732	84.732	84.731	84.481	84.179	83.878	83.645	83.471	83.298	83.123	83.013	82.916	82.84	82.796	82.797	82.796	82.8	85.494	-9999.99	84.732	-9999.99
6.583	89.293	88.517	87.667	86.967	86.725	86.573	86.122	85.587	85.454	85.454	85.447	85.331	85.145	85.069	84.991	84.906	84.709	84.709	84.709	84.455	84.154	83.853	83.619	83.446	83.274	83.099	82.987	82.887	82.808	82.774	82.797	82.797	82.8	85.454	-9999.99	84.709	-9999.99
6.667	89.276	88.5	87.651	86.942	86.696	86.545	86.096	85.55	85.498	85.498	85.492	85.293	85.111	85.038	84.954	84.884	84.688	84.688	84.688	84.431	84.13	83.828	83.593	83.422	83.25	83.074	82.961	82.864	82.784	82.777	82.758	82.758	82.8	85.498	-9999.99	84.688	-9999.99
6.75	89.26	88.481	87.632	86.918	86.668	86.519	86.072	85.515	85.363	85.363	85.359	85.255	85.078	85.009	84.938	84.863	84.67	84.67	84.669	84.407	84.108	83.894	83.566	83.396	83.225	83.05	82.937	82.839	82.765	82.783	82.758	82.758	82.8	85.363	-9999.99	84.67	-9999.99
6.833	89.246	88.465	87.614	86.893	86.638	86.489	86.048	85.582	85.319	85.319	85.316	85.217	85.045	84.98	84.914	84.846	84.651	84.651	84.649	84.382	84.085	83.78	83.541	83.371	83.202	83.028	82.917	82.825	82.773	82.787	82.759	82.759	82.8	85.319	-9999.99	84.651	-9999.99
6.917	89.233	88.449	87.597	86.87	86.61	86.459	86.025	85.55	85.277	85.277	85.275	85.18	85.013	84.95	84.889	84.827	84.63	84.63	84.63	84.359	84.062	83.757	83.516	83.347	83.179	83.005	82.895	82.809	82.781	82.791	82.759	82.759	82.8	85.277	-9999.99	84.63	-9999.99
7	89.214	88.433	87.582	86.849	86.585	86.432	86.006	85.523	85.239	85.239	85.237	85.146	84.983	84.922	84.864	84.808	84.615	84.615	84.613	84.339	84.043	83.736	83.495	83.325	83.157	82.984	82.876	82.794	82.786	82.793	82.759	82.759	82.8	85.239	-9999.99	84.615	-9999.99
7.083	89.195	88.415	87.568	86.829	86.558	86.403	85.988	85.498	85.203	85.203	85.202	85.114	84.954	84.895	84.84	84.794	84.599	84.599	84.598	84.32	84.025	83.717	83.47	83.303	83.137	82.965	82.861	82.789	82.786	82.795	82.759	82.759	82.8	85.203	-9999.99	84.599	-9999.99
7.167	89.18	88.399	87.556	86.809	86.535	86.378	85.968	85.472	85.169	85.169	85.169	85.084	84.927	84.869	84.817	84.778	84.587	84.587	84.585	84.301	84.008	83.699	83.45	83.283	83.118	82.947	82.847	82.791	82.752	82.796	82.759	82.8	82.8	85.169	-9999.99	84.587	-9999.99
7.25	89.166	88.384	87.54	86.792	86.514	86.354	85.951	85.449	85.139	85.139	85.138	85.056	84.902	84.847	84.789	84.772	84.573	84.573	84.573	84.284	83.99	83.681	83.432	83.265	83.1	82.929	82.832	82.794	82.794	82.797	82.8	82.8	82.8	85.139	-9999.99	84.573	-9999.99
7.333	89.155	88.37	87.526	86.776	86.493	86.334	85.935	85.426	85.11	85.11	85.109	85.029	84.879	84.824	84.776	84.75	84.564	84.564	84.56	84.268	83.974	83.664	83.414	83.248	83.083	82.913	82.819	82.795	82.755	82.798	82.8	82.8	82.8	85.11	-9999.99	84.564	-9999.99
7.417	89.145	88.357	87.514	86.762	86.474	86.315	85.921	85.406	85.083	85.083	85.083	85.006	84.859	84.805	84.764	84.745	84.548	84.548	84.548	84.255	83.961	83.65	83.396	83.23	83.067	82.898	82.807	82.796	82.757	82.798	82.8	82.8	82.8	85.083	-9999.99	84.548	-9999.99
7.5	89.131	88.346	87.504	86.75	86.456	86.29	85.906	85.39	85.061	85.061	85.061	84.985	84.839	84.786	84.745	84.725	84.541	84.541	84.539	84.244	83.95	83.638	83.382	83.215	83.054	82.887	82.803	82.797	82.757	82.759	82.8	82.8	82.8	85.061	-9999.99	84.541	-9999.99
7.583	89.117	88.332	87.494	86.738	86.44	86.266	85.891	85.374	85.04	85.04	85.04	84.966	84.821	84.767	84.724	84.703	84.534	84.534	84.529	84.231	83.939	83.627	83.368	83.202	83.038	82.876	82.802	82.798	82.758	82.799	82.8	82.8	82.8	85.04	-9999.99	84.534	-9999.99
7.667	89.103	88.321	87.486	86.726	86.426	86.246	85.876	85.358	85.02	85.02	85.02	84.947	84.806	84.756	84.73	84.718	84.521	84.521	84.521	84.219	83.93	83.618	83.356	83.191	83.026	82.866	82.801	82.798	82.758	82.799	82.8	82.8	82.8	85.02	-9999.99	84.521	-9999.99
7.75	89.092	88.311	87.479	86.716	86.413	86.224	85.862	85.344	85.002	85.002	85.002	84.931	84.792	84.745	84.72	84.709	84.515	84.515	84.515	84.209	83.918	83.607	83.346	83.182	83.015	82.857	82.801	82.799	82.798	82.799	82.8	82.8	82.8	85.002	-9999.99	84.515	-9999.99
7.833	89.083	88.301	87.473	86.706	86.399	86.201	85.849	85.332	84.985	84.985	84.985	84.917	84.78	84.726	84.682	84.661	84.517	84.517	84.508	84.199	83.906	83.595	83.334	83.173	83.006	82.849	82.801	82.799	82.798	82.8	82.8	82.8	82.8	84.985	-9999.99	84.517	-9999.99
7.917	89.075	88.293	87.468	86.698	86.386	86.181	85.838	85.322	84.971	84.971	84.971	84.904	84.767	84.714	84.675	84.659	84.51	84.51	84.504	84.191	83.896	83.585	83.322	83.161	82.995	82.841	82.801	82.799	82.759	82.8	82.8	82.8	82.8	84.971	-9999.99	84.51	-9999.99
8	89.069	88.285	87.458	86.691	86.376	86.162	85.829	85.314	84.959	84.959	84.959	84.893	84.756	84.705	84.673	84.661	84.504	84.504	84.5	84.184	83.888	83.576	83.314	83.151	82.986	82.835	82.8	82.799	82.799	82.8	82.8	82.8	82.8	84.959	-9999.99	84.504	-9999.99
8.083	89.064	88.279	87.449	86.686	86.367	86.148	85.819	85.305	84.948	84.948	84.948	84.883	84.745	84.697	84.674	84.666	84.499	84.499	84.495	84.178	83.881	83.569	83.305	83.143	82.978	82.829	82.8	82.8	82.8	82.8	82.8	82.8	82.8	84.948	-9999.99	84.499	-9999.99
8.167	89.061	88.275	87.443	86.682	86.362	86.139	85.813	85.298	84.941	84.941	84.941	84.876	84.739	84.695	84.678	84.672	84.495	84.495	84.493	84.174	83.876	83.564	83.3	83.137	82.972	82.825	82.8	82.8	82.8	82.8	82.8	82.8	82.8	84.941	-9999.99	84.495	-9999.99
8.25	89.06	88.273	87.441	86.681	86.358	86.135	85.808	85.294	84.938	84.938	84.938	84.868	84.739	84.696	84.667	84.659	84.5	84.5	84.497	84.181	83.885	83.567	83.292	83.123	82.96	82.812	82.8	82.802	82.804	82.805	82.803	82.801	82.8	84.938	-9999.99	84.5	-9999.99
8.333	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.292	84.936	84.936	84.936	84.873	84.734	84.699	84.692	84.69	84.498	84.498	84.496	84.183	83.884	83.557	83.3	83.142	82.973	82.827	82.8	82.798	82.795	82.795	82.797	82.799	82.8	84.936	-9999.99	84.498	-9999.99
8.417	89.059	88.273	87.441	86.681	86.358	86.135	85.809	85.294	84.938	84.938	84.938	84.867	84.741	84.704	84.674	84.66	84.503	84.503	84.499	84.183	83.882	83.561	83.284	83.123	82.964	82.822	82.799	82.801	82.803	82.804	82.803	82.801	82.8	84.938	-9999.99	84.503	-9999.99
8.5	89.06	88.273	87.441	86.68	86.359	86.135	85.809	85.292	84.935	84.935	84.935	84.875	84.732	84.693	84.688	84.686	84.484	84.484	84.484	84.182	83.887	83.562	83.304	83.143	82.97	82.824	82.8	82.796	82.795	82.796	82.758	82.799	82.8	84.935	-9999.99	84.484	-9999.99
8.583	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.293	84.938	84.938	84.938	84.868	84.739	84.711	84.684	84.666	84.505	84.505	84.5	84.182	83.895	83.563	83.282	83.127	82.967	82.824	82.8	82.801	82.803	82.803	82.801	82.8	84.939	-9999.99	84.505	-9999.99
8.667	89.06	88.273	87.441	86.681	86.358	86.135	85.808	85.294	84.935	84.935	84.935	84.874	84.735	84.687	84.68	84.68	84.484	84.484	84.484	84.184	83.893	83.568	83.305	83.142	82.965	82.821	82.799	82.797	82.797	82.797	82.758	82.799	82.8	84.935	-9999.99	84.484	-9999.99
8.75	89.06	88.273	87.441	86.68	86.359	86.134	85.809	85.293	84.937	84.937	84.937	84.87	84.735	84.712	84.696	84.678	84.502	84.502	84.499	84.176	83.867	83.55	83.285	83.129	82.97	82.827	82.801	82.801	82.801	82.801	82.801	82.8	82.8	84.937	-9999.99	84.502	-9999.99

AC31

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 22N
Selected output data from time (hr): 0
to time (hr): 8.75

Velocity

Time (hr)	Newtyle 0:	CH000000	CH000000	Newtyle 0:	CH000000	CH000000	Newtyle 0:	CH000000	Newtyle01:	Bridge1 U	Newtyle12	Newtyle 0:	Newtyle 0:	CH000000	CH000000	CH000000	Newtyle 0:	Bridge2 U	Newtyle 0:	Newtyle 0(	CH000000	CH000000	Newtyle 0(	CH000000	CH000000	Newtyle 0(	CH000000	CH000000	CH000000	Newtyle 0(	CH000000	Newtyle 0(	Newtyle 0(	Spill 012.5	Spill 012.5	Spill 010U	Spill 010D
0	1.445	1.146	1.527	0.974	1.043	0.658	1.457	1.757	0 781	0	0 781	0 924	1 038	0 984	0 832	0 667	1 862	0	1 862	1 324	1 227	1 396	1 06	1 055	1 055	1 002	0 687	0 408	0.281	0.191	0.114	0.088	0.053	0	0	0	0
0.083	1.183	0.874	1.276	0.717	0.89	0.551	1.128	1.453	0 531	0	0 531	0 687	0 811	0 631	0 41	0 285	1 208	0	1 208	0 959	0 906	1 113	0 799	0 846	0 879	0 707	0 331	0 189	0.122	0.0758	0.0331	0.0237	0.0175	0	0	0	0
0.167	1.183	0.87	1.276	0.712	0.895	0.541	1.133	1.445	0 539	0	0 539	0 707	0 742	0 695	0 624	0 49	1 389	0	1 484	1 168	1 088	1 253	0 822	0 748	0 776	0 691	0 322	0 185	0.126	0.0856	0.0465	0.0375	0.0286	0	0	0	0
0.25	1.179	0.883	1.269	0.726	0.882	0.552	1.12	1.455	0 54	0	0 54	0 687	0 824	0 654	0 415	0 28	1 196	0	1 196	0 938	0 907	1 144	0 834	0 859	0 891	0 663	0 3	0 175	0.12	0.0835	0.0465	0.0358	0.0264	0	0	0	0
0.333	1.184	0.871	1.277	0.714	0.893	0.55	1.131	1.451	0 524	0	0 524	0 716	0 741	0 641	0 59	0 501	1 409	0	1 519	1 188	1 092	1 201	0 773	0 745	0 796	0 702	0 336	0 199	0.134	0.0853	0.0389	0.027	0.0199	0	0	0	0
0.417	1.177	0.878	1.268	0.72	0.887	0.54	1.124	1.446	0 558	0	0 558	0 67	0 827	0 716	0 431	0 276	1 177	0	1 177	0 936	0 932	1 186	0 877	0 857	0 89	0 621	0 269	0 161	0.118	0.0902	0.0549	0.0413	0.0303	0	0	0	0
0.5	1.18	0.88	1.271	0.723	0.886	0.554	1.123	1.457	0 528	0	0 528	0 711	0 756	0 582	0 517	0 482	1 421	0	1 538	1 191	1 043	1 123	0 753	0 77	0 806	0 718	0 354	0 208	0.14	0.0883	0.0339	0.0169	0.0117	0	0	0	0
0.583	1.229	0.915	1.269	0.758	0.909	0.567	1.156	1 47	0 58	0	0 58	0 697	0 848	0 729	0 451	0 294	1 201	0	1 202	0 956	0 933	1 179	0 865	0 877	0 906	0 681	0 308	0 179	0.124	0.0885	0.0523	0.042	0.0313	0	0	0	0
0.667	1.287	0.946	1.277	0.797	0.94	0.601	1.203	1.503	0 605	0	0 606	0 752	0 849	0 809	0 651	0 489	1 392	0	1 487	1 146	1 071	1 242	0 876	0 866	0 878	0 764	0 387	0 23	0.158	0.106	0.0531	0.0374	0.0273	0	0	0	0
0.75	1.337	0.984	1.298	0.843	0.962	0.613	1.266	1.573	0 647	0	0 647	0 787	0 883	0 86	0 742	0 569	1 44	0	1 574	1 189	1 109	1 28	0 915	0 901	0 914	0 813	0 434	0 255	0.176	0.12	0.0621	0.0453	0.0332	0	0	0	0
0.833	1.38	1.034	1.38	0.884	0.984	0.621	1.332	1.537	0 689	0	0 689	0 825	0 922	0 905	0 828	0 659	1 494	0	1 676	1 236	1 15	1 315	0 953	0 936	0 952	0 873	0 504	0 297	0.204	0.139	0.0724	0.053	0.039	0	0	0	0
0.917	1.417	1.086	1.457	0.92	1.002	0.631	1.395	1.596	0 732	0	0 732	0 874	0 977	0 947	0 838	0 659	1 662	0	1 764	1 275	1 187	1 344	0 989	0 982	0 995	0 931	0 581	0 343	0.236	0.161	0.0838	0.0614	0.0451	0	0	0	0
1	1.445	1.146	1.528	0.975	1.043	0.658	1.458	1.757	0 782	0	0 782	0 925	1 039	0 986	0 834	0 668	1 864	0	1 864	1 324	1 229	1 397	1 064	1 06	1 058	1 003	0 69	0 41	0.282	0.191	0.0995	0.0727	0.0536	0	0	0	0
1.083	1.471	1.203	1.595	1.019	1.085	0.696	1.514	1.307	0 831	0	0 831	0 973	1 102	1 071	1 004	0 847	1 793	0	1 941	1 371	1 32	1 485	1 128	1 128	1 107	1 08	0 801	0 48	0.33	0.224	0.116	0.0848	0.0622	0	0	0	0
1.167	1.52	1.263	1.665	1.086	1.124	0.719	1.584	1.377	0 888	0	0 888	1 029	1 161	1 116	1 01	0 844	2 023	0	2 023	1 448	1 412	1 568	1 192	1 191	1 153	1 156	0 925	0 558	0.384	0.26	0.135	0.0984	0.0723	0	0	0	0
1.25	1.595	1.325	1.733	1.143	1.163	0.767	1.679	1.935	0 944	0	0 945	1 087	1 226	1 189	1 124	0 976	2 022	0	2 104	1 536	1 504	1 644	1 255	1 248	1 218	1 238	1 047	0 659	0.453	0.307	0.159	0.116	0.085	0	0	0	0
1.333	1.664	1.382	1.794	1.197	1.208	0.831	1.777	1.986	1	0	1 001	1 147	1 298	1 255	1 182	1 026	2 175	0	2 175	1 616	1 588	1 709	1 31	1 3	1 282	1 303	1 133	0 769	0.527	0.357	0.184	0.135	0.0989	0	0	0	0
1.417	1.725	1.439	1.846	1.256	1.256	0.887	1.875	2.034	1 058	0	1 06	1 21	1 372	1 334	1 278	1 17	2 254	0	2 294	1 696	1 664	1 78	1 389	1 379	1 355	1 369	1 227	0 904	0.619	0.418	0.215	0.157	0.115	0	0	0	0
1.5	1.769	1.512	1.939	1.309	1.3	0.945	1.971	2.076	1 12	0	1 122	1 274	1 448	1 411	1 363	1 283	2 404	0	2 417	1 771	1 749	1 857	1 467	1 454	1 425	1 439	1 324	1 064	0.728	0.49	0.251	0.183	0.135	0	0	0	0
1.583	1.811	1.577	2.035	1.367	1.341	1.002	2.09	2.137	1 18	0	1 184	1 344	1 53	1 493	1 456	1 413	2 515	0	2 531	1 863	1 86	1 945	1 54	1 525	1 503	1 524	1 446	1 237	0.855	0.573	0.292	0.213	0.156	0	0	0	0
1.667	1.898	1.674	2.125	1.433	1.393	1.069	2.209	2 19	1 244	0	1 25	1 418	1 618	1 584	1 556	1 538	2 641	0	2 642	1 965	1 966	2 03	1 617	1 6	1 582	1 6	1 533	1 354	1.011	0.673	0.34	0.248	0.182	0	0	0	0
1.75	2.004	1.765	2.203	1.492	1.442	1.135	2.319	2.238	1 306	0	1 314	1 493	1 707	1 678	1 663	1 669	2 736	0	2 737	2 059	2 059	2 111	1 701	1 683	1 658	1 672	1 621	1 471	1.194	0.787	0.393	0.287	0.21	0	0	0	0
1.833	2.102	1.852	2.274	1.544	1.491	1.21	2.43	2.282	1 368	0	1 379	1 574	1 805	1 786	1 787	1 823	2 845	0	2 855	2 15	2 161	2 197	1 781	1 763	1 743	1 756	1 718	1 605	1.404	0.924	0.453	0.331	0.242	0	0	0	0
1.917	2.185	1.945	2.378	1.608	1.545	1.29	2.537	2.322	1 43	0	1 445	1 659	1 908	1 897	1 909	1 968	2 964	0	2 972	2 258	2 271	2 285	1 862	1 842	1 824	1 832	1 795	1 695	1.502	1.099	0.523	0.382	0.279	0	0	0	0
2	2.264	2.051	2.475	1.661	1.596	1.374	2.629	2.365	1 503	0	1 522	1 747	2 014	2 009	2 031	2 111	3 069	0	3 075	2 362	2 373	2 373	1 95	1 929	1 909	1 907	1 865	1 756	1.558	1.198	0.599	0.437	0.318	0	0	0	0
2.083	2.37	2.157	2.563	1.714	1.648	1.461	2.721	2.452	1 624	0	1 652	1 831	2 111	2 121	2 153	2 255	3 167	0	3 176	2 458	2 474	2 454	2 03	2 008	1 988	1 977	1 925	1 811	1.577	1.224	0.684	0.5	0.363	0	0	0	0
2.167	2.466	2.25	2.64	1.764	1.697	1.539	2.798	2.517	1 723	0	1 758	1 901	2 153	2 224	2 269	2 389	3 269	0	3 275	2 56	2 572	2 539	2 11	2 086	2 064	2 051	1 998	1 873	1.629	1.242	0.773	0.565	0.408	0	0	0	0
2.25	2.545	2.35	2.729	1.807	1.743	1.62	2.875	2.561	1 793	0	1 856	1 962	2 205	2 283	2 379	2 514	3 356	0	3 359	2 651	2 66	2 615	2 187	2 164	2 142	2 134	2 071	1 952	1.735	1.347	0.869	0.635	0.457	0	0	0	0
2.333	2.614	2.442	2.811	1.851	1.786	1.695	2.93	2.531	1 783	0	1 949	2 019	2 243	2 349	2 467	2 636	3 44	0	3 443	2 739	2 748	2 686	2 254	2 233	2 213	2 212	2 141	2 033	1.818	1.441	0.969	0.708	0.506	0	0	0	0
2.417	2.675	2.525	2.883	1.888	1.829	1.777	2.956	2.452	1 735	0	2 032	2 071	2 276	2 404	2 543	2 747	3 519	0	3 522	2 826	2 831	2 753	2 317	2 297	2 281	2 29	2 2	2 094	1.878	1.525	1.073	0.785	0.557	0	0	0	0
2.5	2.735	2.609	2.943	1.927	1.869	1.861	2.934	2.283	1 657	0	2 112	2 112	2 31	2 447	2 616	2 845	3 589	0	3 59	2 905	2 905	2 815	2 374	2 358	2 344	2 37	2 25	2 131	1.932	1.603	1.183	0.865	0.608	0	0	0	0
2.583	2.814	2.686	3.001	1.963	1.916	1.916	2.886	1.347	1 577	0	2 189	2 158	2 328	2 493	2 677	2 931	3 657	0	3 658	2 981	2 975	2 873	2 431	2 405	2 395	2 44	2 292	2 157	1.959	1.627	1.239	0.946	0.659	0	0	0	0
2.667	2.883	2.757	3.052	1.998	1.963	1.946	2.714	1.524	1 491	0	2 265	2 19	2 348	2 527	2 732	3 009	3 717	0	3 719	3 052	3 038	2 928	2 486	2 456	2 442	2 484	2 322	2 18	1.984	1.645	1.291	1.034	0.71	0	0	0	0
2.75	2.94	2.834	3.107	2.035	2.014	2.004	2.181	1.274	1 411	0	2 331	2 216	2 368	2 552	2 779	3 075	3 769	0	3 77	3 113	3 092	2 978	2 531	2 494	2 484	2 537	2 353	2 202	1.997	1.663	1.34	1.122	0.759	0	0	0	0
2.833	2.993	2.901	3.159	2.072	2.05	2.025	1.809	1.389	1 356	0	2 379	2 239	2 373	2 573	2 812	3 12	3 807	0	3 808	3 159	3 134	3 011	2 564	2 513	2 511	2 577	2 377	2 217	2.008	1.679	1.38	1.198	0.797	0	0	0	0
2.917	3.042	2.961	3.209	2.132	2.07	1.94	1.486	0.925	1 267	0	2 35	2 112	2 363	2 6	2 848	3 179	3 859	0	3 86	3 22	3 187	3 057	2 608	2 545	2 527	2 627	2 409	2 236	2.023	1.698	1.416	1.265	0.843	0	0	0	0
3	3.086	3.015	3.252	2.174	2.099	1.926	1.452	0.364	1 229	0	2 337	1 947	2 342	2 589	2 853	3 225	3 895	0	3 895	3 258	3 241	3 11	2 657	2 572	2 553	2 64	2 441	2 256	2.037	1.71	1.443	1.314	0.896	0	0	0	0
3.083	3.129	3.066	3.291	2.218	2.125	1.934	1.457	0.353	1 235	0	2 406	1 868	2 285	2 536	2 79	3 227	3 892	0	3 892	3 256	3 253	3 157	2 708	2 595	2 572	2 664	2 457	2 282	2.061	1.727	1.486	1.372	0.965	0	0	0	0
3.167	3.176	3.12	3.32	2.263	2.146	1.949	1.462	0.339	1 233	0	2 44	1 799	2 242	2 503	2 768	3 242	3 912	0	3 912	3 284	3 282	3 176	2 727	2 616	2 572	2 686	2 469	2 289	2.072	1.737	1.513	1.41	1.012	0	0	0	0
3.25	3.337	3.055	3.473	2.27	2.158	1.996	1.361	0.302	1 21	0	2 431	1 703	2 177	2 441	2 73	3 244	3 923	0	3 923	3 309	3 314	3 205	2 75	2 624	2 57	2 705	2 485	2 303	2.084	1.743	1.537	1.444	1.056	0	0	0	0
3.333	3.231	3.207	3.381	2.285	2.269	1.838	1.585	0.739	1 196	0	2 394	1 652	2 135	2 404	2 699	3 247	3 922	0	3 922	3 316	3 32	3 214	2 769	2 629	2 581	2 724	2 5	2 312	2.088	1.748	1.564	1.479	1.103	0	0	0	0
3.417	3.285	3.267	3.394	2.396	2.144	2.051	1.414	0.312	1 19	0	2 374	1 563	2 074	2 363	2 678	3 259	3 94	0	3 94	3 347	3 347	3 233	2 777	2 628	2 583	2 718	2 519	2 326	2.101	1.751	1.585	1.512	1.148	0	0	0	0
3.5	3.333	3.262	3.469	2.366	2.271	1.931	1.532	0.763	1 176	0	2 354	1 525	2 032	2 31	2 648	3 248	3 93	0	3 93	3 354	3 355	3 246	2 791	2 637	2 579	2 71	2 53	2 336	2.112	1.755	1.599	1.54	1.186	0	0	0	0
3.583	3.358	3.296	3.487	2.401	2.259	1.97	1.513	0.763	1 163	0	2 313	1 472	1 994	2 271	2 629	3 247	3 927	0	3 927	3 367	3 363	3 254	2 798	2 641	2 574	2 708	2 537	2 345	2.119	1.759	1.613	1.564	1.219	0	0	0	0
3.667	3.385	3.314	3.511	2.411	2.271	1.974	1.514	0.741	1 124	0	2 175	1 421	1 929	2 214	2 582	3 234	3 914	0	3 915	3 372	3 371	3 262	2 804	2 645	2 574	2 71	2 541	2 352	2.13	1.761	1.625	1.583	1.247	0	0	0	0
3.75	3.387	3.349	3.507	2.426	2.269	1.985	1.52	0.712	1 103	0	2 097	1 36	1 883	2 172	2 537	3 217	3 898	0	3 898	3 371	3 374	3 269	2 817	2 646	2 572	2 712	2 539	2 359	2.137	1.767	1.637	1.599	1.272	0	0	0	0
3.833	3.4	3.359	3.521	2.426	2.28	1.985	1.528	0.698	1 087	0	2 044	1 329	1 849	2 121	2 505	3 203	3 886	0	3 887	3 373	3 38	3 277	2 825	2 646	2 571	2 714	2 538	2 365	2.141	1.77	1.645	1.613	1.292	0	0	0	0
3.917	3.407	3.367	3.528	2.426	2.286	1.988	1.533	0.689	1 074	0	1 999	1 303	1 831	2 09	2 487	3 195	3 881	0	3 881	3 376	3 381	3 282	2 831	2 643	2 571	2 715	2 537	2 368	2.146	1.773	1.654	1.628	1.306	0	0	0	0
4	3.398	3.384	3.514	2.436	2.273	2.003	1.523	0.686	1 07	0	1 982	1 285	1 827	2 083	2 484	3 194	3 877	0	3 878	3 374	3 378	3 284	2 833	2 644	2 571	2 715	2 537	2 369	2.149	1.775	1.658	1.634	1.312	0	0	0	0
4.083	3.405	3.372	3.522	2.428	2.279	1.996	1.525	0.689	1 07	0	1 981	1 29	1 824	2 08	2 481	3 193	3 878	0	3 878	3 375	3 379	3 284	2 831	2 643	2 57	2 715	2 537	2 369	2.148	1.775	1.658	1.635	1.313	0	0	0	0
4.167	3.39	3.374	3.507	2.43	2.269	1.997	1.52	0.69	1 075	0	1 997	1 3	1 833	2 092	2 489	3 195	3 877	0	3 878	3 371	3 375	3 28	2 831	2 644	2 569	2 714	2 536	2 368	2.146	1.773	1.655	1.63	1.308	0	0	0	0
4.25	3.394	3.35	3.514	2.416	2.275	1.981	1.521	0.699	1 083	0	2 031	1 327	1 843	2 112	2 499	3 199	3 881	0	3 881	3 37	3 376	3 275	2 826	2 642	2 57	2 713	2 536	2 365	2.142	1.77	1.649	1.619	1.297	0	0	0	0
4.333	3.379	3.339	3.5	2.413	2.264	1.979	1.514	0.709	1 097	0	2 078	1 351	1 868	2 15	2 522	3 208	3 888	0	3 888	3 367	3 372	3 27	2 819	2 642	2 57	2 711	2 537	2 361	2.137	1.769	1.641	1.607	1.283	0	0	0	0
4.417	3.362	3.325	3.484	2.409	2.253	1.975	1.506	0.723	1 118	0	2 147	1 383	1 903	2 186	2 551	3 218	3 896	0	3 896	3 364	3 367	3 264	2 81	2 643	2 57	2 708	2 537	2 355	2.133	1.766	1.634	1.594	1.265	0	0	0	0
4.5	3.34	3.309	3.463	2.403	2.24	1.974	1.497	0.741	1 142	0	2 234	1 432	1 946	2 225	2 59	3 228	3 905	0	3 905	3 358	3 358	3 253	2 799	2 639	2 572	2 704	2 538	2 349	2.125	1.762	1.624	1.579	1.244	0	0	0	0
4.583	3.319	3.286	3.444	2.391	2.222	1.978	1.486	0.769	1 173	0	2 339	1 487	1 997	2 272	2 627	3 241	3 92	0	3 92	3 358	3 356	3 248	2 793	2 636	2 573	2 704	2 536	2 342	2.118	1.758	1.614	1.563	1.22	0	0	0	0
4.667	3.307	3.244	3.44	2.357	2.232	1.951	1.493	0.777	1 18	0	2 36	1 528	2 031	2 309	2 643	3 242	3 922	0	3 922	3 346	3 347	3 239	2 784	2 632	2 574	2 707	2 525	2 334	2.108	1.754	1.599	1.541	1.188	0	0	0	0
4.75	3.274	3.222	3.407	2.337	2.215	1.944	1.488	0.781	1 187	0	2 373	1 574	2 064	2 347	2 66	3 243	3 921	0	3 921	3 331	3 337	3 229	2 775	2 626	2 578	2 711	2 516	2 325	2.099	1.752	1.585	1.52	1.158	0	0	0	0
4.833	3.233	3.21	3.356	2.339	2.154	1.988	1.44	0.801	1 199	0	2 391	1 614	2 105	2 381	2 682	3 246	3 922	0	3 923	3 321	3 329	3 22	2 765	2 62	2 58	2 718	2 505	2 316	2.091	1.747	1.573	1.496	1.126	0	0	0	0
4.917	3.235	3.094	3.412	2.207	2.282	1.79	1.571	0.777	1 199	0	2 41	1 68	2 151	2 408	2 699	3 233	3 906	0	3 906	3 295	3 306	3 203	2 757	2 624	2 573	2 716	2 49	2 304	2.083	1.743	1.557	1.471	1.091	0	0	0	0
5	3.243	3.069	3.367	2.279	2.081	2.034	1.331	0 9	1 221	0	2 428	1 723	2 18	2 437	2 723	3 236	3 913	0	3 913	3 295	3 301	3 192	2 739	2 618	2 565	2 7	2 481	2 298	2.081	1.739	1.536	1.444	1.055	0	0	0	0
5.083	3.137	3.103	3.261	2.287	2.031	2.048	1.341	0.394	1 244	0	2 437	1 797	2 224	2 481	2 75	3 234	3 906	0	3 907	3 279	3 28	3 174	2 721	2 609	2 564	2 683	2 468	2 288	2.07	1.737	1.515	1.415	1.019	0	0	0	0
5.167	3.101	3.037	3.269	2.193	2.11	1.916	1.452	0.354	1 237	0	2 4	1 869	2 267	2 513	2 765	3 216	3 881	0	3 881	3 245	3 246	3 15	2 703	2 594	2 567	2 664	2 452	2 28	2.06	1.726	1.492	1.382	0.978	0	0	0	0
5.25	3.069	2.997	3.237	2.159	2.065	1.912	1.442	0.364	1 232	0	2 348	1 921	2 291	2 521	2 771	3 196	3 86	0	3 86	3 219	3 22	3 128	2 679	2 576	2 563	2 647	2 449	2 267	2.047	1.717	1.468	1.35	0.939	0	0	0	0
5.333	3.032	2.954	3.202	2.127	2.055	1.909	1.439	0.88	1 235	0	2 313	1 992	2 309	2 536	2 778	3 175	3 844	0	3 844	3 198	3 192	3 095	2 645	2 565	2 546	2 635	2 436	2 251	2.033	1.707	1.444	1.318	0.9	0	0	0	0
5.417	2.995	2.906	3.165	2.094	2.025	1.91	1.458	0.924	1 265	0	2 329	2 09	2 329	2 555	2 789	3 157	3 827	0	3 828	3 178	3 165	3 064	2 615	2 551	2 53	2 627	2 415	2 238	2.023	1.7	1.426	1.285	0.864	0	0	0	0
5.5	2.954	2.855	3.123	2.055	1.996	1.934	1.55	1.014	1 322	0	2 366	2 192	2 354	2 566	2 8	3 136	3 811	0	3 811	3 157	3 14	3 03	2 585	2 528	2 516	2 603	2 393	2 225	2.014	1.691	1.408	1.25	0.828	0	0	0	0
5.583	2.909	2.799	3.079	2.012	1.984	1.962	1.899	1.171	1 386	0	2 345	2 22	2 363	2 556	2 789	3 093	3 776	0	3 776	3 12	3 106	2 993	2 547	2 501	2 501	2 561	2 365	2 209	2.002	1.674	1.37	1.178	0.786	0	0	0	0
5.667	2.861	2.737	3.033	1.985	1.95	1.934	2.541	1.503	1 466	0	2 276	2 19	2 349	2 53	2 744	3 028	3 728	0	3 728	3 063	3 049	2 942	2 498	2 469	2 456	2 503	2 33	2 187	1.985	1.653	1.317	1.079	0.735	0	0	0	0
5.75	2.805	2.68	2.994	1.958	1.915	1.918	2.815	1.799	1 546	0	2 209	2 161	2 329	2 505	2 695	2 958	3 676	0	3 676	3 001	2 995	2 892	2 451	2 423	2 412	2 453	2 305	2 161	1.964	1.635	1.268	0.994	0.686	0	0	0	0
5.833	2.745	2.62	2.95	1.927	1.876	1.886	2.882	2.117	1 617	0	2 145	2 127	2 314	2 467	2 647	2 888	3 619	0	3 621	2 939	2 94	2 844	2 402	2 38	2 376	2 411	2 272	2 141	1.946	1.619	1.224	0.921	0.643	0	0	0	0
5.917	2.691	2.553	2.905	1.898	1.847	1.823	2.921	2.344	1 679	0	2 079	2 091	2 295	2 43	2 591	2 815	3 562	0	3 565	2 877	2 88	2 794	2 356	2 341	2 328	2 351	2 237	2 123	1.925	1.596	1.169	0.852	0.6	0	0	0	0
6	2.645	2.491	2.852	1.87	1.813	1.757	2.937	2.449	1 739	0	2 014	2 058	2 267	2 396	2 533	2 735	3 507	0	3 511	2 816	2 821	2 744	2 31	2 291	2 276	2 286	2 197	2 092	1.881	1.533	1.08	0.787	0.558	0	0	0	0
6.083	2.595	2.425	2.794	1.839	1.779	1.693	2.918	2.512	1 775	0	1 948	2 016	2 241	2 352	2 473	2 646	3 445	0	3 45	2 747	2 756	2 691	2 259	2 239	2 222	2 223	2 153	2 049	1.834	1.466	0.996	0.726	0.518	0	0	0	0
6.167	2.54	2.354	2.729	1.805	1.745	1.635	2.879	2.539	1 783	0	1 875	1 969	2 217	2 299	2 409	2 551	3 38	0	3 382	2 675	2 686	2 635	2 209	2 187	2 167	2 163	2 097	1 985	1.782	1.396	0.916	0.668	0.479	0	0	0	0
6.25	2.481	2.275	2.66	1.77	1.71	1.571	2.828	2.537	1 76	0	1 8	1 928	2 176	2 251	2 324	2 453	3 318	0	3 318	2 606	2 618	2 577	2 151	2 129	2 108	2 1	2 041	1 923	1.7	1.315	0.838	0.611	0.44	0	0	0	0
6.333	2.409	2.201	2.598	1.735	1.673	1.509	2.766	2 49	1 688	0	1 721	1 875	2 137	2 197	2 237	2 353	3 245	0	3 248	2 532	2 547	2 516	2 089	2 067	2 046	2 034	1 983	1 861	1.619	1.241	0.765	0.558	0.403	0	0	0	0
6.417	2.329	2.124	2.533	1.694	1.634	1.445	2.703	2.437	1 609	0	1 636	1 819	2 105	2 11	2 143	2 245	3 16	0	3 167	2 45	2 467	2 447	2 024	2 004	1 985	1 975	1 924	1 812	1.578	1.227	0.694	0.506	0.367	0	0	0	0

6.5	2.247	2.037	2.463	1.652	1.593	1.376	2.632	2.363	1.508	0	1.528	1.752	2.026	2.023	2.047	2.131	3.077	0	3.086	2.375	2.386	2.383	1.963	1.943	1.924	1.919	1.872	1.76	1.566	1.211	0.628	0.457	0.333	0	0	0	0
6.583	2.183	1.951	2.385	1.61	1.551	1.368	2.56	2.324	1.446	0	1.462	1.685	1.943	1.935	1.952	2.019	3.006	0	3.01	2.296	2.311	2.318	1.897	1.877	1.858	1.861	1.827	1.731	1.542	1.184	0.564	0.411	0.3	0	0	0	0
6.667	2.115	1.871	2.295	1.561	1.507	1.243	2.473	2.282	1.376	0	1.393	1.613	1.858	1.844	1.852	1.901	2.918	0	2.82	2.209	2.224	2.244	1.829	1.805	1.732	1.803	1.762	1.668	1.479	1.047	0.501	0.366	0.267	0	0	0	0
6.75	2.033	1.758	2.228	1.509	1.462	1.173	2.383	2.258	1.342	0	1.353	1.543	1.773	1.754	1.753	1.785	2.739	0	2.821	2.122	2.129	2.171	1.76	1.743	1.724	1.74	1.705	1.592	1.389	0.989	0.445	0.325	0.237	0	0	0	0
6.833	1.943	1.716	2.163	1.462	1.419	1.111	2.286	2.216	1.288	0	1.296	1.472	1.687	1.66	1.645	1.651	2.705	0	2.719	2.042	2.044	2.099	1.689	1.673	1.65	1.667	1.619	1.473	1.197	0.787	0.392	0.286	0.209	0	0	0	0
6.917	1.843	1.63	2.089	1.406	1.373	1.05	2.185	2.175	1.231	0	1.237	1.404	1.607	1.574	1.545	1.527	2.632	0	2.632	1.955	1.958	2.003	1.613	1.598	1.58	1.601	1.538	1.365	1.027	0.692	0.343	0.25	0.183	0	0	0	0
7	1.791	1.551	2.007	1.348	1.328	0.991	2.081	2.129	1.176	0	1.18	1.34	1.53	1.496	1.461	1.421	2.518	0	2.536	1.867	1.868	1.95	1.545	1.533	1.513	1.536	1.464	1.264	0.888	0.594	0.302	0.22	0.161	0	0	0	0
7.083	1.752	1.491	1.918	1.297	1.282	0.941	1.972	2.071	1.122	0	1.125	1.277	1.456	1.421	1.376	1.392	2.424	0	2.434	1.784	1.789	1.874	1.481	1.47	1.444	1.465	1.366	1.125	0.768	0.516	0.263	0.192	0.141	0	0	0	0
7.167	1.708	1.426	1.838	1.249	1.252	0.888	1.886	2.006	1.067	0	1.069	1.219	1.388	1.351	1.299	1.199	2.294	0	2.327	1.714	1.683	1.799	1.413	1.404	1.379	1.395	1.269	0.972	0.664	0.447	0.229	0.167	0.123	0	0	0	0
7.25	1.651	1.373	1.789	1.195	1.208	0.838	1.793	1.891	1.012	0	1.013	1.161	1.319	1.278	1.21	1.064	2.209	0	2.269	1.643	1.616	1.735	1.341	1.334	1.315	1.335	1.183	0.839	0.574	0.388	0.2	0.146	0.107	0	0	0	0
7.333	1.588	1.318	1.733	1.143	1.166	0.778	1.706	1.946	0.96	0	0.96	1.105	1.251	1.213	1.15	1.005	2.068	0	2.134	1.569	1.542	1.673	1.28	1.272	1.251	1.276	1.101	0.727	0.498	0.337	0.174	0.127	0.093	0	0	0	0
7.417	1.517	1.263	1.669	1.092	1.126	0.723	1.61	1.836	0.908	0	0.908	1.049	1.187	1.147	1.051	0.889	2.065	0	2.065	1.493	1.461	1.61	1.227	1.223	1.191	1.214	1.019	0.628	0.431	0.292	0.151	0.11	0.0809	0	0	0	0
7.5	1.467	1.209	1.608	1.035	1.054	0.669	1.55	1.342	0.861	0	0.861	1.004	1.138	1.098	1.008	0.847	1.943	0	1.997	1.419	1.387	1.545	1.175	1.176	1.141	1.149	0.915	0.55	0.377	0.256	0.132	0.0969	0.0709	0	0	0	0
7.583	1.444	1.162	1.546	0.992	1.057	0.675	1.491	1.787	0.811	0	0.812	0.955	1.085	1.054	0.975	0.808	1.809	0	1.923	1.359	1.301	1.459	1.116	1.118	1.059	1.077	0.797	0.475	0.326	0.221	0.115	0.0838	0.0615	0	0	0	0
7.667	1.42	1.109	1.484	0.948	1.019	0.64	1.436	1.739	0.768	0	0.769	0.912	1.028	0.975	0.822	0.657	1.851	0	1.851	1.318	1.219	1.39	1.059	1.058	1.056	1.005	0.695	0.412	0.283	0.191	0.0991	0.0722	0.0529	0	0	0	0
7.75	1.39	1.058	1.417	0.906	0.986	0.621	1.386	1.69	0.728	0	0.728	0.873	0.975	0.918	0.76	0.604	1.758	0	1.78	1.282	1.193	1.352	1.005	1	1.011	0.951	0.611	0.361	0.249	0.169	0.0873	0.0635	0.0467	0	0	0	0
7.833	1.356	1.012	1.346	0.872	0.971	0.612	1.331	1.635	0.69	0	0.69	0.828	0.927	0.91	0.84	0.674	1.592	0	1.692	1.242	1.158	1.321	0.961	0.943	0.963	0.898	0.537	0.317	0.218	0.148	0.0767	0.0562	0.0415	0	0	0	0
7.917	1.318	0.967	1.276	0.836	0.953	0.604	1.274	1.578	0.653	0	0.653	0.792	0.892	0.873	0.771	0.597	1.458	0	1.607	1.203	1.123	1.292	0.93	0.915	0.931	0.846	0.472	0.278	0.191	0.13	0.0675	0.0496	0.0366	0	0	0	0
8	1.27	0.938	1.274	0.798	0.936	0.596	1.22	1.522	0.618	0	0.618	0.763	0.862	0.835	0.696	0.523	1.413	0	1.524	1.164	1.088	1.262	0.899	0.887	0.9	0.799	0.419	0.246	0.169	0.115	0.0597	0.0437	0.0323	0	0	0	0
8.083	1.224	0.908	1.272	0.761	0.916	0.578	1.175	1.482	0.584	0	0.584	0.731	0.833	0.788	0.611	0.451	1.366	0	1.44	1.122	1.053	1.228	0.866	0.856	0.869	0.752	0.372	0.218	0.15	0.102	0.0531	0.0389	0.0286	0	0	0	0
8.167	1.192	0.885	1.272	0.733	0.898	0.558	1.146	1.453	0.558	0	0.558	0.705	0.809	0.733	0.529	0.392	1.318	0	1.363	1.081	1.02	1.2	0.84	0.832	0.845	0.712	0.336	0.196	0.135	0.0916	0.0477	0.0349	0.0258	0	0	0	0
8.25	1.18	0.874	1.272	0.715	0.891	0.539	1.129	1.444	0.546	0	0.547	0.704	0.747	0.718	0.631	0.474	1.574	0	1.458	1.149	1.083	1.263	0.851	0.764	0.768	0.681	0.31	0.173	0.117	0.0817	0.0487	0.0369	0.0301	0	0	0	0
8.333	1.181	0.88	1.272	0.723	0.885	0.553	1.123	1.455	0.535	0	0.534	0.689	0.819	0.644	0.412	0.282	1.269	0	1.269	0.947	0.906	1.129	0.821	0.854	0.889	0.679	0.313	0.181	0.122	0.0811	0.0426	0.033	0.0243	0	0	0	0
8.417	1.185	0.869	1.279	0.711	0.896	0.545	1.134	1.447	0.529	0	0.529	0.713	0.74	0.664	0.608	0.498	1.402	0	1.587	1.181	1.093	1.227	0.793	0.741	0.789	0.696	0.329	0.193	0.131	0.0846	0.0417	0.0314	0.0234	0	0	0	0
8.5	1.174	0.885	1.264	0.726	0.881	0.545	1.118	1.453	0.553	0	0.553	0.676	0.829	0.683	0.423	0.279	1.183	0	1.184	0.933	0.917	1.169	0.857	0.862	0.89	0.637	0.281	0.166	0.119	0.0876	0.0517	0.0389	0.0287	0	0	0	0
8.583	1.181	0.877	1.273	0.721	0.887	0.553	1.125	1.457	0.525	0	0.525	0.714	0.75	0.594	0.529	0.49	1.421	0	1.538	1.193	1.061	1.141	0.753	0.764	0.804	0.711	0.349	0.206	0.138	0.0872	0.0546	0.0395	0.0298	0	0	0	0
8.667	1.183	0.869	1.278	0.71	0.897	0.536	1.134	1.441	0.553	0	0.553	0.674	0.811	0.757	0.447	0.272	1.172	0	1.172	0.95	0.958	1.209	0.805	0.847	0.884	0.696	0.255	0.157	0.119	0.0927	0.0579	0.0444	0.0328	0	0	0	0
8.75	1.176	0.881	1.266	0.723	0.884	0.548	1.12	1.456	0.54	0	0.54	0.696	0.775	0.567	0.454	0.434	1.403	0	1.501	1.148	0.974	1.096	0.763	0.776	0.815	0.731	0.359	0.211	0.142	0.0884	0.0315	0.0129	0.00806	0	0	0	0

AC31

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 22N

Selected output data from time (hr): 0

to time (hr): 8.75

Fr

Time (hr)	Newtyle 0:	CH000000	CH000000	Newtyle 0:	CH000000	CH000000	Newtyle 0:	CH000000	Newtyle01:	Bridge1 U	Newtyle12	Newtyle 0:	Newtyle 0:	CH000000	CH000000	CH000000	Newtyle 0:	Bridge2 U	Newtyle 0:	Newtyle 0(	CH000000	CH000000	Newtyle 0(	CH000000	CH000000	Newtyle 0(	CH000000	CH000000	CH000000	Newtyle 0(	CH000000	Newtyle 0(	Newtyle 0(	Spill 012.5	Spill 012.5	Spill 010U	Spill 010D
0	1.443	1.075	1.628	0.895	0.89	0.453	1.23	1.524	0.513	0	0.513	0.672	0.793	0.755	0.604	0.445	2.129	0	2.129	1.286	1.125	1.336	0.919	0.931	0.948	0.897	0.519	0.248	0.154	0.128	0.067	0.042	0.031	0	0	0	0
0.083	1.419	0.995	1.586	0.841	1	0.457	1.089	1.598	0.433	0	0.433	0.648	0.815	0.59	0.331	0.203	1.844	0	1.844	1.348	1.173	1.424	0.833	0.874	0.932	0.75	0.253	0.115	0.0667	0.0505	0.0208	0.0137	0.0103	0	0	0	0
0.167	1.419	0.989	1.587	0.833	1.008	0.448	1.097	1.577	0.435	0	0.436	0.68	0.725	0.656	0.548	0.382	1.838	0	2.03	1.408	1.22	1.504	0.889	0.829	0.862	0.751	0.245	0.112	0.0693	0.058	0.0293	0.0217	0.0168	0	0	0	0
0.25	1.413	1.006	1.577	0.852	0.988	0.458	1.082	1.505	0.44	0	0.44	0.642	0.834	0.626	0.339	0.201	1.847	0	1.847	1.332	1.156	1.42	0.856	0.881	0.953	0.703	0.228	0.107	0.0658	0.0557	0.0293	0.0207	0.0155	0	0	0	0
0.333	1.421	0.991	1.588	0.837	1.004	0.456	1.093	1.589	0.423	0	0.423	0.689	0.722	0.588	0.505	0.387	1.833	0	2.052	1.423	1.254	1.494	0.854	0.82	0.873	0.758	0.256	0.12	0.0738	0.0578	0.0245	0.0156	0.0117	0	0	0	0
0.417	1.409	1.001	1.576	0.843	0.997	0.447	1.09	1.585	0.455	0	0.456	0.624	0.838	0.705	0.359	0.201	1.839	0	1.838	1.325	1.147	1.418	0.89	0.879	0.969	0.67	0.205	0.0982	0.0648	0.0603	0.0346	0.0239	0.0178	0	0	0	0
0.5	1.414	1.003	1.58	0.848	0.993	0.46	1.083	1.601	0.427	0	0.427	0.679	0.748	0.523	0.426	0.365	1.838	0	2.069	1.45	1.253	1.462	0.831	0.837	0.875	0.766	0.269	0.126	0.0769	0.0597	0.0213	0.00978	0.00686	0	0	0	0
0.583	1.433	1.012	1.563	0.864	0.988	0.461	1.099	1.567	0.463	0	0.464	0.634	0.838	0.699	0.368	0.211	1.841	0	1.842	1.338	1.15	1.415	0.871	0.888	0.96	0.717	0.233	0.108	0.0675	0.0591	0.0329	0.0243	0.0184	0	0	0	0
0.667	1.459	1.009	1.558	0.875	0.977	0.478	1.115	1.534	0.467	0	0.467	0.664	0.791	0.759	0.563	0.376	1.847	0	2.039	1.39	1.203	1.43	0.88	0.881	0.914	0.79	0.294	0.139	0.0865	0.0714	0.0334	0.0216	0.0161	0	0	0	0
0.75	1.471	1.013	1.559	0.888	0.95	0.471	1.146	1.546	0.482	0	0.482	0.664	0.783	0.776	0.64	0.441	1.822	0	2.083	1.378	1.191	1.411	0.889	0.889	0.924	0.817	0.329	0.155	0.0964	0.0804	0.0391	0.0262	0.0196	0	0	0	0
0.833	1.47	1.031	1.597	0.889	0.925	0.458	1.178	1.547	0.494	0	0.494	0.662	0.775	0.777	0.7	0.511	1.787	0	2.123	1.354	1.175	1.383	0.893	0.892	0.933	0.847	0.382	0.18	0.112	0.0935	0.0456	0.0306	0.023	0	0	0	0
0.917	1.462	1.049	1.622	0.882	0.895	0.448	1.206	1.538	0.503	0	0.503	0.67	0.784	0.772	0.662	0.476	1.956	0	2.139	1.324	1.156	1.352	0.899	0.906	0.942	0.871	0.44	0.208	0.13	0.108	0.0527	0.0355	0.0265	0	0	0	0
1	1.443	1.074	1.628	0.896	0.89	0.453	1.23	1.523	0.513	0	0.514	0.672	0.793	0.755	0.605	0.446	2.13	0	2.13	1.284	1.126	1.336	0.923	0.936	0.952	0.897	0.522	0.249	0.155	0.129	0.0627	0.042	0.0315	0	0	0	0
1.083	1.424	1.093	1.626	0.893	0.887	0.463	1.251	1.502	0.523	0	0.523	0.673	0.802	0.792	0.741	0.59	1.86	0	2.096	1.253	1.163	1.364	0.937	0.955	0.948	0.933	0.605	0.291	0.181	0.15	0.0733	0.0491	0.0366	0	0	0	0
1.167	1.428	1.111	1.623	0.913	0.876	0.455	1.285	1.495	0.536	0	0.536	0.677	0.801	0.779	0.69	0.542	2.061	0	2.061	1.256	1.194	1.378	0.947	0.965	0.94	0.963	0.696	0.339	0.21	0.175	0.0849	0.0569	0.0426	0	0	0	0
1.25	1.453	1.126	1.618	0.921	0.869	0.468	1.315	1.478	0.545	0	0.546	0.679	0.804	0.793	0.75	0.623	1.905	0	2.021	1.269	1.218	1.379	0.95	0.962	0.948	0.989	0.775	0.401	0.248	0.206	0.1	0.067	0.0501	0	0	0	0
1.333	1.47	1.136	1.605	0.923	0.867	0.492	1.332	1.456	0.553	0	0.554	0.683	0.812	0.797	0.75	0.623	1.97	0	1.97	1.271	1.232	1.368	0.947	0.956	0.957	0.998	0.814	0.468	0.288	0.239	0.116	0.0778	0.0582	0	0	0	0
1.417	1.479	1.145	1.582	0.928	0.866	0.508	1.347	1.439	0.561	0	0.563	0.686	0.818	0.809	0.782	0.704	1.927	0	1.978	1.266	1.23	1.361	0.963	0.974	0.97	1.004	0.854	0.552	0.338	0.28	0.135	0.0908	0.0679	0	0	0	0
1.5	1.471	1.171	1.602	0.926	0.862	0.523	1.354	1.419	0.569	0	0.571	0.688	0.822	0.815	0.798	0.748	1.966	0	1.982	1.252	1.233	1.355	0.975	0.984	0.976	1.01	0.893	0.652	0.397	0.328	0.158	0.106	0.0792	0	0	0	0
1.583	1.463	1.187	1.621	0.926	0.856	0.535	1.38	1.387	0.574	0	0.577	0.692	0.828	0.824	0.817	0.803	1.952	0	1.971	1.253	1.257	1.354	0.98	0.988	0.989	1.03	0.95	0.759	0.464	0.382	0.184	0.123	0.0921	0	0	0	0
1.667	1.482	1.212	1.63	0.932	0.851	0.552	1.4	1.344	0.58	0	0.584	0.696	0.836	0.835	0.836	0.845	1.949	0	1.949	1.259	1.27	1.344	0.985	0.993	0.999	1.037	0.97	0.811	0.546	0.446	0.214	0.144	0.107	0	0	0	0
1.75	1.502	1.229	1.631	0.932	0.845	0.568	1.411	1.302	0.584	0	0.59	0.7	0.842	0.847	0.861	0.889	1.913	0	1.913	1.257	1.27	1.335	0.997	1.006	1.007	1.041	0.99	0.86	0.641	0.519	0.248	0.166	0.124	0	0	0	0
1.833	1.512	1.239	1.625	0.927	0.838	0.589	1.421	1.259	0.588	0	0.595	0.707	0.853	0.867	0.893	0.946	1.889	0	1.9	1.25	1.276	1.327	1.004	1.013	1.021	1.054	1.016	0.918	0.757	0.604	0.285	0.192	0.143	0	0	0	0
1.917	1.506	1.255	1.636	0.93	0.836	0.611	1.426	1.217	0.59	0	0.599	0.715	0.865	0.885	0.919	0.989	1.874	0	1.882	1.255	1.286	1.321	1.01	1.019	1.029	1.058	1.022	0.937	0.819	0.707	0.33	0.221	0.164	0	0	0	0
2	1.497	1.28	1.639	0.926	0.832	0.634	1.42	1.181	0.598	0	0.609	0.761	0.876	0.901	0.943	1.027	1.844	0	1.85	1.254	1.287	1.314	1.02	1.03	1.039	1.061	1.032	0.965	0.873	0.789	0.377	0.254	0.187	0	0	0	0
2.083	1.515	1.306	1.635	0.923	0.83	0.659	1.415	1.179	0.633	0	0.649	0.823	1.036	0.917	0.966	1.064	1.815	0	1.823	1.249	1.29	1.306	1.026	1.037	1.047	1.063	1.051	1.001	0.933	0.848	0.431	0.29	0.213	0	0	0	0
2.167	1.527	1.323	1.627	0.92	0.828	0.678	1.404	1.166	0.655	0	0.675	0.853	1.058	1.043	0.985	1.094	1.795	0	1.8	1.252	1.294	1.303	1.034	1.045	1.055	1.07	1.084	1.06	1.008	0.9	0.487	0.329	0.24	0	0	0	0
2.25	1.526	1.346	1.632	0.914	0.826	0.699	1.396	1.142	0.663	0	0.696	0.878	1.085	1.065	1.001	1.118	1.768	0	1.77	1.249	1.292	1.297	1.042	1.054	1.065	1.084	1.13	1.133	1.098	0.988	0.548	0.37	0.269	0	0	0	0
2.333	1.521	1.365	1.635	0.912	0.824	0.729	1.378	1.079	0.632	0	0.715	0.9	1.1	1.092	1.1	1.141	1.744	0	1.746	1.247	1.294	1.292	1.05	1.062	1.073	1.097	1.176	1.204	1.177	1.067	0.611	0.414	0.298	0	0	0	0
2.417	1.513	1.379	1.632	0.907	0.823	0.765	1.346	0.996	0.585	0	0.73	0.921	1.112	1.111	1.122	1.158	1.721	0	1.723	1.247	1.294	1.286	1.063	1.081	1.095	1.112	1.217	1.266	1.242	1.137	0.677	0.46	0.328	0	0	0	0
2.5	1.508	1.395	1.625	0.904	0.823	0.802	1.289	1.059	0.531	0	0.744	0.94	1.125	1.123	1.144	1.218	1.697	0	1.698	1.244	1.292	1.281	1.073	1.099	1.118	1.128	1.256	1.314	1.302	1.203	0.746	0.509	0.358	0	0	0	0
2.583	1.519	1.407	1.618	0.902	0.827	0.856	1.227	1.023	0.481	0	0.758	0.961	1.125	1.138	1.159	1.235	1.677	0	1.678	1.242	1.293	1.285	1.085	1.138	1.156	1.148	1.29	1.355	1.348	1.235	0.78	0.56	0.388	0	0	0	0
2.667	1.525	1.418	1.611	0.9	0.833	0.923	1.48	0.312	0.433	0	0.772	0.973	1.129	1.145	1.171	1.25	1.657	0	1.658	1.24	1.294	1.288	1.097	1.177	1.217	1.233	1.32	1.392	1.391	1.247	0.811	0.615	0.418	0	0	0	0
2.75	1.525	1.435	1.608	0.901	0.847	0.986	1.437	0.574	0.393	0	0.783	0.983	1.133	1.148	1.182	1.261	1.638	0	1.639	1.237	1.294	1.292	1.108	1.208	1.269	1.307	1.354	1.406	1.385	1.228	0.841	0.672	0.447	0	0	0	0
2.833	1.525	1.446	1.606	0.904	0.855	1.04	1.14	0.462	0.366	0	0.791	0.993	1.129	1.152	1.189	1.268	1.625	0	1.626	1.236	1.296	1.294	1.117	1.225	1.304	1.361	1.38	1.414	1.383	1.218	0.865	0.723	0.469	0	0	0	0
2.917	1.524	1.454	1.605	0.92	0.858	1.01	0.874	0.355	0.33	0	0.769	0.93	1.116	1.158	1.194	1.275	1.61	0	1.611	1.235	1.299	1.299	1.128	1.249	1.333	1.427	1.412	1.423	1.381	1.204	0.885	0.762	0.496	0	0	0	0
3	1.522	1.461	1.602	0.927	0.871	1.01	0.832	0.319	0.316	0	0.76	0.852	1.098	1.143	1.184	1.277	1.585	0	1.586	1.22	1.299	1.307	1.14	1.276	1.367	1.465	1.446	1.434	1.378	1.191	0.896	0.784	0.527	0	0	0	0
3.083	1.522	1.467	1.599	0.936	0.896	1.02	0.821	0.309	0.315	0	0.784	0.812	1.06	1.108	1.142	1.258	1.54	0	1.54	1.185	1.279	1.31	1.159	1.309	1.406	1.512	1.473	1.448	1.381	1.199	0.917	0.808	0.568	0	0	0	0
3.167	1.526	1.476	1.592	0.947	0.917	1.029	0.811	0.299	0.313	0	0.795	0.779	1.032	1.088	1.123	1.25	1.519	0	1.52	1.175	1.277	1.31	1.178	1.332	1.431	1.545	1.491	1.455	1.382	1.204	0.931	0.824	0.596	0	0	0	0
3.25	1.607	1.414	1.659	0.938	0.936	1.048	0.732	0.317	0.304	0	0.788	0.736	0.996	1.056	1.099	1.238	1.496	0	1.496	1.164	1.277	1.314	1.197	1.35	1.451	1.573	1.509	1.467	1.39	1.206	0.943	0.837	0.621	0	0	0	0
3.333	1.516	1.489	1.587	0.937	0.983	0.942	0.871	0.256	0.299	0	0.773	0.712	0.985	1.035	1.082	1.227	1.472	0	1.472	1.15	1.269	1.311	1.214	1.369	1.479	1.605	1.528	1.476	1.392	1.208	0.956	0.851	0.649	0	0	0	0
3.417	1.53	1.505	1.573	0.981	0.941	1.063	0.75	0.277	0.298	0	0.765	0.672	0.971	1.022	1.073	1.218	1.451	0	1.451	1.141	1.274	1.32	1.222	1.381	1.497	1.631	1.548	1.488	1.399	1.205	0.967	0.863	0.676	0	0	0	0
3.5	1.543	1.488	1.602	0.959	0.997	0.984	0.818	0.259	0.292	0	0.755	0.653	0.963	1.029	1.061	1.205	1.429	0	1.429	1.131	1.275	1.329	1.231	1.397	1.507	1.65	1.562	1.497	1.406	1.205	0.973	0.874	0.698	0	0	0	0
3.583	1.544	1.494	1.599	0.968	0.992	1.001	0.8	0.257	0.287	0	0.739	0.63	0.954	1.035	1.054	1.196	1.411	0	1.411	1.123	1.276	1.335	1.237	1.407	1.514	1.667	1.572	1.505	1.411	1.205	0.977	0.883	0.718	0	0	0	0
3.667	1.549	1.494	1.601	0.967	0.997	0.999	0.796	0.247	0.276	0	0.686	0.606	0.927	1.031	1.067	1.184	1.39	0	1.39	1.114	1.277	1.341	1.242	1.416	1.523	1.684	1.58	1.511	1.418	1.204	0.979	0.89	0.734	0	0	0	0
3.75	1.54	1.506	1.589	0.969	0.996	1	0.795	0.236	0.27	0	0.656	0.579	0.908	1.029	1.085	1.174	1.371	0	1.371	1.105	1.277	1.346	1.249	1.414	1.529	1.697	1.581	1.518	1.422	1.206	0.981	0.896	0.749	0	0	0	0
3.833	1.541	1.505	1.591	0.964	1.001	0.995	0.797	0.23	0.265	0	0.636	0.565	0.894	1.025	1.096	1.171	1.358	0	1.358	1.099	1.278	1.351	1.254	1.412	1.534	1.708	1.583	1.523	1.425	1.207	0.982	0.901	0.761	0	0	0	0
3.917	1.542	1.506	1.59	0.96	1.004	0.993	0.798	0.226	0.261	0	0.62	0.553	0.887	1.024	1.105	1.169	1.349	0	1.349	1.096	1.277	1.354	1.257	1.41	1.538	1.715	1.584	1.525	1.428	1.208	0.986	0.909	0.769	0	0	0	0
4	1.535	1.514	1.581	0.964	0.998	1.002	0.791	0.225	0.26	0	0.613	0.545	0.886	1.027	1.111	1.17	1.346	0	1.346	1.093	1.276	1.355	1.258	1.41	1.539	1.718	1.585	1.527	1.43	1.209	0.987	0.912	0.772	0	0	0	0
4.083	1.54	1.508	1.587	0.961	1.001	0.998	0.793	0.226	0.26	0	0.613	0.547	0.884	1.025	1.109	1.169	1.346	0	1.346	1.094	1.276	1.355	1.257	1.409	1.539	1.719	1.585	1.527	1.429	1.209	0.987	0.912	0.773	0	0	0	0
4.167	1.534	1.513	1.581	0.964	0.996	1.001	0.791	0.226	0.261	0	0.619	0.552	0.888	1.026	1.107	1.169	1.348	0	1.348	1.094	1.275	1.353	1.257	1.41	1.537	1.715	1.583	1.525	1.428	1.208	0.986	0.91	0.77	0	0	0	0
4.25	1.542	1.504	1.591	0.961	0.999	0.994	0.794	0.23	0.264	0	0.632	0.564	0.892	1.024	1.098	1.169	1.354	0	1.354	1.097	1.277	1.351	1.254	1.41	1.535	1.71	1.583	1.523	1.426	1.207	0.984	0.904	0.764	0	0	0	0
4.333	1.54	1.504	1.589	0.965	0.994	0.998	0.792	0.234	0.268	0	0.649	0.575	0.902	1.026	1.089	1.171	1.364	0	1.364	1.101	1.276	1.347	1.25	1.411	1.531	1.702	1.581	1.519	1.422	1.206	0.981	0.898	0.755	0	0	0	0
4.417	1.538	1.503	1.588	0.968	0.989	1	0.791	0.24	0.274	0	0.676	0.589	0.916	1.028	1.075	1.175	1.376	0	1.376	1.106	1.275	1.343	1.245	1.414	1.525	1.691	1.579	1.515	1.419	1.206	0.981	0.894	0.745	0	0	0	0
4.5	1.535	1.504	1.586	0.969	0.983	1.003	0.79	0.248	0.282	0	0.709	0.611	0.934	1.03	1.056	1.184	1.391	0	1.392	1.113	1.273	1.337	1.239	1.412	1.52	1.678	1.577	1.509	1.415	1.205	0.979	0.888	0.732	0	0	0	0
4.583	1.534	1.501	1.586	0.97	0.975	1.01	0.787	0.26	0.291	0	0.75	0.636	0.954	1.033	1.053	1.195	1.41	0	1.41	1.121	1.274	1.332	1.235	1.404	1.513	1.665	1.572	1.503	1.41	1.204	0.978	0.882	0.718	0	0	0	0
4.667	1.54	1.488	1.596	0.959	0.98	1	0.797	0.264	0.293	0	0.758	0.655	0.961	1.025	1.059	1.204	1.427	0	1.427	1.129	1.272	1.326	1.228	1.393	1.504	1.648	1.559	1.496	1.403	1.204	0.973	0.874	0.699	0	0	0	0
4.75	1.534	1.489	1.591	0.957	0.972	1.002	0.8	0.268	0.296	0	0.764	0.677	0.968	1.016	1.066	1.212	1.443	0	1.443	1.135	1.27	1.318	1.222	1.382	1.497	1.632	1.547	1.488	1.398	1.205	0.966	0.866	0.682	0	0	0	0
4.833	1.525	1.496	1.576	0.965	0.943	1.035	0.776	0.277	0.301	0	0.773	0.696	0.976	1.024	1.075	1.222	1.461	0	1.461	1.143	1.269	1.311	1.214	1.37	1.487	1.615	1.535	1.48	1.393	1.205	0.961	0.857	0.663	0	0	0	0
4.917	1.544	1.444	1.629	0.909	0.974	0.921	0.872	0.272	0.3	0	0.779	0.725	0.985	1.039	1.082	1.227	1.477	0	1.477	1.15	1.268	1.309	1.207	1.361	1.468	1.593	1.519	1.47	1.388	1.205	0.953	0.847	0.642	0	0	0	0
5	1.57	1.441	1.616	0.952	0.9	1.076	0.72	0.319	0.309	0	0.789	0.745	0.998	1.055	1.097	1.237	1.496	0	1.497	1.162	1.274	1.31	1.191	1.345	1.447	1.569	1.507	1.464	1.387	1.203	0.942	0.837	0.621	0	0	0	0
5.083	1.521	1.481	1.571	0.966	0.872	1.077	0.734	0.32	0.318	0	0.795	0.778	1.025	1.078	1.116	1.246	1.515	0	1.516	1.171	1.276	1.308	1.176	1.329	1.428	1.545	1.491	1.455	1.381	1.203	0.932	0.826	0.6	0	0	0	0
5.167	1.519	1.462	1.599	0.93	0.884	1.01	0.822	0.31	0.316	0	0.782	0.813	1.051	1.097	1.131	1.252	1.533	0	1.533	1.179	1.275	1.306	1.159	1.311	1.408	1.516	1.473	1.447	1.378	1.198	0.921	0.812	0.576	0	0	0	0
5.25	1.522	1.456	1.602	0.923	0.863	1.002	0.827	0.318	0.316	0	0.764	0.839	1.07	1.107	1.142	1.256	1.549	0	1.549	1.186	1.276	1.305	1.144	1.29	1.385	1.489	1.461	1.439	1.376	1.194	0.909	0.799	0.553	0	0	0	0
5.333	1.522	1.453	1.603	0.918	0.851	0.996	0.836	0.33	0.319	0	0.752	0.875	1.083	1.12	1.152	1.259	1.569	0	1.569	1.197	1.279	1.301	1.135	1.272	1.363	1.462	1.443	1.43	1.374	1.189	0.897	0.786	0.53	0	0	0	0
5.417	1.524	1.446	1.606	0.914	0.843	0.991	0.864	0.357	0.331	0	0.762	0.921	1.098	1.135	1.165	1.263	1.587	0	1.588	1.208	1.281	1.297	1.128	1.255	1.341	1.438	1.421	1.424	1.375	1.193	0.889	0.771	0.509	0	0	0	0
5.5	1.524	1.438	1.606	0.906	0.835	0.997	0.953	0.414	0.352	0	0.782	0.97	1.116	1.146	1.178	1.266	1.608	0	1.608	1.219	1.286	1.294	1.121	1.237	1.319	1.399	1.398	1.417	1.379	1.209	0.881	0.755	0.487	0	0	0	0
5.583	1.524	1.428	1.607	0.896	0.836	0.963	1.224	0.515	0.38	0	0.784	0.985	1.127	1.147	1.183	1.262	1.624	0	1.624	1.227	1.29	1.291	1.111	1.216	1.293	1.342	1.37	1.409	1.381	1.22	0.86	0.709	0.463	0	0	0	0
5.667	1.522	1.415	1.608	0.897	0.829	0.914	1.479	0.73	0.421	0	0.772	0.973	1.128	1.144	1.173	1.253	1.647	0	1.647	1.234	1.29	1.287	1.099	1.19	1.238	1.265	1.333	1.399	1.385	1.237	0.827	0.644	0.432	0	0	0	0
5.75	1.517	1.406	1.616	0.898	0.825	0.862	1.184	0.932	0.464	0	0.76	0.952	1.124	1.141	1.162	1.24	1.668	0	1.668	1.238	1.291	1.284	1.088	1.154	1.183	1.188	1.302	1.37	1.366	1.248	0.798	0.59	0.404	0	0	0	0
5.833	1.509	1.396	1.621	0.899	0.821	0.813	1.246	1.058	0.506	0	0.749	0.947	1.123	1.129	1.151	1.226	1.683	0	1.684	1.239	1.289	1.281	1.078	1.119	1.131	1.135	1.275	1.338	1.331	1.224	0.771	0.544	0.379	0	0	0	0
5.917	1.508	1.383	1.627	0.901	0.822	0.786	1.3	0.984	0.547	0	0.737	0.93	1.119	1.117	1.136	1.211	1.7	0	1.702	1.242	1.29	1.279	1.069	1.093	1.112	1.123	1.247	1.305	1.293	1.196	0.738	0.502	0.353	0	0	0	0
6	1.514	1.373	1.63	0.905	0.822	0.756	1.345	1.001	0.591	0	0.725	0.915	1.108	1.108	1.119	1.156	1.72	0	1.723	1.246	1.292	1.283	1.06	1.078	1.093	1.11	1.216	1.265	1.243	1.142	0.681	0.462	0.329	0	0	0	0
6.083	1.52	1.362	1.631	0.908	0.822	0.728	1.371	1.068	0.626	0	0.714	0.898	1.099	1.093	1.102	1.142	1.739	0	1.742	1.246	1.292	1.288	1.05	1.063	1.073	1.097	1.183	1.219	1.192	1.087	0.628	0.425	0.305	0	0	0	0
6.167	1.523	1.348	1.628	0.91	0.823	0.703	1.387	1.118	0.651	0	0.699	0.88	1.092	1.071	1.083	1.124	1.757	0	1.759	1.246	1.29	1.292	1.041	1.054	1.066	1.087	1.148	1.163	1.138	1.028	0.577	0.39	0.282	0	0	0	0
6.25	1.525	1.329	1.625	0.913	0.825	0.687	1.399	1.155	0.662	0	0.683	0.864	1.07	1.053	0.993	1.106	1.783	0	1.783	1.249	1.291	1.297	1.037	1.048	1.059	1.077	1.111	1.106	1.067	0.959	0.528	0.356	0.259	0	0	0	0
6.333	1.518	1.315	1.629	0.917	0.827	0.671	1.405	1.167	0.647	0	0.665	0.842	1.049	0.926	0.98	1.086	1.803	0	1.804	1.25	1.292	1.301	1.03	1.041	1.051	1.066	1.075	1.049	0.997	0.894	0.482	0.325	0.237	0	0	0	0
6.417	1.506	1.3	1.633	0.919	0.828	0.654	1.413	1.177	0.629	0	0.643	0.818	1.033	0.915	0.963	1.061	1.816	0	1.822	1.247	1.288	1.303	1.023	1.034	1.044	1.06	1.049	1.002	0.938	0.852	0.437	0.294	0.216	0	0	0	0

6.5	1.495	1.278	1.636	0.921	0.83	0.635	1.417	1.174	0.598	0	0.609	0.761	0.877	0.962	0.945	1.032	1.834	0	1.841	1.251	1.284	1.389	1.019	1.029	1.039	1.057	1.031	0.969	0.885	0.809	0.355	0.266	0.196	0	0	0	0
6.583	1.502	1.256	1.635	0.925	0.832	0.615	1.423	1.199	0.589	0	0.598	0.715	0.867	0.889	0.927	1.003	1.866	0	1.869	1.253	1.286	1.316	1.013	1.022	1.03	1.054	1.021	0.947	0.851	0.761	0.355	0.238	0.176	0	0	0	0
6.667	1.509	1.241	1.633	0.929	0.835	0.598	1.421	1.233	0.587	0	0.595	0.708	0.858	0.875	0.917	0.989	1.887	0	1.889	1.251	1.282	1.319	1.013	1.018	1.024	1.054	1.019	0.932	0.8	0.675	0.316	0.212	0.157	0	0	0	0
6.75	1.504	1.234	1.624	0.925	0.837	0.577	1.416	1.269	0.584	0	0.59	0.703	0.849	0.861	0.896	0.935	1.88	0	1.903	1.249	1.27	1.325	1	1.009	1.016	1.05	1.013	0.915	0.752	0.593	0.28	0.188	0.14	0	0	0	0
6.833	1.491	1.22	1.629	0.929	0.844	0.562	1.408	1.305	0.581	0	0.586	0.696	0.84	0.844	0.857	0.885	1.901	0	1.917	1.255	1.269	1.334	0.994	1.002	1.004	1.039	0.99	0.862	0.642	0.518	0.247	0.166	0.123	0	0	0	0
6.917	1.496	1.2	1.627	0.927	0.849	0.547	1.396	1.346	0.577	0	0.581	0.693	0.833	0.833	0.834	0.841	1.95	0	1.949	1.257	1.268	1.342	0.985	0.991	0.997	1.035	0.971	0.816	0.554	0.451	0.216	0.145	0.108	0	0	0	0
7	1.463	1.179	1.616	0.921	0.853	0.531	1.378	1.384	0.572	0	0.575	0.689	0.827	0.824	0.818	0.866	1.948	0	1.968	1.251	1.258	1.35	0.977	0.986	0.988	1.029	0.955	0.772	0.481	0.395	0.19	0.127	0.0949	0	0	0	0
7.083	1.471	1.163	1.597	0.922	0.859	0.52	1.353	1.412	0.568	0	0.57	0.685	0.821	0.815	0.8	0.756	1.967	0	1.978	1.249	1.237	1.354	0.973	0.983	0.977	1.017	0.935	0.692	0.417	0.344	0.166	0.111	0.083	0	0	0	0
7.167	1.475	1.141	1.583	0.925	0.862	0.507	1.347	1.432	0.561	0	0.562	0.684	0.818	0.809	0.785	0.715	1.939	0	1.981	1.26	1.226	1.355	0.965	0.976	0.97	1.005	0.872	0.596	0.362	0.289	0.144	0.0967	0.0723	0	0	0	0
7.25	1.467	1.133	1.604	0.92	0.864	0.494	1.333	1.446	0.553	0	0.554	0.681	0.812	0.799	0.756	0.641	1.964	0	1.964	1.268	1.23	1.363	0.952	0.963	0.952	1.001	0.837	0.513	0.314	0.26	0.126	0.0844	0.063	0	0	0	0
7.333	1.452	1.122	1.618	0.917	0.865	0.471	1.321	1.467	0.546	0	0.547	0.678	0.805	0.793	0.752	0.631	1.908	0	2.001	1.269	1.225	1.372	0.946	0.955	0.95	0.995	0.801	0.443	0.272	0.226	0.109	0.0733	0.0548	0	0	0	0
7.417	1.426	1.11	1.622	0.913	0.869	0.45	1.296	1.486	0.538	0	0.538	0.673	0.799	0.781	0.705	0.563	2.042	0	2.042	1.263	1.208	1.378	0.947	0.961	0.941	0.985	0.762	0.382	0.236	0.196	0.0949	0.0637	0.0476	0	0	0	0
7.5	1.417	1.094	1.624	0.897	0.878	0.453	1.269	1.496	0.529	0	0.529	0.673	0.801	0.783	0.707	0.559	1.988	0	2.071	1.248	1.187	1.373	0.943	0.961	0.937	0.963	0.69	0.334	0.206	0.172	0.0833	0.056	0.0418	0	0	0	0
7.583	1.434	1.082	1.625	0.896	0.883	0.457	1.242	1.507	0.517	0	0.517	0.669	0.8	0.788	0.722	0.56	1.921	0	2.105	1.258	1.156	1.359	0.934	0.952	0.945	0.934	0.692	0.289	0.179	0.149	0.0722	0.0484	0.0362	0	0	0	0
7.667	1.451	1.061	1.623	0.892	0.887	0.445	1.223	1.525	0.51	0	0.51	0.67	0.791	0.753	0.589	0.44	2.13	0	2.13	1.288	1.121	1.334	0.92	0.935	0.949	0.9	0.527	0.25	0.155	0.129	0.0624	0.0418	0.0312	0	0	0	0
7.75	1.463	1.042	1.608	0.888	0.893	0.444	1.201	1.537	0.501	0	0.501	0.67	0.781	0.735	0.569	0.413	2.099	0	2.137	1.314	1.147	1.345	0.904	0.914	0.945	0.88	0.463	0.219	0.136	0.113	0.0549	0.0367	0.0275	0	0	0	0
7.833	1.469	1.025	1.582	0.892	0.921	0.452	1.178	1.544	0.493	0	0.493	0.662	0.774	0.776	0.767	0.522	1.779	0	2.126	1.346	1.17	1.372	0.892	0.889	0.933	0.859	0.497	0.192	0.12	0.0996	0.0483	0.0325	0.0244	0	0	0	0
7.917	1.469	1.007	1.547	0.889	0.945	0.462	1.151	1.543	0.483	0	0.483	0.66	0.779	0.777	0.663	0.464	1.814	0	2.1	1.368	1.185	1.398	0.89	0.888	0.927	0.835	0.358	0.169	0.105	0.0876	0.0425	0.0287	0.0216	0	0	0	0
8	1.454	1.009	1.556	0.879	0.968	0.47	1.123	1.537	0.471	0	0.471	0.662	0.786	0.772	0.604	0.495	1.84	0	2.059	1.383	1.195	1.419	0.885	0.885	0.919	0.811	0.318	0.149	0.0928	0.0773	0.0376	0.0253	0.019	0	0	0	0
8.083	1.435	1.006	1.567	0.863	0.986	0.467	1.106	1.549	0.458	0	0.458	0.659	0.793	0.751	0.528	0.344	1.856	0	2.069	1.389	1.203	1.433	0.878	0.878	0.91	0.784	0.283	0.132	0.0824	0.0688	0.0334	0.0225	0.0169	0	0	0	0
8.167	1.421	0.999	1.576	0.849	0.994	0.458	1.096	1.574	0.447	0	0.448	0.655	0.795	0.765	0.45	0.294	1.857	0	1.953	1.387	1.203	1.442	0.869	0.871	0.905	0.759	0.255	0.119	0.0741	0.0616	0.03	0.0202	0.0152	0	0	0	0
8.25	1.414	0.995	1.582	0.837	1.004	0.447	1.094	1.578	0.442	0	0.442	0.674	0.733	0.69	0.581	0.369	1.847	0	2.017	1.393	1.207	1.489	0.908	0.844	0.861	0.742	0.236	0.104	0.0643	0.0554	0.0306	0.0231	0.0177	0	0	0	0
8.333	1.416	1.002	1.581	0.848	0.993	0.459	1.085	1.584	0.435	0	0.435	0.646	0.826	0.61	0.535	0.261	1.846	0	1.845	1.339	1.164	1.419	0.847	0.878	0.946	0.717	0.232	0.11	0.0665	0.0541	0.0269	0.0191	0.0143	0	0	0	0
8.417	1.422	0.988	1.59	0.832	1.009	0.452	1.096	1.582	0.427	0	0.428	0.686	0.721	0.616	0.526	0.387	1.834	0	2.044	1.416	1.241	1.501	0.87	0.819	0.869	0.755	0.251	0.117	0.072	0.0574	0.0262	0.0181	0.0138	0	0	0	0
8.5	1.405	1.009	1.57	0.852	0.988	0.452	1.082	1.589	0.451	0	0.451	0.629	0.843	0.664	0.349	0.202	1.841	0	1.842	1.328	1.145	1.42	0.873	0.884	0.951	0.682	0.214	0.101	0.065	0.0585	0.0326	0.0225	0.0169	0	0	0	0
8.583	1.416	0.999	1.582	0.845	0.995	0.459	1.086	1.6	0.424	0	0.424	0.683	0.739	0.536	0.449	0.373	1.837	0	2.068	1.443	1.259	1.471	0.834	0.933	0.876	0.762	0.265	0.124	0.0758	0.059	0.022	0.0112	0.00815	0	0	0	0
8.667	1.419	0.988	1.589	0.83	1.011	0.444	1.1	1.576	0.451	0	0.451	0.631	0.813	0.76	0.379	0.2	1.827	0	1.827	1.326	1.151	1.419	0.907	0.872	0.973	0.659	0.194	0.0956	0.065	0.0621	0.0365	0.0257	0.0193	0	0	0	0
8.75	1.408	1.004	1.573	0.848	0.992	0.455	1.083	1.598	0.438	0	0.438	0.661	0.776	0.589	0.364	0.321	1.851	0	2.049	1.448	1.221	1.446	0.834	0.837	0.878	0.772	0.272	0.127	0.078	0.0596	0.0198	0.00746	0.00475	0	0	0	0

75% blockage at 12.5 and 75% of wall to the east of the watercourse impermeable

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 - 75 % BLK AT 12 5 22N
Selected output data from time (hr): 0
to time (hr): 5.5

Stage

Time (hr)	Newtyle 0:	CH000000	CH000000	Newtyle 0:	CH000000	CH000000	Newtyle 0:	CH000000	Newtyle01:	Bridge1 U	Newtyle12	Newtyle 0:	Newtyle 0:	CH000000	CH000000	CH000000	Newtyle 0:	Bridge2 U
0	89.066	88.262	87.454	86.678	86.365	86.08	85.794	85.516	85.518	85.518	84.927	84.868	84.735	84.682	84.63	84.58	84.498	84.498
0.083	89.061	88.268	87.444	86.673	86.385	86.312	85.806	85.48	85.477	85.477	84.938	84.869	84.735	84.71	84.692	84.675	84.502	84.502
0.167	89.061	88.27	87.443	86.675	86.369	86.248	85.775	85.452	85.459	85.459	84.936	84.871	84.735	84.709	84.7	84.687	84.497	84.497
0.25	89.061	88.269	87.444	86.674	86.375	86.277	85.8	85.492	85.49	85.49	84.937	84.874	84.733	84.699	84.692	84.69	84.486	84.486
0.333	89.061	88.269	87.444	86.675	86.371	86.262	85.781	85.464	85.462	85.462	84.936	84.87	84.739	84.693	84.664	84.66	84.498	84.498
0.417	89.061	88.269	87.444	86.674	86.373	86.271	85.794	85.484	85.482	85.482	84.938	84.872	84.74	84.69	84.664	84.662	84.495	84.495
0.5	89.061	88.269	87.444	86.674	86.372	86.266	85.785	85.468	85.465	85.465	84.937	84.87	84.734	84.706	84.698	84.695	84.489	84.489
0.583	89.066	88.276	87.451	86.68	86.377	86.253	85.809	85.527	85.526	85.526	84.946	84.873	84.744	84.706	84.676	84.66	84.506	84.506
0.667	89.071	88.287	87.459	86.691	86.376	86.164	85.826	85.532	85.632	85.632	84.953	84.886	84.749	84.7	84.674	84.664	84.501	84.501
0.75	89.079	88.297	87.47	86.7	86.387	86.137	85.861	85.732	85.733	85.733	84.963	84.896	84.759	84.707	84.674	84.661	84.505	84.505
0.833	89.089	88.306	87.476	86.709	86.403	86.135	85.903	85.361	85.861	85.861	84.977	84.91	84.772	84.718	84.677	84.66	84.512	84.512
0.917	89.1	88.317	87.483	86.72	86.42	86.143	85.999	85.993	85.994	85.994	84.992	84.923	84.784	84.73	84.685	84.662	84.519	84.519
1	89.113	88.33	87.491	86.735	86.429	86.188	86.126	86.127	86.127	86.127	85.007	84.936	84.795	84.747	84.723	84.714	84.515	84.515
1.083	89.13	88.343	87.501	86.747	86.449	86.282	86.26	86.262	86.262	86.262	85.022	84.949	84.807	84.757	84.73	84.719	84.521	84.521
1.167	89.146	88.355	87.514	86.756	86.49	86.424	86.418	86.42	86.42	86.42	85.04	84.965	84.82	84.766	84.725	84.705	84.533	84.533
1.25	89.156	88.369	87.526	86.771	86.559	86.528	86.523	86.525	86.525	86.525	85.05	84.974	84.829	84.774	84.726	84.7	84.541	84.541
1.333	89.168	88.387	87.54	86.795	86.624	86.604	86.602	86.604	86.603	86.603	85.067	85.012	84.855	84.801	84.761	84.742	84.546	84.546
1.417	89.183	88.404	87.557	86.817	86.652	86.633	86.63	86.633	86.633	86.633	85.087	85.04	84.874	84.819	84.77	84.742	84.562	84.562
1.5	89.201	88.421	87.571	86.84	86.676	86.654	86.652	86.655	86.655	86.655	85.104	85.062	84.889	84.833	84.786	84.762	84.566	84.566
1.583	89.221	88.442	87.585	86.862	86.699	86.674	86.673	86.677	86.677	86.677	85.121	85.084	84.903	84.849	84.807	84.775	84.575	84.575
1.667	89.239	88.457	87.603	86.886	86.722	86.694	86.693	86.699	86.698	86.698	85.142	85.108	84.92	84.865	84.821	84.779	84.588	84.588
1.75	89.255	88.475	87.623	86.912	86.744	86.713	86.713	86.72	86.72	86.72	85.165	85.134	84.938	84.886	84.849	84.797	84.6	84.6
1.833	89.272	88.495	87.645	86.939	86.768	86.731	86.733	86.742	86.74	86.74	85.191	85.162	84.96	84.911	84.887	84.817	84.62	84.62
1.917	89.292	88.516	87.665	86.964	86.791	86.749	86.753	86.763	86.762	86.762	85.221	85.195	84.986	84.948	84.927	84.841	84.643	84.643
2	89.315	88.535	87.685	86.991	86.814	86.766	86.772	86.785	86.784	86.784	85.258	85.231	85.017	84.989	84.969	84.866	84.669	84.669
2.083	89.333	88.555	87.708	87.019	86.837	86.781	86.79	86.806	86.804	86.804	85.294	85.266	85.052	85.032	85.01	84.894	84.697	84.697
2.167	89.353	88.576	87.732	87.044	86.861	86.795	86.808	86.826	86.823	86.823	85.339	85.301	85.088	85.067	85.039	84.923	84.723	84.723
2.25	89.374	88.596	87.752	87.069	86.881	86.809	86.824	86.845	86.843	86.843	85.373	85.337	85.127	85.109	85.083	84.947	84.754	84.754
2.333	89.396	88.616	87.772	87.094	86.905	86.821	86.839	86.864	86.862	86.862	85.412	85.377	85.17	85.159	85.126	84.979	84.79	84.79
2.417	89.419	88.637	87.794	87.119	86.932	86.833	86.854	86.882	86.88	86.88	85.459	85.427	85.276	85.267	85.227	85.051	84.855	84.855
2.5	89.44	88.657	87.815	87.143	86.957	86.841	86.868	86.9	86.897	86.897	85.488	85.45	85.289	85.282	85.24	85.063	84.867	84.867
2.583	89.457	88.676	87.836	87.167	86.984	86.875	86.88	86.916	86.914	86.914	85.514	85.475	85.314	85.305	85.26	85.087	84.892	84.892
2.667	89.477	88.694	87.86	87.187	87.014	86.898	86.897	86.934	86.929	86.929	85.545	85.505	85.354	85.343	85.294	85.116	84.922	84.922
2.75	89.495	88.711	87.876	87.212	87.036	86.927	86.903	86.95	86.946	86.946	85.585	85.547	85.415	85.404	85.35	85.164	84.971	84.971
2.833	89.515	88.727	87.897	87.228	87.062	86.944	86.921	86.968	86.96	86.96	85.616	85.577	85.461	85.447	85.389	85.196	85.008	85.008
2.917	89.531	88.746	87.912	87.256	87.086	86.971	86.924	86.98	86.975	86.975	85.632	85.593	85.478	85.464	85.407	85.212	85.023	85.023
3	89.546	88.765	87.928	87.28	87.107	86.99	86.931	86.993	86.992	86.992	85.656	85.623	85.511	85.496	85.445	85.237	85.053	85.053
3.083	89.574	88.77	87.955	87.309	87.153	87.005	86.936	87.01	86.987	86.987	85.68	85.638	85.535	85.514	85.461	85.256	85.07	85.07
3.167	89.565	88.808	87.949	87.361	87.149	87.047	86.925	87.011	87.037	87.037	85.708	85.664	85.565	85.548	85.49	85.284	85.096	85.096
3.25	89.599	88.8	87.983	87.373	87.192	87.048	86.933	87.031	87.017	87.017	85.726	85.691	85.592	85.573	85.516	85.312	85.122	85.122
3.333	89.59	88.83	87.982	87.408	87.199	87.065	86.946	87.035	87.059	87.059	85.757	85.722	85.636	85.619	85.56	85.353	85.162	85.162
3.417	89.621	88.821	88.013	87.421	87.24	87.061	86.957	87.355	87.038	87.038	85.767	85.739	85.654	85.636	85.577	85.367	85.179	85.179
3.5	89.627	88.834	88.022	87.445	87.257	87.069	86.963	87.361	87.054	87.054	85.785	85.756	85.677	85.657	85.599	85.386	85.195	85.195
3.583	89.634	88.846	88.029	87.47	87.265	87.085	86.955	87.365	87.063	87.063	85.798	85.768	85.692	85.672	85.614	85.402	85.208	85.208
3.667	89.647	88.848	88.043	87.491	87.283	87.093	86.956	87.375	87.066	87.066	85.82	85.785	85.714	85.692	85.633	85.422	85.234	85.234
3.75	89.65	88.856	88.048	87.511	87.289	87.101	86.95	87.378	87.074	87.074	85.827	85.797	85.723	85.704	85.644	85.433	85.242	85.242
3.833	89.653	88.862	88.053	87.523	87.295	87.105	86.949	87.382	87.078	87.078	85.836	85.809	85.734	85.716	85.656	85.44	85.252	85.252
3.917	89.658	88.862	88.059	87.535	87.303	87.106	86.943	87.384	87.078	87.078	85.884	85.866	85.778	85.765	85.702	85.481	85.292	85.292
4	89.658	88.864	88.059	87.536	87.3	87.104	86.941	87.381	87.078	87.078	85.873	85.848	85.766	85.746	85.688	85.463	85.273	85.273
4.083	89.656	88.865	88.056	87.536	87.297	87.106	86.936	87.379	87.077	87.077	85.867	85.846	85.757	85.745	85.673	85.46	85.269	85.269
4.167	89.655	88.861	88.055	87.53	87.297	87.103	86.939	87.379	87.074	87.074	85.865	85.835	85.755	85.731	85.67	85.451	85.261	85.261
4.25	89.653	88.857	88.052	87.52	87.291	87.099	86.942	87.376	87.072	87.072	85.866	85.841	85.754	85.738	85.674	85.454	85.262	85.262
4.333	89.646	88.854	88.045	87.51	87.282	87.097	86.939	87.371	87.069	87.069	85.851	85.821	85.737	85.719	85.656	85.441	85.247	85.247
4.417	89.641	88.849	88.038	87.495	87.276	87.091	86.942	87.367	87.063	87.063	85.84	85.813	85.727	85.706	85.649	85.427	85.237	85.237
4.5	89.633	88.843	88.03	87.479	87.268	87.085	86.945	87.362	87.058	87.058	85.83	85.803	85.712	85.699	85.631	85.419	85.225	85.225
4.583	89.625	88.837	88.021	87.462	87.255	87.08	86.944	87.356	87.054	87.054	85.818	85.793	85.701	85.683	85.62	85.407	85.213	85.213
4.667	89.621	88.825	88.015	87.44	87.248	87.067	86.946	87.351	87.041	87.041	85.808	85.778	85.688	85.665	85.609	85.39	85.196	85.196
4.75	89.617	88.813	88.009	87.414	87.241	87.048	86.954	87.346	87.029	87.029	85.786	85.768	85.668	85.65	85.589	85.372	85.181	85.181
4.833	89.604	88.808	87.997	87.389	87.23	87.032	86.957	87.338	87.022	87.022	85.772	85.749	85.652	85.629	85.575	85.354	85.164	85.164
4.917	89.579	88.813	87.972	87.382	87.195	87.034	86.95	87.323	87.039	87.039	85.761	85.729	85.632	85.616	85.55	85.338	85.149	85.149
5	89.574	88.798	87.967	87.35	87.19	87.01	86.957	87.319	87.021	87.021	85.739	85.714	85.609	85.593	85.532	85.317	85.127	85.127
5.083	89.58	88.771	87.966	87.317	87.187	86.986	86.956	87.315	86.986	86.986	85.719	85.695	85.588	85.566	85.51	85.295	85.104	85.104
5.167	89.548	88.778	87.933	87.311	87.129	87.002	86.934	86.395	87.011	87.011	85.704	85.675	85.56	85.544	85.487	85.279	85.087	85.087
5.25	89.54	88.761	87.922	87.287	87.107	86.992	86.918	86.386	86.988	86.988	85.692	85.66	85.548	85.526	85.474	85.265	85.072	85.072
5.333	89.533	88.74	87.916	87.257	87.097	86.965	86.923	86.079	86.967	86.967	85.668	85.636	85.518	85.498	85.442	85.238	85.051	85.051
5.417	89.514	88.732	87.897	87.239	87.07	86.949	86.915	86.965	86.962	86.962	85.644	85.616	85.489	85.471	85.419	85.219	85.025	85.025
5.5	89.499	88.718	87.883	87.222	87.049	86.932	86.906	86.953	86.949	86.949	85.629	85.599	85.471	85.454	85.402	85.205	85.011	85.011

Time (hr)	Newtyle 0:	Newtyle 0(	CH000000	CH000000	Newtyle 0(	CH000000	CH000000	Newtyle 0(	CH000000	CH000000	CH000000	Newtyle 0(	CH000000	Newtyle 0(	Newtyle 0(	Spill 012.5	Spill 012.5	Spill 010U	Spill 010D
0	84.496	84.174	83.87	83.566	83.292	83.132	82.969	82.81	82.799	82.8	82.8	82.8	82.8	82.8	82.8	0	0	0	0
0.083	84.498	84.176	83.869	83.55	83.28	83.124	82.961	82.822	82.802	82.802	82.802	82.802	82.801	82.8	82.8	85.477	-9999.99	84.502	-9999.99
0.167	84.495	84.171	83.864	83.551	83.287	83.133	82.973	82.829	82.805	82.803	82.802	82.801	82.8	82.8	82.8	85.459	-9999.99	84.497	-9999.99
0.25	84.486	84.163	83.865	83.558	83.301	83.142	82.972	82.826	82.8	82.796	82.795	82.795	82.798	82.799	82.8	85.49	-9999.99	84.486	-9999.99
0.333	84.495	84.18	83.885	83.569	83.296	83.126	82.96	82.818	82.8	82.802	82.803	82.803	82.802	82.801	82.8	85.462	-9999.99	84.498	-9999.99
0.417	84.494	84.177	83.885	83.571	83.299	83.129	82.958	82.817	82.801	82.803	82.803	82.802	82.801	82.8	82.8	85.482	-9999.99	84.495	-9999.99
0.5	84.489	84.166	83.863	83.551	83.29	83.136	82.975	82.829	82.801	82.799	82.799	82.798	82.798	82.799	82.8	85.465	-9999.99	84.489	-9999.99
0.583	84.501	84.185	83.883	83.562	83.286	83.125	82.967	82.825	82.8	82.801	82.803	82.804	82.803	82.801	82.8	85.526	-9999.99	84.506	-9999.99
0.667	84.497	84.18	83.883	83.571	83.307	83.145	82.979	82.83	82.801	82.8	82.8	82.8	82.8	82.8	82.8	85.632	-9999.99	84.501	-9999.99
0.75	84.501	84.186	83.89	83.578	83.315	83.152	82.986	82.835	82.801	82.8	82.8	82.8	82.8	82.8	82.8	85.733	-9999.99	84.505	-9999.99
0.833	84.505	84.193	83.898	83.587	83.325	83.163	82.996	82.842	82.801	82.8	82.8	82.8	82.8	82.8	82.8	85.861	-9999.99	84.512	-9999.99
0.917	84.51	84.202	83.909	83.597	83.337	83.175	83.007	82.849	82.801	82.799	82.799	82.8	82.8	82.8	82.8	85.994	-9999.99	84.519	-9999.99
1	84.515	84.209	83.918	83.607	83.346	83.182	83.015	82.857	82.802	82.799	82.799	82.8	82.8	82.8	82.8	86.127	-9999.99	84.515	-9999.99
1.083	84.521	84.219	83.93	83.618	83.355	83.19	83.024	82.865	82.802	82.799	82.799	82.799	82.8	82.8	82.8	86.262	-9999.99	84.521	-9999.99
1.167	84.528	84.23	83.938	83.626	83.365	83.199	83.035	82.874	82.803	82.798	82.798	82.799	82.8	82.8	82.8	86.42	-9999.99	84.533	-9999.99
1.25	84.533	84.237	83.943	83.631	83.372	83.206	83.043	82.88	82.803	82.798	82.798	82.799	82.8	82.8	82.8	86.525	-9999.99	84.541	-9999.99
1.333	84.546	84.252	83.957	83.646	83.39	83.223	83.061	82.893	82.805	82.798	82.798	82.799	82.8	82.8	82.8	86.603	-9999.99	84.546	-9999.99
1.417	84.556	84.27	83.986	83.674	83.424	83.257	83.091	82.92	82.825	82.796	82.796	82.798	82.8	82.8	82.8	86.633	-9999.99	84.562	-9999.99
1.5	84.564	84.286	84.011	83.697	83.448	83.279	83.114	82.943	82.844	82.793	82.793	82.797	82.8	82.8	82.8	86.655	-9999.99	84.566	-9999.99
1.583	84.575	84.308	84.037	83.72	83.474	83.305	83.138	82.967	82.862	82.79	82.79	82.795	82.8	82.799	82.8	86.677	-9999.99	84.575	-9999.99
1.667	84.586	84.332	84.063	83.744	83.501	83.331	83.163	82.989	82.88	82.797	82.786	82.793	82.799	82.799	82.8	86.698	-9999.99	84.588	-9999.99
1.75	84.6	84.359	84.094	83.77	83.529	83.358	83.189	83.015	82.905	82.816	82.779	82.79	82.799	82.799	82.8	86.72	-9999.99	84.6	-9999.99
1.833	84.618	84.392	84.127	83.8	83.56	83.387	83.217	83.042	82.93	82.835	82.77	82.786	82.799	82.798	82.8	86.74	-9999.99	84.62	-9999.99
1.917	84.642	84.429	84.158	83.83	83.593	83.419	83.247	83.071	82.958	82.858	82.781	82.779	82.798	82.798	82.8	86.762	-9999.99	84.643	-9999.99
2	84.668	84.459	84.194	83.863	83.626	83.451	83.278	83.103	82.99	82.89	82.812	82.777	82.798	82.797	82.8	86.784	-9999.99	84.669	-9999.99
2.083	84.696	84.51	84.232	83.897	83.661	83.484	83.31	83.134	83.024	82.928	82.854	82.805	82.797	82.796	82.8	86.804	-9999.99	84.697	-9999.99
2.167	84.723	84.558	84.27	83.933	83.699	83.521	83.346	83.17	83.058	82.96	82.883	82.833	82.797	82.795	82.8	86.823	-9999.99	84.723	-9999.99
2.25	84.753	84.595	84.308	83.965	83.729	83.548	83.371	83.193	83.081	82.98	82.898	82.842	82.795	82.793	82.8	86.843	-9999.99	84.754	-9999.99
2.333	84.79	84.635	84.342	83.998	83.764	83.579	83.401	83.221	83.106	83.002	82.913	82.849	82.793	82.791	82.8	86.862	-9999.99	84.79	-9999.99
2.417	84.855	84.699	84.396	84.048	83.812	83.623	83.442	83.257	83.139	83.028	82.933	82.862	82.794	82.789	82.8	86.88	-9999.99	84.855	-9999.99
2.5	84.867	84.714	84.407	84.061	83.826	83.637	83.456	83.273	83.154	83.041	82.941	82.865	82.789	82.786	82.8	86.897	-9999.99	84.867	-9999.99
2.583	84.892	84.741	84.429	84.081	83.845	83.657	83.476	83.298	83.181	83.064	82.958	82.878	82.795	82.783	82.8	86.914	-9999.99	84.892	-9999.99
2.667	84.922	84.773	84.456	84.106	83.868	83.678	83.497	83.321	83.204	83.086	82.977	82.893	82.806	82.779	82.8	86.929	-9999.99	84.922	-9999.99
2.75	84.971	84.829	84.502	84.147	83.906	83.711	83.525	83.339	83.216	83.097	82.989	82.904	82.814	82.775	82.8	86.946	-9999.99	84.971	-9999.99
2.833	85.008	84.862	84.532	84.173	83.931	83.734	83.546	83.358	83.234	83.113	83.003	82.917	82.823	82.768	82.8	86.96	-9999.99	85.008	-9999.99
2.917	85.023	84.878	84.545	84.185	83.943	83.744	83.559	83.378	83.254	83.132	83.019	82.932	82.835	82.771	82.8	86.975	-9999.99	85.023	-9999.99
3	85.053	84.906	84.569	84.205	83.961	83.761	83.574	83.395	83.271	83.147	83.032	82.944	82.845	82.777	82.8	86.992	-9999.99	85.053	-9999.99
3.083	85.07	84.923	84.585	84.218	83.974	83.773	83.586	83.408	83.283	83.159	83.045	82.957	82.856	82.784	82.8	86.987	-9999.99	85.07	-9999.99
3.167	85.096	84.95	84.608	84.238	83.991	83.789	83.601	83.423	83.296	83.171	83.057	82.969	82.867	82.791	82.8	87.037	-9999.99	85.096	-9999.99
3.25	85.122	84.977	84.628	84.256	84.007	83.803	83.614	83.436	83.307	83.182	83.068	82.981	82.876	82.798	82.8	87.017	-9999.99	85.122	-9999.99
3.333	85.162	85.005	84.656	84.282	84.031	83.822	83.632	83.453	83.323	83.196	83.081	82.995	82.888	82.806	82.8	87.059	-9999.99	85.162	-9999.99
3.417	85.179	85.026	84.67	84.293	84.04	83.829	83.639	83.459	83.328	83.201	83.086	82.999	82.892	82.81	82.8	87.038	-9999.99	85.179	-9999.99
3.5	85.195	85.046	84.686	84.308	84.052	83.84	83.648	83.469	83.337	83.209	83.094	83.007	82.899	82.815	82.8	87.054	-9999.99	85.195	-9999.99
3.583	85.208	85.056	84.698	84.318	84.063	83.848	83.656	83.476	83.344	83.216	83.1	83.012	82.905	82.819	82.8	87.063	-9999.99	85.208	-9999.99
3.667	85.234	85.074	84.714	84.332	84.075	83.858	83.664	83.484	83.351	83.224	83.107	83.019	82.911	82.824	82.8	87.066	-9999.99	85.234	-9999.99
3.75	85.242	85.086	84.723	84.342	84.081	83.865	83.669	83.49	83.356	83.228	83.113	83.026	82.915	82.826	82.8	87.074	-9999.99	85.242	-9999.99
3.833	85.252	85.096	84.73	84.349	84.087	83.869	83.673	83.494	83.36	83.232	83.117	83.029	82.918	82.829	82.8	87.078	-9999.99	85.252	-9999.99
3.917	85.292	85.128	84.76	84.371	84.107	83.883	83.686	83.503	83.369	83.24	83.122	83.037	82.924	82.832	82.8	87.078	-9999.99	85.292	-9999.99
4	85.273	85.114	84.747	84.365	84.102	83.883	83.682	83.497	83.363	83.234	83.115	83.028	82.918	82.83	82.8	87.078	-9999.99	85.273	-9999.99
4.083	85.269	85.111	84.742	84.36	84.098	83.879	83.681	83.5	83.366	83.237	83.122	83.034	82.922	82.831	82.8	87.077	-9999.99	85.269	-9999.99
4.167	85.261	85.103	84.736	84.356	84.093	83.875	83.678	83.497	83.363	83.235	83.119	83.031	82.92	82.83	82.8	87.074	-9999.99	85.261	-9999.99
4.25	85.262	85.106	84.739	84.357	84.095	83.876	83.679	83.496	83.362	83.235	83.118	83.031	82.92	82.831	82.8	87.072	-9999.99	85.262	-9999.99
4.333	85.247	85.091	84.726	84.346	84.086	83.868	83.673	83.491	83.359	83.23	83.114	83.027	82.917	82.828	82.8	87.069	-9999.99	85.247	-9999.99
4.417	85.237	85.082	84.719	84.339	84.08	83.864	83.668	83.488	83.354	83.227	83.11	83.024	82.914	82.826	82.8	87.063	-9999.99	85.237	-9999.99
4.5	85.225	85.068	84.709	84.332	84.074	83.858	83.663	83.482	83.35	83.221	83.107	83.019	82.91	82.822	82.8	87.058	-9999.99	85.225	-9999.99
4.583	85.213	85.057	84.699	84.323	84.066	83.851	83.658	83.477	83.345	83.217	83.101	83.014	82.905	82.819	82.8	87.054	-9999.99	85.213	-9999.99
4.667	85.196	85.045	84.688	84.312	84.057	83.844	83.651	83.471	83.339	83.211	83.095	83.009	82.901	82.816	82.8	87.041	-9999.99	85.196	-9999.99
4.75	85.181	85.028	84.674	84.3	84.047	83.835	83.644	83.463	83.332	83.204	83.089	83.002	82.895	82.811	82.8	87.029	-9999.99	85.181	-9999.99
4.833	85.164	85.015	84.66	84.288	84.035	83.826	83.636	83.455	83.324	83.197	83.082	82.995	82.889	82.807	82.8	87.022	-9999.99	85.164	-9999.99
4.917	85.149	84.993	84.645	84.273	84.024	83.817	83.627	83.446	83.316	83.19	83.075	82.989	82.882	82.803	82.8	87.039	-9999.99	85.149	-9999.99
5	85.127	84.975	84.629	84.26	84.011	83.807	83.618	83.436	83.307	83.182	83.067	82.98	82.875	82.798	82.8	87.021	-9999.99	85.127	-9999.99
5.083	85.104	84.955	84.614	84.245	83.998	83.796	83.607	83.426	83.298	83.174	83.059	82.971	82.868	82.793	82.8	86.986	-9999.99	85.104	-9999.99
5.167	85.087	84.935	84.596	84.231	83.986	83.785	83.596	83.415	83.289	83.165	83.05	82.962	82.861	82.787	82.8	87.011	-9999.99	85.087	-9999.99
5.25	85.072	84.927	84.586	84.222	83.976	83.776	83.588	83.406	83.28	83.155	83.041	82.952	82.853	82.782	82.8	86.988	-9999.99	85.072	-9999.99
5.333	85.051	84.902	84.566	84.204	83.961	83.762	83.574	83.391	83.267	83.143	83.029	82.942	82.843	82.776	82.8	86.967	-9999.99	85.051	-9999.99
5.417	85.025	84.878	84.546	84.187	83.945	83.748	83.561	83.378	83.254	83.131	83.019	82.932	82.835	82.771	82.8	86.962	-9999.99	85.025	-9999.99
5.5	85.011	84.863	84.533	84.176	83.934	83.738	83.552	83.365	83.241	83.12	83.01	82.924	82.827	82.766	82.8	86.949	-9999.99	85.011	-9999.99

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 - 75% BLK AT 12.5.22N

Selected output data from time (hr): 0

to time (hr): 5.5

Velocity

Time (hr)	Newtyle D'CH000000	CH000000	Newtyle 01'CH000000	CH000000	Newtyle 01'CH000000	CH000000	Newtyle 01'CH000000	Newtyle-01'Bridge1 U	Newtyle12	Newtyle 0'Newtyle 0'CH000000	CH000000	CH000000	Newtyle 0'Bridge2 U	Newtyle 0'Newtyle 0f CH000000	CH000000	Newtyle 0f CH000000	CH000000	Newtyle 0f CH000000	CH000000	CH000000	Newtyle 0f CH000000	Newtyle 0f Newtyle 0f Spill	012.5 Spill	012.5 Spill	010U Spill	010U
0	1.064	1.04	1.05	0.748	0.826	0.846	1.297	0.329	0.105	0	0.575	0.709	0.792	0.782	0.77	0.757	1.192	0	1.229	1.025	1.049	1.095	0.849	0.817	0.815	0.781	0.314	0.183	0.126	0.086	0.044	0.032	0.024	0	0	0	0
0.083	1.145	0.937	1.203	0.8	0.688	0.263	1.461	0.457	0.113	0	0.541	0.701	0.762	0.572	0.469	0.433	1.392	0	1.483	1.147	0.984	1.112	0.763	0.748	0.79	0.653	0.31	0.19	0.133	0.0894	0.041	0.0253	0.0179	0	0	0	0
0.167	1.157	0.918	1.227	0.779	0.787	0.265	1.321	0.378	0.114	0	0.535	0.69	0.784	0.581	0.418	0.368	1.343	0	1.397	1.058	0.943	1.1	0.771	0.785	0.842	0.731	0.355	0.21	0.142	0.091	0.0365	0.0194	0.0133	0	0	0	0
0.25	1.149	0.93	1.212	0.791	0.743	0.278	1.383	0.395	0.112	0	0.549	0.682	0.822	0.653	0.417	0.283	1.201	0	1.201	0.948	0.912	1.141	0.83	0.856	0.886	0.666	0.302	0.174	0.118	0.0806	0.0427	0.0317	0.0234	0	0	0	0
0.333	1.153	0.925	1.219	0.785	0.767	0.26	1.348	0.393	0.114	0	0.536	0.696	0.763	0.738	0.628	0.447	1.351	0	1.417	1.123	1.08	1.261	0.869	0.781	0.775	0.67	0.3	0.17	0.117	0.0856	0.0558	0.046	0.0344	0	0	0	0
0.417	1.151	0.926	1.216	0.787	0.754	0.273	1.373	0.397	0.113	0	0.544	0.7	0.772	0.764	0.619	0.418	1.317	0	1.363	1.097	1.064	1.262	0.89	0.798	0.79	0.627	0.277	0.162	0.116	0.0872	0.0581	0.0487	0.0365	0	0	0	0
0.5	1.153	0.926	1.218	0.787	0.76	0.266	1.358	0.398	0.114	0	0.537	0.694	0.78	0.6	0.41	0.296	1.227	0	1.228	0.989	0.932	1.094	0.767	0.807	0.853	0.736	0.36	0.209	0.136	0.0816	0.0306	0.0167	0.0117	0	0	0	0
0.583	1.213	0.951	1.234	0.811	0.802	0.339	1.378	0.372	0.114	0	0.558	0.739	0.756	0.679	0.624	0.523	1.421	0	1.54	1.196	1.103	1.228	0.795	0.752	0.802	0.718	0.35	0.207	0.139	0.0882	0.0392	0.0268	0.0196	0	0	0	0
0.667	1.287	0.949	1.274	0.802	0.932	0.584	1.223	0.276	0.11	0	0.599	0.746	0.844	0.894	0.629	0.475	1.382	0	1.468	1.136	1.064	1.239	0.876	0.864	0.877	0.756	0.375	0.22	0.152	0.103	0.0535	0.0364	0.0288	0	0	0	0
0.75	1.339	0.982	1.3	0.841	0.966	0.796	1.075	0.24	0.109	0	0.633	0.775	0.872	0.845	0.714	0.542	1.424	0	1.545	1.174	1.097	1.268	0.904	0.891	0.903	0.798	0.418	0.246	0.169	0.115	0.0599	0.0437	0.0322	0	0	0	0
0.833	1.378	1.009	1.329	0.89	0.974	0.93	0.921	0.21	0.108	0	0.671	0.808	0.904	0.887	0.794	0.621	1.471	0	1.633	1.217	1.133	1.301	0.938	0.921	0.936	0.849	0.474	0.279	0.192	0.13	0.0678	0.0497	0.0367	0	0	0	0
0.917	1.415	1.09	1.455	0.928	0.98	1.021	0.825	0.189	0.107	0	0.708	0.848	0.944	0.924	0.861	0.699	1.517	0	1.719	1.256	1.168	1.331	0.989	0.95	0.989	0.902	0.541	0.319	0.22	0.149	0.0772	0.0565	0.0416	0	0	0	0
1	1.449	1.137	1.533	0.956	1.07	0.985	0.453	0.166	0.107	0	0.743	0.885	0.991	0.933	0.764	0.599	1.786	0	1.785	1.285	1.194	1.353	1.065	0.998	1.01	0.947	0.604	0.358	0.246	0.167	0.0868	0.0637	0.0469	0	0	0	0
1.083	1.47	1.205	1.594	1.02	1.086	0.665	0.365	0.134	0.107	0	0.776	0.919	1.032	0.978	0.824	0.659	1.854	0	1.854	1.32	1.219	1.388	1.096	1.053	1.053	0.997	0.68	0.404	0.277	0.188	0.0977	0.0714	0.0525	0	0	0	0
1.167	1.51	1.282	1.649	1.119	0.989	0.467	0.303	0.111	0.106	0	0.812	0.955	1.081	1.046	0.958	0.792	1.816	0	1.918	1.357	1.291	1.458	1.107	1.106	1.092	1.055	0.766	0.458	0.315	0.214	0.111	0.0805	0.0592	0	0	0	0
1.25	1.591	1.335	1.724	1.167	0.83	0.43	0.292	0.0942	0.106	0	0.837	0.98	1.11	1.082	1.023	0.871	1.784	0	1.952	1.378	1.335	1.499	1.14	1.139	1.115	1.098	0.829	0.496	0.341	0.231	0.12	0.0878	0.0643	0	0	0	0
1.333	1.67	1.373	1.803	1.173	0.745	0.423	0.255	0.0899	0.105	0	0.85	0.999	1.18	1.137	1.036	0.872	2.05	0	2.049	1.425	1.441	1.591	1.212	1.208	1.171	1.18	0.966	0.586	0.486	0.403	0.274	0.143	0.104	0.0768	0	0	0
1.417	1.731	1.425	1.858	1.211	0.789	0.465	0.276	0.0914	0.114	0	0.848	0.867	1.236	1.2	1.138	0.997	2.021	0	2.128	1.486	1.472	1.693	1.313	1.302	1.283	1.304	1.134	0.769	0.528	0.358	0.185	0.135	0.0993	0	0	0	0
1.5	1.775	1.498	1.949	1.262	0.847	0.519	0.297	0.0937	0.119	0	0.847	0.851	1.281	1.24	1.168	1.012	2.143	0	2.172	1.482	1.463	1.762	1.306	1.305	1.371	1.383	1.245	0.935	0.641	0.433	0.222	0.162	0.119	0	0	0	0
1.583	1.821	1.563	2.051	1.32	0.913	0.577	0.322	0.0958	0.123	0	0.845	0.837	1.319	1.27	1.174	1.072	2.225	0	2.225	1.479	1.504	1.846	1.483	1.48	1.453	1.469	1.367	1.128	0.772	0.519	0.266	0.184	0.142	0	0	0	0
1.667	1.903	1.664	2.135	1.385	0.981	0.644	0.349	0.0982	0.129	0	0.841	0.825	1.362	1.314	1.222	1.172	2.263	0	2.292	1.477	1.542	1.927	1.556	1.554	1.533	1.555	1.48	1.283	0.913	0.61	0.31	0.226	0.166	0	0	0	0
1.75	1.995	1.76	2.209	1.447	1.057	0.711	0.378	0.101	0.135	0	0.837	0.815	1.399	1.335	1.215	1.229	2.357	0	2.364	1.491	1.587	2.006	1.64	1.639	1.618	1.633	1.572	1.406	1.089	0.722	0.363	0.265	0.194	0	0	0	0
1.833	2.106	1.846	2.282	1.513	1.137	0.788	0.407	0.106	0.142	0	0.822	0.807	1.43	1.348	1.188	1.286	2.466	0	2.438	1.518	1.646	2.088	1.726	1.726	1.704	1.716	1.674	1.489	1.209	0.869	0.426	0.31	0.227	0	0	0	0
1.917	2.186	1.944	2.379	1.591	1.221	0.869	0.442	0.11	0.15	0	0.825	0.801	1.457	1.331	1.173	1.382	2.451	0	2.466	1.553	1.736	2.168	1.806	1.807	1.79	1.801	1.764	1.659	1.465	1.019	0.493	0.36	0.263	0	0	0	0
2	2.262	2.053	2.473	1.671	1.31	0.96	0.478	0.117	0.161	0	0.814	0.805	1.475	1.321	1.18	1.468	2.495	0	2.509	1.588	1.81	2.25	1.895	1.896	1.875	1.877	1.842	1.741	1.546	1.184	0.568	0.415	0.302	0	0	0	0
2.083	2.369	2.16	2.559	1.749	1.401	1.055	0.515	0.124	0.174	0	0.806	0.819	1.494	1.311	1.191	1.546	2.534	0	2.538	1.629	1.882	2.33	1.977	1.98	1.96	1.951	1.899	1.781	1.58	1.221	0.652	0.476	0.346	0	0	0	0
2.167	2.463	2.258	2.631	1.831	1.484	1.156	0.551	0.133	0.189	0	0.79	0.845	1.488	1.301	1.257	1.599	2.572	0	2.574	1.634	1.969	2.395	2.053	2.072	2.052	2.038	1.992	1.871	1.623	1.234	0.746	0.547	0.397	0	0	0	0
2.25	2.543	2.355	2.724	1.909	1.579	1.239	0.591	0.141	0.202	0	0.782	0.849	1.503	1.341	1.255	1.688	2.565	0	2.567	1.662	1.988	2.463	2.12	2.139	2.116	2.105	2.046	1.925	1.658	1.311	0.836	0.611	0.44	0	0	0	0
2.333	2.612	2.447	2.804	1.983	1.653	1.324	0.633	0.15	0.215	0	0.771	0.848	1.509	1.33	1.231	1.752	2.555	0	2.555	1.73	2.007	2.525	2.19	2.212	2.166	2.164	2.106	2.005	1.738	1.415	0.936	0.684	0.491	0	0	0	0
2.417	2.671	2.533	2.873	2.054	1.714	1.413	0.665	0.158	0.232	0	0.757	0.858	1.292	1.15	1.191	1.802	2.578	0	2.578	1.855	2.196	2.644	2.295	2.315	2.296	2.306	2.213	2.105	1.879	1.505	1.064	0.789	0.563	0	0	0	0
2.5	2.736	2.609	2.943	2.12	1.775	1.51	0.701	0.166	0.243	0	0.75	0.854	1.341	1.188	1.237	1.846	2.619	0	2.621	1.886	2.23	2.66	2.308	2.332	2.315	2.324	2.269	2.108	1.915	1.581	1.151	0.841	0.593	0	0	0	0
2.583	2.819	2.693	3.007	2.178	1.843	1.598	0.742	0.168	0.254	0	0.744	0.86	1.34	1.199	1.267	1.877	2.643	0	2.624	1.915	2.275	2.699	2.342	2.351	2.337	2.317	2.199	2.074	1.929	1.644	1.22	0.922	0.645	0	0	0	0
2.667	2.876	2.768	3.041	2.256	1.846	1.541	0.757	0.184	0.265	0	0.736	0.858	1.295	1.186	1.276	1.902	2.626	0	2.626	1.956	2.326	2.734	2.388	2.401	2.372	2.329	2.155	2.071	1.936	1.611	1.272	1.013	0.7	0	0	0	0
2.75	2.934	2.827	3.113	2.283	1.914	1.516	0.827	0.168	0.276	0	0.71	0.827	1.263	1.116	1.252	1.906	2.611	0	2.611	1.977	2.379	2.799	2.453	2.473	2.451	2.464	2.276	2.152	1.981	1.649	1.325	1.057	0.747	0	0	0	0
2.833	2.976	2.914	3.147	2.369	1.933	1.552	0.834	0.179	0.277	0	0.674	0.795	1.131	1.08	1.24	1.919	2.585	0	2.585	2.015	2.415	2.838	2.496	2.5	2.488	2.504	2.293	2.161	1.991	1.666	1.381	1.205	0.862	0	0	0	0
2.917	3.04	2.951	3.222	2.374	1.985	1.545	0.896	0.17	0.281	0	0.657	0.792	1.119	1.073	1.238	1.921	2.588	0	2.588	2.03	2.436	2.853	2.507	2.508	2.472	2.444	2.229	2.169	1.963	1.655	1.411	1.278	0.859	0	0	0	0
3	3.102	2.987	3.288	2.395	2.04	1.553	0.942	0.167	0.285	0	0.633	0.764	1.077	1.048	1.265	1.94	2.574	0	2.574	2.053	2.459	2.884	2.537	2.535	2.49	2.473	2.22	2.187	1.971	1.661	1.453	1.321	0.906	0	0	0	0
3.083	3.057	3.124	3.228	2.401	1.995	1.62	1.024	0.149	0.288	0	0.607	0.768	1.051	1.043	1.267	1.935	2.577	0	2.577	2.07	2.476	2.912	2.557	2.544	2.486	2.467	2.197	2.09	1.95	1.638	1.45	1.363	0.957	0	0	0	0
3.167	3.203	2.966	3.494	2.245	2.185	1.594	1.111	0.142	0.292	0	0.589	0.737	1.069	1.016	1.214	1.929	2.58	0	2.58	2.095	2.497	2.938	2.592	2.555	2.501	2.495	2.2	2.087	1.947	1.638	1.473	1.404	1.007	0	0	0	0
3.25	3.163	3.179	3.334	2.326	2.113	1.696	1.186	0.126	0.294	0	0.566	0.725	0.992	0.995	1.197	1.911	2.588	0	2.588	2.108	2.526	2.954	2.635	2.567	2.497	2.412	2.206	2.084	1.939	1.636	1.466	1.441	1.055	0	0	0	0
3.333	3.357	3.055	3.519	2.275	2.208	1.647	1.13	0.181	0.294	0	0.545	0.674	0.93	0.956	1.182	1.907	2.578	0	2.578	2.171	2.557	2.997	2.645	2.582	2.498	2.415	2.218	2.097	1.946	1.636	1.526	1.488	1.118	0	0	0	0
3.417	3.25	3.292	3.367	2.34	2.115	1.775	1.167	0.183	0.295	0	0.532	0.662	0.923	0.947	1.164	1.905	2.569	0	2.57	2.169	2.576	3.01	2.658	2.597	2.501	2.417	2.23	2.107	1.95	1.642	1.537	1.505	1.143	0	0	0	0
3.5	3.31	3.307	3.408	2.331	2.133	1.83	1.176	0.203	0.296	0	0.519	0.649	0.901	0.935	1.16	1.912	2.586	0	2.586	2.18	2.588	3.026	2.674	2.593	2.505	2.397	2.236	2.108	1.95	1.64	1.552	1.533	1.182	0	0	0	0
3.583	3.353	3.309	3.462	2.285	2.155	1.826	1.249	0.194	0.298	0	0.51	0.643	0.884	0.922	1.151	1.906	2.596	0	2.596	2.204	2.594	3.038	2.682	2.598	2.504	2.389	2.233	2.106	1.954	1.644	1.56	1.563	1.213	0	0	0	0
3.667	3.34	3.371	3.432	2.266	2.212	1.873	1.304	0.191	0.299	0	0.493	0.635	0.857	0.914	1.143	1.906	2.573	0	2.573	2.23	2.61	3.045	2.694	2.598	2.51	2.384	2.223	2.108	1.956	1.644	1.575	1.578	1.249	0	0	0	0
3.75	3.375	3.372	3.461	2.299	2.246	1.887	1.359	0.19	0.301	0	0.489	0.624	0.857	0.899	1.135	1.901	2.584	0	2.584	2.226	2.617	3.044	2.705	2.589	2.514	2.373	2.22	2.115	1.946	1.635	1.584	1.594	1.272	0	0	0	0
3.833	3.397	3.376	3.476	2.327	2.268	1.909	1.388	0.19	0.302	0	0.483	0.607	0.855	0.897	1.131	1.91	2.578	0	2.578	2.233	2.628	3.048	2.707	2.593	2.509	2.375	2.221	2.115	1.95	1.639	1.59	1.606	1.289	0	0	0	0
3.917	3.388	3.4	3.461	2.295	2.271	1.94	1.439	0.187	0.298	0	0.448	0.544	0.872	0.871	1.126	1.902	2.621	0	2.621	2.212	2.671	3.096	2.735	2.631	2.518	2.409	2.237	2.131	1.985	1.643	1.607	1.637	1.325	0	0	0	0
4	3.398	3.398	3.469	2.211	2.286	1.951	1.438	0.19	0.298	0	0.455	0.565	0.87	0.911	1.14	1.958	2.63	0	2.63	2.293	2.661	3.063	2.713	2.592	2.523	2.436	2.265	2.155	2.009	1.675	1.611	1.615	1.301	0	0	0	0
4.083	3.407	3.38	3.484	2.2	2.303	1.932	1.455	0.185	0.298	0	0.46	0.555	0.897	0.887	1.177	1.94	2.623	0	2.623	2.281	2.659	3.058	2.715	2.593	2.507	2.384	2.226	2.124	1.961	1.647	1.606	1.633	1.319	0	0	0	0
4.167	3.389	3.387	3.485	2.212	2.278	1.936	1.426	0.188	0.297	0	0.46	0.582	0.874	0.929	1.167	1.955	2.629	0	2.629	2.278	2.656	3.066	2.712	2.593	2.506	2.388	2.228	2.125	1.962	1.647	1.599	1.618	1.305	0	0	0	0
4.25	3.373	3.384	3.452	2.223	2.267	1.923	1.4	0.188	0.296	0	0.459	0.566	0.885	0.912	1.162	1.954	2.642	0	2.642	2.284	2.658	3.06	2.715	2.589	2.506	2.389	2.244	2.125	1.975	1.647	1.599	1.618	1.306	0	0	0	0
4.333	3.372	3.356	3.46	2.224	2.265	1.89	1.386	0.186	0.296	0	0.47	0.589	0.887	0.927	1.166	1.937	2.63	0	2.63	2.263	2.643	3.054	2.702	2.586	2.503	2.393	2.224	2.122	1.958	1.644	1.586	1.6	1.281	0	0	0	0
4.417	3.358	3.339	3.45	2.241	2.234	1.873	1.344	0.186	0.295	0	0.477	0.596	0.893	0.941	1.162	1.952	2.625	0	2.625	2.25	2.637	3.05	2.698	2.591	2.513	2.388	2.233	2.118	1.963	1.634	1.584	1.589	1.263	0	0	0	0
4.5	3.345	3.317	3.445	2.252	2.216	1.868	1.358	0.188	0.295	0	0.484	0.594	0.917	0.93	1.189	1.937	2.63	0	2.63	2.263	2.636	3.042	2.696	2.589	2.514	2.398	2.25	2.122	1.963	1.645	1.574	1.579	1.241	0	0	0	0
4.583	3.327	3.282	3.436	2.259	2.192	1.808	1.262	0.185	0.292	0	0.492	0.599	0.926	0.95	1.191	1.94	2.632	0	2.632	2.247	2.617	3.018	2.687	2.592	2.511	2.399	2.239	2.118	1.96	1.643	1.567	1.557	1.218	0	0	0	0
4.667	3.273	3.286	3.383	2.289	2.14	1.802	1.221	0.183	0.29	0	0.498	0.618	0.929	0.981	1.184	1.955	2.64	0	2.64	2.218	2.612	3.026	2.674	2.59	2.507	2.404	2.243	2.115	1.958	1.639	1.557	1.538	1.189	0	0	0	0
4.75	3.216	3.29	3.327	2.332	2.048	1.822	1.14	0.182	0.289	0	0.513	0.612	0.957	0.98	1.202	1.953	2.626	0	2.627	2.21	2.598	3.016	2.662	2.582	2.501	2.419	2.24	2.112	1.958	1.642	1.544	1.516	1.169	0	0	0	0
4.833	3.209	3.238	3.318	2.367	2.02	1.819	1.068	0.207	0.285	0	0.524	0.628	0.972	1.005	1.189	1.96	2.623	0	2.623	2.18	2.593	3.005	2.65	2.582	2.5	2.429	2.238	2.11	1.956	1.65	1.53	1.493	1.128	0	0	0	0
4.917	3.292	3.08	3.437	2.295	2.058	1.713	1.02	0.218	0.284	0	0.538	0.63	0.991	0.999	1.228	1.954	2.611	0	2.611	2.186	2.589	2.988	2.637	2.575	2.495	2.44	2.232	2.108	1.956	1.647	1.517	1.469	1.092	0	0	0	0
5	3.233	3.068	3.336	2.371	1.996	1.76	0.931	0.259	0.284	0	0.554	0.637	1.022	1.022	1.225	1.963	2.621	0	2.621	2.159	2.552	2.978	2.627	2.562	2.496	2.408	2.227	2.106	1.957	1.653	1.5	1.442	1.057	0	0	0	0
5.083	3.054	3.18	3.184	2.435	1.895	1.792	0.922	0.214	0.279	0	0.565	0.668	1.041	1.048	1.219	1.968	2.631	0	2.631	2.144	2.537	2.966	2.61	2.55	2.502	2.414	2.224	2.105	1.961	1.651	1.483	1.414	1.021	0	0	0	0
5.167	3.161	2.976	3.348	2.321	2.059	1.595	0.931	0.2	0.28	0	0.586	0.676	1.063	1.056	1.241	1.971	2.638	0	2.638	2.137	2.513	2.935	2.585	2.544	2.499	2.43	2.22	2.104	1.967	1.651	1.465	1.383	0.982	0	0	0	0
5.25	3.088	2.96	3.28	2.327	2.044	1.538	0.983	0.192	0.279	0	0.594	0.7	1.091	1.09	1.22	1.966	2.641	0	2.641	2.104	2.511	2.921	2.57	2.548	2.497	2.444	2.235	2.108	1.981	1.667	1.453	1.351	0.943	0	0	0	0
5.333	3.001	2.979	3.173	2.373	1.953	1.593	0.902	0.172	0.276	0	0.614	0.721	1.095	1.081	1.244	1.978	2.621	0	2.621	2.088	2.489	2.894	2.537	2.526	2.49	2.457	2.251	2.126	1.977	1.665	1.432	1.315	0.901	0	0	0	0
5.417	3	2.899	3.177	2.338	1.944	1.566	0.855	0.184	0.273	0	0.639	0.73	1.133	1.104	1.25	1.96	2.646	0	2.646	2.068	2.462	2.865	2.515	2.508	2.479	2.467	2.251	2.124	1.989	1.66	1.412	1.28	0.862	0	0	0	0
5.5	2.957	2.848	3.134	2.299	1.919	1.557	0.834	0.181	0.27	0	0.655	0.743	1.146	1.111	1.247	1.969	2.64	0	2.64	2.054	2.483	2.852	2.5	2.496	2.475	2.484	2.268	2.136	1.971	1.669	1.399	1.249	0.828	0	0	0	0

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 - 75% BLK AT 12.5 22N
Selected output data from time (hr): 0
to time (hr): 5.5

Fr

Time (hr)	Newtyle D'CH000000	CH000000	Newtyle D'CH000000	CH000000	Newtyle D'CH000000	CH000000	Newtyle D'CH000000	Newtyle01'Bridge1 U	Newtyle12	Newtyle 0'Newtyle	0'CH000000	CH000000	CH000000	Newtyle 0'Bridge2 U	Newtyle 0'Newtyle	0f CH000000	CH000000	Newtyle 0f CH000000	CH000000	Newtyle 0f CH000000	CH000000	CH000000	Newtyle 0f CH000000	Newtyle 0f Newtyle 0f Spill	012.5 Spill	012.5 Spill	010U Spill	010U
0	1.235	1.262	1.287	0.893	0.901	0.809	1.258	0.217	0.041	0	0.481	0.679	0.795	0.804	0.868	0.869	1.639	0	1.715	1.314	1.289	1.503	0.904	0.871	0.882	0.869	0.239	0.111	0.069	0.058	0.028	0.019	0.014	0	0	0	0
0.083	1.359	1.094	1.489	0.987	0.685	0.164	1.426	0.317	0.0454	0	0.438	0.67	0.763	0.516	0.381	0.322	1.851	0	2.036	1.447	1.218	1.464	0.849	0.824	0.883	0.706	0.234	0.114	0.073	0.0604	0.0258	0.0146	0.0105	0	0	0	0
0.167	1.379	1.063	1.52	0.945	0.839	0.184	1.373	0.269	0.0451	0	0.436	0.655	0.786	0.526	0.332	0.266	1.865	0	1.979	1.407	1.207	1.437	0.835	0.835	0.897	0.762	0.266	0.127	0.0781	0.0613	0.023	0.0112	0.00784	0	0	0	0
0.25	1.366	1.082	1.501	0.97	0.773	0.184	1.371	0.271	0.0445	0	0.445	0.639	0.83	0.619	0.339	0.292	1.845	0	1.845	1.337	1.162	1.421	0.854	0.88	0.948	0.708	0.23	0.106	0.0647	0.0538	0.0269	0.0183	0.0138	0	0	0	0
0.333	1.372	1.074	1.51	0.957	0.811	0.178	1.385	0.279	0.0461	0	0.436	0.663	0.75	0.719	0.563	0.348	1.856	0	1.993	1.376	1.205	1.469	0.914	0.855	0.871	0.732	0.228	0.103	0.0643	0.0579	0.0351	0.0266	0.0202	0	0	0	0
0.417	1.37	1.077	1.506	0.963	0.79	0.183	1.375	0.274	0.0452	0	0.44	0.662	0.757	0.754	0.557	0.322	1.853	0	1.951	1.369	1.191	1.455	0.923	0.861	0.896	0.687	0.21	0.098	0.0638	0.0589	0.0366	0.0281	0.0215	0	0	0	0
0.5	1.372	1.075	1.509	0.961	0.799	0.18	1.383	0.281	0.046	0	0.436	0.66	0.785	0.552	0.327	0.299	1.837	0	1.84	1.362	1.203	1.429	0.822	0.849	0.903	0.771	0.273	0.126	0.0744	0.0547	0.0192	0.00569	0.00687	0	0	0	0
0.583	1.408	1.067	1.517	0.956	0.824	0.234	1.334	0.24	0.0443	0	0.441	0.694	0.725	0.623	0.536	0.495	1.826	0	2.062	1.417	1.248	1.496	0.865	0.825	0.872	0.767	0.266	0.125	0.0766	0.0597	0.0247	0.0155	0.0115	0	0	0	0
0.667	1.459	1.013	1.555	0.883	0.965	0.459	1.133	0.152	0.0403	0	0.465	0.663	0.791	0.759	0.554	0.364	1.853	0	2.028	1.389	1.291	1.431	0.881	0.881	0.915	0.786	0.284	0.133	0.0832	0.0695	0.0336	0.0228	0.017	0	0	0	0
0.75	1.474	1.01	1.562	0.884	0.956	0.457	0.934	0.118	0.0379	0	0.477	0.664	0.786	0.773	0.618	0.42	1.833	0	2.07	1.382	1.196	1.417	0.888	0.887	0.921	0.81	0.317	0.149	0.0927	0.0772	0.0377	0.0253	0.0189	0	0	0	0
0.833	1.467	1.037	1.594	0.897	0.911	0.77	0.757	0.0923	0.0354	0	0.489	0.661	0.776	0.778	0.678	0.482	1.883	0	2.109	1.366	1.183	1.395	0.892	0.89	0.929	0.836	0.359	0.169	0.105	0.0877	0.0427	0.0287	0.0216	0	0	0	0
0.917	1.459	1.053	1.618	0.895	0.879	0.832	0.418	0.0761	0.0335	0	0.498	0.667	0.76	0.775	0.717	0.539	1.767	0	2.152	1.341	1.166	1.369	0.894	0.892	0.936	0.859	0.41	0.193	0.12	0.1	0.0496	0.0327	0.0245	0	0	0	0
1	1.448	1.063	1.636	0.872	0.922	0.682	0.25	0.0305	0.0319	0	0.506	0.671	0.787	0.742	0.567	0.495	2.139	0	2.138	1.315	1.147	1.347	0.905	0.913	0.945	0.877	0.457	0.217	0.135	0.112	0.0546	0.0368	0.0276	0	0	0	0
1.083	1.422	1.095	1.624	0.894	0.887	0.438	0.176	0.0581	0.0305	0	0.512	0.672	0.792	0.754	0.6	0.441	2.13	0	2.13	1.289	1.121	1.333	0.92	0.934	0.951	0.806	0.514	0.245	0.152	0.127	0.0615	0.0413	0.0309	0	0	0	0
1.167	1.416	1.132	1.601	0.952	0.738	0.252	0.13	0.0503	0.0291	0	0.518	0.67	0.8	0.785	0.707	0.547	1.944	0	2.109	1.264	1.152	1.357	0.933	0.95	0.95	0.921	0.579	0.278	0.173	0.144	0.0696	0.0465	0.0348	0	0	0	0
1.25	1.447	1.137	1.607	0.948	0.551	0.21	0.179	0.0409	0.0282	0	0.524	0.673	0.802	0.795	0.753	0.668	1.825	0	2.088	1.247	1.169	1.366	0.939	0.957	0.945	0.941	0.625	0.301	0.187	0.155	0.0755	0.0507	0.0379	0	0	0	0
1.333	1.477	1.126	1.616	0.957	0.452	0.165	0.166	0.0368	0.0284	0	0.537	0.67	0.801	0.781	0.7	0.555	2.051	0	2.051	1.261	1.204	1.379	0.949	0.965	0.941	0.971	0.725	0.356	0.221	0.184	0.0897	0.0603	0.0452	0	0	0	0
1.417	1.485	1.131	1.596	0.882	0.46	0.209	0.176	0.0366	0.0296	0	0.5	0.522	0.805	0.794	0.755	0.636	1.879	0	2.03	1.193	1.132	1.352	0.948	0.957	0.957	0.999	0.814	0.468	0.288	0.24	0.116	0.0781	0.0585	0	0	0	0
1.5	1.477	1.157	1.613	0.88	0.48	0.23	0.187	0.0369	0.0307	0	0.486	0.494	0.81	0.795	0.748	0.621	1.958	0	1.998	1.134	1.057	1.334	0.958	0.976	0.972	1.005	0.862	0.572	0.35	0.29	0.14	0.0939	0.0703	0	0	0	0
1.583	1.479	1.172	1.638	0.882	0.504	0.253	0.2	0.0372	0.0317	0	0.473	0.47	0.811	0.789	0.723	0.642	1.96	0	1.96	1.067	1.025	1.323	0.969	0.986	0.981	1.017	0.913	0.692	0.42	0.346	0.167	0.112	0.0837	0	0	0	0
1.667	1.487	1.201	1.641	0.889	0.528	0.278	0.214	0.0376	0.033	0	0.458	0.447	0.813	0.794	0.733	0.698	1.906	0	1.942	1.007	0.995	1.312	0.971	0.989	0.993	1.033	0.958	0.779	0.495	0.406	0.195	0.131	0.0978	0	0	0	0
1.75	1.504	1.224	1.637	0.894	0.556	0.305	0.227	0.038	0.0344	0	0.443	0.426	0.809	0.778	0.696	0.71	1.906	0	1.914	0.959	0.969	1.298	0.98	1	1.004	1.039	0.978	0.832	0.587	0.478	0.229	0.153	0.114	0	0	0	0
1.833	1.516	1.234	1.631	0.901	0.586	0.339	0.236	0.0382	0.0368	0	0.426	0.467	0.8	0.766	0.648	0.721	1.836	0	1.868	0.918	0.963	1.283	0.988	1.01	1.016	1.047	1.002	0.888	0.706	0.563	0.269	0.18	0.134	0	0	0	0
1.917	1.506	1.254	1.637	0.917	0.615	0.374	0.255	0.0402	0.0379	0	0.409	0.389	0.784	0.767	0.601	0.746	1.755	0	1.771	0.882	0.961	1.27	0.993	1.015	1.026	1.057	1.02	0.93	0.791	0.661	0.31	0.209	0.155	0	0	0	0
2	1.495	1.283	1.637	0.933	0.646	0.413	0.271	0.0422	0.0406	0	0.389	0.376	0.76	0.665	0.574	0.766	1.68	0	1.635	0.851	0.955	1.26	1.003	1.026	1.034	1.059	1.026	0.953	0.856	0.765	0.358	0.241	0.178	0	0	0	0
2.083	1.513	1.309	1.631	0.948	0.678	0.455	0.287	0.0445	0.0436	0	0.371	0.368	0.732	0.627	0.554	0.779	1.611	0	1.615	0.826	0.949	1.249	1.009	1.035	1.045	1.061	1.041	0.963	0.905	0.828	0.411	0.277	0.204	0	0	0	0
2.167	1.523	1.329	1.619	0.968	0.705	0.501	0.302	0.0459	0.047	0	0.351	0.368	0.706	0.612	0.568	0.778	1.557	0	1.559	0.783	0.953	1.232	1.01	1.043	1.054	1.059	1.029	1.051	0.995	0.887	0.47	0.318	0.234	0	0	0	0
2.25	1.524	1.35	1.627	0.985	0.738	0.558	0.32	0.0492	0.0499	0	0.338	0.359	0.683	0.592	0.543	0.799	1.474	0	1.476	0.765	0.927	1.226	1.016	1.052	1.062	1.079	1.114	1.108	1.066	0.957	0.527	0.356	0.259	0	0	0	0
2.333	1.519	1.369	1.629	1.001	0.78	0.613	0.336	0.0517	0.0531	0	0.323	0.371	0.658	0.562	0.576	0.802	1.388	0	1.388	0.761	0.929	1.216	1.023	1.059	1.07	1.092	1.16	1.18	1.155	1.045	0.59	0.4	0.289	0	0	0	0
2.417	1.51	1.385	1.625	1.015	0.774	0.67	0.352	0.0541	0.0568	0	0.307	0.376	0.635	0.533	0.519	0.771	1.286	0	1.286	0.775	0.95	1.218	1.048	1.088	1.101	1.117	1.225	1.273	1.245	1.126	0.67	0.463	0.331	0	0	0	0
2.5	1.508	1.395	1.624	1.027	0.788	0.728	0.368	0.0561	0.0592	0	0.299	0.383	0.659	0.549	0.537	0.781	1.289	0	1.29	0.779	0.957	1.213	1.048	1.091	1.107	1.112	1.231	1.293	1.284	1.184	0.726	0.495	0.349	0	0	0	0
2.583	1.503	1.403	1.623	1.037	0.795	0.773	0.386	0.0565	0.0615	0	0.291	0.385	0.659	0.551	0.545	0.798	1.295	0	1.295	0.774	0.956	1.214	1.053	1.094	1.113	1.097	1.218	1.301	1.321	1.215	0.769	0.543	0.36	0	0	0	0
2.667	1.52	1.425	1.603	1.058	0.79	0.799	0.39	0.0512	0.0641	0	0.283	0.383	0.634	0.542	0.544	0.806	1.216	0	1.216	0.771	0.958	1.213	1.053	1.137	1.154	1.149	1.229	1.324	1.354	1.226	0.8	0.601	0.412	0	0	0	0
2.75	1.521	1.431	1.613	1.051	0.808	0.793	0.425	0.0554	0.0663	0	0.267	0.368	0.584	0.503	0.525	0.788	1.151	0	1.151	0.748	0.963	1.215	1.077	1.192	1.238	1.262	1.31	1.375	1.377	1.224	0.832	0.656	0.44	0	0	0	0
2.833	1.513	1.454	1.599	1.078	0.811	0.816	0.424	0.0586	0.0665	0	0.249	0.354	0.544	0.482	0.514	0.781	1.103	0	1.103	0.746	0.962	1.216	1.087	1.216	1.287	1.33	1.337	1.377	1.368	1.204	0.866	0.726	0.472	0	0	0	0
2.917	1.523	1.449	1.615	1.062	0.827	0.816	0.455	0.0552	0.0671	0	0.24	0.352	0.537	0.477	0.511	0.776	1.09	0	1.09	0.744	0.964	1.216	1.088	1.224	1.293	1.339	1.317	1.341	1.335	1.16	0.875	0.768	0.506	0	0	0	0
3	1.503	1.444	1.626	1.056	0.845	0.81	0.477	0.0538	0.0675	0	0.229	0.34	0.513	0.462	0.491	0.774	1.056	0	1.056	0.738	0.963	1.218	1.095	1.244	1.318	1.354	1.325	1.338	1.329	1.155	0.889	0.786	0.534	0	0	0	0
3.083	1.474	1.505	1.561	1.039	0.843	0.838	0.517	0.0477	0.0684	0	0.217	0.342	0.458	0.457	0.49	0.766	1.044	0	1.044	0.737	0.963	1.223	1.099	1.254	1.327	1.363	1.322	1.326	1.306	1.137	0.866	0.804	0.563	0	0	0	0
3.167	1.597	1.385	1.699	0.949	0.921	0.761	0.564	0.0456	0.0685	0	0.207	0.328	0.474	0.442	0.489	0.754	1.023	0	1.023	0.734	0.963	1.224	1.108	1.273	1.35	1.383	1.333	1.328	1.299	1.124	0.905	0.821	0.593	0	0	0	0
3.25	1.494	1.493	1.578	0.971	0.917	0.812	0.599	0.04	0.0694	0	0.197	0.322	0.464	0.431	0.48	0.738	1.008	0	1.008	0.727	0.966	1.229	1.119	1.285	1.367	1.404	1.345	1.33	1.293	1.131	0.916	0.836	0.621	0	0	0	0
3.333	1.597	1.421	1.667	0.932	0.963	0.823	0.568	0.0572	0.0685	0	0.188	0.299	0.429	0.411	0.474	0.724	0.976	0	0.976	0.737	0.973	1.234	1.143	1.313	1.395	1.434	1.364	1.342	1.296	1.125	0.931	0.853	0.658	0	0	0	0
3.417	1.508	1.522	1.558	0.952	0.928	0.889	0.583	0.0576	0.0691	0	0.182	0.293	0.424	0.407	0.467	0.72	0.961	0	0.961	0.728	0.979	1.235	1.153	1.326	1.408	1.449	1.375	1.35	1.299	1.128	0.936	0.86	0.673	0	0	0	0
3.5	1.529	1.514	1.565	0.937	0.937	0.911	0.584	0.0536	0.0691	0	0.176	0.286	0.411	0.411	0.466	0.717	0.957	0	0.957	0.724	0.982	1.237	1.166	1.335	1.424	1.459	1.385	1.353	1.298	1.123	0.943	0.87	0.696	0	0	0	0
3.583	1.541	1.502	1.583	0.905	0.964	0.898	0.625	0.0507	0.0693	0	0.172	0.283	0.405	0.413	0.479	0.71	0.952	0	0.952	0.728	0.983	1.239	1.174	1.344	1.434	1.469	1.388	1.354	1.3	1.124	0.942	0.878	0.714	0	0	0	0
3.667	1.521	1.528	1.554	0.885	0.968	0.916	0.652	0.0395	0.0697	0	0.165	0.279	0.403	0.418	0.494	0.704	0.929	0	0.929	0.729	0.988	1.241	1.183	1.354	1.449	1.482	1.386	1.357	1.302	1.121	0.943	0.887	0.735	0	0	0	0
3.75	1.533	1.519	1.562	0.864	0.987	0.918	0.681	0.0389	0.0699	0	0.163	0.274	0.4	0.417	0.501	0.7	0.928	0	0.928	0.724	0.99	1.243	1.189	1.355	1.457	1.487	1.386	1.363	1.295	1.113	0.944	0.893	0.749	0	0	0	0
3.833	1.539	1.515	1.563	0.853	0.957	0.926	0.696	0.0301	0.07	0	0.16	0.266	0.401	0.421	0.509	0.701	0.92	0	0.92	0.722	0.993	1.246	1.192	1.362	1.459	1.496	1.388	1.364	1.258	1.114	0.944	0.897	0.759	0	0	0	0
3.917	1.53	1.526	1.551	0.838	0.955	0.941	0.721	0.0579	0.0691	0	0.146	0.236	0.418	0.438	0.559	0.711	0.913	0	0.913	0.716	1.005	1.271	1.208	1.394	1.48	1.534	1.403	1.371	1.32	1.114	0.948	0.911	0.78	0	0	0	0
4	1.534	1.523	1.554	0.84	1.003	0.947	0.724	0.0589	0.0691	0	0.149	0.246	0.415	0.446	0.542	0.714	0.926	0	0.926	0.735	1.003	1.256	1.197	1.373	1.478	1.54	1.418	1.391	1.337	1.139	0.956	0.9	0.766	0	0	0	0
4.083	1.541	1.514	1.563	0.836	1.012	0.937	0.734	0.0575	0.0691	0	0.151	0.242	0.426	0.433	0.545	0.708	0.927	0	0.926	0.732	1.003	1.253	1.197	1.37	1.467	1.513	1.394	1.369	1.305	1.118	0.949	0.91	0.777	0	0	0	0
4.167	1.534	1.521	1.556	0.843	1.001	0.941	0.72	0.0583	0.0691	0	0.151	0.254	0.415	0.444	0.537	0.715	0.933	0	0.933	0.734	1.003	1.251	1.195	1.367	1.464	1.51	1.395	1.371	1.305	1.119	0.947	0.902	0.768	0	0	0	0
4.25	1.529	1.524	1.553	0.853	0.996	0.937	0.705	0.0583	0.0688	0	0.151	0.247	0.42	0.44	0.539	0.714	0.937	0	0.937	0.735	1.004	1.253	1.197	1.371	1.464	1.516	1.404	1.371	1.314	1.119	0.947	0.902	0.769	0	0	0	0
4.333	1.535	1.514	1.565	0.858	0.995	0.922	0.658	0.0579	0.0688	0	0.155	0.258	0.417	0.436	0.525	0.711	0.941	0	0.941	0.734	1	1.248	1.189	1.362	1.455	1.502	1.39	1.368	1.303	1.119	0.945	0.895	0.754	0	0	0	0
4.417	1.536	1.512	1.567	0.873	0.981	0.918	0.676	0.0582	0.0686	0	0.158	0.261	0.418	0.437	0.517	0.72	0.945	0	0.945	0.733	0.998	1.245	1.186	1.356	1.456	1.492	1.393	1.364	1.307	1.112	0.945	0.891	0.744	0	0	0	0
4.5	1.538	1.508	1.574	0.886	0.965	0.91	0.642	0.0591	0.0683	0	0.161	0.261	0.426	0.429	0.513	0.717	0.954	0	0.954	0.736	0.995	1.24	1.184	1.349	1.45	1.487	1.384	1.365	1.3	1.109	0.944	0.886	0.731	0	0	0	0
4.583	1.539	1.499	1.581	0.899	0.963	0.893	0.634	0.0581	0.0682	0	0.165	0.263	0.427	0.431	0.509	0.721	0.963	0	0.963	0.741	0.992	1.238	1.177	1.345	1.44	1.477	1.382	1.362	1.304	1.122	0.945	0.879	0.717	0	0	0	0
4.667	1.519	1.514	1.563	0.922	0.94	0.899	0.613	0.0576	0.068	0	0.167	0.272	0.425	0.435	0.487	0.722	0.976	0	0.976	0.737	0.991	1.236	1.188	1.337	1.43	1.467	1.391	1.358	1.303	1.122	0.945	0.872	0.7	0	0	0	0
4.75	1.498	1.529	1.544	0.952	0.958	0.921	0.571	0.0499	0.0678	0	0.174	0.27	0.443	0.426	0.482	0.726	0.981	0	0.981	0.74	0.987	1.226	1.198	1.33	1.415	1.458	1.383	1.354	1.304	1.126	0.94	0.864	0.682	0	0	0	0
4.833	1.509	1.512	1.554	0.979	0.887	0.927	0.533	0.0555	0.0672	0	0.179	0.277	0.447	0.432	0.477	0.744	0.991	0	0.991	0.736	0.987	1.235	1.147	1.317	1.403	1.447	1.377	1.351	1.303	1.135	0.933	0.855	0.664	0	0	0	0
4.917	1.582	1.432	1.641	0.953	0.913	0.872	0.511	0.0593	0.0666	0	0.185	0.279	0.458	0.43	0.492	0.746	0.997	0	0.997	0.747	0.979	1.233	1.137	1.316	1.387	1.434	1.367	1.347	1.303	1.136	0.928	0.846	0.643	0	0	0	0
5	1.56	1.458	1.599	1.002	0.886	0.908	0.495	0.0762	0.0662	0	0.192	0.292	0.475	0.441	0.49	0.756	1.017	0	1.017	0.745	0.976	1.253	1.126	1.292	1.375	1.415	1.356	1.344	1.304	1.143	0.919	0.836	0.622	0	0	0	0
5.083	1.496	1.53	1.527	1.049	0.92	0.937	0.461	0.0585	0.0664	0	0.198	0.296	0.487	0.455	0.489	0.766	1.037	0	1.037	0.749	0.976	1.253	1.113	1.276	1.357	1.403	1.35	1.341	1.308	1.143	0.911	0.825	0.601	0	0	0	0
5.167	1.559	1.423	1.648	1.093	0.854	0.826	0.471	0.0545	0.0661	0	0.207	0.3	0.5	0.46	0.5	0.772	1.054	0	1.054	0.765	0.973	1.226	1.197	1.264	1.344	1.386	1.34	1.337	1.313	1.145	0.903	0.813	0.578	0	0	0	0
5.25	1.534	1.436	1.629	1.021	0.847	0.801	0.501	0.0493	0.0663	0	0.211	0.311	0.458	0.483	0.493	0.773	1.088	0	1.088	0.747	0.978	1.225	1.194	1.258	1.336	1.381	1.342	1.35	1.323	1.158	0.898	0.799	0.555	0	0	0	0
5.333	1.5	1.47	1.585	1.06	0.812	0.843	0.458	0.0561	0.0659	0	0.22	0.321	0.521	0.476	0.508	0.789	1.078	0	1.078	0.753	0.976	1.223	1.095	1.241	1.318	1.367	1.34	1.35	1.335	1.159	0.889	0.784	0.53	0	0	0	0
5.417	1.528	1.441	1.614	1.057	0.814	0.825	0.436	0.0502	0.0655	0	0.232	0.325	0.543	0.49	0.514	0.789	1.112	0	1.112	0.757	0.974	1.22	1.091	1.226	1.299	1.351	1.33	1.351	1.338	1.163	0.88	0.769	0.507	0	0	0	0
5.5	1.526	1.433	1.614	1.051	0.808	0.816	0.428	0.0398	0.0665	0	0.24	0.33	0.55	0.495	0.515	0.79	1.123	0	1.123	0.759	0.973	1.221	1.088	1.215	1.286	1.337	1.329	1.36	1.348	1.183	0.875	0.795	0.488	0	0	0	0

Design Statement & Policy Consideration Response

21/01000/FULL

REVISION D, Nov 24.

Proposed Dwelling –

Burnbank, 33 South Street Newtyle

October 24 Overview

Over the course of several years (Application submitted December 2021) a number of requests have been made for additional supporting evidence and further clarification sought as to confirming our compliance with Planning Policies. In each of these cases further information has been supplied either by ourselves, or where necessary, by specialist independent consultants. We have demonstrated in each of these cases that the appropriate Planning Policy criteria have been met; in short, compliance has now been demonstrated in every aspect of the proposals.

The final query point was raised by Angus Council's Coastal Flood Risk and Structures Team, with regards to potential flood risk concerns at the site. To this end a flood risk assessment, with flood modelling, was commissioned by specialist Civils Engineers Millard Consulting. At this stage it was requested that we demonstrate that the proposed development would not be at risk of flooding up to and including a 1 in 200 (0.5% annual probability) event inclusive of a 35% allowance for climate change, and factoring in various culvert blockage scenarios.

This information was commissioned and submitted, demonstrating compliance, for review. SEPA as the statutory assessed this information. In May of this year SEPA returned additional query points. Whilst acknowledging the engineer's demonstration that the site was not specifically liable to flooding in a 1 in 200 year flood event, SEPA requested that a number of further blockage scenarios be modelled. I.e. modelling the absolute worst case scenario of a 100% blockage further downstream, in a 1 in 200 year flood event, taking into account climate change. "*We request that blockage scenarios be run for the culverts and bridge on the site. Additionally, we request that a 100% blockage scenario be modelled on the downstream culvert".*

A further report, including responses to all SEPA comments, was undertaken and submitted to Angus Council for review by SEPA.

<u>Present time</u>

Following the additional Millards report, a further response document was received from SEPA on the 13th of September. In this document SEPA outlined their approach stance as taking a precautionary approach; this to consider the potential flooding on the basis of a "*75% culvert blockage and 75% solid boundary wall, as representative of the 1 in 200-year plus climate change flood extent for the proposed site",* accepting that scenario supplied in figure 4 of the Millards report.

Furthermore, SEPA confirms in this document "*Figure 4 also demonstrates that there is space available within the red line boundary, to the west and south-west of the current proposed location, which falls outwith the 1 in 200-year plus climate change flood extent. If the applicant submitted revised site plans, with all built development lying outwith the flood risk area as laid out in Figure 4, then we would be able to remove our objection on flood risk grounds".*

Following this advice, we have now submitted revised plans with a small reduction to the footprint of the proposed plans, alongside a repositioning of the house to be outwith the worst case scenario flood event – i.e. 75% culvert blockage and 75% solid boundary wall, as representative of the 1 in 200-year plus climate change flood extent for the proposed site. Only minor adjustment has been required to meet this criteria.

Consequently, the revised drawings supplied with this document demonstrate compliance with flood event criteria as prescribed by SEPA, based on actual and empirical modelling data; without speculation, opinion or assumption.

The proposed dwelling is now, at its closest point, 9.4 metres from the burn itself and some 8.35 metres from the top of the bank; this is over 3 metres in excess of the 6 metres guidance provided by SEPA. The proposed is also now sited 1 mere from the extents of the worst-case scenario of a 1 in 200-year Flood event with climate change and blockage scenario. It has been demonstrated that the construction of the dwellinghouse would not increase flood risk elsewhere in the area. Additionally, the proposed finished floor level is 300mm higher than the adjacent ground level, as a further additional precautionary measure. To summarise compliance has been robustly demonstrated with regards to all flood related queries.

Whilst it has been recognised by Angus Council in previous correspondence, it should also be noted here that the site conditions and groundcover have changed over the course of the years since the initial Planning Application was submitted. In this time several major storm events have occurred, including storm Arwen and storm Babet, which had a very significant impact on tree cover to the local area and indeed to the application site. At the time of these storm events our client provided photographic evidence to the Planning Department of the damage and provided details of the proposed action with regards to the clearance of fallen/dangerous trees as a best practice approach. As can be seen from the above site photographs, and visits to the site, it exists as a large open space that offers an excellent position for a modest, contemporary eco home – as has been proposed.

It should also be noted that the vehicular access and driveway has now been formed on the land (these works were covered in a separate Planning Application). The proposals presented here utilise the driveway in the same format – i.e. no changes to what has been constructed and exists currently.

Summary

In summary, we believe that we have now provided all additional information requested, clarified all policy queries and made significant efforts wherever required to accommodate advise and guidance of both the Planning Department and statutory consultees. We trust that the attached drawing and supporting evidence issue will now draw a close to the determination of the application and note that compliance has been demonstrated with regards to all relevant planning policies of the National Planning Framework.

The following text has been retained from our original design statement, updated wherever appropriate.

Existing Design Statement information

Since submitting the application the Client's circumstances have changed, along with their requirements for their new home. Whilst they still intend to build an eco-home on the property, the scale and positioning of the revised proposals has been amended. These amendments also take into account comments received from the Planning Authority at the end of 2022.

The revised design proposals include a small timber framed home of 3 bedrooms and modest proportions, at a significant reduction in size to the previous proposals (which were also of a modest proportion). The footprint of the site has moved further Northwards at a distance some 20 metres to the large tree to the south, allowing for a vast expanse of grassed lawn area. The proposed dwelling is of a rural scale and nature, being one and a half storeys, as is common in the area.

Care has been taken to ensure utmost privacy, with windows being carefully considered in their size and positioning. All windows are at a distance of more than 20 metres to adjacent properties.

April 2024 Overview

Since the last information submission (April 2023) a Full Flood Risk assessment has been conducted alongside detailed culvert modelling analysis. The latter is an involved and comprehensive process, whereby a number of theoretical flooding situations are analysed; this process has taken several months to complete.

A number of conversations have been held with Planning Officer - James Wright, Andrew Brown - Design Engineer – Coastal, Flood Risk and Structures Team and SEPA to determine the scope and nature of the flood risk analysis required. Our aim has been to ensure that any queries in this regard have been comprehensively answered to allow the assessment/determination to take place without further concerns being considered/or remaining regarding potential unsuitability of the proposed dwelling due to flooding.

The project team has been through an extended and extremely thorough process to establish flood risk and negate any potential residual concerns with regards to flooding. The floor report and recommendations are appended with this information submission. The FRA report and analysis confirms that the site would not be significantly impacted by flooding and indeed would be suitable for the placement of a dwelling. It is worth noting also that the modelling has taken place using a methodology of a 1 in 200-year flood event, plus 39% as a worst-case scenario. The author, Millards, make certain recommendations within their report to further mitigate against potential flood impact. These are included below:

It is concluded that the majority of the site is outwith the predicted 1 in 200 year + climate change flood extent, and hence site is developable with respect to flood risk. Flood free egress from the site is also predicted to be available during the aforementioned flood event.

The following mitigation measures should be incorporated into the development:

- *The new house should be set out-with the flood extent shown on drawing 18518/21/001*

WPA Response: The proposed dwelling is sited well out-with the flood extents of all worst case modelling scenarios. The dwelling footprint is sited a minimum of 8 metres from the top of bank, which is more than 9m from the actual watercourse, in an elevated position.

- *The new house should have a finished floor level no lower than 84.8m AOD, while the floor should also be set with a suitable upstand above finished surrounding ground levels. An upstand of no less than 0.3m is suggested.*

WPA Response: The proposed dwelling has a finished floor level of 85.300, which is 500mm higher than the minimum recommendations set out in the above. The footprint is raised a minimum of 300mm above the adjacent ground level, as per the above advice.

- *Flood resilient materials and construction methods are recommended for the proposed development given it is to be located close to the flood plain of the Newtyle Burn. In particular, the use of a solid floor construction is recommended.*

WPA Response: Flood resilient materials and construction methods will be incorporated within the construction. It should also be noted that a Flood Early Warning System has been proposed, with audible and visual sounders to alert the occupier should the water level begin to encroach on the top of the existing bank. The proposed has also been designed to facilitate flood barriers to doors, should they be necessary, as a betterment to the recommendations; please refer to ground floor plan and elevation drawings.

Shadow analysis and daylight influx.

Since the application was originally submitted (2021) there have been two major storms which have had significant impact on Dundee and Angus, leading to vast tree loss across the counties. The application site also suffered from tree loss (photographs of the storm damage were sent by the client to Angus Council Planning Department at the time). Consequently, the density of existing trees has been reduced since the time of application. It is important to note that the client had no bearing on this tree loss, nor desire to remove trees from the site. With the trees being in a dangerous condition a further tree survey was commissioned, this updated tree survey is appended with this application and illustrates the reduction in trees.

The initial shadow analysis diagrams have also been updated using mapping from the updated tree survey model, these are again appended with this information issue.

Proposed design

The materials proposed are of a natural and high-quality nature, being of treated natural timber, natural stone cladding and standing seam metal. All these materials are seen within the locality.

The revised proposals offer the opportunity for the client to remain living within the locality of 33 South Street in a bespoke environmentally sensitive and efficient home which better suits their future needs, on an area of currently vacant ground.

Site location & Context:

The site is located within a residential street in the village of Newtyle, an attractive settlement some 11 miles North of Dundee, with a mixture of Scottish stone vernacular and individual contemporary new build homes. Located at 33 South Street, to the Eastern edge of the village, it neighbours a vibrant village pub (the Commercial Inn), a number of 2 storey and storey and a half stone built dwellings (opposite) and occupies a gap between the contemporary type dwelling of 29a, to the South West, and Milton Cottage to the North East.

The site lies within the extensive grounds of Burnbank Cottage, a large detached late 19th century dwelling positioned to the far Eastern periphery of 4849m2 of garden grounds. Theses grounds are naturally divided to the East and West by the small watercourse of Newtyle Burn. The proposals here utilise the annexed (by watercourse) Western portion of the site, bordering South Street, for the provision of a contextually responsive & sensitive high-quality modest family home designed comprehensively around the natural attributes of setting.

Prior to the Client's purchase of the site, in June 2019, this area of grounds was in a state of semi-dereliction, overgrown and undermaintained with a mass of low-quality vegetative growth, as was recorded in Community Council minutes at the time. This poor state of repair existed as an 'eyesore' within the streetscape, detracting from the visual amenity of the area. (It should be noted that *Google Streetview illustrates the level of vegetative growth as it was in 2008)*. Since then the client has commissioned significant maintenance works to restore the site back to a well-maintained private garden, as these contemporary photographs illustrate. Today, the site consists of a large expanse of open grassed land, bordered by mature trees lining the street edge with South Street. There are also several mature trees aligned with the existing driveway, bordering the South Western periphery of the application site. A small number of these trees were assessed as being of very poor quality by the

Environmental Consultant, requiring maintenance or removal. Vegetation on the site is limited to the trees aforementioned and the hedgerow that borders South Street. It should be noted from the outset that this application does not include for the removal of any mature trees or existing hedgerow area.

Photograph looking east showing existing site boundary. The proposed dwelling is sited well out-with the root protection areas of the trees pictured, some 11 metres from these trees and consequently within all statuary distance constraints.

The proposed site sits within a well-established residential area, close to local amenities and public transport links. It offers a unique opportunity to provide a highly desirable dwelling designed to blur the boundaries between ‘inside’ and ‘outside’ environments and actively embrace the existing trees that border the site to provide a tranquil and private environmentally sensitive home.

Photograph depicts western site boundary and expanse of open grassed area. Photograph taken approximately just to the front of where the proposed living areas are sited.

The application site proposed is approximately 1584 m2, which is in considerable excess of the Council's requirement of 400m2 for new build dwelling sites. Of this area 1173m2 is allocated as high-quality leisure and amenity space, as natural garden ground. The residual garden ground of Burnbank Cottage would therefore be in the region of 3265m2, remaining to be of a significantly considerable size. The size of ground at present has been noted by the homeowner as not being practical in terms of ongoing maintenance due to the sheer size, it's lack of use by them and the fact that the garden is annexed naturally by the watercourse. Apportioning this excess of land allows would allow for a much-needed high quality home with future occupation ensuring the necessary maintenance is ongoing (and practical), enhancing the visual amenity of the streetscape.

Design Approach:

The design approach has adopted 3 fundamental principles:

1. 'Inside-outside' house. The dwelling is of a bespoke design that seeks to provide strategically framed views of the natural setting, maximise daylight into the plan and provide a large external patio that directly opens into the building to draw the natural environment inside the living spaces. Large, carefully positioned bi-folding doors seek to enhance this natural connection further.

2. Natural elements. The proposals are designed comprehensively around the existing natural features of the site, to make the most of the setting. No mature trees are proposed to be removed and the placement of accommodation and associated windows are positioned to work in harmony with the existing tree cover.

3. Contextual integration. From the outset the proposed was designed to be of a very modest, human scale, 'nestling' within the site and adopting a light touch in terms of footprint and height. The single storey garage and linear positioning of the one and a half storey living block allow the design to have a minimal visual impact from South Street, whilst the use of high-quality natural stone and timber seek to further root the proposal within the setting.

The decision was made to have the footprint of the house sit perpendicular to the Newtyle Burn. This has a number of distinct advantages:

- A greater amount of south light can be utilised along the length of the building, providing bright well lit internal spaces as well as aiding in the passive heating of the scheme through solar gain.
- An expanse of south facing quality amenity space – as a large patio is provided to south of the property not overshadowed by existing tree cover.
- Main glazing expanse is positioned perpendicular to the street allowing for a high degree of privacy from existing neighbouring buildings (some 30 metres away to the nearest property of 26 South Street). Negating issues of overlooking, privacy, and light pollution.
- It allows the placement of a new driveway of approximately 10 metres in length from the South Street entrance to the proposed, taking precedent from the neighbouring property of 29a which utilises a similar distance. This allows a comfortable and familiar relationship with

the street edge, not adversely impacting local residents – whilst being of a small enough distance to not constitute a 'back-land' development.

- This orientation allows for a greater distance to existing properties of number 20 and Sidlaw House to the northwest, where, to maximise South facing daylighting, the living accommodation is sited. Consequently, the living areas are a minimum distance of 41 metres from Sidlaw house, again negating issues of privacy or potential impact on existing visual amenity.

Aerial 3d CGI generated using topographical and tree survey data looking southeast; character and nature of the existing streetscape remains unchanged.

Design features:

The layout has been based around providing a higher degree of privacy to the north and west (visible from the site entrance, facing the access road) with limited windows, whilst the southeast areas of the layout are opened to a much greater degree (where natural privacy is at its highest and natural daylighting influx is optimal), with a large patio area positioned to maximise the sun throughout the entire day.

Daylight into the building has been maximised in a number of innovative ways, whilst retaining the 'low rise' massing. A large degree of glazing is adopted throughout the south and west facades, with the primary living space being possitioned here to capture the sun throughout the day. Internally a large void space is used to allow additional daylighting into the depth of the plan. This occurs at the main entrance hall, strengthened in impactful by large skylighs positioned above the void. The main living area has an increased height with a pitched 'byre' arrangement, allowing for a dynamic impression that clearly delineates it from the remainder of the dwelling. Rooflights are used in the first floor in order to provide bright internal spaces while maintaining the low profil of the scheme.

3D Visualization of the proposed dwelling with Tree Report data plotted, the amenity of the proposed home will be of excellent quality, whilst the architectural design of the proposed dwelling seeks to provide a characterful and innovative high-quality home to embrace its surrounds.

Light, horizontal, timber cladding is proposed as the main material for the outer skin of the building, with natural stone details such as at ground level on the west elevation. The roofing and walls at the upper storey level utilise a standing seam aluminium cladding material, dark grey in colour, to reference the existing context of dark grey slate roofs in the area. The standing seam cladding also helps to add interest to and reduce the massing of the building by differentiating between the colour of the remainder of the façade. Windows are proposed to be high-quality double-glazed units, complimenting the natural stone, whilst the large areas of glazing serve to reflect the trees and natural cover bordering the site.

Windows to the east façade have been restricted to the southernly most side only. To maximise privacy to Burnbank Cottage.

COMPLIANCE WITH RELEVANT ADLP POLICY

Policy DS3

Policy DS3 Design Quality and Placemaking indicates that development proposals should deliver a high design standard and draw upon those aspects of landscape and townscape that contribute positively to the character and sense of place of the area.

We have aimed to produce a very high quality, bespoke design that has been tailored to respond to the site context. References have been drawn from the existing building stock to provide an appropriate scale (at 1.5 storey in height) and using a contemporary interpretation of the bothy and byre vernacular. The aim in undertaking this work has been to produce a characterful yet restrained dwelling that is very much of its surroundings and integrates wholeheartedly within the semi-rural

setting – as can be seen from the visualizations included with this submission. Equally, all (external) materials selected are of a natural type and are present within Newtyle.

In summary, the aim of this application is to provide a high quality, contextually sensitive, Affordable home on an existing residential site – architecturally designed to both integrate within its setting and attribute a strong sense of place and identity. A dwelling here also prevents further pressure on pristine greenfield sites out with existing established residential areas (and development boundaries) and promotes the use of pre-existing public transport links.

Development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located. Development proposals should create buildings

and places which are:

- **Distinctive**

We have made significant efforts to produce an appropriately scaled, contextually responsive building design. Our primary aim is to produce a high quality, architectural dwelling of modest proportions and unique sense of identity. Our intention with the proposal is to draw from the existing building stock and bothy context to assist in generating a modern interpretation of the Scottish vernacular; one which reflects and enhances the local area. The restrained palette of high-quality materials, for example natural stone cladding, was utilised on the west façade so to conform with existing area precedents, such as those on the opposing side of South Street.

The window proportions for all glazed elements have been centred on meeting the current requirements of the Scottish Government's Building Standards for natural daylighting. Window sizes on the North of the East facade restricted to avoid any privacy issues towards the driveway road. Large glass panels are utilized on the south elevation to maximise view to the south. Oblique glass and solar shading elements have also been provided to limit glare from solar gain, particularly in the winter months.

3d Visualization illustrating from around 6 metres from the South Street border depicting the approach from the driveway.

- **Safe and Pleasant**

The dwelling is proposed to be positioned by South Street, offering convenient vehicle and pedestrian access. Planters will also be included by the entrance to further enhance the building in its landscape. The front entrance and driveway (using low level bollard type lights within the curtilage of the site) will be adequately lit to ensure the security and safety of the building occupants at night. Adequate street lighting is already in place, as is a pavement offering pedestrian access to local amenities. In addition, all access doors and windows will be lockable and secured by design with the utilization double glazing to add to the strength of the structure. The siting of a family dwelling within this area would prevent undesirable use of a previously potentially secluded site at night times and encourages positive neighbourhood surveillance, increasing safety.

- **Easy to Move Around and Beyond**

The main entrance will provide level access for disabled users. Doors and openings have been given adequate widths to provide convenient access for wheelchair users.

- **Welcoming**

In addition to the points outlined above:

The proposal will utilise a similar design language, structure, and materials to that of nearby buildings in the area. The buildings entrance will also engage with the driveway approach providing a distinct covered entrance with adequate external lighting.

- **Versatile**

The proposal has been designed around the spatial standards required by building standards regulations. As stated above, all entrances provide adequate door widths as well as level access from

the main entrance with a largely open plan layout and one and a half storey format. The proposed will allow for easy conversion/adaption and meet the need of occupants in future years.

- Resource efficient.

The aim has been to generate a resource efficient home with contextually responsive materials that have inherently high sustainability credentials. The building utilizes a timber frame construction using locally sourced, sustainable materials. Timber kit construction also has inherent air tightness properties at junctions and will be highly insulated throughout to reduce energy consumption.

The client has shown interest in alternate heat sources, including ground/ air-source Heat pump. Rainwater Harvesting will be incorporated, as will a multifuel (bio pellet) burner to top up heat. To accommodate for low temperatures during the winter months the design has been orientated to maximise South light to living spaces.

Planning Application history

21/00292/PPPL

In June 2021 a Planning Application in Principle (reference above) was submitted for the erection of a dwelling house at the site.

The latter application, being only an Application in Principle, offered no detail as to the massing, design or scale of the proposed dwelling. After consultation with the Planning Officer, James Wright, it was decided to withdraw the application in order to produce a full detailed design that utilized a bespoke and tailored approach to the site.

The previous application site was significantly smaller than that is proposed here and used a 'generic' house type design without consideration to the context of the site. In that application a proposed dwelling was sited in very close proximity to the South Street boundary and was 2 storey in height. Concerns were raised of privacy and of unacceptable overshadowing (from tree cover) of the proposed home as a result.

This application uses a one and a half storey, 'low rise' linear format modern interpretation of the traditional cottage. The proposed dwelling also uses an entirely different orientation and positioning within the plot, as has been explained throughout this document.

Care has been taken therefore to address all relevant concerns raised in the provision of this Full Planning Application.

Compliance with relevant Planning Policy

Policy DS1

The application is in compliance with policy DS1.

Policy TC2

Policy TC2 Residential Development

All proposals for new residential development*, including the conversion of non-residential buildings must:

- *be compatible with current and proposed land uses in the surrounding area;*
  The application is in line with this guidance.
- *provide a satisfactory residential environment for the proposed dwelling(s);*
  The existing grounds of Burnbank Cottage measure 4849m2, very considerably in excess of what one would reasonably consider a large *manageable* garden for a single dwelling. As a result a great deal of this ground is unused or underused. The proposed allocates a plot area of 1584m2 from the 4849m2 for the proposed dwelling, which is significantly in excess of 400m2 suggested by Planning Policy guidance. The proposed utilizes an innovative architectural design which orientates the dwelling to maximise both sunlight and views, as well as maximising privacy to the existing house. As can be seen from the drawings provided, this layout and design would provide an exemplary, tranquil and high quality environment for residential living – with no tangible detriment to the existing residential properties of South Street or Burnbank Cottage.

  There are a number of existing mature trees that border the site (South Street) and a small number within the curtilage of the plot, they do not haver occupy the central area of the site. Additionally, the Tree cover is based along the South Street in its near entirety, to the West of the site – not adversely overshadowing the proposed (shadows are predominantly cast North, as can be seen from the site photographs). A very sizeable area of high-quality garden ground has been included to the South and West of the proposed dwelling, this is well in excess in of statutory requirements set out by the ALDP. Overshadowing by tree cover would not excessively impact the aforementioned amenity space, as is demonstrated and indeed the existing trees serve to provide an attractive natural attribute to be embraced by the proposed home.

3d Visualization illustrating South facing living space with small external patio.

- *not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and*

The proposed application does not seek to remove any mature trees or existing hedgerow cover. The proposed dwelling seeks to provide an environmentally and contextually sensitive and modest dwelling with associated high-quality landscaping.

The site is not within a designated SEPA flood risk zone. All paving materials consist of either porous paving setts or gravel allowing the percolation of rainwater.

With regards to impact on the on the surrounding built and natural environment, these proposals could provide attractive and high-quality areas of managed garden ground centred around a carefully designed home of similar proportions to that of the existing cottages. A sparse palette of natural materials is proposed, such as natural stone throughout, to root the dwelling within the surrounding natural environment, and reference the local building stock. It is our opinion that these proposals would provide a strong positive impact to the local amenity and facilitate a dwelling that has been designed from the ground up to integrate fully within the semi-rural context.

- *include as appropriate a mix of house sizes, types and tenures and provision for affordable housing in accordance with Policy TC3 Affordable Housing.*

  As this element of policy advises, successful places are made up of a mixture of house sizes and types, the latter adding to a sense of identity and sense of place – without which large monocultures can occur, as can be seen in the development of some large housing developments on Greenfield sites. This application supports another 'cottage like' development, of the same proportions to those seen throughout Newtyle, in an area where such house types are in (well-documented) shortage. The proposed, as a modest 3-bedroom 1.5 storey home, would be of Affordable Housing type, and presents a unique opportunity to re-use an existing residential site with pre-existing infrastructure.

- *Within development boundaries Angus Council will support proposals for new residential development where:*
  the site is not allocated or protected for another use; and
  The site is not allocated or protected for another use. The proposals are therefore in compliance.

- *the proposal is consistent with the character and pattern of development in the surrounding area.*
- **Newtyle demonstrates a richly diverse mix of building typologies, though most of which conform to the Scottish cottage or 2 storey pitched roof stone vernacular. The majority of cottages demonstrate a long and low 'squat' profile single storey, or storey and a half arrangement. The proposed fits with the character and pattern of development in the area, with the dwelling set back from the pavement by a distance of around 10 metres, the design of the dwelling also strongly references the massing and scale of the cottages aforementioned. To further integrate with the existing Burnbank Cottage, and for reasons of daylighting and privacy, the orientation of the proposed matches that of Burnbank Cottage, in a similar format.**

3d Visualization illustrates post development arial view. The careful massing helps to ensure that the proposed has negligible visual impact on the existing streetscape or existing residential properties.

Additional Notes following correspondence with Angus Council Planning Department (August 2023)

Daylight influx and overshadowing

That the site is bordered by trees we do not feel in any way disadvantages the living environment of the occupants of the proposed home, privacy, shade and natural setting indeed attributes to quality of life rather than to the detriment. It should be fully understood that shadows vary in position at different times of the day and year. Throughout the day shadows will move around the site, providing *variable* shade and natural cover – at no point will the site be in 'full shadow'; whilst some areas of the site may be in shadow at that particular time, others will not be, changing the nature of the spaces. The trees to the Northern boundary, around 40%, will not overshadow the property by virtue of orientation – they overshadow only the properties opposite.

The remaining trees to the South are almost without exception confers, which although tall, have narrow canopy cover and thus do not cast large shadows. Whilst we note that often new build greenfield developments are constructed with virtually/no tree cover, and this example differs, recognition should be given that ultimately this is subjective and of course personal choice. The proposed has a plot area of 1584m2 which is significantly in excess of the 400m2 recommended by Planning Policy guidance, of this there is more than 600m2 of dedicated amenity space (the recommendation being a minimum of 100m2); at no point in the year will the dwelling be left with less than 100m2 'un-shadowed' amenity space. Most gardens of existing properties have trees bordering which cast shadows throughout the day, it is uncommon not to have trees providing cover. Ultimately the degree of tree cover/shadow is subjective and of course personal choice. We would point out however that tree planting proposals and increased tree/vegetation cover are increasingly integral to the requirements of our clients, particularly with increasing climate extremes. We have modelled the proposals extensively in photorealistic 3D software and are without doubt that the proposed would have a comfortable living environment with a highly desirable natural setting – that some shadows are cast in areas on the dwelling we do not see as a

detriment. The dwelling is also of a bespoke design that seeks to provide strategically framed views of the natural setting, maximise daylight into the plan and provide a large external patio that directly opens into the building to draw the natural environment inside the living spaces. Large, carefully positioned bi-folding doors seek to enhance this natural connection further.

Virtually all dwelling houses are in partial shade much of the time, by virtue of being sited next to, and in-front/to the rear of, other houses, which you will no doubt provide more overshadowing by virtue of their scale and mass. As outlined above, that the house has natural cover and will have areas in partial shade is not a negative attribute. The sunpath analysis does not indicate that a satisfactory residential environment would not be provided; indeed it shows that in the summer months there is virtually no overshadowing. In the winter months, with shadows cast longer their remains to be areas un-shadowed, however you will note that the surrounding houses are overshadowed to a greater extent by other houses and indeed the trees of this site. It must also be noted that in the sunpath diagrams a generic deciduous tree type is used, in the winter months the canopy cover would be shed, thus casting a vastly reduced shadow. In the cases of coniferous trees the canopy is much narrower than as illustrated, throughout the year. Should the site have been bordered by existing dwellings, as is most common, the overshadowing would of course be far greater.

Summary

In our view the above information and enclosed drawing package clearly demonstrates that the proposals would reflect and respect the existing pattern of development in the area, provide no detriment to the existing character and nature of the area – and would provide a much needed affordable family home with excellent garden amenity. The proposed would be largely invisible from nearly all areas of the South Street approach and therefore aesthetically would represent very little change to the current condition. There are no demonstrable concerns with the proposed dwelling overshadowing existing properties or with issues of privacy.

Our view is that the proposed dwelling satisfies the criteria as set out within the ALDP and has been demonstrated as such.

WILSON PAUL ARCHITECTS LLP

OCTOBER 2024

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

MARCH 1
10:00AM

City: Ruthven, UK
Country: United Kingdom
Day of year: 60
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-10-01 13:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-3-01 07:01:26 +0100
Sunset: 2023-3-01 18:42:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

MARCH 1
1:00PM

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

MARCH 1
3:00PM

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

JULY 1
10:00AM

City: Ruthven, UK
Country: United Kingdom
Day of year: 182
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-7-01 13:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-7-01 04:31:26 +0100
Sunset: 2023-7-01 21:42:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

JULY 1
1:00PM

City: Ruthven, UK
Country: United Kingdom
Day of year: 182
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-7-01 15:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-7-01 04:31:26 +0100
Sunset: 2023-7-01 21:42:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

JULY 1
3:00PM

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

OCTOBER 1
10:00AM

City: Ruthven, UK
Country: United Kingdom
Day of year: 274
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-10-01 13:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-10-01 07:01:26 +0100
Sunset: 2023-10-01 16:37:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

OCTOBER 1
1:00PM

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

OCTOBER 1
3:00PM

New Build Dwelling
South Street, Newtyle

Aerial View 1

WILSON / PAUL

AC34

New Build Dwelling
South Street, Newtyle

View 2. Looking North to South Street

WILSON / PAUL

AC34

New Build Dwelling
South Street, Newtyle

View 3. Looking East to driveway

WILSON / PAUL

New Build Dwelling
South Street, Newtyle

View 4. Looking to living spaces and master bedroom

WILSON / PAUL

APPENDIX 2

DEVELOPMENT MANAGEMENT REVIEW COMMITTEE

APPLICATION FOR REVIEW

33 SOUTH STREET, NEWTYLE

APPLICATION NO 21/01000/FULL

APPLICANT'S SUBMISSION

PAGE NO.

Angus House Orchardbank Business Park Forfar DD8 1AN Tel: 01307 473360 Fax: 01307 461 895 Email: plnprocessing@angus.gov.uk

Applications cannot be validated until all the necessary documentation has been submitted and the required fee has been paid.

Thank you for completing this application form:

ONLINE REFERENCE 100518894-012

The online reference is the unique reference for your online form only. The Planning Authority will allocate an Application Number when your form is validated. Please quote this reference if you need to contact the planning Authority about this application.

Applicant or Agent Details

Are you an applicant or an agent? * (An agent is an architect, consultant or someone else acting on behalf of the applicant in connection with this application) ☐ Applicant ☒ Agent

Agent Details

Please enter Agent details

Company/Organisation:	Wilson Paul Architects		
Ref. Number:		You must enter a Building Name or Number, or both: *	
First Name: *	Sam	Building Name:	
Last Name: *	Wilson	Building Number:	4
Telephone Number: *	01382737866	Address 1 (Street): *	Brook Street
Extension Number:		Address 2:	Broughty Ferry
Mobile Number:		Town/City: *	Dundee
Fax Number:		Country: *	UK
		Postcode: *	DD5 1DP
Email Address: *	mail@wilsonpaul.co.uk		

Is the applicant an individual or an organisation/corporate entity? *

☒ Individual ☐ Organisation/Corporate entity

Applicant Details

Please enter Applicant details

Title:	Other	You must enter a Building Name or Number, or both: *	
Other Title:	Dr	Building Name:	
First Name: *	Maria	Building Number:	4
Last Name: *	Jemwicz	Address 1 (Street): *	Brook Street
Company/Organisation		Address 2:	
Telephone Number: *		Town/City: *	Broughty Ferry
Extension Number:		Country: *	UK
Mobile Number:		Postcode: *	DD51DP
Fax Number:			
Email Address: *	sam@wilsonpaul.co.uk		

Site Address Details

Planning Authority:	Angus Council

Full postal address of the site (including postcode where available):

Address 1:	BURNBANK
Address 2:	33 SOUTH STREET
Address 3:	NEWTYLE
Address 4:	
Address 5:	
Town/City/Settlement:	BLAIRGOWRIE
Post Code:	PH12 8UQ

Please identify/describe the location of the site or sites

Northing	741259	Easting	329993

Description of Proposal

Please provide a description of your proposal to which your review relates. The description should be the same as given in the application form, or as amended with the agreement of the planning authority: *
(Max 500 characters)

21/01000/FULL - Erection of Dwellinghouse, 33 South Street, Newtyle, Blairgowrie

Type of Application

What type of application did you submit to the planning authority? *

☒ Application for planning permission (including householder application but excluding application to work minerals).

☐ Application for planning permission in principle.

☐ Further application.

☐ Application for approval of matters specified in conditions.

What does your review relate to? *

☒ Refusal Notice.

☐ Grant of permission with Conditions imposed.

☐ No decision reached within the prescribed period (two months after validation date or any agreed extension) – deemed refusal.

Statement of reasons for seeking review

You must state in full, why you are a seeking a review of the planning authority's decision (or failure to make a decision). Your statement must set out all matters you consider require to be taken into account in determining your review. If necessary this can be provided as a separate document in the 'Supporting Documents' section: * (Max 500 characters)

Note: you are unl kely to have a further opportunity to add to your statement of appeal at a later date, so it is essential that you produce all of the information you want the decision-maker to take into account.

You should not however raise any new matter which was not before the planning authority at the time it decided your application (or at the time expiry of the period of determination), unless you can demonstrate that the new matter could not have been raised before that time or that it not being raised before that time is a consequence of exceptional circumstances.

Our full response is included within the supporting documents section.

Have you raised any matters which were not before the appointed officer at the time the Determination on your application was made? * ☐ Yes ☒ No

If yes, you should explain in the box below, why you are raising the new matter, why it was not raised with the appointed officer before your application was determined and why you consider it should be considered in your review: * (Max 500 characters)

Please provide a list of all supporting documents, materials and evidence which you wish to submit with your notice of review and intend to rely on in support of your review. You can attach these documents electronically later in the process: * (Max 500 characters)

Attached as Drawing Register within documents

Application Details

Please provide the application reference no. given to you by your planning authority for your previous application. 21/01000/FULL

What date was the application submitted to the planning authority? * 24/12/2021

What date was the decision issued by the planning authority? * 07/01/2025

Review Procedure

The Local Review Body will decide on the procedure to be used to determine your review and may at any time during the review process require that further information or representations be made to enable them to determine the review. Further information may be required by one or a combination of procedures, such as: written submissions; the holding of one or more hearing sessions and/or inspecting the land which is the subject of the review case.

Can this review continue to a conclusion, in your opinion, based on a review of the relevant information provided by yourself and other parties only, without any further procedures? For example, written submission, hearing session, site inspection. *

☒ Yes ☐ No

In the event that the Local Review Body appointed to consider your application decides to inspect the site, in your opinion:

Can the site be clearly seen from a road or public land? * ☒ Yes ☐ No

Is it possible for the site to be accessed safely and without barriers to entry? * ☐ Yes ☒ No

Checklist – Application for Notice of Review

Please complete the following checklist to make sure you have provided all the necessary information in support of your appeal. Failure to submit all this information may result in your appeal being deemed invalid.

Have you provided the name and address of the applicant?. * ☒ Yes ☐ No

Have you provided the date and reference number of the application which is the subject of this review? * ☒ Yes ☐ No

If you are the agent, acting on behalf of the applicant, have you provided details of your name and address and indicated whether any notice or correspondence required in connection with the review should be sent to you or the applicant? * ☒ Yes ☐ No ☐ N/A

Have you provided a statement setting out your reasons for requiring a review and by what procedure (or combination of procedures) you wish the review to be conducted? * ☒ Yes ☐ No

Note: You must state, in full, why you are seeking a review on your application. Your statement must set out all matters you consider require to be taken into account in determining your review. You may not have a further opportunity to add to your statement of review at a later date. It is therefore essential that you submit with your notice of review, all necessary information and evidence that you rely on and wish the Local Review Body to consider as part of your review.

Please attach a copy of all documents, material and evidence which you intend to rely on (e.g. plans and Drawings) which are now the subject of this review * ☒ Yes ☐ No

Note: Where the review relates to a further application e.g. renewal of planning permission or modification, variation or removal of a planning condition or where it relates to an application for approval of matters specified in conditions, it is advisable to provide the application reference number, approved plans and decision notice (if any) from the earlier consent.

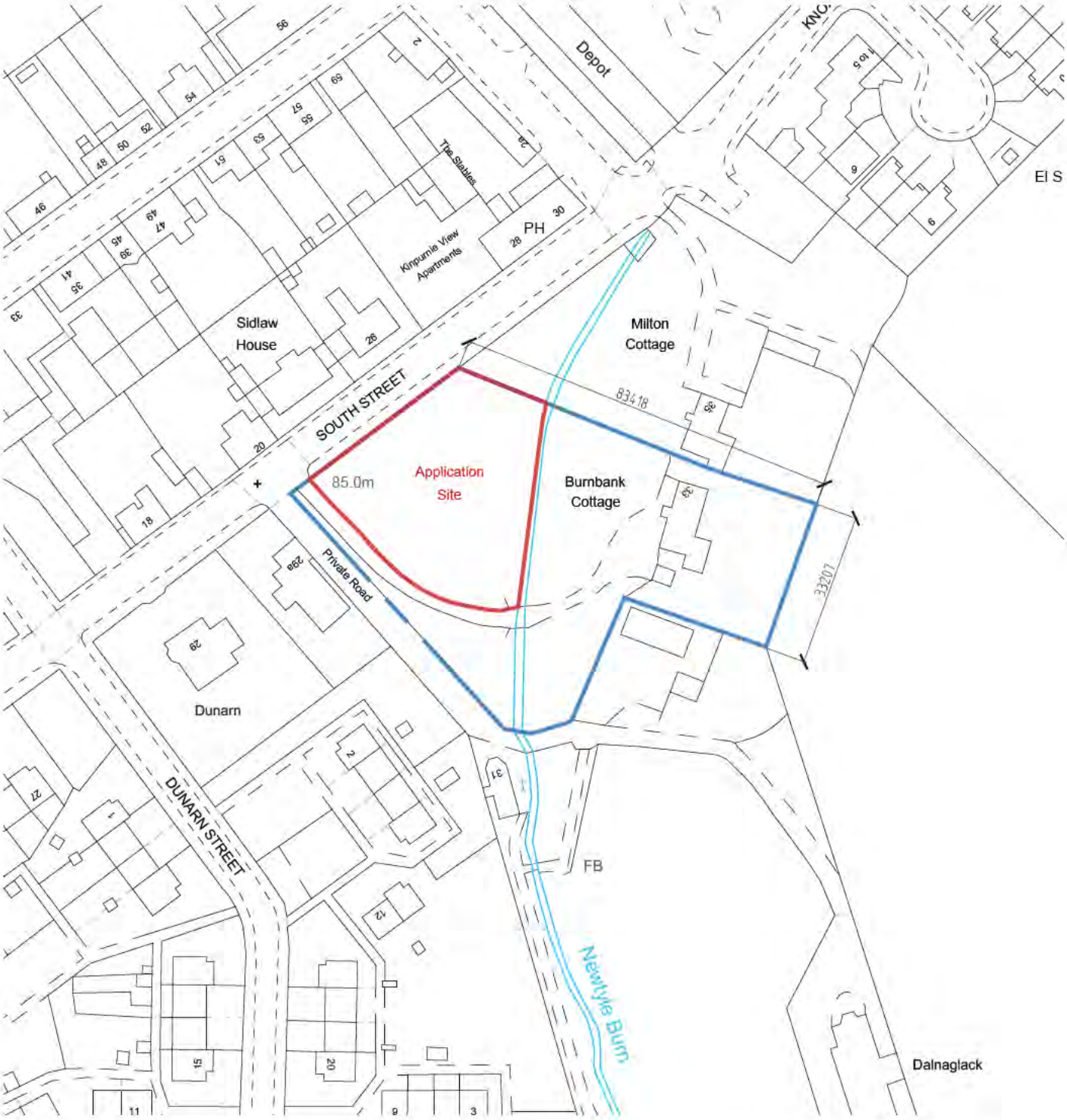
Declare – Notice of Review

I/We the applicant/agent certify that this is an application for review on the grounds stated.

Declaration Name: Mr Sam Wilson

Declaration Date: 31/01/2025

ITEM 2



Scale (m) 1:1250 @A4

Key:

Existing house ownership site boundary

Application site

Project Title : **New Build Dwelling**
Walled Garden House
Land at 33 South Street
Newtyle

Sheet Contents : Existing Location Plan

Designed by:		Drawing Number :
Drawn by :	SB	**2039 EX 002**
Date :	30.11.21	
Scale :	1:1250 @ A4	Revision :

JPA
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Broughty Ferry
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t 01382 737866

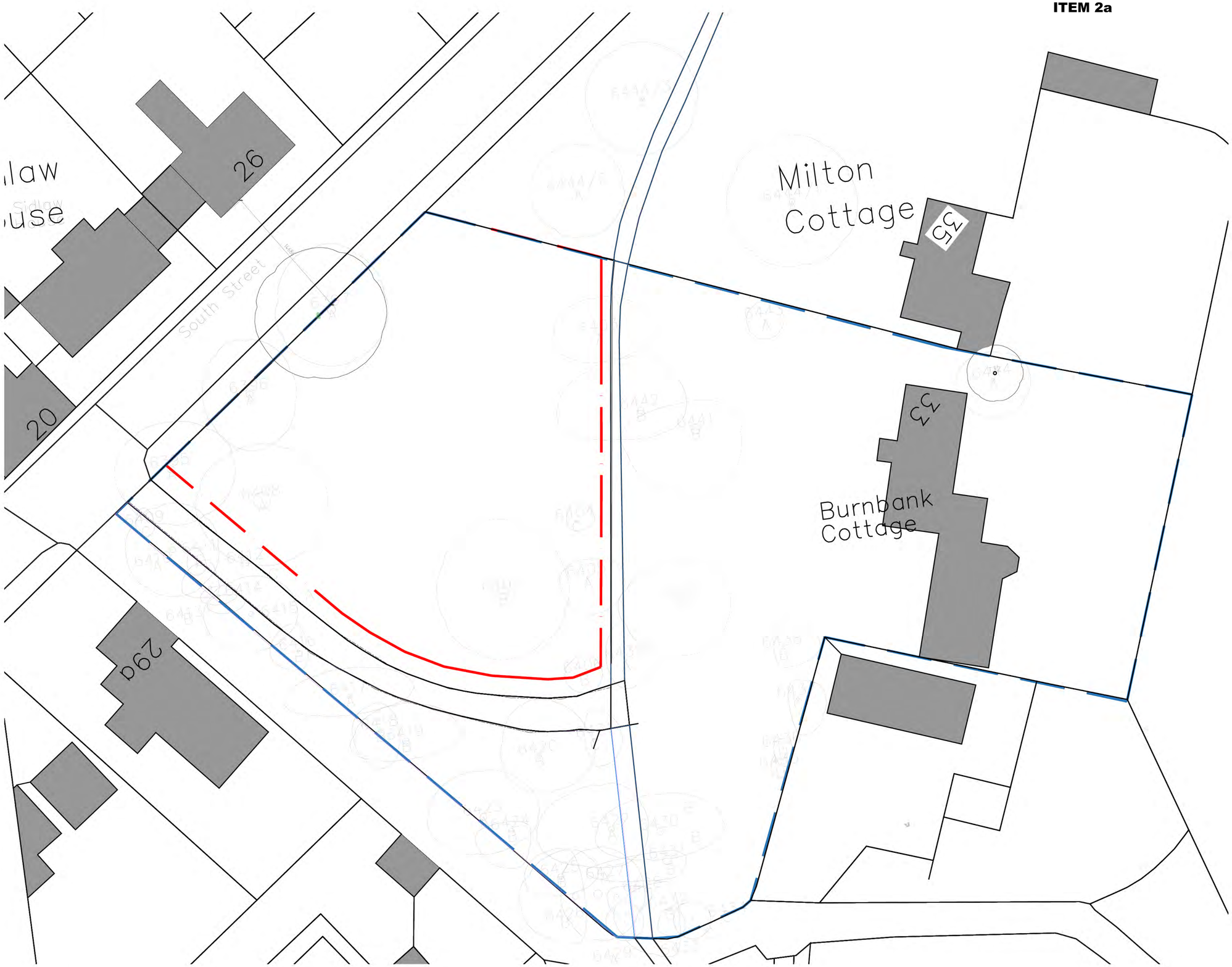
James Paul Associates

www.jamespaul-associates.co.uk

ITEM 2a

NOTE
(Please refer to tree survey information for further details of trees)

NO MATURE TREES ARE PROPOSED TO BE REMOVED OR ALTERED IN THIS APPLICATION.



PROPOSED SITE PLAN 1:200

Scale 1:200 @ A1

Ownership Key

EXISTING SITE

PROPOSED DWELLING SITE

GENERAL AREA BREAKDOWN
(All figures below are approximate subject to full site survey & design development)

EXISTING TOTAL SITE AREA:
4849 M2

PROPOSED DWELLING SITE AREA:
1584 M2

PLANNING ISSUE

Project Title : **New Build Dwelling**
33 South Street Newtyle

Sheet Contents :	**Existing Site Plan**		
Designed by:	**SW**	Drawing Number :	**2039 EX 001**
Drawn by :	**JD**		
Date :	**26/01/2023**		
Scale :	**1:200 @ A1**	Revision :	

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Scale (m)
1:200@A1

NOTE: GREY HATCH DENOTES CONFIRMED SEPA CRITERIA BOUNDARY EXTENTS OF 75% CULVERT CULVERT BLOCKAGE, 75% SOLID BOUNDARY WALL AT A 1 IN 200 YEAR FLOOD EVENT PLUS CLIMATE CHANGE FLOOD EXTENT.

ITEM 2b

NOTE
(Please refer to tree survey information for further details of trees)

ALL PROPOSED DEVELOPMENT IS OUTWITH TREE ROOT PROTECTION AREAS (RPAs) AND AS SUCH WILL NOT ADVERSELY IMPACT EXISTING TREES.

EXISTING HEDGEROW AND SHRUB GROWTH TO THE BORDER WITH SOUTH STREET WILL BE RETAINED AS EXISTING.

ALL WINDOWS INCLUDED WITHIN THE PROPOSED ARE A DISTANCE GREATER THAN 18m FROM EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

THE PROPOSED IS AT A DISTANCE, ORIENTATION AND POSITIONING THAT NEGATES POTENTIAL OVERSHADOWING OF EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

Ownership Key

- EXISTING SITE
- PROPOSED DWELLING SITE

GENERAL AREA BREAKDOWN
(All figures below are approximate subject to full site survey & design development)

EXISTING TOTAL SITE AREA:
4849 M2

PROPOSED DWELLING SITE AREA:
1584 M2

PROPOSED DWELLING BREAKDOWN:

PROPOSED FOOTPRINT APRX. 185 M2

AMENITY SPACE. 1173 M2 (Excluding driveway & pathways)

(Amenity space provided significantly Angus Council's minimum requirement of 100 Square Meters)

NOTE: GREY HATCH DENOTES CONFIRMED SEPA CRITERIA BOUNDARY EXTENTS OF 75% CULVERT CULVERT BLOCKAGE, 75% SOLID BOUNDARY WALL AT A 1 IN 200 YEAR FLOOD EVENT PLUS CLIMATE CHANGE FLOOD EXTENT.

Project Title : **Road Access**
33 South Street Newtyle

Sheet Contents :	**Proposed Site Plan**		
Designed by:	SW	Drawing Number :	**2039/PA/003**
Drawn by :	JV		
Date :	22/08/2023		
Scale :	1:200 @ A1	Revision :	B 05.11.24 SEPA Comments

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ITEM 2c

NORTH

NOTE
(Please refer to tree survey information for further details of trees)

EXISTING HEDGEROW AND SHRUB GROWTH TO THE BORDER WITH SOUTH STREET WILL BE RETAINED AS EXISTING.

ALL WINDOWS INCLUDED WITHIN THE PROPOSED ARE A DISTANCE GREATER THAN 18m FROM EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

THE PROPOSED IS AT A DISTANCE, ORIENTATION AND POSITIONING THAT NEGATES POTENTIAL OVERSHADOWING OF EXISTING BUILDINGS INLINE WITH PLANNING POLICY.

THE PROPOSED DWELLING IS SITED AT A DISTANCE GREATER THAN 6M FROM THE WATERCOURSE AS PER RECOMMENDATIONS.

GROUND FLOOR CONSTRUCTION TO BE OF SOLID TYPE - REFER TO FLOOD RISK ASSESSMENT FOR FURTHER DETAILS.

NOTE: GREY HATCH DENOTES CONFIRMED SEPA CRITERIA BOUNDARY EXTENTS OF 75% CULVERT CULVERT BLOCKAGE, 75% SOLID BOUNDARY WALL AT A 1 IN 200 YEAR FLOOD EVENT PLUS CLIMATE CHANGE FLOOD EXTENT.

ELEVATION B-B
ELEVATION A-A
ELEVATION C-C
ELEVATION D-D
NEW SHRUB PLANTING
Bins
Double Garage
Porous gravel driveway
GRASS AREA
Entrance Lobby
Triple glazed window
Seating/boot storage
Plant (& Battery Storage)
WC
Garage Link
Utility
Storage racking
Sink (Cabinets over)
Open gallery
Void over
FINISHED FLOOR LEVEL +300 FROM ADJACENT GROUND LEVEL
FINISHED FLOOR LEVEL +85.300 (MINIMUM REQ +84.840)
Master Bedroom
Fitted Wardrobe
Plant & Riser/Store
Store
Stairs
Under stair storage
Kitchen
Kitchen Island
Lounge
Full height triple glazed window
Bath
En Suite
Integrated wall storage
Triple Glazed Bifold Doors
Stone hearth
Stove
Chest of drawers
Root Protection Area
Dashed line denotes canopy overhang
Dashed line denotes canopy overhang
Porous paving setts
External Dining
Lawn
Media Unit
Half height stone wall
+85.000
RUINOUS FENCE (POST/WIRE)
WOODEN
TOP OF BANK
BOTTOM OF BANK
Burn
Surveyed watercourse
Dashed purple line indicates existing top of bank

NOTE: GREY HATCH DENOTES CONFIRMED SEPA CRITERIA BOUNDARY EXTENTS OF 75% CULVERT CULVERT BLOCKAGE, 75% SOLID BOUNDARY WALL AT A 1 IN 200 YEAR FLOOD EVENT PLUS CLIMATE CHANGE FLOOD EXTENT.

Scale (m)
1:50@A1

2 1 0.5 0 2 4 6 8

Project Title : **New Build Dwelling**
33 South Street Newtyle

Sheet Contents :	**Proposed Ground Floor Plan**		
Designed by:	**SW**	Drawing Number :	**2039PA001**
Drawn by :	**JD**		
Date :	**26/02/2023**		
Scale :	**1:50 @ A1**	Revision :	**D - 11.11.24 SEPA CMTS**

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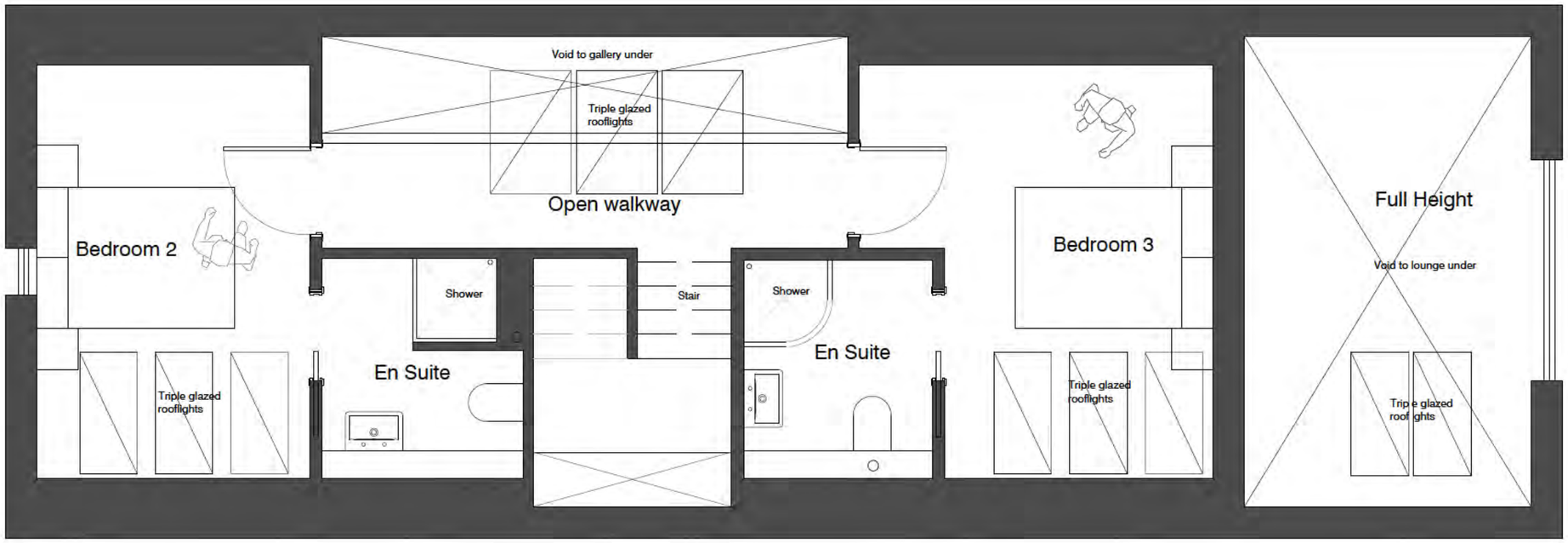
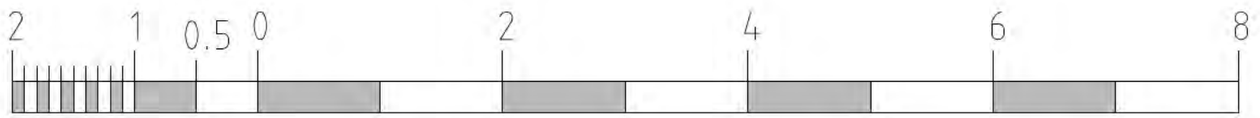
ITEM 2d





Project Title : **New Build Dwelling**
33 South Street Newtyle

Sheet Contents :	**Proposed First Floor Plan**		
Designed by:	**SW**	Drawing Number :	**2039PA002**
Drawn by :	**JD**		
Date :	**26/03/2023**		
Scale :	**1:50 @ A3**	Revision :	**A 17.10.24**

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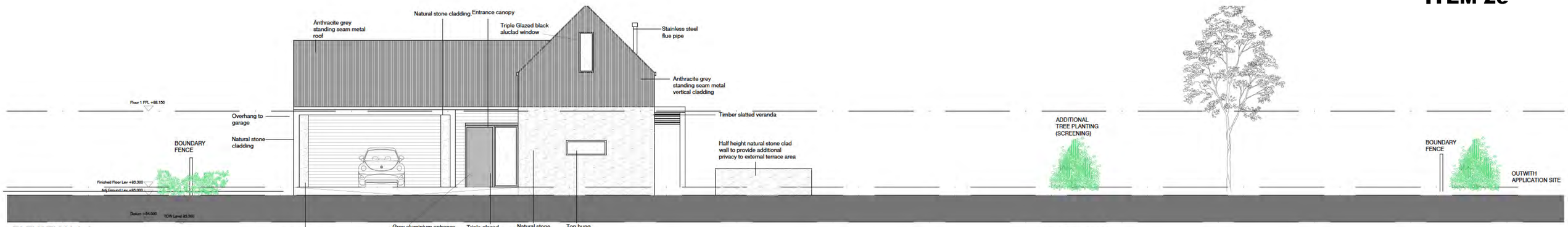
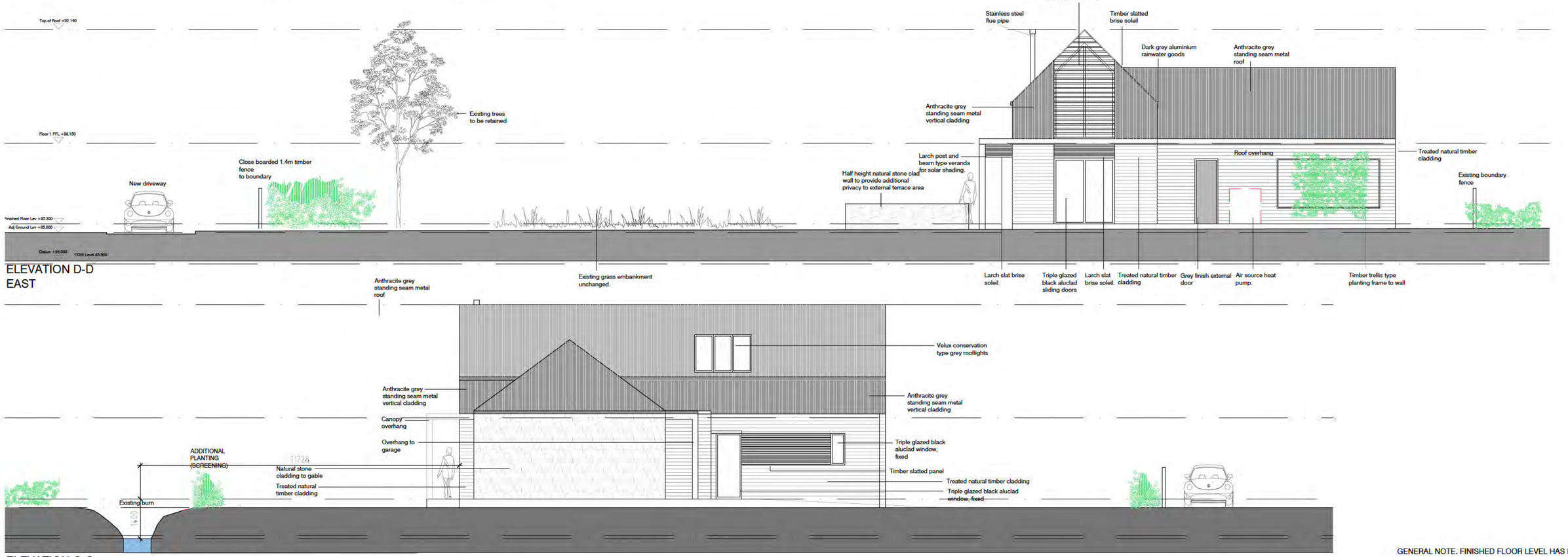
ITEM 2e

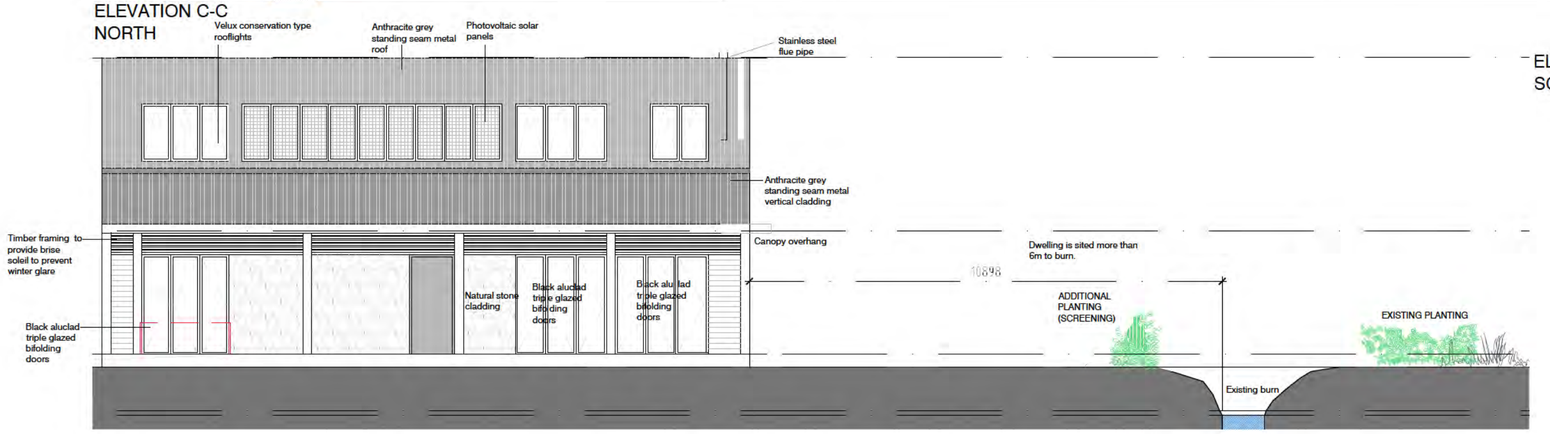


ELEVATION A-A
WEST



ELEVATION D-D
EAST

ELEVATION C-C
NORTH



ELEVATION B-B
SOUTH

2 1 0.5 0 2 4 6 8

SCALE 1:100 @ A3

GENERAL NOTE. FINISHED FLOOR LEVEL HAS BEEN RAISED AN ADDITIONAL 150MM TO A TOTAL OF 300MM.

PLANNING ISSUE

Project Title: **New Build Eco Dwelling**

Land at 33 South Street
Newtyle

Sheet Contents :	**Proposed elevations**		
Designed by:	SW	Drawing Number :	**2039-PA-005**
Drawn by :			
Date :	01.04.23		
Scale :	1:100 @ A3	Revision :	C 05.11.24 Fld Meas Removed

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ITEM 2f

New Build Dwelling
South Street, Newtyle

View 1. South, from burn.

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ITEM 2g

New Build Dwelling
South Street, Newtyle

View 2. Looking North to South Street

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ITEM 2h

New Build Dwelling
South Street, Newtyle

View 3. Looking East to driveway

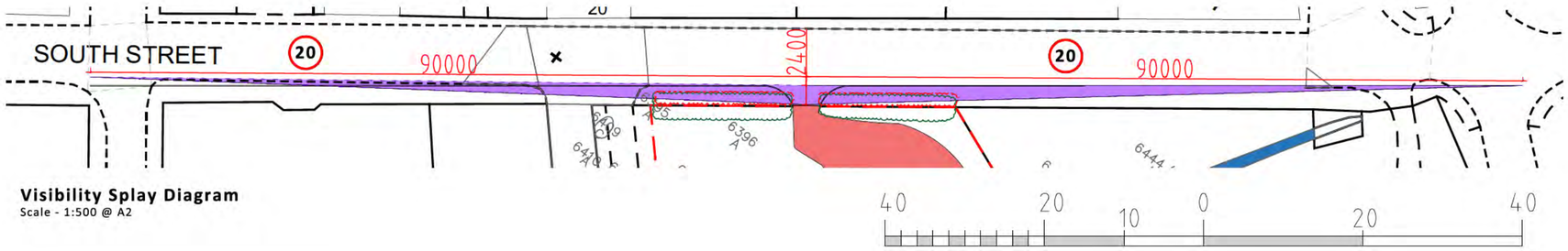
WILSON / PAUL

New Build Dwelling
South Street, Newtyle

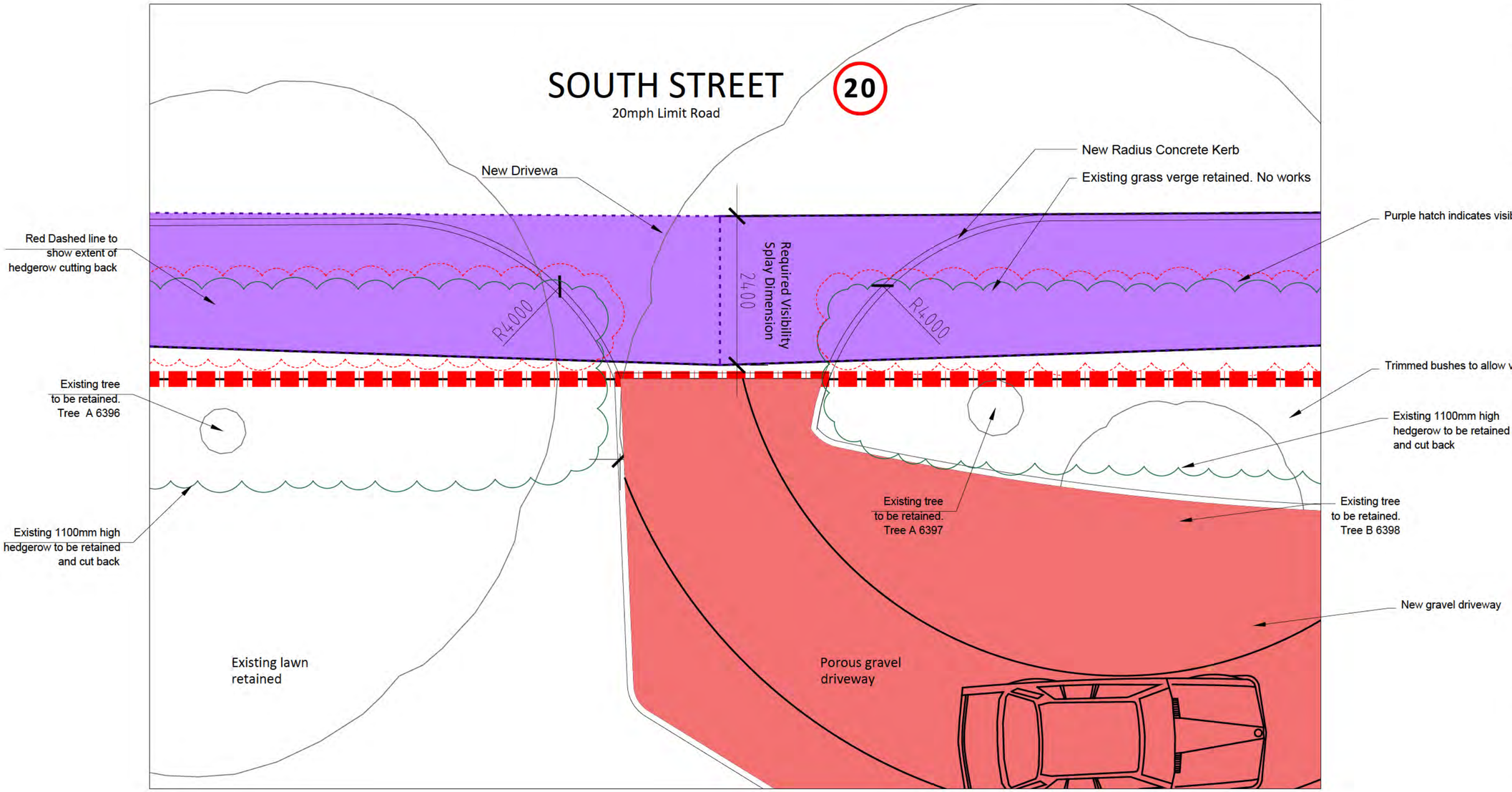
View 4. Looking to living spaces and master bedroom

WILSON / PAUL

ITEM 3



Visibility Splay Diagram
Scale - 1:500 @ A2



Vehicle Access
Scale - 1:50 @ A2

1 0.5 0 1 2 3 4

NOTES;

Do not scale from drawing. Dimensions should be requested in writing to the project Architect.

KEY

Denotes Visibility Spay

NOTES;

New driveway comprises required vehicle maneuvering space to allow access and egress in forward gear.

New driveway to use substrate protection to protect existing tree roots . Refer to tree report for details.

Regulations state that 90mm visibility be achieves for 30MPH speed limit roads. South street is a designated 20MPH zone.
This proposal exceed.

STATUTORY REQUIREMENTS:
Pedestrian Footway
Access is located on opposite side of street.

PLANNING ISSUE

Project Title: **Formation of New Driveway**
33 South Street Newtyle

Sheet Contents :	**Proposed Visibility Splay & Driveway Diagram Access Diagram**		
Designed by:	**SW**	Drawing Number :	
Drawn by :	**JV**	**2039/PA/03**	
Date :	**22/08/2023**		
Scale :	**As noted @ A2**	Revision :	

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ITEM 4

Response to Report of Handling, dated 7th January 2025

21/01000/FULL - Erection of Dwellinghouse, 33 South Street, Newtyle, Blairgowrie

20th January 2025

Note: Original Report of Handling text included below in grey font, responses included in blue.

Above. Export from geolocated 3d model, proposed dwelling pictured top right.

New Build Dwelling
South Street, Newtyle

View 1. South, from burn.

Assessment Sections 25 and 37(2) of the Town and Country Planning (Scotland) Act 1997 require that planning decisions be made in accordance with the development plan unless material considerations indicate otherwise. In this case the development plan comprises: - - National Planning Framework 4 (NPF4) (Published 2023) - Angus Local Development Plan (ALDP) (Adopted 2016) The development plan policies relevant to the determination of the planning application are reproduced at Appendix 1 and have been taken into account in preparing this report. The ALDP was adopted in September 2016 while NPF4 was adopted in February 2023. Planning legislation indicates that where there is any incompatibility between the provision of the national planning framework and the provision of a local development plan, whichever of them is the later in date is to prevail.

The application site consists of garden ground forming part of the curtilage of an existing dwelling, Burnbank Cottage, located within the settlement of Newtyle. Policy DS1 in the ALDP states that for unidentified sites within development boundaries, proposals will be supported where they are of a scale and nature appropriate to the location and where they accord with other relevant policies in the LDP.

Both the ALDP and NPF4 encourage the reuse of brownfield land in preference to the use of greenfield land. NPF4 Policy 16 'quality homes' seeks to encourage, promote and facilitate the delivery of more high quality, affordable and sustainable homes, in the right locations. Policy 16 offers support to proposals for new homes on land allocated for housing in the LDP. It indicates that on land not allocated for housing in the LDP proposals for new homes will only be supported in limited circumstances where (amongst other things) the proposal is for smaller scale opportunities within an existing settlement boundary.

The proposed dwelling is sited within an existing settlement boundary (as outlined within the LDP) and offers a smaller scale opportunity; as such, the proposals are in compliance with this policy.

Policy 17 deals with new housing in rural areas and amongst other things, requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. Policy TC2 of the ALDP indicates that within development boundaries, proposal for residential development will be supported where the site is not protected for another use and is consistent with the character and pattern of development in the surrounding area.

The site is not protected for another use, has no current use and had a dedicated vehicle access and driveway as approved. The design proposals are of a high-quality nature, utilising high quality natural materials and as used extensively within this area. The scale and massing of the proposals are of the exact footprint of the majority of other houses on the street. The design of the proposals has been based upon a rural typology, of Scottish vernacular and designed to integrate fully with the surrounding housing stock.

Please refer to Nolli plans and pattern of development diagrams on the following pages. The proposals are suitably scaled (please refer to footprint diagrams of existing houses within the immediate locale) and are demonstrably in-keeping with those in the surrounding area. The proposals use stone and timber, as the houses adjacent and on the opposing side of the street, whilst the storey and a half scale is fully reflective of neighbouring properties. In our view it could not be reasonably stated that the proposals do not fit within the pattern of development or character and nature of the area, as such we would challenge this statement. It is our view that the proposals are well integrated with the pattern of development and character and nature of the area.

Policy TC2 also requires all proposals for new residential development to be compatible in terms of land use; to provide a satisfactory residential environment; to not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and to include provision for affordable housing in accordance with Policy TC3 Affordable Housing.

The proposals have a modest footprint and we would argue could not be said to have an adverse effect on the natural or built environment. The proposals do not suggest the removal of mature trees or hedgerows. The surrounding land use is residential, consequently the proposals are compatible with prevailing land use. The proposals comply with all aspects of this policy.

NPF4 Policy 14 states development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale. It indicates that development proposals that are poorly designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported. ALDP Policy DS3 indicates that development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located, and the council's Design and Placemaking Supplementary Guidance provides relevant considerations when applying this policy.

The design proposals have been carefully considered over a significant gestation period in order to carefully integrate within the site context and surrounds. The design is of a high quality, considered architectural response. As has been extensively demonstrated throughout the course of the application process, the design proposals were conceived and developed using the six qualities of successful placemaking and are embodied in a bespoke (i.e. to the site constraints and setting), contextually responsive architectural dwelling.

Policy DS4 of the ALDP states that development will not be permitted where there is an unacceptable adverse impact on the surrounding area or the environment or amenity of existing or future

occupiers of adjoining or nearby properties, including impacts upon the availability of sunlight, daylight and overshadowing.

We note that it is accepted that the proposals do not overshadow existing properties, by virtue of the distance of the property (greater than 22 metres to the nearest property) and the limited scale of the proposals, being a storey and a half in height. As such the proposals would not provide a detrimental impact to neighbouring properties.

Policy PV7 of the ALDP and Policy 6 of NPF4 seek to protect and enhance woodland, trees and hedges that contribute to the nature conservation, heritage, amenity, townscape or landscape value of the area. NPF4 Policy 22 relates to flood risk and water management and the policy intent is to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. The policy states that development proposals at risk of flooding or in a flood risk area will only be supported if they are for: essential infrastructure where the location is required for operational reasons; water compatible uses; redevelopment of an existing building or site for an equal or less vulnerable use; or redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long term safety and resilience can be secured in accordance with relevant SEPA advice. The ALDP states that the avoidance and mitigation of flood risk in new and existing development will be an important factor in determining development proposals.

Flood risk has been examined at great length and specialist independent hydrological engineering reports confirm that the proposals would not generate additional flood risk. SEPA also confirm within their correspondence that the proposals would not generate additional flood risk and have no objection to the latest revision of the design proposals. Flood concerns for the proposals have been negated and such should not count against a positive determination of the application. We would draw attention to the SEPA comments in this regard as the statutory consultee with jurisdiction of this matter.

The application site is not protected for another use, is located in a predominantly residential area, and residential development would be compatible with surrounding land uses. The principle of developing a site of this nature within a development boundary attracts some support from development plan policy.

As stated above by the Planning Officer, the principle of developing the site for a residential dwelling would be supported within the development plan policy. We would note that whilst the principle is acceptable, our design proposals were also deemed as acceptable, with no concerns raised as to the design of the dwelling. We were informed that the design of the dwelling was considered to be of a high standard, as is evidenced by the 3d visualizations included within the application.

The plot is of an acceptable size given the context of the area and the proposal would generally comply with recommended separation distances provided in council guidance. There is no reason to conclude the new dwelling would result in an unacceptable impact upon the availability of sunlight or daylight to neighbouring properties when assessed against relevant guidance.

We would agree with this statement.

An existing access would be utilised, and parking and waste storage provision would be provided within the site. The roads service has offered no objection to the development in terms of traffic likely to be generated by it and potential impacts upon the road network. The principle of the proposed

water supply and drainage arrangements are acceptable and Scottish Water has offered no objection. A flood risk assessment has been submitted which indicates an area of the site may be at risk from flooding from the Newtyle Burn which runs to the southeast of the site. The application has been amended to relocate the dwelling to a position outwith any area identified as being at risk from flooding. ***Both SEPA and the roads service in its capacity as flood prevention authority, have considered all available information and are satisfied the dwelling would not be at an unacceptable risk from flooding and the proposal would not increase flood risk elsewhere.***

There is no reason to consider that the proposal would adversely impact on infrastructure, having regard to the consultation responses received. In terms of the built and natural environment, the site is within an area with archaeological potential, but the archaeology service has reviewed the proposal and offers no objection.

The site is not within an area designated for natural heritage reasons, but it does contain a large number of mature trees. The submitted information suggests that no trees would require to be felled to accommodate the development (one tree is to be felled due to its condition) and that only a small root area of one tree would be affected by the house foundations. It is suggested that this could be protected during construction and the safeguarding of trees during the construction process could be dealt with by planning condition. ***There is no reasonable basis to conclude that the construction of a house on the site would give rise to unacceptable impact on the built or natural environment.***

We would agree with this statement

There are several aspects of the proposal which are compatible with development plan or could be made compatible subject to relevant planning conditions. However, development plan policy also requires development proposals to provide a good residential environment and level of amenity for prospective occupants of any dwelling, and it also requires development proposals to provide a high quality of design, contributing positively to the character and sense of place of an area and to fit with the character and pattern of development in the area.

In this case, the application site is located adjacent to a watercourse and in an area characterised by large trees that contribute significantly to the character of the village. While the proposed house has been carefully located such that it would not be at unacceptable flood risk, submitted information indicates that a reasonably significant area of the garden ground amounting to around 25-30% of the plot area, would be at flood risk.

The above statement is incorrect. Millard Consulting, hydrological engineers, have modelled the potential flooding scenario for a 1 in 200-year flood event, plus climate change, plus at 75% watercourse blockage – as the worst possible case event. It is a scenario that is modelled as occurring once in 200 years, *with* the addition of a significant theoretical blockage to the watercourse.

Even in this event the dwelling, driveway and external terraces are outwith the notional flood area and as such there could be no reasoning for the installation of temporary measures (as was SEPAs response in their recent confirmation of no objection to the proposals). This worst possible case event has been used within our plan information and plotted on our siteplan drawings. In a 1 in 200 Year flood event, plus climate change, plus 75% blockage scenario, the proposed dwelling and more than 80% of the amenity garden ground (1209m2) has been demonstrated to be outwith any flood risk - regardless of the most extreme notional scenarios. Of the 1530m2 site area only 287m2 of the garden ground, within the unusable banked areas and South East corner would be affected by the 1

in 200 year flood event; 18% of the garden ground, the majority of which is within the embankment area.

In addition, while the proposed house has been carefully positioned to minimise potential impact on existing trees, information submitted with the application demonstrates that most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year. Dappled shade provided by a woodland setting can add to the amenity of a garden area and can be regarded as a desirable feature. However, trees within the site and those close to it are large and have potential to give rise to significant shading.

We would refute the statement that *'most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year'.* Please refer to the images below which illustrate the open nature of the site and the lack of shadowing. We believe the shadow extents have been picked up incorrectly in assessment by assumption that the RPAs (Root Protection Areas) included on the plan drawing reference the canopy size; this is not the case, RPA outlines are not an indicator of canopy size. Had the site been heavily populated by trees we would understand this claim; however, the actuality is a large open site bordered border in areas by tall, narrow pines with a small circumference canopy. We would suggest a site visit in this regard.

As has been extensively covered, within our design statement and correspondence, the trees do not unacceptably shadow amenity spaces. Shadows, by virtue of the sun position, move across the site at different times of the day. The majority of tall trees are positioned on the North elevation (bordering South Street) with some trees positioned to the West. Trees positioned to the North do not cast shadow into the site, rather they cast shadow to the North, by virtue of the sun being in a Southerly direction generally, moving from East to West from morning to afternoon. During the course of the day shadows will be cast into the site, predominantly by the trees located to the West. The line of trees to the West site boundary is a minimum of 28 metres from the dwelling. It could not be stated that these trees will unacceptably shadow the dwelling. Indeed, should the dwelling be bordered by other buildings, as is usually the case, the shadows cast into the site would be far greater. At all times of the day, and year, we have demonstrated that there would be an area of greater than 954m2 which is not within shadow. This figure is considerably in excess of Angus Council requirements for total amenity ground provision for new build dwellings (250m2). Shadows move dynamically; as with all gardens there will be areas that receive more sunlight at different times, our proposals include for different external terrace areas for enjoyment of the property. Should one be in shade in the early morning another area may be used.

Notwithstanding the above, we would draw attention to the following points with regards to trees on the application site:

1. It is of key importance with the climate change crisis that buildings have a degree of shading and solar control. Areas of shade should not be considered as 'bad'. Trees absorb heat through their leaves and provide shade, reducing the overall temperature of the surrounding environment, including the areas near buildings. This helps to combat the heat island effect and lowers the ambient temperature around the home, essential for the comfort of the occupants.
2. Seasonal Shading. Deciduous trees, which lose their leaves in the autumn (seen predominantly on the Western Boundary), are particularly beneficial because they provide shade during the hot summer months to amenity garden ground while allowing sunlight to reach the building in the winter when the leaves have fallen. This seasonal cycle helps

prevent overheating in the summer while taking advantage of solar warmth during the winter.

3. Assessment. New build developments are bordered by other buildings, which are in most cases taller and in all cases denser than trees, the degree of overshadowing would be higher. Had the proposed site been confined by existing neighbouring buildings, as is most often the case, the degree of shadowing would be far greater than the actual site conditions – as a large open site with a tree lined boundary.
4. Privacy and Noise Reduction. The trees to the periphery of the site (and hedgerows) act as natural barriers, offering more privacy from neighbours and reducing noise pollution, creating a quieter, more peaceful environment; as was the desire of our client.
5. Stormwater Management. We have proposed to retain all mature trees in order to absorb rainwater, reducing runoff and further lessening the likelihood of flooding or erosion to the site.
6. Whilst it may not constitute a material consideration in within the Planning policy, it *must* be noted and understood in assessment that it is a matter of personal preference as to whether the resident wishes to live with a view of surrounding trees and a degree of natural shading. In this case the client chose the site to build a dwelling precisely to have a degree of tree cover, to enjoy a natural environment setting and privacy. Many of our client's approach us with the same wish and are averse to recent new build developments which in cases include no mature tree cover or significant natural planting.

In summary, the limited shade from trees bordering the site reduces the direct impact of solar radiation on the building, lowers surrounding temperatures, and can significantly improve comfort levels inside, preventing overheating during hot weather. At all points of the year (and time of day) the area of amenity ground with no shading far exceeds the minimum requirements for useable garden ground (250m2). Notwithstanding the latter, nearly all new build developments are bordered by neighbouring buildings of a scale and mass far greater than boundary trees, thus providing a greater degree of overshadowing. Whilst we understand that assessment on this point is subjective, it is our view that it would not be reasonable to suggest that that the presence of trees on the site in itself offers reasoning for a negative determination.

Above, Images of the site in its current condition, taken following damage from Storm Babet.

The trees that lie outwith but adjacent to the site, particularly those that effectively form a line along the south and southwest boundary, which include trees in the region of 20m in height, would constitute a high hedge in terms of high ledge legislation. With that in mind, guidance provided in the 'Hedge Height and Light Loss' document published in 2005 by the Office of the Deputy Prime Minister (ODPM) would suggest that the trees in that area could be required to be reduced in height if an application was made under high hedge legislation. That may not be the current applicant's intention, but it does indicate that the trees, which are otherwise of importance to the character of the area could be susceptible to future pressure for lopping, topping, or felling.

The above could not be considered a credible point in assessment in our view, particularly relative to the specific circumstances of this of this application. This legislation would apply to *any and all* residential site(s) with trees that lie outwith but adjacent to that site; the same theory could be applied to existing properties on South Street and indeed any number of recently approved Planning Applications for the erection of dwellings within the Angus Council catchment.

The logical conclusion of this argument would be that *all* applications for new dwellings are assessed with a theoretical presumption that a future resident of the dwelling may undertake significant tree works outwith their own site. Clearly this could not be the case as it would lead to the majority of new applications dwellings being assessed with a negative outcome. If, however, this argument is targeted only at this application we would question the validity of the argument and indeed why it should be raised in this instance.

Notwithstanding the above, the key point is that an application would require to be made under high hedge legislation. Any theoretical/potential future works therefore would require to be submitted and assessed by Angus Council Planning, before they were undertaken. As such, the control of the tree height remains with the local authority. We would also remind at this point that the Planning Application is for a modest environmentally focussed eco home, with the intention of being rooted within a natural setting. Whilst we understand not a material consideration, there is no desire from the client to remove the trees, which indeed are a key component of her attraction to the site.

It is also a strong indication that the overshadowing associated with the trees could be regarded as adversely affecting the enjoyment of the domestic property which an occupant of that property could reasonably expect to have. The individual and cumulative impact on amenity associated with potential flood risk to a significant area of the garden ground and the overshadowing of much of the garden area by large trees is such that the proposed plot is not considered to provide a good level of residential amenity and the proposal does not comply with relevant policy in that respect.

Our response is as detailed within the above statements, it is not reasonable in our view to suggest that the trees lining the site would "*adversely affect the enjoyment of the domestic property which an occupant of that property could reasonably expect to have".* Conversely it is the trees lining the site, the sense of tranquillity, of nature and of dappled light which are key drivers in the client's desire for future enjoyment of the site. Notwithstanding, the result area unaffected by shadow is in excess of Angus Council standards for usable amenity ground.

New Build Dwelling
South Street, Newtyle

View 2. Looking North to South Street

New Build Dwelling
South Street, Newtyle

View 4. Looking to living spaces and master bedroom

It would not be unreasonable to anticipate that occupants of the property might take steps to minimise flood risk to the garden area, and that might include temporary works that would not require planning permission. Such works might increase flood risk elsewhere.

It has been confirmed by SEPA, as the independent specialist regulatory body, that the proposals would not increase flood risk. SEPA have not provided an objection and indeed have explicitly detailed in their statutory response that additional flood risk mitigations would not be required, we would refer to their public response in this regard. We do not believe it a credible statement to suggest that temporary measures to prevent may be adopted when the qualified regulatory body states in defined terms that this is not the case, particularly when that regulatory body has undertaken their own investigations over a 12 month period, with significantly robust theoretical flooding scenarios. Millard Consulting, hydrological engineers, have modelled the potential flooding scenario for a 1 in 200-year flood event, plus climate change, plus at 75% watercourse blockage – as the worst possible case event. It is a scenario that is modelled as occurring once in 200 years, *with* the addition of a theoretical blockage to the watercourse.

Even in this event the dwelling, driveway and external terraces are outwith the notional flood area and as such there could be no reasoning for the installation of temporary measures (as was SEPAs response in their recent confirmation of no objection to the proposals). This worst possible case event has been used within our plan information and plotted on our siteplan drawings. In a 1 in 200 Year flood even, plus climate change, plus 75% blockage scenario, the proposed dwelling and more than 80% of the amenity garden ground (1209m2) has been demonstrated to be outwith any flood risk - regardless of the most extreme notional scenarios.

Similarly, and as discussed above, given the preliminary calculations that have been undertaken using the hedge height and light loss guidance, it is not unreasonable to anticipate that future occupants of the property might seek to have works done to trees within or adjacent to the site to reduce the impact of overshadowing.

As outlined above, such works would first require permission to be granted by the local authority, whom remain in control of the future works could refuse permission at will. We also note that a

condition could also be incorporated within the Planning Permission, thus negating any potential concerns.

The submitted tree survey recognises that many of the trees are of significant value and any such work would be likely to have a detrimental impact on the character of the area.

The proposals do not suggest the removal of mature trees, as is evidenced throughout our supporting documents.

The constraints associated with flood risk as well as root protection zones and overshadowing associated with trees limit the developable area of the site and has resulted in amendment to the position of the proposed building during consideration of the application. In particular, the house was initially proposed closer to the burn and therefore further from South Street. However, following revision to address flood risk, the proposed house would now be positioned closer to South Street and it would be visible from the street.

Following the modelling of the worst case scenario, 1 in 200 year flood event, plus climate change, plus 75% watercourse blockage scenario, the footprint of the dwelling was moved marginally further away from the watercourse as a best practice approach, also negating any possible flooding concerns. The footprint of the house in the previous proposals was 6.5m to the burn, the current proposals are 8.3m to the burn. We consulted the Planning Department at the time of this repositioning and concerns were not relayed to us (as is evidenced in correspondence) with regards to being marginally closer to the street edge.

We would note that the dwelling was not designed to be invisible from South Street; the marginal shift in positioning could not convert the street view from being invisible to visible, rather, it would always have been visible. In having a degree of presence and visibility the dwelling assists to reinforce an edge condition and provides a carefully considered active street frontage. Please refer to the massing visuals attached from the geolocated 3D model illustrating views from the street. As can be seen from these drawings, the proposed dwelling integrates well with the existing context in terms of mass, scale, positioning and high-quality design. It is not of an inappropriate scale nor or of an anomalous positioning. We would also note that the driveway and vehicle access for the house, in this position, were granted Planning Permission in 2024, with the works now complete.

Above: View as proposed from the existing vehicle entrance at 33 South Street. Top of roof visible, reflective of other neighbouring properties in the street in terms of massing and orientation.

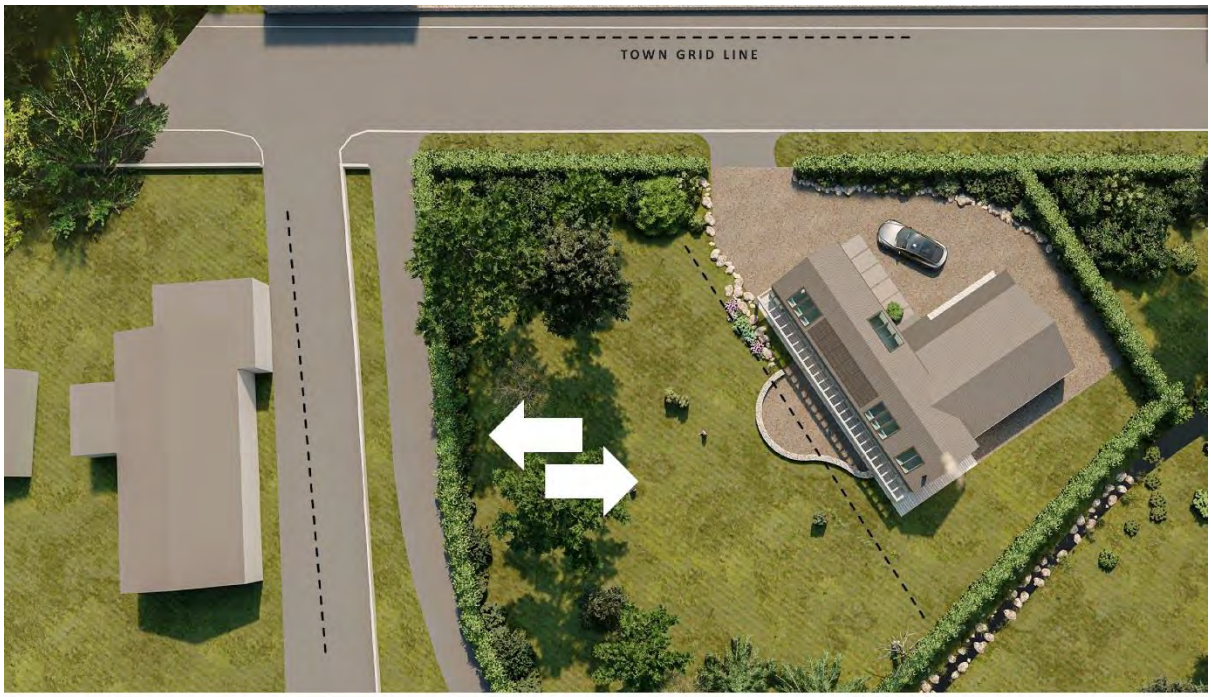
Above: View as proposed from the from 26 South Street. Massing can be clearly read with neighbouring number 29a. The house is set back from the street by an appropriate distance to allow privacy and reflective of the pattern of development of the area.

Above: View as proposed opposite new vehicle entrance. A modest ecologically sensitive home on this site would allow the required ongoing maintenance of the site, ensuring a positive character to the immediate locale, as attractive, maintained gardens- rather than overgrown scrubland (and the issues with littering/flytipping/loitering and security that would entail).

The L-shaped plan and orientation of the proposed building would be such that both ridges of the roof would be set an angle relative to the carriageway of South Street. However, Newtyle is a planned village, and it generally follows a rigid grid iron street pattern. Buildings are typically orientated such that their ridges run parallel or at right angles to the adjacent streets.

Please refer to the Nolli Plan and pattern of development diagrams provided. Newtyle has developed organically over a long period of time, with many houses and streets which do not conform to a rigid grid pattern, providing a degree of variety and richness of identity. Since 2021 (the time of submission of the Planning Application) WPA have not received any comment with regards to orientation from the Planning Department or the L shaped plan. The proposals have been orientated to align exactly with the existing house at Burnbank and with a roof pitch format matching that of the neighbouring 291. The proposed dwelling also aligns with the watercourse. The orientation and plan of the house has been carefully considered to allow a degree of privacy to the buildings adjacent, whilst establishing a compact and well-integrated driveway (Planning Permission has been previously granted for this); consequently the main entrance is in view from the public facing elevation, yet a degree of privacy is maintained to the public areas to the South. These moves assist in screening and softening the visual appearance of the dwelling, already modest in scale and form. Please refer also to the proposed street view visualizations below. The proposed dwelling is set back from the road by 8.4m, which is exactly comparable to the neighbouring property of 29a, set back by 8.4 metres.

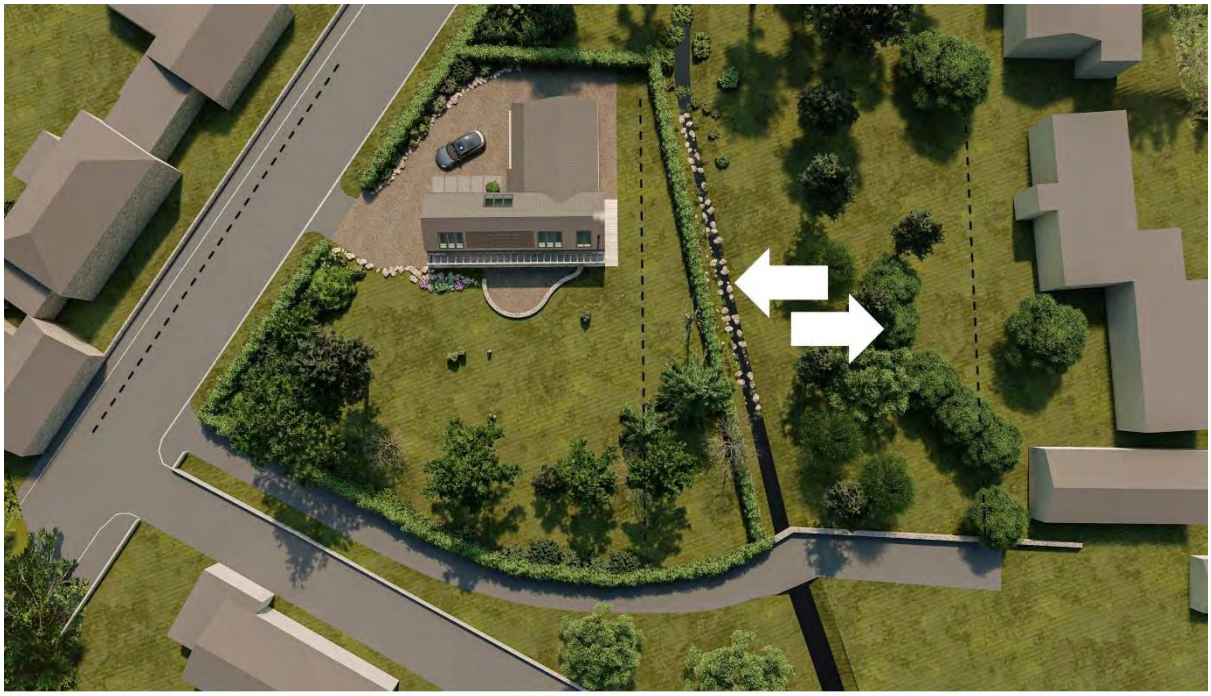
As can be seen from the diagrams, the dwelling fits with the pattern of development in the area and is clearly read with the existing building of Burnbank and screened by hedgerows.



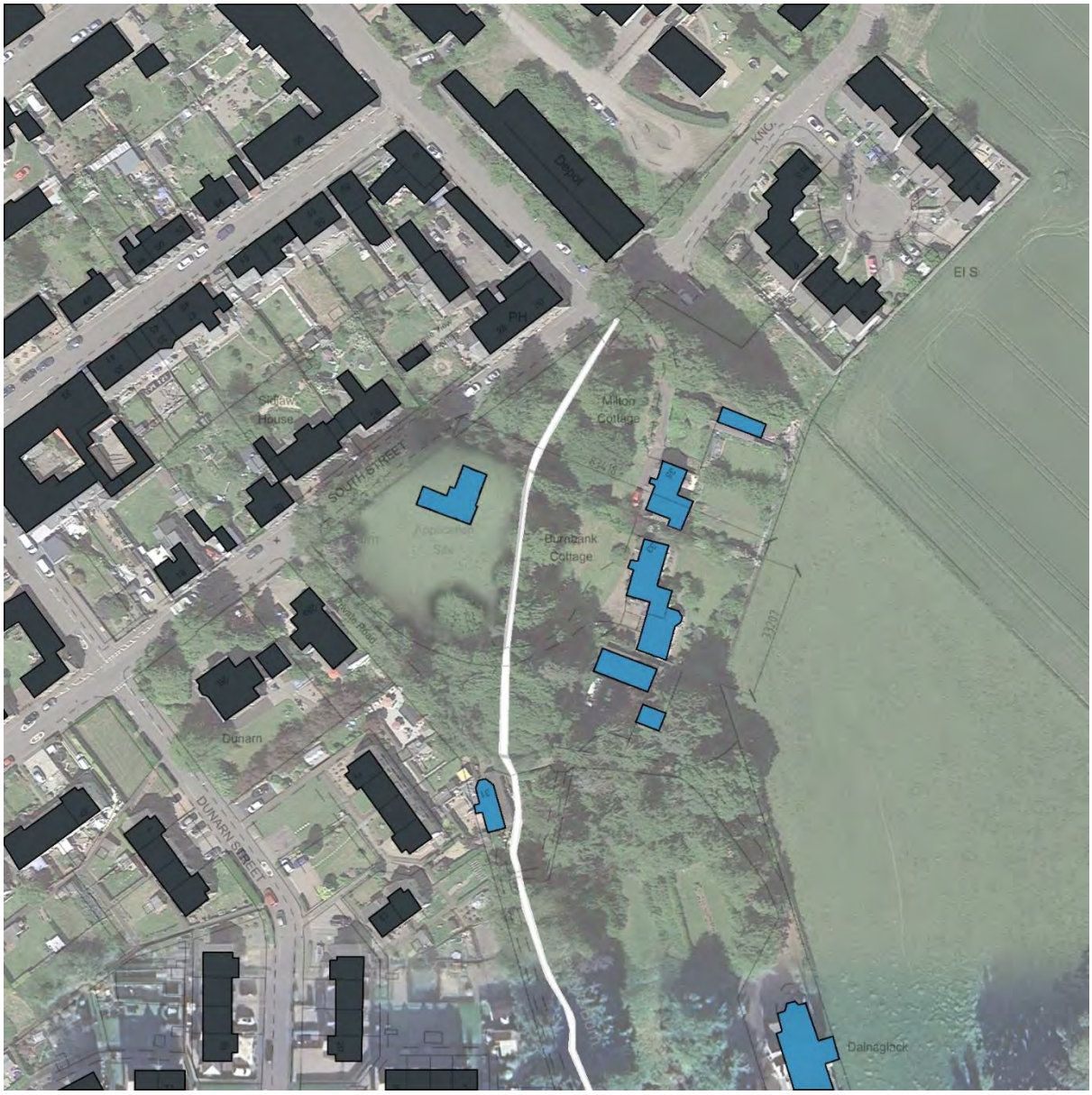
Above: Diagram illustrates the orientation and distance from the street edge relative to the neighbouring property of 29a. It is this property, on this side of the street, which the proposals will be read with. It is our view that this is very much in-keeping with the pattern of development in the area.

While existing properties at Burnbank and Milton depart from that pattern, they are set back from South Street by significant distance and landscape planting reduces their visibility from the street.

The current sizeable and undeveloped garden areas associated with those properties that sit adjacent to South Street add to the character and appearance of the area. The orientation of the proposed building relative to the street would depart markedly from the character of the area, and development of the existing woodland garden area would erode the chatter and established pattern of development in the area.



Above: Diagram illustrates the orientation and distance from the street edge relative and neighbouring properties. The proposals read in alignment with both the existing properties to the South East (Burnbank) and neighbouring 29a. The footprint of the house is directly comparable to near all houses lining South Street.



Above: Nolli Plan illustrates that the pattern of development is not confined to a strict grid arrangement and that the proposals offer a continuation of the South side of South Street.

As per our responses above (and drawings illustrate) the proposed dwelling is positioned back from the road by some 8.4 metres and of a type and scale matching existing properties to South Street. South Street has a mix of roof pitch orientations along the length of the street. It is our view that it could not be reasonably stated to be 'marked departure' from the character of the area, as has been demonstrated. That the proposed footprint follows the angle of the nearest property (and the one to which it will be read with, being on the same side of the street) we do not feel to be a valid reason for a negative determination of the Planning Application, particularly when the difference in angle to other neighbouring properties is slight, as can be seen throughout the village.

Case 1 – Dundee Road

Dundee Road and South Street, in close proximity to the application site. Many of the existing houses are angled from the street edge whilst the street does not follow a grid form. The dwellings are set back from the street in order to provide a degree of parking and privacy, the degree to which they are set back is comparable to the proposals presented here.

Case 2

Dunarn Street, some 250m from the application site. The majority of the houses do not follow a grid from and many are not aligned to the street edge; the pattern of development illustrates a rich sense of variety and layering, establishing an identity and sense of place, rather than adhering to a notional arbitrary grid form.

Case 3

Kinpurnie Gardens – recently constructed new build development. This recently approved development, some 200 metres from the application site does not conform to any suggested rigid grid plan form, similarly the dwellings are not aligned in the majority of cases perpendicular to the street edge. In our view it could not be reasonably stated that the proposals presented here deviate from the pattern of development or character of the area

Case 4

Bulb Farm Road and Commercial Street, some 300-350m from the application site. Again, buildings are not aligned to the street edge, have L Shaped plan forms and are set back some distance from the street edge for privacy and accommodation of car parking.

Case 5

Smiddy Road, some 250-300m from the application site. The street does not conform to a rigid grid pattern and all nearly all houses vary to a degree in orientation from the street edge, as opposed to an estate type grid pattern; again, a degree of identity, character and interest is generated, with a reading of historical layering.

It would not respect and respond to the local context where this makes a positive contribution to the existing character of the area and it would not integrate with the surrounding development pattern as required by the council's design guidance. The proposal is not compatible with relevant development plan design policies. In addition, Newtyle is in a rural area as defined by the Scottish Government's Urban Rural Classification 2020. As such policy 17 of NPF4 is relevant to determination of the application. It requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. The application is not consistent with that requirement for the reasons set out above.

We have demonstrated, at considerable length, that the proposals would are suitably scaled, sited and designed to be in keeping with the character of the area

1. Scale. The proposed footprint of the building is 141m2.

The footprint of neighbouring buildings (measured from OS Data) is as follows:

- Number 29 – 168 m2
- Number 24 – 148 m2
- Number 26 – 142 m2
- Number 20- 130m2
- Number 29 – 155 m2
- Number 18 – 135m2

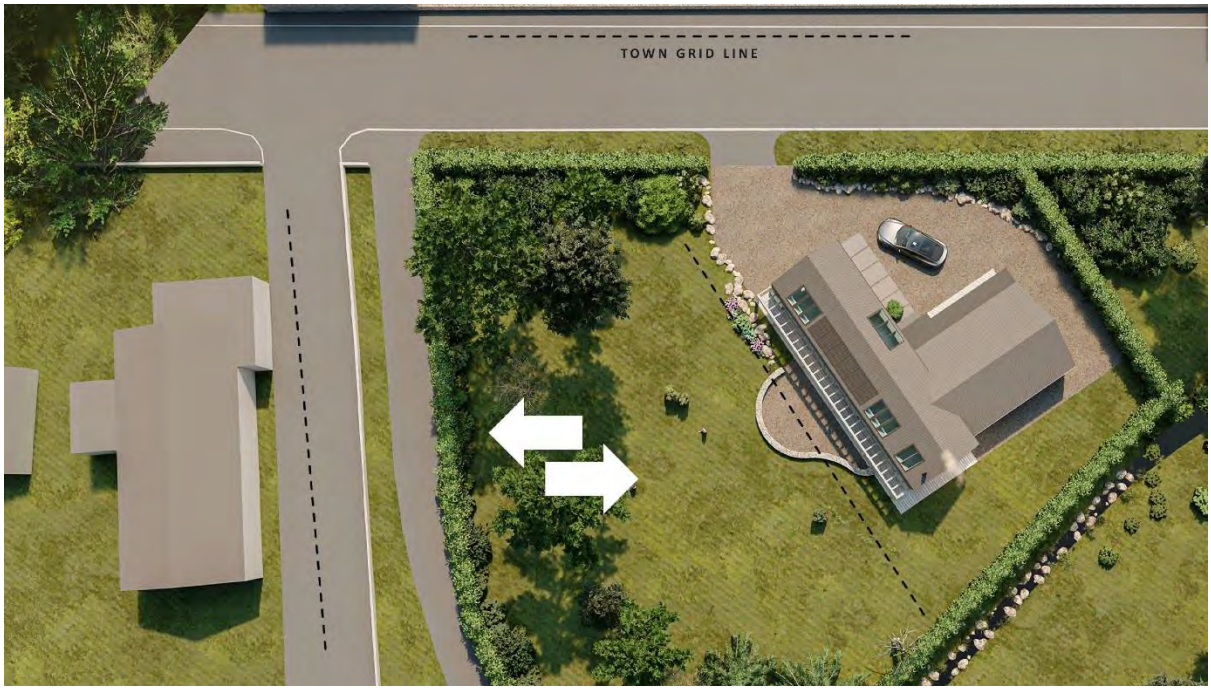
Weighted average (878 / 6) – 146m2. The proposed footprint is of a scale exactly matching the pattern of development of neighbouring properties and immediate locale and could not be reasonably stated to be otherwise.

2. Massing / form. The form of the dwelling is of a modest storey and a half scale, with the highest ridge point 6.8 metres from adjacent ground level, the same massing as all other storey and a half properties lining South Street. There are also a number of 2 storey properties lining the street, however the majority are of one and a half storeys. The massing is therefore exactly comparable to nearly every existing dwelling on the street and could not be stated to be inappropriate.

3. Design. The design of the proposals is of a high quality, considered form of the Scottish vernacular, with a classic pitched roof and L shaped building form seen throughout the village and indeed across the Angus area. None of the form(s), design language or proportioning is at odds with what is seen within the immediate area. The design is bespoke, carefully considered to capture views to areas of the garden, ensure privacy to bedrooms and capitalise on South sunlight, with private external terraced areas. It has been designed exactly and only for this site.

   We have received no compliant or concern with the architectural design of the proposals during the course of the application from the Planning Officer, we were informed that the architectural design was of a high quality and a point of concern. The materials are natural, of a high quality and as seen thought the immediate area; the design has been constructed to be comprehensively appropriate to the rural setting and we would robustly challenge an argument to the contrary, seeking evidence as to how that could be the case.

   The appearance of the building is of a restrained pallete of materials – natural stone, natural timber, and standing seam slate coloured metal cladding; it is of a modest scale and comprehensively rooted within its specific setting. The design uses materials, massing, scale, architectural forms and detailing as seen within the immediate area; as such we would request the assessment in this regard is reconsidered.



While the proposal is compatible with some aspects of development plan policy, it is not consistent with those that require a new house to provide a good living environment, or with those aspects that require it to be in keeping and contribute positively to the character and sense of place of the area. In overall terms, the proposal is contrary to the development plan. In addition to development plan policy, it is necessary to have regard to other material considerations. In this case those are the information submitted in support of the application, and the comments submitted both in support of and in objection to the proposal. The information submitted in support of the application has been considered and taken into account in the assessment set out above. While that information suggests that the proposal complies with relevant policy, that position is not supported for the reasons set out above. There is nothing in the supporting information that justifies approval of the application in circumstances where it is contrary to development plan policy.

Throughout the course of the application determination process, since 2021, requests have been made by the Planning Department for additional information from ourselves and various consultants in order to provide additional information to demonstrate compliance with policy. We have, in every case, actioned the requests for additional information and in cases provided significantly extensive reports to demonstrate this compliance. In each of these cases we have appropriately and empirically demonstrated compliance; consequently, we would refute that the proposals are contrary to development plan policy and would argue that it has been evidenced as such.

The representations submitted in support of the application are noted. However, for the reasons set out above it is concluded that the proposal is contrary to development plan policy. The identity of the applicant and whether they intend to live in the property as a long-term residence is not a material consideration. The representations submitted in objection to the proposal support refusal of the application in so far as they raise concern regarding conflict with the character and pattern of development in the area, and the quality of the residential environment that would be created due to flood risk and overshadowing from trees. However, it is relevant to note that while there may be other areas in Newtyle allocated for residential development, that does not preclude the grant of permission for additional small-scale residential development. Lack of historic or future maintenance

of the existing trees or the Newtyle Burn is not a matter material to the consideration of this application. The information submitted in support of the application is considered adequate to allow proper determination of the application. Neighbour notification has been undertaken in accordance with relevant statutory requirements. In conclusion, while aspects of the proposal attract some support from the development plan, the erection of a dwelling on the site in the manner proposed does not comply with the policies of the development plan for the reasons set out above. It would not be in keeping and contribute positively to the character and sense of place of the area and it would not provide a good living environment as its garden area would be subject to flood risk and significant overshadowing from trees that are otherwise important to the townscape of the area. Account has been had for all information and representations submitted both in support of and in objection to the proposal. However, the application is contrary to the development plan and there are no material considerations which justify approval of planning permission contrary to the provisions of the development plan.

In conclusion, we strongly believe that the proposal aligns with the development plan and has demonstrated compliance with all relevant policies, as evidenced by our extensive supporting documentation and consistent cooperation with requests from the Planning Department and statutory consultees. The design of the dwelling respects the character and scale of the surrounding area, with careful consideration given to both the architectural design and the site's specific conditions. The dwelling's footprint, massing, and material choices are in keeping with the character and nature of the locale and existing development pattern of development. The positioning of the house and driveway addresses both flood risk and privacy concerns.

Furthermore, we have provided robust evidence confirming that the proposed development will not increase flood risk, with independent hydrological modelling and extensive investigation. The proposed home has been designed to blend harmoniously into the community, contributing positively to its character and providing an attractive, well-maintained garden that complements the existing landscape.

Design Statement & Policy Consideration Response

21/01000/FULL

REVISION C, October 24.

Proposed single storey Dwelling –

Burnbank, 33 South Street Newtyle

October 24 Overview

Over the course of several years (Application submitted December 2021) a number of requests have been made for additional supporting evidence and further clarification sought as to confirming our compliance with Planning Policies. In each of these cases further information has been supplied either by ourselves, or where necessary, by specialist independent consultants. We have demonstrated in each of these cases that the appropriate Planning Policy criteria have been met; in short, compliance has now been demonstrated in every aspect of the proposals.

The final query point was raised by Angus Council's Coastal Flood Risk and Structures Team, with regards to potential flood risk concerns at the site. To this end a flood risk assessment, with flood modelling, was commissioned by specialist Civils Engineers Millard Consulting. At this stage it was requested that we demonstrate that the proposed development would not be at risk of flooding up to and including a 1 in 200 (0.5% annual probability) event inclusive of a 35% allowance for climate change, and factoring in various culvert blockage scenarios.

This information was commissioned and submitted, demonstrating compliance, for review. SEPA as the statutory assessed this information. In May of this year SEPA returned additional query points. Whilst acknowledging the engineer's demonstration that the site was not specifically liable to flooding in a 1 in 200 year flood event, SEPA requested that a number of further blockage scenarios be modelled. I.e. modelling the absolute worst case scenario of a 100% blockage further downstream, in a 1 in 200 year flood event, taking into account climate change. "*We request that blockage scenarios be run for the culverts and bridge on the site. Additionally, we request that a 100% blockage scenario be modelled on the downstream culvert".*

A further report, including responses to all SEPA comments, was undertaken and submitted to Angus Council for review by SEPA.

<u>Present time</u>

Following the additional Millards report, a further response document was received from SEPA on the 13th of September. In this document SEPA outlined their approach stance as taking a precautionary approach; this to consider the potential flooding on the basis of a "*75% culvert blockage and 75% solid boundary wall, as representative of the 1 in 200-year plus climate change flood extent for the proposed site",* accepting that scenario supplied in figure 4 of the Millards report.

Furthermore, SEPA confirms in this document "*Figure 4 also demonstrates that there is space available within the red line boundary, to the west and south-west of the current proposed location, which falls outwith the 1 in 200-year plus climate change flood extent. If the applicant submitted revised site plans, with all built development lying outwith the flood risk area as laid out in Figure 4, then we would be able to remove our objection on flood risk grounds".*

Following this advice, we have now submitted revised plans with a small reduction to the footprint of the proposed plans, alongside a repositioning of the house to be outwith the worst case scenario flood event – i.e. 75% culvert blockage and 75% solid boundary wall, as representative of the 1 in 200-year plus climate change flood extent for the proposed site. Only minor adjustment has been required to meet this criteria.

Consequently, the revised drawings supplied with this document demonstrate compliance with flood event criteria as prescribed by SEPA, based on actual and empirical modelling data; without speculation, opinion or assumption.

The proposed dwelling is now, at its closest point, 9.4 metres from the burn itself and some 8.35 metres from the top of the bank; this is over 3 metres in excess of the 6 metres guidance provided by SEPA. The proposed is also now sited 1 mere from the extents of the worst-case scenario of a 1 in 200-year Flood event with climate change and blockage scenario. It has been demonstrated that the construction of the dwellinghouse would not increase flood risk elsewhere in the area. Additionally, the proposed finished floor level is 300mm higher than the adjacent ground level, as a further additional precautionary measure. To summarise compliance has been robustly demonstrated with regards to all flood related queries.

Whilst it has been recognised by Angus Council in previous correspondence, it should also be noted here that the site conditions and groundcover have changed over the course of the years since the initial Planning Application was submitted. In this time several major storm events have occurred, including storm Arwen and storm Babet, which had a very significant impact on tree cover to the local area and indeed to the application site. At the time of these storm events our client provided photographic evidence to the Planning Department of the damage and provided details of the proposed action with regards to the clearance of fallen/dangerous trees as a best practice approach. As can be seen from the above site photographs, and visits to the site, it exists as a large open space that offers an excellent position for a modest, contemporary eco home – as has been proposed.

Summary

In summary, we believe that we have now provided all additional information requested, clarified all policy queries and made significant efforts wherever required to accommodate advise and guidance of both the Planning Department and statutory consultees. We trust that the attached drawing and supporting evidence issue will now draw a close to the determination of the application and note that compliance has been demonstrated with regards to all relevant planning policies of the National Planning Framework.

The following text has been retained from our original design statement, updated wherever appropriate.

Existing Design Statement information

Since submitting the application the Client's circumstances have changed, along with their requirements for their new home. Whilst they still intend to build an eco-home on the property, the scale and positioning of the revised proposals has been amended. These amendments also take into account comments received from the Planning Authority at the end of 2022.

The revised design proposals include a small timber framed home of 3 bedrooms and modest proportions, at a significant reduction in size to the previous proposals (which were also of a modest proportion). The footprint of the site has moved further Northwards at a distance some 20 metres to the large tree to the south, allowing for a vast expanse of grassed lawn area.

Care has been taken to ensure utmost privacy, with windows being carefully considered in their size and positioning. All windows are at a distance of more than 20 metres to adjacent properties.

In the interim period a large storm event was seen in which we understand a number of large trees on the site were damaged. Consequently, a revised tree survey was submitted in April 2023.

April 2024 Overview

Since the last information submission (April 2023) a Full Flood Risk assessment has been conducted alongside detailed culvert modelling analysis. The latter is an involved and comprehensive process, whereby a number of theoretical flooding situations are analysed; this process has taken several months to complete.

A number of conversations have been held with Planning Officer - James Wright, Andrew Brown - Design Engineer – Coastal, Flood Risk and Structures Team and SEPA to determine the scope and nature of the flood risk analysis required. Our aim has been to ensure that any queries in this regard have been comprehensively answered to allow the assessment/determination to take place without further concerns being considered/or remaining regarding potential unsuitability of the proposed dwelling due to flooding.

The project team has been through an extended and extremely thorough process to establish flood risk and negate any potential residual concerns with regards to flooding. The floor report and recommendations are appended with this information submission. The FRA report and analysis confirms that the site would not be significantly impacted by flooding and indeed would be suitable for the placement of a dwelling. It is worth noting also that the modelling has taken place using a methodology of a 1 in 200-year flood event, plus 39% as a worst-case scenario. The author, Millards, make certain recommendations within their report to further mitigate against potential flood impact. These are included below:

It is concluded that the majority of the site is outwith the predicted 1 in 200 year + climate change flood extent, and hence site is developable with respect to flood risk. Flood free egress from the site is also predicted to be available during the aforementioned flood event.

The following mitigation measures should be incorporated into the development:

- *The new house should be set out-with the flood extent shown on drawing 18518/21/001*

WPA Response: The proposed dwelling is sited well out-with the flood extents of all worst case modelling scenarios. The dwelling footprint is sited a minimum of 8 metres from the top of bank, which is more than 9m from the actual watercourse, in an elevated position.

- *The new house should have a finished floor level no lower than 84.8m AOD, while the floor should also be set with a suitable upstand above finished surrounding ground levels. An upstand of no less than 0.3m is suggested.*

WPA Response: The proposed dwelling has a finished floor level of 85.300, which is 500mm higher than the minimum recommendations set out in the above. The footprint is raised a minimum of 300mm above the adjacent ground level, as per the above advice.

- *Flood resilient materials and construction methods are recommended for the proposed development given it is to be located close to the flood plain of the Newtyle Burn. In particular, the use of a solid floor construction is recommended.*

WPA Response: Flood resilient materials and construction methods will be incorporated within the construction. It should also be noted that a Flood Early Warning System has been proposed, with audible and visual sounders to alert the occupier should the water level begin to encroach on the top of the existing bank. The proposed has also been designed to facilitate flood barriers to doors, should they be necessary, as a betterment to the recommendations; please refer to ground floor plan and elevation drawings.

Shadow analysis and daylight influx.

Since the application was originally submitted (2021) there have been two major storms which have had significant impact on Dundee and Angus, leading to vast tree loss across the counties. The application site also suffered from tree loss (photographs of the storm damage were sent by the client to Angus Council Planning Department at the time). Consequently, the density of existing trees has been reduced since the time of application. It is important to note that the client had no bearing on this tree loss, nor desire to remove trees from the site. With the trees being in a dangerous condition a further tree survey was commissioned, this updated tree survey is appended with this application and illustrates the reduction in trees.

The initial shadow analysis diagrams have also been updated using mapping from the updated tree survey model, these are again appended with this information issue.

Proposed design

The materials proposed are of a natural and high-quality nature, being of treated natural timber, natural stone cladding and standing seam metal. All these materials are seen within the locality.

The revised proposals offer the opportunity for the client to remain living within the locality of 33 South Street in a bespoke environmentally sensitive and efficient home which better suits their future needs, on an area of currently vacant ground.

Site location & Context:

The site is located within a residential street in the village of Newtyle, an attractive settlement some 11 miles North of Dundee, with a mixture of Scottish stone vernacular and individual contemporary new build homes. Located at 33 South Street, to the Eastern edge of the village, it neighbours a vibrant village pub (the Commercial Inn), a number of 2 storey and storey and a half stone built dwellings (opposite) and occupies a gap between the contemporary type dwelling of 29a, to the South West, and Milton Cottage to the North East.

The site lies within the extensive grounds of Burnbank Cottage, a large detached late 19th century dwelling positioned to the far Eastern periphery of 4849m2 of garden grounds. Theses grounds are naturally divided to the East and West by the small watercourse of Newtyle Burn. The proposals here utilise the annexed (by watercourse) Western portion of the site, bordering South Street, for the provision of a contextually responsive & sensitive high-quality modest family home designed comprehensively around the natural attributes of setting.

Prior to the Client's purchase of the site, in June 2019, this area of grounds was in a state of semi-dereliction, overgrown and undermaintained with a mass of low-quality vegetative growth, as was recorded in Community Council minutes at the time. This poor state of repair existed as an 'eyesore' within the streetscape, detracting from the visual amenity of the area. (It should be noted that *Google Streetview illustrates the level of vegetative growth as it was in 2008)*. Since then the client has commissioned significant maintenance works to restore the site back to a well-maintained private garden, as these contemporary photographs illustrate. Today, the site consists of a large expanse of open grassed land, bordered by mature trees lining the street edge with South Street. There are also several mature trees aligned with the existing driveway, bordering the South Western periphery of the application site. A small number of these trees were assessed as being of very poor quality by the

Environmental Consultant, requiring maintenance or removal. Vegetation on the site is limited to the trees aforementioned and the hedgerow that borders South Street. It should be noted from the outset that this application does not include for the removal of any mature trees or existing hedgerow area.

Photograph looking east showing existing site boundary. The proposed dwelling is sited well out-with the root protection areas of the trees pictured, some 11 metres from these trees and consequently within all statuary distance constraints.

The proposed site sits within a well-established residential area, close to local amenities and public transport links. It offers a unique opportunity to provide a highly desirable dwelling designed to blur the boundaries between 'inside' and 'outside' environments and actively embrace the existing trees that border the site to provide a tranquil and private environmentally sensitive home.

Photograph depicts western site boundary and expanse of open grassed area. Photograph taken approximately just to the front of where the proposed living areas are sited.

The application site proposed is approximately 1584 m2, which is in considerable excess of the Council's requirement of 400m2 for new build dwelling sites. Of this area 1173m2 is allocated as high-quality leisure and amenity space, as natural garden ground. The residual garden ground of Burnbank Cottage would therefore be in the region of 3265m2, remaining to be of a significantly considerable size. The size of ground at present has been noted by the homeowner as not being practical in terms of ongoing maintenance due to the sheer size, it's lack of use by them and the fact that the garden is annexed naturally by the watercourse. Apportioning this excess of land allows would allow for a much-needed high quality home with future occupation ensuring the necessary maintenance is ongoing (and practical), enhancing the visual amenity of the streetscape.

Design Approach:

The design approach has adopted 3 fundamental principles:

1. 'Inside-outside' house. The dwelling is of a bespoke design that seeks to provide strategically framed views of the natural setting, maximise daylight into the plan and provide a large external patio that directly opens into the building to draw the natural environment inside the living spaces. Large, carefully positioned bi-folding doors seek to enhance this natural connection further.

2. Natural elements. The proposals are designed comprehensively around the existing natural features of the site, to make the most of the setting. No mature trees are proposed to be removed and the placement of accommodation and associated windows are positioned to work in harmony with the existing tree cover.

3. Contextual integration. From the outset the proposed was designed to be of a very modest, human scale, 'nestling' within the site and adopting a light touch in terms of footprint and height. The single storey garage and linear positioning of the one and a half storey living block allow the design to have a minimal visual impact from South Street, whilst the use of high-quality natural stone and timber seek to further root the proposal within the setting.

The decision was made to have the footprint of the house sit perpendicular to the Newtyle Burn. This has a number of distinct advantages:

- A greater amount of south light can be utilised along the length of the building, providing bright well lit internal spaces as well as aiding in the passive heating of the scheme through solar gain.
- An expanse of south facing quality amenity space – as a large patio is provided to south of the property not overshadowed by existing tree cover.
- Main glazing expanse is positioned perpendicular to the street allowing for a high degree of privacy from existing neighbouring buildings (some 30 metres away to the nearest property of 26 South Street). Negating issues of overlooking, privacy, and light pollution.
- It allows the placement of a new driveway of approximately 10 metres in length from the South Street entrance to the proposed, taking precedent from the neighbouring property of 29a which utilises a similar distance. This allows a comfortable and familiar relationship with

the street edge, not adversely impacting local residents – whilst being of a small enough distance to not constitute a 'back-land' development.

- This orientation allows for a greater distance to existing properties of number 20 and Sidlaw House to the northwest, where, to maximise South facing daylighting, the living accommodation is sited. Consequently, the living areas are a minimum distance of 41 metres from Sidlaw house, again negating issues of privacy or potential impact on existing visual amenity.

Aerial 3d CGI generated using topographical and tree survey data looking southeast; character and nature of the existing streetscape remains unchanged.

Design features:

The layout has been based around providing a higher degree of privacy to the north and west (visible from the site entrance, facing the access road) with limited windows, whilst the southeast areas of the layout are opened to a much greater degree (where natural privacy is at its highest and natural daylighting influx is optimal), with a large patio area positioned to maximise the sun throughout the entire day.

Daylight into the building has been maximised in a number of innovative ways, whilst retaining the 'low rise' massing. A large degree of glazing is adopted throughout the south and west facades, with the primary living space being possitioned here to capture the sun throughout the day. Internally a large void space is used to allow additional daylighting into the depth of the plan. This occurs at the main entrance hall, strengthened in impactful by large skylighs positioned above the void. The main living area has an increased height with a pitched 'byre' arrangement, allowing for a dynamic impression that clearly delineates it from the remainder of the dwelling. Rooflights are used in the first floor in order to provide bright internal spaces while maintaining the low profil of the scheme.

3D Visualization of the proposed dwelling with Tree Report data plotted, the amenity of the proposed home will be of excellent quality, whilst the architectural design of the proposed dwelling seeks to provide a characterful and innovative high-quality home to embrace its surrounds.

Light, horizontal, timber cladding is proposed as the main material for the outer skin of the building, with natural stone details such as at ground level on the west elevation. The roofing and walls at the upper storey level utilise a standing seam aluminium cladding material, dark grey in colour, to reference the existing context of dark grey slate roofs in the area. The standing seam cladding also helps to add interest to and reduce the massing of the building by differentiating between the colour of the remainder of the façade. Windows are proposed to be high-quality double-glazed units, complimenting the natural stone, whilst the large areas of glazing serve to reflect the trees and natural cover bordering the site.

Windows to the east façade have been restricted to the southernly most side only. To maximise privacy to Burnbank Cottage.

COMPLIANCE WITH RELEVANT ADLP POLICY

Policy DS3

Policy DS3 Design Quality and Placemaking indicates that development proposals should deliver a high design standard and draw upon those aspects of landscape and townscape that contribute positively to the character and sense of place of the area.

We have aimed to produce a very high quality, bespoke design that has been tailored to respond to the site context. References have been drawn from the existing building stock to provide an appropriate scale (at 1.5 storey in height) and using a contemporary interpretation of the bothy and byre vernacular. The aim in undertaking this work has been to produce a characterful yet restrained dwelling that is very much of its surroundings and integrates wholeheartedly within the semi-rural

setting – as can be seen from the visualizations included with this submission. Equally, all (external) materials selected are of a natural type and are present within Newtyle.

In summary, the aim of this application is to provide a high quality, contextually sensitive, Affordable home on an existing residential site – architecturally designed to both integrate within its setting and attribute a strong sense of place and identity. A dwelling here also prevents further pressure on pristine greenfield sites out with existing established residential areas (and development boundaries) and promotes the use of pre-existing public transport links.

Development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located. Development proposals should create buildings

and places which are:

- **Distinctive**

We have made significant efforts to produce an appropriately scaled, contextually responsive building design. Our primary aim is to produce a high quality, architectural dwelling of modest proportions and unique sense of identity. Our intention with the proposal is to draw from the existing building stock and bothy context to assist in generating a modern interpretation of the Scottish vernacular; one which reflects and enhances the local area. The restrained palette of high-quality materials, for example natural stone cladding, was utilised on the west façade so to conform with existing area precedents, such as those on the opposing side of South Street.

The window proportions for all glazed elements have been centred on meeting the current requirements of the Scottish Government's Building Standards for natural daylighting. Window sizes on the North of the East facade restricted to avoid any privacy issues towards the driveway road. Large glass panels are utilized on the south elevation to maximise view to the south. Oblique glass and solar shading elements have also been provided to limit glare from solar gain, particularly in the winter months.

3d Visualization illustrating from around 6 metres from the South Street border depicting the approach from the driveway.

- **Safe and Pleasant**

The dwelling is proposed to be positioned by South Street, offering convenient vehicle and pedestrian access. Planters will also be included by the entrance to further enhance the building in its landscape. The front entrance and driveway (using low level bollard type lights within the curtilage of the site) will be adequately lit to ensure the security and safety of the building occupants at night. Adequate street lighting is already in place, as is a pavement offering pedestrian access to local amenities. In addition, all access doors and windows will be lockable and secured by design with the utilization double glazing to add to the strength of the structure. The siting of a family dwelling within this area would prevent undesirable use of a previously potentially secluded site at night times and encourages positive neighbourhood surveillance, increasing safety.

- **Easy to Move Around and Beyond**

The main entrance will provide level access for disabled users. Doors and openings have been given adequate widths to provide convenient access for wheelchair users.

- **Welcoming**

In addition to the points outlined above:

The proposal will utilise a similar design language, structure, and materials to that of nearby buildings in the area. The buildings entrance will also engage with the driveway approach providing a distinct covered entrance with adequate external lighting.

- **Versatile**

The proposal has been designed around the spatial standards required by building standards regulations. As stated above, all entrances provide adequate door widths as well as level access from

the main entrance with a largely open plan layout and one and a half storey format. The proposed will allow for easy conversion/adaption and meet the need of occupants in future years.

- Resource efficient.

The aim has been to generate a resource efficient home with contextually responsive materials that have inherently high sustainability credentials. The building utilizes a timber frame construction using locally sourced, sustainable materials. Timber kit construction also has inherent air tightness properties at junctions and will be highly insulated throughout to reduce energy consumption.

The client has shown interest in alternate heat sources, including ground/ air-source Heat pump. Rainwater Harvesting will be incorporated, as will a multifuel (bio pellet) burner to top up heat. To accommodate for low temperatures during the winter months the design has been orientated to maximise South light to living spaces.

Planning Application history

21/00292/PPPL

In June 2021 a Planning Application in Principle (reference above) was submitted for the erection of a dwelling house at the site.

The latter application, being only an Application in Principle, offered no detail as to the massing, design or scale of the proposed dwelling. After consultation with the Planning Officer, James Wright, it was decided to withdraw the application in order to produce a full detailed design that utilized a bespoke and tailored approach to the site.

The previous application site was significantly smaller than that is proposed here and used a 'generic' house type design without consideration to the context of the site. In that application a proposed dwelling was sited in very close proximity to the South Street boundary and was 2 storey in height. Concerns were raised of privacy and of unacceptable overshadowing (from tree cover) of the proposed home as a result.

This application uses a one and a half storey, 'low rise' linear format modern interpretation of the traditional cottage. The proposed dwelling also uses an entirely different orientation and positioning within the plot, as has been explained throughout this document.

Care has been taken therefore to address all relevant concerns raised in the provision of this Full Planning Application.

Compliance with relevant Planning Policy

Policy DS1

The application is in compliance with policy DS1.

Policy TC2

Policy TC2 Residential Development

All proposals for new residential development*, including the conversion of non-residential buildings must:

- *be compatible with current and proposed land uses in the surrounding area;*
  The application is in line with this guidance.
- *provide a satisfactory residential environment for the proposed dwelling(s);*
  The existing grounds of Burnbank Cottage measure 4849m2, very considerably in excess of what one would reasonably consider a large *manageable* garden for a single dwelling. As a result a great deal of this ground is unused or underused. The proposed allocates a plot area of 1584m2 from the 4849m2 for the proposed dwelling, which is significantly in excess of 400m2 suggested by Planning Policy guidance. The proposed utilizes an innovative architectural design which orientates the dwelling to maximise both sunlight and views, as well as maximising privacy to the existing house. As can be seen from the drawings provided, this layout and design would provide an exemplary, tranquil and high quality environment for residential living – with no tangible detriment to the existing residential properties of South Street or Burnbank Cottage.

  There are a number of existing mature trees that border the site (South Street) and a small number within the curtilage of the plot, they do not haver occupy the central area of the site. Additionally, the Tree cover is based along the South Street in its near entirety, to the West of the site – not adversely overshadowing the proposed (shadows are predominantly cast North, as can be seen from the site photographs). A very sizeable area of high-quality garden ground has been included to the South and West of the proposed dwelling, this is well in excess in of statutory requirements set out by the ALDP. Overshadowing by tree cover would not excessively impact the aforementioned amenity space, as is demonstrated and indeed the existing trees serve to provide an attractive natural attribute to be embraced by the proposed home.

3d Visualization illustrating South facing living space with small external patio.

- *not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and*

The proposed application does not seek to remove any mature trees or existing hedgerow cover. The proposed dwelling seeks to provide an environmentally and contextually sensitive and modest dwelling with associated high-quality landscaping.

The site is not within a designated SEPA flood risk zone. All paving materials consist of either porous paving setts or gravel allowing the percolation of rainwater.

With regards to impact on the on the surrounding built and natural environment, these proposals could provide attractive and high-quality areas of managed garden ground centred around a carefully designed home of similar proportions to that of the existing cottages. A sparse palette of natural materials is proposed, such as natural stone throughout, to root the dwelling within the surrounding natural environment, and reference the local building stock. It is our opinion that these proposals would provide a strong positive impact to the local amenity and facilitate a dwelling that has been designed from the ground up to integrate fully within the semi-rural context.

- *include as appropriate a mix of house sizes, types and tenures and provision for affordable housing in accordance with Policy TC3 Affordable Housing.*

  As this element of policy advises, successful places are made up of a mixture of house sizes and types, the latter adding to a sense of identity and sense of place – without which large monocultures can occur, as can be seen in the development of some large housing developments on Greenfield sites. This application supports another 'cottage like' development, of the same proportions to those seen throughout Newtyle, in an area where such house types are in (well-documented) shortage. The proposed, as a modest 3-bedroom 1.5 storey home, would be of Affordable Housing type, and presents a unique opportunity to re-use an existing residential site with pre-existing infrastructure.

- *Within development boundaries Angus Council will support proposals for new residential development where:*
  the site is not allocated or protected for another use; and
  The site is not allocated or protected for another use. The proposals are therefore in compliance.

- *the proposal is consistent with the character and pattern of development in the surrounding area.*
- **Newtyle demonstrates a richly diverse mix of building typologies, though most of which conform to the Scottish cottage or 2 storey pitched roof stone vernacular. The majority of cottages demonstrate a long and low 'squat' profile single storey, or storey and a half arrangement. The proposed fits with the character and pattern of development in the area, with the dwelling set back from the pavement by a distance of around 10 metres, the design of the dwelling also strongly references the massing and scale of the cottages aforementioned. To further integrate with the existing Burnbank Cottage, and for reasons of daylighting and privacy, the orientation of the proposed matches that of Burnbank Cottage, in a similar format.**

3d Visualization illustrates post development arial view. The careful massing helps to ensure that the proposed has negligible visual impact on the existing streetscape or existing residential properties.

Additional Notes following correspondence with Angus Council Planning Department (August 2023)

Daylight influx and overshadowing

That the site is bordered by trees we do not feel in any way disadvantages the living environment of the occupants of the proposed home, privacy, shade and natural setting indeed attributes to quality of life rather than to the detriment. It should be fully understood that shadows vary in position at different times of the day and year. Throughout the day shadows will move around the site, providing *variable* shade and natural cover – at no point will the site be in 'full shadow'; whilst some areas of the site may be in shadow at that particular time, others will not be, changing the nature of the spaces. The trees to the Northern boundary, around 40%, will not overshadow the property by virtue of orientation – they overshadow only the properties opposite.

The remaining trees to the South are almost without exception confers, which although tall, have narrow canopy cover and thus do not cast large shadows. Whilst we note that often new build greenfield developments are constructed with virtually/no tree cover, and this example differs, recognition should be given that ultimately this is subjective and of course personal choice. The proposed has a plot area of 1584m2 which is significantly in excess of the 400m2 recommended by Planning Policy guidance, of this there is more than 600m2 of dedicated amenity space (the recommendation being a minimum of 100m2); at no point in the year will the dwelling be left with less than 100m2 'un-shadowed' amenity space. Most gardens of existing properties have trees bordering which cast shadows throughout the day, it is uncommon not to have trees providing cover. Ultimately the degree of tree cover/shadow is subjective and of course personal choice. We would point out however that tree planting proposals and increased tree/vegetation cover are increasingly integral to the requirements of our clients, particularly with increasing climate extremes. We have modelled the proposals extensively in photorealistic 3D software and are without doubt that the proposed would have a comfortable living environment with a highly desirable natural setting – that some shadows are cast in areas on the dwelling we do not see as a

detriment. The dwelling is also of a bespoke design that seeks to provide strategically framed views of the natural setting, maximise daylight into the plan and provide a large external patio that directly opens into the building to draw the natural environment inside the living spaces. Large, carefully positioned bi-folding doors seek to enhance this natural connection further.

Virtually all dwelling houses are in partial shade much of the time, by virtue of being sited next to, and in-front/to the rear of, other houses, which you will no doubt provide more overshadowing by virtue of their scale and mass. As outlined above, that the house has natural cover and will have areas in partial shade is not a negative attribute. The sunpath analysis does not indicate that a satisfactory residential environment would not be provided; indeed it shows that in the summer months there is virtually no overshadowing. In the winter months, with shadows cast longer their remains to be areas un-shadowed, however you will note that the surrounding houses are overshadowed to a greater extent by other houses and indeed the trees of this site. It must also be noted that in the sunpath diagrams a generic deciduous tree type is used, in the winter months the canopy cover would be shed, thus casting a vastly reduced shadow. In the cases of coniferous trees the canopy is much narrower than as illustrated, throughout the year. Should the site have been bordered by existing dwellings, as is most common, the overshadowing would of course be far greater.

Summary

In our view the above information and enclosed drawing package clearly demonstrates that the proposals would reflect and respect the existing pattern of development in the area, provide no detriment to the existing character and nature of the area – and would provide a much needed affordable family home with excellent garden amenity. The proposed would be largely invisible from nearly all areas of the South Street approach and therefore aesthetically would represent very little change to the current condition. There are no demonstrable concerns with the proposed dwelling overshadowing existing properties or with issues of privacy.

Our view is that the proposed dwelling satisfies the criteria as set out within the ALDP and has been demonstrated as such.

WILSON PAUL ARCHITECTS LLP

OCTOBER 2024

ITEM 5

Response to Report of Handling, dated 7th January 2025

21/01000/FULL - Erection of Dwellinghouse, 33 South Street, Newtyle, Blairgowrie

20th January 2025

Note: Original Report of Handling text included below in grey font, responses included in blue.

Above. Export from geolocated 3d model, proposed dwelling pictured top right.

New Build Dwelling
South Street, Newtyle

View 1. South, from burn.

Assessment Sections 25 and 37(2) of the Town and Country Planning (Scotland) Act 1997 require that planning decisions be made in accordance with the development plan unless material considerations indicate otherwise. In this case the development plan comprises: - - National Planning Framework 4 (NPF4) (Published 2023) - Angus Local Development Plan (ALDP) (Adopted 2016) The development plan policies relevant to the determination of the planning application are reproduced at Appendix 1 and have been taken into account in preparing this report. The ALDP was adopted in September 2016 while NPF4 was adopted in February 2023. Planning legislation indicates that where there is any incompatibility between the provision of the national planning framework and the provision of a local development plan, whichever of them is the later in date is to prevail.

The application site consists of garden ground forming part of the curtilage of an existing dwelling, Burnbank Cottage, located within the settlement of Newtyle. Policy DS1 in the ALDP states that for unidentified sites within development boundaries, proposals will be supported where they are of a scale and nature appropriate to the location and where they accord with other relevant policies in the LDP.

Both the ALDP and NPF4 encourage the reuse of brownfield land in preference to the use of greenfield land. NPF4 Policy 16 'quality homes' seeks to encourage, promote and facilitate the delivery of more high quality, affordable and sustainable homes, in the right locations. Policy 16 offers support to proposals for new homes on land allocated for housing in the LDP. It indicates that on land not allocated for housing in the LDP proposals for new homes will only be supported in limited circumstances where (amongst other things) the proposal is for smaller scale opportunities within an existing settlement boundary.

The proposed dwelling is sited within an existing settlement boundary (as outlined within the LDP) and offers a smaller scale opportunity; as such, the proposals are in compliance with this policy.

Policy 17 deals with new housing in rural areas and amongst other things, requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. Policy TC2 of the ALDP indicates that within development boundaries, proposal for residential development will be supported where the site is not protected for another use and is consistent with the character and pattern of development in the surrounding area.

The site is not protected for another use, has no current use and had a dedicated vehicle access and driveway as approved. The design proposals are of a high-quality nature, utilising high quality natural materials and as used extensively within this area. The scale and massing of the proposals are of the exact footprint of the majority of other houses on the street. The design of the proposals has been based upon a rural typology, of Scottish vernacular and designed to integrate fully with the surrounding housing stock.

Please refer to Nolli plans and pattern of development diagrams on the following pages. The proposals are suitably scaled (please refer to footprint diagrams of existing houses within the immediate locale) and are demonstrably in-keeping with those in the surrounding area. The proposals use stone and timber, as the houses adjacent and on the opposing side of the street, whilst the storey and a half scale is fully reflective of neighbouring properties. In our view it could not be reasonably stated that the proposals do not fit within the pattern of development or character and nature of the area, as such we would challenge this statement. It is our view that the proposals are well integrated with the pattern of development and character and nature of the area.

Policy TC2 also requires all proposals for new residential development to be compatible in terms of land use; to provide a satisfactory residential environment; to not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and to include provision for affordable housing in accordance with Policy TC3 Affordable Housing.

The proposals have a modest footprint and we would argue could not be said to have an adverse effect on the natural or built environment. The proposals do not suggest the removal of mature trees or hedgerows. The surrounding land use is residential, consequently the proposals are compatible with prevailing land use. The proposals comply with all aspects of this policy.

NPF4 Policy 14 states development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale. It indicates that development proposals that are poorly designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported. ALDP Policy DS3 indicates that development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located, and the council's Design and Placemaking Supplementary Guidance provides relevant considerations when applying this policy.

The design proposals have been carefully considered over a significant gestation period in order to carefully integrate within the site context and surrounds. The design is of a high quality, considered architectural response. As has been extensively demonstrated throughout the course of the application process, the design proposals were conceived and developed using the six qualities of successful placemaking and are embodied in a bespoke (i.e. to the site constraints and setting), contextually responsive architectural dwelling.

Policy DS4 of the ALDP states that development will not be permitted where there is an unacceptable adverse impact on the surrounding area or the environment or amenity of existing or future

occupiers of adjoining or nearby properties, including impacts upon the availability of sunlight, daylight and overshadowing.

We note that it is accepted that the proposals do not overshadow existing properties, by virtue of the distance of the property (greater than 22 metres to the nearest property) and the limited scale of the proposals, being a storey and a half in height. As such the proposals would not provide a detrimental impact to neighbouring properties.

Policy PV7 of the ALDP and Policy 6 of NPF4 seek to protect and enhance woodland, trees and hedges that contribute to the nature conservation, heritage, amenity, townscape or landscape value of the area. NPF4 Policy 22 relates to flood risk and water management and the policy intent is to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. The policy states that development proposals at risk of flooding or in a flood risk area will only be supported if they are for: essential infrastructure where the location is required for operational reasons; water compatible uses; redevelopment of an existing building or site for an equal or less vulnerable use; or redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long term safety and resilience can be secured in accordance with relevant SEPA advice. The ALDP states that the avoidance and mitigation of flood risk in new and existing development will be an important factor in determining development proposals.

Flood risk has been examined at great length and specialist independent hydrological engineering reports confirm that the proposals would not generate additional flood risk. SEPA also confirm within their correspondence that the proposals would not generate additional flood risk and have no objection to the latest revision of the design proposals. Flood concerns for the proposals have been negated and such should not count against a positive determination of the application. We would draw attention to the SEPA comments in this regard as the statutory consultee with jurisdiction of this matter.

The application site is not protected for another use, is located in a predominantly residential area, and residential development would be compatible with surrounding land uses. The principle of developing a site of this nature within a development boundary attracts some support from development plan policy.

As stated above by the Planning Officer, the principle of developing the site for a residential dwelling would be supported within the development plan policy. We would note that whilst the principle is acceptable, our design proposals were also deemed as acceptable, with no concerns raised as to the design of the dwelling. We were informed that the design of the dwelling was considered to be of a high standard, as is evidenced by the 3d visualizations included within the application.

The plot is of an acceptable size given the context of the area and the proposal would generally comply with recommended separation distances provided in council guidance. There is no reason to conclude the new dwelling would result in an unacceptable impact upon the availability of sunlight or daylight to neighbouring properties when assessed against relevant guidance.

We would agree with this statement.

An existing access would be utilised, and parking and waste storage provision would be provided within the site. The roads service has offered no objection to the development in terms of traffic likely to be generated by it and potential impacts upon the road network. The principle of the proposed

water supply and drainage arrangements are acceptable and Scottish Water has offered no objection. A flood risk assessment has been submitted which indicates an area of the site may be at risk from flooding from the Newtyle Burn which runs to the southeast of the site. The application has been amended to relocate the dwelling to a position outwith any area identified as being at risk from flooding. ***Both SEPA and the roads service in its capacity as flood prevention authority, have considered all available information and are satisfied the dwelling would not be at an unacceptable risk from flooding and the proposal would not increase flood risk elsewhere.***

There is no reason to consider that the proposal would adversely impact on infrastructure, having regard to the consultation responses received. In terms of the built and natural environment, the site is within an area with archaeological potential, but the archaeology service has reviewed the proposal and offers no objection.

The site is not within an area designated for natural heritage reasons, but it does contain a large number of mature trees. The submitted information suggests that no trees would require to be felled to accommodate the development (one tree is to be felled due to its condition) and that only a small root area of one tree would be affected by the house foundations. It is suggested that this could be protected during construction and the safeguarding of trees during the construction process could be dealt with by planning condition. ***There is no reasonable basis to conclude that the construction of a house on the site would give rise to unacceptable impact on the built or natural environment.***

We would agree with this statement

There are several aspects of the proposal which are compatible with development plan or could be made compatible subject to relevant planning conditions. However, development plan policy also requires development proposals to provide a good residential environment and level of amenity for prospective occupants of any dwelling, and it also requires development proposals to provide a high quality of design, contributing positively to the character and sense of place of an area and to fit with the character and pattern of development in the area.

In this case, the application site is located adjacent to a watercourse and in an area characterised by large trees that contribute significantly to the character of the village. While the proposed house has been carefully located such that it would not be at unacceptable flood risk, submitted information indicates that a reasonably significant area of the garden ground amounting to around 25-30% of the plot area, would be at flood risk.

The above statement is incorrect. Millard Consulting, hydrological engineers, have modelled the potential flooding scenario for a 1 in 200-year flood event, plus climate change, plus at 75% watercourse blockage – as the worst possible case event. It is a scenario that is modelled as occurring once in 200 years, *with* the addition of a significant theoretical blockage to the watercourse.

Even in this event the dwelling, driveway and external terraces are outwith the notional flood area and as such there could be no reasoning for the installation of temporary measures (as was SEPAs response in their recent confirmation of no objection to the proposals). This worst possible case event has been used within our plan information and plotted on our siteplan drawings. In a 1 in 200 Year flood event, plus climate change, plus 75% blockage scenario, the proposed dwelling and more than 80% of the amenity garden ground (1209m2) has been demonstrated to be outwith any flood risk - regardless of the most extreme notional scenarios. Of the 1530m2 site area only 287m2 of the garden ground, within the unusable banked areas and South East corner would be affected by the 1

in 200 year flood event; 18% of the garden ground, the majority of which is within the embankment area.

In addition, while the proposed house has been carefully positioned to minimise potential impact on existing trees, information submitted with the application demonstrates that most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year. Dappled shade provided by a woodland setting can add to the amenity of a garden area and can be regarded as a desirable feature. However, trees within the site and those close to it are large and have potential to give rise to significant shading.

We would refute the statement that *'most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year'.* Please refer to the images below which illustrate the open nature of the site and the lack of shadowing. We believe the shadow extents have been picked up incorrectly in assessment by assumption that the RPAs (Root Protection Areas) included on the plan drawing reference the canopy size; this is not the case, RPA outlines are not an indicator of canopy size. Had the site been heavily populated by trees we would understand this claim; however, the actuality is a large open site bordered border in areas by tall, narrow pines with a small circumference canopy. We would suggest a site visit in this regard.

As has been extensively covered, within our design statement and correspondence, the trees do not unacceptably shadow amenity spaces. Shadows, by virtue of the sun position, move across the site at different times of the day. The majority of tall trees are positioned on the North elevation (bordering South Street) with some trees positioned to the West. Trees positioned to the North do not cast shadow into the site, rather they cast shadow to the North, by virtue of the sun being in a Southerly direction generally, moving from East to West from morning to afternoon. During the course of the day shadows will be cast into the site, predominantly by the trees located to the West. The line of trees to the West site boundary is a minimum of 28 metres from the dwelling. It could not be stated that these trees will unacceptably shadow the dwelling. Indeed, should the dwelling be bordered by other buildings, as is usually the case, the shadows cast into the site would be far greater. At all times of the day, and year, we have demonstrated that there would be an area of greater than 954m2 which is not within shadow. This figure is considerably in excess of Angus Council requirements for total amenity ground provision for new build dwellings (250m2). Shadows move dynamically; as with all gardens there will be areas that receive more sunlight at different times, our proposals include for different external terrace areas for enjoyment of the property. Should one be in shade in the early morning another area may be used.

Notwithstanding the above, we would draw attention to the following points with regards to trees on the application site:

1. It is of key importance with the climate change crisis that buildings have a degree of shading and solar control. Areas of shade should not be considered as 'bad'. Trees absorb heat through their leaves and provide shade, reducing the overall temperature of the surrounding environment, including the areas near buildings. This helps to combat the heat island effect and lowers the ambient temperature around the home, essential for the comfort of the occupants.
2. Seasonal Shading. Deciduous trees, which lose their leaves in the autumn (seen predominantly on the Western Boundary), are particularly beneficial because they provide shade during the hot summer months to amenity garden ground while allowing sunlight to reach the building in the winter when the leaves have fallen. This seasonal cycle helps

prevent overheating in the summer while taking advantage of solar warmth during the winter.

3. Assessment. New build developments are bordered by other buildings, which are in most cases taller and in all cases denser than trees, the degree of overshadowing would be higher. Had the proposed site been confined by existing neighbouring buildings, as is most often the case, the degree of shadowing would be far greater than the actual site conditions – as a large open site with a tree lined boundary.
4. Privacy and Noise Reduction. The trees to the periphery of the site (and hedgerows) act as natural barriers, offering more privacy from neighbours and reducing noise pollution, creating a quieter, more peaceful environment; as was the desire of our client.
5. Stormwater Management. We have proposed to retain all mature trees in order to absorb rainwater, reducing runoff and further lessening the likelihood of flooding or erosion to the site.
6. Whilst it may not constitute a material consideration in within the Planning policy, it *must* be noted and understood in assessment that it is a matter of personal preference as to whether the resident wishes to live with a view of surrounding trees and a degree of natural shading. In this case the client chose the site to build a dwelling precisely to have a degree of tree cover, to enjoy a natural environment setting and privacy. Many of our client's approach us with the same wish and are averse to recent new build developments which in cases include no mature tree cover or significant natural planting.

In summary, the limited shade from trees bordering the site reduces the direct impact of solar radiation on the building, lowers surrounding temperatures, and can significantly improve comfort levels inside, preventing overheating during hot weather. At all points of the year (and time of day) the area of amenity ground with no shading far exceeds the minimum requirements for useable garden ground (250m2). Notwithstanding the latter, nearly all new build developments are bordered by neighbouring buildings of a scale and mass far greater than boundary trees, thus providing a greater degree of overshadowing. Whilst we understand that assessment on this point is subjective, it is our view that it would not be reasonable to suggest that that the presence of trees on the site in itself offers reasoning for a negative determination.

Above, Images of the site in its current condition, taken following damage from Storm Babet.

The trees that lie outwith but adjacent to the site, particularly those that effectively form a line along the south and southwest boundary, which include trees in the region of 20m in height, would constitute a high hedge in terms of high ledge legislation. With that in mind, guidance provided in the 'Hedge Height and Light Loss' document published in 2005 by the Office of the Deputy Prime Minister (ODPM) would suggest that the trees in that area could be required to be reduced in height if an application was made under high hedge legislation. That may not be the current applicant's intention, but it does indicate that the trees, which are otherwise of importance to the character of the area could be susceptible to future pressure for lopping, topping, or felling.

The above could not be considered a credible point in assessment in our view, particularly relative to the specific circumstances of this of this application. This legislation would apply to *any and all* residential site(s) with trees that lie outwith but adjacent to that site; the same theory could be applied to existing properties on South Street and indeed any number of recently approved Planning Applications for the erection of dwellings within the Angus Council catchment.

The logical conclusion of this argument would be that *all* applications for new dwellings are assessed with a theoretical presumption that a future resident of the dwelling may undertake significant tree works outwith their own site. Clearly this could not be the case as it would lead to the majority of new applications dwellings being assessed with a negative outcome. If, however, this argument is targeted only at this application we would question the validity of the argument and indeed why it should be raised in this instance.

Notwithstanding the above, the key point is that an application would require to be made under high hedge legislation. Any theoretical/potential future works therefore would require to be submitted and assessed by Angus Council Planning, before they were undertaken. As such, the control of the tree height remains with the local authority. We would also remind at this point that the Planning Application is for a modest environmentally focussed eco home, with the intention of being rooted within a natural setting. Whilst we understand not a material consideration, there is no desire from the client to remove the trees, which indeed are a key component of her attraction to the site.

It is also a strong indication that the overshadowing associated with the trees could be regarded as adversely affecting the enjoyment of the domestic property which an occupant of that property could reasonably expect to have. The individual and cumulative impact on amenity associated with potential flood risk to a significant area of the garden ground and the overshadowing of much of the garden area by large trees is such that the proposed plot is not considered to provide a good level of residential amenity and the proposal does not comply with relevant policy in that respect.

Our response is as detailed within the above statements, it is not reasonable in our view to suggest that the trees lining the site would "*adversely affect the enjoyment of the domestic property which an occupant of that property could reasonably expect to have".* Conversely it is the trees lining the site, the sense of tranquillity, of nature and of dappled light which are key drivers in the client's desire for future enjoyment of the site. Notwithstanding, the result area unaffected by shadow is in excess of Angus Council standards for usable amenity ground.

New Build Dwelling
South Street, Newtyle

View 2. Looking North to South Street

New Build Dwelling
South Street, Newtyle

View 4. Looking to living spaces and master bedroom

Above: Visual of proposed garden area and external terrace

Above: Site photograph (October)

Above: Site photograph (October)

It would not be unreasonable to anticipate that occupants of the property might take steps to minimise flood risk to the garden area, and that might include temporary works that would not require planning permission. Such works might increase flood risk elsewhere.

It has been confirmed by SEPA, as the independent specialist regulatory body, that the proposals would not increase flood risk. SEPA have not provided an objection and indeed have explicitly detailed in their statutory response that additional flood risk mitigations would not be required, we would refer to their public response in this regard. We do not believe it a credible statement to suggest that temporary measures to prevent may be adopted when the qualified regulatory body states in defined terms that this is not the case, particularly when that regulatory body has undertaken their own investigations over a 12 month period, with significantly robust theoretical flooding scenarios. Millard Consulting, hydrological engineers, have modelled the potential flooding scenario for a 1 in 200-year flood event, plus climate change, plus at 75% watercourse blockage – as the worst possible case event. It is a scenario that is modelled as occurring once in 200 years, *with* the addition of a theoretical blockage to the watercourse.

Even in this event the dwelling, driveway and external terraces are outwith the notional flood area and as such there could be no reasoning for the installation of temporary measures (as was SEPAs response in their recent confirmation of no objection to the proposals). This worst possible case event has been used within our plan information and plotted on our siteplan drawings. In a 1 in 200 Year flood even, plus climate change, plus 75% blockage scenario, the proposed dwelling and more than 80% of the amenity garden ground (1209m2) has been demonstrated to be outwith any flood risk - regardless of the most extreme notional scenarios.

Similarly, and as discussed above, given the preliminary calculations that have been undertaken using the hedge height and light loss guidance, it is not unreasonable to anticipate that future occupants of the property might seek to have works done to trees within or adjacent to the site to reduce the impact of overshadowing.

As outlined above, such works would first require permission to be granted by the local authority, whom remain in control of the future works could refuse permission at will. We also note that a condition could also be incorporated within the Planning Permission, thus negating any potential concerns.

The submitted tree survey recognises that many of the trees are of significant value and any such work would be likely to have a detrimental impact on the character of the area.

The proposals do not suggest the removal of mature trees, as is evidenced throughout our supporting documents.

The constraints associated with flood risk as well as root protection zones and overshadowing associated with trees limit the developable area of the site and has resulted in amendment to the position of the proposed building during consideration of the application. In particular, the house was initially proposed closer to the burn and therefore further from South Street. However, following revision to address flood risk, the proposed house would now be positioned closer to South Street and it would be visible from the street.

Following the modelling of the worst case scenario, 1 in 200 year flood event, plus climate change, plus 75% watercourse blockage scenario, the footprint of the dwelling was moved marginally further away from the watercourse as a best practice approach, also negating any possible flooding concerns. The footprint of the house in the previous proposals was 6.5m to the burn, the current

proposals are 8.3m to the burn. We consulted the Planning Department at the time of this repositioning and concerns were not relayed to us (as is evidenced in correspondence) with regards to being marginally closer to the street edge.

We would note that the dwelling was not designed to be invisible from South Street; the marginal shift in positioning could not convert the street view from being invisible to visible, rather, it would always have been visible. In having a degree of presence and visibility the dwelling assists to reinforce an edge condition and provides a carefully considered active street frontage. Please refer to the massing visuals attached from the geolocated 3D model illustrating views from the street. As can be seen from these drawings, the proposed dwelling integrates well with the existing context in terms of mass, scale, positioning and high-quality design. It is not of an inappropriate scale nor or of an anomalous positioning. We would also note that the driveway and vehicle access for the house, in this position, were granted Planning Permission in 2024, with the works now complete.

Above: View as proposed from the existing vehicle entrance at 33 South Street. Top of roof visible, reflective of other neighbouring properties in the street in terms of massing and orientation.

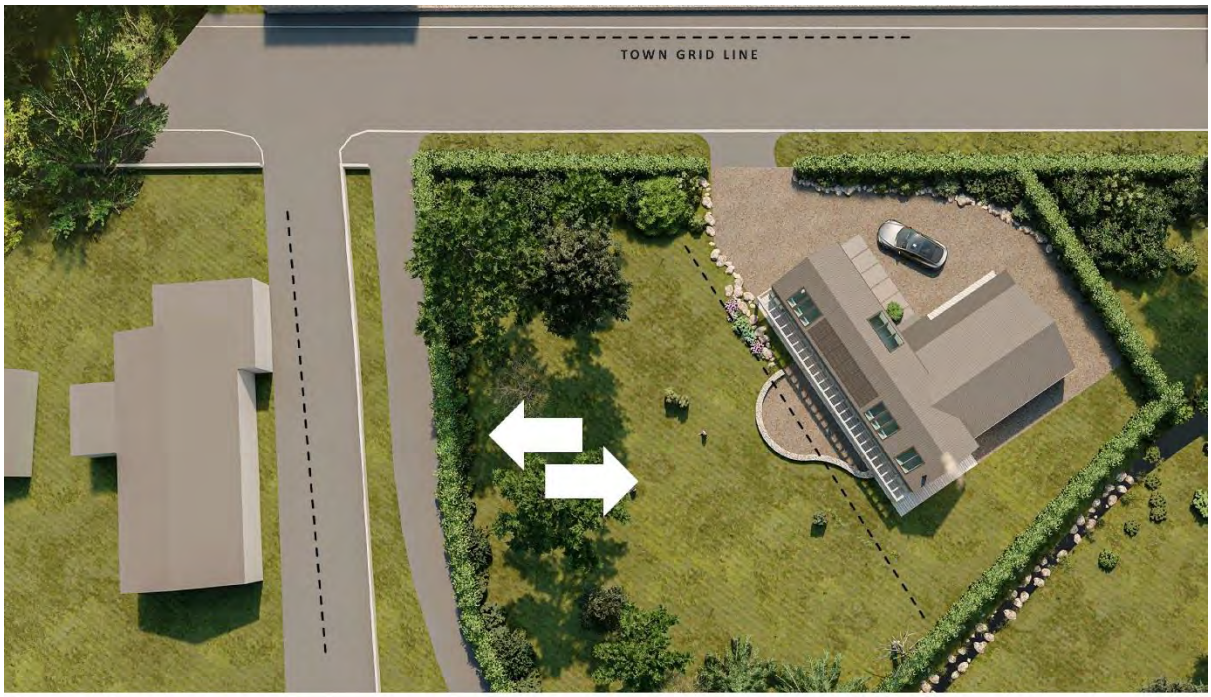
Above: View as proposed from the from 26 South Street. Massing can be clearly read with neighbouring number 29a. The house is set back from the street by an appropriate distance to allow privacy and reflective of the pattern of development of the area.

Above: View as proposed opposite new vehicle entrance. A modest ecologically sensitive home on this site would allow the required ongoing maintenance of the site, ensuring a positive character to the immediate locale, as attractive, maintained gardens- rather than overgrown scrubland (and the issues with littering/flytipping/loitering and security that would entail).

The L-shaped plan and orientation of the proposed building would be such that both ridges of the roof would be set an angle relative to the carriageway of South Street. However, Newtyle is a planned village, and it generally follows a rigid grid iron street pattern. Buildings are typically orientated such that their ridges run parallel or at right angles to the adjacent streets.

Please refer to the Nolli Plan and pattern of development diagrams provided. Newtyle has developed organically over a long period of time, with many houses and streets which do not conform to a rigid grid pattern, providing a degree of variety and richness of identity. Since 2021 (the time of submission of the Planning Application) WPA have not received any comment with regards to orientation from the Planning Department or the L shaped plan. The proposals have been orientated to align exactly with the existing house at Burnbank and with a roof pitch format matching that of the neighbouring 291. The proposed dwelling also aligns with the watercourse. The orientation and plan of the house has been carefully considered to allow a degree of privacy to the buildings adjacent, whilst establishing a compact and well-integrated driveway (Planning Permission has been previously granted for this); consequently the main entrance is in view from the public facing elevation, yet a degree of privacy is maintained to the public areas to the South. These moves assist in screening and softening the visual appearance of the dwelling, already modest in scale and form. Please refer also to the proposed street view visualizations below. The proposed dwelling is set back from the road by 8.4m, which is exactly comparable to the neighbouring property of 29a, set back by 8.4 metres.

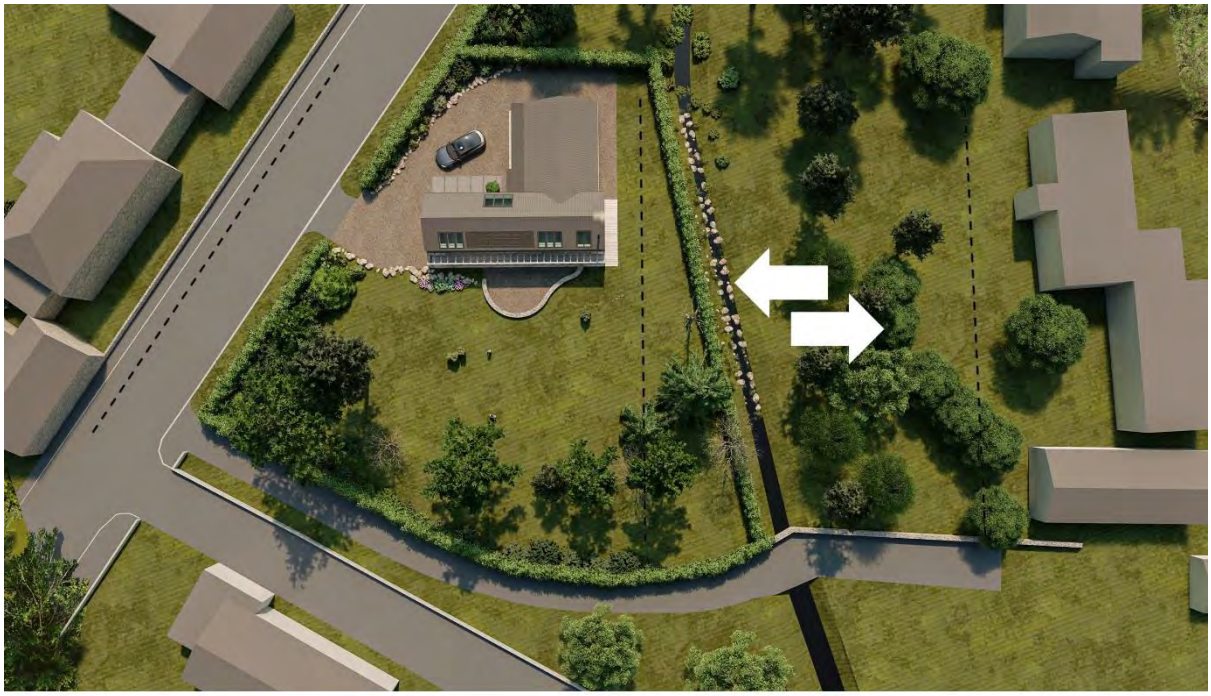
As can be seen from the diagrams, the dwelling fits with the pattern of development in the area and is clearly read with the existing building of Burnbank and screened by hedgerows.



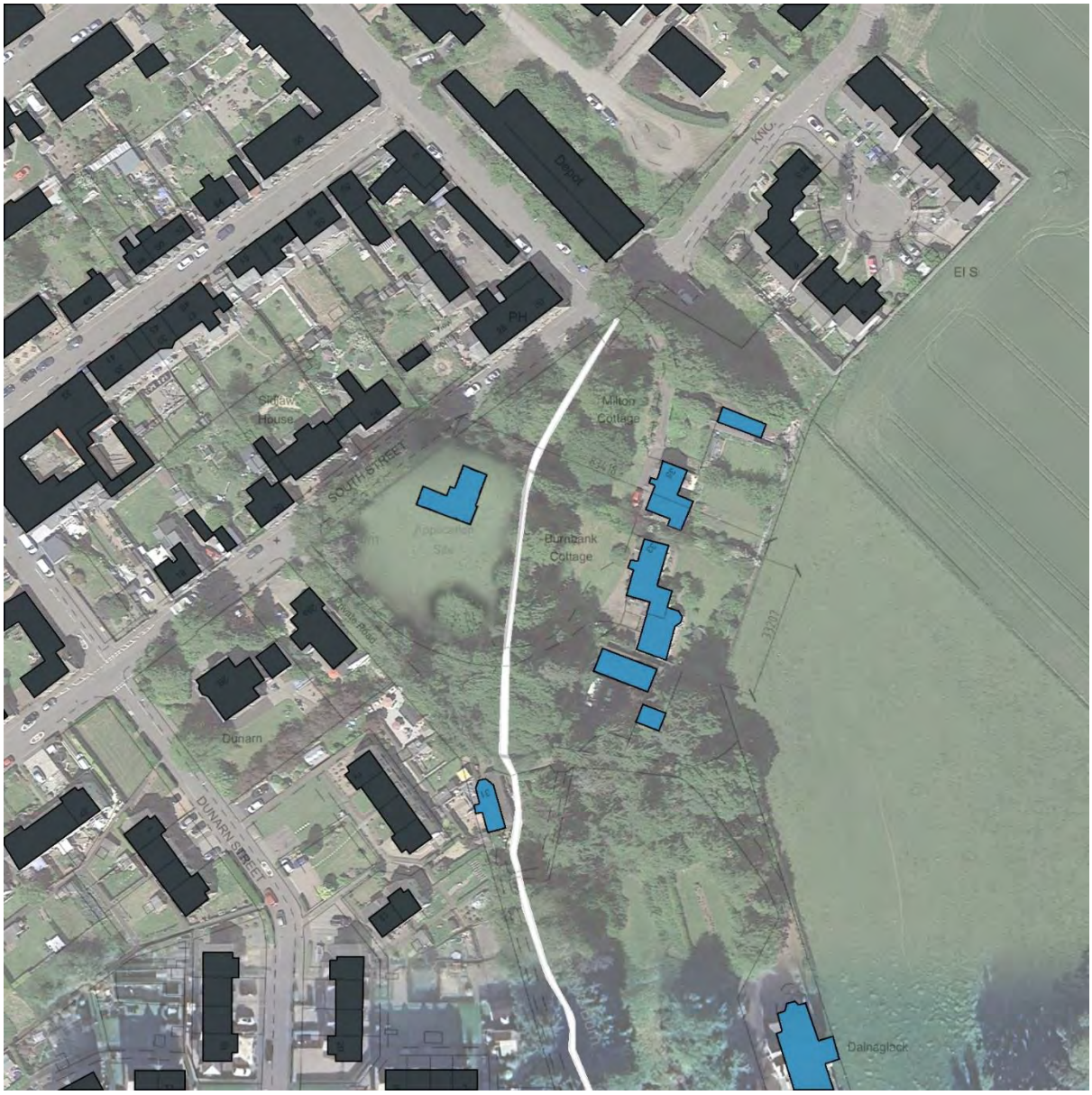
Above: Diagram illustrates the orientation and distance from the street edge relative to the neighbouring property of 29a. It is this property, on this side of the street, which the proposals will be read with. It is our view that this is very much in-keeping with the pattern of development in the area.

While existing properties at Burnbank and Milton depart from that pattern, they are set back from South Street by significant distance and landscape planting reduces their visibility from the street.

The current sizeable and undeveloped garden areas associated with those properties that sit adjacent to South Street add to the character and appearance of the area. The orientation of the proposed building relative to the street would depart markedly from the character of the area, and development of the existing woodland garden area would erode the chatter and established pattern of development in the area.



Above: Diagram illustrates the orientation and distance from the street edge relative and neighbouring properties. The proposals read in alignment with both the existing properties to the South East (Burnbank) and neighbouring 29a. The footprint of the house is directly comparable to near all houses lining South Street.



Above: Nolli Plan illustrates that the pattern of development is not confined to a strict grid arrangement and that the proposals offer a continuation of the South side of South Street.

As per our responses above (and drawings illustrate) the proposed dwelling is positioned back from the road by some 8.4 metres and of a type and scale matching existing properties to South Street. South Street has a mix of roof pitch orientations along the length of the street. It is our view that it could not be reasonably stated to be 'marked departure' from the character of the area, as has been demonstrated. That the proposed footprint follows the angle of the nearest property (and the one to which it will be read with, being on the same side of the street) we do not feel to be a valid reason for a negative determination of the Planning Application, particularly when the difference in angle to other neighbouring properties is slight, as can be seen throughout the village.

Case 1 – Dundee Road

Dundee Road and South Street, in close proximity to the application site. Many of the existing houses are angled from the street edge whilst the street does not follow a grid form. The dwellings are set back from the street in order to provide a degree of parking and privacy, the degree to which they are set back is comparable to the proposals presented here.

Case 2

Dunarn Street, some 250m from the application site. The majority of the houses do not follow a grid from and many are not aligned to the street edge; the pattern of development illustrates a rich sense of variety and layering, establishing an identity and sense of place, rather than adhering to a notional arbitrary grid form.

Case 3

Kinpurnie Gardens – recently constructed new build development. This recently approved development, some 200 metres from the application site does not conform to any suggested rigid grid plan form, similarly the dwellings are not aligned in the majority of cases perpendicular to the street edge. In our view it could not be reasonably stated that the proposals presented here deviate from the pattern of development or character of the area

Case 4

Bulb Farm Road and Commercial Street, some 300-350m from the application site. Again, buildings are not aligned to the street edge, have L Shaped plan forms and are set back some distance from the street edge for privacy and accommodation of car parking.

Case 5

Smiddy Road, some 250-300m from the application site. The street does not conform to a rigid grid pattern and all nearly all houses vary to a degree in orientation from the street edge, as opposed to an estate type grid pattern; again, a degree of identity, character and interest is generated, with a reading of historical layering.

It would not respect and respond to the local context where this makes a positive contribution to the existing character of the area and it would not integrate with the surrounding development pattern as required by the council's design guidance. The proposal is not compatible with relevant development plan design policies. In addition, Newtyle is in a rural area as defined by the Scottish Government's Urban Rural Classification 2020. As such policy 17 of NPF4 is relevant to determination of the application. It requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. The application is not consistent with that requirement for the reasons set out above.

We have demonstrated, at considerable length, that the proposals would are suitably scaled, sited and designed to be in keeping with the character of the area

1. Scale. The proposed footprint of the building is 141m2.

The footprint of neighbouring buildings (measured from OS Data) is as follows:

- Number 29 – 168 m2
- Number 24 – 148 m2
- Number 26 – 142 m2
- Number 20- 130m2
- Number 29 – 155 m2
- Number 18 – 135m2

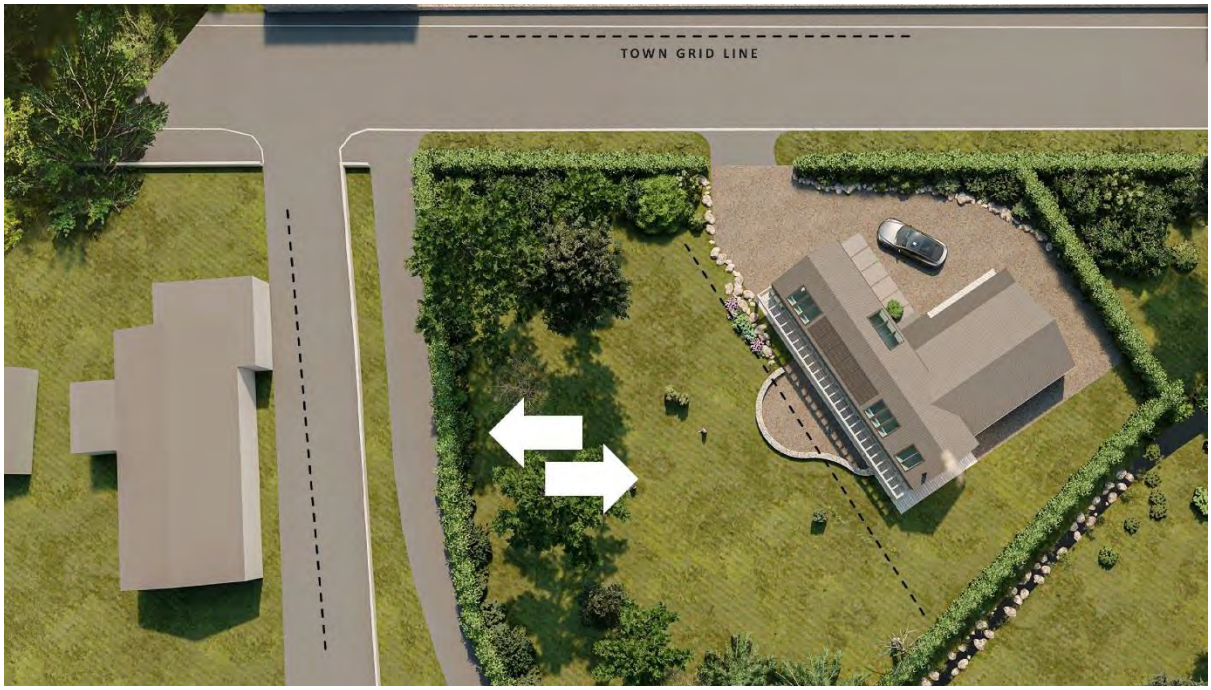
Weighted average (878 / 6) – 146m2. The proposed footprint is of a scale exactly matching the pattern of development of neighbouring properties and immediate locale and could not be reasonably stated to be otherwise.

2. Massing / form. The form of the dwelling is of a modest storey and a half scale, with the highest ridge point 6.8 metres from adjacent ground level, the same massing as all other storey and a half properties lining South Street. There are also a number of 2 storey properties lining the street, however the majority are of one and a half storeys. The massing is therefore exactly comparable to nearly every existing dwelling on the street and could not be stated to be inappropriate.

3. Design. The design of the proposals is of a high quality, considered form of the Scottish vernacular, with a classic pitched roof and L shaped building form seen throughout the village and indeed across the Angus area. None of the form(s), design language or proportioning is at odds with what is seen within the immediate area. The design is bespoke, carefully considered to capture views to areas of the garden, ensure privacy to bedrooms and capitalise on South sunlight, with private external terraced areas. It has been designed exactly and only for this site.

   We have received no compliant or concern with the architectural design of the proposals during the course of the application from the Planning Officer, we were informed that the architectural design was of a high quality and a point of concern. The materials are natural, of a high quality and as seen thought the immediate area; the design has been constructed to be comprehensively appropriate to the rural setting and we would robustly challenge an argument to the contrary, seeking evidence as to how that could be the case.

   The appearance of the building is of a restrained pallete of materials – natural stone, natural timber, and standing seam slate coloured metal cladding; it is of a modest scale and comprehensively rooted within its specific setting. The design uses materials, massing, scale, architectural forms and detailing as seen within the immediate area; as such we would request the assessment in this regard is reconsidered.



While the proposal is compatible with some aspects of development plan policy, it is not consistent with those that require a new house to provide a good living environment, or with those aspects that require it to be in keeping and contribute positively to the character and sense of place of the area. In overall terms, the proposal is contrary to the development plan. In addition to development plan policy, it is necessary to have regard to other material considerations. In this case those are the information submitted in support of the application, and the comments submitted both in support of and in objection to the proposal. The information submitted in support of the application has been considered and taken into account in the assessment set out above. While that information suggests that the proposal complies with relevant policy, that position is not supported for the reasons set out above. There is nothing in the supporting information that justifies approval of the application in circumstances where it is contrary to development plan policy.

Throughout the course of the application determination process, since 2021, requests have been made by the Planning Department for additional information from ourselves and various consultants in order to provide additional information to demonstrate compliance with policy. We have, in every case, actioned the requests for additional information and in cases provided significantly extensive reports to demonstrate this compliance. In each of these cases we have appropriately and empirically demonstrated compliance; consequently, we would refute that the proposals are contrary to development plan policy and would argue that it has been evidenced as such.

The representations submitted in support of the application are noted. However, for the reasons set out above it is concluded that the proposal is contrary to development plan policy. The identity of the applicant and whether they intend to live in the property as a long-term residence is not a material consideration. The representations submitted in objection to the proposal support refusal of the application in so far as they raise concern regarding conflict with the character and pattern of development in the area, and the quality of the residential environment that would be created due to flood risk and overshadowing from trees. However, it is relevant to note that while there may be other areas in Newtyle allocated for residential development, that does not preclude the grant of permission for additional small-scale residential development. Lack of historic or future maintenance

of the existing trees or the Newtyle Burn is not a matter material to the consideration of this application. The information submitted in support of the application is considered adequate to allow proper determination of the application. Neighbour notification has been undertaken in accordance with relevant statutory requirements. In conclusion, while aspects of the proposal attract some support from the development plan, the erection of a dwelling on the site in the manner proposed does not comply with the policies of the development plan for the reasons set out above. It would not be in keeping and contribute positively to the character and sense of place of the area and it would not provide a good living environment as its garden area would be subject to flood risk and significant overshadowing from trees that are otherwise important to the townscape of the area. Account has been had for all information and representations submitted both in support of and in objection to the proposal. However, the application is contrary to the development plan and there are no material considerations which justify approval of planning permission contrary to the provisions of the development plan.

In conclusion, we strongly believe that the proposal aligns with the development plan and has demonstrated compliance with all relevant policies, as evidenced by our extensive supporting documentation and consistent cooperation with requests from the Planning Department and statutory consultees. The design of the dwelling respects the character and scale of the surrounding area, with careful consideration given to both the architectural design and the site's specific conditions. The dwelling's footprint, massing, and material choices are in keeping with the character and nature of the locale and existing development pattern of development. The positioning of the house and driveway addresses both flood risk and privacy concerns.

Furthermore, we have provided robust evidence confirming that the proposed development will not increase flood risk, with independent hydrological modelling and extensive investigation. The proposed home has been designed to blend harmoniously into the community, contributing positively to its character and providing an attractive, well-maintained garden that complements the existing landscape.

ITEM 6

Scottish Environment Protection Agency
Buidheann Dìon Àrainneachd na h-Alba

James Wright
Planning Department
Angus Council

By email only to:
PLNProcessing@angus.gov.uk

Our Ref: PCS-20003388
Your Ref: 21/01000/FULL

SEPA Email Contact:
planning.south@sepa.org.uk

05 November 2024

Dear James Wright

Town and Country Planning (Scotland) Acts
21/01000/FULL
Erection of Dwellinghouse Garden Ground
Burnbank 33 South Street Newtyle Blairgowrie PH12 8UQ

Thank you for your consultation which was received by SEPA on 21 October 2024 in relation to the above application. We understand the reason for consultation is flood risk.

Advice for the planning authority

We are now in a position to **withdraw our objection** to the proposed development on flood risk grounds. Please note our advice provided below.

1. Flood risk advice

1.1 In line with National Planning Framework 4 (Policy 22), a precautionary approach to flood risk should be taken by avoiding development within areas at risk of flooding

Chair
Lisa Tennant

CEO
Nicole Paterson

SEPA
Unit 6
4 Parklands Avenue
Holytown
Motherwell
ML1 4WQ

Tel: 03000 99 66 99
www.sepa.org.uk

(land or built form with an annual probability of being flooded of greater than 0.5% which must include an appropriate allowance for future climate change).

1.2 The revised site plans submitted by the applicant (Drawing No. 2039/PA/003) show that the development is now located outwith the flood risk area, shown in Figure 4 of the Flood Risk Assessment, as requested in our previous response. We are therefore able to **withdraw our objection** to the proposed development on grounds of flood risk.

1.3 We note that the revised elevation drawings (Drawing No. 2039-PA-05) show the proposed building fitted with removable flood gates and a private flood warning system installed on the Newtyle Burn. It is unclear why these measures are necessary given that the building has been shown to be outwith the flood risk area. We suggest that the local planning authority review the revised plans and determine if they deem it appropriate for a new dwelling to be constructed with measures which anticipate flooding of the building.

1.4 We advise that there is still space available in the red line boundary which lies further from the flood risk area than the position of the proposed property in the revised plans, and therefore the building could be distanced even further from potential flood risk if desired. Additionally, as the proposed building now lies outwith the flood risk area, landraising of the property would be possible, and may provide more reliable protection than the proposed removable barriers.

2. Other planning matters

2.1 For all other planning matters, please see our triage framework and standing advice which are available on our website: www.sepa.org.uk/environment/land/planning/

Advice for the applicant

3. Regulatory advice

3.1 Details of regulatory requirements and good practice advice, for example in relation to private drainage, can be found on the regulations section of our website. If you are unable to find the advice you need for a specific regulatory matter, please contact a

member of the local compliance team at FAD@sepa.org.uk

If you have queries relating to this letter, please contact us at planning.south@sepa.org.uk including our reference number in the email subject.

Yours sincerely
Jessica Taylor
Senior Planning Officer
Planning Service

Ecopy to: [redacted]

Disclaimer: This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at this time. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning or similar application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application or similar application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. For planning applications, if you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found on our website planning pages - www.sepa.org.uk/environment/land/planning/

Millard Consulting – Dundee Office
www.millardconsulting.co.uk

Planning Consultation Response
Flood Risk – Burnbank, Newtyle

Ref: Application 21/01000/FULL

Date: 22nd August 2024

Subject: Burnbank, Newtyle – Response to SEPA comments dated 17th May 2024

This statement addresses comments received from SEPA in relation to flood risk for the above planning application, dated 17th May 2024. Each relevant section of the Planning Consultation is copied below in *italics*, followed with the Design Team's response.

SEPA Comment

"We require the topographic survey undertaken in preparation for the FRA, clearly showing elevations across the site and the opposite bank, to demonstrate that the site of the proposed development is elevated above potential flood risk. Further photographs showing the site of the proposed development and its relation to the burn would also be helpful to build a greater picture of the ground conditions at the site."

Response

The topographical survey of the site and surrounding area is included on drawing 18518/21/002, attached. The survey was undertaken by Douglas Land Surveys. Additional photographs of the site are shown overleaf. We do not hold photographs of the Newtyle Burn within the grounds of Dalnaglack upstream of the site as we did not have access to the land.

Photograph A – Looking north west, approximately from the location of cross section Newtyle_012. The site is situated beyond the green, timber fence in the centre right of the picture.

Photograph B – Taken from approximately the location of cross section Newtyle_012, looking north east along the boundary between Burnbank and Dalnaglack.

Photograph C – A further photograph looking north east along the boundary between Burnbank and Dalnaglack, taken from a similar location to Photograph B.

Photograph D – Looking north east along the north western boundary of the site. The Newtyle Burn is located just beyond the timber fence in the top right of the picture.

SEPA Comment

"We request that blockage scenarios be run for the culverts and bridge on the site. We hold records of significant flooding in other areas where blockages have been the main cause and it is recommended that a range of blockage scenarios be tested, these being: 25%, 50% and 75% blockages. In the event the upstream culvert is blocked, it may cause water to take a pathway which causes inundation of the proposed development. Additionally, we request that a 100% blockage scenario be modelled on the downstream culvert, owing to its small aperture, length, and potentially significant consequences of a blockage here."

Response

Our modelling analysis shows that with 75% blockages of the bridge and culvert upstream of the site (at nodes Newtyle012.5 and Newtyle_010) additional floodwater would leave the watercourse, however this would not impact the footprint of the proposed house when no boundary wall is modelled. The predicted 2D flood extents for 75% blockages at the aforementioned structures, modelled independently, are shown in Figures 1 and 2 overleaf.

Figure 1 – Predicted 2D 200yr + CC flood extents including a 75% blockage of the bridge providing vehicular access to Burnbank (node Newtyle_010) (MB Error at peak 1D = -0.41%, 2D = -0.7%)

Figure 2 - Predicted 2D 200yr + CC flood extents including a 75% blockage of the culvert running beneath the driveway of Dalnaglack (node Newtyle012.5) (MB Error at peak 1D = -0.51%, 2D = -0.1%)

With respect to the downstream culvert, it has not been included in the model, however a water surface level provided at the downstream end of the model (at the location of the culvert inlet) assumes floodwater is exceeding the capacity of the culvert and flowing overland in a north easterly direction. The relief level of ground above the inlet to the long culvert is approximately 82.8m, 1m lower than the lowest existing ground level across the footprint of the proposed house.

SEPA Comment

"The model treated the drystone wall on the site as porous and having no bearing on flood water, but past flood events have demonstrated that drystone walls can restrict flows and collapse, leading to rapid downstream inundation. As such, we request that differing scenarios of porosity and collapse are modelled, in a similar manner to the above blockage scenarios, to assess the impact of the drystone wall on flooding at the site."

Response

Given existing ground levels upstream of the drystone wall are lower on the right bank of the watercourse at the upstream end of the culvert running beneath Dalnaglack driveway, and as borne out by the hydraulic model, flood flows exceeding the capacity of the culvert running beneath the drystone wall are predicted to flow in an easterly/north easterly direction, beyond the right bank of the watercourse. Should a collapse of the wall on this side of the watercourse (to the east) occur, floodwater would return to the watercourse rather than flowing across the site. Existing ground levels to the east of the watercourse, within the grounds of Dalnaglack, gradually reduce down to the north eastern corner of the property. At its lowest, the garden ground of Dalnaglack, behind the drystone wall sits at a level of 85.7m, approximately 1.2m lower than the level water would need to reach to flow down the driveway of Dalnaglack towards South Street. Any collapse would therefore be more likely to the east of the watercourse where floodwater could potentially build up behind the wall.

A "porosity" cannot be applied to the wall in the model, however we can model solid sections and open sections. When modelling 50% and 75% of the wall to the east of the watercourse as solid, no floodwater was predicted to flow along the driveway of Dalnaglack. The maximum predicted flood extent for the 75% solid model is shown in Figure 3, overleaf.

Please not the global roughness value applied in the 2D model was reduced to 0.06 where the wall was modelled with partial impermeability, as the previously applied roughness of 0.1 was artificially high in an attempt to recreate additional roughness provided by the wall itself.

Figure 3 - Predicted 2D 200yr + CC flood extents including 75% of the boundary wall to the east of the watercourse being modelled as solid (MB Error at peak 1D = -0.3%, 2D = -0.7%)

The above output was modelled with no blockage in any structures on the watercourse.

In the instance that the wall withstood floodwater building behind it, and impeded flow to an extent whereby floodwater could flow along the driveway of Dalnaglack, towards South Street, the majority of flow would be expected to flow onto South Street. It is however accepted that a limited flow could potentially, in that scenario, penetrate the wall running between the driveway of Dalnaglack and the grounds of Burnbank, and flow towards the site. Any flow in this situation would be shallow, and hence suitably formed ground levels would ensure the return of overland flow into the Newtyle Burn and would occur pre-development. The proposed finished floor level for the new house is 85.3m, approximately 0.6m above the highest existing ground level around the footprint of the proposed house, while finished ground levels along the south western side of the proposed property will be no lower than 85m, providing a minimum upstand of approximately 0.3m from existing ground levels.

A model run of the extreme scenario whereby the culvert running beneath the driveway of Dalnaglack is blocked by 75%, and the boundary wall to the east of the Newtyle Burn is 75% impermeable has been run. The predicted flood extents from the 2D domain are shown in Figure 4 overleaf. As can be seen flooding, as would be expected, is shown within the site, however it is predicted to be very shallow generally (less than 0.05m).

Figure 4 - Predicted 2D 200yr + CC flood extents including 75% of the boundary wall to the east of the watercourse being modelled as solid, and a 75% blockage in the culvert running beneath the driveway of Dalnaglack (MB Error at peak 1D = -0.49%, 2D = 2.2%). Final MB figure in 1D zzd file = 2.83% - please see 1D mass balance summary from zzd file overleaf. Final 2D MB figure = 4.37% - please see 2D mass balance summary overleaf.

```
**************************************************

Simulation time elapsed (s):          436

run completed

 Number of unconverged timestops:          6
 Proportion of simulation unconverged:   0.02%

 ********* Mass balance summary *********
 Mass balance calculated every    300.0s

 Initial volume:            103.046    m3
 Final volume:              509.148    m3
----------------------
 Total boundary inflow  :   6479.9     m3
 Total boundary outflow :   6383.5     m3
 Total lat. link inflow :   4866.0     m3
 Total lat. link outflow:   4914.6     m3
----------------------
 Max. system volume:        702.080    m3
 Max. |volume| increase:    599.042    m3
 Max. boundary inflow:      6.4464     m3/s
 Max. boundary outflow:     6.5914     m3/s
----------------------
 Net increase in volume:    406.102    m3
 Net inflow volume:         386.262    m3
 Volume discrepancy:       -19.8406    m3
 Mass balance error:          2.83% (of peak system volume)
 Mass balance error [2]:      0.02% (of boundary inflow volume)

 ******* End mass balance summary *******
```

Figure 5 – 1D mass balance summary from zzd file for model run for 75% blockage of Dalnaglack drivewa culvert, and 75% of wall to the east of the watercourse modelled as being solid. 5.5hr run duration.

```
Maximum Courant number:2.7
Wet cell count:
   Total number of cells wetted:       4299
   Maximum number of wet cells :       4216 at time       4.07hr
   Final number of wet cells   :       3151
   Final mass error            :       3.73%
Volumes:
   Maximum volume :  595.156    m3 at time       3.98hr
   Final volume   :  322.822    m3
Vertical/horizontal extents:
   Bounding rectangle : ( 329901.56, 741140.69), ( 330007.56, 741321.69)
   Wet bounding cells : 17.84% (154 out of          863   )

------------------------------------------------------------------------

Entire Model Volume Summary:
                        1D RIVER          2D        Combined
  Initial volume (m3):    103.046       0.136490E-01    103.059
    Final volume (m3):    522.922        442.227        965.150
 Boundary inflow (m3):    872.934       -70.6626        802.271
   Linked inflow (m3):   -486.664        490.661        3.99701

 Combined volume error (m3):   59.8195
    Combined mass error (%):          4.37%
------------------------------------------------------------------------
```

Figure 6 - 2D mass balance summary from zzd file for model run for 75% blockage of Dalnaglack drivewa culvert, and 75% of wall to the east of the watercourse modelled as being solid. 5.5hr run duration.

Figure 7 below shows the same flood extent as Figure 4, with the proposed house location overlain:

Figure 4 - Predicted 2D 200yr + CC flood extents including 75% of the boundary wall to the east of the watercourse being modelled as solid, and a 75% blockage in the culvert running beneath the driveway of Dalnaglack, with proposed house location overlain.

The above figure shows that with a 75% blockage of the culvert running beneath the driveway of Dalnaglack, and 75% of the wall to the east of the Newtyle Burn being modelled as solid, floodwater could flow into the site. As part of the proposal the house floor level will however be set higher than existing ground, at a level of 85.3m AOD. This level is 0.6m above the existing ground level in the vicinity of the south western corner of the house, and approximately 1m above the existing ground level in the vicinity of the south western corner of the house. Finished ground levels along the south western side of the house will be set no lower than 85m AOD.

Figure 7, overleaf shows the predicted flood extents from the 2D model domain for the 1 in 200 year + climate change flood extents with a 25% blockage of the culvert running beneath the driveway of Dalnaglack, and 50% of the boundary wall to the east of the watercourse being modelled as solid.

Figure 7 – Predicted 2D 200yr + CC flood extents including 50% of the boundary wall to the east of the watercourse being modelled as solid, and a 25% blockage in the culvert running beneath the driveway of Dalnaglack (MB Error at peak 1D = -0.24%, 2D = 0.5%)

SEPA Comment

"The FRA also includes multiple flood extents which appear to differ in the area of inundation shown for 1 in 200-year plus climate change events (i.e. Figure 7 output compared to that shown in Appendix: Plans). Please could the correct flood extent output be confirmed. The flood output extents within the report (Figures 7, 8, 9, 10 and 11) also seem to be shifted to the east of the channel – we request confirmation if this is a georeferencing discrepancy between the output and the displayed extent."

Response

Drawing 18518/21/001 shows the full 1 in 200 year + climate change flood extent. The figures in the report show the 2D extents only.

SEPA Comment

"We require the proposed location of the proposed building overlaid onto a map showing the modelled flood extents. The proposed building must be outside of the flood risk area."

Response

Please see drawing 18518/21/002, attached, which shows the predicted 1 in 200 year + climate change flood extents from the original flood risk assessment report with the proposed house location overlain.

SEPA Comment

"We note that some of the flood outputs have mass balance values of greater than ±1%. This falls outside of our normally accepted error range and so requires further clarification. We require model diagnostics such as zzd info, warnings, outputs from key cross sections such as stage plots etc."

Response

From the updated runs undertaken as part of this response, only one has mass balance errors at the peak of the event, with a variance larger than 1%. This was for the most extreme scenario whereby the wall to the east of the watercourse is modelled 75% solid, and the culvert running beneath the driveway of Dalnaglack is blocked by 75%. Additional mass balance information for this run is provided in Figures 5 and 6, and stage plots for cross sections Newtyle_006 to Newtyle_014 are enclosed.

SEPA Comment

"We require a clear summary of the modelling numerical outputs, preferably in tabular format, of the modelled velocities, Froude numbers and stage ratings to ensure that the modelled water levels have not been underestimated. Providing such outputs is standard practice and outlined in SEPA's Technical Flood Risk Guidance."

Response

Please find enclosed modelling summaries for the following model runs:

- baseline 200yr + CC scenario with no blockages or wall
- 75% blockage at 12.5 and 75% of wall to the east of the watercourse impermeable

Summary

A porosity cannot be applied to the boundary wall, hence we have modelled it partially solid. The results demonstrate that with a large blockage of the culvert running beneath the driveway of Dalnaglack and high impermeability of the wall, floodwater could flow along the driveway of Dalnaglack. It's important to note however that the scenario whereby the culvert running beneath the driveway of Dalnaglack is 25% blocked and the boundary wall to the east of the watercourse is modelled as being 50% solid, does not predict any floodwater flowing along the driveway of Dalnaglack and through the site.

When modelling a high impermeability to the boundary wall, shallow floodwater could flow along driveway of Dalnaglack. This is not unexpected given it would have no other route to flow. Should this occur and floodwater entered the site, the flow would be very shallow.

During a flood event floodwater would firstly overtop the right bank of the Newtyle Burn and flow in a north easterly direction. If floodwater did build up behind the boundary wall, this would be most significant in the northern corner of Dalnaglack, and hence should there be a collapse of the wall, it is expected that this would be the most likely location. Should a wall collapse occur in this location, floodwater would flow through the grounds of Burnbank and back into the Newtyle Burn.

Considering all the information, we would suggest its reasonable to conclude the site is not within the 1 in 200 year + climate change flood extent of the Newtyle Burn. It can be said however that proposed levels are such that should any shallow overland flow enter the site, the proposed upstand from adjacent ground to the floor level of the building would mean the house itself is not predicted to flood, with overland flow returning to the Newtyle Burn.

Enc

Drawing 18518/21/002 Predicted 1 in 200yr + CC flood extent with proposed house location overlain

Stage Time Series Plots for 75% blockage of Dalnaglack driveway culvert and boundary wall 75% solid

Modelling summary output

Drawing 18518/21/002

Predicted 1 in 200yr + CC flood extent with proposed house location overlain

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3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.

LEGEND:

– PREDICTED 1 IN 200YR + CC FLOOD EXTENTS

REV	AMENDMENT DETAILS	DRAWN	APPROVED	DATE

PROJECT: BURNBANK, NEWTYLE, ANGUS	DESIGNED BY	DRAWN BY: ASB	SCALE: 1:500
	CHECKED BY	APPROVED BY	
DRAWING TITLE: PREDICTED 1 IN 200YR + CC FLOOD EXTENT WITH PROPOSED HOUSE LOCATION OVERLAIN	DRAWING STATUS		DATE: 22.08.24
CLIENT: MS M JEMICZ	DRAWING NUMBER: 18518/21/002		REVISION

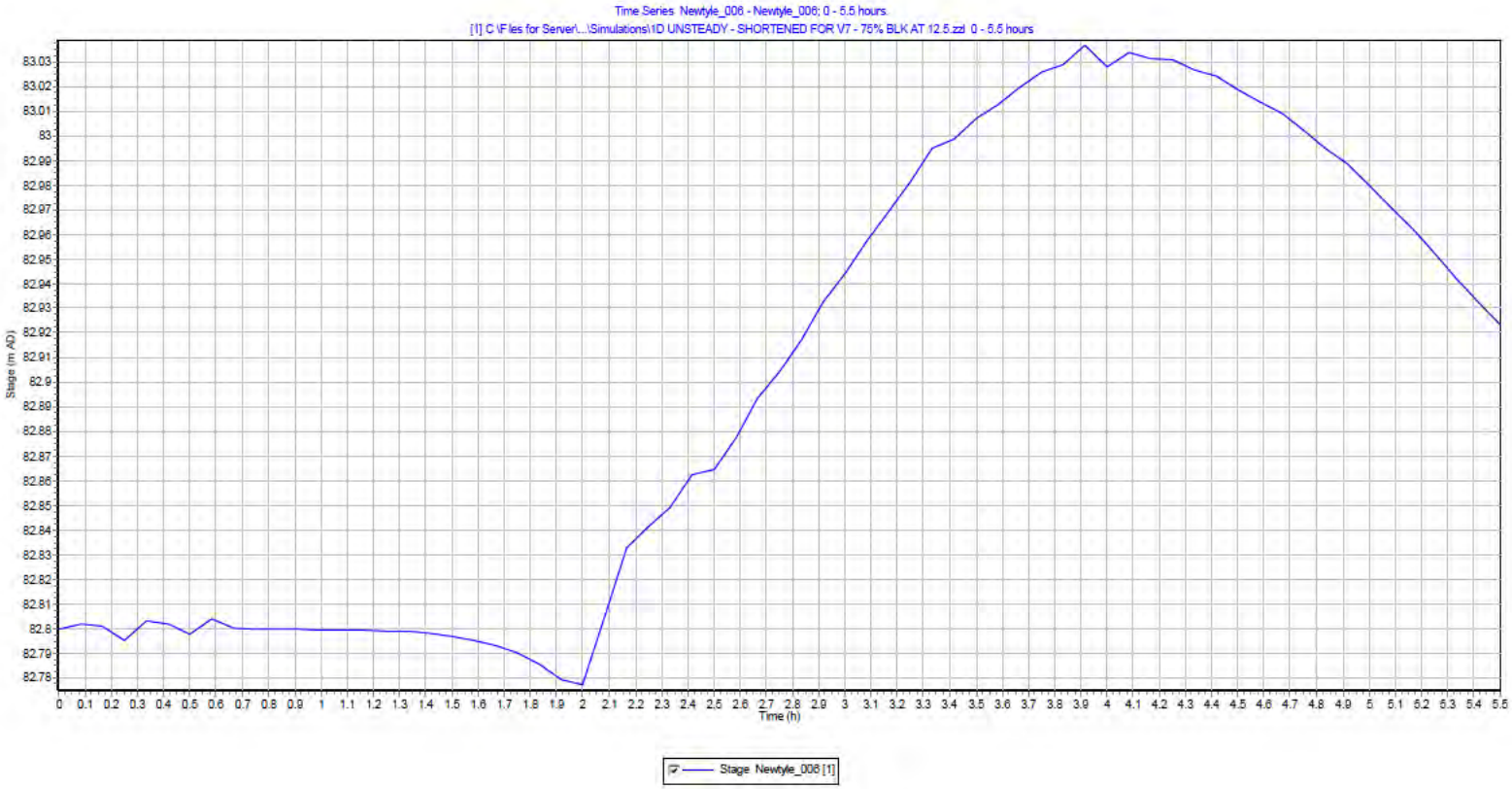
Dundee Office
Seabraes
18 Greenmarket
Dundee
DD1 4QB

tel: 01382 227380
email: dundee@millardconsulting.co.uk
web: millardconsulting.co.uk

Millard
More than civil engineers

Stage Time Series Plots

Model Scenario – 75% blockage of Dalnaglack driveway culvert and boundary wall 75% solid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Time (h)
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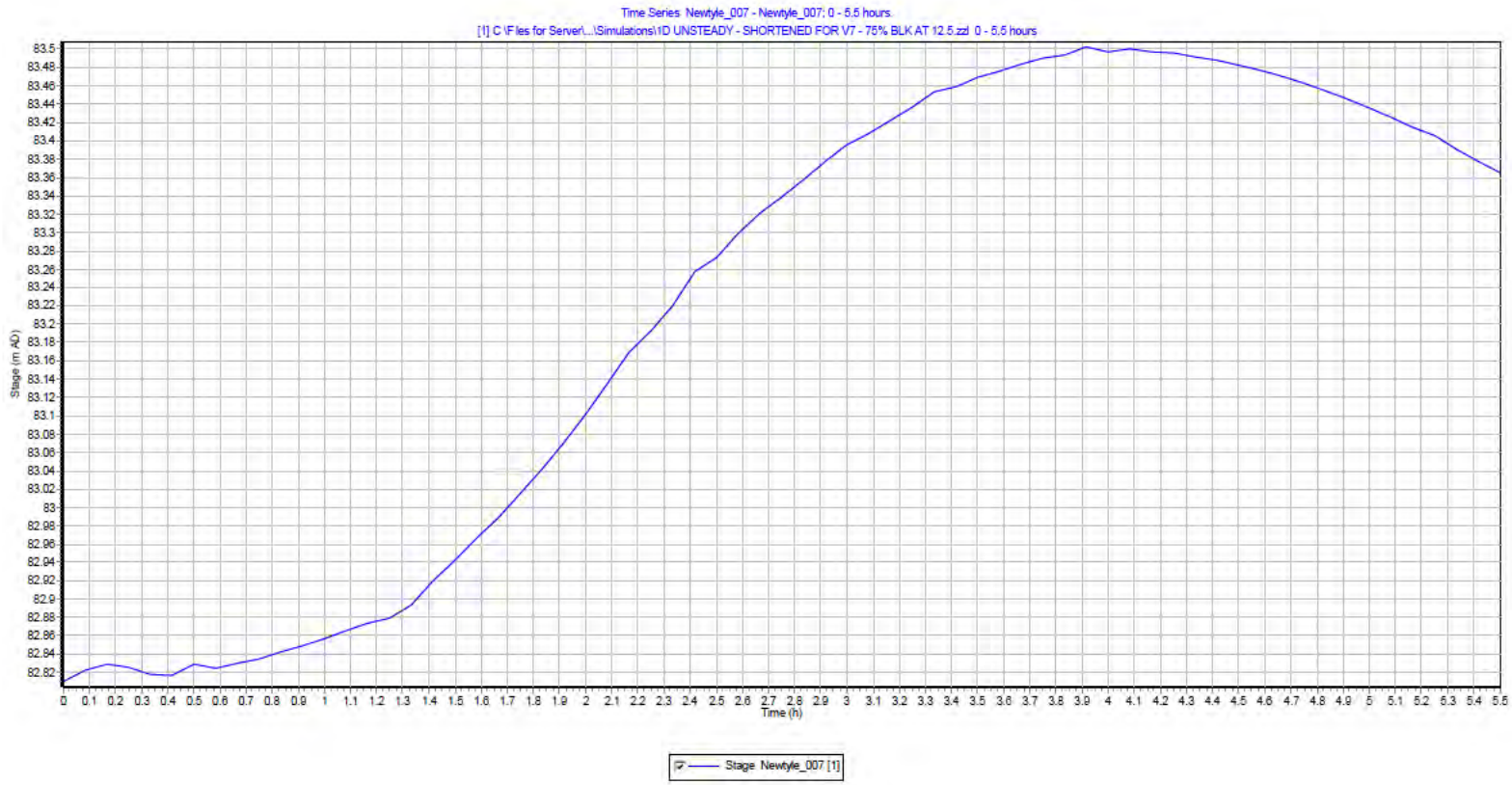
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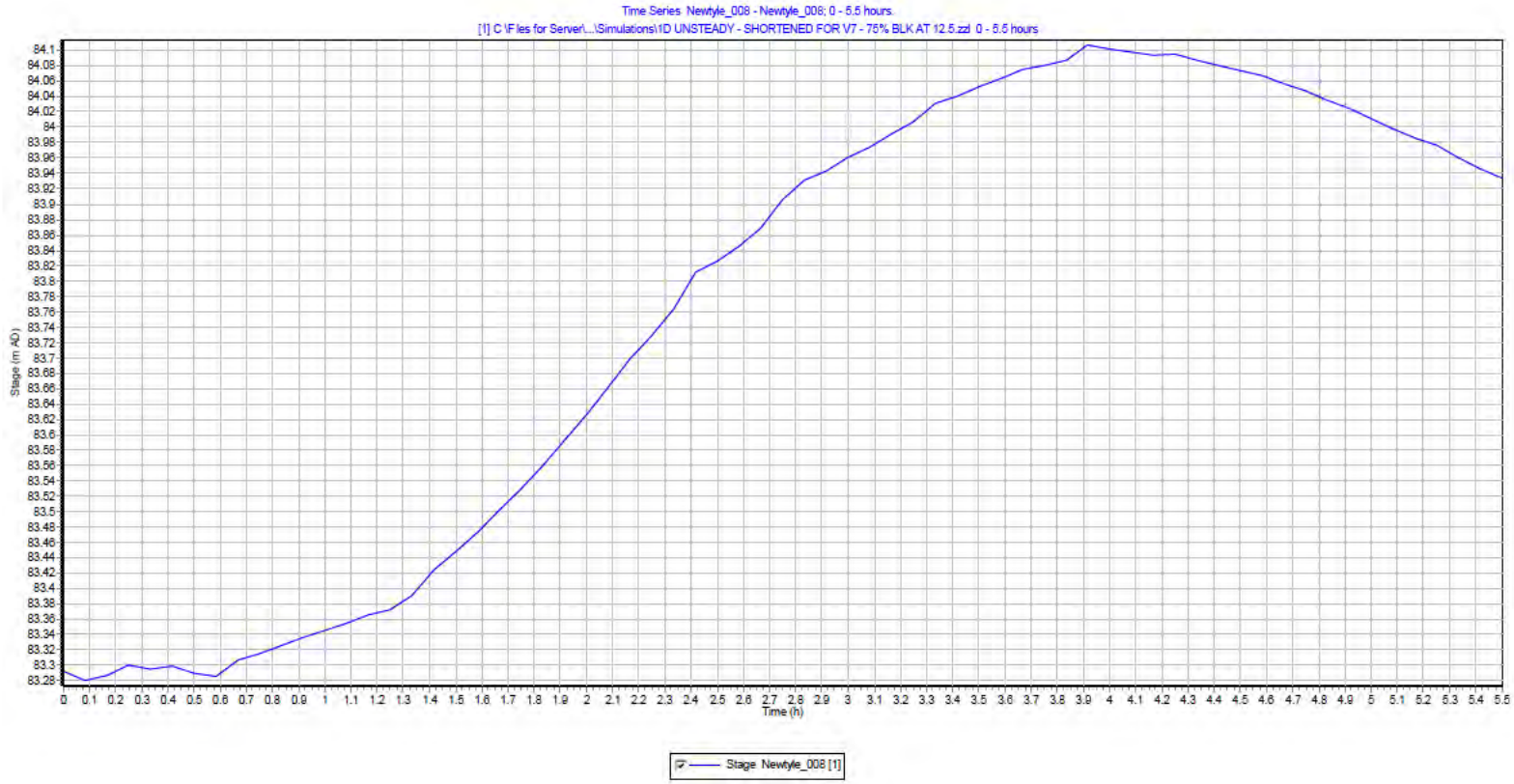
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Time (h)
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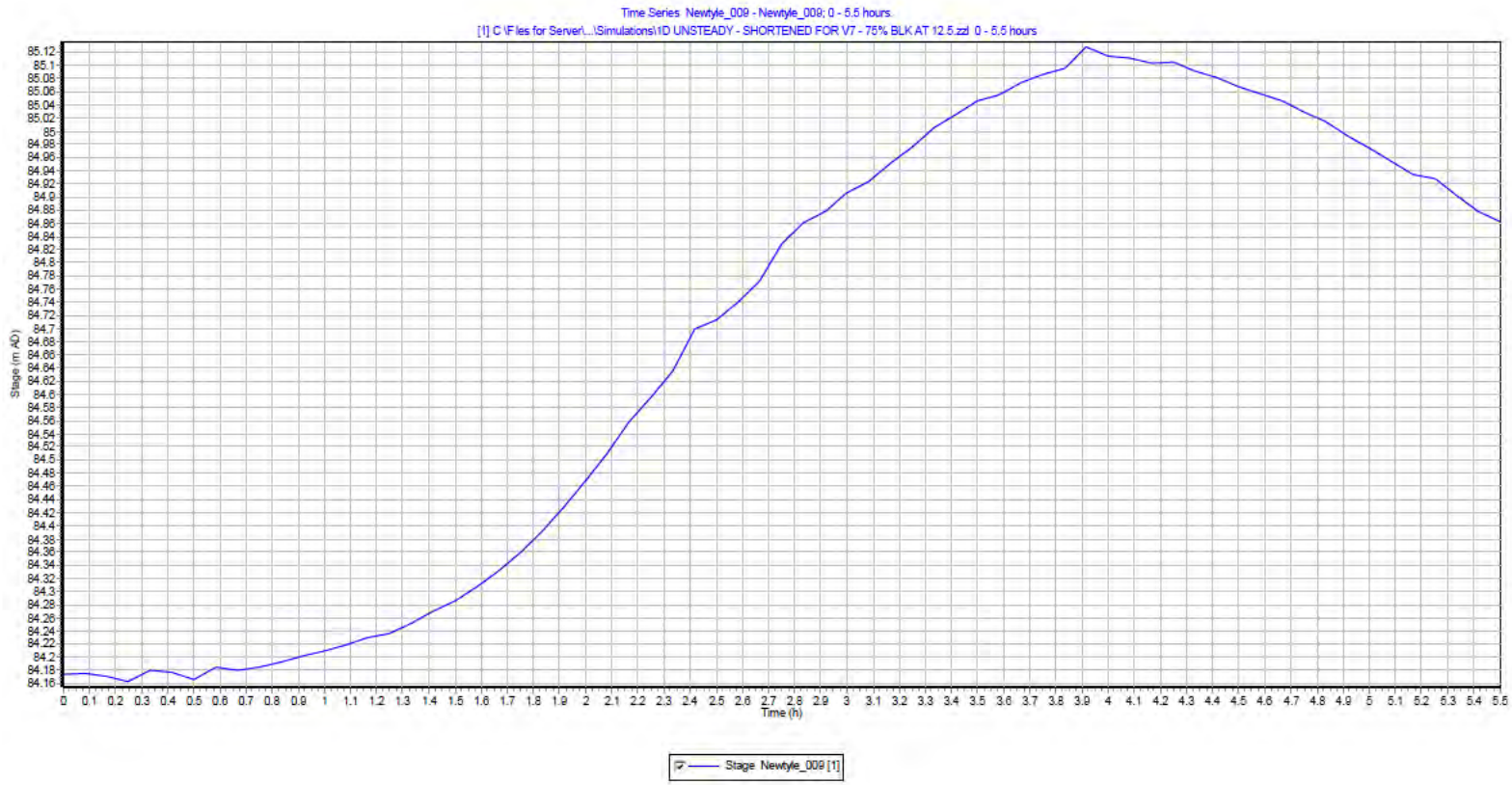
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Time (h)
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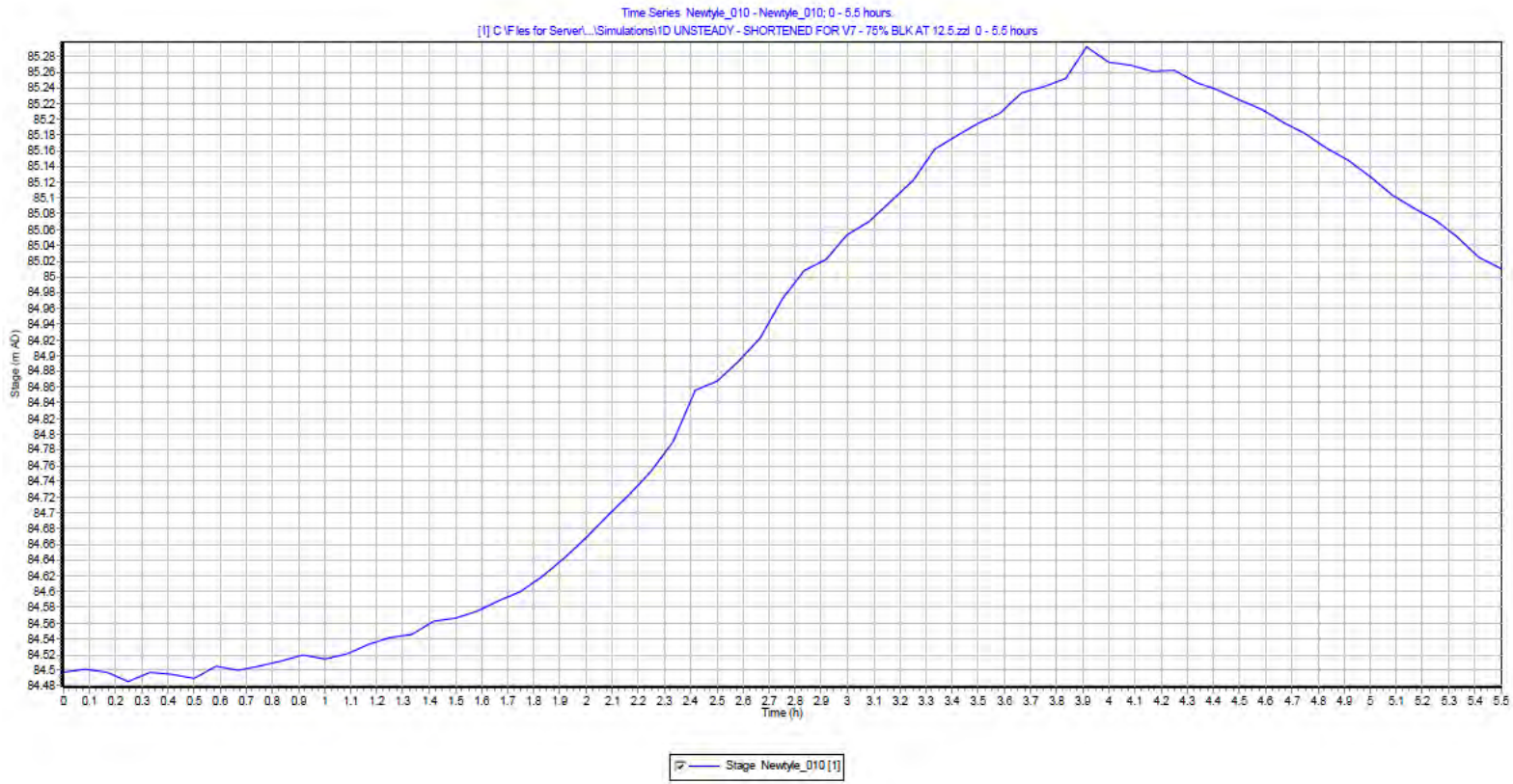
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Time (h)
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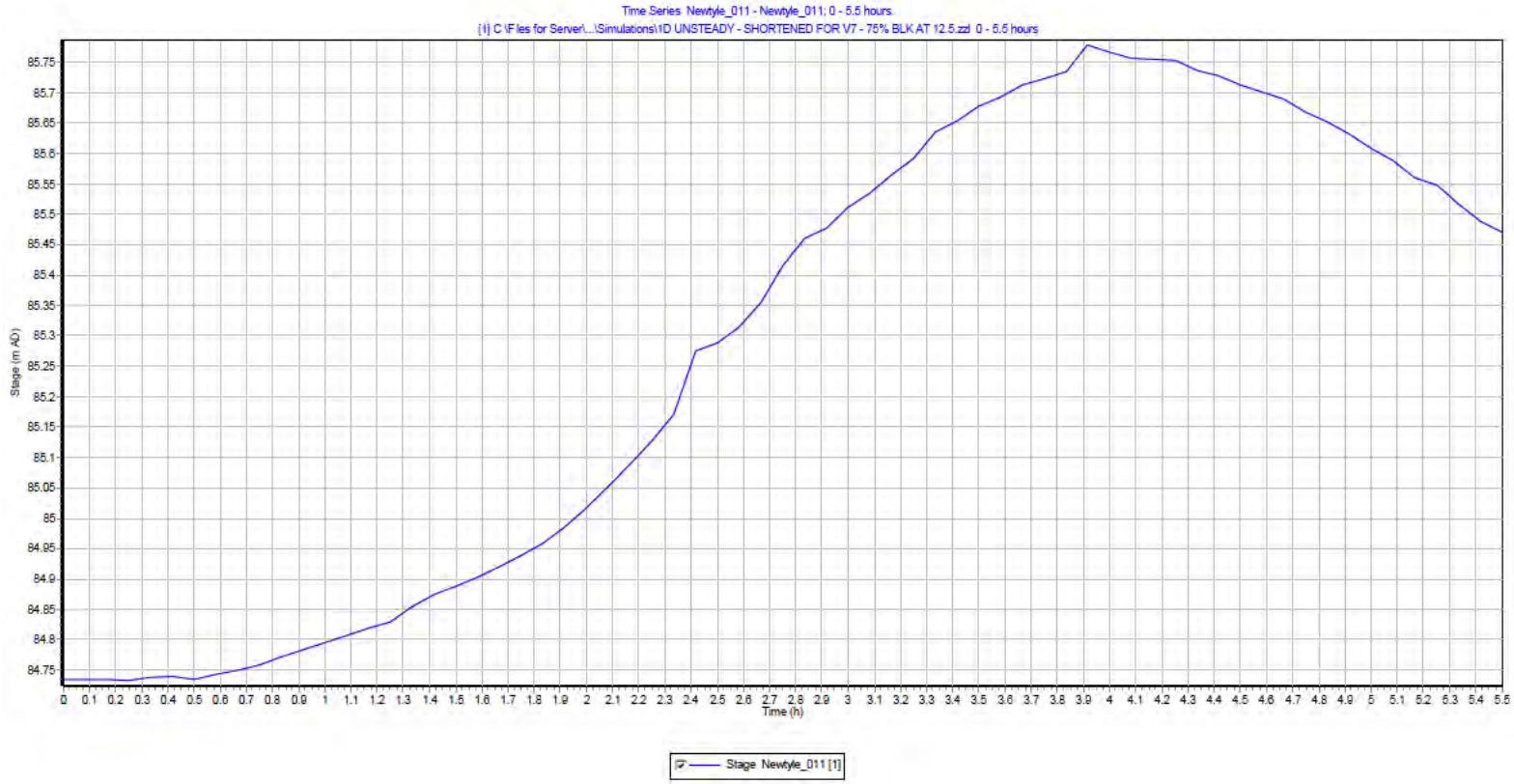
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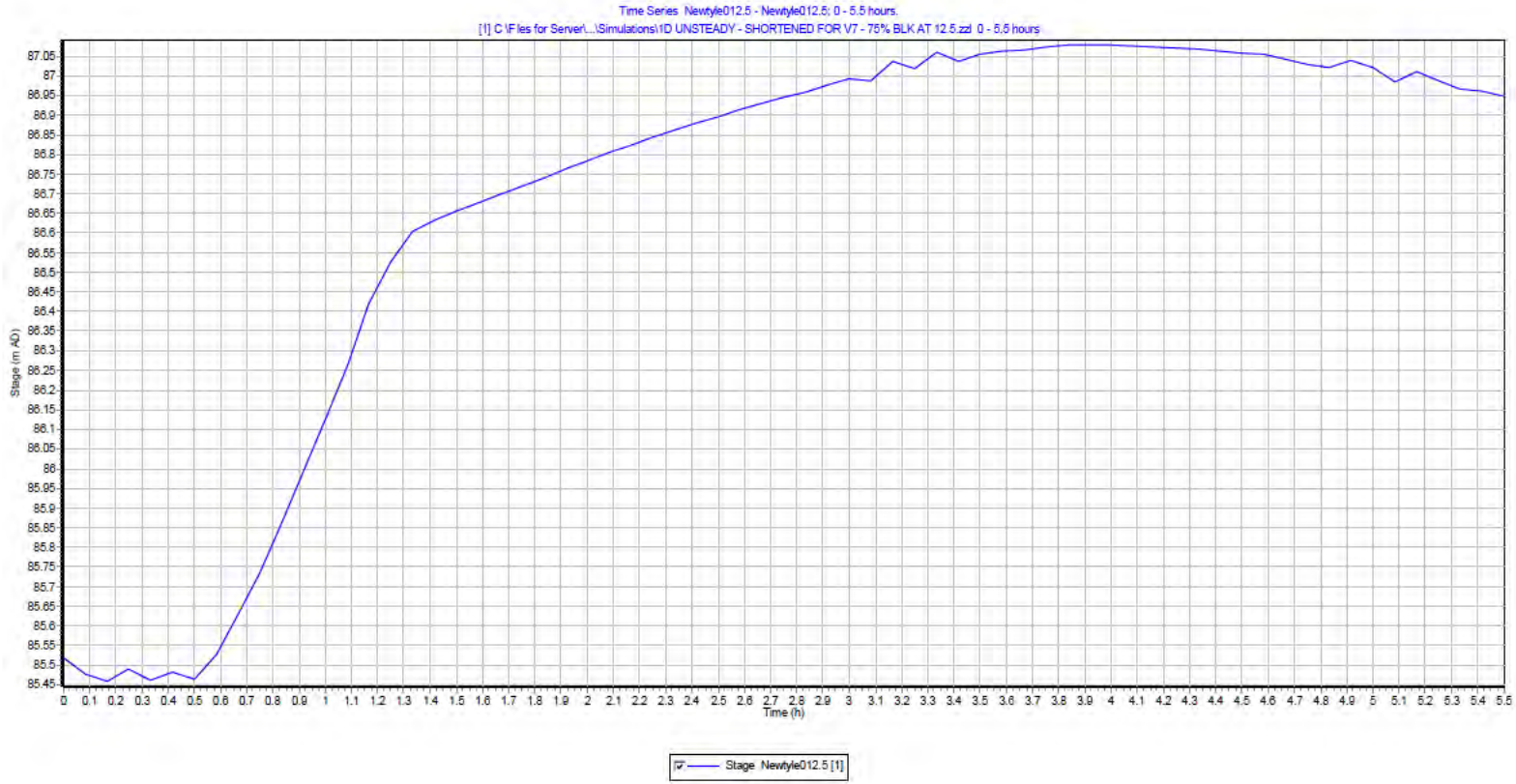
85.6
85.55
85.5
85.45
85.4
85.35
85.3
85.25
85.2
85.15
85.1
85.05
85
84.95
84.9
84.85
84.8
84.75
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5
Time (h)
Stage Newtyle_011 [1]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Time (h)
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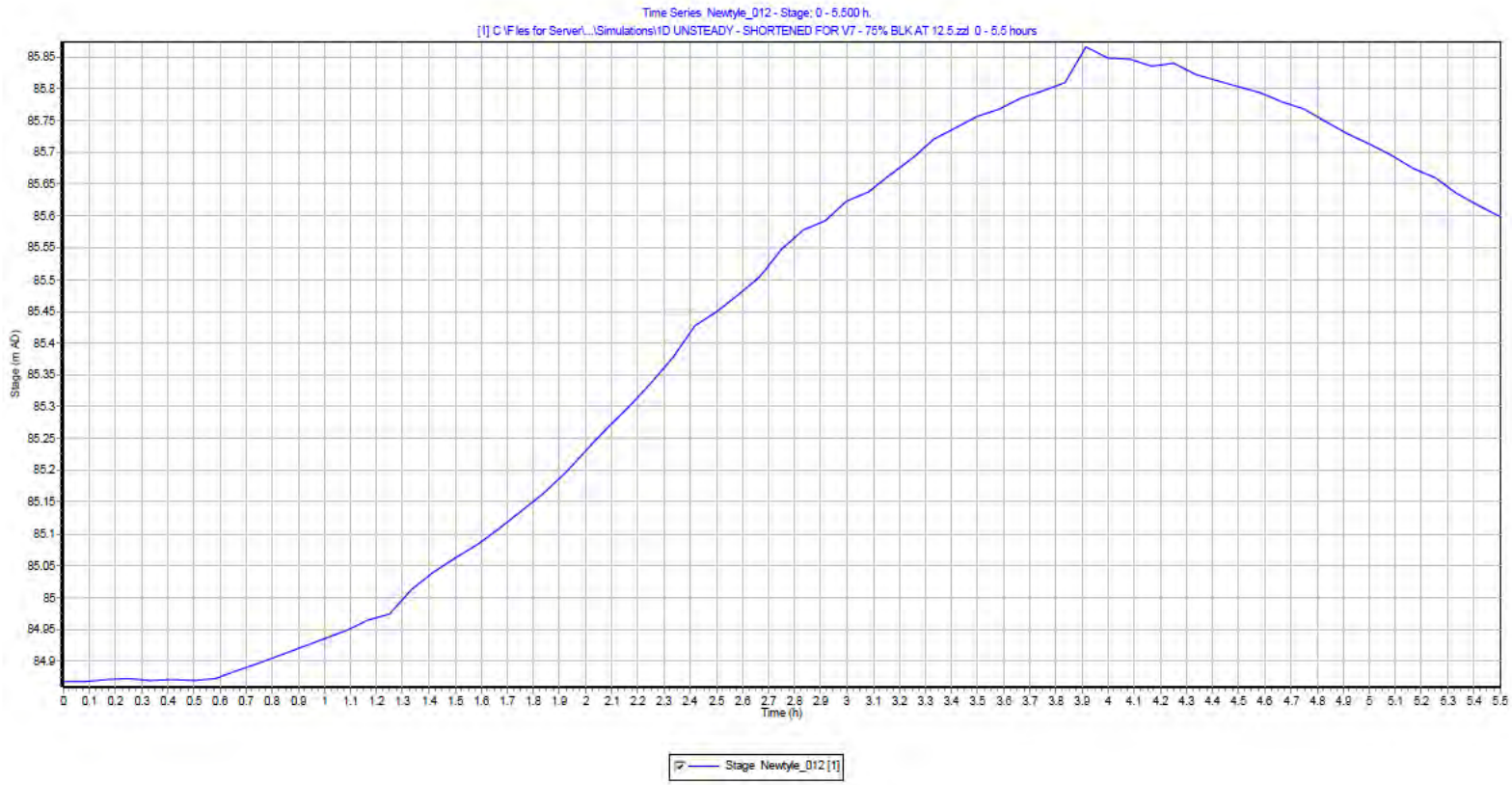
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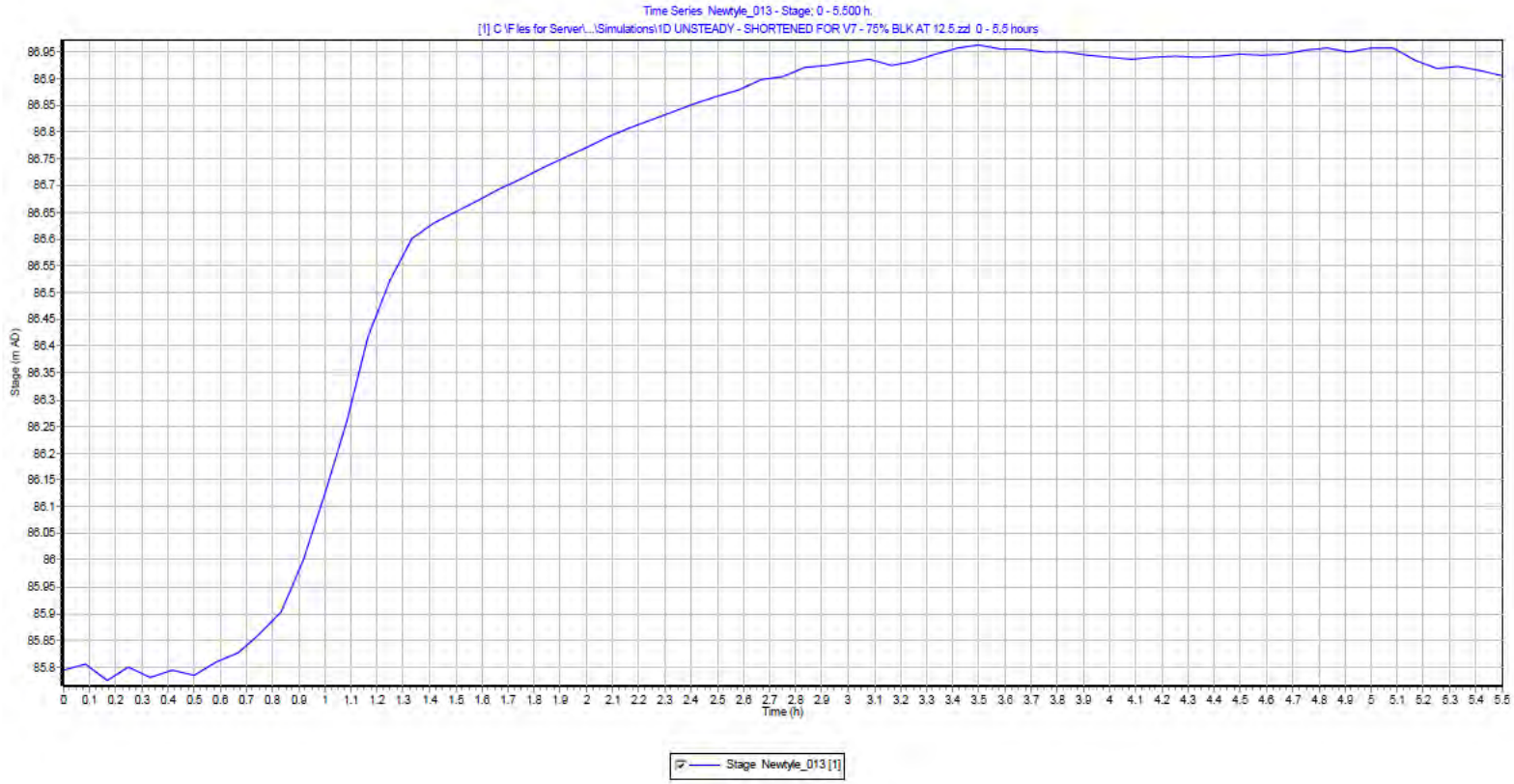
Stage (m AD)
Time (h)
Stage Newtyle_012 [1]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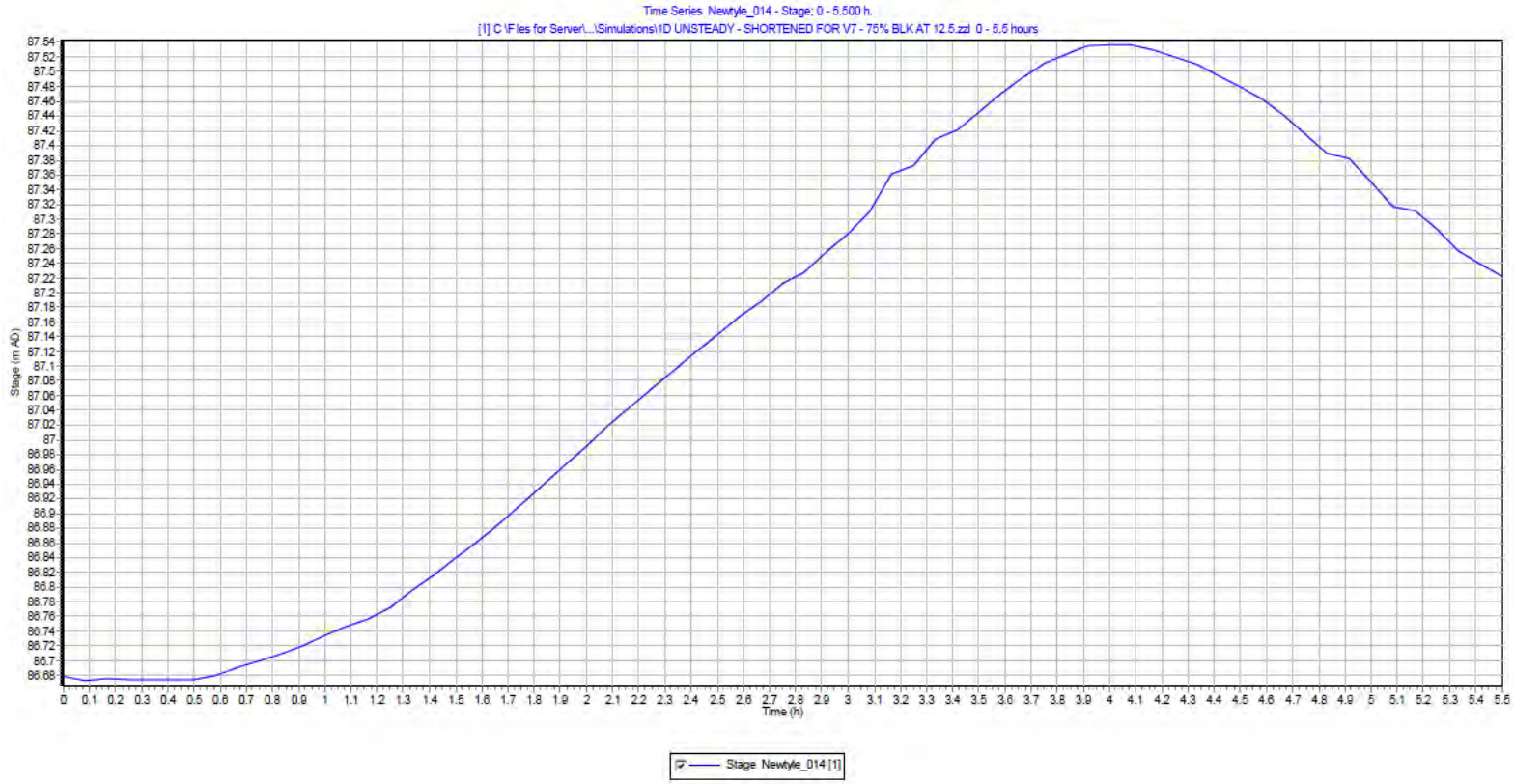
Stage (m AD)
86.95
86.9
86.85
86.8
86.75
86.7
86.65
86.6
86.55
86.5
86.45
86.4
86.35
86.3
86.25
86.2
86.15
86.1
86.05
86
85.95
85.9
85.85
85.8
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5
Time (h)
Stage Newtyle_013 [1]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Stage (m AD)
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87.5
87.48
87.46
87.44
87.42
87.4
87.38
87.36
87.34
87.32
87.3
87.28
87.26
87.24
87.22
87.2
87.18
87.16
87.14
87.12
87.1
87.08
87.06
87.04
87.02
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86.94
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86.82
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86.74
86.72
86.7
86.68
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2 2.1 2.2 2.3 2.4 2.5 2.6 2.7 2.8 2.9 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4 4.1 4.2 4.3 4.4 4.5 4.6 4.7 4.8 4.9 5 5.1 5.2 5.3 5.4 5.5
Time (h)
Stage Newtyle_014 [1]

Modelling Summary Output

- Baseline 200yr + CC scenario with no blockages or wall
- 75% blockage at 12.5 and 75% of wall to the east of the watercourse impermeable

Baseline 200yr + CC scenario with no blockages or wall

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7.ZZN
Selected output data from time (hr): 0
to time (hr): 8.75

Stage

Time (hr)	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	Newtyle01	Bridge1_U	Newtyle12	Newtyle_0	Newtyle_0	CH000000	CH000000	CH000000	Newtyle_0	Bridge2_U	Newtyle_0	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	CH000000	CH000000	Newtyle_0	CH000000	Newtyle_0	Newtyle_0	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	89.114	88.329	87.491	86.732	86.433	86.253	85.881	85.362	85.024	85.024	85.024	84.951	84.808	84.759	84.731	84.719	84.522	84.522	84.522	84.22	83.931	83.619	83.357	83.192	83.026	82.866	82.802	82.799	82.799	82.799	82.8	82.8	82.8	85.024	-9999.99	84.522	-9999.99
0.083	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.293	84.936	84.936	84.935	84.872	84.734	84.702	84.694	84.692	84.487	84.487	84.487	84.164	83.863	83.554	83.297	83.141	82.975	82.826	82.798	82.793	82.793	82.793	82.796	82.799	82.8	84.936	-9999.99	84.487	-9999.99
0.167	89.06	88.273	87.441	86.681	86.358	86.135	85.809	85.295	84.938	84.938	84.938	84.867	84.74	84.7	84.67	84.659	84.502	84.502	84.498	84.182	83.884	83.564	83.288	83.122	82.962	82.821	82.799	82.801	82.804	82.805	82.803	82.801	82.8	84.938	-9999.99	84.502	-9999.99
0.25	89.06	88.273	87.441	86.68	86.359	86.134	85.809	85.292	84.936	84.936	84.936	84.874	84.733	84.697	84.69	84.689	84.485	84.485	84.485	84.163	83.865	83.559	83.302	83.143	82.972	82.826	82.8	82.796	82.795	82.795	82.797	82.799	82.8	84.936	-9999.99	84.485	-9999.99
0.333	89.059	88.273	87.441	86.681	86.359	86.134	85.81	85.294	84.938	84.938	84.938	84.867	84.741	84.706	84.677	84.662	84.504	84.504	84.5	84.183	83.88	83.558	83.282	83.124	82.966	82.823	82.8	82.801	82.803	82.804	82.803	82.801	82.8	84.938	-9999.99	84.504	-9999.99
0.417	89.06	88.273	87.441	86.681	86.359	86.135	85.808	85.293	84.935	84.935	84.935	84.875	84.733	84.69	84.685	84.684	84.483	84.483	84.483	84.163	83.87	83.565	83.305	83.143	82.967	82.823	82.799	82.796	82.796	82.796	82.798	82.799	82.8	84.935	-9999.99	84.483	-9999.99
0.5	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.293	84.938	84.938	84.938	84.869	84.738	84.712	84.688	84.668	84.505	84.505	84.5	84.181	83.873	83.552	83.282	83.128	82.968	82.825	82.801	82.801	82.802	82.803	82.802	82.801	82.8	84.938	-9999.99	84.505	-9999.99
0.583	89.065	88.279	87.449	86.685	86.365	86.144	85.815	85.3	84.942	84.942	84.942	84.881	84.738	84.696	84.691	84.689	84.486	84.486	84.486	84.164	83.869	83.564	83.307	83.147	82.974	82.828	82.802	82.797	82.795	82.795	82.797	82.799	82.8	84.942	-9999.99	84.486	-9999.99
0.667	89.071	88.287	87.459	86.692	86.375	86.157	85.826	85.312	84.955	84.955	84.955	84.888	84.751	84.701	84.674	84.663	84.502	84.502	84.498	84.181	83.884	83.571	83.308	83.145	82.98	82.831	82.8	82.799	82.799	82.8	82.8	82.8	82.8	84.955	-9999.99	84.502	-9999.99
0.75	89.079	88.297	87.47	86.7	86.387	86.179	85.837	85.321	84.968	84.968	84.968	84.901	84.763	84.71	84.675	84.66	84.507	84.507	84.502	84.188	83.893	83.58	83.318	83.155	82.989	82.837	82.801	82.8	82.8	82.8	82.8	82.8	82.8	84.968	-9999.99	84.507	-9999.99
0.833	89.088	88.306	87.476	86.709	86.401	86.202	85.85	85.332	84.984	84.984	84.984	84.916	84.778	84.724	84.68	84.66	84.515	84.515	84.507	84.197	83.903	83.591	83.33	83.168	83.001	82.845	82.801	82.799	82.799	82.8	82.8	82.8	82.8	84.984	-9999.99	84.515	-9999.99
0.917	89.1	88.317	87.482	86.721	86.418	86.228	85.864	85.345	85.003	85.003	85.003	84.931	84.792	84.739	84.701	84.686	84.518	84.518	84.513	84.207	83.915	83.604	83.343	83.179	83.012	82.854	82.802	82.799	82.799	82.8	82.8	82.8	82.8	85.003	-9999.99	84.518	-9999.99
1	89.114	88.329	87.491	86.733	86.433	86.253	85.881	85.362	85.024	85.024	85.024	84.951	84.808	84.759	84.731	84.72	84.522	84.522	84.522	84.22	83.931	83.619	83.356	83.191	83.025	82.866	82.802	82.799	82.799	82.799	82.8	82.8	82.8	85.024	-9999.99	84.522	-9999.99
1.083	89.13	88.343	87.501	86.747	86.449	86.275	85.897	85.381	85.047	85.047	85.047	84.972	84.826	84.772	84.725	84.701	84.539	84.539	84.531	84.234	83.941	83.629	83.37	83.204	83.04	82.877	82.803	82.798	82.798	82.799	82.8	82.8	82.8	85.047	-9999.99	84.539	-9999.99
1.167	89.145	88.357	87.513	86.76	86.469	86.305	85.915	85.399	85.072	85.072	85.072	84.995	84.847	84.795	84.756	84.738	84.542	84.542	84.542	84.248	83.953	83.642	83.385	83.218	83.056	82.889	82.804	82.798	82.798	82.799	82.8	82.8	82.8	85.072	-9999.99	84.542	-9999.99
1.25	89.156	88.37	87.526	86.775	86.49	86.329	85.931	85.419	85.1	85.1	85.1	85.02	84.87	84.815	84.767	84.741	84.559	84.559	84.554	84.262	83.967	83.657	83.404	83.237	83.073	82.904	82.811	82.797	82.797	82.798	82.8	82.8	82.8	85.1	-9999.99	84.559	-9999.99
1.333	89.169	88.385	87.541	86.792	86.512	86.35	85.947	85.443	85.13	85.13	85.129	85.047	84.894	84.839	84.792	84.768	84.568	84.568	84.568	84.277	83.983	83.673	83.424	83.257	83.091	82.92	82.825	82.795	82.796	82.798	82.8	82.8	82.8	85.13	-9999.99	84.568	-9999.99
1.417	89.184	88.402	87.558	86.81	86.534	86.375	85.966	85.468	85.162	85.162	85.162	85.076	84.92	84.863	84.811	84.773	84.583	84.583	84.581	84.295	84.001	83.692	83.443	83.275	83.109	82.939	82.84	82.793	82.794	82.797	82.8	82.8	82.8	85.162	-9999.99	84.583	-9999.99
1.5	89.201	88.419	87.571	86.832	86.56	86.403	85.987	85.496	85.199	85.199	85.198	85.11	84.95	84.891	84.836	84.791	84.597	84.597	84.596	84.316	84.022	83.713	83.465	83.296	83.131	82.96	82.857	82.791	82.791	82.796	82.8	82.799	82.8	85.199	-9999.99	84.597	-9999.99
1.583	89.222	88.44	87.586	86.854	86.59	86.435	86.007	85.523	85.239	85.239	85.237	85.145	84.981	84.921	84.862	84.808	84.613	84.613	84.612	84.338	84.041	83.733	83.489	83.321	83.153	82.98	82.871	82.791	82.787	82.794	82.8	82.799	82.8	85.239	-9999.99	84.613	-9999.99
1.667	89.239	88.456	87.604	86.877	86.618	86.466	86.03	85.556	85.283	85.283	85.281	85.184	85.016	84.953	84.891	84.829	84.632	84.632	84.632	84.361	84.063	83.757	83.517	83.347	83.178	83.004	82.894	82.808	82.782	82.792	82.799	82.799	82.8	85.283	-9999.99	84.632	-9999.99
1.75	89.255	88.474	87.623	86.904	86.649	86.499	86.056	85.591	85.329	85.329	85.326	85.225	85.052	84.986	84.919	84.851	84.653	84.653	84.653	84.386	84.088	83.783	83.543	83.372	83.203	83.029	82.918	82.826	82.775	82.788	82.799	82.799	82.8	85.329	-9999.99	84.653	-9999.99
1.833	89.272	88.495	87.646	86.933	86.683	86.532	86.083	85.63	85.38	85.38	85.375	85.268	85.09	85.019	84.947	84.871	84.676	84.676	84.675	84.415	84.115	83.81	83.573	83.401	83.23	83.054	82.941	82.842	82.768	82.783	82.799	82.798	82.8	85.38	-9999.99	84.676	-9999.99
1.917	89.293	88.516	87.665	86.961	86.717	86.565	86.112	85.672	85.434	85.434	85.428	85.314	85.13	85.055	84.978	84.895	84.7	84.7	84.699	84.443	84.142	83.84	83.605	83.432	83.26	83.083	82.971	82.871	82.793	82.775	82.798	82.798	82.8	85.434	-9999.99	84.7	-9999.99
2	89.314	88.536	87.685	86.993	86.754	86.598	86.146	85.718	85.488	85.488	85.48	85.361	85.172	85.093	85.012	84.923	84.727	84.727	84.726	84.475	84.173	83.871	83.637	83.463	83.29	83.114	83.003	82.904	82.827	82.788	82.797	82.797	82.8	85.488	-9999.99	84.727	-9999.99
2.083	89.333	88.556	87.707	87.026	86.791	86.63	86.179	85.757	85.521	85.521	85.509	85.403	85.215	85.132	85.046	84.95	84.755	84.755	84.754	84.508	84.204	83.904	83.671	83.496	83.321	83.146	83.036	82.939	82.863	82.814	82.796	82.796	82.8	85.521	-9999.99	84.755	-9999.99
2.167	89.353	88.577	87.731	87.057	86.827	86.664	86.215	85.799	85.561	85.561	85.547	85.444	85.255	85.17	85.08	84.979	84.783	84.783	84.783	84.54	84.234	83.935	83.704	83.527	83.352	83.175	83.064	82.966	82.888	82.837	82.795	82.794	82.8	85.561	-9999.99	84.783	-9999.99
2.25	89.374	88.597	87.751	87.091	86.865	86.696	86.249	85.844	85.612	85.612	85.586	85.485	85.293	85.208	85.115	85.008	84.813	84.813	84.813	84.573	84.267	83.968	83.736	83.558	83.381	83.202	83.09	82.987	82.903	82.844	82.794	82.793	82.8	85.612	-9999.99	84.813	-9999.99
2.333	89.396	88.617	87.772	87.122	86.9	86.727	86.287	85.906	85.695	85.695	85.626	85.523	85.33	85.244	85.149	85.037	84.842	84.842	84.842	84.606	84.297	84	83.769	83.59	83.411	83.23	83.114	83.008	82.918	82.852	82.792	82.791	82.8	85.695	-9999.99	84.842	-9999.99
2.417	89.418	88.638	87.793	87.154	86.935	86.755	86.328	85.98	85.8	85.8	85.666	85.561	85.366	85.279	85.182	85.067	84.872	84.872	84.872	84.638	84.328	84.032	83.802	83.619	83.439	83.255	83.137	83.027	82.932	82.859	82.791	82.788	82.8	85.8	-9999.99	84.872	-9999.99
2.5	89.44	88.657	87.815	87.186	86.97	86.78	86.377	86.073	85.926	85.926	85.706	85.597	85.401	85.314	85.215	85.097	84.902	84.902	84.902	84.671	84.36	84.064	83.833	83.649	83.466	83.279	83.159	83.045	82.946	82.867	82.788	82.786	82.8	85.926	-9999.99	84.902	-9999.99
2.583	89.458	88.676	87.837	87.215	87	86.806	86.431	86.174	86.061	86.061	85.743	85.631	85.434	85.346	85.246	85.125	84.931	84.931	84.931	84.702	84.389	84.093	83.862	83.676	83.492	83.303	83.18	83.065	82.962	82.881	82.798	82.782	82.8	86.061	-9999.99	84.931	-9999.99
2.667	89.476	88.694	87.859	87.244	87.03	86.833	86.492	86.283	86.211	86.211	85.778	85.663	85.466	85.378	85.277	85.154	84.96	84.96	84.96	84.733	84.419	84.122	83.889	83.701	83.514	83.324	83.2	83.084	82.979	82.895	82.808	82.778	82.8	86.211	-9999.99	84.96	-9999.99
2.75	89.495	88.711	87.878	87.271	87.056	86.852	86.579	86.439	86.362	86.362	85.81	85.693	85.495	85.407	85.305	85.18	84.987	84.987	84.987	84.761	84.446	84.148	83.914	83.723	83.535	83.341	83.216	83.098	82.992	82.907	82.816	82.773	82.8	86.362	-9999.99	84.987	-9999.99
2.833	89.513	88.728	87.896	87.296	87.082	86.877	86.65	86.559	86.479	86.479	85.833	85.714	85.516	85.428	85.325	85.199	85.007	85.007	85.007	84.783	84.466	84.167	83.932	83.74	83.55	83.354	83.227	83.108	83.001	82.915	82.822	82.768	82.8	86.479	-9999.99	85.007	-9999.99
2.917	89.531	88.745	87.914	87.313	87.107	86.912	86.732	86.691	86.618	86.618	85.871	85.763	85.546	85.456	85.353	85.225	85.033	85.033	85.033	84.81	84.491	84.192	83.955	83.761	83.569	83.371	83.242	83.121	83.013	82.926	82.83	82.768	82.8	86.618	-9999.99	85.033	-9999.99
3	89.549	88.762	87.932	87.334	87.13	86.935	86.761	86.754	86.684	86.684	85.889	85.819	85.58	85.488	85.386	85.255	85.064	85.064	85.063	84.844	84.52	84.218	83.979	83.783	83.589	83.389	83.258	83.136	83.027	82.939	82.842	82.776	82.8	86.684	-9999.99	85.064	-9999.99
3.083	89.565	88.778	87.949	87.352	87.15	86.954	86.779	86.784	86.712	86.712	85.883	85.858	85.616	85.527	85.43	85.291	85.1	85.1	85.1	84.887	84.56	84.251	84.008	83.808	83.613	83.41	83.278	83.154	83.043	82.954	82.855	82.785	82.8	86.712	-9999.99	85.1	-9999.99
3.167	89.578	88.791	87.967	87.369	87.169	86.97	86.795	86.811	86.738	86.738	85.883	85.891	85.644	85.556	85.46	85.316	85.125	85.125	85.125	84.914	84.583	84.274	84.029	83.824	83.628	83.423	83.29	83.166	83.054	82.964	82.864	82.792	82.8	86.738	-9999.99	85.125	-9999.99
3.25	89.576	88.819	87.971	87.393	87.19	86.98	86.83	86.835	86.782	86.782	85.894	85.922	85.671	85.585	85.489	85.341	85.15	85.15	85.15	84.942	84.609	84.297	84.048	83.84	83.642	83.435	83.3	83.175	83.063	82.974	82.872	82.798	82.8	86.782	-9999.99	85.15	-9999.99
3.333	89.608	88.814	87.994	87.406	87.188	87.021	86.806	86.859	86.802	86.802	85.905	85.956	85.703	85.617	85.52	85.366	85.174	85.174	85.174	84.967	84.63	84.318	84.069	83.856	83.657	83.448	83.311	83.185	83.072	82.984	82.88	82.804	82.8	86.802	-9999.99	85.174	-9999.99
3.417	89.616	88.825	88.01	87.409	87.228	87.001	86.851	86.885	86.805	86.805	85.91	85.981	85.729	85.645	85.549	85.393	85.202	85.202	85.202	84.996	84.654	84.338	84.085	83.87	83.669	83.46	83.322	83.195	83.081	82.993	82.888	82.81	82.8	86.805	-9999.99	85.202	-9999.99
3.5	89.624	88.839	88.015	87.429	87.221	87.032	86.841	86.898	86.84	86.84	85.921	86.007	85.752	85.668	85.571	85.413	85.222	85.222	85.222	85.017	84.673	84.355	84.101	83.883	83.679	83.469	83.331	83.202	83.088	83.001	82.896	82.815	82.8	86.84	-9999.99	85.222	-9999.99
3.583	89.633	88.847	88.025	87.438	87.236	87.037	86.855	86.914	86.854	86.854	85.933	86.027	85.772	85.689	85.591	85.431	85.241	85.241	85.241	85.036	84.69	84.369	84.113	83.893	83.688	83.477	83.338	83.209	83.095	83.007	82.902	82.82	82.8	86.854	-9999.99	85.241	-9999.99
3.667	89.64	88.855	88.033	87.449	87.246	87.047	86.864	86.932	86.878	86.878	85.967	86.04	85.79	85.709	85.611	85.449	85.26	85.26	85.26	85.055	84.704	84.382	84.123	83.901	83.695	83.483	83.344	83.215	83.099	83.012	82.906	82.823	82.8	86.878	-9999.99	85.26	-9999.99
3.75	89.648	88.859	88.042	87.458	87.256	87.054	86.872	86.948	86.891	86.891	85.987	86.058	85.807	85.726	85.627	85.464	85.275	85.275	85.275	85.07	84.717	84.392	84.132	83.909	83.702	83.489	83.35	83.22	83.104	83.017	82.91	82.826	82.8	86.891	-9999.99	85.275	-9999.99
3.833	89.653	88.864	88.046	87.465	87.262	87.061	86.877	86.958	86.903	86.903	86.002	86.068	85.818	85.738	85.64	85.475	85.287	85.287	85.287	85.081	84.727	84.4	84.138	83.914	83.707	83.493	83.354	83.224	83.108	83.02	82.913	82.829	82.8	86.903	-9999.99	85.287	-9999.99
3.917	89.656	88.867	88.049	87.471	87.266	87.065	86.88	86.964	86.91	86.91	86.014	86.076	85.826	85.747	85.648	85.483	85.296	85.296	85.295	85.089	84.733	84.406	84.142	83.918	83.71	83.496	83.357	83.227	83.11	83.022	82.915	82.829	82.8	86.91	-9999.99	85.296	-9999.99
4	89.658	88.866	88.052	87.471	87.27	87.064	86.884	86.966	86.911	86.911	86.019	86.083	85.83	85.751	85.652	85.486	85.299	85.299	85.299	85.092	84.735	84.408	84.145	83.92	83.712	83.498	83.358	83.228	83.111	83.023	82.916	82.83	82.8	86.911	-9999.99	85.299	-9999.99
4.083	89.656	88.867	88.05	87.471	87.268	87.064	86.883	86.966	86.912	86.912	86.019	86.081	85.829	85.751	85.652	85.486	85.299	85.299	85.299	85.092	84.735	84.408	84.144	83.92	83.712	83.498	83.358	83.228	83.111	83.023	82.916	82.83	82.8	86.912	-9999.99	85.299	-9999.99
4.167	89.655	88.863	88.049	87.467	87.266	87.061	86.881	86.962	86.907	86.907	86.014	86.077	85.826	85.747	85.649	85.483	85.295	85.295	85.295	85.089	84.732	84.406	84.143	83.919	83.711	83.496	83.357	83.227	83.11	83.023	82.915	82.829	82.8	86.907	-9999.99	85.295	-9999.99
4.25	89.65	88.862	88.043	87.464	87.26	87.059	86.877	86.957	86.903	86.903	86.005	86.068	85.82	85.74	85.642	85.477	85.29	85.29	85.29	85.084	84.728	84.402	84.139	83.916	83.708	83.494	83.355	83.225	83.109	83.021	82.914	82.829	82.8	86.903	-9999.99	85.29	-9999.99
4.333	89.645	88.857	88.039	87.457	87.255	87.053	86.872	86.948	86.892	86.892	85.992	86.06	85.811	85.731	85.632	85.468	85.28	85.28	85.28	85.075	84.721	84.396	84.135	83.912	83.704	83.491	83.352	83.222	83.106	83.018	82.912	82.828	82.8	86.892	-9999.99	85.28	-9999.99
4.417	89.64	88.851	88.033	87.448	87.247	87.046	86.866	86.937	86.878	86.878	85.973	86.051	85.8	85.719	85.62	85.457	85.269	85.269	85.269	85.063	84.712	84.388	84.129	83.906	83.7	83.487	83.348	83.219	83.103	83.015	82.909	82.825	82.8	86.878	-9999.99	85.269	-9999.99
4.5	89.634	88.844	88.027	87.438	87.24	87.038	86.86	86.924	86.861	86.861	85.951	86.037	85.785	85.703	85.605	85.443	85.254	85.254	85.254	85.049	84.7	84.378	84.121	83.9	83.694	83.482	83.343	83.214	83.099	83.011	82.906	82.823	82.8	86.861	-9999.99	85.254	-9999.99
4.583	89.626	88.837	88.019	87.427	87.232	87.027	86.853	86.907	86.84	86.84	85.924	86.021	85.768	85.686	85.589	85.429	85.239	85.239	85.239	85.034	84.688	84.368	84.112	83.892	83.687	83.477	83.338	83.209	83.094	83.007	82.901	82.82	82.8	86.84	-9999.99	85.239	-9999.99
4.667	89.617	88.831	88.009	87.42	87.219	87.021	86.842	86.893	86.83	86.83	85.918	86.001	85.749	85.666	85.569	85.41	85.22	85.22	85.22	85.016	84.672	84.354	84.1	83.882	83.679	83.469	83.331	83.203	83.089	83.001	82.896	82.815	82.8	86.83	-9999.99	85.22	-9999.99
4.75	89.609	88.821	88	87.409	87.209	87.012	86.832	86.879	86.813	86.813	85.912	85.981	85.731	85.647	85.55	85.394	85.203	85.203	85.203	84.998	84.656	84.341	84.088	83.873	83.671	83.461	83.324	83.196	83.083	82.995	82.891	82.811	82.8	86.813	-9999.99	85.203	-9999.99
4.833	89.601	88.81	87.993	87.394	87.205	86.993	86.83	86.865	86.787	86.787	85.903	85.961	85.711	85.627	85.531	85.376	85.185	85.185	85.185	84.979	84.64	84.326	84.075	83.862	83.662	83.453	83.316	83.19	83.077	82.989	82.884	82.807	82.8	86.787	-9999.99	85.185	-9999.99
4.917	89.587	88.808	87.973	87.397	87.166	87.013	86.795	86.839	86.798	86.798	85.902	85.941	85.689	85.604	85.507	85.355	85.163	85.163	85.163	84.957	84.621	84.311	84.062	83.851	83.652	83.444	83.308	83.182	83.07	82.982	82.878	82.803	82.8	86.798	-9999.99	85.163	-9999.99
5	89.57	88.8	87.965	87.372	87.185	86.961	86.826	86.822	86.756	86.756	85.889	85.912	85.666	85.581	85.485	85.337	85.146	85.146	85.146	84.939	84.605	84.294	84.046	83.838	83.641	83.435	83.3	83.175	83.063	82.974	82.872	82.797	82.8	86.756	-9999.99	85.146	-9999.99
5.083	89.568	88.78	87.96	87.351	87.176	86.944	86.81	86.802	86.714	86.714	85.878	85.884	85.643	85.557	85.462	85.317	85.127	85.127	85.127	84.917	84.586	84.276	84.03	83.825	83.629	83.424	83.291	83.167	83.056	82.966	82.865	82.792	82.8	86.714	-9999.99	85.127	-9999.99
5.167	89.557	88.77	87.941	87.345	87.142	86.949	86.774	86.777	86.707	86.707	85.883	85.856	85.618	85.531	85.435	85.293	85.102	85.102	85.102	84.891	84.563	84.254	84.012	83.811	83.616	83.413	83.28	83.157	83.046	82.957	82.857	82.787	82.8	86.707	-9999.99	85.102	-9999.99
5.25	89.543	88.757	87.927	87.33	87.127	86.934	86.761	86.755	86.684	86.684	85.887	85.829	85.595	85.508	85.411	85.272	85.081	85.081	85.081	84.868	84.543	84.235	83.995	83.797	83.603	83.401	83.27	83.147	83.037	82.948	82.85	82.781	82.8	86.684	-9999.99	85.081	-9999.99
5.333	89.529	88.744	87.913	87.313	87.11	86.918	86.745	86.727	86.656	86.656	85.886	85.799	85.573	85.485	85.387	85.251	85.06	85.06	85.06	84.845	84.522	84.217	83.978	83.782	83.589	83.389	83.259	83.137	83.028	82.94	82.843	82.776	82.8	86.656	-9999.99	85.06	-9999.99
5.417	89.514	88.73	87.899	87.296	87.091	86.9	86.725	86.682	86.609	86.609	85.872	85.765	85.552	85.463	85.364	85.231	85.041	85.041	85.041	84.822	84.502	84.199	83.962	83.768	83.576	83.377	83.248	83.127	83.019	82.931	82.835	82.771	82.8	86.609	-9999.99	85.041	-9999.99
5.5	89.5	88.716	87.884	87.279	87.072	86.879	86.689	86.607	86.528	86.528	85.847	85.731	85.53	85.442	85.34	85.211	85.021	85.021	85.021	84.8	84.482	84.181	83.945	83.752	83.562	83.365	83.236	83.117	83.009	82.922	82.827	82.766	82.8	86.528	-9999.99	85.021	-9999.99
5.583	89.485	88.703	87.869	87.262	87.049	86.85	86.612	86.492	86.411	86.411	85.821	85.703	85.505	85.418	85.316	85.19	84.998	84.998	84.998	84.775	84.459	84.16	83.925	83.735	83.545	83.35	83.224	83.105	82.999	82.913	82.82	82.769	82.8	86.411	-9999.99	84.998	-9999.99
5.667	89.471	88.689	87.854	87.24	87.026	86.831	86.514	86.322	86.251	86.251	85.788	85.672	85.475	85.387	85.286	85.162	84.969	84.969	84.969	84.744	84.429	84.132	83.899	83.711	83.523	83.332	83.208	83.091	82.985	82.901	82.812	82.775	82.8	86.251	-9999.99	84.969	-9999.99
5.75	89.456	88.675	87.837	87.217	87.003	86.808	86.451	86.213	86.109	86.109	85.755	85.643	85.446	85.358	85.257	85.136	84.942	84.942	84.942	84.715	84.401	84.105	83.874	83.687	83.502	83.313	83.191	83.075	82.971	82.888	82.803	82.78	82.8	86.109	-9999.99	84.942	-9999.99
5.833	89.442	88.66	87.819	87.194	86.979	86.787	86.401	86.122	85.988	85.988	85.724	85.615	85.419	85.331	85.231	85.112	84.918	84.918	84.918	84.689	84.377	84.081	83.85	83.666	83.482	83.294	83.173	83.059	82.957	82.876	82.794	82.783	82.8	85.988	-9999.99	84.918	-9999.99
5.917	89.426	88.646	87.802	87.17	86.952	86.767	86.358	86.042	85.882	85.882	85.693	85.587	85.391	85.304	85.206	85.088	84.894	84.894	84.894	84.662	84.352	84.056	83.826	83.643	83.46	83.275	83.155	83.042	82.943	82.865	82.788	82.786	82.8	85.882	-9999.99	84.894	-9999.99
6	89.408	88.629	87.785	87.145	86.926	86.747	86.32	85.969	85.784	85.784	85.662	85.557	85.363	85.276	85.179	85.064	84.87	84.87	84.869	84.636	84.326	84.03	83.8	83.619	83.438	83.255	83.138	83.027	82.932	82.859	82.79	82.788	82.8	85.784	-9999.99	84.87	-9999.99
6.083	89.391	88.613	87.768	87.12	86.898	86.725	86.288	85.91	85.703	85.703	85.629	85.527	85.334	85.248	85.152	85.04	84.846	84.846	84.845	84.61	84.302	84.005	83.775	83.595	83.417	83.236	83.12	83.012	82.92	82.853	82.791	82.79	82.8	85.703	-9999.99	84.846	-9999.99
6.167	89.374	88.597	87.753	87.095	86.87	86.701	86.258	85.861	85.636	85.636	85.599	85.497	85.305	85.22	85.126	85.018	84.822	84.822	84.822	84.584	84.278	83.98	83.749	83.571	83.393	83.214	83.1	82.997	82.91	82.847	82.793	82.792	82.8	85.636	-9999.99	84.822	-9999.99
6.25	89.357	88.581	87.737	87.069	86.841	86.676	86.23	85.819	85.583	85.583	85.567	85.465	85.275	85.19	85.098	84.994	84.798	84.798	84.798	84.558	84.252	83.954	83.723	83.546	83.37	83.192	83.08	82.979	82.898	82.841	82.794	82.793	82.8	85.583	-9999.99	84.798	-9999.99
6.333	89.341	88.565	87.719	87.043	86.812	86.651	86.203	85.785	85.549	85.549	85.536	85.432	85.244	85.16	85.071	84.971	84.776	84.776	84.775	84.532	84.227	83.928	83.697	83.522	83.347	83.171	83.061	82.963	82.885	82.834	82.795	82.794	82.8	85.549	-9999.99	84.776	-9999.99
6.417	89.326	88.548	87.701	87.019	86.783	86.625	86.175	85.752	85.517	85.517	85.506	85.399	85.212	85.129	85.044	84.948	84.754	84.754	84.753	84.507	84.203	83.903	83.672	83.497	83.322	83.147	83.038	82.941	82.865	82.816	82.796	82.795	82.8	85.517	-9999.99	84.754	-9999.99

6.5	89.311	88.533	87.683	86.993	86.754	86.599	86.148	85.723	85.494	85.494	85.486	85.368	85.178	85.099	85.017	84.927	84.732	84.732	84.731	84.481	84.179	83.878	83.645	83.471	83.298	83.123	83.013	82.916	82.84	82.796	82.797	82.796	82.8	85.494	-9999.99	84.732	-9999.99
6.583	89.293	88.517	87.667	86.967	86.725	86.573	86.122	85.687	85.454	85.454	85.447	85.331	85.145	85.069	84.991	84.906	84.709	84.709	84.709	84.455	84.154	83.853	83.619	83.446	83.274	83.099	82.987	82.887	82.808	82.774	82.797	82.797	82.8	85.454	-9999.99	84.709	-9999.99
6.667	89.276	88.5	87.651	86.942	86.696	86.545	86.096	85.65	85.408	85.408	85.402	85.293	85.111	85.038	84.964	84.884	84.688	84.688	84.688	84.431	84.13	83.828	83.593	83.422	83.25	83.074	82.961	82.861	82.784	82.777	82.798	82.798	82.8	85.408	-9999.99	84.688	-9999.99
6.75	89.26	88.481	87.632	86.918	86.668	86.519	86.072	85.615	85.363	85.363	85.359	85.255	85.078	85.009	84.938	84.863	84.67	84.67	84.669	84.407	84.108	83.804	83.566	83.396	83.225	83.05	82.937	82.839	82.765	82.783	82.798	82.798	82.8	85.363	-9999.99	84.67	-9999.99
6.833	89.246	88.465	87.614	86.893	86.638	86.489	86.048	85.582	85.319	85.319	85.316	85.217	85.045	84.98	84.914	84.846	84.651	84.651	84.649	84.382	84.085	83.78	83.541	83.371	83.202	83.028	82.917	82.825	82.773	82.787	82.799	82.799	82.8	85.319	-9999.99	84.651	-9999.99
6.917	89.233	88.449	87.597	86.87	86.61	86.459	86.025	85.55	85.277	85.277	85.275	85.18	85.013	84.95	84.889	84.827	84.63	84.63	84.63	84.359	84.062	83.757	83.516	83.347	83.179	83.005	82.895	82.809	82.781	82.791	82.799	82.799	82.8	85.277	-9999.99	84.63	-9999.99
7	89.214	88.433	87.582	86.849	86.585	86.432	86.006	85.523	85.239	85.239	85.237	85.146	84.983	84.922	84.864	84.808	84.615	84.615	84.613	84.339	84.043	83.736	83.493	83.325	83.157	82.984	82.876	82.794	82.786	82.793	82.799	82.799	82.8	85.239	-9999.99	84.615	-9999.99
7.083	89.195	88.415	87.568	86.829	86.558	86.403	85.988	85.498	85.203	85.203	85.202	85.114	84.954	84.895	84.84	84.794	84.599	84.599	84.598	84.32	84.025	83.717	83.47	83.303	83.137	82.965	82.861	82.789	82.789	82.795	82.799	82.799	82.8	85.203	-9999.99	84.599	-9999.99
7.167	89.18	88.399	87.556	86.809	86.535	86.378	85.968	85.472	85.169	85.169	85.169	85.084	84.927	84.869	84.817	84.778	84.587	84.587	84.585	84.301	84.008	83.699	83.45	83.283	83.118	82.947	82.847	82.791	82.792	82.796	82.799	82.8	82.8	85.169	-9999.99	84.587	-9999.99
7.25	89.166	88.384	87.54	86.792	86.514	86.354	85.951	85.449	85.139	85.139	85.138	85.056	84.902	84.847	84.799	84.772	84.573	84.573	84.573	84.284	83.99	83.681	83.432	83.265	83.1	82.929	82.832	82.794	82.794	82.797	82.8	82.8	82.8	85.139	-9999.99	84.573	-9999.99
7.333	89.155	88.37	87.526	86.776	86.493	86.334	85.935	85.426	85.11	85.11	85.109	85.029	84.879	84.824	84.776	84.75	84.564	84.564	84.56	84.268	83.974	83.664	83.414	83.248	83.083	82.913	82.819	82.795	82.795	82.798	82.8	82.8	82.8	85.11	-9999.99	84.564	-9999.99
7.417	89.145	88.357	87.514	86.762	86.474	86.315	85.921	85.406	85.083	85.083	85.083	85.006	84.859	84.805	84.764	84.745	84.548	84.548	84.548	84.255	83.961	83.65	83.396	83.23	83.067	82.898	82.807	82.796	82.797	82.798	82.8	82.8	82.8	85.083	-9999.99	84.548	-9999.99
7.5	89.131	88.346	87.504	86.75	86.456	86.29	85.906	85.39	85.061	85.061	85.061	84.985	84.839	84.786	84.745	84.725	84.541	84.541	84.539	84.244	83.95	83.638	83.382	83.215	83.054	82.887	82.803	82.797	82.797	82.799	82.8	82.8	82.8	85.061	-9999.99	84.541	-9999.99
7.583	89.117	88.332	87.494	86.738	86.44	86.266	85.891	85.374	85.04	85.04	85.04	84.966	84.821	84.767	84.724	84.703	84.534	84.534	84.529	84.231	83.939	83.627	83.368	83.202	83.038	82.876	82.802	82.798	82.798	82.799	82.8	82.8	82.8	85.04	-9999.99	84.534	-9999.99
7.667	89.103	88.321	87.486	86.726	86.426	86.246	85.876	85.358	85.02	85.02	85.02	84.947	84.806	84.756	84.73	84.718	84.521	84.521	84.521	84.219	83.93	83.618	83.356	83.191	83.026	82.866	82.801	82.798	82.798	82.799	82.8	82.8	82.8	85.02	-9999.99	84.521	-9999.99
7.75	89.092	88.311	87.479	86.716	86.413	86.224	85.862	85.344	85.002	85.002	85.002	84.931	84.792	84.745	84.72	84.709	84.515	84.515	84.515	84.209	83.918	83.607	83.346	83.182	83.015	82.857	82.801	82.799	82.799	82.799	82.8	82.8	82.8	85.002	-9999.99	84.515	-9999.99
7.833	89.083	88.301	87.473	86.706	86.399	86.201	85.849	85.332	84.985	84.985	84.985	84.917	84.78	84.726	84.682	84.661	84.517	84.517	84.508	84.199	83.906	83.595	83.334	83.173	83.006	82.849	82.801	82.799	82.799	82.8	82.8	82.8	82.8	84.985	-9999.99	84.517	-9999.99
7.917	89.075	88.293	87.468	86.698	86.386	86.181	85.838	85.322	84.971	84.971	84.971	84.904	84.767	84.714	84.675	84.659	84.51	84.51	84.504	84.191	83.896	83.585	83.323	83.161	82.995	82.841	82.801	82.799	82.799	82.8	82.8	82.8	82.8	84.971	-9999.99	84.51	-9999.99
8	89.069	88.285	87.458	86.691	86.376	86.162	85.829	85.314	84.959	84.959	84.959	84.893	84.756	84.705	84.673	84.661	84.504	84.504	84.5	84.184	83.888	83.576	83.314	83.151	82.986	82.835	82.8	82.799	82.799	82.8	82.8	82.8	82.8	84.959	-9999.99	84.504	-9999.99
8.083	89.064	88.279	87.449	86.686	86.367	86.148	85.819	85.305	84.948	84.948	84.948	84.883	84.746	84.697	84.674	84.666	84.499	84.499	84.496	84.178	83.881	83.569	83.305	83.143	82.978	82.829	82.8	82.8	82.8	82.8	82.8	82.8	82.8	84.948	-9999.99	84.499	-9999.99
8.167	89.061	88.275	87.443	86.682	86.362	86.139	85.813	85.298	84.941	84.941	84.941	84.876	84.739	84.695	84.678	84.672	84.495	84.495	84.493	84.174	83.876	83.564	83.3	83.137	82.972	82.825	82.8	82.8	82.8	82.8	82.8	82.8	82.8	84.941	-9999.99	84.495	-9999.99
8.25	89.06	88.273	87.441	86.681	86.358	86.135	85.808	85.294	84.938	84.938	84.938	84.868	84.739	84.696	84.667	84.659	84.5	84.5	84.497	84.181	83.885	83.567	83.292	83.123	82.96	82.82	82.8	82.802	82.804	82.805	82.803	82.801	82.8	84.938	-9999.99	84.5	-9999.99
8.333	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.292	84.936	84.936	84.936	84.873	84.734	84.699	84.692	84.69	84.486	84.486	84.486	84.163	83.864	83.557	83.3	83.142	82.973	82.827	82.8	82.796	82.795	82.795	82.797	82.799	82.8	84.936	-9999.99	84.486	-9999.99
8.417	89.059	88.273	87.441	86.681	86.358	86.135	85.809	85.294	84.938	84.938	84.938	84.867	84.741	84.704	84.674	84.66	84.503	84.503	84.499	84.183	83.882	83.561	83.284	83.123	82.964	82.822	82.799	82.801	82.803	82.804	82.803	82.801	82.8	84.938	-9999.99	84.503	-9999.99
8.5	89.06	88.273	87.441	86.68	86.359	86.135	85.809	85.292	84.935	84.935	84.935	84.875	84.732	84.693	84.688	84.686	84.484	84.484	84.484	84.162	83.867	83.562	83.304	83.143	82.97	82.824	82.8	82.796	82.795	82.796	82.798	82.799	82.8	84.935	-9999.99	84.484	-9999.99
8.583	89.06	88.273	87.441	86.68	86.359	86.134	85.81	85.293	84.938	84.938	84.938	84.868	84.739	84.711	84.684	84.666	84.505	84.505	84.5	84.182	83.875	83.553	83.282	83.127	82.967	82.824	82.8	82.801	82.802	82.803	82.803	82.801	82.8	84.938	-9999.99	84.505	-9999.99
8.667	89.06	88.273	87.441	86.681	86.358	86.135	85.808	85.294	84.935	84.935	84.935	84.874	84.735	84.687	84.68	84.68	84.484	84.484	84.484	84.164	83.873	83.568	83.305	83.142	82.965	82.821	82.799	82.797	82.797	82.797	82.798	82.799	82.8	84.935	-9999.99	84.484	-9999.99
8.75	89.06	88.273	87.441	86.68	86.359	86.134	85.809	85.293	84.937	84.937	84.937	84.87	84.735	84.712	84.696	84.678	84.502	84.502	84.499	84.176	83.867	83.55	83.285	83.129	82.97	82.827	82.801	82.801	82.801	82.801	82.801	82.8	82.8	84.937	-9999.99	84.502	-9999.99

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7.ZZN
Selected output data from time (hr): 0
to time (hr): 8.75

Velocity

Time (hr)	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	Newtyle01	Bridge1_U	Newtyle12	Newtyle_0	Newtyle_0	CH000000	CH000000	CH000000	Newtyle_0	Bridge2_U	Newtyle_0	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	CH000000	Newtyle_0	CH000000	CH000000	CH000000	Newtyle_0	CH000000	Newtyle_0	Newtyle_0	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	1.445	1.146	1.527	0.974	1.043	0.658	1.457	1.757	0.781	0	0.781	0.924	1.038	0.984	0.832	0.667	1.862	0	1.862	1.324	1.227	1.396	1.06	1.055	1.055	1.002	0.687	0.408	0.281	0.191	0.114	0.088	0.053	0	0	0	0
0.083	1.183	0.874	1.276	0.717	0.89	0.551	1.128	1.453	0.531	0	0.531	0.687	0.811	0.631	0.41	0.285	1.208	0	1.208	0.959	0.906	1.113	0.799	0.846	0.879	0.707	0.331	0.189	0.122	0.0758	0.0331	0.0237	0.0175	0	0	0	0
0.167	1.183	0.87	1.276	0.712	0.895	0.541	1.133	1.445	0.539	0	0.539	0.707	0.742	0.695	0.624	0.49	1.389	0	1.484	1.168	1.088	1.253	0.822	0.748	0.776	0.691	0.322	0.185	0.126	0.0856	0.0465	0.0375	0.0286	0	0	0	0
0.25	1.179	0.883	1.269	0.726	0.882	0.552	1.12	1.455	0.54	0	0.54	0.687	0.824	0.654	0.415	0.28	1.196	0	1.196	0.938	0.907	1.144	0.834	0.859	0.891	0.663	0.3	0.175	0.12	0.0835	0.0465	0.0358	0.0264	0	0	0	0
0.333	1.184	0.871	1.277	0.714	0.893	0.55	1.131	1.451	0.524	0	0.524	0.716	0.741	0.641	0.59	0.501	1.409	0	1.519	1.188	1.092	1.201	0.773	0.745	0.796	0.702	0.336	0.199	0.134	0.0853	0.0389	0.027	0.0199	0	0	0	0
0.417	1.177	0.878	1.268	0.72	0.887	0.54	1.124	1.446	0.558	0	0.558	0.67	0.827	0.716	0.431	0.276	1.177	0	1.177	0.936	0.932	1.186	0.877	0.857	0.89	0.621	0.269	0.161	0.118	0.0902	0.0549	0.0413	0.0303	0	0	0	0
0.5	1.18	0.88	1.271	0.723	0.886	0.554	1.123	1.457	0.528	0	0.528	0.711	0.756	0.582	0.517	0.482	1.421	0	1.538	1.191	1.043	1.123	0.753	0.77	0.806	0.718	0.354	0.208	0.14	0.0883	0.0339	0.0169	0.0117	0	0	0	0
0.583	1.229	0.915	1.269	0.758	0.909	0.567	1.156	1.47	0.58	0	0.58	0.697	0.848	0.729	0.451	0.294	1.201	0	1.202	0.956	0.933	1.179	0.865	0.877	0.906	0.681	0.308	0.179	0.124	0.0885	0.0523	0.042	0.0313	0	0	0	0
0.667	1.287	0.946	1.277	0.797	0.94	0.601	1.203	1.503	0.605	0	0.606	0.752	0.849	0.809	0.651	0.489	1.392	0	1.487	1.146	1.071	1.242	0.876	0.866	0.878	0.764	0.387	0.23	0.158	0.106	0.0531	0.0374	0.0273	0	0	0	0
0.75	1.337	0.984	1.298	0.843	0.962	0.613	1.266	1.573	0.647	0	0.647	0.787	0.883	0.86	0.742	0.569	1.44	0	1.574	1.189	1.109	1.28	0.915	0.901	0.914	0.813	0.434	0.255	0.176	0.12	0.0621	0.0453	0.0332	0	0	0	0
0.833	1.38	1.034	1.38	0.884	0.984	0.621	1.332	1.637	0.689	0	0.689	0.825	0.922	0.905	0.828	0.659	1.494	0	1.676	1.236	1.15	1.315	0.953	0.936	0.952	0.873	0.504	0.297	0.204	0.139	0.0724	0.053	0.039	0	0	0	0
0.917	1.417	1.086	1.457	0.92	1.002	0.631	1.395	1.696	0.732	0	0.732	0.874	0.977	0.947	0.838	0.659	1.662	0	1.764	1.275	1.187	1.344	0.989	0.982	0.995	0.931	0.581	0.343	0.236	0.161	0.0838	0.0614	0.0451	0	0	0	0
1	1.445	1.146	1.528	0.975	1.043	0.658	1.458	1.757	0.782	0	0.782	0.925	1.039	0.986	0.834	0.668	1.864	0	1.864	1.324	1.229	1.397	1.064	1.06	1.058	1.003	0.69	0.41	0.282	0.191	0.0995	0.0727	0.0536	0	0	0	0
1.083	1.471	1.203	1.595	1.019	1.085	0.696	1.514	1.807	0.831	0	0.831	0.973	1.102	1.071	1.004	0.847	1.793	0	1.941	1.371	1.32	1.485	1.128	1.128	1.107	1.08	0.801	0.48	0.33	0.224	0.116	0.0848	0.0622	0	0	0	0
1.167	1.52	1.263	1.665	1.086	1.124	0.719	1.584	1.877	0.888	0	0.888	1.029	1.161	1.116	1.01	0.844	2.023	0	2.023	1.448	1.412	1.568	1.192	1.191	1.153	1.156	0.925	0.558	0.384	0.26	0.135	0.0984	0.0723	0	0	0	0
1.25	1.595	1.325	1.733	1.143	1.163	0.767	1.679	1.935	0.944	0	0.945	1.087	1.226	1.189	1.124	0.976	2.022	0	2.104	1.536	1.504	1.644	1.255	1.248	1.218	1.238	1.047	0.659	0.453	0.307	0.159	0.116	0.085	0	0	0	0
1.333	1.664	1.382	1.794	1.197	1.208	0.831	1.777	1.986	1	0	1.001	1.147	1.298	1.255	1.182	1.026	2.175	0	2.175	1.616	1.588	1.709	1.31	1.3	1.282	1.303	1.133	0.769	0.527	0.357	0.184	0.135	0.0989	0	0	0	0
1.417	1.725	1.439	1.846	1.256	1.256	0.887	1.875	2.034	1.058	0	1.06	1.21	1.372	1.334	1.278	1.17	2.254	0	2.294	1.696	1.664	1.78	1.389	1.379	1.355	1.369	1.227	0.904	0.619	0.418	0.215	0.157	0.115	0	0	0	0
1.5	1.769	1.512	1.939	1.309	1.3	0.945	1.971	2.076	1.12	0	1.122	1.274	1.448	1.411	1.363	1.283	2.404	0	2.417	1.771	1.749	1.857	1.467	1.454	1.425	1.439	1.324	1.064	0.728	0.49	0.251	0.183	0.135	0	0	0	0
1.583	1.811	1.577	2.035	1.367	1.341	1.002	2.09	2.137	1.18	0	1.184	1.344	1.53	1.493	1.456	1.413	2.515	0	2.531	1.863	1.86	1.945	1.54	1.525	1.503	1.524	1.446	1.237	0.855	0.573	0.292	0.213	0.156	0	0	0	0
1.667	1.898	1.674	2.125	1.433	1.393	1.069	2.209	2.19	1.244	0	1.25	1.418	1.618	1.584	1.556	1.538	2.641	0	2.642	1.965	1.966	2.03	1.617	1.6	1.582	1.6	1.533	1.354	1.011	0.673	0.34	0.248	0.182	0	0	0	0
1.75	2.004	1.765	2.203	1.492	1.442	1.135	2.319	2.238	1.306	0	1.314	1.493	1.707	1.678	1.663	1.669	2.736	0	2.737	2.059	2.059	2.111	1.701	1.683	1.658	1.672	1.621	1.471	1.194	0.787	0.393	0.287	0.21	0	0	0	0
1.833	2.102	1.852	2.274	1.544	1.491	1.21	2.43	2.282	1.368	0	1.379	1.574	1.805	1.786	1.787	1.823	2.845	0	2.855	2.15	2.161	2.197	1.781	1.763	1.743	1.756	1.718	1.605	1.404	0.924	0.453	0.331	0.242	0	0	0	0
1.917	2.185	1.945	2.378	1.608	1.545	1.29	2.537	2.322	1.43	0	1.445	1.659	1.908	1.897	1.909	1.968	2.964	0	2.972	2.258	2.271	2.285	1.862	1.842	1.824	1.832	1.795	1.695	1.502	1.099	0.523	0.382	0.279	0	0	0	0
2	2.264	2.051	2.475	1.661	1.596	1.374	2.629	2.365	1.503	0	1.522	1.747	2.014	2.009	2.031	2.111	3.069	0	3.075	2.362	2.373	2.373	1.95	1.929	1.909	1.907	1.865	1.756	1.558	1.198	0.599	0.437	0.318	0	0	0	0
2.083	2.37	2.157	2.563	1.714	1.648	1.461	2.721	2.452	1.624	0	1.652	1.831	2.111	2.121	2.153	2.255	3.167	0	3.176	2.458	2.474	2.454	2.03	2.008	1.988	1.977	1.925	1.811	1.577	1.224	0.684	0.5	0.363	0	0	0	0
2.167	2.466	2.25	2.64	1.764	1.697	1.539	2.798	2.517	1.723	0	1.758	1.901	2.153	2.224	2.269	2.389	3.269	0	3.275	2.56	2.572	2.539	2.11	2.086	2.064	2.051	1.998	1.873	1.629	1.242	0.773	0.565	0.408	0	0	0	0
2.25	2.545	2.35	2.729	1.807	1.743	1.62	2.875	2.561	1.793	0	1.856	1.962	2.205	2.283	2.379	2.514	3.356	0	3.359	2.651	2.66	2.615	2.187	2.164	2.142	2.134	2.071	1.952	1.735	1.347	0.869	0.635	0.457	0	0	0	0
2.333	2.614	2.442	2.811	1.851	1.786	1.695	2.93	2.531	1.783	0	1.949	2.019	2.243	2.349	2.467	2.636	3.44	0	3.443	2.739	2.748	2.686	2.254	2.233	2.213	2.212	2.141	2.033	1.818	1.441	0.969	0.708	0.506	0	0	0	0
2.417	2.675	2.525	2.883	1.888	1.829	1.777	2.956	2.452	1.735	0	2.032	2.071	2.276	2.404	2.543	2.747	3.519	0	3.522	2.826	2.831	2.753	2.317	2.297	2.281	2.29	2.2	2.094	1.878	1.525	1.073	0.785	0.557	0	0	0	0
2.5	2.735	2.609	2.943	1.927	1.869	1.861	2.934	2.283	1.657	0	2.112	2.112	2.31	2.447	2.616	2.845	3.589	0	3.59	2.905	2.905	2.815	2.374	2.358	2.344	2.37	2.25	2.131	1.932	1.603	1.183	0.865	0.608	0	0	0	0
2.583	2.814	2.686	3.001	1.963	1.916	1.916	2.886	1.947	1.577	0	2.189	2.158	2.328	2.493	2.677	2.931	3.657	0	3.658	2.981	2.975	2.873	2.431	2.405	2.395	2.44	2.292	2.157	1.959	1.627	1.239	0.946	0.659	0	0	0	0
2.667	2.883	2.757	3.052	1.998	1.963	1.946	2.714	1.624	1.491	0	2.265	2.19	2.348	2.527	2.732	3.009	3.717	0	3.719	3.052	3.038	2.928	2.486	2.456	2.442	2.484	2.322	2.18	1.984	1.645	1.291	1.034	0.71	0	0	0	0
2.75	2.94	2.834	3.107	2.035	2.014	2.004	2.181	1.274	1.411	0	2.331	2.216	2.368	2.552	2.779	3.075	3.769	0	3.77	3.113	3.092	2.978	2.531	2.494	2.484	2.537	2.353	2.202	1.997	1.663	1.34	1.122	0.759	0	0	0	0
2.833	2.993	2.901	3.159	2.072	2.05	2.025	1.809	1.089	1.356	0	2.379	2.239	2.373	2.573	2.812	3.12	3.807	0	3.808	3.159	3.134	3.011	2.564	2.513	2.511	2.577	2.377	2.217	2.008	1.679	1.38	1.198	0.797	0	0	0	0
2.917	3.042	2.961	3.209	2.132	2.07	1.94	1.486	0.925	1.267	0	2.35	2.112	2.363	2.6	2.848	3.179	3.859	0	3.86	3.22	3.187	3.057	2.608	2.545	2.527	2.627	2.409	2.236	2.023	1.698	1.416	1.265	0.843	0	0	0	0
3	3.086	3.015	3.252	2.174	2.099	1.926	1.452	0.864	1.229	0	2.337	1.947	2.342	2.589	2.853	3.225	3.895	0	3.895	3.258	3.241	3.11	2.657	2.572	2.553	2.64	2.441	2.256	2.037	1.71	1.443	1.314	0.896	0	0	0	0
3.083	3.129	3.066	3.291	2.218	2.125	1.934	1.457	0.853	1.235	0	2.406	1.868	2.285	2.536	2.79	3.227	3.892	0	3.892	3.256	3.253	3.157	2.708	2.595	2.572	2.664	2.457	2.282	2.061	1.727	1.486	1.372	0.965	0	0	0	0
3.167	3.176	3.12	3.32	2.263	2.146	1.949	1.462	0.839	1.233	0	2.44	1.799	2.242	2.503	2.768	3.242	3.912	0	3.912	3.284	3.282	3.176	2.727	2.616	2.572	2.686	2.469	2.289	2.072	1.737	1.513	1.41	1.012	0	0	0	0
3.25	3.337	3.055	3.473	2.27	2.158	1.996	1.361	0.902	1.21	0	2.431	1.703	2.177	2.441	2.73	3.244	3.923	0	3.923	3.309	3.314	3.205	2.75	2.624	2.57	2.705	2.485	2.303	2.084	1.743	1.537	1.444	1.056	0	0	0	0
3.333	3.231	3.207	3.381	2.285	2.269	1.838	1.585	0.739	1.196	0	2.394	1.652	2.135	2.404	2.699	3.247	3.922	0	3.922	3.316	3.32	3.214	2.769	2.629	2.581	2.724	2.5	2.312	2.088	1.748	1.564	1.479	1.103	0	0	0	0
3.417	3.285	3.267	3.394	2.396	2.144	2.051	1.414	0.812	1.19	0	2.374	1.563	2.074	2.363	2.678	3.259	3.94	0	3.94	3.347	3.347	3.233	2.777	2.628	2.583	2.718	2.519	2.326	2.101	1.751	1.585	1.512	1.148	0	0	0	0
3.5	3.333	3.262	3.469	2.366	2.271	1.931	1.532	0.763	1.176	0	2.354	1.525	2.032	2.31	2.648	3.248	3.93	0	3.93	3.354	3.355	3.246	2.791	2.637	2.579	2.71	2.53	2.336	2.112	1.755	1.599	1.54	1.186	0	0	0	0
3.583	3.358	3.296	3.487	2.401	2.259	1.97	1.513	0.763	1.163	0	2.313	1.472	1.994	2.271	2.629	3.247	3.927	0	3.927	3.367	3.363	3.254	2.798	2.641	2.574	2.708	2.537	2.345	2.119	1.759	1.613	1.564	1.219	0	0	0	0
3.667	3.385	3.314	3.511	2.411	2.271	1.974	1.514	0.741	1.124	0	2.175	1.421	1.929	2.214	2.582	3.234	3.914	0	3.915	3.372	3.371	3.262	2.804	2.645	2.574	2.71	2.541	2.352	2.13	1.761	1.625	1.583	1.247	0	0	0	0
3.75	3.387	3.349	3.507	2.426	2.269	1.985	1.52	0.712	1.103	0	2.097	1.36	1.883	2.172	2.537	3.217	3.898	0	3.898	3.371	3.374	3.269	2.817	2.646	2.572	2.712	2.539	2.359	2.137	1.767	1.637	1.599	1.272	0	0	0	0
3.833	3.4	3.359	3.521	2.426	2.28	1.985	1.528	0.698	1.087	0	2.044	1.329	1.849	2.121	2.505	3.203	3.886	0	3.887	3.373	3.38	3.277	2.825	2.646	2.571	2.714	2.538	2.365	2.141	1.77	1.645	1.613	1.292	0	0	0	0
3.917	3.407	3.367	3.528	2.426	2.286	1.988	1.533	0.689	1.074	0	1.999	1.303	1.831	2.09	2.487	3.195	3.881	0	3.881	3.376	3.381	3.282	2.831	2.643	2.571	2.715	2.537	2.368	2.146	1.773	1.654	1.628	1.306	0	0	0	0
4	3.398	3.384	3.514	2.436	2.273	2.003	1.523	0.686	1.07	0	1.982	1.285	1.827	2.083	2.484	3.194	3.877	0	3.878	3.374	3.378	3.284	2.833	2.644	2.571	2.715	2.537	2.369	2.149	1.775	1.658	1.634	1.312	0	0	0	0
4.083	3.405	3.372	3.522	2.428	2.279	1.996	1.525	0.689	1.07	0	1.981	1.29	1.824	2.08	2.481	3.193	3.878	0	3.878	3.375	3.379	3.284	2.831	2.643	2.57	2.715	2.537	2.369	2.148	1.775	1.658	1.635	1.313	0	0	0	0
4.167	3.39	3.374	3.507	2.43	2.269	1.997	1.52	0.69	1.075	0	1.997	1.3	1.833	2.092	2.489	3.195	3.877	0	3.878	3.371	3.375	3.28	2.831	2.644	2.569	2.714	2.536	2.368	2.146	1.773	1.655	1.63	1.308	0	0	0	0
4.25	3.394	3.35	3.514	2.416	2.275	1.981	1.521	0.699	1.083	0	2.031	1.327	1.843	2.112	2.499	3.199	3.881	0	3.881	3.37	3.376	3.275	2.826	2.642	2.57	2.713	2.536	2.365	2.142	1.77	1.649	1.619	1.297	0	0	0	0
4.333	3.379	3.339	3.5	2.413	2.264	1.979	1.514	0.709	1.097	0	2.078	1.351	1.868	2.15	2.522	3.208	3.888	0	3.888	3.367	3.372	3.27	2.819	2.642	2.57	2.711	2.537	2.361	2.137	1.769	1.641	1.607	1.283	0	0	0	0
4.417	3.362	3.325	3.484	2.409	2.253	1.975	1.506	0.723	1.118	0	2.147	1.383	1.903	2.186	2.551	3.218	3.896	0	3.896	3.364	3.367	3.264	2.81	2.643	2.57	2.708	2.537	2.355	2.133	1.766	1.634	1.594	1.265	0	0	0	0
4.5	3.34	3.309	3.463	2.403	2.24	1.974	1.497	0.741	1.142	0	2.234	1.432	1.946	2.225	2.59	3.228	3.905	0	3.905	3.358	3.358	3.253	2.799	2.639	2.572	2.704	2.538	2.349	2.125	1.762	1.624	1.579	1.244	0	0	0	0
4.583	3.319	3.286	3.444	2.391	2.222	1.978	1.486	0.769	1.173	0	2.339	1.487	1.997	2.272	2.627	3.241	3.92	0	3.92	3.358	3.356	3.248	2.793	2.636	2.573	2.704	2.536	2.342	2.118	1.758	1.614	1.563	1.22	0	0	0	0
4.667	3.307	3.244	3.44	2.357	2.232	1.951	1.493	0.777	1.18	0	2.36	1.528	2.031	2.309	2.643	3.242	3.922	0	3.922	3.346	3.347	3.239	2.784	2.632	2.574	2.707	2.525	2.334	2.108	1.754	1.599	1.541	1.188	0	0	0	0
4.75	3.274	3.222	3.407	2.337	2.215	1.944	1.488	0.781	1.187	0	2.373	1.574	2.064	2.347	2.66	3.243	3.921	0	3.921	3.331	3.337	3.229	2.775	2.626	2.578	2.711	2.516	2.325	2.099	1.752	1.585	1.52	1.158	0	0	0	0
4.833	3.233	3.21	3.356	2.339	2.154	1.988	1.44	0.801	1.199	0	2.391	1.614	2.105	2.381	2.682	3.246	3.922	0	3.923	3.321	3.329	3.22	2.765	2.62	2.58	2.718	2.505	2.316	2.091	1.747	1.573	1.496	1.126	0	0	0	0
4.917	3.235	3.094	3.412	2.207	2.282	1.79	1.571	0.777	1.199	0	2.41	1.68	2.151	2.408	2.699	3.233	3.906	0	3.906	3.295	3.306	3.203	2.757	2.624	2.573	2.716	2.49	2.304	2.083	1.743	1.557	1.471	1.091	0	0	0	0
5	3.243	3.069	3.367	2.279	2.081	2.034	1.331	0.9	1.221	0	2.428	1.723	2.18	2.437	2.723	3.236	3.913	0	3.913	3.295	3.301	3.192	2.739	2.618	2.565	2.7	2.481	2.298	2.081	1.739	1.536	1.444	1.055	0	0	0	0
5.083	3.137	3.103	3.261	2.287	2.031	2.048	1.341	0.894	1.244	0	2.437	1.797	2.224	2.481	2.75	3.234	3.906	0	3.907	3.279	3.28	3.174	2.721	2.609	2.564	2.683	2.468	2.288	2.07	1.737	1.515	1.415	1.019	0	0	0	0
5.167	3.101	3.037	3.269	2.193	2.11	1.916	1.452	0.854	1.237	0	2.4	1.869	2.267	2.513	2.765	3.216	3.881	0	3.881	3.245	3.246	3.15	2.703	2.594	2.567	2.664	2.452	2.28	2.06	1.726	1.492	1.382	0.978	0	0	0	0
5.25	3.069	2.997	3.237	2.159	2.085	1.912	1.442	0.864	1.232	0	2.348	1.921	2.291	2.521	2.771	3.196	3.86	0	3.86	3.219	3.22	3.128	2.679	2.576	2.563	2.647	2.449	2.267	2.047	1.717	1.468	1.35	0.939	0	0	0	0
5.333	3.032	2.954	3.202	2.127	2.055	1.909	1.439	0.88	1.235	0	2.313	1.992	2.309	2.536	2.778	3.175	3.844	0	3.844	3.198	3.192	3.095	2.645	2.565	2.546	2.635	2.436	2.251	2.033	1.707	1.444	1.318	0.9	0	0	0	0
5.417	2.995	2.906	3.165	2.094	2.025	1.91	1.458	0.924	1.265	0	2.329	2.09	2.329	2.555	2.789	3.157	3.827	0	3.828	3.178	3.165	3.064	2.615	2.551	2.53	2.627	2.415	2.238	2.023	1.7	1.426	1.285	0.864	0	0	0	0
5.5	2.954	2.855	3.123	2.055	1.996	1.934	1.55	1.014	1.322	0	2.366	2.192	2.354	2.566	2.8	3.136	3.811	0	3.811	3.157	3.14	3.03	2.585	2.528	2.516	2.603	2.393	2.225	2.014	1.691	1.408	1.25	0.828	0	0	0	0
5.583	2.909	2.799	3.079	2.012	1.984	1.962	1.899	1.171	1.386	0	2.345	2.22	2.363	2.556	2.789	3.093	3.776	0	3.776	3.12	3.106	2.993	2.547	2.501	2.501	2.561	2.365	2.209	2.002	1.674	1.37	1.178	0.786	0	0	0	0
5.667	2.861	2.737	3.033	1.985	1.95	1.934	2.541	1.503	1.466	0	2.276	2.19	2.349	2.53	2.744	3.028	3.728	0	3.728	3.063	3.049	2.942	2.498	2.469	2.456	2.503	2.33	2.187	1.985	1.653	1.317	1.079	0.735	0	0	0	0
5.75	2.805	2.68	2.994	1.958	1.915	1.918	2.815	1.799	1.546	0	2.209	2.161	2.329	2.505	2.695	2.958	3.676	0	3.676	3.001	2.995	2.892	2.451	2.423	2.412	2.453	2.305	2.161	1.964	1.635	1.268	0.994	0.686	0	0	0	0
5.833	2.745	2.62	2.95	1.927	1.876	1.886	2.882	2.117	1.617	0	2.145	2.127	2.314	2.467	2.647	2.888	3.619	0	3.621	2.939	2.94	2.844	2.402	2.38	2.376	2.411	2.272	2.141	1.946	1.619	1.224	0.921	0.643	0	0	0	0
5.917	2.691	2.553	2.905	1.898	1.847	1.823	2.921	2.344	1.679	0	2.079	2.091	2.295	2.43	2.591	2.815	3.562	0	3.565	2.877	2.88	2.794	2.356	2.341	2.328	2.351	2.237	2.123	1.925	1.596	1.169	0.852	0.6	0	0	0	0
6	2.645	2.491	2.852	1.87	1.813	1.757	2.937	2.449	1.739	0	2.014	2.058	2.267	2.396	2.533	2.735	3.507	0	3.511	2.816	2.821	2.744	2.31	2.291	2.276	2.286	2.197	2.092	1.881	1.533	1.08	0.787	0.558	0	0	0	0
6.083	2.595	2.425	2.794	1.839	1.779	1.693	2.918	2.512	1.775	0	1.948	2.016	2.241	2.352	2.473	2.646	3.445	0	3.45	2.747	2.756	2.691	2.259	2.239	2.222	2.223	2.153	2.049	1.834	1.466	0.996	0.726	0.518	0	0	0	0
6.167	2.54	2.354	2.729	1.805	1.745	1.635	2.879	2.539	1.783	0	1.875	1.969	2.217	2.299	2.409	2.551	3.38	0	3.382	2.675	2.686	2.635	2.209	2.187	2.167	2.163	2.097	1.985	1.782	1.396	0.916	0.668	0.479	0	0	0	0
6.25	2.481	2.275	2.66	1.77	1.71	1.571	2.828	2.537	1.76	0	1.8	1.928	2.176	2.251	2.324	2.453	3.318	0	3.318	2.606	2.618	2.577	2.151	2.129	2.108	2.1	2.041	1.923	1.7	1.315	0.838	0.611	0.44	0	0	0	0
6.333	2.409	2.201	2.598	1.735	1.673	1.509	2.766	2.49	1.688	0	1.721	1.875	2.137	2.197	2.237	2.353	3.245	0	3.248	2.532	2.547	2.516	2.089	2.067	2.046	2.034	1.983	1.861	1.619	1.241	0.765	0.558	0.403	0	0	0	0
6.417	2.329	2.124	2.533	1.694	1.634	1.445	2.703	2.437	1.609	0	1.636	1.819	2.105	2.11	2.143	2.245	3.16	0	3.167	2.45	2.467	2.447	2.024	2.004	1.985	1.975	1.924	1.812	1.578	1.227	0.694	0.506	0.367	0	0	0	0

6.5	2.247	2.037	2.463	1.652	1.593	1.376	2.632	2.363	1.508	0	1.528	1.752	2.026	2.023	2.047	2.131	3.077	0	3.086	2.375	2.386	2.383	1.963	1.943	1.924	1.919	1.872	1.76	1.566	1.211	0.628	0.457	0.333	0	0	0	0
6.583	2.183	1.951	2.385	1.61	1.551	1.308	2.56	2.324	1.446	0	1.462	1.685	1.943	1.935	1.952	2.019	3.006	0	3.01	2.296	2.311	2.318	1.897	1.877	1.858	1.861	1.827	1.731	1.542	1.184	0.564	0.411	0.3	0	0	0	0
6.667	2.115	1.871	2.295	1.561	1.507	1.243	2.473	2.292	1.396	0	1.409	1.613	1.858	1.844	1.852	1.901	2.918	0	2.92	2.209	2.224	2.244	1.824	1.806	1.792	1.803	1.769	1.668	1.479	1.047	0.501	0.366	0.267	0	0	0	0
6.75	2.033	1.798	2.228	1.509	1.462	1.173	2.383	2.258	1.342	0	1.353	1.543	1.773	1.754	1.753	1.785	2.799	0	2.821	2.122	2.129	2.171	1.76	1.743	1.724	1.74	1.705	1.592	1.389	0.909	0.445	0.325	0.237	0	0	0	0
6.833	1.943	1.716	2.163	1.462	1.419	1.111	2.286	2.216	1.288	0	1.296	1.472	1.687	1.66	1.645	1.651	2.705	0	2.719	2.042	2.044	2.099	1.689	1.673	1.65	1.667	1.619	1.473	1.197	0.787	0.392	0.286	0.209	0	0	0	0
6.917	1.843	1.63	2.089	1.406	1.373	1.05	2.185	2.175	1.231	0	1.237	1.404	1.607	1.574	1.545	1.527	2.632	0	2.632	1.955	1.958	2.023	1.613	1.598	1.58	1.601	1.538	1.365	1.027	0.682	0.343	0.25	0.183	0	0	0	0
7	1.791	1.551	2.007	1.348	1.328	0.991	2.081	2.129	1.176	0	1.18	1.34	1.53	1.496	1.461	1.421	2.518	0	2.536	1.867	1.868	1.95	1.545	1.533	1.513	1.536	1.464	1.264	0.888	0.594	0.302	0.22	0.161	0	0	0	0
7.083	1.752	1.491	1.918	1.297	1.292	0.941	1.972	2.071	1.122	0	1.125	1.277	1.456	1.421	1.376	1.302	2.424	0	2.434	1.784	1.769	1.874	1.481	1.47	1.444	1.465	1.366	1.125	0.768	0.516	0.263	0.192	0.141	0	0	0	0
7.167	1.708	1.426	1.838	1.249	1.252	0.888	1.886	2.036	1.067	0	1.069	1.219	1.388	1.351	1.299	1.199	2.294	0	2.327	1.714	1.683	1.799	1.413	1.404	1.379	1.395	1.269	0.972	0.664	0.447	0.229	0.167	0.123	0	0	0	0
7.25	1.651	1.373	1.789	1.195	1.208	0.838	1.793	1.991	1.012	0	1.013	1.161	1.319	1.278	1.21	1.064	2.209	0	2.209	1.643	1.616	1.735	1.341	1.334	1.315	1.335	1.183	0.839	0.574	0.388	0.2	0.146	0.107	0	0	0	0
7.333	1.588	1.318	1.733	1.143	1.166	0.778	1.706	1.946	0.96	0	0.96	1.105	1.251	1.213	1.15	1.005	2.068	0	2.134	1.569	1.542	1.673	1.28	1.272	1.251	1.276	1.101	0.727	0.498	0.337	0.174	0.127	0.093	0	0	0	0
7.417	1.517	1.263	1.669	1.092	1.126	0.723	1.61	1.896	0.908	0	0.908	1.049	1.187	1.147	1.051	0.889	2.065	0	2.065	1.493	1.461	1.61	1.227	1.223	1.191	1.214	1.019	0.628	0.431	0.292	0.151	0.11	0.0809	0	0	0	0
7.5	1.467	1.209	1.608	1.035	1.094	0.699	1.55	1.842	0.861	0	0.861	1.004	1.138	1.098	1.008	0.847	1.943	0	1.997	1.419	1.387	1.545	1.175	1.176	1.141	1.149	0.915	0.55	0.377	0.256	0.132	0.0969	0.0709	0	0	0	0
7.583	1.444	1.162	1.546	0.992	1.057	0.675	1.491	1.787	0.811	0	0.812	0.955	1.085	1.054	0.975	0.808	1.809	0	1.923	1.359	1.301	1.469	1.116	1.118	1.099	1.077	0.797	0.475	0.326	0.221	0.115	0.0838	0.0615	0	0	0	0
7.667	1.42	1.109	1.484	0.948	1.019	0.64	1.439	1.739	0.768	0	0.769	0.912	1.028	0.975	0.822	0.657	1.851	0	1.851	1.318	1.219	1.39	1.059	1.058	1.056	1.005	0.695	0.412	0.283	0.191	0.0991	0.0722	0.0529	0	0	0	0
7.75	1.39	1.058	1.417	0.906	0.986	0.621	1.386	1.69	0.728	0	0.728	0.873	0.975	0.918	0.76	0.604	1.758	0	1.78	1.282	1.193	1.352	1.005	1	1.011	0.951	0.611	0.361	0.249	0.169	0.0873	0.0635	0.0467	0	0	0	0
7.833	1.356	1.012	1.346	0.872	0.971	0.612	1.331	1.635	0.69	0	0.69	0.828	0.927	0.91	0.84	0.674	1.502	0	1.692	1.242	1.158	1.321	0.961	0.943	0.963	0.898	0.537	0.317	0.218	0.148	0.0767	0.0562	0.0415	0	0	0	0
7.917	1.318	0.967	1.276	0.836	0.953	0.604	1.274	1.578	0.653	0	0.653	0.792	0.892	0.873	0.771	0.597	1.458	0	1.607	1.203	1.123	1.292	0.93	0.915	0.931	0.846	0.472	0.278	0.191	0.13	0.0675	0.0496	0.0366	0	0	0	0
8	1.27	0.938	1.274	0.798	0.936	0.596	1.22	1.522	0.618	0	0.618	0.763	0.862	0.835	0.696	0.523	1.413	0	1.524	1.164	1.088	1.262	0.899	0.887	0.9	0.799	0.419	0.246	0.169	0.115	0.0597	0.0437	0.0323	0	0	0	0
8.083	1.224	0.908	1.272	0.761	0.916	0.578	1.175	1.482	0.584	0	0.584	0.731	0.833	0.788	0.611	0.451	1.366	0	1.44	1.122	1.053	1.228	0.866	0.856	0.869	0.752	0.372	0.218	0.15	0.102	0.0531	0.0389	0.0286	0	0	0	0
8.167	1.192	0.885	1.272	0.733	0.898	0.558	1.146	1.463	0.558	0	0.558	0.706	0.809	0.733	0.539	0.392	1.318	0	1.363	1.081	1.02	1.2	0.84	0.832	0.846	0.712	0.336	0.196	0.135	0.0916	0.0477	0.0349	0.0258	0	0	0	0
8.25	1.18	0.874	1.272	0.715	0.891	0.539	1.129	1.444	0.546	0	0.547	0.704	0.747	0.718	0.631	0.474	1.374	0	1.458	1.149	1.083	1.263	0.851	0.764	0.768	0.681	0.31	0.173	0.117	0.0817	0.0487	0.0399	0.0301	0	0	0	0
8.333	1.181	0.88	1.272	0.723	0.885	0.553	1.123	1.455	0.533	0	0.534	0.689	0.819	0.644	0.412	0.282	1.202	0	1.202	0.947	0.906	1.129	0.821	0.854	0.889	0.679	0.313	0.181	0.122	0.0811	0.0426	0.033	0.0243	0	0	0	0
8.417	1.185	0.869	1.279	0.711	0.896	0.545	1.134	1.447	0.529	0	0.529	0.713	0.74	0.664	0.608	0.498	1.402	0	1.507	1.181	1.093	1.227	0.793	0.741	0.789	0.696	0.329	0.193	0.131	0.0846	0.0417	0.0314	0.0234	0	0	0	0
8.5	1.174	0.885	1.264	0.726	0.881	0.545	1.118	1.453	0.553	0	0.553	0.676	0.829	0.683	0.423	0.279	1.183	0	1.184	0.933	0.917	1.169	0.857	0.862	0.89	0.637	0.281	0.166	0.119	0.0876	0.0517	0.0389	0.0287	0	0	0	0
8.583	1.181	0.877	1.273	0.721	0.887	0.553	1.125	1.457	0.525	0	0.525	0.714	0.75	0.594	0.539	0.49	1.421	0	1.538	1.193	1.061	1.141	0.753	0.764	0.804	0.711	0.349	0.206	0.138	0.0872	0.0349	0.0195	0.0138	0	0	0	0
8.667	1.183	0.869	1.278	0.71	0.897	0.536	1.134	1.441	0.553	0	0.553	0.674	0.811	0.757	0.447	0.272	1.172	0	1.172	0.95	0.958	1.209	0.895	0.847	0.884	0.606	0.255	0.157	0.119	0.0927	0.0579	0.0444	0.0328	0	0	0	0
8.75	1.176	0.881	1.266	0.723	0.884	0.548	1.12	1.456	0.54	0	0.54	0.696	0.775	0.567	0.454	0.434	1.403	0	1.501	1.148	0.974	1.096	0.763	0.776	0.815	0.731	0.359	0.211	0.142	0.0884	0.0315	0.0129	0.00806	0	0	0	0

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7.ZZN
Selected output data from time (hr): 0
to time (hr): 8.75

Fr

Time (hr)	Newtyle_0	CH000000	CH000000	Newtyle_0:	CH000000	CH000000	Newtyle_0	CH000000	Newtyle01	Bridge1_U	Newtyle12	Newtyle_0	Newtyle_0:	CH000000	CH000000	CH000000	Newtyle_0	Bridge2_U	Newtyle_0	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	CH000000	Newtyle_0(	CH000000	Newtyle_0(	Newtyle_0(	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	1.443	1.075	1.628	0.895	0.89	0.453	1.23	1.524	0.513	0	0.513	0.672	0.793	0.755	0.604	0.445	2.129	0	2.129	1.286	1.125	1.336	0.919	0.931	0.948	0.897	0.519	0.248	0.154	0.128	0.067	0.042	0.031	0	0	0	0
0.083	1.419	0.995	1.586	0.841	1	0.457	1.089	1.598	0.433	0	0.433	0.648	0.815	0.59	0.331	0.203	1.844	0	1.844	1.348	1.173	1.424	0.833	0.874	0.932	0.75	0.253	0.115	0.0667	0.0505	0.0208	0.0137	0.0103	0	0	0	0
0.167	1.419	0.989	1.587	0.833	1.008	0.448	1.097	1.577	0.435	0	0.436	0.68	0.725	0.656	0.548	0.382	1.838	0	2.03	1.408	1.22	1.504	0.889	0.829	0.862	0.751	0.245	0.112	0.0693	0.058	0.0293	0.0217	0.0168	0	0	0	0
0.25	1.413	1.006	1.577	0.852	0.988	0.458	1.082	1.605	0.44	0	0.44	0.642	0.834	0.626	0.339	0.201	1.847	0	1.847	1.332	1.156	1.42	0.856	0.881	0.953	0.703	0.228	0.107	0.0658	0.0557	0.0293	0.0207	0.0155	0	0	0	0
0.333	1.421	0.991	1.588	0.837	1.004	0.456	1.093	1.589	0.423	0	0.423	0.689	0.722	0.588	0.505	0.387	1.833	0	2.052	1.423	1.254	1.494	0.854	0.82	0.873	0.758	0.256	0.12	0.0738	0.0578	0.0245	0.0156	0.0117	0	0	0	0
0.417	1.409	1.001	1.576	0.843	0.997	0.447	1.09	1.585	0.455	0	0.456	0.624	0.838	0.705	0.359	0.201	1.839	0	1.838	1.325	1.147	1.418	0.89	0.879	0.969	0.67	0.205	0.0982	0.0648	0.0603	0.0346	0.0239	0.0178	0	0	0	0
0.5	1.414	1.003	1.58	0.848	0.993	0.46	1.083	1.601	0.427	0	0.427	0.679	0.748	0.523	0.426	0.365	1.838	0	2.069	1.45	1.253	1.462	0.831	0.837	0.875	0.766	0.269	0.126	0.0769	0.0597	0.0213	0.00978	0.00686	0	0	0	0
0.583	1.433	1.012	1.563	0.864	0.988	0.461	1.099	1.567	0.463	0	0.464	0.634	0.838	0.699	0.368	0.211	1.841	0	1.842	1.338	1.15	1.415	0.871	0.888	0.96	0.717	0.233	0.108	0.0675	0.0591	0.0329	0.0243	0.0184	0	0	0	0
0.667	1.459	1.009	1.558	0.875	0.977	0.478	1.115	1.534	0.467	0	0.467	0.664	0.791	0.759	0.563	0.376	1.847	0	2.039	1.39	1.203	1.43	0.88	0.881	0.914	0.79	0.294	0.139	0.0865	0.0714	0.0334	0.0216	0.0161	0	0	0	0
0.75	1.471	1.013	1.559	0.888	0.95	0.471	1.146	1.546	0.482	0	0.482	0.664	0.783	0.776	0.64	0.441	1.822	0	2.083	1.378	1.191	1.411	0.889	0.889	0.924	0.817	0.329	0.155	0.0964	0.0804	0.0391	0.0262	0.0196	0	0	0	0
0.833	1.47	1.031	1.597	0.889	0.925	0.458	1.178	1.547	0.494	0	0.494	0.662	0.775	0.777	0.7	0.511	1.787	0	2.123	1.354	1.175	1.383	0.893	0.892	0.933	0.847	0.382	0.18	0.112	0.0935	0.0456	0.0306	0.023	0	0	0	0
0.917	1.462	1.049	1.622	0.882	0.895	0.448	1.206	1.538	0.503	0	0.503	0.67	0.784	0.772	0.662	0.476	1.956	0	2.139	1.324	1.156	1.352	0.899	0.906	0.942	0.871	0.44	0.208	0.13	0.108	0.0527	0.0355	0.0265	0	0	0	0
1	1.443	1.074	1.628	0.896	0.89	0.453	1.23	1.523	0.513	0	0.514	0.672	0.793	0.755	0.605	0.446	2.13	0	2.13	1.284	1.126	1.336	0.923	0.936	0.952	0.897	0.522	0.249	0.155	0.129	0.0627	0.042	0.0315	0	0	0	0
1.083	1.424	1.093	1.626	0.893	0.887	0.463	1.251	1.502	0.523	0	0.523	0.673	0.802	0.792	0.741	0.59	1.86	0	2.096	1.253	1.163	1.364	0.937	0.955	0.948	0.933	0.605	0.291	0.181	0.15	0.0733	0.0491	0.0366	0	0	0	0
1.167	1.428	1.111	1.623	0.913	0.876	0.455	1.285	1.495	0.536	0	0.536	0.677	0.801	0.779	0.69	0.542	2.061	0	2.061	1.256	1.194	1.378	0.947	0.965	0.94	0.963	0.696	0.339	0.21	0.175	0.0849	0.0569	0.0426	0	0	0	0
1.25	1.453	1.126	1.618	0.921	0.869	0.468	1.315	1.478	0.545	0	0.546	0.679	0.804	0.793	0.75	0.623	1.905	0	2.021	1.269	1.218	1.379	0.95	0.962	0.948	0.989	0.775	0.401	0.248	0.206	0.1	0.067	0.0501	0	0	0	0
1.333	1.47	1.136	1.605	0.923	0.867	0.492	1.332	1.456	0.553	0	0.554	0.683	0.812	0.797	0.75	0.623	1.97	0	1.97	1.271	1.232	1.368	0.947	0.956	0.957	0.998	0.814	0.468	0.288	0.239	0.116	0.0778	0.0582	0	0	0	0
1.417	1.479	1.145	1.582	0.928	0.866	0.508	1.347	1.439	0.561	0	0.563	0.686	0.818	0.809	0.782	0.704	1.927	0	1.978	1.266	1.23	1.361	0.963	0.974	0.97	1.004	0.854	0.552	0.338	0.28	0.135	0.0908	0.0679	0	0	0	0
1.5	1.471	1.171	1.602	0.926	0.862	0.523	1.354	1.419	0.569	0	0.571	0.688	0.822	0.815	0.798	0.748	1.966	0	1.982	1.252	1.233	1.355	0.975	0.984	0.976	1.01	0.893	0.652	0.397	0.328	0.158	0.106	0.0792	0	0	0	0
1.583	1.463	1.187	1.621	0.926	0.856	0.535	1.38	1.387	0.574	0	0.577	0.692	0.828	0.824	0.817	0.803	1.952	0	1.971	1.253	1.257	1.354	0.98	0.988	0.989	1.03	0.95	0.759	0.464	0.382	0.184	0.123	0.0921	0	0	0	0
1.667	1.482	1.212	1.63	0.932	0.851	0.552	1.4	1.344	0.58	0	0.584	0.696	0.836	0.835	0.836	0.845	1.949	0	1.949	1.259	1.27	1.344	0.985	0.993	0.999	1.037	0.97	0.811	0.546	0.446	0.214	0.144	0.107	0	0	0	0
1.75	1.502	1.229	1.631	0.932	0.845	0.568	1.411	1.302	0.584	0	0.59	0.7	0.842	0.847	0.861	0.889	1.913	0	1.913	1.257	1.27	1.335	0.997	1.006	1.007	1.041	0.99	0.86	0.641	0.519	0.248	0.166	0.124	0	0	0	0
1.833	1.512	1.239	1.625	0.927	0.838	0.589	1.421	1.259	0.588	0	0.595	0.707	0.853	0.867	0.893	0.946	1.889	0	1.9	1.25	1.276	1.327	1.004	1.013	1.021	1.054	1.016	0.918	0.757	0.604	0.285	0.192	0.143	0	0	0	0
1.917	1.506	1.255	1.636	0.93	0.836	0.611	1.426	1.217	0.59	0	0.599	0.715	0.865	0.885	0.919	0.989	1.874	0	1.882	1.255	1.286	1.321	1.01	1.019	1.029	1.058	1.022	0.937	0.819	0.707	0.33	0.221	0.164	0	0	0	0
2	1.497	1.28	1.639	0.926	0.832	0.634	1.42	1.181	0.598	0	0.609	0.761	0.876	0.901	0.943	1.027	1.844	0	1.85	1.254	1.287	1.314	1.02	1.03	1.039	1.061	1.032	0.965	0.873	0.789	0.377	0.254	0.187	0	0	0	0
2.083	1.515	1.306	1.635	0.923	0.83	0.659	1.415	1.179	0.633	0	0.649	0.823	1.036	0.917	0.966	1.064	1.815	0	1.823	1.249	1.29	1.306	1.026	1.037	1.047	1.063	1.051	1.001	0.933	0.848	0.431	0.29	0.213	0	0	0	0
2.167	1.527	1.323	1.627	0.92	0.828	0.678	1.404	1.166	0.655	0	0.675	0.853	1.058	1.043	0.985	1.094	1.795	0	1.8	1.252	1.294	1.303	1.034	1.045	1.055	1.07	1.084	1.06	1.008	0.9	0.487	0.329	0.24	0	0	0	0
2.25	1.526	1.346	1.632	0.914	0.826	0.699	1.396	1.142	0.663	0	0.696	0.878	1.085	1.065	1.001	1.118	1.768	0	1.77	1.249	1.292	1.297	1.042	1.054	1.065	1.084	1.13	1.133	1.098	0.988	0.548	0.37	0.269	0	0	0	0
2.333	1.521	1.365	1.635	0.912	0.824	0.729	1.378	1.079	0.632	0	0.715	0.9	1.1	1.092	1.1	1.141	1.744	0	1.746	1.247	1.294	1.292	1.05	1.062	1.073	1.097	1.176	1.204	1.177	1.067	0.611	0.414	0.298	0	0	0	0
2.417	1.513	1.379	1.632	0.907	0.823	0.765	1.346	0.996	0.585	0	0.73	0.921	1.112	1.111	1.122	1.158	1.721	0	1.723	1.247	1.294	1.286	1.063	1.081	1.095	1.112	1.217	1.266	1.242	1.137	0.677	0.46	0.328	0	0	0	0
2.5	1.508	1.395	1.625	0.904	0.823	0.802	1.289	1.059	0.531	0	0.744	0.94	1.125	1.123	1.144	1.218	1.697	0	1.698	1.244	1.292	1.281	1.073	1.099	1.118	1.128	1.256	1.314	1.302	1.203	0.746	0.509	0.358	0	0	0	0
2.583	1.519	1.407	1.618	0.902	0.827	0.856	1.227	1.023	0.481	0	0.758	0.961	1.125	1.138	1.159	1.235	1.677	0	1.678	1.242	1.293	1.285	1.085	1.138	1.156	1.148	1.29	1.355	1.348	1.235	0.78	0.56	0.388	0	0	0	0
2.667	1.525	1.418	1.611	0.9	0.833	0.923	1.48	0.812	0.433	0	0.772	0.973	1.129	1.145	1.171	1.25	1.657	0	1.658	1.24	1.294	1.288	1.097	1.177	1.217	1.233	1.32	1.392	1.391	1.247	0.811	0.615	0.418	0	0	0	0
2.75	1.525	1.435	1.608	0.901	0.847	0.986	1.437	0.574	0.393	0	0.783	0.983	1.133	1.148	1.182	1.261	1.638	0	1.639	1.237	1.294	1.292	1.108	1.208	1.269	1.307	1.354	1.406	1.385	1.228	0.841	0.672	0.447	0	0	0	0
2.833	1.525	1.446	1.606	0.904	0.855	1.04	1.14	0.462	0.366	0	0.791	0.993	1.129	1.152	1.189	1.268	1.625	0	1.626	1.236	1.296	1.294	1.117	1.225	1.304	1.361	1.38	1.414	1.383	1.218	0.865	0.723	0.469	0	0	0	0
2.917	1.524	1.454	1.605	0.92	0.858	1.01	0.874	0.355	0.33	0	0.769	0.93	1.116	1.158	1.194	1.275	1.61	0	1.611	1.235	1.299	1.299	1.128	1.249	1.333	1.427	1.412	1.423	1.381	1.204	0.885	0.762	0.496	0	0	0	0
3	1.522	1.461	1.602	0.927	0.871	1.01	0.832	0.319	0.316	0	0.76	0.852	1.098	1.143	1.184	1.277	1.585	0	1.586	1.22	1.299	1.307	1.14	1.276	1.367	1.465	1.446	1.434	1.378	1.191	0.896	0.784	0.527	0	0	0	0
3.083	1.522	1.467	1.599	0.936	0.896	1.02	0.821	0.309	0.315	0	0.784	0.812	1.06	1.108	1.142	1.258	1.54	0	1.54	1.185	1.279	1.31	1.159	1.309	1.406	1.512	1.473	1.448	1.381	1.199	0.917	0.808	0.568	0	0	0	0
3.167	1.526	1.476	1.592	0.947	0.917	1.029	0.811	0.299	0.313	0	0.795	0.779	1.032	1.088	1.123	1.25	1.519	0	1.52	1.175	1.277	1.31	1.178	1.332	1.431	1.545	1.491	1.455	1.382	1.204	0.931	0.824	0.596	0	0	0	0
3.25	1.607	1.414	1.659	0.938	0.936	1.048	0.732	0.317	0.304	0	0.788	0.736	0.996	1.056	1.099	1.238	1.496	0	1.496	1.164	1.277	1.314	1.197	1.35	1.451	1.573	1.509	1.467	1.39	1.206	0.943	0.837	0.621	0	0	0	0
3.333	1.516	1.489	1.587	0.937	0.983	0.942	0.871	0.256	0.299	0	0.773	0.712	0.985	1.035	1.082	1.227	1.472	0	1.472	1.15	1.269	1.311	1.214	1.369	1.479	1.605	1.528	1.476	1.392	1.208	0.956	0.851	0.649	0	0	0	0
3.417	1.53	1.505	1.573	0.981	0.941	1.063	0.75	0.277	0.298	0	0.765	0.672	0.971	1.022	1.073	1.218	1.451	0	1.451	1.141	1.274	1.32	1.222	1.381	1.497	1.631	1.548	1.488	1.399	1.205	0.967	0.863	0.676	0	0	0	0
3.5	1.543	1.488	1.602	0.959	0.997	0.984	0.818	0.259	0.292	0	0.755	0.653	0.963	1.029	1.061	1.205	1.429	0	1.429	1.131	1.275	1.329	1.231	1.397	1.507	1.65	1.562	1.497	1.406	1.205	0.973	0.874	0.698	0	0	0	0
3.583	1.544	1.494	1.599	0.968	0.992	1.001	0.8	0.257	0.287	0	0.739	0.63	0.954	1.035	1.054	1.196	1.411	0	1.411	1.123	1.276	1.335	1.237	1.407	1.514	1.667	1.572	1.505	1.411	1.205	0.977	0.883	0.718	0	0	0	0
3.667	1.549	1.494	1.601	0.967	0.997	0.999	0.796	0.247	0.276	0	0.686	0.606	0.927	1.031	1.067	1.184	1.39	0	1.39	1.114	1.277	1.341	1.242	1.416	1.523	1.684	1.58	1.511	1.418	1.204	0.979	0.89	0.734	0	0	0	0
3.75	1.54	1.506	1.589	0.969	0.996	1	0.795	0.236	0.27	0	0.656	0.579	0.908	1.029	1.085	1.174	1.371	0	1.371	1.105	1.277	1.346	1.249	1.414	1.529	1.697	1.581	1.518	1.422	1.206	0.981	0.896	0.749	0	0	0	0
3.833	1.541	1.505	1.591	0.964	1.001	0.995	0.797	0.23	0.265	0	0.636	0.565	0.894	1.025	1.096	1.171	1.358	0	1.358	1.099	1.278	1.351	1.254	1.412	1.534	1.708	1.583	1.523	1.425	1.207	0.982	0.901	0.761	0	0	0	0
3.917	1.542	1.506	1.59	0.96	1.004	0.993	0.798	0.226	0.261	0	0.62	0.553	0.887	1.024	1.105	1.169	1.349	0	1.349	1.096	1.277	1.354	1.257	1.41	1.538	1.715	1.584	1.525	1.428	1.208	0.986	0.909	0.769	0	0	0	0
4	1.535	1.514	1.581	0.964	0.998	1.002	0.791	0.225	0.26	0	0.613	0.545	0.886	1.027	1.111	1.17	1.346	0	1.346	1.093	1.276	1.355	1.258	1.41	1.539	1.718	1.585	1.527	1.43	1.209	0.987	0.912	0.772	0	0	0	0
4.083	1.54	1.508	1.587	0.961	1.001	0.998	0.793	0.226	0.26	0	0.613	0.547	0.884	1.025	1.109	1.169	1.346	0	1.346	1.094	1.276	1.355	1.257	1.409	1.539	1.719	1.585	1.527	1.429	1.209	0.987	0.912	0.773	0	0	0	0
4.167	1.534	1.513	1.581	0.964	0.996	1.001	0.791	0.226	0.261	0	0.619	0.552	0.888	1.026	1.107	1.169	1.348	0	1.348	1.094	1.275	1.353	1.257	1.41	1.537	1.715	1.583	1.525	1.428	1.208	0.986	0.91	0.77	0	0	0	0
4.25	1.542	1.504	1.591	0.961	0.999	0.994	0.794	0.23	0.264	0	0.632	0.564	0.892	1.024	1.098	1.169	1.354	0	1.354	1.097	1.277	1.351	1.254	1.41	1.535	1.71	1.583	1.523	1.426	1.207	0.984	0.904	0.764	0	0	0	0
4.333	1.54	1.504	1.589	0.965	0.994	0.998	0.792	0.234	0.268	0	0.649	0.575	0.902	1.026	1.089	1.171	1.364	0	1.364	1.101	1.276	1.347	1.25	1.411	1.531	1.702	1.581	1.519	1.422	1.206	0.981	0.898	0.755	0	0	0	0
4.417	1.538	1.503	1.588	0.968	0.989	1	0.791	0.24	0.274	0	0.676	0.589	0.916	1.028	1.075	1.175	1.376	0	1.376	1.106	1.275	1.343	1.245	1.414	1.525	1.691	1.579	1.515	1.419	1.206	0.981	0.894	0.745	0	0	0	0
4.5	1.535	1.504	1.586	0.969	0.983	1.003	0.79	0.248	0.282	0	0.709	0.611	0.934	1.03	1.056	1.184	1.391	0	1.392	1.113	1.273	1.337	1.239	1.412	1.52	1.678	1.577	1.509	1.415	1.205	0.979	0.888	0.732	0	0	0	0
4.583	1.534	1.501	1.586	0.97	0.975	1.01	0.787	0.26	0.291	0	0.75	0.636	0.954	1.033	1.053	1.195	1.41	0	1.41	1.121	1.274	1.332	1.235	1.404	1.513	1.665	1.572	1.503	1.41	1.204	0.978	0.882	0.718	0	0	0	0
4.667	1.54	1.488	1.596	0.959	0.98	1	0.797	0.264	0.293	0	0.758	0.655	0.961	1.025	1.059	1.204	1.427	0	1.427	1.129	1.272	1.326	1.228	1.393	1.504	1.648	1.559	1.496	1.403	1.204	0.973	0.874	0.699	0	0	0	0
4.75	1.534	1.489	1.591	0.957	0.972	1.002	0.8	0.268	0.296	0	0.764	0.677	0.968	1.016	1.066	1.212	1.443	0	1.443	1.135	1.27	1.318	1.222	1.382	1.497	1.632	1.547	1.488	1.398	1.205	0.966	0.866	0.682	0	0	0	0
4.833	1.525	1.496	1.576	0.965	0.943	1.035	0.776	0.277	0.301	0	0.773	0.696	0.976	1.024	1.075	1.222	1.461	0	1.461	1.143	1.269	1.311	1.214	1.37	1.487	1.615	1.535	1.48	1.393	1.205	0.961	0.857	0.663	0	0	0	0
4.917	1.544	1.444	1.629	0.909	0.974	0.921	0.872	0.272	0.3	0	0.779	0.725	0.985	1.039	1.082	1.227	1.477	0	1.477	1.15	1.268	1.309	1.207	1.361	1.468	1.593	1.519	1.47	1.388	1.205	0.953	0.847	0.642	0	0	0	0
5	1.57	1.441	1.616	0.952	0.9	1.076	0.72	0.319	0.309	0	0.789	0.745	0.998	1.055	1.097	1.237	1.496	0	1.497	1.162	1.274	1.31	1.191	1.345	1.447	1.569	1.507	1.464	1.387	1.203	0.942	0.837	0.621	0	0	0	0
5.083	1.521	1.481	1.571	0.966	0.872	1.077	0.734	0.32	0.318	0	0.795	0.778	1.025	1.078	1.116	1.246	1.515	0	1.516	1.171	1.276	1.308	1.176	1.329	1.428	1.545	1.491	1.455	1.381	1.203	0.932	0.826	0.6	0	0	0	0
5.167	1.519	1.462	1.599	0.93	0.884	1.01	0.822	0.31	0.316	0	0.782	0.813	1.051	1.097	1.131	1.252	1.533	0	1.533	1.179	1.275	1.306	1.159	1.311	1.408	1.516	1.473	1.447	1.378	1.198	0.921	0.812	0.576	0	0	0	0
5.25	1.522	1.458	1.602	0.923	0.863	1.002	0.827	0.318	0.316	0	0.764	0.839	1.07	1.107	1.142	1.256	1.549	0	1.549	1.186	1.276	1.305	1.144	1.29	1.385	1.489	1.461	1.439	1.376	1.194	0.909	0.799	0.553	0	0	0	0
5.333	1.522	1.453	1.603	0.918	0.851	0.996	0.836	0.33	0.319	0	0.752	0.875	1.083	1.12	1.152	1.259	1.569	0	1.569	1.197	1.279	1.301	1.135	1.272	1.363	1.462	1.443	1.43	1.374	1.189	0.897	0.786	0.53	0	0	0	0
5.417	1.524	1.446	1.606	0.914	0.843	0.991	0.864	0.357	0.331	0	0.762	0.921	1.098	1.135	1.165	1.263	1.587	0	1.588	1.208	1.281	1.297	1.128	1.255	1.341	1.438	1.421	1.424	1.375	1.193	0.889	0.771	0.509	0	0	0	0
5.5	1.524	1.438	1.606	0.906	0.835	0.997	0.953	0.414	0.352	0	0.782	0.97	1.116	1.146	1.178	1.266	1.608	0	1.608	1.219	1.286	1.294	1.121	1.237	1.319	1.399	1.398	1.417	1.379	1.209	0.881	0.755	0.487	0	0	0	0
5.583	1.524	1.428	1.607	0.896	0.836	0.963	1.224	0.515	0.38	0	0.784	0.985	1.127	1.147	1.183	1.262	1.624	0	1.624	1.227	1.29	1.291	1.111	1.216	1.293	1.342	1.37	1.409	1.381	1.22	0.86	0.709	0.463	0	0	0	0
5.667	1.522	1.415	1.608	0.897	0.829	0.914	1.479	0.73	0.421	0	0.772	0.973	1.128	1.144	1.173	1.253	1.647	0	1.647	1.234	1.29	1.287	1.099	1.19	1.238	1.265	1.333	1.399	1.385	1.237	0.827	0.644	0.432	0	0	0	0
5.75	1.517	1.406	1.616	0.898	0.825	0.862	1.184	0.932	0.464	0	0.76	0.962	1.124	1.141	1.162	1.24	1.668	0	1.668	1.238	1.291	1.284	1.088	1.154	1.183	1.188	1.302	1.37	1.366	1.248	0.798	0.59	0.404	0	0	0	0
5.833	1.509	1.396	1.621	0.899	0.821	0.813	1.246	1.058	0.506	0	0.749	0.947	1.123	1.129	1.151	1.226	1.683	0	1.684	1.239	1.289	1.281	1.078	1.119	1.131	1.135	1.275	1.338	1.331	1.224	0.771	0.544	0.379	0	0	0	0
5.917	1.508	1.383	1.627	0.901	0.822	0.786	1.3	0.984	0.547	0	0.737	0.93	1.119	1.117	1.136	1.211	1.7	0	1.702	1.242	1.29	1.279	1.069	1.093	1.112	1.123	1.247	1.305	1.293	1.196	0.738	0.502	0.353	0	0	0	0
6	1.514	1.373	1.63	0.905	0.822	0.756	1.345	1.001	0.591	0	0.725	0.915	1.108	1.108	1.119	1.156	1.72	0	1.723	1.246	1.292	1.283	1.06	1.078	1.093	1.11	1.216	1.265	1.243	1.142	0.681	0.462	0.329	0	0	0	0
6.083	1.52	1.362	1.631	0.908	0.822	0.728	1.371	1.068	0.626	0	0.714	0.898	1.099	1.093	1.102	1.142	1.739	0	1.742	1.246	1.292	1.288	1.05	1.063	1.073	1.097	1.183	1.219	1.192	1.087	0.628	0.425	0.305	0	0	0	0
6.167	1.523	1.348	1.628	0.91	0.823	0.703	1.387	1.118	0.651	0	0.699	0.88	1.092	1.071	1.083	1.124	1.757	0	1.759	1.246	1.29	1.292	1.041	1.054	1.066	1.087	1.148	1.163	1.138	1.028	0.577	0.39	0.282	0	0	0	0
6.25	1.525	1.329	1.625	0.913	0.825	0.687	1.399	1.155	0.662	0	0.683	0.864	1.07	1.053	0.993	1.106	1.783	0	1.783	1.249	1.291	1.297	1.037	1.048	1.059	1.077	1.111	1.106	1.067	0.959	0.528	0.356	0.259	0	0	0	0
6.333	1.518	1.315	1.629	0.917	0.827	0.671	1.405	1.167	0.647	0	0.665	0.842	1.049	0.926	0.98	1.086	1.803	0	1.804	1.25	1.292	1.301	1.03	1.041	1.051	1.066	1.075	1.049	0.997	0.894	0.482	0.325	0.237	0	0	0	0
6.417	1.506	1.3	1.633	0.919	0.828	0.654	1.413	1.177	0.629	0	0.643	0.818	1.033	0.915	0.963	1.061	1.816	0	1.822	1.247	1.288	1.303	1.023	1.034	1.044	1.06	1.049	1.002	0.938	0.852	0.437	0.294	0.216	0	0	0	0

6.5	1.495	1.278	1.636	0.921	0.83	0.635	1.417	1.174	0.598	0	0.609	0.761	0.877	0.902	0.945	1.032	1.834	0	1.841	1.251	1.284	1.309	1.019	1.029	1.039	1.057	1.031	0.969	0.885	0.809	0.395	0.266	0.196	0	0	0	0
6.583	1.502	1.256	1.635	0.925	0.832	0.615	1.423	1.199	0.589	0	0.598	0.715	0.867	0.889	0.927	1.003	1.865	0	1.869	1.253	1.286	1.316	1.013	1.022	1.03	1.054	1.021	0.947	0.851	0.761	0.355	0.238	0.176	0	0	0	0
6.667	1.509	1.241	1.623	0.925	0.835	0.598	1.421	1.233	0.587	0	0.595	0.708	0.858	0.875	0.907	0.969	1.887	0	1.889	1.251	1.282	1.319	1.003	1.013	1.024	1.054	1.019	0.932	0.8	0.676	0.316	0.212	0.157	0	0	0	0
6.75	1.504	1.234	1.624	0.925	0.837	0.577	1.416	1.269	0.584	0	0.59	0.703	0.849	0.861	0.886	0.935	1.88	0	1.903	1.249	1.27	1.325	1	1.009	1.016	1.05	1.013	0.915	0.752	0.593	0.28	0.188	0.14	0	0	0	0
6.833	1.491	1.22	1.629	0.929	0.844	0.562	1.408	1.305	0.581	0	0.586	0.696	0.84	0.844	0.857	0.885	1.901	0	1.917	1.255	1.269	1.334	0.994	1.002	1.004	1.039	0.99	0.862	0.642	0.518	0.247	0.166	0.123	0	0	0	0
6.917	1.466	1.2	1.627	0.927	0.849	0.547	1.396	1.346	0.577	0	0.581	0.693	0.833	0.833	0.834	0.841	1.95	0	1.949	1.257	1.268	1.342	0.983	0.991	0.997	1.035	0.971	0.816	0.554	0.451	0.216	0.145	0.108	0	0	0	0
7	1.463	1.179	1.616	0.921	0.853	0.531	1.378	1.384	0.572	0	0.575	0.689	0.827	0.824	0.818	0.806	1.948	0	1.968	1.251	1.258	1.35	0.977	0.986	0.988	1.029	0.955	0.772	0.481	0.395	0.19	0.127	0.0949	0	0	0	0
7.083	1.471	1.163	1.597	0.922	0.859	0.52	1.353	1.412	0.568	0	0.57	0.685	0.821	0.815	0.8	0.756	1.967	0	1.978	1.249	1.237	1.354	0.973	0.983	0.977	1.017	0.915	0.692	0.417	0.344	0.166	0.111	0.083	0	0	0	0
7.167	1.475	1.141	1.583	0.925	0.862	0.507	1.347	1.432	0.561	0	0.562	0.684	0.818	0.809	0.785	0.715	1.939	0	1.981	1.26	1.226	1.355	0.965	0.976	0.97	1.005	0.872	0.596	0.362	0.299	0.144	0.0967	0.0723	0	0	0	0
7.25	1.467	1.133	1.604	0.92	0.864	0.494	1.333	1.446	0.553	0	0.554	0.681	0.812	0.799	0.756	0.641	1.964	0	1.964	1.268	1.23	1.363	0.952	0.963	0.962	1.001	0.837	0.513	0.314	0.26	0.126	0.0844	0.063	0	0	0	0
7.333	1.452	1.122	1.618	0.917	0.865	0.471	1.321	1.467	0.546	0	0.547	0.678	0.805	0.793	0.752	0.631	1.908	0	2.001	1.269	1.225	1.372	0.946	0.955	0.95	0.995	0.801	0.443	0.272	0.226	0.109	0.0733	0.0548	0	0	0	0
7.417	1.426	1.11	1.622	0.913	0.869	0.45	1.296	1.486	0.538	0	0.538	0.673	0.799	0.781	0.705	0.563	2.042	0	2.042	1.263	1.208	1.378	0.947	0.961	0.941	0.985	0.762	0.382	0.236	0.196	0.0949	0.0637	0.0476	0	0	0	0
7.5	1.417	1.094	1.624	0.897	0.878	0.453	1.269	1.496	0.529	0	0.529	0.673	0.801	0.783	0.707	0.559	1.988	0	2.071	1.248	1.187	1.373	0.943	0.961	0.937	0.963	0.69	0.334	0.206	0.172	0.0833	0.056	0.0418	0	0	0	0
7.583	1.434	1.082	1.625	0.896	0.883	0.457	1.242	1.507	0.517	0	0.517	0.669	0.8	0.788	0.722	0.56	1.921	0	2.105	1.258	1.156	1.359	0.934	0.952	0.945	0.934	0.602	0.289	0.179	0.149	0.0722	0.0484	0.0362	0	0	0	0
7.667	1.451	1.061	1.623	0.892	0.887	0.445	1.223	1.525	0.51	0	0.51	0.67	0.791	0.753	0.599	0.44	2.13	0	2.13	1.288	1.121	1.334	0.92	0.935	0.949	0.9	0.527	0.25	0.155	0.129	0.0624	0.0418	0.0312	0	0	0	0
7.75	1.463	1.042	1.608	0.888	0.893	0.444	1.201	1.537	0.501	0	0.501	0.67	0.781	0.735	0.569	0.413	2.099	0	2.137	1.314	1.147	1.345	0.904	0.914	0.945	0.88	0.463	0.219	0.136	0.113	0.0549	0.0367	0.0275	0	0	0	0
7.833	1.469	1.025	1.582	0.892	0.921	0.452	1.178	1.544	0.493	0	0.493	0.662	0.774	0.776	0.707	0.522	1.779	0	2.126	1.346	1.17	1.372	0.892	0.889	0.933	0.859	0.407	0.192	0.12	0.0996	0.0483	0.0325	0.0244	0	0	0	0
7.917	1.469	1.007	1.547	0.889	0.945	0.462	1.151	1.543	0.483	0	0.483	0.66	0.779	0.777	0.663	0.464	1.814	0	2.1	1.368	1.185	1.398	0.89	0.888	0.927	0.835	0.358	0.169	0.105	0.0876	0.0425	0.0287	0.0216	0	0	0	0
8	1.454	1.009	1.556	0.879	0.968	0.47	1.123	1.537	0.471	0	0.471	0.662	0.786	0.772	0.604	0.405	1.84	0	2.059	1.383	1.195	1.419	0.885	0.885	0.919	0.811	0.318	0.149	0.0928	0.0773	0.0376	0.0253	0.019	0	0	0	0
8.083	1.435	1.006	1.567	0.863	0.986	0.467	1.106	1.549	0.458	0	0.458	0.659	0.793	0.751	0.528	0.344	1.856	0	2.009	1.389	1.203	1.433	0.878	0.878	0.91	0.784	0.283	0.132	0.0824	0.0688	0.0334	0.0225	0.0169	0	0	0	0
8.167	1.421	0.999	1.576	0.849	0.994	0.458	1.096	1.574	0.447	0	0.448	0.655	0.795	0.706	0.46	0.294	1.857	0	1.953	1.387	1.203	1.442	0.869	0.871	0.905	0.759	0.255	0.119	0.0741	0.0616	0.03	0.0202	0.0152	0	0	0	0
8.25	1.414	0.995	1.582	0.837	1.004	0.447	1.094	1.578	0.442	0	0.442	0.674	0.733	0.69	0.561	0.369	1.847	0	2.017	1.393	1.207	1.489	0.908	0.844	0.861	0.742	0.236	0.104	0.0643	0.0554	0.0306	0.0231	0.0177	0	0	0	0
8.333	1.416	1.002	1.581	0.848	0.993	0.459	1.085	1.604	0.435	0	0.435	0.646	0.826	0.61	0.335	0.201	1.846	0	1.845	1.339	1.164	1.419	0.847	0.878	0.946	0.717	0.237	0.11	0.0665	0.0541	0.0269	0.0191	0.0143	0	0	0	0
8.417	1.422	0.988	1.59	0.832	1.009	0.452	1.096	1.582	0.427	0	0.428	0.686	0.721	0.616	0.526	0.387	1.834	0	2.044	1.416	1.241	1.501	0.87	0.819	0.869	0.755	0.251	0.117	0.072	0.0574	0.0262	0.0181	0.0138	0	0	0	0
8.5	1.405	1.009	1.57	0.852	0.988	0.452	1.082	1.599	0.451	0	0.451	0.629	0.843	0.664	0.349	0.202	1.841	0	1.842	1.328	1.146	1.42	0.873	0.884	0.961	0.682	0.214	0.101	0.065	0.0585	0.0326	0.0225	0.0169	0	0	0	0
8.583	1.416	0.999	1.582	0.845	0.995	0.459	1.085	1.6	0.424	0	0.424	0.683	0.739	0.536	0.449	0.373	1.837	0	2.068	1.443	1.259	1.471	0.834	0.833	0.876	0.762	0.265	0.124	0.0758	0.059	0.022	0.0112	0.00815	0	0	0	0
8.667	1.419	0.988	1.589	0.83	1.011	0.444	1.1	1.576	0.451	0	0.451	0.631	0.813	0.76	0.379	0.2	1.827	0	1.827	1.326	1.151	1.419	0.907	0.872	0.973	0.659	0.194	0.0956	0.065	0.0621	0.0365	0.0257	0.0193	0	0	0	0
8.75	1.408	1.004	1.573	0.848	0.992	0.455	1.083	1.598	0.438	0	0.438	0.661	0.776	0.509	0.364	0.321	1.851	0	2.049	1.448	1.221	1.446	0.834	0.837	0.878	0.772	0.272	0.127	0.078	0.0596	0.0198	0.00746	0.00475	0	0	0	0

75% blockage at 12.5 and 75% of wall to the east of the watercourse impermeable

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 - 75% BLK AT 12.5.ZZN
Selected output data from time (hr): 0
to time (hr): 5.5

Stage

Time (hr)	Newtyle_0	CH000000	CH000000	Newtyle_0:	CH000000	CH000000	Newtyle_0	CH000000	Newtyle01	Bridge1_U	Newtyle12	Newtyle_0	Newtyle_0:	CH000000	CH000000	CH000000	Newtyle_0	Bridge2_U	Newtyle_0	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	Newtyle_0(	Newtyle_0(	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	89.066	88.262	87.454	86.678	86.365	86.08	85.794	85.516	85.518	85.518	84.927	84.868	84.735	84.682	84.63	84.58	84.498	84.498	84.496	84.174	83.87	83.566	83.292	83.132	82.969	82.81	82.799	82.8	82.8	82.8	82.8	82.8	82.8	0	0	0	0
0.083	89.061	88.268	87.444	86.673	86.385	86.312	85.806	85.48	85.477	85.477	84.938	84.869	84.735	84.71	84.692	84.675	84.502	84.502	84.498	84.176	83.869	83.55	83.28	83.124	82.961	82.822	82.802	82.802	82.802	82.802	82.801	82.8	82.8	82.8	85.477	-9999.99	84.502	-9999.99
0.167	89.061	88.27	87.443	86.675	86.369	86.248	85.775	85.462	85.459	85.459	84.936	84.871	84.735	84.709	84.7	84.687	84.497	84.497	84.495	84.171	83.864	83.551	83.287	83.133	82.973	82.829	82.805	82.803	82.802	82.801	82.8	82.8	82.8	85.459	-9999.99	84.497	-9999.99
0.25	89.061	88.269	87.444	86.674	86.375	86.277	85.8	85.492	85.49	85.49	84.937	84.874	84.733	84.699	84.692	84.69	84.486	84.486	84.486	84.163	83.865	83.558	83.301	83.142	82.972	82.826	82.8	82.796	82.795	82.795	82.798	82.799	82.8	85.49	-9999.99	84.486	-9999.99
0.333	89.061	88.269	87.444	86.675	86.371	86.262	85.781	85.464	85.462	85.462	84.936	84.87	84.739	84.693	84.664	84.66	84.498	84.498	84.495	84.18	83.885	83.569	83.296	83.126	82.96	82.818	82.8	82.802	82.803	82.803	82.802	82.801	82.8	85.462	-9999.99	84.498	-9999.99
0.417	89.061	88.269	87.444	86.674	86.373	86.271	85.794	85.484	85.482	85.482	84.938	84.872	84.74	84.69	84.664	84.662	84.495	84.495	84.494	84.177	83.885	83.571	83.299	83.129	82.958	82.817	82.801	82.803	82.803	82.802	82.801	82.8	82.8	85.482	-9999.99	84.495	-9999.99
0.5	89.061	88.269	87.444	86.674	86.372	86.266	85.785	85.468	85.465	85.465	84.937	84.87	84.734	84.706	84.698	84.695	84.489	84.489	84.489	84.166	83.863	83.551	83.29	83.136	82.975	82.829	82.801	82.799	82.799	82.798	82.798	82.799	82.8	85.465	-9999.99	84.489	-9999.99
0.583	89.066	88.276	87.451	86.68	86.377	86.253	85.809	85.527	85.526	85.526	84.946	84.873	84.744	84.706	84.676	84.66	84.506	84.506	84.501	84.185	83.883	83.562	83.286	83.125	82.967	82.825	82.8	82.801	82.803	82.804	82.803	82.801	82.8	85.526	-9999.99	84.506	-9999.99
0.667	89.071	88.287	87.459	86.691	86.376	86.164	85.826	85.632	85.632	85.632	84.953	84.886	84.749	84.7	84.674	84.664	84.501	84.501	84.497	84.18	83.883	83.571	83.307	83.145	82.979	82.83	82.801	82.8	82.8	82.8	82.8	82.8	82.8	85.632	-9999.99	84.501	-9999.99
0.75	89.079	88.297	87.47	86.7	86.387	86.137	85.861	85.732	85.733	85.733	84.963	84.896	84.759	84.707	84.674	84.661	84.505	84.505	84.501	84.186	83.89	83.578	83.315	83.152	82.986	82.835	82.801	82.8	82.8	82.8	82.8	82.8	82.8	85.733	-9999.99	84.505	-9999.99
0.833	89.089	88.306	87.476	86.709	86.403	86.135	85.903	85.861	85.861	85.861	84.977	84.91	84.772	84.718	84.677	84.66	84.512	84.512	84.505	84.193	83.898	83.587	83.325	83.163	82.996	82.842	82.801	82.8	82.8	82.8	82.8	82.8	82.8	85.861	-9999.99	84.512	-9999.99
0.917	89.1	88.317	87.483	86.72	86.42	86.143	85.999	85.993	85.994	85.994	84.992	84.923	84.784	84.73	84.685	84.662	84.519	84.519	84.51	84.202	83.909	83.597	83.337	83.175	83.007	82.849	82.801	82.799	82.799	82.8	82.8	82.8	82.8	85.994	-9999.99	84.519	-9999.99
1	89.113	88.33	87.491	86.735	86.429	86.188	86.126	86.127	86.127	86.127	85.007	84.936	84.795	84.747	84.723	84.714	84.515	84.515	84.515	84.209	83.918	83.607	83.346	83.182	83.015	82.857	82.802	82.799	82.799	82.8	82.8	82.8	82.8	86.127	-9999.99	84.515	-9999.99
1.083	89.13	88.343	87.501	86.747	86.449	86.282	86.26	86.262	86.262	86.262	85.022	84.949	84.807	84.757	84.73	84.719	84.521	84.521	84.521	84.219	83.93	83.618	83.355	83.19	83.024	82.865	82.802	82.799	82.799	82.799	82.8	82.8	82.8	86.262	-9999.99	84.521	-9999.99
1.167	89.146	88.355	87.514	86.756	86.49	86.424	86.418	86.42	86.42	86.42	85.04	84.965	84.82	84.766	84.725	84.705	84.533	84.533	84.528	84.23	83.938	83.626	83.365	83.199	83.035	82.874	82.803	82.798	82.798	82.799	82.8	82.8	82.8	86.42	-9999.99	84.533	-9999.99
1.25	89.156	88.369	87.526	86.771	86.559	86.528	86.523	86.525	86.525	86.525	85.05	84.974	84.829	84.774	84.726	84.7	84.541	84.541	84.533	84.237	83.943	83.631	83.372	83.206	83.043	82.88	82.803	82.798	82.798	82.799	82.8	82.8	82.8	86.525	-9999.99	84.541	-9999.99
1.333	89.168	88.387	87.54	86.795	86.624	86.604	86.602	86.604	86.603	86.603	85.067	85.012	84.855	84.801	84.761	84.742	84.546	84.546	84.546	84.252	83.957	83.646	83.39	83.223	83.061	82.893	82.805	82.798	82.798	82.799	82.8	82.8	82.8	86.603	-9999.99	84.546	-9999.99
1.417	89.183	88.404	87.557	86.817	86.652	86.633	86.63	86.633	86.633	86.633	85.087	85.04	84.874	84.819	84.77	84.742	84.562	84.562	84.556	84.27	83.986	83.674	83.424	83.257	83.091	82.92	82.825	82.796	82.796	82.798	82.8	82.8	82.8	86.633	-9999.99	84.562	-9999.99
1.5	89.201	88.421	87.571	86.84	86.676	86.654	86.652	86.655	86.655	86.655	85.104	85.062	84.889	84.833	84.786	84.762	84.566	84.566	84.564	84.286	84.011	83.697	83.448	83.279	83.114	82.943	82.844	82.793	82.793	82.797	82.8	82.8	82.8	86.655	-9999.99	84.566	-9999.99
1.583	89.221	88.442	87.585	86.862	86.699	86.674	86.673	86.677	86.677	86.677	85.121	85.084	84.903	84.849	84.807	84.775	84.575	84.575	84.575	84.308	84.037	83.72	83.474	83.305	83.138	82.967	82.862	82.79	82.79	82.795	82.8	82.799	82.8	86.677	-9999.99	84.575	-9999.99
1.667	89.239	88.457	87.603	86.886	86.722	86.694	86.693	86.699	86.698	86.698	85.142	85.108	84.92	84.865	84.821	84.779	84.588	84.588	84.586	84.332	84.063	83.744	83.501	83.331	83.163	82.989	82.88	82.797	82.786	82.793	82.799	82.799	82.8	86.698	-9999.99	84.588	-9999.99
1.75	89.255	88.475	87.623	86.912	86.744	86.713	86.713	86.72	86.72	86.72	85.165	85.134	84.938	84.886	84.849	84.797	84.6	84.6	84.6	84.359	84.094	83.77	83.529	83.358	83.189	83.015	82.905	82.816	82.779	82.79	82.799	82.799	82.8	86.72	-9999.99	84.6	-9999.99
1.833	89.272	88.495	87.645	86.939	86.768	86.731	86.733	86.742	86.74	86.74	85.191	85.162	84.96	84.911	84.887	84.817	84.62	84.62	84.618	84.392	84.127	83.8	83.56	83.387	83.217	83.042	82.93	82.835	82.77	82.786	82.799	82.798	82.8	86.74	-9999.99	84.62	-9999.99
1.917	89.292	88.516	87.665	86.964	86.791	86.749	86.753	86.763	86.762	86.762	85.221	85.195	84.986	84.948	84.927	84.841	84.643	84.643	84.642	84.429	84.158	83.83	83.593	83.419	83.247	83.071	82.958	82.858	82.781	82.779	82.798	82.798	82.8	86.762	-9999.99	84.643	-9999.99
2	89.315	88.535	87.685	86.991	86.814	86.766	86.772	86.785	86.784	86.784	85.258	85.231	85.017	84.989	84.969	84.866	84.669	84.669	84.668	84.469	84.194	83.863	83.626	83.451	83.278	83.103	82.99	82.89	82.812	82.777	82.798	82.797	82.8	86.784	-9999.99	84.669	-9999.99
2.083	89.333	88.555	87.708	87.019	86.837	86.781	86.79	86.806	86.804	86.804	85.294	85.266	85.052	85.032	85.01	84.894	84.697	84.697	84.696	84.51	84.232	83.897	83.661	83.484	83.31	83.134	83.024	82.928	82.854	82.805	82.797	82.796	82.8	86.804	-9999.99	84.697	-9999.99
2.167	89.353	88.576	87.732	87.044	86.861	86.795	86.808	86.826	86.823	86.823	85.339	85.301	85.088	85.067	85.039	84.923	84.723	84.723	84.723	84.558	84.27	83.933	83.699	83.521	83.346	83.17	83.058	82.96	82.883	82.833	82.797	82.795	82.8	86.823	-9999.99	84.723	-9999.99
2.25	89.374	88.596	87.752	87.069	86.881	86.809	86.824	86.845	86.843	86.843	85.373	85.337	85.127	85.109	85.083	84.947	84.754	84.754	84.753	84.595	84.308	83.965	83.729	83.548	83.371	83.193	83.081	82.98	82.898	82.842	82.795	82.793	82.8	86.843	-9999.99	84.754	-9999.99
2.333	89.396	88.616	87.772	87.094	86.905	86.821	86.839	86.864	86.862	86.862	85.412	85.377	85.17	85.159	85.126	84.979	84.79	84.79	84.79	84.635	84.342	83.998	83.764	83.579	83.401	83.221	83.106	83.002	82.913	82.849	82.793	82.791	82.8	86.862	-9999.99	84.79	-9999.99
2.417	89.419	88.637	87.794	87.119	86.932	86.833	86.854	86.882	86.88	86.88	85.459	85.427	85.276	85.267	85.227	85.051	84.855	84.855	84.855	84.699	84.396	84.048	83.812	83.623	83.442	83.257	83.139	83.028	82.933	82.862	82.794	82.789	82.8	86.88	-9999.99	84.855	-9999.99
2.5	89.44	88.657	87.815	87.143	86.957	86.841	86.868	86.9	86.897	86.897	85.488	85.45	85.289	85.282	85.24	85.063	84.867	84.867	84.867	84.714	84.407	84.061	83.826	83.637	83.456	83.273	83.154	83.041	82.941	82.865	82.789	82.786	82.8	86.897	-9999.99	84.867	-9999.99
2.583	89.457	88.676	87.836	87.167	86.984	86.875	86.88	86.916	86.914	86.914	85.514	85.475	85.314	85.305	85.26	85.087	84.892	84.892	84.892	84.741	84.429	84.081	83.845	83.657	83.476	83.298	83.181	83.064	82.958	82.878	82.795	82.783	82.8	86.914	-9999.99	84.892	-9999.99
2.667	89.477	88.694	87.86	87.187	87.014	86.898	86.897	86.934	86.929	86.929	85.545	85.505	85.354	85.343	85.294	85.116	84.922	84.922	84.922	84.773	84.456	84.106	83.868	83.678	83.497	83.321	83.204	83.086	82.977	82.893	82.806	82.779	82.8	86.929	-9999.99	84.922	-9999.99
2.75	89.495	88.711	87.876	87.212	87.036	86.927	86.903	86.95	86.946	86.946	85.585	85.547	85.415	85.404	85.35	85.164	84.971	84.971	84.971	84.829	84.502	84.147	83.906	83.711	83.525	83.339	83.216	83.097	82.989	82.904	82.814	82.775	82.8	86.946	-9999.99	84.971	-9999.99
2.833	89.515	88.727	87.897	87.228	87.062	86.944	86.921	86.968	86.96	86.96	85.616	85.577	85.461	85.447	85.389	85.196	85.008	85.008	85.008	84.862	84.532	84.173	83.931	83.734	83.546	83.358	83.234	83.113	83.003	82.917	82.823	82.768	82.8	86.96	-9999.99	85.008	-9999.99
2.917	89.531	88.746	87.912	87.256	87.086	86.971	86.924	86.98	86.975	86.975	85.632	85.593	85.478	85.464	85.407	85.212	85.023	85.023	85.023	84.878	84.545	84.185	83.943	83.744	83.559	83.378	83.254	83.132	83.019	82.932	82.835	82.771	82.8	86.975	-9999.99	85.023	-9999.99
3	89.546	88.765	87.928	87.28	87.107	86.99	86.931	86.993	86.992	86.992	85.656	85.623	85.511	85.496	85.445	85.237	85.053	85.053	85.053	84.906	84.569	84.205	83.961	83.761	83.574	83.395	83.271	83.147	83.032	82.944	82.845	82.777	82.8	86.992	-9999.99	85.053	-9999.99
3.083	89.574	88.77	87.955	87.309	87.153	87.005	86.936	87.01	86.987	86.987	85.68	85.638	85.535	85.514	85.461	85.256	85.07	85.07	85.07	84.923	84.585	84.218	83.974	83.773	83.586	83.408	83.283	83.159	83.045	82.957	82.856	82.784	82.8	86.987	-9999.99	85.07	-9999.99
3.167	89.565	88.808	87.949	87.361	87.149	87.047	86.925	87.011	87.037	87.037	85.708	85.664	85.565	85.548	85.49	85.284	85.096	85.096	85.096	84.95	84.608	84.238	83.991	83.789	83.601	83.423	83.296	83.171	83.057	82.969	82.867	82.791	82.8	87.037	-9999.99	85.096	-9999.99
3.25	89.599	88.8	87.983	87.373	87.192	87.048	86.933	87.031	87.017	87.017	85.726	85.691	85.592	85.573	85.516	85.312	85.122	85.122	85.122	84.977	84.628	84.256	84.007	83.803	83.614	83.436	83.307	83.182	83.068	82.981	82.876	82.798	82.8	87.017	-9999.99	85.122	-9999.99
3.333	89.59	88.83	87.982	87.408	87.199	87.065	86.946	87.035	87.059	87.059	85.757	85.722	85.636	85.619	85.56	85.353	85.162	85.162	85.162	85.005	84.656	84.282	84.031	83.822	83.632	83.453	83.323	83.196	83.081	82.995	82.888	82.806	82.8	87.059	-9999.99	85.162	-9999.99
3.417	89.621	88.821	88.013	87.421	87.24	87.061	86.957	87.055	87.038	87.038	85.767	85.739	85.654	85.636	85.577	85.367	85.179	85.179	85.179	85.026	84.67	84.293	84.04	83.829	83.639	83.459	83.328	83.201	83.086	82.999	82.892	82.81	82.8	87.038	-9999.99	85.179	-9999.99
3.5	89.627	88.834	88.022	87.445	87.257	87.069	86.963	87.061	87.054	87.054	85.785	85.756	85.677	85.657	85.599	85.386	85.195	85.195	85.195	85.046	84.686	84.308	84.052	83.84	83.648	83.469	83.337	83.209	83.094	83.007	82.899	82.815	82.8	87.054	-9999.99	85.195	-9999.99
3.583	89.634	88.846	88.029	87.47	87.265	87.085	86.955	87.065	87.063	87.063	85.798	85.768	85.692	85.672	85.614	85.402	85.208	85.208	85.208	85.056	84.698	84.318	84.063	83.848	83.656	83.476	83.344	83.216	83.1	83.012	82.905	82.819	82.8	87.063	-9999.99	85.208	-9999.99
3.667	89.647	88.848	88.043	87.491	87.283	87.093	86.956	87.075	87.066	87.066	85.82	85.785	85.714	85.692	85.633	85.422	85.234	85.234	85.234	85.074	84.714	84.332	84.075	83.858	83.664	83.484	83.351	83.224	83.107	83.019	82.911	82.824	82.8	87.066	-9999.99	85.234	-9999.99
3.75	89.65	88.856	88.048	87.511	87.289	87.101	86.95	87.078	87.074	87.074	85.827	85.797	85.723	85.704	85.644	85.433	85.242	85.242	85.242	85.086	84.723	84.342	84.081	83.865	83.669	83.49	83.356	83.228	83.113	83.026	82.915	82.826	82.8	87.074	-9999.99	85.242	-9999.99
3.833	89.653	88.862	88.053	87.523	87.295	87.105	86.949	87.082	87.078	87.078	85.836	85.809	85.734	85.716	85.656	85.44	85.252	85.252	85.252	85.096	84.73	84.349	84.087	83.869	83.673	83.494	83.36	83.232	83.117	83.029	82.918	82.829	82.8	87.078	-9999.99	85.252	-9999.99
3.917	89.658	88.862	88.059	87.535	87.303	87.106	86.943	87.084	87.078	87.078	85.884	85.866	85.778	85.765	85.702	85.481	85.292	85.292	85.292	85.128	84.76	84.371	84.107	83.883	83.686	83.503	83.369	83.24	83.122	83.037	82.924	82.832	82.8	87.078	-9999.99	85.292	-9999.99
4	89.658	88.864	88.059	87.536	87.3	87.104	86.941	87.081	87.078	87.078	85.873	85.848	85.766	85.746	85.688	85.463	85.273	85.273	85.273	85.114	84.747	84.365	84.102	83.883	83.682	83.497	83.363	83.234	83.115	83.028	82.918	82.83	82.8	87.078	-9999.99	85.273	-9999.99
4.083	89.656	88.865	88.056	87.536	87.297	87.106	86.936	87.079	87.077	87.077	85.867	85.846	85.757	85.745	85.673	85.46	85.269	85.269	85.269	85.111	84.742	84.36	84.098	83.879	83.681	83.5	83.366	83.237	83.122	83.034	82.922	82.831	82.8	87.077	-9999.99	85.269	-9999.99
4.167	89.655	88.861	88.055	87.53	87.297	87.103	86.939	87.079	87.074	87.074	85.865	85.835	85.755	85.731	85.67	85.451	85.261	85.261	85.261	85.103	84.736	84.356	84.093	83.875	83.678	83.497	83.363	83.235	83.119	83.031	82.92	82.83	82.8	87.074	-9999.99	85.261	-9999.99
4.25	89.653	88.857	88.052	87.52	87.291	87.099	86.942	87.076	87.072	87.072	85.866	85.841	85.754	85.738	85.674	85.454	85.262	85.262	85.262	85.106	84.739	84.357	84.095	83.876	83.679	83.496	83.362	83.235	83.118	83.031	82.92	82.831	82.8	87.072	-9999.99	85.262	-9999.99
4.333	89.646	88.854	88.045	87.51	87.282	87.097	86.939	87.071	87.069	87.069	85.851	85.821	85.737	85.719	85.656	85.441	85.247	85.247	85.247	85.091	84.726	84.346	84.086	83.868	83.673	83.491	83.359	83.23	83.114	83.027	82.917	82.828	82.8	87.069	-9999.99	85.247	-9999.99
4.417	89.641	88.849	88.038	87.495	87.276	87.091	86.942	87.067	87.063	87.063	85.84	85.813	85.727	85.706	85.649	85.427	85.237	85.237	85.237	85.082	84.719	84.339	84.08	83.864	83.668	83.488	83.354	83.227	83.11	83.024	82.914	82.826	82.8	87.063	-9999.99	85.237	-9999.99
4.5	89.633	88.843	88.03	87.479	87.268	87.085	86.945	87.062	87.058	87.058	85.83	85.803	85.712	85.699	85.631	85.419	85.225	85.225	85.225	85.068	84.709	84.332	84.074	83.858	83.663	83.482	83.35	83.221	83.107	83.019	82.91	82.822	82.8	87.058	-9999.99	85.225	-9999.99
4.583	89.625	88.837	88.021	87.462	87.255	87.08	86.944	87.056	87.054	87.054	85.818	85.793	85.701	85.683	85.62	85.407	85.213	85.213	85.213	85.057	84.699	84.323	84.066	83.851	83.658	83.477	83.345	83.217	83.101	83.014	82.905	82.819	82.8	87.054	-9999.99	85.213	-9999.99
4.667	89.621	88.825	88.015	87.44	87.248	87.067	86.946	87.051	87.041	87.041	85.808	85.778	85.688	85.665	85.609	85.39	85.196	85.196	85.196	85.045	84.688	84.312	84.057	83.844	83.651	83.471	83.339	83.211	83.095	83.009	82.901	82.816	82.8	87.041	-9999.99	85.196	-9999.99
4.75	89.617	88.813	88.009	87.414	87.241	87.048	86.954	87.046	87.029	87.029	85.786	85.768	85.668	85.65	85.589	85.372	85.181	85.181	85.181	85.028	84.674	84.3	84.047	83.835	83.644	83.463	83.332	83.204	83.089	83.002	82.895	82.811	82.8	87.029	-9999.99	85.181	-9999.99
4.833	89.604	88.808	87.997	87.389	87.23	87.032	86.957	87.038	87.022	87.022	85.772	85.749	85.652	85.629	85.575	85.354	85.164	85.164	85.164	85.015	84.66	84.288	84.035	83.826	83.636	83.455	83.324	83.197	83.082	82.995	82.889	82.807	82.8	87.022	-9999.99	85.164	-9999.99
4.917	89.579	88.813	87.972	87.382	87.195	87.034	86.95	87.023	87.039	87.039	85.761	85.729	85.632	85.616	85.55	85.338	85.149	85.149	85.149	84.993	84.645	84.273	84.024	83.817	83.627	83.446	83.316	83.19	83.075	82.989	82.882	82.803	82.8	87.039	-9999.99	85.149	-9999.99
5	89.574	88.798	87.967	87.35	87.19	87.01	86.957	87.019	87.021	87.021	85.739	85.714	85.609	85.593	85.532	85.317	85.127	85.127	85.127	84.975	84.629	84.26	84.011	83.807	83.618	83.436	83.307	83.182	83.067	82.98	82.875	82.798	82.8	87.021	-9999.99	85.127	-9999.99
5.083	89.58	88.771	87.966	87.317	87.187	86.986	86.956	87.015	86.986	86.986	85.719	85.695	85.588	85.566	85.51	85.295	85.104	85.104	85.104	84.955	84.614	84.245	83.998	83.796	83.607	83.426	83.298	83.174	83.059	82.971	82.868	82.793	82.8	86.986	-9999.99	85.104	-9999.99
5.167	89.548	88.778	87.933	87.311	87.129	87.002	86.934	86.995	87.011	87.011	85.704	85.675	85.56	85.544	85.487	85.279	85.087	85.087	85.087	84.935	84.596	84.231	83.986	83.785	83.596	83.415	83.289	83.165	83.05	82.962	82.861	82.787	82.8	87.011	-9999.99	85.087	-9999.99
5.25	89.54	88.761	87.922	87.287	87.107	86.992	86.918	86.986	86.988	86.988	85.692	85.66	85.548	85.526	85.474	85.265	85.072	85.072	85.072	84.927	84.586	84.222	83.976	83.776	83.588	83.406	83.28	83.155	83.041	82.952	82.853	82.782	82.8	86.988	-9999.99	85.072	-9999.99
5.333	89.533	88.74	87.916	87.257	87.097	86.965	86.923	86.979	86.967	86.967	85.668	85.636	85.518	85.498	85.442	85.238	85.051	85.051	85.051	84.902	84.566	84.204	83.961	83.762	83.574	83.391	83.267	83.143	83.029	82.942	82.843	82.776	82.8	86.967	-9999.99	85.051	-9999.99
5.417	89.514	88.732	87.897	87.239	87.07	86.949	86.915	86.965	86.962	86.962	85.644	85.616	85.489	85.471	85.419	85.219	85.025	85.025	85.025	84.878	84.546	84.187	83.945	83.748	83.561	83.378	83.254	83.131	83.019	82.932	82.835	82.771	82.8	86.962	-9999.99	85.025	-9999.99
5.5	89.499	88.718	87.883	87.222	87.049	86.932	86.906	86.953	86.949	86.949	85.629	85.599	85.471	85.454	85.402	85.205	85.011	85.011	85.011	84.863	84.533	84.176	83.934	83.738	83.552	83.365	83.241	83.12	83.01	82.924	82.827	82.766	82.8	86.949	-9999.99	85.011	-9999.99

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 - 75% BLK AT 12.5.ZZN
Selected output data from time (hr): 0
to time (hr): 5.5

Velocity

Time (hr)	Newtyle_0	CH000000	CH000000	Newtyle_0:	CH000000	CH000000	Newtyle_0	CH000000	Newtyle01	Bridge1_U	Newtyle12	Newtyle_0	Newtyle_0:	CH000000	CH000000	CH000000	Newtyle_0	Bridge2_U	Newtyle_0	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	CH000000	Newtyle_0(	CH000000	Newtyle_0(	Newtyle_0(	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	1.064	1.04	1.05	0.748	0.826	0.846	1.297	0.329	0.105	0	0.575	0.709	0.792	0.782	0.77	0.757	1.192	0	1.229	1.025	1.049	1.095	0.849	0.817	0.815	0.781	0.314	0.183	0.126	0.086	0.044	0.032	0.024	0	0	0	0
0.083	1.145	0.937	1.203	0.8	0.688	0.263	1.461	0.457	0.113	0	0.541	0.701	0.762	0.572	0.469	0.433	1.392	0	1.483	1.147	0.984	1.112	0.763	0.748	0.79	0.653	0.31	0.19	0.133	0.0894	0.041	0.0253	0.0179	0	0	0	0
0.167	1.157	0.918	1.227	0.779	0.787	0.265	1.321	0.378	0.114	0	0.535	0.69	0.784	0.581	0.418	0.368	1.343	0	1.397	1.068	0.943	1.1	0.771	0.785	0.842	0.731	0.355	0.21	0.142	0.091	0.0365	0.0194	0.0133	0	0	0	0
0.25	1.149	0.93	1.212	0.791	0.743	0.278	1.383	0.395	0.112	0	0.549	0.682	0.822	0.653	0.417	0.283	1.201	0	1.201	0.948	0.912	1.141	0.83	0.856	0.886	0.666	0.302	0.174	0.118	0.0806	0.0427	0.0317	0.0234	0	0	0	0
0.333	1.153	0.925	1.219	0.785	0.767	0.26	1.348	0.393	0.114	0	0.536	0.696	0.763	0.738	0.628	0.447	1.351	0	1.417	1.123	1.08	1.261	0.869	0.781	0.775	0.67	0.3	0.17	0.117	0.0856	0.0558	0.046	0.0344	0	0	0	0
0.417	1.151	0.926	1.216	0.787	0.754	0.273	1.373	0.397	0.113	0	0.544	0.7	0.772	0.764	0.619	0.418	1.317	0	1.363	1.097	1.064	1.262	0.89	0.798	0.79	0.627	0.277	0.162	0.116	0.0872	0.0581	0.0487	0.0365	0	0	0	0
0.5	1.153	0.926	1.218	0.787	0.76	0.266	1.358	0.398	0.114	0	0.537	0.694	0.78	0.6	0.41	0.296	1.227	0	1.228	0.989	0.932	1.094	0.767	0.807	0.853	0.736	0.36	0.209	0.136	0.0816	0.0306	0.0167	0.0117	0	0	0	0
0.583	1.213	0.951	1.234	0.811	0.802	0.339	1.379	0.372	0.114	0	0.558	0.739	0.756	0.679	0.624	0.523	1.421	0	1.54	1.196	1.103	1.228	0.795	0.752	0.802	0.718	0.35	0.207	0.139	0.0882	0.0392	0.0268	0.0196	0	0	0	0
0.667	1.287	0.949	1.274	0.802	0.932	0.584	1.223	0.276	0.11	0	0.599	0.746	0.844	0.804	0.639	0.475	1.382	0	1.468	1.136	1.064	1.239	0.876	0.864	0.877	0.756	0.375	0.22	0.152	0.103	0.0535	0.0394	0.0288	0	0	0	0
0.75	1.339	0.982	1.3	0.841	0.966	0.796	1.075	0.24	0.109	0	0.633	0.775	0.872	0.845	0.714	0.542	1.424	0	1.545	1.174	1.097	1.268	0.904	0.891	0.903	0.798	0.418	0.246	0.169	0.115	0.0599	0.0437	0.0322	0	0	0	0
0.833	1.378	1.039	1.379	0.89	0.974	0.93	0.921	0.21	0.108	0	0.671	0.808	0.904	0.887	0.794	0.621	1.471	0	1.633	1.217	1.133	1.301	0.938	0.921	0.936	0.849	0.474	0.279	0.192	0.13	0.0678	0.0497	0.0367	0	0	0	0
0.917	1.415	1.09	1.455	0.929	0.99	1.021	0.625	0.189	0.107	0	0.708	0.848	0.944	0.924	0.861	0.699	1.517	0	1.719	1.256	1.168	1.331	0.969	0.95	0.969	0.902	0.541	0.319	0.22	0.149	0.0772	0.0565	0.0416	0	0	0	0
1	1.449	1.137	1.533	0.956	1.07	0.905	0.453	0.166	0.107	0	0.743	0.885	0.991	0.933	0.764	0.599	1.785	0	1.785	1.285	1.194	1.353	1.005	0.998	1.01	0.947	0.604	0.358	0.246	0.167	0.0868	0.0637	0.0469	0	0	0	0
1.083	1.47	1.205	1.594	1.02	1.086	0.665	0.365	0.134	0.107	0	0.776	0.919	1.032	0.978	0.824	0.659	1.854	0	1.854	1.32	1.219	1.388	1.056	1.053	1.053	0.997	0.68	0.404	0.277	0.188	0.0977	0.0714	0.0525	0	0	0	0
1.167	1.51	1.282	1.649	1.119	0.989	0.467	0.303	0.111	0.106	0	0.812	0.955	1.081	1.046	0.958	0.792	1.816	0	1.918	1.357	1.291	1.458	1.107	1.106	1.092	1.055	0.766	0.458	0.315	0.214	0.111	0.0805	0.0592	0	0	0	0
1.25	1.591	1.335	1.724	1.167	0.83	0.43	0.292	0.0942	0.106	0	0.837	0.98	1.11	1.082	1.023	0.871	1.784	0	1.952	1.378	1.335	1.499	1.14	1.139	1.115	1.098	0.829	0.496	0.341	0.231	0.12	0.0878	0.0643	0	0	0	0
1.333	1.67	1.373	1.803	1.173	0.745	0.423	0.255	0.0899	0.109	0	0.85	0.899	1.18	1.137	1.036	0.872	2.05	0	2.049	1.475	1.441	1.591	1.212	1.208	1.171	1.18	0.966	0.586	0.403	0.274	0.143	0.104	0.0768	0	0	0	0
1.417	1.731	1.425	1.858	1.211	0.789	0.465	0.276	0.0914	0.114	0	0.848	0.867	1.236	1.2	1.138	0.997	2.021	0	2.128	1.486	1.472	1.693	1.313	1.302	1.283	1.304	1.134	0.769	0.528	0.358	0.185	0.135	0.0993	0	0	0	0
1.5	1.775	1.498	1.949	1.262	0.847	0.519	0.297	0.0937	0.119	0	0.847	0.851	1.281	1.24	1.168	1.012	2.143	0	2.172	1.482	1.463	1.762	1.396	1.395	1.371	1.383	1.246	0.935	0.641	0.433	0.222	0.162	0.119	0	0	0	0
1.583	1.821	1.563	2.051	1.32	0.913	0.577	0.322	0.0958	0.123	0	0.845	0.837	1.319	1.27	1.174	1.072	2.225	0	2.225	1.479	1.504	1.846	1.483	1.48	1.453	1.469	1.367	1.128	0.772	0.519	0.266	0.194	0.142	0	0	0	0
1.667	1.903	1.664	2.135	1.385	0.981	0.644	0.349	0.0982	0.129	0	0.841	0.825	1.362	1.314	1.222	1.172	2.263	0	2.292	1.477	1.542	1.927	1.556	1.554	1.533	1.555	1.48	1.283	0.913	0.61	0.31	0.226	0.166	0	0	0	0
1.75	2.005	1.76	2.209	1.447	1.057	0.711	0.378	0.101	0.135	0	0.837	0.815	1.399	1.335	1.215	1.229	2.357	0	2.364	1.491	1.587	2.006	1.64	1.639	1.618	1.633	1.572	1.406	1.089	0.722	0.363	0.265	0.194	0	0	0	0
1.833	2.105	1.846	2.282	1.513	1.137	0.788	0.407	0.105	0.142	0	0.832	0.807	1.43	1.348	1.188	1.306	2.408	0	2.428	1.519	1.646	2.088	1.726	1.726	1.704	1.716	1.671	1.539	1.309	0.858	0.425	0.31	0.227	0	0	0	0
1.917	2.185	1.944	2.379	1.591	1.221	0.869	0.442	0.11	0.15	0	0.825	0.801	1.457	1.331	1.173	1.382	2.451	0	2.466	1.553	1.736	2.168	1.806	1.807	1.79	1.801	1.764	1.659	1.465	1.019	0.493	0.36	0.263	0	0	0	0
2	2.262	2.053	2.473	1.671	1.31	0.96	0.478	0.117	0.161	0	0.814	0.805	1.475	1.321	1.18	1.468	2.495	0	2.509	1.588	1.81	2.25	1.895	1.896	1.875	1.877	1.842	1.741	1.546	1.184	0.568	0.415	0.302	0	0	0	0
2.083	2.369	2.16	2.558	1.749	1.401	1.055	0.515	0.124	0.174	0	0.805	0.818	1.484	1.311	1.191	1.546	2.534	0	2.538	1.629	1.882	2.33	1.977	1.98	1.96	1.951	1.899	1.781	1.56	1.221	0.652	0.476	0.346	0	0	0	0
2.167	2.463	2.258	2.631	1.831	1.484	1.156	0.551	0.133	0.189	0	0.79	0.845	1.488	1.331	1.257	1.599	2.572	0	2.574	1.634	1.969	2.395	2.053	2.072	2.052	2.038	1.992	1.871	1.623	1.234	0.746	0.547	0.397	0	0	0	0
2.25	2.543	2.355	2.724	1.909	1.579	1.239	0.591	0.141	0.202	0	0.782	0.849	1.503	1.341	1.255	1.688	2.565	0	2.567	1.662	1.988	2.463	2.12	2.139	2.116	2.105	2.046	1.925	1.698	1.311	0.836	0.611	0.44	0	0	0	0
2.333	2.612	2.447	2.804	1.983	1.653	1.324	0.629	0.15	0.215	0	0.771	0.848	1.509	1.33	1.281	1.752	2.555	0	2.555	1.72	2.057	2.525	2.19	2.212	2.188	2.184	2.116	2.005	1.799	1.415	0.936	0.684	0.491	0	0	0	0
2.417	2.671	2.533	2.873	2.054	1.714	1.413	0.665	0.158	0.232	0	0.757	0.838	1.292	1.15	1.191	1.802	2.578	0	2.578	1.855	2.196	2.644	2.295	2.315	2.296	2.306	2.213	2.105	1.879	1.505	1.064	0.789	0.563	0	0	0	0
2.5	2.736	2.609	2.943	2.12	1.775	1.51	0.701	0.166	0.243	0	0.75	0.854	1.341	1.188	1.237	1.846	2.619	0	2.621	1.886	2.23	2.66	2.308	2.332	2.315	2.324	2.209	2.108	1.915	1.581	1.151	0.841	0.593	0	0	0	0
2.583	2.819	2.679	3.007	2.178	1.823	1.508	0.742	0.168	0.254	0	0.744	0.86	1.34	1.199	1.267	1.877	2.623	0	2.624	1.915	2.275	2.696	2.342	2.361	2.337	2.317	2.165	2.072	1.929	1.604	1.22	0.922	0.645	0	0	0	0
2.667	2.876	2.768	3.041	2.256	1.846	1.541	0.757	0.184	0.265	0	0.736	0.858	1.296	1.186	1.276	1.902	2.626	0	2.626	1.956	2.326	2.734	2.388	2.401	2.372	2.329	2.155	2.071	1.936	1.611	1.272	1.013	0.7	0	0	0	0
2.75	2.934	2.827	3.113	2.283	1.914	1.516	0.827	0.168	0.276	0	0.71	0.827	1.203	1.116	1.252	1.906	2.611	0	2.611	1.977	2.379	2.799	2.453	2.473	2.451	2.464	2.276	2.152	1.981	1.649	1.325	1.097	0.747	0	0	0	0
2.833	2.976	2.914	3.147	2.369	1.933	1.552	0.834	0.179	0.277	0	0.674	0.795	1.131	1.08	1.24	1.919	2.585	0	2.585	2.015	2.415	2.838	2.496	2.5	2.488	2.504	2.293	2.161	1.991	1.666	1.381	1.205	0.802	0	0	0	0
2.917	3.04	2.951	3.222	2.374	1.985	1.545	0.896	0.17	0.281	0	0.657	0.792	1.119	1.073	1.238	1.921	2.588	0	2.588	2.03	2.436	2.853	2.507	2.508	2.472	2.444	2.229	2.109	1.963	1.655	1.411	1.278	0.859	0	0	0	0
3	3.102	2.987	3.288	2.395	2.04	1.553	0.942	0.167	0.285	0	0.633	0.764	1.077	1.048	1.205	1.94	2.574	0	2.574	2.053	2.459	2.884	2.537	2.535	2.49	2.423	2.22	2.107	1.971	1.661	1.433	1.321	0.906	0	0	0	0
3.083	3.057	3.124	3.228	2.401	1.995	1.62	1.024	0.149	0.288	0	0.607	0.768	1.051	1.043	1.207	1.935	2.577	0	2.577	2.07	2.476	2.912	2.557	2.544	2.486	2.407	2.197	2.09	1.95	1.638	1.45	1.363	0.957	0	0	0	0
3.167	3.283	2.966	3.494	2.245	2.185	1.504	1.111	0.142	0.292	0	0.589	0.737	1.009	1.016	1.214	1.929	2.58	0	2.58	2.095	2.497	2.938	2.592	2.555	2.501	2.405	2.2	2.087	1.947	1.638	1.473	1.404	1.007	0	0	0	0
3.25	3.163	3.179	3.334	2.326	2.113	1.606	1.185	0.126	0.294	0	0.566	0.725	0.992	0.995	1.197	1.911	2.588	0	2.588	2.108	2.526	2.964	2.616	2.557	2.497	2.412	2.206	2.084	1.939	1.636	1.495	1.441	1.055	0	0	0	0
3.333	3.357	3.095	3.519	2.275	2.208	1.647	1.13	0.181	0.294	0	0.545	0.674	0.93	0.956	1.182	1.907	2.578	0	2.578	2.171	2.557	2.997	2.645	2.582	2.498	2.415	2.218	2.097	1.946	1.636	1.526	1.488	1.118	0	0	0	0
3.417	3.25	3.292	3.367	2.34	2.115	1.775	1.167	0.183	0.295	0	0.532	0.662	0.923	0.947	1.164	1.905	2.569	0	2.57	2.169	2.576	3.01	2.658	2.597	2.501	2.417	2.23	2.107	1.95	1.642	1.537	1.505	1.143	0	0	0	0
3.5	3.31	3.307	3.408	2.331	2.133	1.83	1.176	0.203	0.296	0	0.519	0.649	0.901	0.935	1.16	1.912	2.586	0	2.586	2.18	2.588	3.026	2.674	2.593	2.505	2.397	2.236	2.108	1.95	1.64	1.552	1.533	1.182	0	0	0	0
3.583	3.353	3.309	3.462	2.285	2.195	1.826	1.249	0.194	0.298	0	0.51	0.643	0.884	0.922	1.151	1.906	2.596	0	2.596	2.204	2.594	3.038	2.682	2.598	2.504	2.389	2.233	2.106	1.954	1.644	1.56	1.553	1.213	0	0	0	0
3.667	3.34	3.371	3.432	2.266	2.202	1.873	1.304	0.191	0.299	0	0.493	0.635	0.867	0.914	1.143	1.906	2.573	0	2.573	2.23	2.61	3.045	2.694	2.598	2.51	2.384	2.223	2.108	1.956	1.644	1.575	1.578	1.249	0	0	0	0
3.75	3.375	3.372	3.461	2.239	2.246	1.887	1.359	0.19	0.301	0	0.489	0.624	0.857	0.899	1.135	1.901	2.584	0	2.584	2.226	2.617	3.044	2.705	2.589	2.514	2.373	2.22	2.115	1.946	1.635	1.584	1.594	1.272	0	0	0	0
3.833	3.397	3.376	3.476	2.227	2.268	1.909	1.388	0.19	0.302	0	0.483	0.607	0.855	0.897	1.131	1.91	2.578	0	2.578	2.233	2.628	3.048	2.707	2.593	2.509	2.375	2.221	2.115	1.95	1.639	1.59	1.606	1.289	0	0	0	0
3.917	3.388	3.4	3.461	2.205	2.271	1.94	1.433	0.187	0.298	0	0.448	0.544	0.872	0.871	1.126	1.942	2.621	0	2.621	2.312	2.671	3.096	2.735	2.631	2.518	2.409	2.237	2.131	1.985	1.643	1.607	1.637	1.325	0	0	0	0
4	3.398	3.398	3.469	2.211	2.286	1.951	1.438	0.19	0.298	0	0.455	0.565	0.87	0.911	1.14	1.958	2.63	0	2.63	2.293	2.661	3.063	2.713	2.592	2.523	2.436	2.265	2.155	2.009	1.675	1.611	1.615	1.301	0	0	0	0
4.083	3.407	3.38	3.484	2.2	2.303	1.932	1.455	0.185	0.298	0	0.46	0.555	0.897	0.887	1.177	1.94	2.623	0	2.623	2.281	2.659	3.058	2.715	2.593	2.507	2.384	2.226	2.124	1.961	1.647	1.606	1.633	1.319	0	0	0	0
4.167	3.389	3.387	3.465	2.212	2.278	1.936	1.429	0.188	0.297	0	0.46	0.582	0.874	0.929	1.167	1.955	2.629	0	2.629	2.278	2.656	3.056	2.712	2.593	2.506	2.388	2.228	2.125	1.962	1.647	1.599	1.618	1.305	0	0	0	0
4.25	3.373	3.384	3.452	2.223	2.267	1.923	1.4	0.188	0.296	0	0.459	0.566	0.885	0.912	1.162	1.954	2.642	0	2.642	2.284	2.658	3.06	2.715	2.599	2.506	2.399	2.244	2.125	1.975	1.647	1.599	1.618	1.306	0	0	0	0
4.333	3.372	3.356	3.46	2.224	2.265	1.89	1.386	0.186	0.296	0	0.47	0.589	0.887	0.927	1.166	1.937	2.63	0	2.63	2.263	2.643	3.054	2.702	2.596	2.503	2.393	2.224	2.122	1.958	1.644	1.589	1.6	1.281	0	0	0	0
4.417	3.358	3.339	3.45	2.241	2.234	1.873	1.344	0.186	0.295	0	0.477	0.596	0.893	0.941	1.162	1.952	2.625	0	2.625	2.25	2.637	3.05	2.698	2.591	2.513	2.388	2.233	2.118	1.963	1.634	1.584	1.589	1.263	0	0	0	0
4.5	3.345	3.312	3.445	2.252	2.206	1.848	1.298	0.189	0.293	0	0.484	0.594	0.917	0.93	1.189	1.937	2.63	0	2.63	2.253	2.626	3.042	2.696	2.589	2.514	2.398	2.23	2.122	1.953	1.645	1.574	1.573	1.241	0	0	0	0
4.583	3.327	3.282	3.436	2.259	2.192	1.808	1.262	0.185	0.292	0	0.492	0.599	0.926	0.95	1.191	1.94	2.632	0	2.632	2.247	2.617	3.038	2.687	2.592	2.511	2.399	2.239	2.118	1.96	1.643	1.567	1.557	1.218	0	0	0	0
4.667	3.273	3.286	3.383	2.289	2.14	1.802	1.221	0.183	0.29	0	0.498	0.618	0.929	0.981	1.184	1.955	2.64	0	2.64	2.218	2.612	3.026	2.674	2.59	2.507	2.404	2.243	2.115	1.958	1.639	1.557	1.538	1.189	0	0	0	0
4.75	3.216	3.29	3.327	2.332	2.069	1.822	1.14	0.193	0.288	0	0.513	0.612	0.967	0.98	1.202	1.953	2.626	0	2.627	2.21	2.598	3.016	2.663	2.593	2.501	2.419	2.24	2.113	1.958	1.642	1.544	1.516	1.159	0	0	0	0
4.833	3.209	3.238	3.318	2.367	2.02	1.819	1.068	0.207	0.285	0	0.524	0.628	0.972	1.005	1.189	1.96	2.623	0	2.623	2.18	2.593	3.005	2.65	2.582	2.5	2.429	2.238	2.11	1.956	1.65	1.53	1.493	1.128	0	0	0	0
4.917	3.292	3.08	3.437	2.295	2.098	1.713	1.02	0.218	0.284	0	0.538	0.63	0.991	0.999	1.228	1.954	2.611	0	2.611	2.186	2.569	2.988	2.637	2.575	2.495	2.44	2.232	2.108	1.956	1.647	1.517	1.469	1.092	0	0	0	0
5	3.213	3.098	3.336	2.371	1.996	1.76	0.931	0.239	0.281	0	0.554	0.637	1.022	1.022	1.223	1.963	2.621	0	2.621	2.159	2.552	2.978	2.627	2.562	2.498	2.438	2.227	2.106	1.957	1.653	1.5	1.442	1.057	0	0	0	0
5.083	3.054	3.18	3.184	2.435	1.895	1.792	0.922	0.214	0.279	0	0.565	0.668	1.041	1.048	1.219	1.968	2.631	0	2.631	2.144	2.537	2.966	2.61	2.55	2.502	2.434	2.224	2.105	1.961	1.651	1.483	1.414	1.021	0	0	0	0
5.167	3.161	2.976	3.348	2.321	2.059	1.595	0.931	0.2	0.28	0	0.586	0.676	1.063	1.056	1.241	1.971	2.638	0	2.638	2.137	2.513	2.935	2.585	2.544	2.499	2.43	2.22	2.104	1.967	1.651	1.465	1.383	0.982	0	0	0	0
5.25	3.088	2.96	3.28	2.327	2.044	1.538	0.983	0.152	0.279	0	0.594	0.7	1.051	1.06	1.22	1.966	2.641	0	2.641	2.104	2.511	2.921	2.57	2.548	2.497	2.444	2.235	2.128	1.981	1.667	1.453	1.351	0.943	0	0	0	0
5.333	3.001	2.979	3.173	2.373	1.953	1.593	0.902	0.172	0.276	0	0.614	0.721	1.096	1.081	1.244	1.978	2.621	0	2.621	2.088	2.489	2.894	2.537	2.526	2.49	2.457	2.251	2.126	1.977	1.665	1.432	1.315	0.901	0	0	0	0
5.417	3	2.899	3.177	2.338	1.944	1.566	0.855	0.184	0.273	0	0.639	0.73	1.133	1.104	1.25	1.96	2.646	0	2.646	2.068	2.462	2.865	2.515	2.508	2.479	2.467	2.251	2.124	1.969	1.66	1.412	1.28	0.862	0	0	0	0
5.5	2.957	2.848	3.134	2.299	1.919	1.557	0.834	0.181	0.27	0	0.655	0.743	1.146	1.111	1.247	1.949	2.64	0	2.64	2.054	2.443	2.852	2.5	2.496	2.475	2.484	2.268	2.136	1.971	1.659	1.399	1.249	0.828	0	0	0	0

Output data from file C:\FILES FOR SERVER\NEWTYLE\FLOOD MODELLER\SIMULATIONS\1D UNSTEADY - SHORTENED FOR V7 - 75% BLK AT 12.5.ZZN
Selected output data from time (hr): 0
to time (hr): 5.5

Fr

Time (hr)	Newtyle_0	CH000000	CH000000	Newtyle_0:	CH000000	CH000000	Newtyle_0	CH000000	Newtyle01	Bridge1_U	Newtyle12	Newtyle_0	Newtyle_0:	CH000000	CH000000	CH000000	Newtyle_0	Bridge2_U	Newtyle_0	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	Newtyle_0(	CH000000	CH000000	CH000000	Newtyle_0(	CH000000	Newtyle_0(	Newtyle_0(	Spill_012.5	Spill_012.5	Spill_010U	Spill_010D
0	1.235	1.262	1.287	0.893	0.901	0.809	1.298	0.217	0.041	0	0.481	0.679	0.795	0.804	0.808	0.809	1.639	0	1.715	1.314	1.289	1.303	0.904	0.871	0.882	0.869	0.239	0.111	0.069	0.058	0.028	0.019	0.014	0	0	0	0
0.083	1.359	1.094	1.489	0.987	0.685	0.164	1.426	0.317	0.0454	0	0.438	0.67	0.763	0.516	0.381	0.322	1.851	0	2.036	1.447	1.218	1.464	0.849	0.824	0.883	0.706	0.234	0.114	0.073	0.0604	0.0258	0.0146	0.0105	0	0	0	0
0.167	1.379	1.063	1.52	0.945	0.839	0.184	1.373	0.269	0.0461	0	0.436	0.655	0.786	0.526	0.332	0.266	1.865	0	1.979	1.407	1.207	1.437	0.835	0.835	0.897	0.762	0.266	0.127	0.0781	0.0613	0.023	0.0112	0.00784	0	0	0	0
0.25	1.366	1.082	1.501	0.97	0.773	0.184	1.371	0.271	0.0445	0	0.446	0.639	0.83	0.619	0.339	0.202	1.845	0	1.845	1.337	1.162	1.421	0.854	0.88	0.948	0.708	0.23	0.106	0.0647	0.0538	0.0269	0.0183	0.0138	0	0	0	0
0.333	1.372	1.074	1.51	0.957	0.811	0.178	1.385	0.279	0.0461	0	0.436	0.663	0.75	0.719	0.563	0.348	1.856	0	1.993	1.376	1.205	1.469	0.914	0.855	0.871	0.732	0.228	0.103	0.0643	0.0579	0.0351	0.0266	0.0202	0	0	0	0
0.417	1.37	1.077	1.506	0.963	0.79	0.183	1.375	0.274	0.0452	0	0.44	0.662	0.757	0.754	0.557	0.322	1.853	0	1.951	1.369	1.191	1.455	0.923	0.861	0.896	0.687	0.21	0.098	0.0638	0.0589	0.0366	0.0281	0.0215	0	0	0	0
0.5	1.372	1.075	1.509	0.961	0.799	0.18	1.383	0.281	0.046	0	0.436	0.66	0.785	0.552	0.327	0.209	1.837	0	1.84	1.362	1.203	1.429	0.822	0.849	0.903	0.771	0.273	0.126	0.0744	0.0547	0.0192	0.00969	0.00687	0	0	0	0
0.583	1.408	1.067	1.517	0.956	0.824	0.234	1.334	0.24	0.0443	0	0.441	0.694	0.725	0.623	0.536	0.405	1.826	0	2.062	1.417	1.248	1.496	0.865	0.825	0.872	0.767	0.266	0.125	0.0766	0.0597	0.0247	0.0155	0.0115	0	0	0	0
0.667	1.459	1.013	1.555	0.883	0.965	0.459	1.133	0.152	0.0403	0	0.465	0.663	0.791	0.759	0.554	0.364	1.853	0	2.028	1.389	1.201	1.431	0.881	0.881	0.915	0.786	0.284	0.133	0.0832	0.0695	0.0336	0.0228	0.017	0	0	0	0
0.75	1.474	1.01	1.562	0.884	0.956	0.657	0.934	0.118	0.0379	0	0.477	0.664	0.786	0.773	0.618	0.42	1.833	0	2.07	1.382	1.196	1.417	0.888	0.887	0.921	0.81	0.317	0.149	0.0927	0.0772	0.0377	0.0253	0.0189	0	0	0	0
0.833	1.467	1.037	1.594	0.897	0.911	0.77	0.757	0.0923	0.0354	0	0.489	0.661	0.776	0.778	0.678	0.482	1.803	0	2.109	1.366	1.183	1.395	0.892	0.89	0.929	0.836	0.359	0.169	0.105	0.0877	0.0427	0.0287	0.0216	0	0	0	0
0.917	1.459	1.053	1.618	0.895	0.879	0.832	0.419	0.0761	0.0335	0	0.498	0.667	0.776	0.775	0.717	0.539	1.767	0	2.132	1.341	1.166	1.369	0.894	0.892	0.936	0.859	0.41	0.193	0.12	0.1	0.0486	0.0327	0.0245	0	0	0	0
1	1.448	1.063	1.636	0.872	0.922	0.682	0.25	0.0835	0.0319	0	0.506	0.671	0.787	0.742	0.567	0.405	2.139	0	2.138	1.315	1.147	1.347	0.905	0.913	0.946	0.877	0.457	0.217	0.135	0.112	0.0546	0.0368	0.0276	0	0	0	0
1.083	1.422	1.095	1.624	0.894	0.887	0.438	0.176	0.0681	0.0305	0	0.512	0.672	0.792	0.754	0.6	0.441	2.13	0	2.13	1.289	1.121	1.333	0.92	0.934	0.951	0.896	0.514	0.245	0.152	0.127	0.0615	0.0413	0.0309	0	0	0	0
1.167	1.416	1.132	1.601	0.952	0.738	0.252	0.13	0.0503	0.0291	0	0.518	0.67	0.8	0.785	0.707	0.547	1.944	0	2.109	1.264	1.152	1.357	0.933	0.95	0.95	0.921	0.579	0.278	0.173	0.144	0.0696	0.0465	0.0348	0	0	0	0
1.25	1.447	1.137	1.607	0.948	0.551	0.21	0.173	0.0409	0.0282	0	0.524	0.673	0.802	0.795	0.753	0.608	1.825	0	2.088	1.247	1.169	1.366	0.939	0.957	0.945	0.941	0.625	0.301	0.187	0.155	0.0755	0.0507	0.0379	0	0	0	0
1.333	1.477	1.126	1.616	0.897	0.452	0.195	0.166	0.0368	0.0284	0	0.517	0.57	0.801	0.781	0.7	0.555	2.051	0	2.051	1.261	1.204	1.379	0.949	0.965	0.941	0.971	0.725	0.356	0.221	0.184	0.0897	0.0603	0.0452	0	0	0	0
1.417	1.485	1.131	1.596	0.882	0.46	0.209	0.176	0.0366	0.0296	0	0.5	0.522	0.805	0.794	0.755	0.636	1.879	0	2.03	1.193	1.132	1.352	0.948	0.957	0.957	0.999	0.814	0.468	0.289	0.24	0.116	0.0781	0.0585	0	0	0	0
1.5	1.477	1.157	1.613	0.88	0.48	0.23	0.187	0.0369	0.0307	0	0.486	0.494	0.81	0.795	0.748	0.621	1.958	0	1.998	1.134	1.057	1.334	0.958	0.976	0.972	1.005	0.862	0.572	0.35	0.29	0.14	0.0939	0.0703	0	0	0	0
1.583	1.473	1.172	1.638	0.882	0.504	0.253	0.2	0.0372	0.0317	0	0.473	0.47	0.811	0.789	0.723	0.642	1.96	0	1.96	1.067	1.025	1.323	0.969	0.986	0.981	1.017	0.913	0.692	0.42	0.346	0.167	0.112	0.0837	0	0	0	0
1.667	1.487	1.201	1.641	0.889	0.528	0.278	0.214	0.0376	0.033	0	0.458	0.447	0.813	0.794	0.733	0.698	1.906	0	1.942	1.007	0.996	1.312	0.971	0.989	0.993	1.033	0.958	0.779	0.495	0.406	0.195	0.131	0.0978	0	0	0	0
1.75	1.504	1.224	1.637	0.894	0.556	0.305	0.227	0.038	0.0344	0	0.443	0.426	0.809	0.778	0.696	0.71	1.906	0	1.914	0.959	0.969	1.298	0.98	1	1.004	1.039	0.978	0.832	0.587	0.478	0.229	0.153	0.114	0	0	0	0
1.833	1.516	1.234	1.631	0.901	0.585	0.339	0.239	0.0392	0.0359	0	0.426	0.407	0.8	0.755	0.643	0.731	1.835	0	1.858	0.918	0.953	1.283	0.989	1.01	1.015	1.047	1.003	0.888	0.705	0.563	0.268	0.18	0.134	0	0	0	0
1.917	1.506	1.254	1.637	0.917	0.615	0.374	0.255	0.0402	0.0379	0	0.409	0.389	0.784	0.707	0.601	0.746	1.755	0	1.771	0.882	0.961	1.27	0.993	1.015	1.026	1.057	1.02	0.93	0.791	0.661	0.31	0.209	0.155	0	0	0	0
2	1.495	1.283	1.637	0.933	0.646	0.413	0.271	0.0422	0.0406	0	0.389	0.376	0.76	0.665	0.574	0.766	1.68	0	1.695	0.851	0.955	1.26	1.003	1.026	1.034	1.059	1.026	0.953	0.856	0.765	0.358	0.241	0.178	0	0	0	0
2.083	1.513	1.309	1.631	0.948	0.678	0.455	0.287	0.0445	0.0435	0	0.371	0.368	0.732	0.627	0.554	0.779	1.611	0	1.615	0.826	0.949	1.249	1.009	1.035	1.045	1.061	1.041	0.983	0.905	0.828	0.411	0.277	0.204	0	0	0	0
2.167	1.523	1.329	1.619	0.968	0.705	0.501	0.302	0.0469	0.047	0	0.351	0.368	0.705	0.612	0.568	0.778	1.557	0	1.559	0.783	0.953	1.232	1.01	1.043	1.054	1.069	1.079	1.051	0.995	0.887	0.47	0.318	0.234	0	0	0	0
2.25	1.524	1.35	1.627	0.985	0.738	0.558	0.32	0.0492	0.0499	0	0.338	0.359	0.683	0.592	0.543	0.799	1.474	0	1.476	0.765	0.927	1.226	1.016	1.052	1.062	1.079	1.114	1.108	1.066	0.957	0.527	0.356	0.259	0	0	0	0
2.333	1.519	1.369	1.629	1.001	0.76	0.613	0.336	0.0517	0.0531	0	0.323	0.371	0.658	0.562	0.576	0.802	1.388	0	1.388	0.761	0.929	1.216	1.023	1.059	1.07	1.092	1.16	1.18	1.155	1.045	0.59	0.4	0.289	0	0	0	0
2.417	1.51	1.385	1.625	1.015	0.774	0.67	0.352	0.0541	0.0568	0	0.307	0.376	0.635	0.533	0.519	0.771	1.286	0	1.286	0.775	0.95	1.218	1.048	1.088	1.101	1.117	1.225	1.273	1.245	1.126	0.67	0.463	0.331	0	0	0	0
2.5	1.508	1.395	1.624	1.027	0.788	0.728	0.368	0.0561	0.0592	0	0.299	0.383	0.659	0.549	0.537	0.781	1.289	0	1.29	0.779	0.957	1.213	1.048	1.091	1.107	1.112	1.231	1.293	1.284	1.184	0.726	0.495	0.349	0	0	0	0
2.583	1.523	1.403	1.623	1.037	0.795	0.773	0.386	0.0565	0.0616	0	0.291	0.385	0.659	0.551	0.546	0.808	1.255	0	1.255	0.774	0.962	1.214	1.053	1.104	1.113	1.087	1.218	1.301	1.321	1.215	0.769	0.545	0.38	0	0	0	0
2.667	1.52	1.425	1.603	1.058	0.79	0.799	0.39	0.0612	0.0641	0	0.283	0.383	0.634	0.542	0.544	0.806	1.216	0	1.216	0.771	0.968	1.213	1.063	1.137	1.154	1.149	1.229	1.324	1.354	1.226	0.8	0.601	0.412	0	0	0	0
2.75	1.521	1.431	1.613	1.051	0.809	0.793	0.425	0.0554	0.0663	0	0.267	0.368	0.584	0.503	0.525	0.788	1.151	0	1.151	0.748	0.963	1.215	1.077	1.192	1.238	1.262	1.31	1.375	1.377	1.224	0.832	0.656	0.44	0	0	0	0
2.833	1.513	1.454	1.599	1.079	0.811	0.816	0.424	0.0586	0.0665	0	0.249	0.354	0.544	0.482	0.514	0.781	1.103	0	1.103	0.746	0.962	1.216	1.087	1.216	1.287	1.33	1.337	1.377	1.369	1.204	0.866	0.726	0.472	0	0	0	0
2.917	1.523	1.449	1.615	1.062	0.827	0.816	0.455	0.0552	0.0671	0	0.24	0.352	0.537	0.477	0.511	0.776	1.09	0	1.09	0.744	0.964	1.216	1.088	1.224	1.293	1.339	1.317	1.341	1.335	1.16	0.879	0.768	0.506	0	0	0	0
3	1.533	1.444	1.626	1.056	0.845	0.81	0.477	0.0538	0.0675	0	0.229	0.34	0.513	0.462	0.491	0.774	1.056	0	1.056	0.738	0.963	1.218	1.095	1.244	1.318	1.354	1.325	1.338	1.329	1.155	0.889	0.786	0.534	0	0	0	0
3.083	1.474	1.505	1.561	1.039	0.843	0.838	0.517	0.0477	0.0684	0	0.217	0.342	0.498	0.457	0.49	0.766	1.044	0	1.044	0.737	0.963	1.223	1.099	1.254	1.327	1.363	1.322	1.326	1.306	1.137	0.895	0.804	0.563	0	0	0	0
3.167	1.597	1.385	1.699	0.943	0.921	0.761	0.564	0.0456	0.0685	0	0.207	0.328	0.474	0.442	0.489	0.754	1.023	0	1.023	0.734	0.963	1.224	1.108	1.273	1.35	1.383	1.333	1.328	1.299	1.134	0.905	0.821	0.593	0	0	0	0
3.25	1.494	1.493	1.578	0.971	0.917	0.812	0.599	0.04	0.0694	0	0.197	0.322	0.464	0.431	0.48	0.738	1.008	0	1.008	0.727	0.966	1.229	1.119	1.285	1.367	1.404	1.346	1.33	1.293	1.131	0.916	0.836	0.621	0	0	0	0
3.333	1.597	1.421	1.667	0.932	0.963	0.823	0.568	0.0572	0.0685	0	0.188	0.299	0.429	0.411	0.474	0.724	0.976	0	0.976	0.737	0.973	1.234	1.143	1.313	1.396	1.434	1.364	1.342	1.296	1.125	0.931	0.853	0.658	0	0	0	0
3.417	1.508	1.522	1.558	0.952	0.928	0.889	0.583	0.0576	0.0691	0	0.182	0.293	0.424	0.407	0.467	0.72	0.961	0	0.961	0.728	0.979	1.235	1.153	1.326	1.408	1.449	1.375	1.35	1.299	1.128	0.936	0.86	0.673	0	0	0	0
3.5	1.529	1.514	1.565	0.937	0.937	0.911	0.584	0.0636	0.0691	0	0.176	0.286	0.411	0.411	0.466	0.717	0.957	0	0.957	0.724	0.982	1.237	1.166	1.335	1.424	1.459	1.385	1.353	1.298	1.123	0.943	0.87	0.696	0	0	0	0
3.583	1.541	1.502	1.583	0.905	0.964	0.898	0.625	0.0607	0.0693	0	0.172	0.283	0.405	0.413	0.479	0.71	0.952	0	0.952	0.728	0.983	1.239	1.174	1.344	1.434	1.469	1.388	1.354	1.3	1.124	0.942	0.878	0.714	0	0	0	0
3.667	1.521	1.528	1.554	0.885	0.968	0.916	0.652	0.0595	0.0697	0	0.165	0.279	0.403	0.418	0.494	0.704	0.929	0	0.929	0.729	0.988	1.241	1.183	1.354	1.449	1.482	1.386	1.357	1.302	1.121	0.943	0.887	0.735	0	0	0	0
3.75	1.533	1.519	1.562	0.864	0.987	0.918	0.681	0.0589	0.0699	0	0.163	0.274	0.4	0.417	0.501	0.7	0.928	0	0.928	0.724	0.99	1.243	1.189	1.355	1.457	1.487	1.386	1.363	1.295	1.113	0.944	0.893	0.749	0	0	0	0
3.833	1.539	1.515	1.563	0.853	0.997	0.926	0.696	0.0591	0.07	0	0.16	0.266	0.401	0.421	0.509	0.701	0.92	0	0.92	0.722	0.993	1.246	1.192	1.362	1.459	1.496	1.388	1.364	1.298	1.114	0.944	0.897	0.759	0	0	0	0
3.917	1.53	1.526	1.551	0.838	0.995	0.941	0.721	0.0579	0.0691	0	0.146	0.236	0.418	0.438	0.559	0.711	0.913	0	0.913	0.736	1.005	1.271	1.208	1.394	1.48	1.534	1.403	1.371	1.32	1.114	0.948	0.911	0.78	0	0	0	0
4	1.534	1.523	1.554	0.84	1.003	0.947	0.724	0.0589	0.0691	0	0.149	0.246	0.415	0.446	0.542	0.714	0.926	0	0.926	0.735	1.003	1.256	1.197	1.373	1.478	1.54	1.418	1.391	1.337	1.139	0.956	0.9	0.766	0	0	0	0
4.083	1.541	1.514	1.563	0.836	1.012	0.937	0.734	0.0575	0.0691	0	0.151	0.242	0.426	0.433	0.545	0.708	0.927	0	0.926	0.732	1.003	1.253	1.197	1.37	1.467	1.513	1.394	1.369	1.305	1.118	0.949	0.91	0.777	0	0	0	0
4.167	1.534	1.521	1.556	0.843	1.001	0.941	0.72	0.0583	0.0691	0	0.151	0.254	0.415	0.444	0.537	0.715	0.933	0	0.933	0.734	1.003	1.251	1.195	1.367	1.464	1.51	1.395	1.371	1.305	1.119	0.947	0.902	0.768	0	0	0	0
4.25	1.529	1.524	1.553	0.853	0.996	0.937	0.705	0.0583	0.0688	0	0.151	0.247	0.42	0.44	0.539	0.714	0.937	0	0.937	0.735	1.004	1.253	1.197	1.371	1.464	1.516	1.404	1.371	1.314	1.119	0.947	0.902	0.769	0	0	0	0
4.333	1.535	1.514	1.565	0.858	0.995	0.922	0.698	0.0579	0.0688	0	0.155	0.258	0.417	0.436	0.525	0.711	0.941	0	0.941	0.734	1	1.248	1.189	1.362	1.455	1.502	1.39	1.368	1.303	1.119	0.945	0.895	0.754	0	0	0	0
4.417	1.536	1.512	1.567	0.873	0.981	0.918	0.676	0.0582	0.0686	0	0.158	0.261	0.418	0.437	0.517	0.72	0.945	0	0.945	0.733	0.998	1.245	1.186	1.356	1.456	1.492	1.393	1.364	1.307	1.112	0.945	0.891	0.744	0	0	0	0
4.5	1.538	1.506	1.574	0.886	0.969	0.91	0.652	0.0591	0.0683	0	0.161	0.261	0.426	0.429	0.513	0.717	0.954	0	0.954	0.739	0.995	1.24	1.184	1.349	1.45	1.487	1.389	1.365	1.3	1.122	0.944	0.885	0.731	0	0	0	0
4.583	1.539	1.499	1.581	0.899	0.963	0.893	0.634	0.0581	0.0682	0	0.165	0.263	0.427	0.431	0.502	0.721	0.963	0	0.963	0.741	0.992	1.238	1.177	1.345	1.44	1.477	1.392	1.362	1.304	1.122	0.945	0.879	0.717	0	0	0	0
4.667	1.519	1.514	1.563	0.922	0.94	0.899	0.613	0.0576	0.068	0	0.167	0.272	0.425	0.435	0.487	0.732	0.976	0	0.976	0.737	0.991	1.236	1.168	1.337	1.43	1.467	1.391	1.358	1.303	1.122	0.945	0.872	0.7	0	0	0	0
4.75	1.498	1.529	1.544	0.952	0.908	0.921	0.571	0.0608	0.0678	0	0.174	0.27	0.443	0.426	0.482	0.736	0.981	0	0.981	0.74	0.987	1.236	1.158	1.33	1.415	1.458	1.383	1.354	1.304	1.126	0.94	0.864	0.682	0	0	0	0
4.833	1.509	1.512	1.554	0.979	0.887	0.927	0.533	0.0655	0.0672	0	0.179	0.277	0.447	0.432	0.477	0.744	0.991	0	0.991	0.736	0.987	1.235	1.147	1.317	1.403	1.447	1.377	1.351	1.303	1.135	0.933	0.855	0.664	0	0	0	0
4.917	1.582	1.432	1.641	0.953	0.913	0.872	0.511	0.0693	0.0666	0	0.185	0.279	0.458	0.43	0.492	0.746	0.997	0	0.997	0.747	0.979	1.233	1.137	1.306	1.387	1.434	1.367	1.347	1.303	1.136	0.928	0.846	0.643	0	0	0	0
5	1.55	1.458	1.599	1.002	0.866	0.908	0.465	0.0762	0.0662	0	0.192	0.282	0.475	0.441	0.49	0.756	1.017	0	1.017	0.745	0.976	1.233	1.126	1.292	1.373	1.419	1.358	1.344	1.304	1.143	0.919	0.836	0.622	0	0	0	0
5.083	1.466	1.53	1.527	1.049	0.82	0.937	0.461	0.0685	0.0664	0	0.198	0.296	0.487	0.455	0.489	0.766	1.037	0	1.037	0.749	0.976	1.233	1.113	1.276	1.357	1.403	1.35	1.341	1.308	1.143	0.911	0.825	0.601	0	0	0	0
5.167	1.559	1.423	1.648	1.003	0.854	0.826	0.471	0.0645	0.0661	0	0.207	0.3	0.5	0.46	0.5	0.772	1.054	0	1.054	0.755	0.973	1.226	1.107	1.264	1.344	1.386	1.34	1.337	1.313	1.145	0.903	0.813	0.578	0	0	0	0
5.25	1.534	1.436	1.629	1.021	0.847	0.801	0.501	0.0493	0.0663	0	0.211	0.311	0.496	0.463	0.493	0.775	1.068	0	1.068	0.747	0.976	1.225	1.104	1.258	1.336	1.381	1.342	1.35	1.329	1.158	0.898	0.799	0.555	0	0	0	0
5.333	1.5	1.47	1.585	1.06	0.812	0.843	0.458	0.0561	0.0659	0	0.22	0.321	0.521	0.476	0.508	0.789	1.078	0	1.078	0.753	0.976	1.223	1.095	1.241	1.318	1.367	1.34	1.35	1.335	1.159	0.889	0.784	0.53	0	0	0	0
5.417	1.528	1.441	1.614	1.057	0.814	0.825	0.436	0.0602	0.0655	0	0.232	0.325	0.543	0.49	0.514	0.789	1.112	0	1.112	0.757	0.974	1.22	1.091	1.226	1.299	1.351	1.33	1.351	1.338	1.163	0.88	0.769	0.507	0	0	0	0
5.5	1.526	1.433	1.614	1.051	0.808	0.816	0.428	0.0598	0.065	0	0.24	0.33	0.55	0.495	0.515	0.79	1.123	0	1.123	0.759	0.973	1.221	1.088	1.215	1.286	1.337	1.329	1.36	1.348	1.183	0.875	0.755	0.488	0	0	0	0

ITEM 8

Millard
More than civil engineers

Proposed House on land at Burnbank, Newtyle, Angus

Flood Risk Assessment

Ref: 18518/AB/941

April 2024

REGISTRATION OF AMENDMENTS

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By

CLIENT: Ms Maria Jemicz

ENGINEER: Millard Consulting
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Report Checked By:

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Ken Pirie (Managing Director)

CONTENTS

PLANS

1.0 Introduction

Millard Consulting have been instructed by Ms Maria Jemicz to carry out a Flood Risk Assessment on land at Burnbank, South Street, Newtyle in Angus. The site was previously part of the garden ground for a residential property at Burnbank. It is proposed to construct one new house on the site.

1.1 Scope and Methodology

The purpose of this assessment is to assess the 1 in 200 year flood risk to the site.

There is one watercourse in the vicinity of the site from which flood risk is to be considered; the Newtyle Burn. A 1D-2D linked hydraulic model of the watercourse and its flood plain has been constructed using Flood Modeller, and this will be utilised to predict the 1 in 200 year flood extent (including climate change) in the vicinity of the site.

The potential impact of climate change will also be quantified as part of the assessment. An appropriate climate change allowance will be applied in line with the SEPA document “Climate change allowances for flood risk assessment in land use planning” (SEPA, 2023). As part of this guidance, climate change allowances vary dependent on site location and catchment size, with specific values for each identified river basin region. The specific allowance applied and the associated modelling results are outlined in Section 5 of this report.

To enable the hydraulic model to be constructed cross sections have been surveyed by Douglas Land Surveys (DLS). DLS have also undertaken a topographical survey of the site and selected offsite areas.

This Flood Risk Assessment is carried out in accordance with the requirements of National Planning Framework 4 *(Scottish Government, 2023)*. This assessment uses a set of procedures originally set out in the Flood Estimation Handbook *(Institute of Hydrology, 1999)* and embodied in the FEH and WINFAP software packages currently used.

The assessment is prepared using our best engineering judgement but there are levels of uncertainty implicit in the historical data and methods of analysis. Details of the range of possible error in the methods of flood estimation are given in the Flood Estimation Handbook (FEH).

2.0 General Description of Site

The site at Burnbank is located at Ordnance Survey grid reference 329940, 741268, on the eastern edge of the village of Newtyle in Angus. The site location is shown in Figure 1 below:

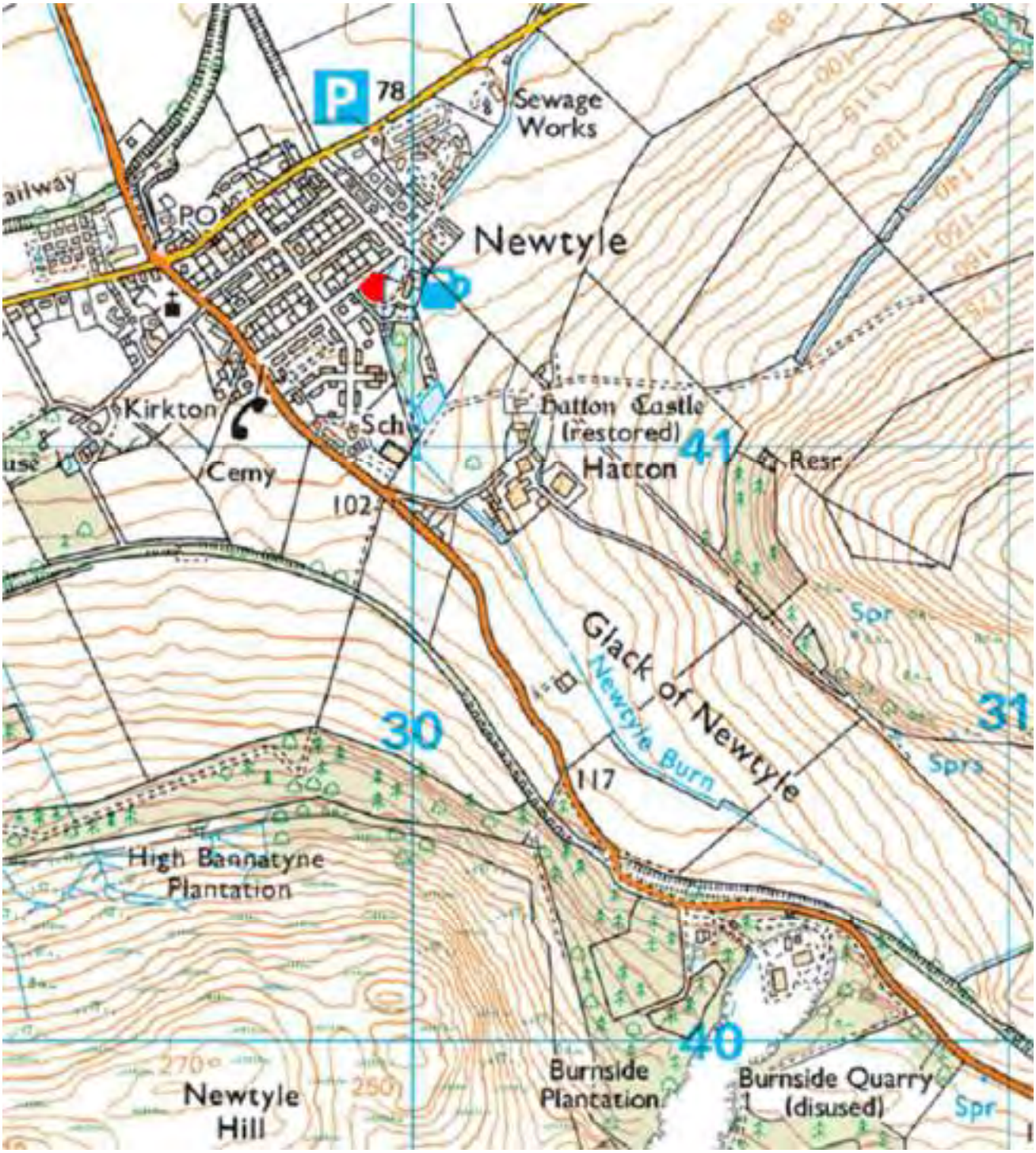


Figure 1 – Site Location Plan

The site is approximately 1700m^2 in size and is irregular in shape. Formerly part of the garden ground of Burnbank, the site is mainly covered with grass, with occasional trees. The site is bounded to the north west by South Street, to the south west by the driveway into Burnbank, to the south east by the Newtyle Burn and to the north east by neighbouring garden ground. A new access is to be formed from the site onto South Street.

A small outbuilding is the only building located on site at present.

The topography of the site slopes generally in a north easterly direction. The level difference across the site is approximately 1.6m from the higher, south western boundary to the lowest part of the site at its north eastern corner.

The Newtyle Burn flows along a straight course past the south eastern boundary of the site. The burn flows from higher ground in the Sidlaw Hills to the south east of the site and has an estimated catchment size of 3.3km^2 at the location of the site. As it passes the site the banks are generally covered with short grass.

There are several structures on the Newtyle Burn in the vicinity of the site which require to be considered as part of this flood risk assessment. They are listed below as follows:

- At the upstream end of the ground of Burnbank the Newtyle Burn is culverted for a length of approximately 6.5m. The culvert is of an old masonry form, and is rectangular in shape, approximately 1.5m wide and a varying height depending on bed level. At the centre of the downstream end of the culvert the soffit is approximately 0.9m above the bed of the watercourse. This culvert runs beneath the vehicular access into the neighbouring property of Dalnaglack. Above the downstream end of this culvert there is a high drystone boundary wall which runs between the grounds of Burnbank and Dalnaglack.
- Adjacent to the south eastern corner of the site the Newtyle Burn is bridged by the driveway into Burnbank. This bridge is a single span bridge with concrete abutments and an arched, drystone parapet. This bridge spans 1.86m, and the soffit was measured as being approximately 1m above the bed of the watercourse at its upstream side. At the downstream side of this bridge there is a step in the bed level of the channel of approximately 0.5m.
- 88m downstream of the Burnbank driveway bridge the watercourse enters a culvert. This culvert runs beneath Knox Close, which runs from South Street in a north easterly direction. The culvert is approximately 122m long, outfalling into another open section of the Newtyle Burn, flowing is a north easterly direction. This culvert changes form along its length, with the surveyed cross sections showing a sprung arch arrangement at the upstream end, and twin pipes at the downstream end. The sprung arch has been surveyed as being approximately 2m wide, with the centre of the arch 0.95m above the bed of the watercourse. A metal inlet grille was noted on the upstream side of the culvert, however it has been significantly damaged, likely by debris flowing along the watercourse, and it is now sitting at a 45 degree angle into the culvert inlet. The downstream end of the culvert is formed by twin pipes, surveyed as being 0.65m diameter. The culvert outfall is also protected by a metal grille which at the time of walkover in January 2024 was also damaged. The point at which the culvert cross section changes along its length is not known.
- In addition the bridge and culverts a weir is located approximately 1.1m upstream of the long culvert downstream of the site.

Ground levels above the inlet to the culvert beneath Knox Close sit at approximately 82.8m to 82.9m, approximately 1m below the lowest part of the site.

Photograph 1 – downstream end of the culvert which runs under the driveway of Dalnaglack. This photograph shows the Newtyle Burn as it enters the grounds of Burnbank.

Photograph 2 – looking downstream on the Newtyle Burn towards the bridge which takes the driveway of Burnbank over the watercourse. This photograph is taken from the same location as Photograph 1.

Photograph 3 – looking downstream on the Newtyle Burn from the driveway of Burnbank. The site is located beyond the green fence.

Photograph 4 – looking upstream from the upstream end of the culvert which runs beneath Knox Close. Sediment can be seen on the banks of the watercourse, assumed to have been deposited during a previous high flow event.

Photograph 5 – a view of the upstream end of the culvert which runs beneath Knox Close.

Photograph 6 – looking north east along Knox Close from South Street. The entrance to the culvert shown in Photograph 5 is located in the vicinity of the telegraph pole in the top right of this picture.

Photograph 7 – looking downstream on the Newtyle Burn at the downstream end of the long culvert running beneath Knox Close.

3.0 General Observations

A site visit was undertaken on 12th January 2024. During the site visit evidence of backing up at the upstream end of the long culvert downstream of the site was identified by sediment which had been left by floodwater in the vicinity of the culvert inlet. During the same walkover discussions with the client and another local resident confirmed anecdotally that floodwater has overtopped the culvert in the past, and that when this occurs, floodwater continues in a north easterly direction along Knox Close, away from the site.

The client advised that previously floodwater has flowed through the boundary wall between Burnbank and Dalnaglack in the vicinity of the house at Burnbank. According to the client this was likely due to a drainage issue within Dalnaglack.

From consideration of the topographical survey it can be said that if floodwater built up upstream of the culvert running beneath the access within the grounds of Dalnaglack, it would firstly overtop the right bank. Similarly at the bridge providing vehicular access to Burnbank, the right bank is lower.

4.0 Estimation of Flood Flows

In order to define the extent and water surface level of the applicable floodplain, we have made an assessment of 1 in 200 year flood flows in the Newtyle Burn using the FEH Rainfall Runoff Method outlined in the Flood Estimation Handbook (FEH), and the Revitalised Flood Hydrograph Method (ReFH2). The FEH Statistical Method has not been applied given the very small catchment size of the watercourse.

Catchment descriptors for the Newtyle Burn were downloaded from the FEH Web Service. The catchment size provided by the FEH Web Service was 2.94km^2, however the manual inspection of Ordnance Survey mapping found that the applicable catchment size was larger at 3.314km^2. As outlined in the Flood Estimation Handbook, the DPLBAR descriptor was recalculated for the larger catchment area. DLBAR was recalculated as follows:

AREA$^{0.548}$ = adjusted DPLBAR
3.314$^{0.548}$ = 1.928

Final catchment descriptors are shown in Figure 2 below, while the watercourse catchment is shown in Figure 3 overleaf.

VERSION	"FEH CD-ROM"	Version	5.0.1	exported	14.01.22
CATCHMENT	GB	329950	741250	NO 29950	41250
CENTROID	GB	330521	740135	NO 30521	40135
AREA	3.314				
ALTBAR	180				
ASPBAR	355				
ASPVAR	0.17				
BFIHOST	0.636				
BFIHOST19	0.559				
DPLBAR	1.928				
DPSBAR	132.7				
FARL	1				
FPEXT	0.0255				
FPDBAR	0.216				
FPLOC	0.642				
LDP	3.23				
PROPWET	0.46				
RMED-1H	8.3				
RMED-1D	35.6				
RMED-2D	45.1				
SAAR	835				
SAAR4170	866				
SPRHOST	28.55				
URBCONC1990	0.094				
URBEXT1990	0.004				
URBLOC1990	0.048				
URBCONC2000	-999999				
URBEXT2000	0.0018				
URBLOC2000	-999999				
C	-0.01587				
D1	0.47436				
D2	0.39177				
D3	0.30912				
E	0.24541				
F	2.1781				
C(1km)	-0.015				
D1(1km)	0.473				
D2(1km)	0.389				
D3(1km)	0.324				
E(1km)	0.245				
F(1km)	2.168				

Figure 2 – Final catchment descriptors for the Newtyle Burn

Figure 3 – Manually derived Newtyle Burn catchment

The flow estimation process is outlined below.

4.1 FEH Rainfall Runoff Method

The Rainfall Runoff method relies on rainfall records rather than river flow records. Hence, if catchment characteristics are known or estimated, the method converts the theoretical design rainfall event of a known return period into a design flood event, with a peak of a known return period.

Flood Modeller software was used to undertake the Rainfall Runoff analysis, and a 1 in 200 year flood flow of 4.66m^3/s was estimated.

4.2 Revitalised Flood Hydrograph Method (ReFH2)

The second method utilised for the assessment of flood flows in the Newtyle Burn was the Revitalised Flood Hydrograph Method.

The ReFH2 model is comprised of three components; a loss model, a routing model and a baseflow model. The total rainfall, less the losses is input into the routing model, with results from the routing and baseflow models combined to provide a prediction of flow. The ReFH2 model is used in conjunction with a depth-duration-frequency model. In this instance, the FEH22 model was used to provide the rainfall input.

Using the ReFH2 software, a 1 in 200 year flood flow of 2.56m^3/s was calculated.

4.3 Flood Flows including Climate Change

The flood risk area applicable to the site is established through modelling the 1 in 200 year + climate change flood flow. As the site is within the “Tay” region in the document “Climate change allowances for flood risk assessment in land use planning Version 3 (SEPA, 2023), and the subject catchments are less than 30km^2 in size, an additional 39% should be applied to the rainfall estimated for the flood event.

In this instance the highest, most conservative flood flow estimate will be applied in the modelling analysis. The FEH Rainfall Runoff Method results in the highest estimated flood flows, hence an additional 39% has been applied to rainfall estimates generated by Flood Modeller. The addition of the climate change allowance results in a 1 in 200 year + climate change flood flow of 6.45m^3/s.

5.0 Predicted Flood Levels

5.1 Initial Model

Having estimated the 1 in 200 year + climate change flood flow in the Newtyle Burn, it is necessary to analyse the watercourses to establish predicted 1 in 200 year + climate change flood levels.

To establish predicted flood levels a 1D-2D linked hydraulic model has been developed using Flood Modeller software. Cross sections in the 1D domain were surveyed by Douglas Land Surveys, as was the topography which has been utilised to create the digital terrain model for the 2D domain.

Manning's n coefficients were selected for the site based on inspection of existing conditions, and comparison with tabulated descriptors in tables of Manning's values. The selected values for the 1D model were as follows:

Channels:

- Channel: 0.035
- Banks/floodplain: applied at various locations, as appropriate, were 0.03, 0.05 and 0.06

For the 2D model a global roughness of 0.1 was applied. This value is high for a significant proportion of the floodplain, however floodwater would flow through a drystone wall and occasional areas of shrubs. The boundary wall is drystone and hence porous. The model has therefore been run without the wall impeding flood flows. It has been assumed however that the house at Burnbank and the building in the north eastern corner of the grounds of Dalnaglack would be defended, with all floodwater having to flow across the floodplain, outwith the buildings.

Once appropriate Manning's values had been selected, boundary conditions at the downstream and upstream ends of the modelled length were applied. The model was run in an unsteady state, hence a flow hydrograph was applied at the upstream end of both watercourse, with the hydrograph having been generated using Flood Modeller software. At the downstream end a known water level of 82.8m has been applied, i.e. approximately the relief level above the upstream end of the downstream culvert. It has therefore been assumed in the model that floodwater has exceeded the capacity of the downstream culvert.

Figures 4 to 6 overleaf show model node locations, as well as the 2D model extent.

Figure 4 – Node locations, 1 of 2

Figure 5 – Node locations, 2 of 2

Figure 6 – 2D Active Area

Table 5.1 overleaf shows the predicted flood levels for a 1 in 200 year + climate change flood event. The model mass balance figures for this run were -0.28% and -1.2% for the 1D and 2D domains respectively, at the peak of the flood event.

Location	Flood Level (m AOD)
Newtyle_004	82.8
Newtyle_005	82.83
Newtyle_006	83.02
Newtyle_007	83.5
Newtyle_008	84.14
Newtyle_009	85.09
Newtyle_010	85.28
Newtyle_011	85.8
Newtyle_012	86.04
Newtyle_012.5	86.91
Newtyle_013	86.89
Newtyle_014	87.45
Newtyle_015	89.66

Table 5.1 – Predicted 1 in 200 year + CC flood levels

Figure 7 below shows the predicted 1 in 200 year + climate change flood extent from the 2D model domain in the vicinity of the site.

Figure 7 – Predicted 1 in 200 year + climate change flood extent from 2D model domain

The modelling results predict the majority of the site being flood free during a 1 in 200yr + climate change flood event, with the majority of out of bank flow predicted over the right bank of the watercourse. Mass balance figures from the model for this analysis were -0.28% and -1.2% for the 1D and 2D domains respectively, at the peak of the flood event.

5.2 Sensitivity Analysis

Sensitivity analyses were carried out to check the effect of a variation in flow rate, of variation in Manning's 'n' values, and of variation in downstream boundary condition.

5.2.1 Variation in Flowrate

The potential impact of an increase in 200 year + climate change flood flow of 20% has been assessed. Mass balance figures from the model for this analysis were -0.85% and -0.3% for the 1D and 2D domains respectively at the peak of the flood event. The results of this analysis are compared directly with the 1 in 200 year + climate change results in Table 5.2 below:

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC + 20% Flood Level (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.84	0.01
Newtyle_006	83.02	83.06	0.04
Newtyle_007	83.5	83.55	0.05
Newtyle_008	84.14	84.22	0.08
Newtyle_009	85.09	85.22	0.13
Newtyle_010	85.28	85.42	0.14
Newtyle_011	85.8	85.92	0.12
Newtyle_012	86.04	86.15	0.11
Newtyle_012.5	86.91	87.03	0.12
Newtyle_013	86.89	86.96	0.07
Newtyle_014	87.45	87.53	0.08
Newtyle_015	89.66	89.72	0.06

Table 5.2 – Comparison between predicted 1 in 200 Year + CC and 1 in 200 year + CC + 20% flood levels

The above table shows a predicted increase in flood level with an increase in flood flow of 20%. The predicted increase in flood level is small however, with a maximum level variation of 0.14m.

Predicted 2D flood extents in the vicinity of the site from this analysis are shown in Figure 8 overleaf.

Figure 8 – Predicted 1 in 200yr + CC + 20% 2D flood extents

5.2.2 Variation in Manning's n

Sensitivity of the model to changes in Manning's n were tested, by increasing the initial values by 20%. Mass balance figures from the model for this analysis were -0.84% and -0.6% for the 1D and 2D domains respectively, at the peak of the flood event. The results of this analysis are shown in Table 5.3 overleaf:

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with increased roughness (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.84	0.01
Newtyle_006	83.02	83.06	0.04
Newtyle_007	83.5	83.55	0.05
Newtyle_008	84.14	84.22	0.08
Newtyle_009	85.09	85.19	0.1
Newtyle_010	85.28	85.39	0.11
Newtyle_011	85.8	85.88	0.08
Newtyle_012	86.04	86.1	0.06
Newtyle_012.5	86.91	86.96	0.05
Newtyle_013	86.89	86.97	0.08
Newtyle_014	87.45	87.51	0.06
Newtyle_015	89.66	89.72	0.06

Table 5.3 – Assessment of potential impact of increased roughness

2D flood extents predicted in the vicinity of the site for the roughness sensitivity model are shown in Figure 9 overleaf.

Figure 9 – Predicted 1 in 200yr + CC flood extent from 2D model domain with an increase in roughness of 20%

5.2.3 Variation in Downstream Boundary Level

Sensitivity of the model to changes in downstream boundary level were tested, by increasing the level from 82.8m to 83m. Mass balance figures from the model for this analysis were -0.28% and 0.3% for the 1D and 2D domains respectively at the peak of the flood event. The results of this analysis are shown in Table 5.4 below. It should be noted that the 2D active area was reduced at its downstream end for this analysis to improve mass balance and model stability.

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with adjusted downstream boundary level (m AOD)	Variation (m)
Newtyle_004	82.8	83	0.2
Newtyle_005	82.83	83	0.17
Newtyle_006	83.02	83.06	0.04
Newtyle_007	83.5	83.5	0
Newtyle_008	84.14	84.14	0
Newtyle_009	85.09	85.09	0
Newtyle_010	85.28	85.28	0
Newtyle_011	85.8	85.8	0
Newtyle_012	86.04	86.04	0
Newtyle_012.5	86.91	86.91	0
Newtyle_013	86.89	86.89	0
Newtyle_014	87.45	87.45	0
Newtyle_015	89.66	89.66	0

Table 5.4 – Assessment of potential impact of decreased downstream boundary slope

5.3 Flood Levels including Blockage

The potential impact of a reduction in culvert opening of 25% at the culvert running beneath the driveway of Dalnaglack has been assessed. Mass balance figures from the model for this analysis were -0.29% and -0.4% for the 1D and 2D domains respectively, at the peak of the flood event. The results of this analysis are shown in the table below.

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with 25% reduction in span on culvert running beneath driveway into Dalnaglack (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.83	0
Newtyle_006	83.02	83.02	0
Newtyle_007	83.5	83.5	0
Newtyle_008	84.14	84.14	0
Newtyle_009	85.09	85.1	0.01
Newtyle_010	85.28	85.3	0.02
Newtyle_011	85.8	85.82	0.02
Newtyle_012	86.04	86.04	0
Newtyle_012.5	86.91	87.02	0.11
Newtyle_013	86.89	86.95	0.06
Newtyle_014	87.45	87.46	0.01
Newtyle_015	89.66	89.66	0

Table 5.5 – 200yr + CC Flood Levels with 25% reduction in span of culvert at node Newtyle_012.5

2D flood extents in the vicinity of the site predicted for the blockage model are shown in Figure 10 overleaf.

Figure 10 – Predicted 1 in 200yr + CC flood extent from 2D model domain with a 25% reduction in span in the culvert running beneath the driveway of Dalnaglack

The potential impact of a reduction in culvert opening of 25% at the bridge crossing the watercourse at the driveway to Burnbank has been assessed. Mass balance figures from the model for this analysis were -1.49% and -1.1% for the 1D and 2D domains respectively, at the peak of the flood event. The results of this analysis are shown in the table overleaf.

Location	Predicted 1 in 200 year + CC Flood Level (m AOD)	Predicted 1 in 200 year + CC Flood Level with 25% reduction in span on bridge crossing driveway into Burnbank (m AOD)	Variation (m)
Newtyle_004	82.8	82.8	0
Newtyle_005	82.83	82.83	0
Newtyle_006	83.02	83.02	0
Newtyle_007	83.5	83.5	0
Newtyle_008	84.14	84.14	0
Newtyle_009	85.09	85.09	0
Newtyle_010	85.28	85.91	0.63
Newtyle_011	85.8	85.96	0.16
Newtyle_012	86.04	86.09	0.05
Newtyle_012.5	86.91	86.93	0.02
Newtyle_013	86.89	86.9	0.01
Newtyle_014	87.45	87.45	0
Newtyle_015	89.66	89.66	0

Table 5.6 – 200yr + CC Flood Levels with 25% reduction in span of culvert at node Newtyle_010

Figure 11 below shows the predicted 2D 1 in 200 year + climate change flood extents including the 25% reduction in span at the bridge crossing the Newtyle Burn at the driveway to Burnbank.

Figure 11 – Predicted 1 in 200yr + CC flood extent from 2D model domain with a 25% reduction in span at the bridge crossing the watercourse at the driveway to Burnbank

6.0 Discussion and Proposed Mitigation

As noted earlier in this report, there is a high, drystone boundary wall which separates the garden ground of Burnbank from that of Dalnaglack to the south. The model predicts that floodwater would overtop the banks of the Newtyle Burn, with the majority flowing in a north easterly direction, and not impacting the development site. The boundary wall is clearly not a flood defence feature, and is porous, hence the model has been run without the wall in place. Anecdotally it has been mentioned that water has flowed through the wall in the past, thought to be due to a drainage issue within the grounds of Dalnaglack. The baseline modelling therefore does not include flow impedance from the boundary wall. The predicted 1 in 200 year + climate change flood extent, including modelled blockages at the Burnbank driveway bridge and the Dalnaglack driveway culvert, are shown on drawing 18518/21/001, enclosed within the “Plans” section of this report.

With the baseline model results the vast majority of the site is predicted to be flood free, and a flood free egress route is available via South Street.

The driveway of Dalnaglack rises slightly from where it crosses the Newtyle Burn, in a north westerly direction. Should however the boundary wall provide significant impedance to flood flows, it is acknowledged that floodwater could potentially flow down the driveway of Dalnaglack and onto South Street. In the event that this scenario occurred, there would be a shallow flow of water flowing in a north easterly direction along South Street. The site itself sits higher than South Street, and hence would not be flooded from the public road.

The site is deemed developable with respect to flood risk, however mitigation measures are still required. The proposed house must be situated outwith the predicted flood extent. Additionally there should be no landraising within the predicted flood extent.

The new house should have a finished floor level no lower than 84.8m AOD.

It is recommended that flood resilient materials and construction methods should be utilised for the development, and the floor level should be set with an upstand to surrounding finished ground levels. A minimum upstand of 0.3m is suggested. The use of solid floor construction is recommended.

Surface water from the development should be drained using sustainable drainage systems.

7.0 Conclusions

It is concluded that the majority of the site is outwith the predicted 1 in 200 year + climate change flood extent, and hence site is developable with respect to flood risk. Flood free egress from the site is also predicted to be available during the aforementioned flood event.

The following mitigation measures should be incorporated into the development:

- The new house should be set outwith the flood extent shown on drawing 18518/21/001
- The new house should have a finished floor level no lower than 84.8m AOD, while the floor should also be set with a suitable upstand above finished surrounding ground levels. An upstand of no less than 0.3m is suggested.
- Flood resilient materials and construction methods are recommended for the proposed development given it is to be located close to the flood plain of the Newtyle Burn. In particular, the use of a solid floor construction is recommended.

We have used our best engineering judgement in this Assessment, and our calculations have been carried out using the Flood Estimation Handbook, WINFAP, Flood Modeller and other standard hydrological methods. We note that as with all such Flood Risk Assessments the accuracy of the results is only as good as the data and statistical techniques used.

8.0 References

i. Flood Estimation Handbook, Duncan Reed, CEH Institute of Hydrology, Wallingford, 1999.

ii. National Planning Framework 4, Scottish Government, 2023

iii. ReFH 2.3, Wallingford Hydrosolutions, 2019

iv. Climate change allowances for flood risk assessment in land use planning Version 3, SEPA, 2023

v. FEH Web Service, UK Centre for Ecology and Hydrology, 2023

vi. Flood Modeller, Jacobs, Version 7.0.8774.19121

Appendix A: Results from ReFH2 Flow Estimation

UK Design Flood Estimation

Generated on 29 February 2024 20:34:46 by abraid
Printed from the ReFH2 Flood Modelling software package, version 4.0.8560.23190

Summary of estimate using the Flood Estimation Handbook revitalised flood hydrograph method (ReFH2)

Site details Checksum: F610-2262

Site name: FEH_Catchment_Descriptors_329950_741250_v5_0_1

Easting: 329950

Northing: 741250

Country: Scotland

Catchment Area (km²): 3.31 [2.94]*

Using plot scale calculations: No

Model: 2.3

Site description: None

Model run: 200 year 1.39 CC

Summary of results

Rainfall - FEH22 (mm):	79.72	Total runoff (ML):	42.39
Total Rainfall (mm):	52.85	Total flow (ML):	123.13
Peak Rainfall (mm):	10.30	Peak flow (m³/s):	3.77

Parameters

Where the user has overriden a system-generated value, this original value is shown in square brackets after the value used.
** Indicates that the user locked the duration/timestep*

Rainfall parameters (Rainfall - FEH22)

Name	Value	User-defined?
Duration (hh:mm:ss)	03:15:00	No
Timestep (hh:mm:ss)	00:15:00	No
SCF (Seasonal correction factor)	0.69	No
ARF (Areal reduction factor)	0.96	No
Seasonality	Winter	No
Climate change factor	1.39	Yes

Loss model parameters

Name	Value	User-defined?
Cini (mm)	90.17	No
Cmax (mm)	482.97	No
Use alpha correction factor	No	No
Alpha correction factor	n/a	No

Routing model parameters

Name	Value	User-defined?
Tp (hr)	1.78	No
Up	0.65	No
Uk	0.8	No

Baseflow model parameters

Name	Value	User-defined?
BF0 (m^3/s)	0.06	No
BL (hr)	27.98	No
BR	1.91	No

Urbanisation parameters

Name	Value	User-defined?
Sewer capacity (m^3/s)	0	No
Exporting drained area (km^2)	0	No
Urban area (km^2)	0.01	No
Urbext 2000	0	No
Impervious runoff factor	0.7	No
Imperviousness factor	0.4	No
Tp scaling factor	0.75	No
Depression storage depth (mm)	0.5	No

Appendix B: Results from FEH Rainfall Runoff Flow Estimation

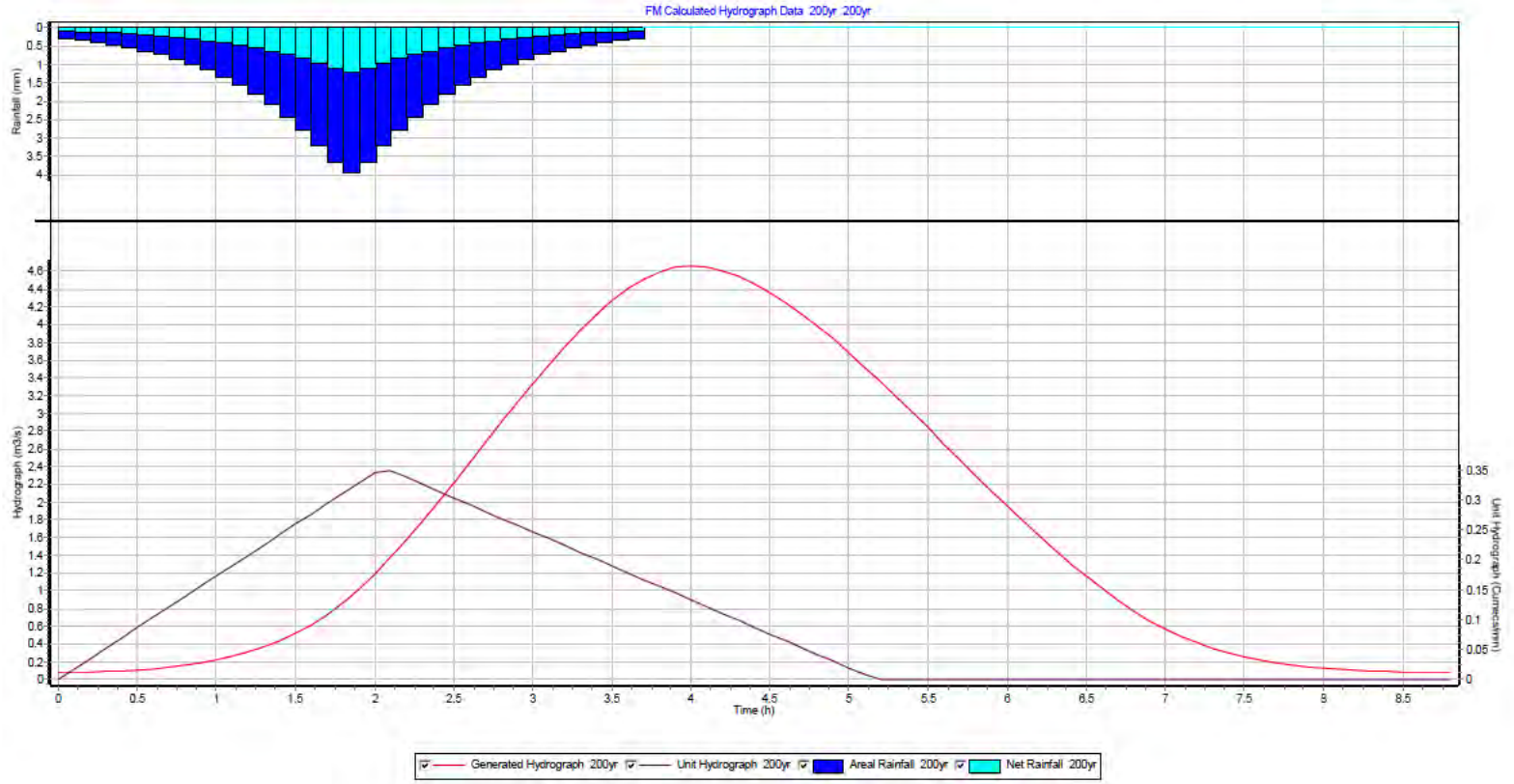
```
FILE=2825.dat Flood Modeller VER=5.1.0.8423
 ************************************************************
 Flood Modeller
 ************************************************************

 HYDROLOGICAL DATA

 Catchment: 200yr
 ************************************************************
 Catchment Descriptors
 ************************************************************
 Easting        :    329950 Northing       :    741250
 Area           :     3.314 km2
 DPLBAR         :     1.928 km
 DPSBAR         :   132.700 m/km
 PROPWET        :     0.460
 SAAR           :   835.000 mm
 Urban Extent   :     0.004
 c              :    -0.016
 d1             :     0.474
 d2             :     0.392
 d3             :     0.309
 e              :     0.245
 f              :     2.178
 SPR            :    28.550 %
 ************************************************************
 Summary of estimate using Flood Estimation Handbook rainfall-runoff method
 ************************************************************
 Estimation of T-year flood
 ==========================
 Unit hydrograph time to peak   :     2.051 hours
 Instantaneous UH time to peak  :     2.001 hours
 Data interval                  :     0.100 hours
 Design storm duration          :     3.700 hours
 Critical storm duration        :     3.763 hours
 Return period for design flood :   200.000 years
 requires rain return period    :   246.667 years
 ARF                            :     0.963
 Design storm depth             :    54.491 mm
 CWI                            :   119.500
 Standard Percentage Runoff     :    28.550 %
 Percentage runoff              :    30.197 %
 Snowmelt rate                  :     0.000 mm/day
 Unit hydrograph peak           :     0.356 (m3/s/mm)
 Quick response hydrograph peak :     4.582 m3/s
 Baseflow                       :     0.077 m3/s
 Baseflow adjustment            :     0.000 m3/s
 Hydrograph peak                :     4.660 m3/s
 Hydrograph adjustment factor   :     1.000

 Flags
 =====
 Unit hydrograph flag           : FSRUH
```

```
Tp flag                         : FEHTP
Event rainfall flag             : FEHER
Rainfall profile flag           : WINRP
Percentage Runoff flag          : FEHPR
Baseflow flag                   : F16BF
CWI flag                        : FSRCW
************************************************************
```


FM Calculated Hydrograph Data 200yr 200yr
Rainfall (mm)
Hydrograph (m3/s)
Unit Hydrograph (Cumecs/mm)
Time (h)
Generated Hydrograph 200yr
Unit Hydrograph 200yr
Areal Rainfall 200yr
Net Rainfall 200yr

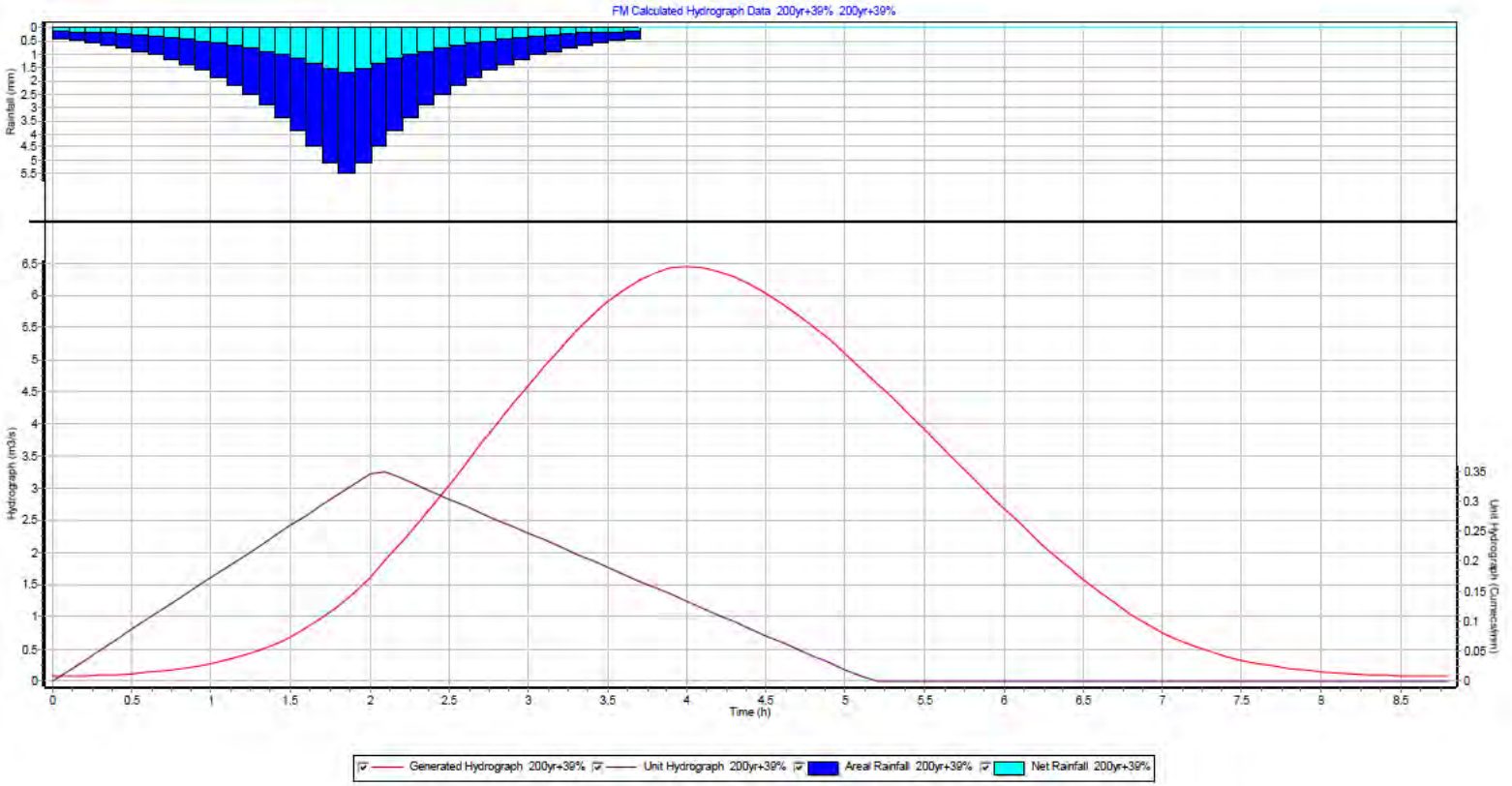
```
FILE=D33D.dat Flood Modeller VER=5.1.0.8423
 ************************************************************
 Flood Modeller
 ************************************************************

 HYDROLOGICAL DATA

 Catchment: 200yr+39%
 ************************************************************
 Catchment Descriptors
 ************************************************************
 Easting        :    329950 Northing       :    741250
 Area           :     3.314 km2
 DPLBAR         :     1.928 km
 DPSBAR         :   132.700 m/km
 PROPWET        :     0.460
 SAAR           :   835.000 mm
 Urban Extent   :     0.004
 c              :    -0.016
 d1             :     0.474
 d2             :     0.392
 d3             :     0.309
 e              :     0.245
 f              :     2.178
 SPR            :    28.550 %
 ************************************************************
 Summary of estimate using Flood Estimation Handbook rainfall-runoff method
 ************************************************************
 Estimation of T-year flood
 ==========================
 Unit hydrograph time to peak   :     2.051 hours
 Instantaneous UH time to peak  :     2.001 hours
 Data interval                  :     0.100 hours
 Design storm duration          :     3.700 hours
 Critical storm duration        :     3.763 hours
 Return period for design flood :   200.000 years
 requires rain return period    :   246.667 years
 ARF                            :     0.963
 Design storm depth             :    54.491 mm
 CWI                            :   119.500
 Standard Percentage Runoff     :    28.550 %
 Percentage runoff              :    30.197 %
 Snowmelt rate                  :     0.000 mm/day
 Unit hydrograph peak           :     0.356 (m3/s/mm)
 Quick response hydrograph peak :     6.369 m3/s
 Baseflow                       :     0.077 m3/s
 Baseflow adjustment            :     0.000 m3/s
 Hydrograph peak                :     6.446 m3/s
 Hydrograph adjustment factor   :     1.000

 Flags
 =====
 Unit hydrograph flag           : FSRUH
```

```
Tp flag                         : FEHTP
Event rainfall flag             : FEHER
Rainfall profile flag           : OBSRP
Percentage Runoff flag          : FEHPR
Baseflow flag                   : F16BF
CWI flag                        : FSRCW
************************************************************
```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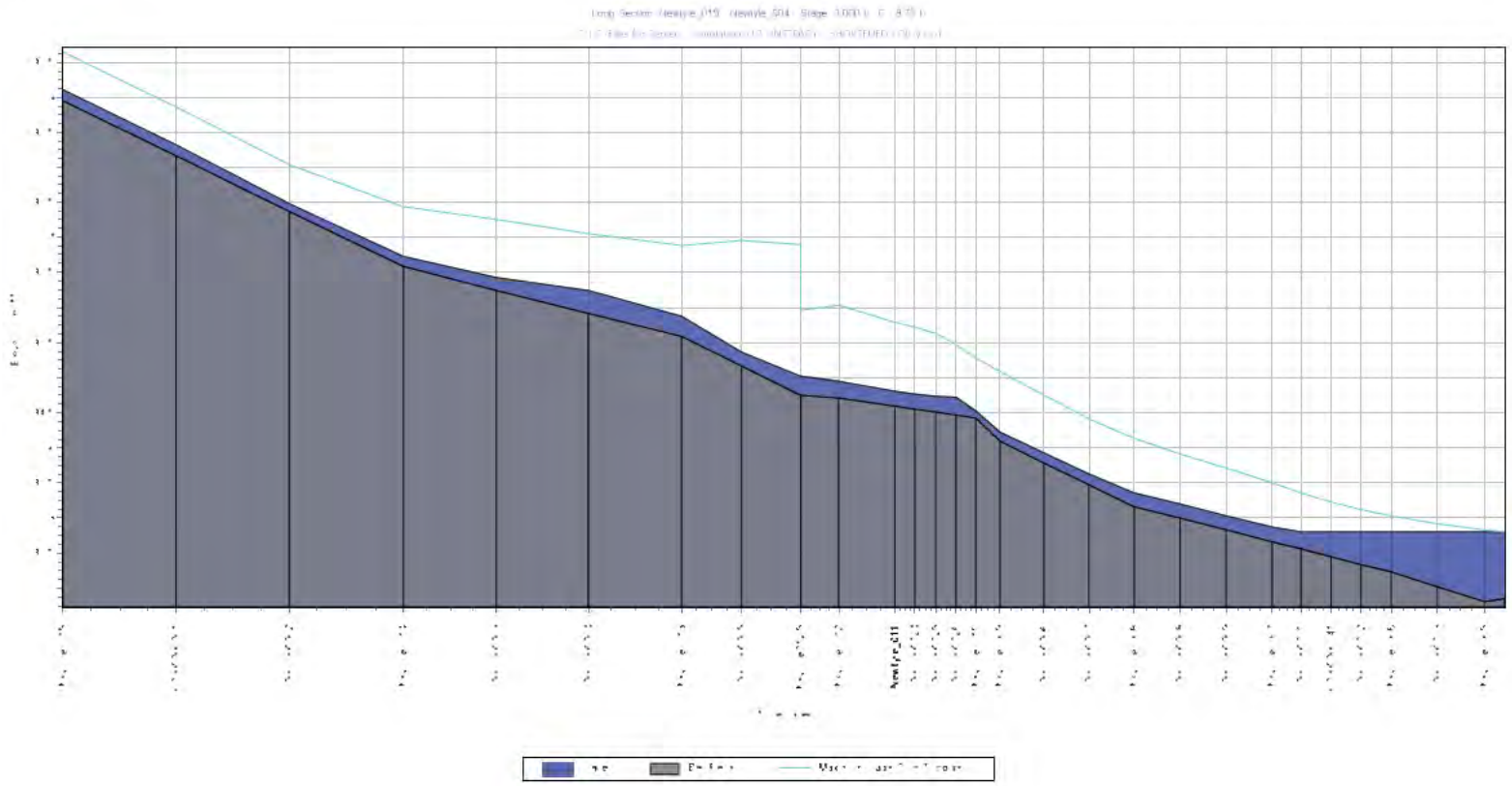
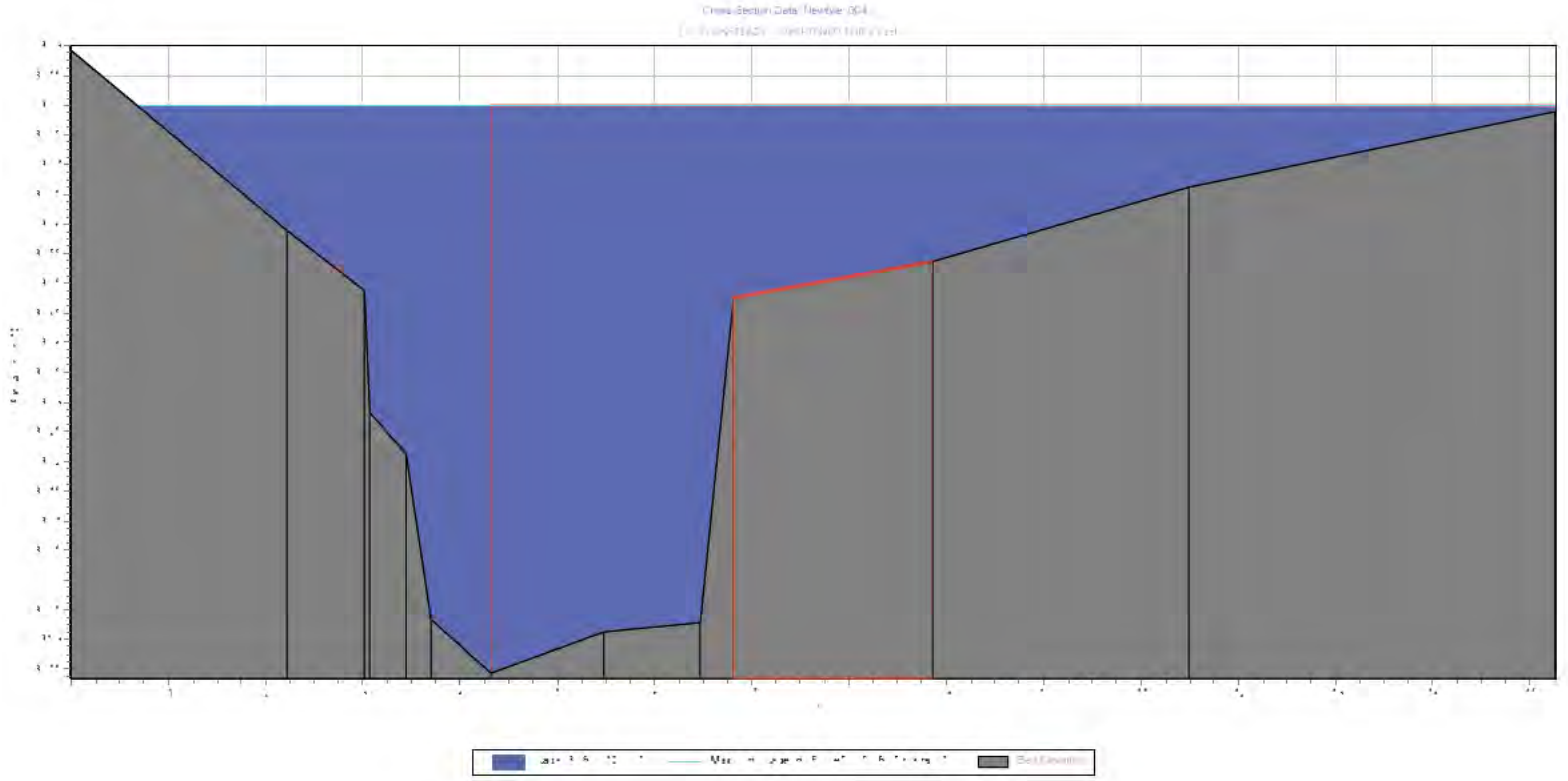
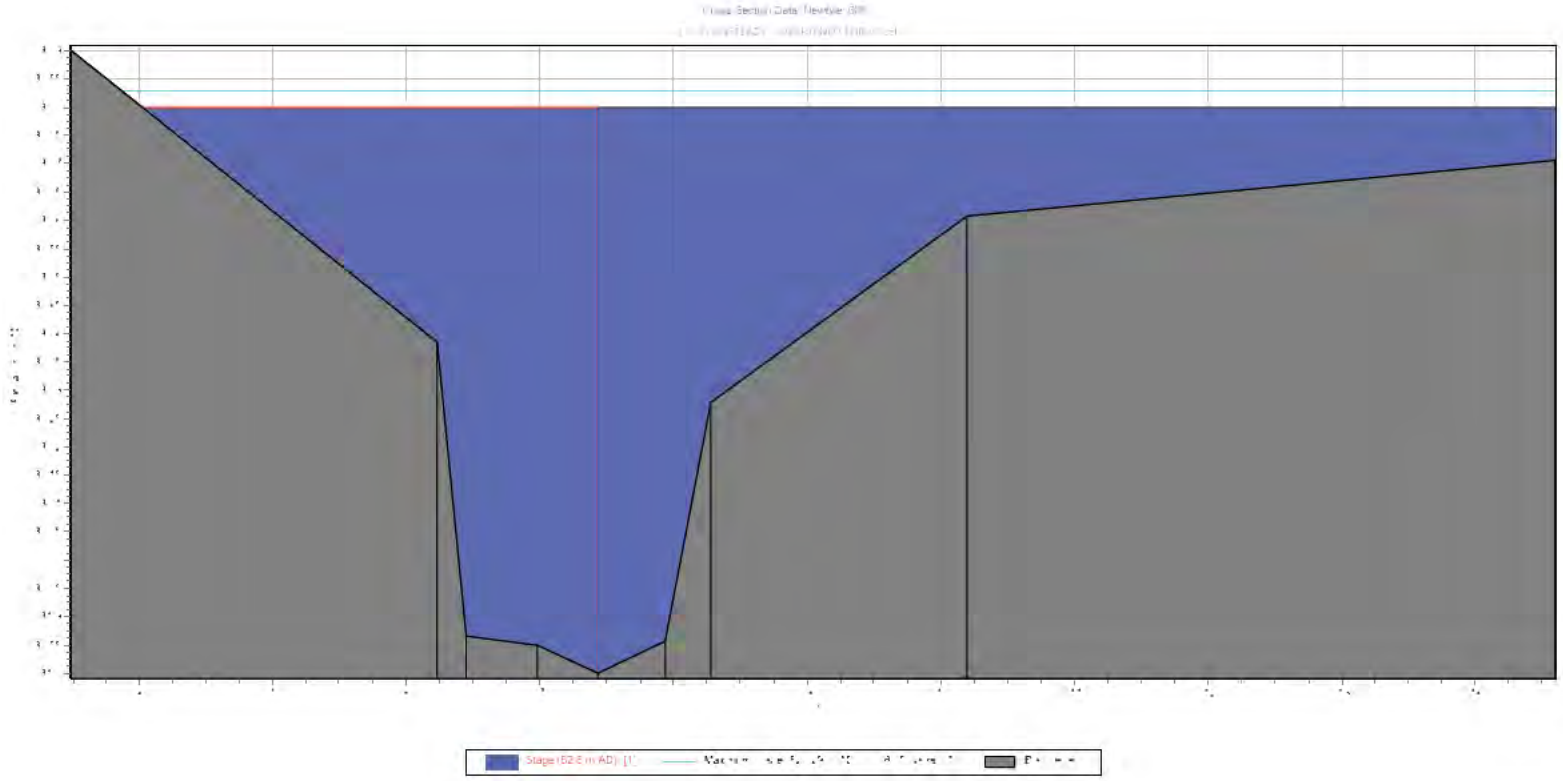
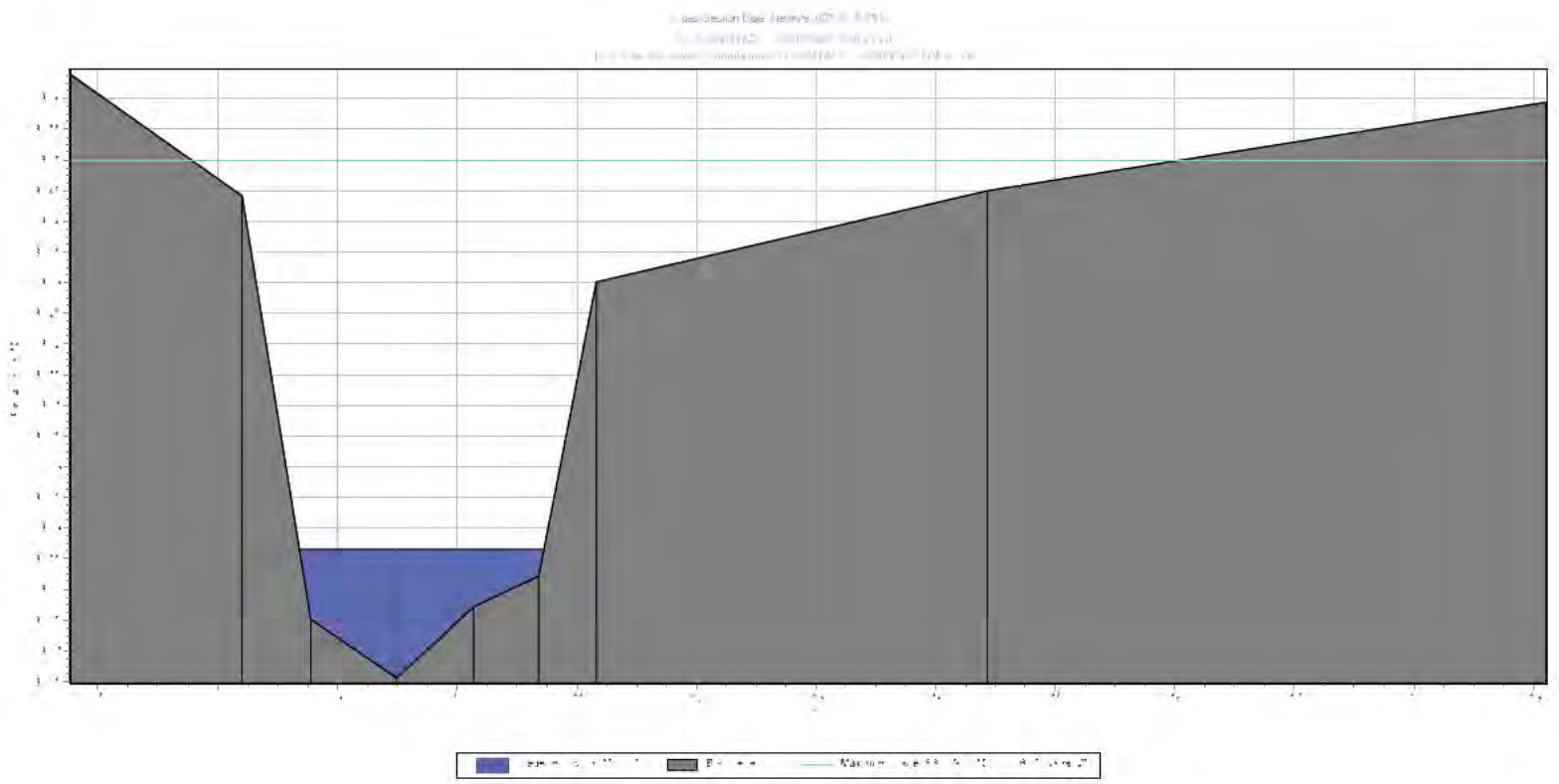
Rainfall (mm)
Hydrograph (m3/s)
Unit Hydrograph (Cumecs/mm)
Time (h)
Generated Hydrograph 200yr+39%
Unit Hydrograph 200yr+39%
Areal Rainfall 200yr+39%
Net Rainfall 200yr+39%

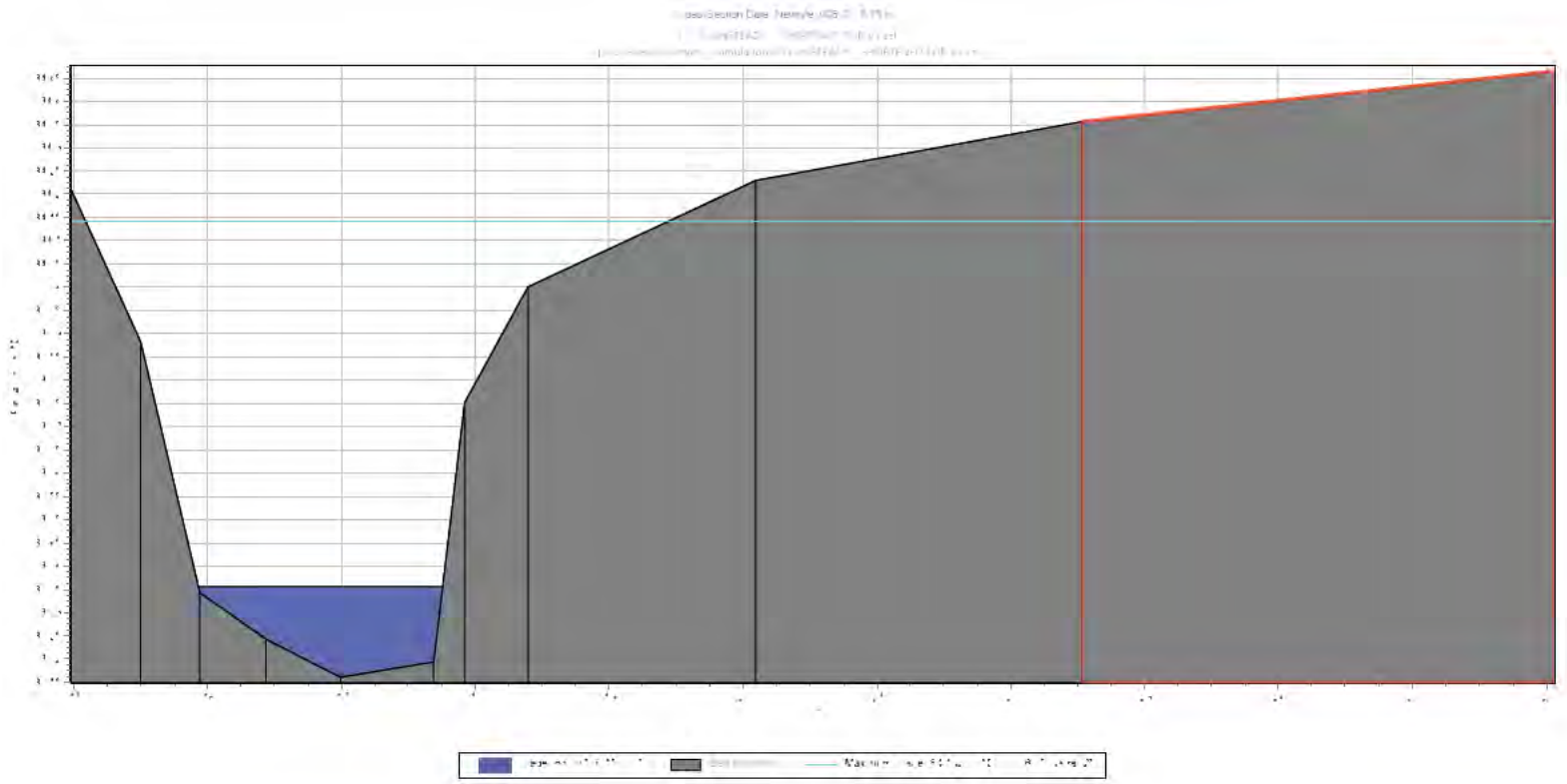
Appendix C: Output from Hydraulic Model

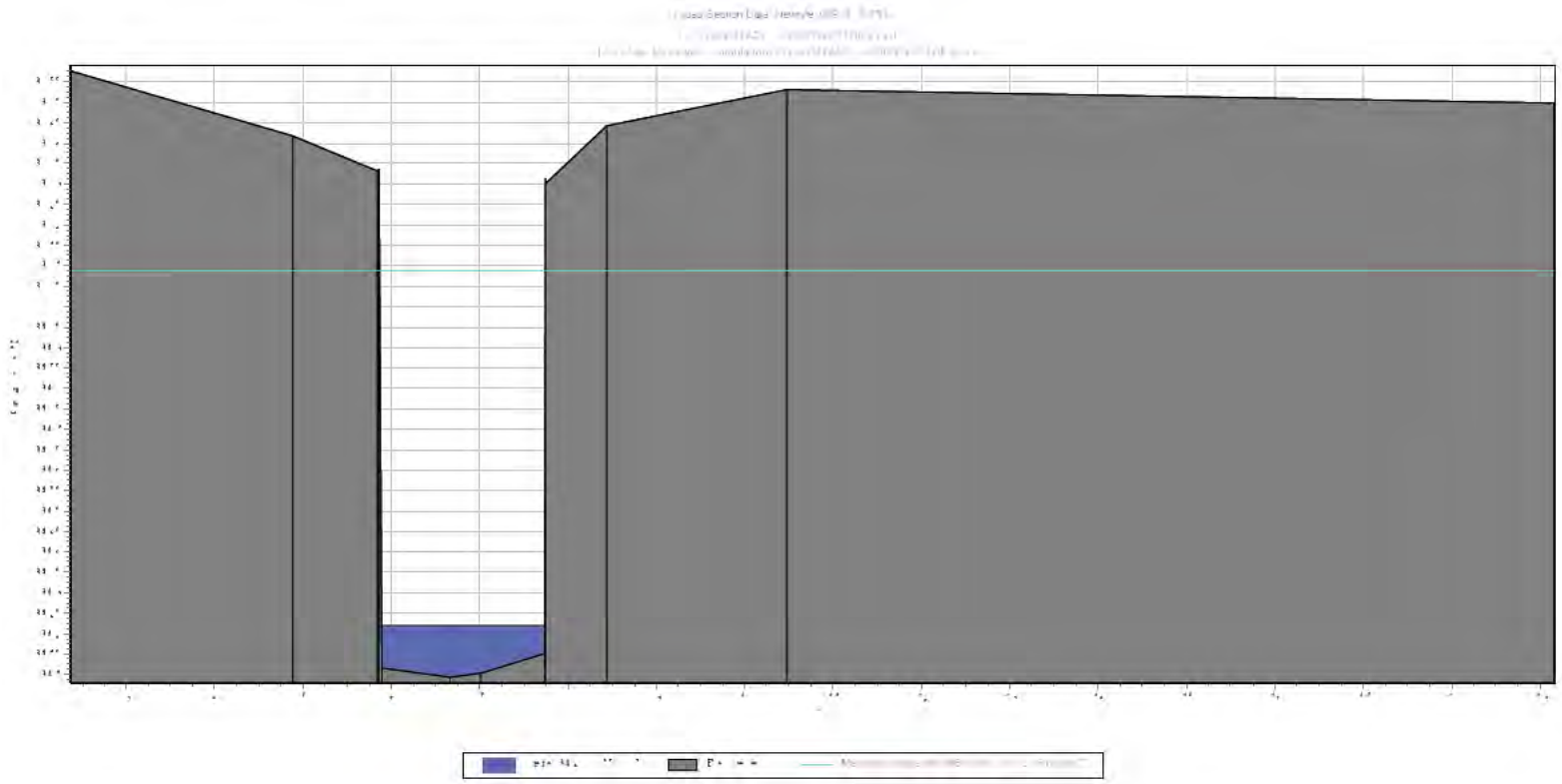


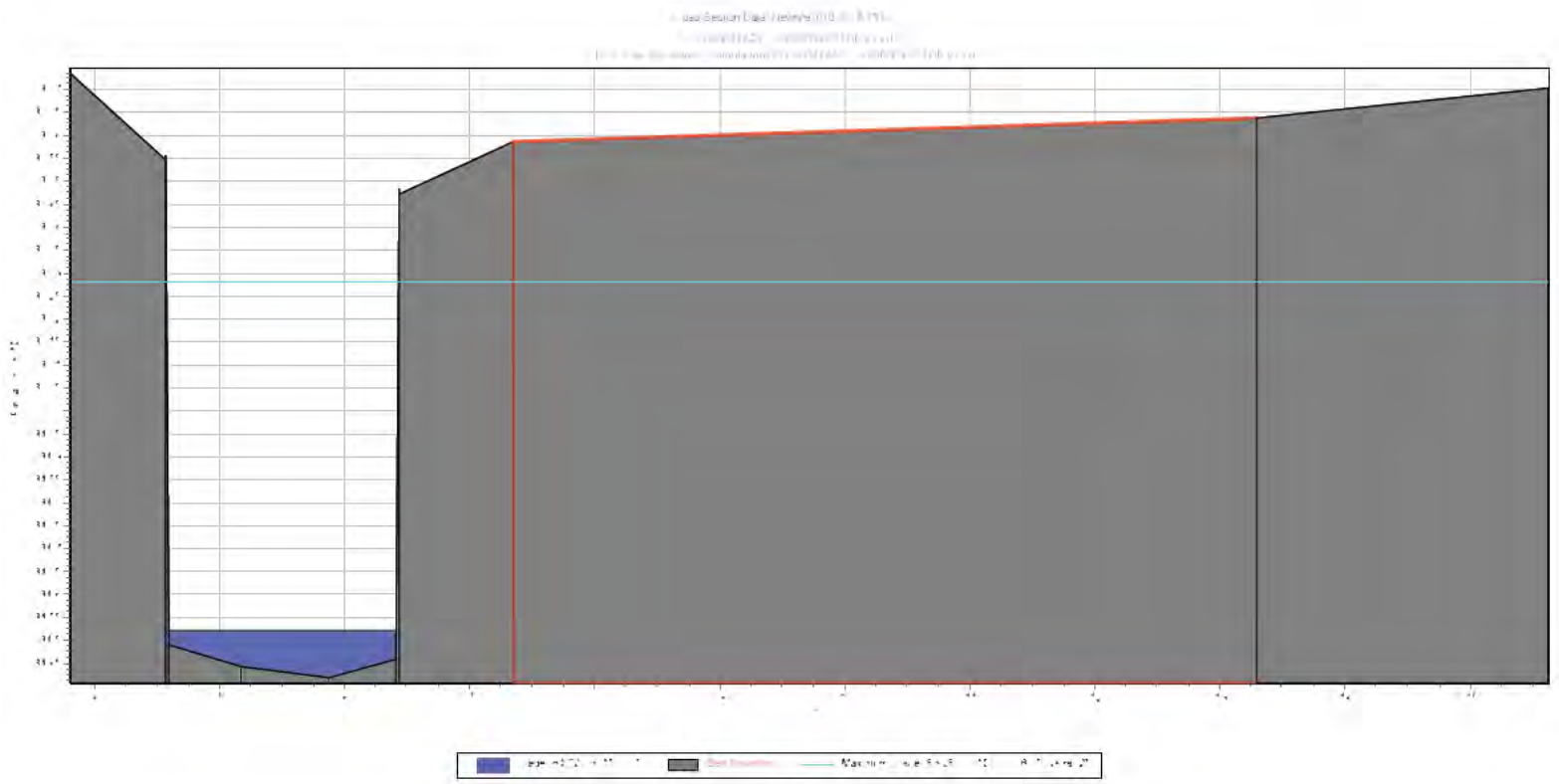


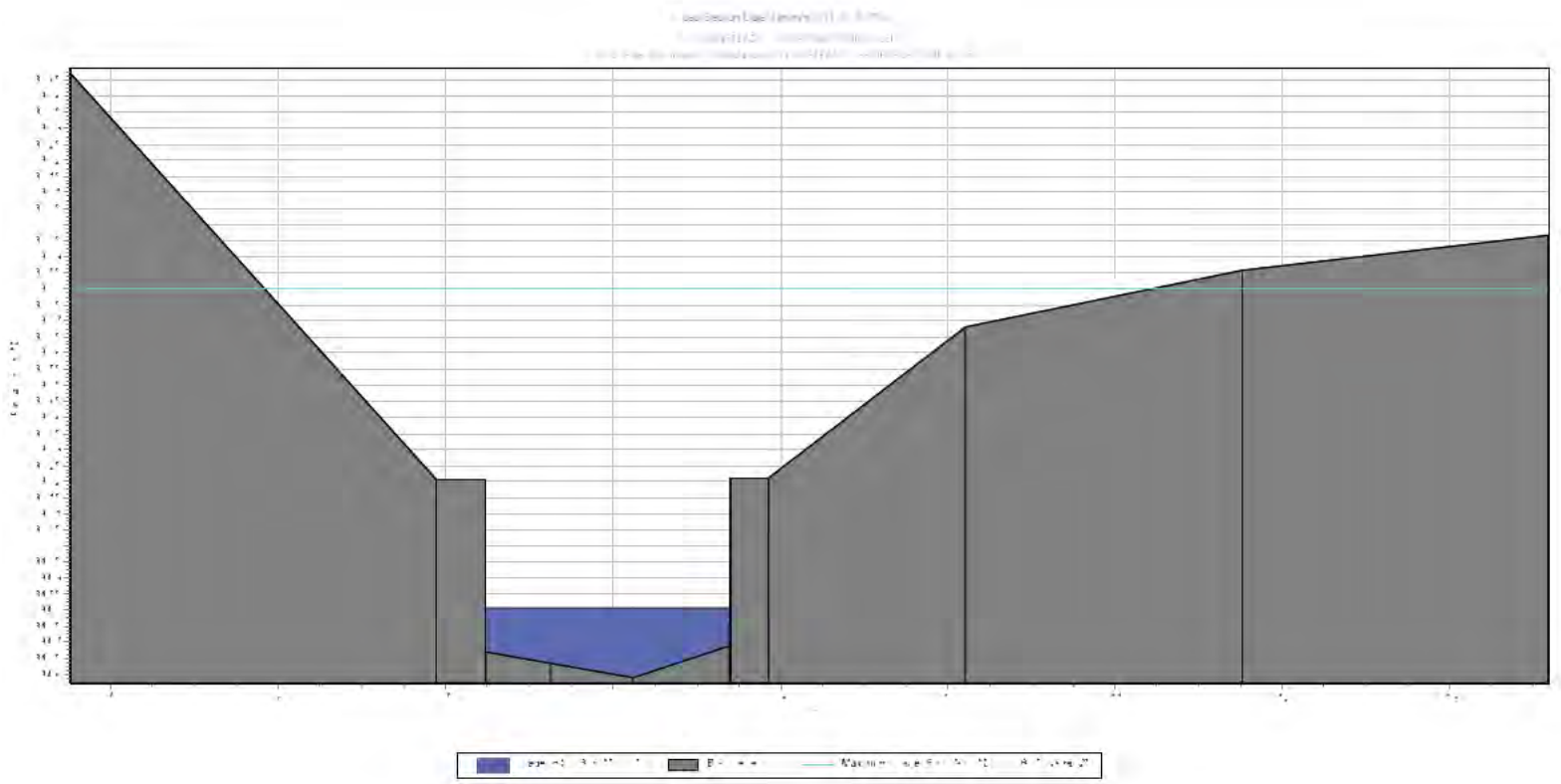


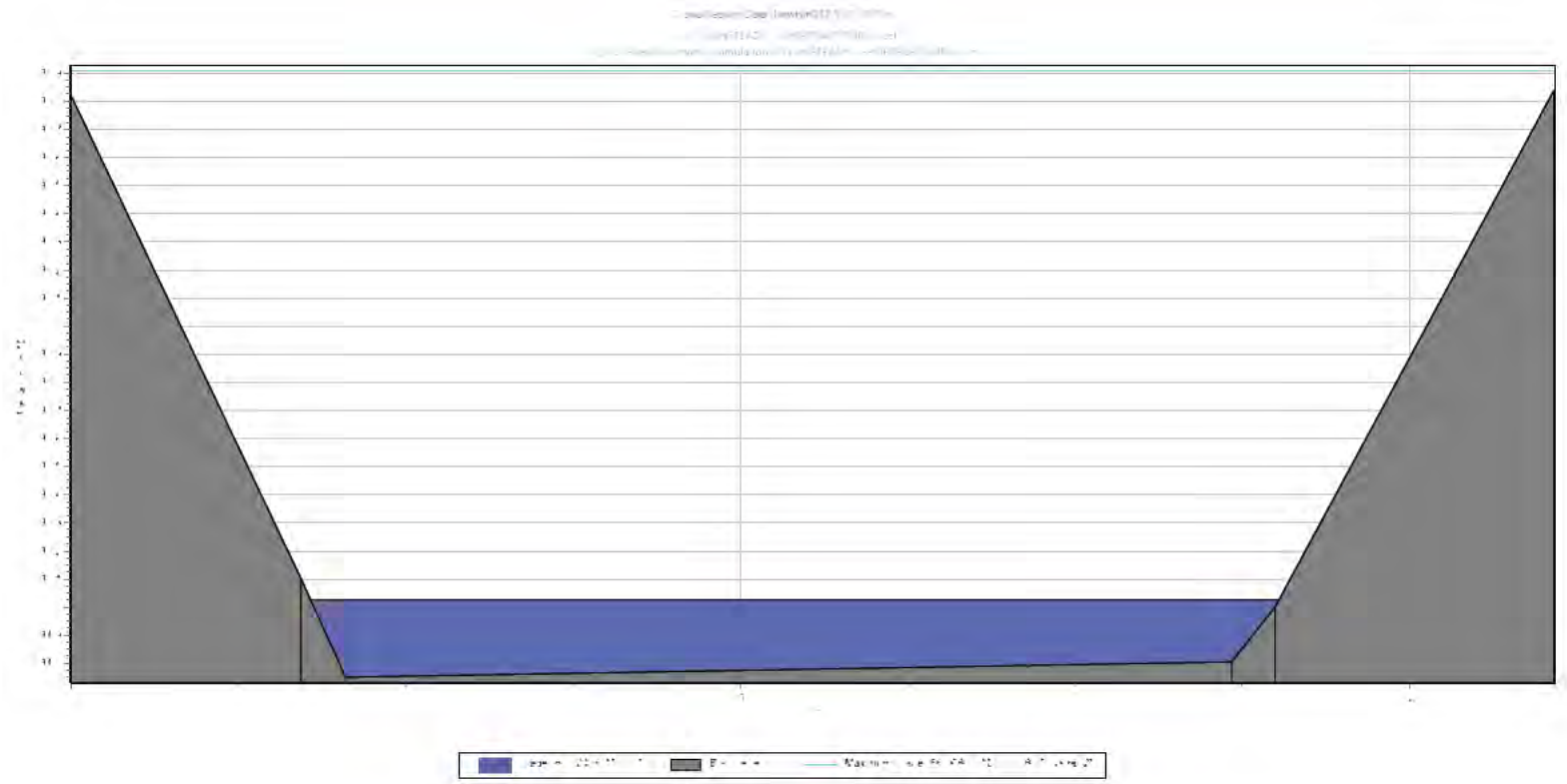


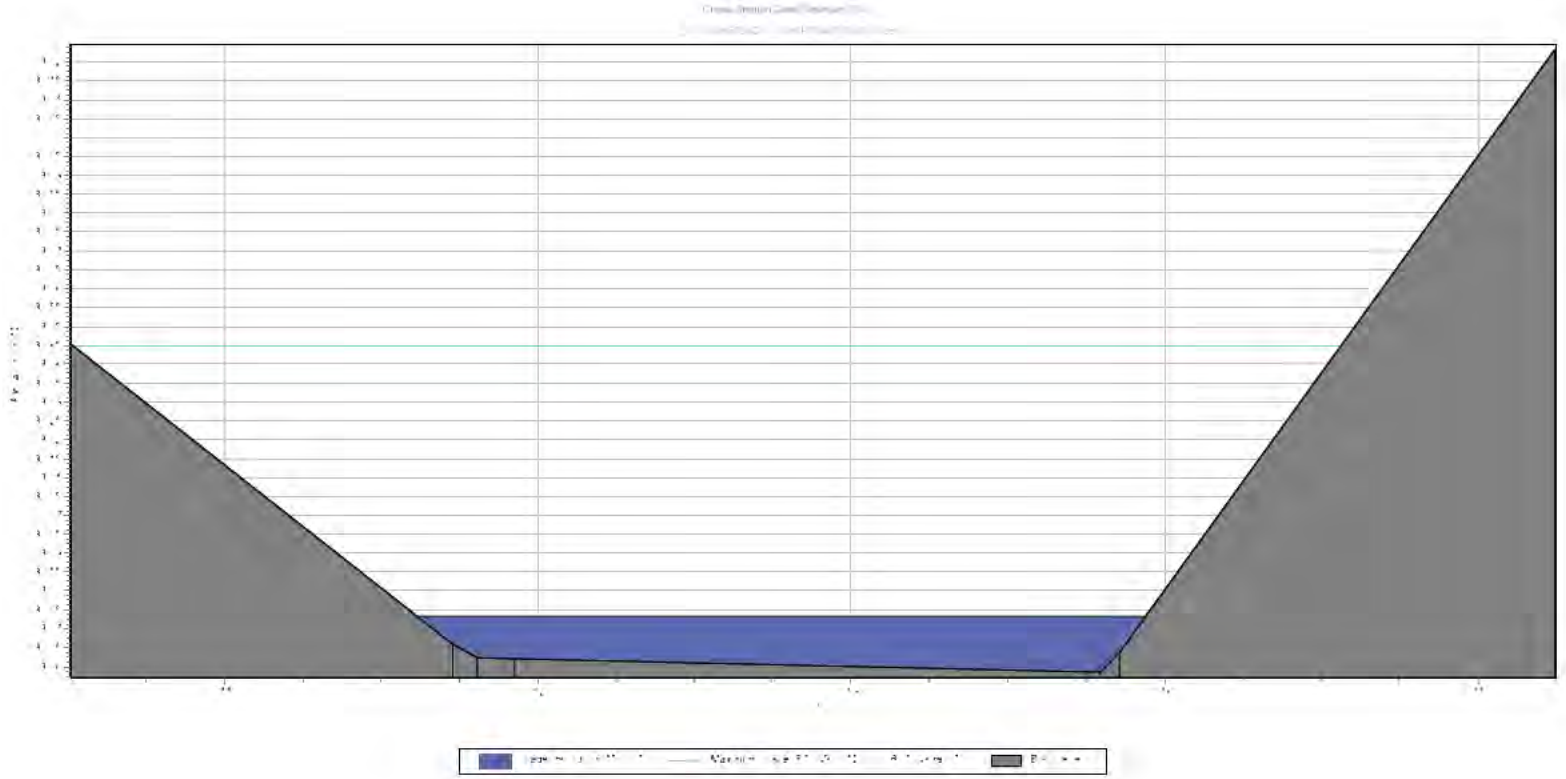


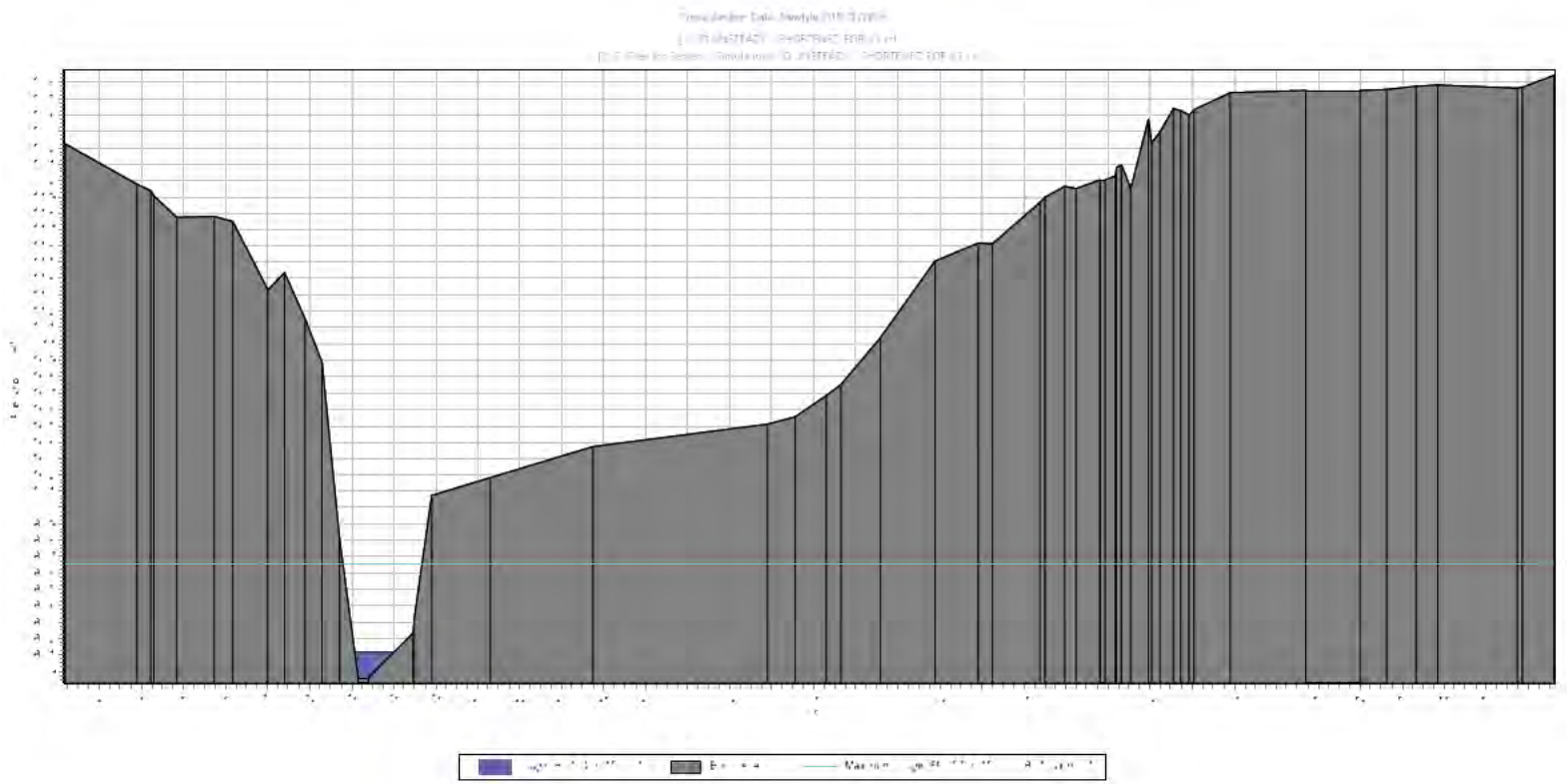












Appendix D: SEPA Checklist

Flood Risk Assessment (FRA) Checklist

(SS-NFR-F-001 - Version 13 - Last updated 15/04/2015

This document should be attached within the front cover of any flood risk assessments issued to Local Planning Authorities (LPA) in support of a development proposal which may be at risk of flooding. The document will take only a few minutes to complete and will assist SEPA in reviewing FRAs, when consulted by LPAs. This document should not be a substitute for a FRA.

Development Proposal						
Site Name		Burnbank, Newtyle				
Grid Reference	Easting:	329940	Northing:	741268		
Local Authority		Angus Council				
Planning Reference number (if known)						
Nature of the development		Residential		If residential, state type:	Single house	
Size of the development site		0.17 Ha				
Identified Flood Risk	Source:	Fluvial		Source name:	Newtyle Burn	
Supporting Information						
Have clear maps / plans been provided within the FRA (including topographic and flood inundation plans)		Yes				
Has a historic flood search been undertaken?		Select from List				
Is a formal flood prevention scheme present?		Select from List		If known, state the standard of protection offered		
Current / historical site use		Garden ground				
Hydrology						
Area of catchment		3.314 km^2				
Qmed estimate		m^3/s		Method:	Select from List	
Estimate of 200 year design flood flow		4.66 m^3/s				
Estimation method(s) used *		Rainfall-runoff		If other (please specify methodology used):		
				If Pooled analysis have group details been included	Select from List	
Hydraulics						
Hydraulic modelling method		Linked 1D 2D		Software used:	ISIS	
If other please specify						
Modelled reach length		246 m				
Any structures within the modelled length?		Combination		Specify, if combination	Bridge and culvert	
Brief summary of sensitivity tests, and range:						
variation on flow (%)		20 %				
variation on channel roughness		20%				
blockage of structure (range of % blocked)		25 %		Reference CIRIA culvert design guide R168, section 8.4		
boundary conditions:		**Upstream**			**Downstream**	
(1) type		Flow			Other	
	Specify if other			Specify if other	Relief level	
(2) does it influence water levels at the site?		Yes			No	
Has model been calibrated (gauge data / flood records)?		No				
Is the hydraulic model available to SEPA?		Select from List				
Design flood levels	200 year		m AOD	200 year plus climate change	84.14	m AOD

Flood Risk Assessment (FRA) Checklist

(SS-NFR-F-001 - Version 13 - Last updated 15/04/2015

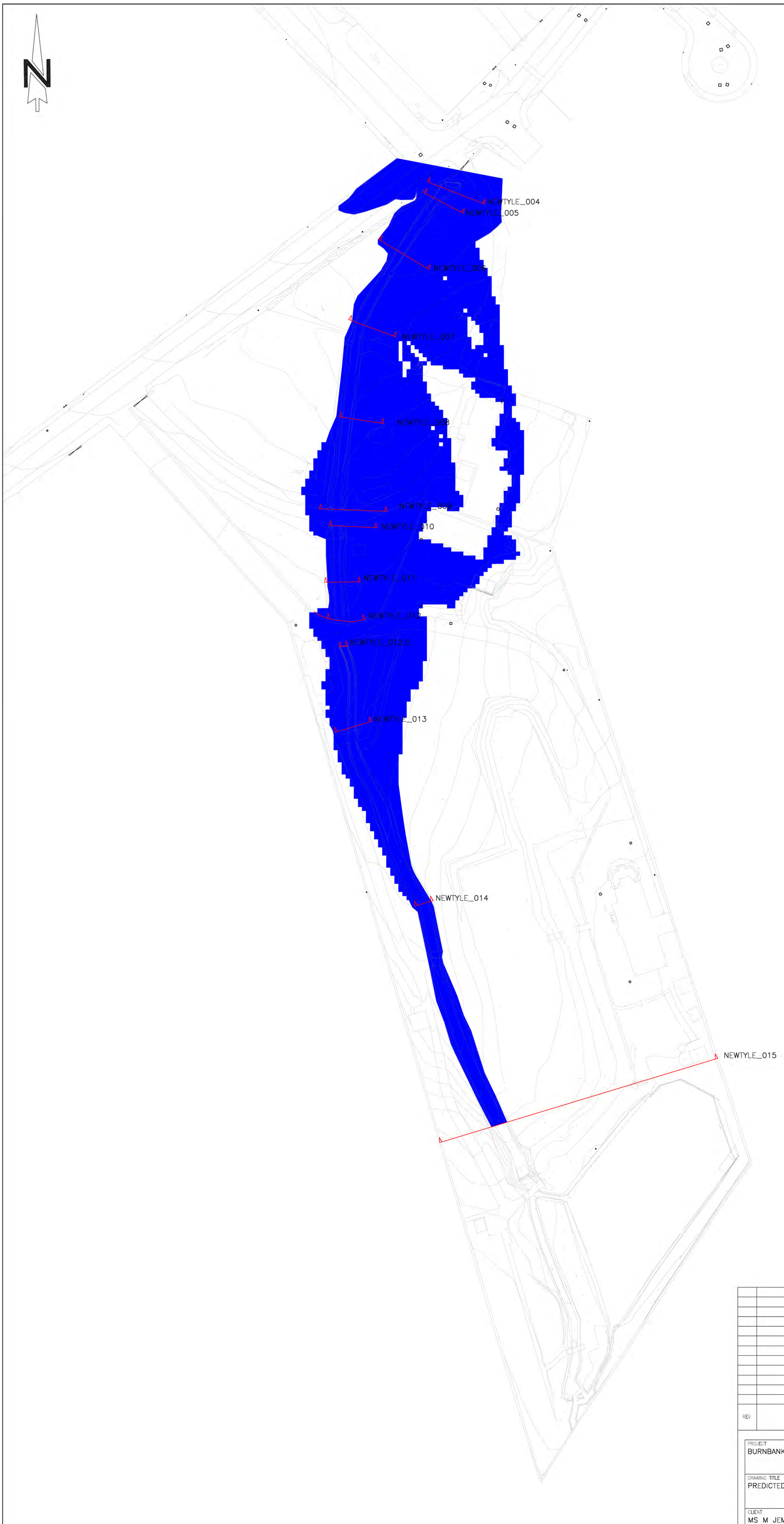
Coastal						
Estimate of 200 year design flood level			m AOD			
Estimation method(s) used		Select from List	If other (please specify methodology used):			
Allowance for climate change (m)			m			
Allowance for wave action etc (m)			m			
Overall design flood level			m AOD			
Development						
Is any of the site within the functional floodplain? (refer to SPP para 255)		No		If yes, what is the net loss of storage		m^3
Is the site brownfield or greenfield		Greenfield				
Freeboard on design water level (m)		0.6	m			
Is the development for essential civil infrastructure or vulnerable groups?		Select from List		If yes, has consideration been g ven to 1000 year design flood?	Select from List	
Is safe / dry access and egress available?		Vehicular and Pedestrian		Min access/egress level		m AOD
If there is no dry access, what return period is dry access available?			years			
If there is no dry access, what is the impact on the access routes?	Max Flood Depth @ 200 year event:		m	Max Flood Velocity:		m/s
Design levels	Ground level		m AOD	Min FFL:	84.8	mAOD
Mitigation						
Can development be designed to avoid all areas at risk of flooding?		Yes				
Is mitigation proposed?		Select from List				
If yes, is compenstory storage necessary?		Select from List				
Demonstration of compensatory storage on a "like for like" basis?		Select from List				
Should water resistant materials and forms of construction be used?		Yes				
Comments						
Any additional comments:						

Approved by:	**Andrew Braid**
Organisation:	**Millard Consulting**
Date:	**11/04/2024**

Note: Further details and guidance is provided in 'Technical Flood Risk Guidance for Stakeholders' which can be accesssed here:- **CLICK HERE**

**** ReFH2 is now accepted by SEPA for flow estimates in Scotland. Any use of this method should be compared with other accepted methods.***

Plans



GENERAL:

1. COPYRIGHT – T.A. MILLARD SCOTLAND LIMITED, CONSULTING ENGINEERS.
2. DO NOT SCALE THIS DRAWING – WRITTEN DIMENSIONS ONLY SHALL BE USED.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
4. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM UNLESS NOTED OTHERWISE.

LEGEND:

– PREDICTED 1 IN 200YR + CC FLOOD EXTENTS

REV	AMENDMENT DETAILS	DRAWN	APPROVED	DATE

PROJECT: BURNBANK, NEWTYLE, ANGUS	DESIGNED BY	DRAWN BY: ASB	SCALE: 1:500
	CHECKED BY	APPROVED BY	
DRAWING TITLE: PREDICTED 1 IN 200YR + CC FLOOD EXTENT	DRAWING STATUS		DATE: 23.03.24
CLIENT: MS M JEMICZ	DRAWING NUMBER: 18518/21/001		REVISION

Dundee Office
Seabraes
18 Greenmarket
Dundee
DD1 4QB

tel: 01382 227380
email: dundee@millardconsulting.co.uk
web: millardconsulting.co.uk

Millard
More than civil engineers

ITEM 9

Report on tree survey at Burnbank Cottage, Newtyle

Commissioned by Dr Maria Jemicz

By Keith Logie MICFor

13 February 2023
Revised 22 Sept 2023

Keith Logie MICFor BSc (Hons)
Chartered Forester
38/4 Temple Park Crescent
Edinburgh
EH11 1HU

1. General introduction and summary

This tree survey has been carried out for Dr Maria Jemicz. It relates to 53 trees within and near to the survey boundary shown on the plans supplied. The survey has been commissioned because a proposal is being drawn up to construct a new residential unit on the northern part of the site. If development were to proceed on the site, the existing trees will be retained, and the impact in arboricultural terms would be nil or neglible. Care will be required in construction of the proposed house and access road if trees proposed for retention are to be adequately protected. The report consists of:

- this written section;
- the schedule;
- 2 no drawings showing: an overview of tree positions and a tree protection plan showing root protection areas.

2. Site description

The site as a whole comprises roughly 0.49 hectares in total. To the north-west is South Street, a residential street, to the south-west an access lane then residential units, to the north-east another residential unit, and to the south is a light industrial unit set in woodland. The site is more or less flat but slopes gently from south-west down to north-east. The site is divided by the Newtyle burn. Most of the area is garden ground. Elevation is about 85m above sea level with a fairly sheltered aspect. The site is not believed to be within a Conservation Area or subject to a Tree Preservation Order.

3. Tree survey and methodology

53 trees within and close to the site have been recorded and assessed, and where required tagged with a numbered disc, fixed to the trunk at about 1.8m on the north side or where practicable. Tag numbers run sequentially from 6395 to 6444. Trees standing outside the site were not tagged. Trees smaller than 7.5 cm DBH and bushes were not tagged or recorded in detail. Some trees were assessed and plotted but not tagged. Fieldwork was done on 30 January 2023.

The location of most of the trees has been plotted according to the topo supplied or by using handheld GPS with an accuracy of 1 – 3m. Prior to construction, locations should be adjusted if required according to a topographic survey of suitable accuracy. Information on each numbered tree is provided in the attached Tree Survey Schedule. The position of the trees is shown on the attached drawings.

All trees within the site have been ascribed a Retention Category. In line with the recommendations contained within BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations", this takes account of the health, condition and future life expectancy of the tree, as well as its amenity and landscape value. The retention category for each tree is shown in the Tree Survey Schedule which records relevant data and comments on condition.

A – High category: trees whose retention is most desirable

B – Moderate category; trees where retention is desirable
C – Low category; trees which could be retained
U – Unsuitable for retention; trees which should be removed

Recommendations are made, where appropriate, on appropriate remedial action as regards tree surgery or felling works. These are specified where there is a significant current risk to public safety or tree health and are consistent with sound arboricultural practice. All tree work recommendations, where made, are in line with BS 3998: 2010 "Tree work recommendations".

The felling of more than 5 cubic metres of timber will require a felling license from Scottish Forestry unless the felling forms part of the granted Planning Permission.

4. Survey results and discussion

53 trees of at least 7.5cm DBH within and close to the site were plotted and assessed. Details of the trees are shown in the Schedule below. Some trees are part of the woodland group which has been assessed in detail below. Note that the Schedule is a summary of the data gathered and assessments made.

The **BS 5837 retention categories** of the 53 trees assessed in detail on and around the site were as follows:

Category A	20
Category B	21
Category C	10
Category U	2

In terms of their **condition,** they are as follows:

Good	23
Fair	25
Poor	3
Dead/dying	2

The **species** mix is as follows, by number

Beech	1
Birch, Silver	5
Cherry, Flowering	1
Cedar, Deodar	1
Cypress, Lawson	15
Fir, Douglas	3
Hemlock – Western	1
Laburnum	3

Larch	1
Lime, common	10
Maple, Japanese	1
Maple, Norway	3
Oak, pedunculate	1
Rowan	2
Western Red Cedar	2
Willow, weeping	1

Findings:

Overall, the garden is very well stocked with a wide variety of trees. There is a broad range of species, but the garden is dominated by mature common limes which are of a similar age, and conifers, some of which are very large. There are also ornamental trees of a smaller scale orientated towards the burn, which makes a nice feature in the garden.

There is a row of lime trees along the frontage with South Street, and another row running south along the western boundary, interspersed with Douglas fir. There has been underplanting with conifers in places too. There are large conifers further into the garden, including two very large and old Lawson cypress, and nearer the cottage, a large western hemlock and a deodar.

A number of trees have been removed fairly recently, prior to the survey, it is understood due to structural weakness or disease. Nevertheless, the effect of so many very large trees in the garden is fairly dramatic, particularly along the western boundary where the trees are very closely spaced.

There are trees in neighbouring properties – in Mill Cottage garden to the north there is a mature oak, a weeping willow and plum fairly close to the proposed development. In the grounds of the light industrial unit to the south-west of the site is a conifer woodland comprising mainly mature spruce. Trees standing outside the site to the south and to the north in neighbouring gardens will be unaffected by the proposed development.

Details of each tree surveyed are contained in the Schedule below. Positions are shown in drawing 1 below.

5. Constraints posed by existing trees - considerations

Trees can be badly damaged or killed by construction operations, and particular care is required to protect them from damage. The ability of trees to recover from damage to roots is often very limited. Root systems can be damaged by ground excavations, soil compaction, contamination or spillages of e.g. diesel or cement, and changes in soil moisture content (both drying and waterlogging).

Drawing 2 below shows a Root Protection Area (RPA) for each tree, shown as a hatched circle, which shows the area near to the trees where activity needs to be carefully controlled during construction if the tree is to be retained. Only trees which are to be retained are shown on this drawing.

The development proposals involve construction of a new house at the north-east part of the site, and a new access to serve it. Most trees on site and those on neighbouring properties will be unaffected by the proposed development. The tree protection plan drawing shows Root Protection Areas (RPA's) for trees to be retained.

The proposed construction footprint overlaps with the Root Protection Area (RPA) of lime 6397 which has a theoretical RPA of 367 sq m. As drawn, this would mean the loss of about 15.3 sq m of the potential rootable area of this tree, or 4.2%. Given that limes are relatively tolerant of incursions into the rooting zone this is not considered likely to cause significant harm to the tree. There is a larger area of the RPA where construction work will take place, which will ultimately form the front apron of the house, and in this area (shown pink on the Tree Protection Plan) work needs to be carefully controlled. A method statement to guide work in this area has been included below.

Other trees, including those located south of the burn are unlikely to be affected by the development proposals.

6. Tree protection plan

In general terms, where trees are recommended for retention they must be protected by barriers and/or ground protection prior to commencement of any development works, including demolition.

Temporary protective fencing - specification. This specification applies to all tree protection fences referred to below. Fencing to consist of 2m high welded mesh panels (Heras or similar) on rubber or concrete feet joined with a minimum of two anti-tamper couplings. The distance between the couplings should be at least 1m and should be uniform throughout the fence line. The panels should be supported on the inner side by stabiliser struts, which should be anchored at ground level by a block tray or stakes driven into the soil. All-weather notices should be affixed to the fence with the wording "Construction exclusion zone – no access." The position of temporary protective fencing is shown on the Tree Protection Plan drawing below.

Work within RPA's. The nature of this proposal means that, in order to retain the good quality trees close to both proposed dwelling house and the proposed access road, there will be work within the RPA's. The principles that will be applied to work with the RPA's are as follows:

Work in the proximity of tree **6397**: There are two aspects to the work here, creation of building foundations and laying of surfaces outside the proposed building. Care will be need to be taken to ensure the survival of this tree.

1. In terms of the foundation work: the proportion of the tree's roots likely to be affected here is very small (less than 5%) , but it is anticipated that some small roots will require

to be severed. Excavations to be carried out by hand in this area. Wet concrete is toxic to tree roots and care must be taken when pouring. It is recommended that the foundation trench be lined with Visqueen or similar DPC type membrane to protect tree roots until the concrete is dry.

2. In terms of the creation of finished surfaces, levels are of key importance here. Away from the foundations there should be no excavations, other than to strip off turf, which should be done by hand. Levels will then be built up from suitable imported material carefully laid on the ground until the required levels are achieved. Where employed, kerbs will be haunched up at ground level. Surfaces will be comprised of porous material. The specification for the road and finished surfaces will be detailed in the Construction Method Statement.
3. There will be no raising of soil levels above existing ground level at or on the stems of trees to be retained. This is critically important for long-term tree survival.

7. Recommendations

1. **Implement the tree protection plan detailed above.**
2. **Implement the detailed recommendations contained the schedule below.**
3. **Inspect the retained trees on an ongoing 5 year cycle.**

STANDARD CONDITIONS RELATING TO TREE SURVEY INFORMATION

1. Unless otherwise stated in the report, inspection has been carried in accordance with Visual Tree Assessment (VTA) Stage 1.

2. The survey has been carried out in accordance with the recommendations of BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations".

3. Recommendations for tree works assume that they will be carried out in accordance with BS 3998: 2010 “Tree work recommendations” by suitably qualified and experienced persons.

4. Unless otherwise stated, tree surveys are undertaken from ground level using established visual assessment methodology. The inspection is designed to determine the following:

   a. The presence of fungal disease in the root, stem, or branch structure that may give rise to a risk of structural failure of part or all of the tree;

   b. The presence of structural defects, such as root heave, cavities, weak forks, hazard beams, included bark, cracks, and the like, that may give rise to a risk of structural failure of part or all of the tree;

   c. The presence of soil disturbance, excavations, infilling, compaction, or other changes in the surrounding environment, such as adjacent tree removal or erection of new structures, that may give rise to a risk of structural failure of part or all of the tree;

   d. The presence of any of the above or another factor not specifically referred to, which may give rise to a decline or death of the tree.

4. Where further investigation is recommended, whether by climbing, the use of specialised decay detection equipment or the exposure of roots, this is identified in the report.

5. The findings and recommendations contained within this report are valid for a period of twelve months. Trees are living organisms subject to change and it is strongly recommended that they are inspected at regular intervals for reasons of safety.

6. The recommendations relate to the site as it exists at present, and to the level and pattern of usage it currently enjoys. The degree of risk and hazard may alter if the site is developed or significantly changed, and as such will require regular re-inspection and re-appraisal.

7. Whilst every effort has been made to detect defects within the trees inspected, no guarantee can be given as to the absolute safety or otherwise of any individual tree. Extreme weather conditions can cause damage to apparently healthy trees, and phenomena such as summer branch drop may occur and are difficult to predict. In particular caution must be exercised if inferring or assuming matters relating to tree roots in the case where they cannot be visually assessed, as is normal and likely. It should be assumed that underground roots cannot be seen unless otherwise stated.

8. This report in no way constitutes a professional opinion on the integrity or status of buildings. Its primary purpose is to report on the status of trees. The status of built structures, if in doubt, should be reviewed by a suitably qualified person.

9. This report has been prepared for the sole use of Dr Maria Jemicz and her appointed agents. Any third party referring to this report or relying on information contained within it does so entirely at their own risk.

Explanation of terms used in the schedule

Tag	Identification number of tree
Species	Common name of species.
DBH	Trunk diameter in metres measured at 1.5m.
Crown	Radial tree crown spread in metres.
Height	Estimated height of tree in metres.
Age	Age class category. **Y** Young, **E-M** Early Mature, **M** Mature, **M-A** Advanced mature, **Vet** Veteran.
Stems	Single stemmed or multi-stemmed
Condition	Condition category (**Good**, **Fair**, **Poor**, **Dying** or **Dead**).
SULE	The tree's safe useful life expectancy, estimated in years. Note that this may be less than the tree's biological life expectancy.
BS Cat	BS 5837 Retention category (**A, B, C or U** – see explanation above)
Comments	General comments on tree health, condition and form, highlighting any defects or areas of concern and any **recommendations**.

Tree condition categories

Good (1) Healthy trees with no major defects
(2) Trees with a considerable life expectancy
(3) Trees of good shape and form

Fair (1) Healthy trees with small or easily remedied defects
(2) Trees with a shorter life expectancy

(3) Trees of reasonable shape and form

Poor (1) Trees with significant structural defects and/or decay
(2) Trees of low vigour and under stress
(3) Trees with a limited life expectancy
(4) Trees of inferior shape and form

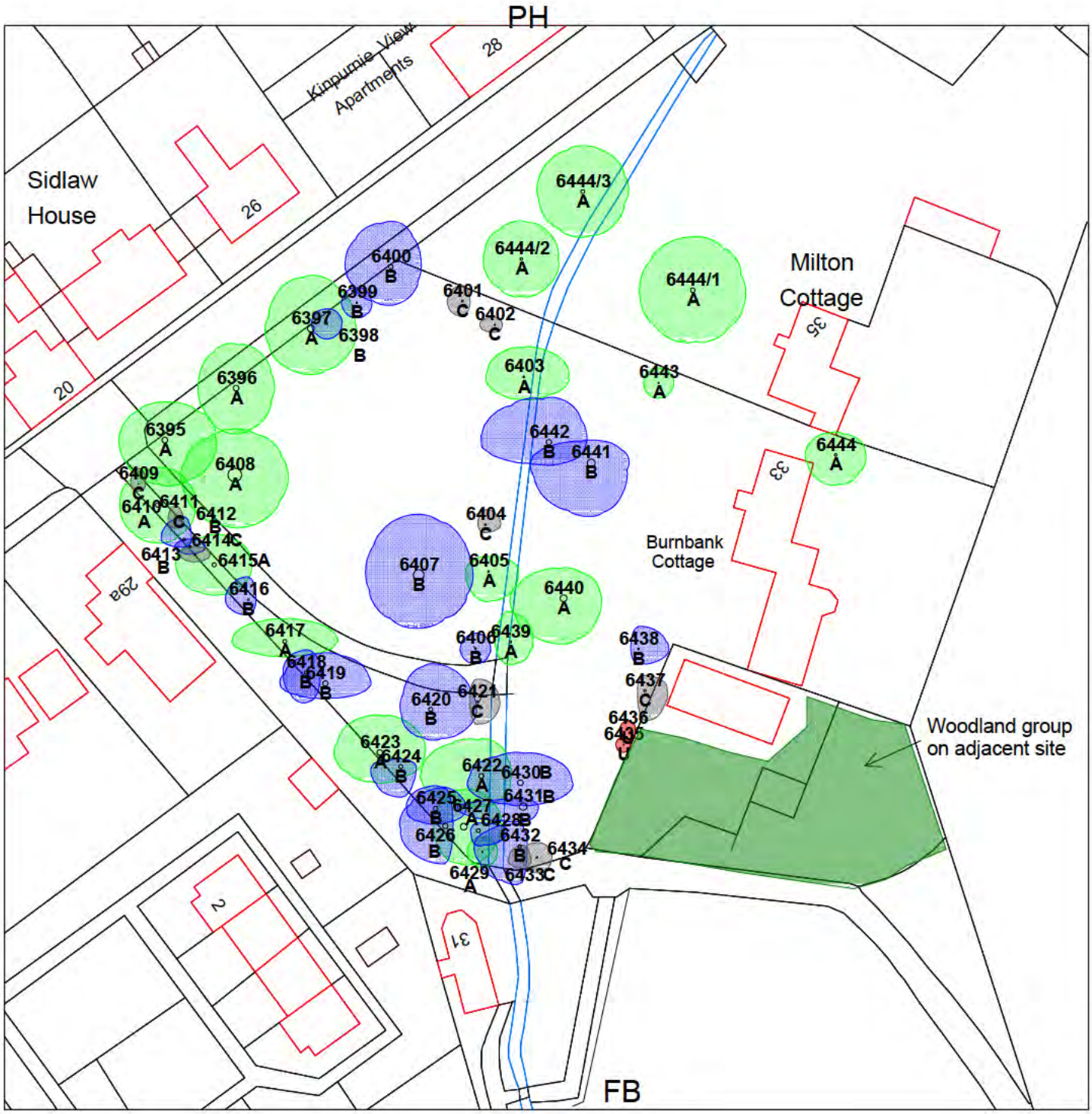
Dead (1) Dead, dying and dangerous trees
(2) Trees of very low vigour and with a severely limited life expectancy
(3) Trees with serious structural defects and/or decay
(4) Trees of exceptionally poor shape and form.

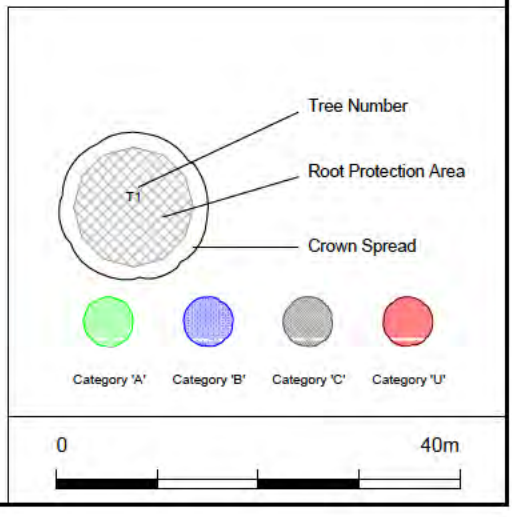
Burnbank - Schedule

Tag no	Species	DBH	Canopy	Height	BSCat	Condition	Age	Stems	SULE	Comments	Recommendation
6395	Lime-common	0.75	7	23	A1	Good	M-A	1	>40	Restricted rooting.Minor dead wood (<50mm dia).Small amounts of dead wood. Hard against wall	Complete dead-wooding.
6396	Lime-common	0.75	6	23	A1	Good	M-A	1	>40	Ivy growth obscur ng detailed assessment.Minor dead wood (<50mm dia).Very upright.	
6397	Lime-common	0.9	7	24	A1	Good	M-A	1	>40	Ivy growth obscur ng detailed assessment.Minor dead wood (<50mm dia).Ded wood is quite minor and confined to a few branch tips. Several bird nests high in	
6398	Western red cedar	0.2	2	6	B1	Good	E-M	1	20 to 40	Young tree 1.5m from base of lime	
6399	Western red cedar	0.2	2	7	B1	Good	E-M	1	20 to 40	Young tree4m from 6398. 7 m from 6400	
6400	Lime-common	0.6	6	21	B1	Fair	M	1	20 to 40	Excessive epicormic growth.Minor dead wood (<50mm dia).Minor cavity/decay in main scaffold limb.Massive epicormic growth at base. Some decay on branches at old pruning wounds	Complete dead-wooding.
6401	Laburnum	0.25	2	<5	C1	Poor	M	1	10 to 20	Stem lean.Minor dead wood (<50mm dia).Has been pollarded.	
6402	Rowan	0.15	1	<5	C1	Poor	E-M	1	10 to 20	Topped at 4m	
6403	Maple-Japanese	0.2	6	5	A1	Good	M	3	>40	By nurn, spreading. Crown close to BT I/h line	
6404	Cherry-flowering	0.2	2	5	C1	Poor	M	3	10 to 20	Poor crown structure.Topped at 4m	
6405	Willow-weeping	0.2	4	<5	A1	Good	E-M	1	>40	Branch stubs from past pruning/storm damage.Nice salix alba tristis o/h burn	
6406	Cypress-Lawson cv	0.2	2	<5	B1	Good	E-M	1	20 to 40		
6407	Cypress-Lawson	1.4	8	26	B1	Fair	M-A	1	20 to 40	Minor decay in buttress.Included bark, compression fork.Min decay between buttresses n side. Forks into 3 at 7m, bigger union ok, smaller is compressed	Monitor decay at regular intervals.

Tag no	Species	DBH	Canopy	Height	BSCat	Condition	Age	Stems	SULE	Comments	Recommendation
6408	Cypress-Lawson	1.8	7	27	A1	Good	M-A	1	>40	Included bark, compression fork.2 main stems fork at 1.8m, forks again 6m. 7m from drive. Dbh 1.8m	
6409	Cypress-Lawson	0.1	2	<5	C1	Fair	Y	1	10 to 20	Canopy 1-sided.	
6410	Lime-common	0.6	5	22	A1	Fair	M	1	>40	Major dead wood (>50mm dia).D/w over drive and lane	Complete dead-wooding.
6411	Laburnum	0.2	2	5	C1	Fair	E-M	1	10 to 20	Topped at 4m. Remove chip piled at base	
6412	Cypress-Lawson	0.35	3	14	B1	Fair	M	1	20 to 40	Canopy 1-sided.Hard against wall	
6413	Cypress-Lawson	0.25	1	14	B1	Fair	M	1	20 to 40	Canopy suppressed.	
6414	Cypress-Lawson	0.2	1	12	C1	Fair	E-M	1	10 to 20	Canopy suppressed.Hard against wall	
6415	Lime-common	0.55	5	22	A1	Good	M	1	>40	Minor cavity/decay in stem.at 5m.Minor dead wood (<50mm dia).Poss cavity 5m west. Pile of chipped woody material at base	
6416	Cypress-Lawson	0.25	3	12	B1	Good	E-M	1	20 to 40	Hard against wall	
6417	Lime-common	0.5	7	21	A1	Good	M	1	>40	Minor dead wood (<50mm dia).Canopy compressed. Dead wood quite minor	
6418	Cypress-Lawson	0.4	4	13	B1	Fair	M	1	20 to 40	Co crowned with lime. 2 limbs through canopy. hard against wall	
6419	Lime-common	0.7	6	21	B1	Good	M	1	20 to 40	Damaged, hanging branch.Canopy compressed. 2 Doug fir removed to south.	Remove damaged branch.
6420	Beech	0.55	6	19	B1	Fair	M	1	20 to 40	Significant cavity/decay in stem.at 1m.Slight lean east. Decay 1-2m north. Reaction wood . Saprophyte colonising dead wood	Monitor decay at regular intervals.
6421	Laburnum	0.2	3	5	C1	Fair	M	1	10 to 20	Stem lean.Minor dead wood (<50mm dia).	
6422	Maple-Norway	0.65	8	20	A1	Fair	M	1	>40	Minor cavity/decay in stem.Minor dead wood (<50mm dia).	
6423	Lime-common	0.75	6	22	A1	Fair	M-A	1	>40	Excessive epicormic growth.Minor dead wood (<50mm dia).Damaged, hanging branch.Hard against wall . Bulge in wall to west	Remove damaged branch.
6424	Fir-Douglas	0.55	4	22	B1	Fair	M	1	20 to 40	Canopy suppressed.Stem has a kink in it, could remove	
6425	Fir-Douglas	0.6	4	23	B1	Fair	M	1	>40	Minor dead wood (<50mm dia).Canopy suppressed.Interlocking crowns	

Tag no	Species	DBH	Canopy	Height	BSCat	Condition	Age	Stems	SULE	Comments	Recommendation
6427	Fir-Douglas	0.9	5	24	A1	Fair	M-A	1	>40	Major dead wood (>50mm dia).Damaged, hanging branch.	Crown clean, remove dead wood, weak, broken branches.
6428	Larch	0.5	4	19	B1	Fair	M	1	20 to 40	Canopy suppressed.Canopy very 1 sided. Could remove	
6429	Cypress-Lawson	0.15	2	<5	A1	Good	E-M	1	>40		
6430	Maple-Norway	0.75	7	21	B1	Fair	M-A	1	20 to 40	Bark necrosis.Branch stubs from past pruning/storm damage.2 bird nests in crown.	
6431	Maple-Norway	1	9	20	B1	Fair	M-A	1	20 to 40	Bark necrosis.Canopy 1-sided.One main limb cut at 8m leaving other going west, unbalanced. Recent pruning here.	
6432	Birch-silver	0.45	6	14	B1	Good	M	1	20 to 40	Stem lean.Canopy 1-sided.	
6433	Cypress-Lawson	0.15	2	<5	C1	Fair	E-M	1	10 to 20		
6434	Cypress-Lawson	0.2	2	<5	C1	Fair	E-M	1	10 to 20	Maybe topped at 4m	
6435	Cypress-Lawson	0.1	1	<5	U	Dead	E-M	1	0		
6436	Cypress-Lawson	0.15	2	6	U	Dead	E-M	1	0		
6437	Cypress-Lawson	0.3	4	7	C1	Fair	E-M	1	10 to 20	Stem lean.Canopy 1-sided.Hard against wall. Maybe topped at 4m and regrown,	
6438	Kashmir rowan	0.2	4	5	B1	Fair	M	1	20 to 40	Canopy 1-sided.White berries	
6439	Birch-silver	0.3	4	13	A1	Good	M	1	>40	Excavations/level changes in root zone.Stem lean.Right by burn on slope but nice tree	
6440	Hemlock-western	0.9	6	27	A1	Good	M-A	1	>40	Fork at 4m union looks good. Well balanced crown. good tree	
6441	Cedar-deodar	1.05	7	23	B1	Fair	M-A	1	20 to 40	Minor dead wood (<50mm dia).Canopy suppressed.Canopy suppressed to north by birch. V straight. Decay in buttress to east up to 2m, bark becoming detached.	Carry out further investigation. Monitor decay at regular intervals.
6442	Birch-silver	0.7	9	18	B1	Good	M-A	1	20 to 40	Stem lean.Exceptionally large birch	
6443	Birch-silver	0.15	2	7	A1	Good	E-M	1	>40		
6444	Birch-silver	0.35	4	15	A1	Good	M	1	>40		
6444/1	Oak-pedunculate	0.6	7	12	A1	Good	M-A	1	>40	In neighbouring garden to north	
6444/2	Plum-purple leafed	0.35	5	8	A1	Good	M-A	1	>40	In neighbouring garden to north	
6444/3	Willow-weeping	0.5	6	12	A1	Good	M-A	1	>40	In neighbouring garden to north	





Keith Logie MICFor

Chartered Forester

Burnbank - Tree Positions

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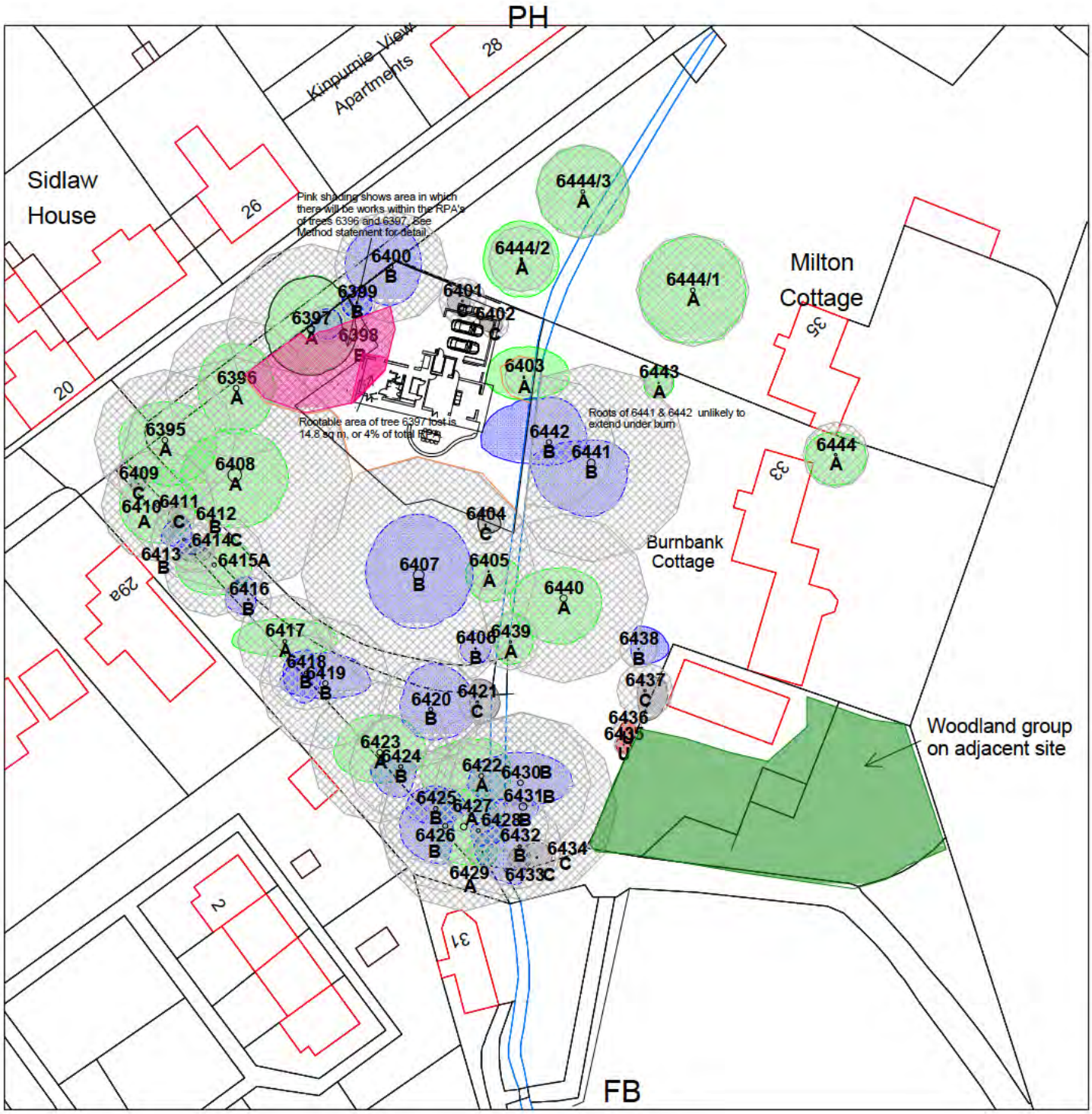
MAP FILENAME : Newtyle tree positions		



Keith Logie MICFor

Chartered Forester

Burnbank - Tree Protection rev B

SCALE :	DATE :	N
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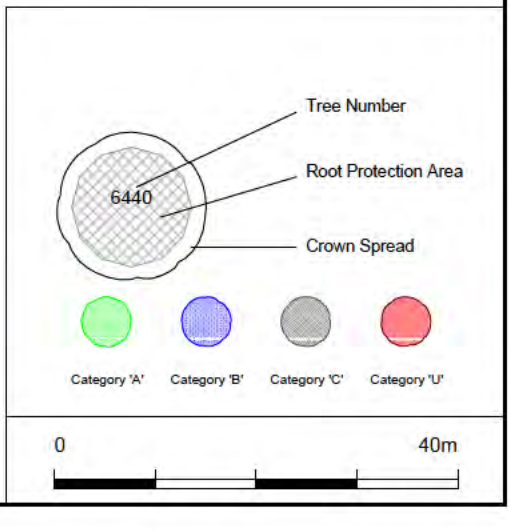
MAP FILENAME : Newtyle tree protection rev B		



City: Ruthven, UK
Country: United Kingdom
Day of year: 60
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-3-01 10:00:49 +0100
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-3-01 07:21:26 +0100
Sunset: 2023-3-01 18:42:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

MARCH 1
10:00AM

REV A
Trees updated to match seasonality for accurate tree representation

City: Ruthven, UK
Country: United Kingdom
Day of year: 60
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-10-01 13:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
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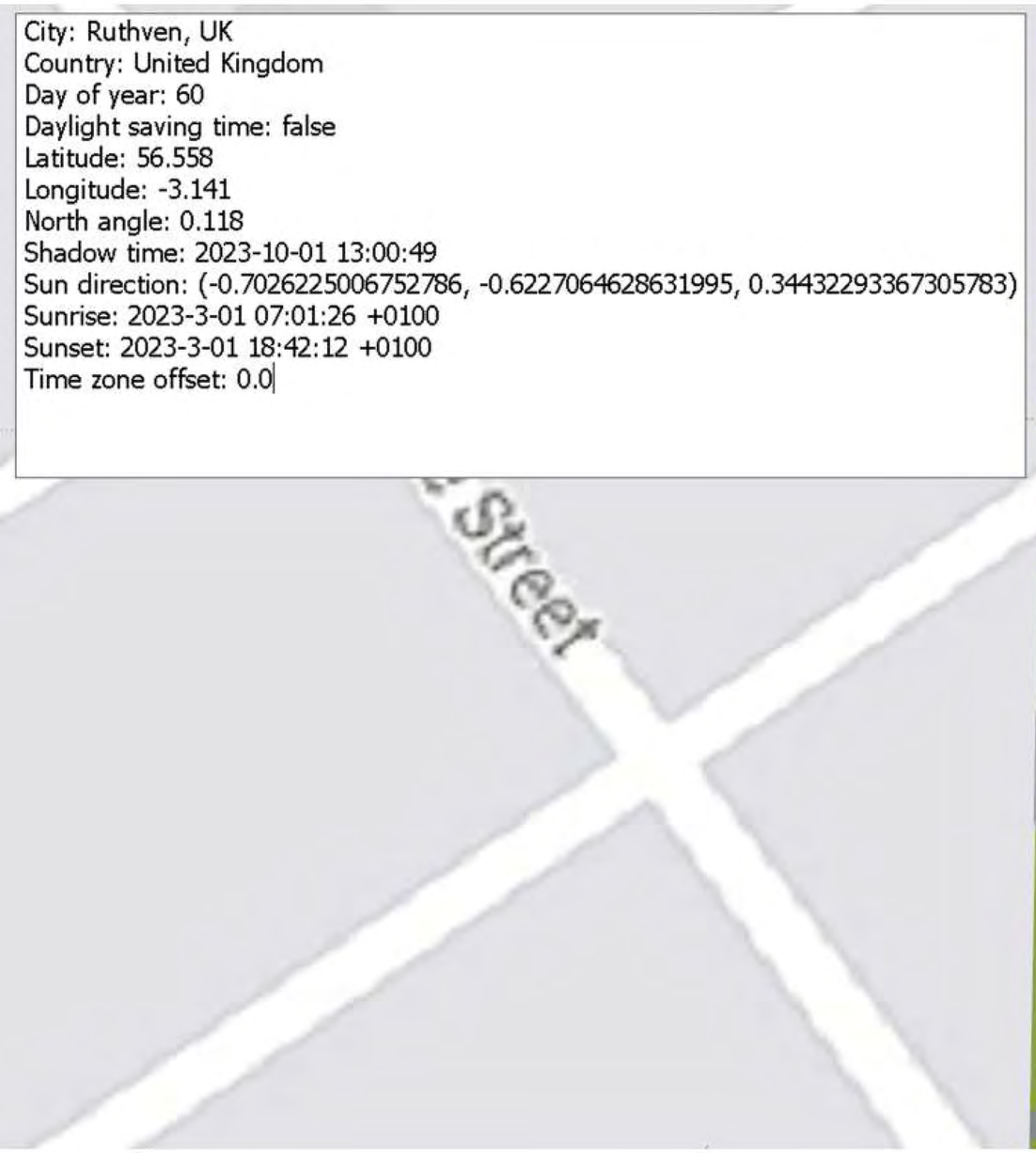
Sunset: 2023-3-01 18:42:12 +0100
Time zone offset: 0.0

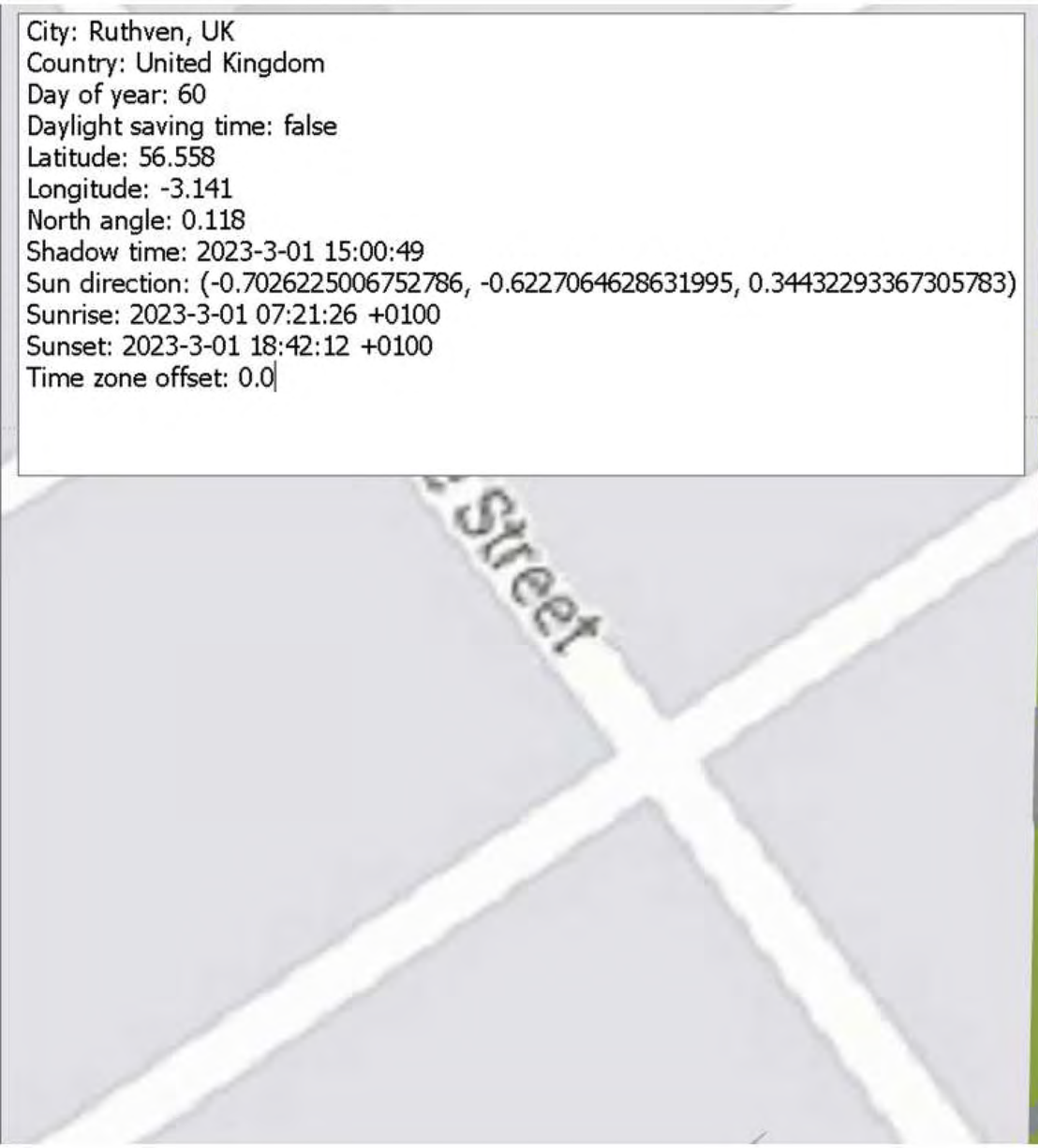


33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

MARCH 1
1:00PM

REV A
Trees updated to match seasonality for accurate tree representation

City: Ruthven, UK
Country: United Kingdom
Day of year: 60
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-3-01 15:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-3-01 07:21:26 +0100
Sunset: 2023-3-01 18:42:12 +0100
Time zone offset: 0.0



33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

MARCH 1
3:00PM

REV A
Trees updated to match seasonality for accurate tree representation

ITEM 10c

City: Ruthven, UK
Country: United Kingdom
Day of year: 182
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
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Sunset: 2023-07-01 21:57:32 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated shadow Analysis

July 01
9:00AM

ITEM 10d

City: Ruthven, UK
Country: United Kingdom
Day of year: 182
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-07-01 16:00:49 +0100
Sun direction: (-0.6051955857194062, -0.3611462149387883, 0.709444652147813)
Sunrise: 2023-07-01 04:35:30 +0100
Sunset: 2023-07-01 21:57:01 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated shadow Analysis

July 01
3:00PM

ITEM 10e

City: Ruthven, UK
Country: United Kingdom
Day of year: 182
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-07-01 13:00:49 +0100
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Sunrise: 2023-07-01 04:35:30 +0100
Sunset: 2023-07-01 21:57:02 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated shadow Analysis

July 01
12:00PM

City: Ruthven, UK
Country: United Kingdom
Day of year: 274
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-10-01 10:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-10-01 07:01:26 +0100
Sunset: 2023-10-01 16:37:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

OCTOBER 1
10:00AM

REV A
Trees updated to match seasonality for accurate tree representation

City: Ruthven, UK
Country: United Kingdom
Day of year: 274
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-10-01 13:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
Sunrise: 2023-10-01 07:01:26 +0100
Sunset: 2023-10-01 16:37:12 +0100
Time zone offset: 0.0

33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

OCTOBER 1
1:00PM

REV A
Trees updated to match seasonality for accurate tree representation

City: Ruthven, UK
Country: United Kingdom
Day of year: 274
Daylight saving time: false
Latitude: 56.558
Longitude: -3.141
North angle: 0.118
Shadow time: 2023-10-01 15:00:49
Sun direction: (-0.7026225006752786, -0.6227064628631995, 0.34432293367305783)
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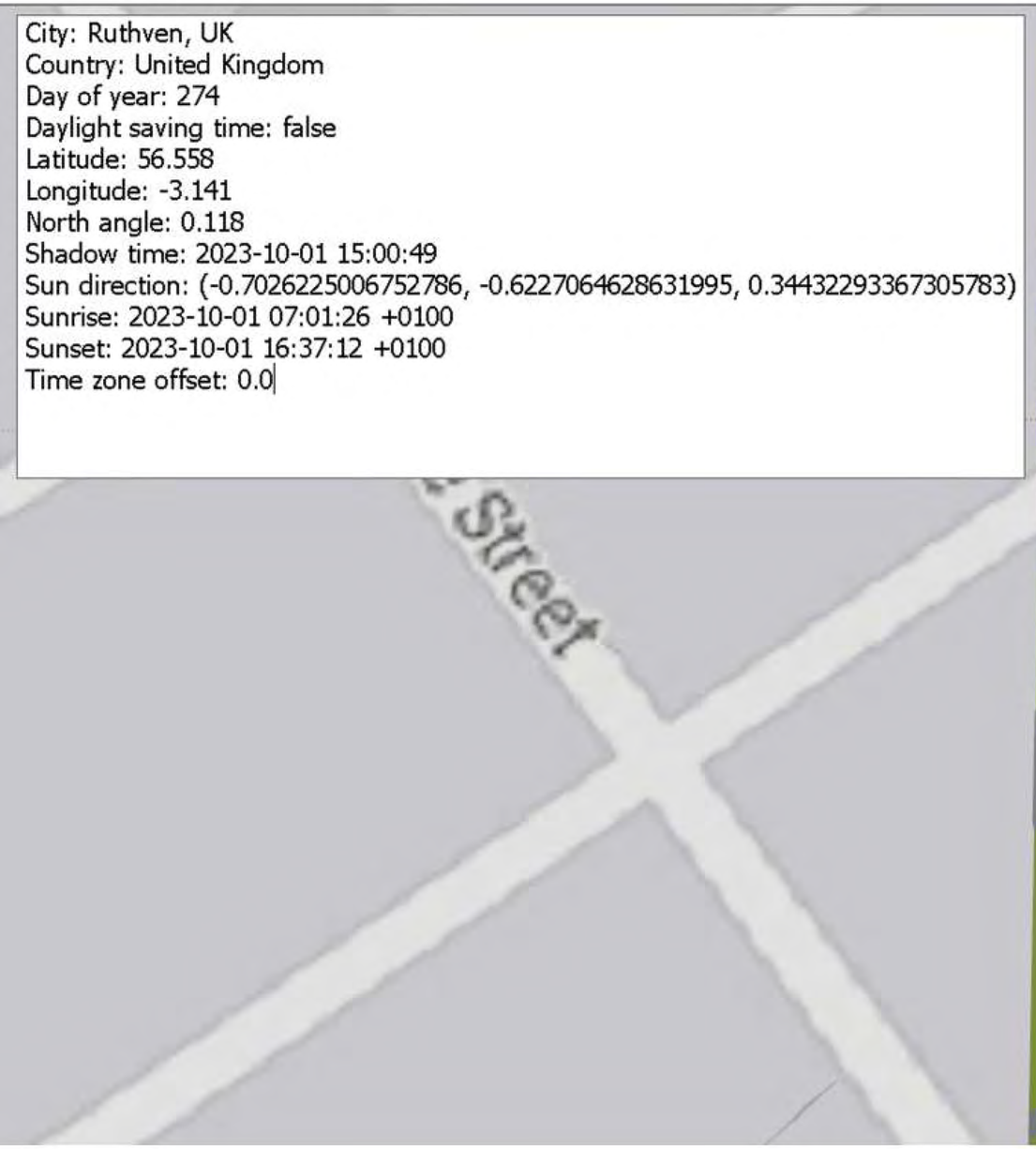
Time zone offset: 0.0



33 South Street, Newtyle
Proposed New Build Dwelling
Geolocated Shadow Analysis

OCTOBER 1
3:00PM

REV A
Trees updated to match seasonality for accurate tree representation

APPENDIX 3

FURTHER LODGED REPRESENTATIONS

From: [redacted]
To:
Subject: Re: Application for Review- Burnbank, 33 South Street, Newtyle
Date: 15 February 2025 13:46:59

Dear Ms Stewart,

Thank you for inviting me to add to existing representations in respect a review of planning application No - 21/01000/FULL-DMRC - 2/25.

I should emphasis that I have no skin in the game. I have met the applicant but the outcome of the planning application does not affect me one way or the other.

My observations are:

1. Supplementary Guidance for new house development in countryside, including the Rural Service Areas of which Newtyle is one, has as one of its aims maintaining diversity "by encouraging people to live and work in rural communities". A high spec house on the planned site would be very likely to attract a new resident in the future, perhaps teleworking from home.

2. Newtyle is now ringed by new relatively small scale housing developments. This is much needed, albeit at the cost of encroachment on good agricultural land. But this planning application is for a site that, if anything, adds to the amenity of South Street, contrary to one of the reasons given for refusal. The pleasant ambience of bushes, trees, open space and natural habitat of, for example, red squirrels is more likely to be preserved and well looked after as part of the envisaged garden area.

3. The Supplementary Guidance refers to AC support for filling gaps between an existing house and a metalled road. The site application, in my opinion, is for just such a gap, being between Burnbank house and garden on one side and South Street on the other.

4. Grounds for refusal include a "failure to provide a satisfactory residential environment for the occupants". I think I can say with certainty that, were such a property to come on to the market one day, the queue of would-be buyers of the (proposed) residential environment would be down the road and over the hill.

5. Out of respect for the planning process, I have read the "relevant policies" of the Development Plan referred to in the notice of refusal. There is nothing there that I can see which specifically contradicts the detail or the spirit of the proposed development. The generalised negative wording given in the notice of refusal, referring to the Development Plan, strikes me as unfairly vague. Therefore I think the appeal deserves to succeed.

Regards,
Dudley Treffry (resident, 20 South Street, Newtyle).

------ Original Message ------

From "Laura Stewart" <[redacted]
To
Date 13/02/2025 11:06:22
Subject Application for Review- Burnbank, 33 South Street, Newtyle

Dear Sir/Madam

Town and Country Planning (Schemes of Delegation and Local Review Procedure) (Scotland) Regulations 2013
Application for Review – Erection of Dwellinghouse in Garden Ground at Burnbank, 33 South Street, Newtyle Blairgowrie, Mrs Maria Jemicz
Application No- 21/01000/FULL– DMRC - 2/25

I refer to the above planning application and your lodged representations to that application.

I write to advise you that the applicant has made an application for a review of the decision taken by the Service Lead – Planning and Sustainable Growth. This is a process brought in by the above legislation to enable applicants dissatisfied with a decision of the Planning Authority to ask for it to be reviewed. This review will be considered by Angus Council's Development Management Review Committee. A copy of the Council's Decision Notice is attached for your information.

In accordance with the above Regulations, I am required to ask you if you wish to make any further representations. The Review Committee will be given copies of your original representation. If you do wish to do so, you have 14 days from the date of receipt of this email to make such representations. These should be sent directly to me.

The applicant will then be sent a copy of these representations and the applicant will be entitled to make comments on them. These comments will also be placed before the Review Committee when it considers the review.

I can also advise that a copy of the Notice of Review and other documents related to the review can be viewed by contacting me directly.

In the meantime, should you have any queries please do not hesitate to contact me.

Kind regards
Laura

Laura Stewart - Committee and Elections Officer – Legal, Governance and Change Services - Angus Council
Tel: [redacted]

From: [redacted]
To:
Subject: Re: Application for Review- Burnbank, 33 South Street, Newtyle
Date: 17 February 2025 21:06:02

Laura,
I would indeed like to make further representations as I cannot understand why Planning permission for Erection of a dwellinghouse in Garden Ground at Burnbank has yet again been declined because it is not 'sited and designed to be in keeping with the character of the area'!

Firstly, have you had a look at houses, old and new, in Newtyle as a whole, never mind just South Street? A hotchpotch of houses.
Then in the last 20 years Bob & Jenny Seaton sold their property at 29 South Street and built a new house (29A) in the grounds of their old property. If you check it out on Google Maps you will see it isn't really in keeping with the character of their old house!
Finally, it appears the new owners at Burnbank, 33 South Street, have already built a new garage, using the same materials Maria wants to use to build her new house...discuss please?

Rhona Barrie

From: Laura Stewart
Sent: Thursday, February 13, 2025 11:06
Subject: Application for Review- Burnbank, 33 South Street, Newtyle

Dear Sir/Madam

Town and Country Planning (Schemes of Delegation and Local Review Procedure) (Scotland) Regulations 2013
Application for Review – Erection of Dwellinghouse in Garden Ground at Burnbank, 33 South Street, Newtyle Blairgowrie, Mrs Maria Jemicz
Application No- 21/01000/FULL– DMRC - 2/25

I refer to the above planning application and your lodged representations to that application.

I write to advise you that the applicant has made an application for a review of the decision taken by the Service Lead – Planning and Sustainable Growth. This is a process brought in by the above legislation to enable applicants dissatisfied with a decision of the Planning Authority to ask for it to be reviewed. This review will be considered by Angus Council's Development Management Review Committee. A copy of the Council's Decision Notice is attached for your information.

In accordance with the above Regulations, I am required to ask you if you wish to make any further representations. The Review Committee will be given copies of your original representation. If you do wish to do so, you have 14 days

from the date of receipt of this email to make such representations. These should be sent directly to me.

The applicant will then be sent a copy of these representations and the applicant will be entitled to make comments on them. These comments will also be placed before the Review Committee when it considers the review.

I can also advise that a copy of the Notice of Review and other documents related to the review can be viewed by contacting me directly.

In the meantime, should you have any queries please do not hesitate to contact me.

Kind regards
Laura

Laura Stewart - Committee and Elections Officer – Legal, Governance and Change Services -Angus Council
Tel: [redacted]

Follow us on Twitter
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Think green – please do not print this email

From: [redacted]
To:
Subject: Re: Application for Review- Burnbank, 33 South Street, Newtyle
Date: 25 February 2025 21:43:08
Attachments: Presentation bbv4.pdf

Laura, Please find attached my comments on 21/01000/FULL-DMRC.
Best regards
Mairead

On Thu, 13 Feb 2025, 11:06 Laura Stewart, [redacted] wrote:

> Dear Sir/Madam
>
> Town and Country Planning (Schemes of Delegation and Local Review Procedure) (Scotland) Regulations 2013
>
> Application for Review – Erection of Dwellinghouse in Garden Ground at Burnbank, 33 South Street, Newtyle Blairgowrie, Mrs Maria Jemicz
>
> Application No- 21/01000/FULL– DMRC - 2/25
>
> I refer to the above planning application and your lodged representations to that application.
>
> I write to advise you that the applicant has made an application for a review of the decision taken by the Service Lead – Planning and Sustainable Growth. This is a process brought in by the above legislation to enable applicants dissatisfied with a decision of the Planning Authority to ask for it to be reviewed. This review will be considered by Angus Council's Development Management Review Committee. A copy of the Council's Decision Notice is attached for your information.
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In the meantime, should you have any queries please do not hesitate to contact me.

Kind regards

Laura

Laura Stewart - Committee and Elections Officer – Legal, Governance and Change Services - Angus Council

Tel: [redacted]

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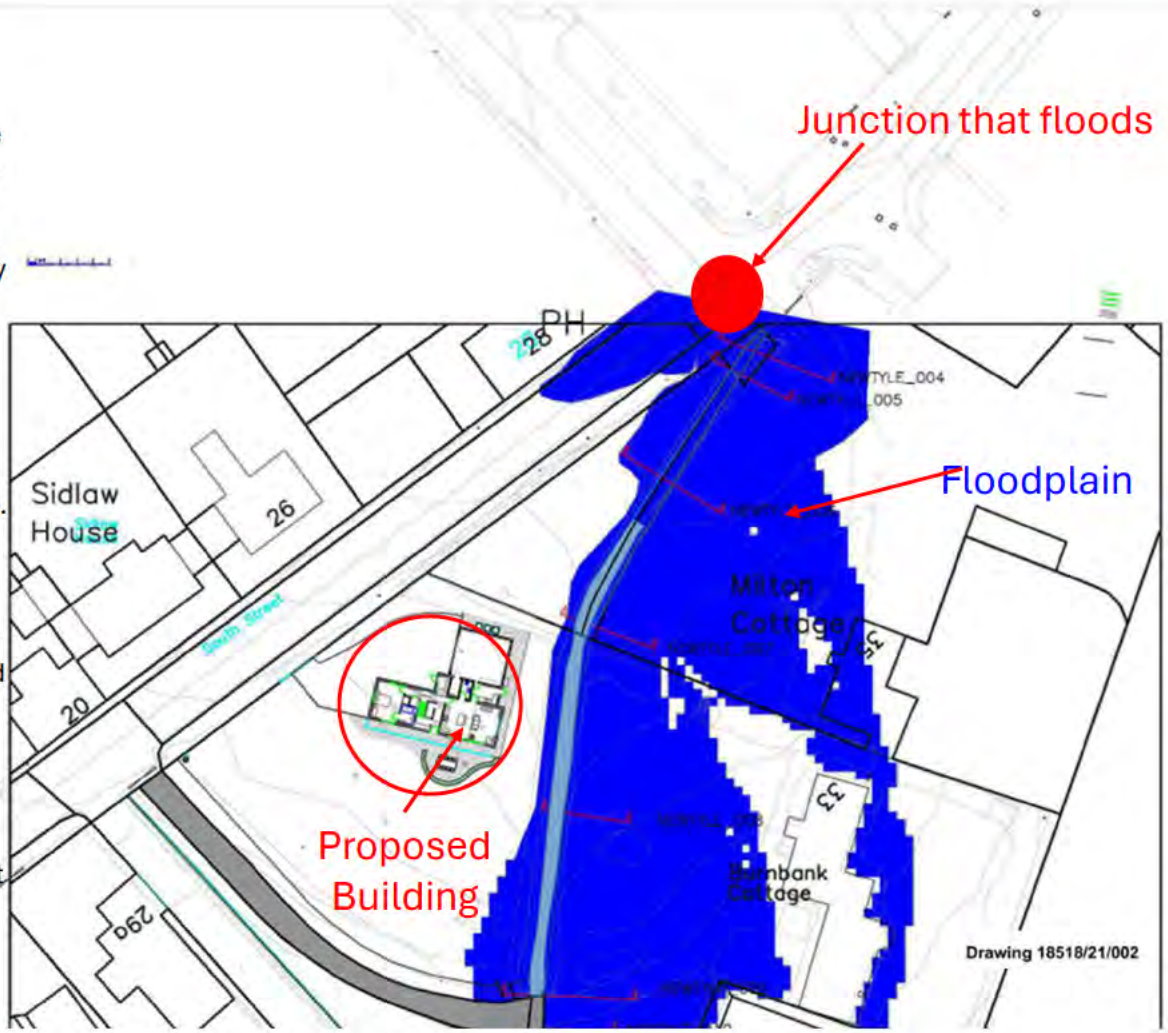
Proposed Development (Planning Application 21-01000) increases flood risk in Newtyle

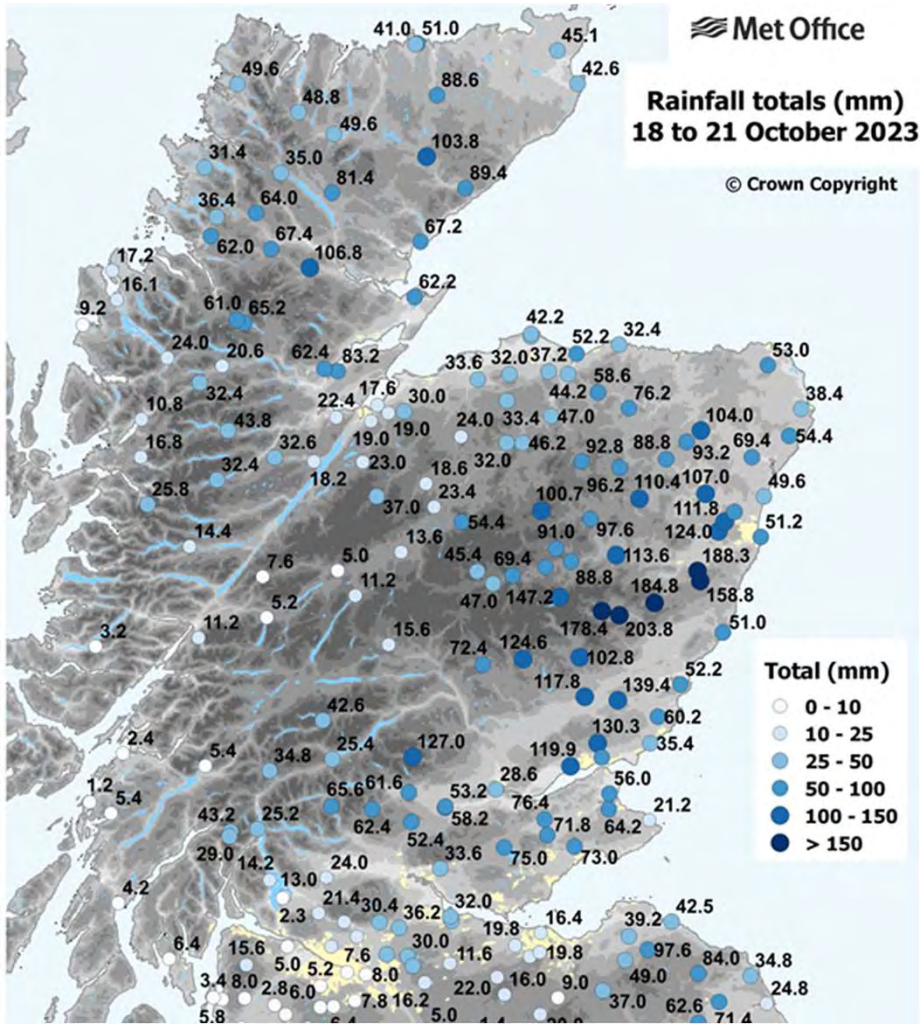
It can be seen from the flood risk assessment that the proposed development sits very close to the floodplain of the Newtyle Burn (see drawing 18518/21/002 adjacent). The proposed development lies just upstream of the junction of Commercial Street, South Street and Knox Close which is known to flood. During heavy rainfall, the capacity of the culvert under the public road at this junction has been exceeded. Scottish Water has indicated that there is not capacity in their network for surface runoff from the roof and hard ground of the development. If the surface runoff from the development is discharged into the Newtyle Burn, it will exacerbate flooding at the junction. Pumping the water away is unsustainable. Without a sustainable drainage plan, this development is likely to increase the frequency and severity of flooding at the culvert contrary to NPF4 Policy 18.

The flood risk assessment was carried out in January 2024, published in April 2024 and is already out-dated. In August 2024, the climate change allowance for this region was increased from 35% to 53. During storm Babet Newtyle the nearest rainfall stations saw 130mm whereas Stonyford in Angus saw 203mm. The flood extent might be a lot closer to the proposed building than shown here. (See Appendix 1 and https://www.sepa.org.uk/media/fxjgfjmf/climate-change-allowances-guidance.docx).

The flood extent in drawing 18518/21/002 is aligned with the fence between the proposed building and the Newtyle Burn. If the fence is protecting the proposed development from flooding, the site could be at risk of worse flooding, if the fence is breached. If the fence has not been included in flood modelling, then there is the potential that the fence could worsen flooding at the junction of Commercial Street, South Street and Knox Close. The fence probably falls under permitted development as it does not have planning permission. As suggested in the handling report (paragraph 4 page 7), it is reasonable to expect that anyone living in the proposed development might wish to build other structures which fall under permitted development e.g. sheds, gazebos or drainage which could impact the floodplain and would increase the rate of runoff into the Newtyle burn and thereby local flooding contrary to NPF4 policy 22.



Appendix 1 Storm Babet Rainfall



From: [redacted]
To:
Subject: Representations relating to Application No- 21/01000/FULL– DMRC - 2/25
Date: 26 February 2025 10:26:13
Attachments: Representations to Angus Council DRMC.docx

Dear Laura

Please find attached our representations relating to the above application for review by the DMRC.

I would be grateful if you could acknowledge receipt of this email.

Best wishes

James Robertson

Representations to Angus Council's
Development Management Review Committee
re Application for Review – Erection of Dwellinghouse in Garden Ground at Burnbank, 33 South Street, Newtyle, Mrs Maria Jemicz
Application No- 21/01000/FULL– DMRC - 2/25

Since April 2021, when the first (outline) planning application was made to build a dwellinghouse on this site, we have lodged objections to it and to the later (full) application dated 11th January 2022.

Throughout this four-year period we have been impressed by the professionalism, diligence, clarity, fairness and patience of the planning officers of Angus Council, and do not doubt that the decision to refuse permission to the application is based on solid reasons, as stated in the notice issued to the applicant on 9th January 2025.

Since we understand that the Development Management Review Committee will be given copies of our previous representations (made between February 2022 and November 2024) we do not wish to repeat what we said in those submissions. However, we feel it is important to emphasise some salient points.

In each of our submissions we have highlighted the risk of flooding on the site, which is adjacent to the Newtyle Burn. This watercourse has been the subject of several flooding events in recent years, usually during severe storms or after heavy, persistent rainfall: these events have led to flooding immediately to the south-west and north-east of the site. The site is part of the natural flood plain of the Burn and our view has always been that it would be unwise to erect a dwellinghouse upon it, with associated driveway, hard surfaced areas, introduction of sewerage and other utilities and related excavation work and disruption to tree roots during construction.

This is because all of the above changes would not only reduce the extent of ground available to absorb precipitation and/or floodwater naturally, but would also be likely to cause excess water to go elsewhere, for example onto South Street and/or its junction with Commercial Steet, where flooding is already not uncommon, as is already known to Angus Council.

There is also a high risk that any blockage incidents at the culvert that carries the Newtyle Burn under South Street and Kinpurnie Gardens would cause a backup of water affecting ground adjacent to and on the proposed site. The

maintenance of the culvert is presumably the responsibility of Angus Council and any problems of this kind would therefore have to be resolved by the Council.

Furthermore, meteorological evidence and forecasting overwhelmingly indicate that, owing to the effects of climate change, eastern Scotland, including this part of Angus, will experience heavier, longer and more extreme rainfall and storm events now and in the future. Existing flood risk assessment (FRA) data is in need of updating to take this into account, especially as it now looks almost certain that the average global temperature rise will not be limited to 1.5°C by 2050. Even using existing data, the FRA carried out on behalf of the applicant clearly shows that around 25-30% of the site would be at flood risk.

The Report of Handling (dated 7th January 2025) addresses these and other issues (such as overshadowing by trees, and the possibility of a future occupant taking steps to minimise flood risk that would not require planning permission but might increase flood risk elsewhere) and concludes that the proposal is contrary to National Policy Framework 4 (NPF4), Policy 14: 'The individual and cumulative impact on amenity associated with potential flood risk to a significant area of the garden ground and the overshadowing of much of the garden area by large trees is such that the proposed plot is not considered to provide a good level of residential amenity and the proposal does not comply with relevant policy in that respect.'

We agree with this and would add that, in light of the above, the description of the proposed dwellinghouse as an *eco-home* is misleading.

The site, formerly part of the extensive garden ground of Burnbank, is now a separately owned triangular plot, surrounded by a fence that has been erected on a flood plain, including on the eastern perimeter along the bank of the Burn. Any owner or occupant of a house built on the plot would have no rights over the Burn, therefore no responsibility for, but equally no control over, maintenance of the Burn's flow, clearance of debris, prevention of blockage of culverts etc. Such responsibilities will lie with neighbouring properties and with Angus Council. This separation of responsibility for the Burn's maintenance from the ownership of a new home built in such proximity to it, is another powerful reason why we think this is an unsuitable location for the erection of a new dwellinghouse.

Below is a photograph of the site, taken some years ago from 24 South Street directly opposite, prior to the erection of the fence. This photograph shows the extent of the flood plain and the former – potentially redeemable – nature of

the site. As the Report of Handling states, NPF4 Policy 17 ‘requires proposals to be suitably scaled, sited and designed to be in keeping with the area’ and we agree that the planning application fails on all these points.

We also believe that the application has been rightly refused as it is contrary to Angus Local Development Plan Policies DS4 and TC2, particularly the latter in that it fails to ‘provide a satisfactory residential environment for the proposed dwelling’ and would have an ‘unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure’.

James Robertson & Marianne Mitchelson
(26th February 2025)

From: [redacted]
To:
Subject: Planning application 21/01000/FULL
Date: 26 February 2025 23:54:31

Representations to Angus Council's
Development Management Review Committee
re Application for Review − Erection of Dwellinghouse in Garden Ground at
Burnbank, 33 South Street, Newtyle, Mrs Maria Jemicz
Application No- 21/01000/FULL– DMRC - 2/25

We considered the statements of January 9th 2025, from the planning officers' refusal of this planning application to be clear and succinct and we were surprised to find that this continues. That being so all our objections to date still stand.

We have lodged carefully considered and valid objections to this application, since its first publication in January 2022. As you will recall our concerns were based on community needs ie safety, community identity, local biodiversity and flood prevention.

As we have stated on several occasions, that we have serious concerns regarding,

(1) The damage/destruction caused by the groundwork required for the footprint of this proposed dwelling will have a negative effect on these mature trees and in turn a detrimental effect on the amount of surface water running off into a system already stretched.

(2) Not only this property flooding but also the serious impact it will have at the junction of South Street and Commercial Street and flowing into Kinpurnie Gardens.

This area is prone to flooding in heavy rain. (See previous photographs) As we all know these excessive weather patterns are predicted to increase in ferocity and frequency. So, we stand by our belief that the garden and trees contribute greatly to minimising flooding of our local environment and that this really is not a suitable place for a property to be built. As the burn ownership is no longer included in this part of the garden, there would always have to be a high level of trust and responsibility for the flood prevention maintenance by others.

Jonathan Fenwick and Astrid Leeson
26 South Street, Newtyle

From: [redacted]
To:
Subject: RE: Re: Erection of dwelling house in garden ground of Burnbanmk 33 South street, Newtyle. PH12 8UQ - Application No- 21/01000/FULL– DMRC - 2/25
Date: 28 February 2025 07:32:41

Dear Sir/Madam, Laura,

Please edit my response of ysterday with the following, which corrects spelling errors and an omitted word:

Re: appeal of Application No- 21/01000/FULL– DMRC - 2/25

I currently reside at The Gardeners Cottage, 31 South St, Newtyle, previously in Dalnaglack house, and I keep a wood workshop in the garage that is immediately adjacent to Burnbank.

This has given me a wide perspective, and living closer to Burnbank, an opportunity to better understand the amenity value of the property around this side of South Street, and to understand more of its historical context. The site of the old mill is the site of this gardeners cottage, stone lined race, weir sluices and old mill wheel foundation, all visible right in front of this cottage. The outflow from the old saw mill is the further beautiful lined stone race that heads through Burnbank. Burnbank and Milton are the next two properties that border South street, and at the corner with commerical street are met with the historic Newtyle Railway sheds, one of the oldest Railway sheds in the UK. This building has been recently tastefully converted and brought back into use as residential property in a manner that is praiseworthy in preserving and improving the amenity value of this valuable area of Newtyle. Furthermore, Sidlaw joiners have won an award in 2025, showing that the preservation of areas can go hand in hand with reasonable expansion in domestic property, and in line with council development plans. The opposite side of South street from Burnbank is the old bank building of Sidlaw house. This historical and aesthetic nature of this part of Newtyle were obvious and a key attraction when we were exploring Newtyle as a place to live and bring up our young family.

Against the backdrop of these historical buildings, and infrastructure, some of which predates the planned village (such as the mill works), are the gardens, including the front gardens of Milton and Burnbank. These gardens represent a key botanical pocket for biodiversity available to Newtyle residents on this side of Newtyle, and a small protected oasis against the surrounding more industrial farmland behind. These gardens are connected to the gardens of Dalnaglack and the Gardeners cottage via the Newtyle burn that traverses them, its origin coming from above the Glack. In contract to some recent media representation (in Jan 2025), the Burnbank garden was not deshevelled or unattractive. Indeed, the very opposite was the case. Our offer to buy Burnbank was turned down, but we were delighted to have made such an offer for a property with such a spectacular front garden. This garden could be readily appreciated as a view for local residents, and as an amenity for the many daily local walkers. When we visited, old long cultivated roses were growing high up and around the well kempt specimen trees. Red squirrels were notably centred in these same trees. I saw my first ever gold crests in the Burnbank garden. The garden was frankly a stunning asset, very well maintained indeed and we visited it often when deliberating such as significant purchase. It wasn't to be, but we somehow ended up next door in Dalnaglack.

In contrast to Burnbank, Dalnaglack had seen some neglect with very overgrown Leylandii

hedges, variably collapsing, or needing removed - the former resident was in her 100s when she died. Nevertheless, there is evidence of continued biodiversity clinging to the small pocket that the 3 consecutive gardens represent, and joined by the Newtyle burn. Our long term aim, whatever the outcome of consideration of this proposal, will be to aim to protect and enhance this biodiversity as much as we can. Sadly, there has been significant change to the Burnbank garden with clearing of trees, loss of specimen shurbs and roses, and disappearance of the red squirrels. Certainly some maintenance work was required in Burnbank, and there is no reason why this amenity cannot still be protected, and strengthened. This would seem much more unlikely if a new property were to be built in the front Burnbank garden, this area which does look quite unkempt in its current form.

One significant deteroriation in the amenity value directly to support the subsequent development proposal, has been the installation of a new fence in the flood plain of the Newtyle burn, directly along the burn between the proposed development and the original Burnbank property. While understandable to separate the original Burnbank building from the proposed development, it is nevertheless unsightly. Also of concern to me here is that this fence has been placed directly in the flood plain and without planning permission. Furthermore, as yet, despite some involvement from SEPA on the wider proposal, SEPA have not been invited to comment and have not commented on this direct flood plane disruption. This is also a particular concern to me (and was a concern to a former joiner), given that the garage in Dalnaglack is a long term woodworking workshop. The viability of this buiding, let alone its function, depends on drainage that surrounds the garage and which is present within the garage precisely to mitigate against the obvious risk of flooding. This drainage has long since historically drained into the mid Burnbank segment of the Newtyle Burn, formed from clay pipe work of at least a century in age. We are therefore entirely reliant for the workings and continued maintenance of this building on historic draining into the burn that divides Burnbank and the proposed new development. We are therefore highly concerned that this unpermitted fence represents an intervention in a flood plain that directly puts our property at risk.

Even before this current prpoposal, the former resident of Burnbank was acutely aware of the existing risk to the Burnbank property having come and blamed myself for Burnbank being flooded at the end closest to our garage. This interaction was witnessed by others, and the owner of Burnbank at the time blamed the drains that protect the garage (which ironically traverse Burnbank into the burn)! Therefore, I appeal to you to consider that before any new proposal is developed, it is critical that the maintenance of existing buildings is put first, incuding of the garage and cottage in Dalnaglack, the original Burnbank building and Milton, all of which would apper to have been put at risk by the placement of a significant fence, directly adjacent to the Newtyle burn and fully within the flood plane of the burn, which is not something that can be permitted without proper assessment, and which has not yet happened.

Therefore for reasons of amenity value, from biodiversity through to historical value, and to ensure the maintenance of existing properties, the proposal should be turned down, and the erection of the fence along the Burn within Burnbank should be subject to a proper planning approval process and SEPA assessment.

Yours sincerely,

Dr Jamie Wilson

Gardener's cottage,
31 South Street Newtyle
PH12 8UQ.
[redacted]

From: Jamie Wilson
Sent: 27 February 2025 23:52
To: [redacted]
Subject: Re: Erection of dwelling house in garden ground of Burnbanmk 33 South street, Newtyle. PH12 8UQ - Application No- 21/01000/FULL– DMRC - 2/25

Dear Sir/Madam, Laura,

Re: appeal of Application No- 21/01000/FULL– DMRC - 2/25

I currently reside at The Gardeners Cottage, 31 South St, Newtyle, previously in Dalnaglack house, and I keep a wood workshop in the garage that is immediately adjacent to Burnbank.

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The garden was frankly a stunning asset, very well maintained indeed and we visited it often when deliberating such as significant purchase. It wasn't to be, but we somehow ended up next door in Dalnaglack.

In contrast to Burnbank, Dalnaglack had seen some neglect with very overgrown Leylandii hedges, variably collapsing, or needing removed - the former resident was in her 100s when she died. Nevertheless, there is evidence of continued biodiversity clinging to the small pocket that the 3 consecutive gardens represent, and jpined by the Newtyle burn. Our long term aim, whatever the outcome of consideration of this proposal, will be to aim to protect and enhance this biodiversity as much as we can. Sadly, there has been significant change to the Burnbank garden with clearing of trees, loss of specimen shurbs and roses, and disappearance of the red squirrels. Certainly some maintenance work was required in Burnbank, and there is no reason why this amenity cannot still be protected, and strengthened. This would seem much more unlikely if a new property were to be built in the front Burnbank garden, this area which does look quite unkempt in its current form.

One significant deteroriation in the amenity value directly to support the subsequent development proposal, has been the installation of a new fence in the flood plain of the Newtyle burn, directly along the burn between the proposed development and the original Burnbank property. While understandable to separate the original Burnbank building from the proposed development, it is nevertheless unsightly. Also of concern to me here is that this fence has been placed directly in the flood plain and without planning permission. Furthermore, as yet, despite some involvement from SEPA on the wider proposal, SEPA have not been invited to comment and have not commented on this direct flood plane disruption. This is also a particular concern to me (and was a concern to a former joiner), given that the garage in Dalnaglack is a long term woodworking workshop. The viability of this buiding, let alone its function, depends on drainage that surrounds the garage and which is present within the garage precisely to mitigate against the obvious risk of flooding. This drainage has long since historically drained into the mid Burnbank segment of the Newtyle Burn, formed from clay pipe work of at least a century in age. We are therefore entirely reliant for the workings and continued maintenance of this building on historic draining into the burn that divides Burnbank and the proposed new development. We are therefore highly concerned that this unpermitted fence represents an intervention in a flood plain that directly puts our property at risk.

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approval process and SEPA assessment.

Yours sincerely,

Dr Jamie Wilson
Gardener's cottage,
31 South Street Newtyle
PH12 8UQ.
[redacted]

APPENDIX 4

APPLICANT'S RESPONSE TO FURTHER LODGED REPRESENTATIONS

Comment to representations

21/01000/FULL - Erection of Dwellinghouse, 33 South Street, Newtyle, Blairgowrie

20th March 2025

We have carefully reviewed the representations made on the above application and are encouraged by the level of support it has garnered. This support reflects our own experience and the positive reception of the application from the general public, as well as from fellow professionals and consultants, including those involved in its assessment.

Upon review of the representations, it is our opinion that no new issues have been raised that have not already been thoroughly considered and addressed in previous submissions. The concerns expressed largely revisit points that have already been exhaustively addressed and, as such, do not present any new grounds for reconsideration of the proposal.

We firmly assert that the proposals are fully compliant with relevant Planning Policies, as demonstrated through the provision of extensive supporting documentation and empirical evidence. We have consistently responded to the requests for additional information from the Planning Department, over several years, providing comprehensive reports to demonstrate that the development meets all policy requirements. This includes ensuring that the design of the proposed dwelling is in keeping with the character and scale of the surrounding area, and contributes positively to the local sense of place. The footprint, massing, and material choices of the dwelling have been carefully considered to integrate seamlessly with the existing development pattern and surrounding environment.

Flood Risk and Drainage

In regard to the concerns about flood risk, we have provided extensive evidence, including independent hydrological modelling, which has been reviewed and verified by SEPA (Scottish Environment Protection Agency). The hydrological modelling, based on the most up-to-date data and best-practice methodologies, has demonstrated that the proposed development will not increase flood risk in the area.

The modelling and flood risk assessment undertaken by independent specialists considered various flood scenarios, including the impact of surface water runoff, potential flood events from Newtyle Burn, and other contributing factors. As a result, the findings have confirmed that the site is not at significant risk of flooding, and the development will not exacerbate the flood risk elsewhere in the locality.

Additionally, the proposal incorporates robust mitigation measures that ensure any potential flood risk is managed appropriately. For example, the positioning of the house, as well as the grading of the land and driveway, has been carefully designed to ensure water flow is directed away from the building and surrounding properties. These measures will reduce the potential for surface water flooding and ensure that the development complies with flood risk management guidelines.

We also note that the site has undergone thorough investigation, and the hydrological modelling was carried out to the satisfaction of both our consultants and SEPA. Their positive review and confirmation of no increased flood risk offer additional assurance that the development will not contribute to flooding in the area, which is an important consideration in line with both local planning policies and national flood risk management strategies. This is a scientific and empirical process and not based upon opinion or conjecture, verified by the appropriate government appointed regulatory body.

Daylight and Residential Quality

In addition to flood risk, we would also like to address concerns regarding the quality of the living environment, specifically regarding daylight access to the proposed dwelling. We have undertaken a comprehensive daylight and sunlight assessment, which confirms that the proposed house will receive adequate natural daylight throughout the day.

The site and the positioning of the dwelling have been carefully considered to ensure that it is not overshadowed by existing trees or surrounding buildings. The design of the dwelling, including its footprint and positioning, respects the local context and ensures that the windows and internal living spaces will receive sufficient daylight to create a healthy and comfortable living environment. Furthermore, the orientation of the house and the careful positioning of key windows have been specifically designed to maximize the amount of natural light entering the interior spaces.

The proposal adheres to the principles of good design as outlined in the National Planning Policy Framework 4 (NPPF4). NPPF4 stresses the importance of creating developments that provide high-quality living environments, including the provision of adequate daylight and sunlight. The proposed dwelling will provide ample daylight for the residents, which is in line with the policy's requirements for residential quality and well-being.

Moreover, the proposed dwelling does not contravene any policies within NPPF4. The development respects the character and scale of the surrounding area, promotes sustainability through well-thought-out drainage and flood mitigation measures, and ensures that the new dwelling offers a high standard of living. This includes adequate natural light, appropriate privacy distances, and a design that enhances the local environment. Additionally, the landscaping and garden spaces have been designed to complement the existing landscape and provide attractive, functional outdoor areas that contribute positively to the overall environment.

Conclusion

In conclusion, the application aligns with all relevant planning policies and represents a significant opportunity to provide an attractive, well-maintained home that will positively contribute to the area. The flood risk concerns have been thoroughly addressed with comprehensive evidence, and we have demonstrated that the proposal will not increase flood risk or negatively impact the area. Furthermore, the proposed dwelling provides an adequate living environment, ensuring sufficient daylight access, privacy, and a high standard of residential quality in line with the requirements of NPPF4.

We respectfully urge the approval of this proposal, as it has been meticulously designed to meet the highest standards of both planning policy and residential quality. The development will complement and enhance the local character and contribute positively to the community, making it a valuable addition to the area and ensuring future upkeep and maintenance of the site.

Response to Report of Handling, dated 7th January 2025

21/01000/FULL - Erection of Dwellinghouse, 33 South Street, Newtyle, Blairgowrie

20th January 2025

Note: Original Report of Handling text included below in grey font, responses included in blue.

Above. Export from geolocated 3d model, proposed dwelling pictured top right.

New Build Dwelling
South Street, Newtyle

View 1. South, from burn.

Assessment Sections 25 and 37(2) of the Town and Country Planning (Scotland) Act 1997 require that planning decisions be made in accordance with the development plan unless material considerations indicate otherwise. In this case the development plan comprises: - - National Planning Framework 4 (NPF4) (Published 2023) - Angus Local Development Plan (ALDP) (Adopted 2016) The development plan policies relevant to the determination of the planning application are reproduced at Appendix 1 and have been taken into account in preparing this report. The ALDP was adopted in September 2016 while NPF4 was adopted in February 2023. Planning legislation indicates that where there is any incompatibility between the provision of the national planning framework and the provision of a local development plan, whichever of them is the later in date is to prevail.

The application site consists of garden ground forming part of the curtilage of an existing dwelling, Burnbank Cottage, located within the settlement of Newtyle. Policy DS1 in the ALDP states that for unidentified sites within development boundaries, proposals will be supported where they are of a scale and nature appropriate to the location and where they accord with other relevant policies in the LDP.

Both the ALDP and NPF4 encourage the reuse of brownfield land in preference to the use of greenfield land. NPF4 Policy 16 'quality homes' seeks to encourage, promote and facilitate the delivery of more high quality, affordable and sustainable homes, in the right locations. Policy 16 offers support to proposals for new homes on land allocated for housing in the LDP. It indicates that on land not allocated for housing in the LDP proposals for new homes will only be supported in limited circumstances where (amongst other things) the proposal is for smaller scale opportunities within an existing settlement boundary.

The proposed dwelling is sited within an existing settlement boundary (as outlined within the LDP) and offers a smaller scale opportunity; as such, the proposals are in compliance with this policy.

Policy 17 deals with new housing in rural areas and amongst other things, requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. Policy TC2 of the ALDP indicates that within development boundaries, proposal for residential development will be supported where the site is not protected for another use and is consistent with the character and pattern of development in the surrounding area.

The site is not protected for another use, has no current use and had a dedicated vehicle access and driveway as approved. The design proposals are of a high-quality nature, utilising high quality natural materials and as used extensively within this area. The scale and massing of the proposals are of the exact footprint of the majority of other houses on the street. The design of the proposals has been based upon a rural typology, of Scottish vernacular and designed to integrate fully with the surrounding housing stock.

Please refer to Nolli plans and pattern of development diagrams on the following pages. The proposals are suitably scaled (please refer to footprint diagrams of existing houses within the immediate locale) and are demonstrably in-keeping with those in the surrounding area. The proposals use stone and timber, as the houses adjacent and on the opposing side of the street, whilst the storey and a half scale is fully reflective of neighbouring properties. In our view it could not be reasonably stated that the proposals do not fit within the pattern of development or character and nature of the area, as such we would challenge this statement. It is our view that the proposals are well integrated with the pattern of development and character and nature of the area.

Policy TC2 also requires all proposals for new residential development to be compatible in terms of land use; to provide a satisfactory residential environment; to not result in unacceptable impact on the built and natural environment, surrounding amenity, access and infrastructure; and to include provision for affordable housing in accordance with Policy TC3 Affordable Housing.

The proposals have a modest footprint and we would argue could not be said to have an adverse effect on the natural or built environment. The proposals do not suggest the removal of mature trees or hedgerows. The surrounding land use is residential, consequently the proposals are compatible with prevailing land use. The proposals comply with all aspects of this policy.

NPF4 Policy 14 states development proposals will be designed to improve the quality of an area whether in urban or rural locations and regardless of scale. It indicates that development proposals that are poorly designed, detrimental to the amenity of the surrounding area or inconsistent with the six qualities of successful places, will not be supported. ALDP Policy DS3 indicates that development proposals should deliver a high design standard and draw upon those aspects of landscape or townscape that contribute positively to the character and sense of place of the area in which they are to be located, and the council's Design and Placemaking Supplementary Guidance provides relevant considerations when applying this policy.

The design proposals have been carefully considered over a significant gestation period in order to carefully integrate within the site context and surrounds. The design is of a high quality, considered architectural response. As has been extensively demonstrated throughout the course of the application process, the design proposals were conceived and developed using the six qualities of successful placemaking and are embodied in a bespoke (i.e. to the site constraints and setting), contextually responsive architectural dwelling.

Policy DS4 of the ALDP states that development will not be permitted where there is an unacceptable adverse impact on the surrounding area or the environment or amenity of existing or future

occupiers of adjoining or nearby properties, including impacts upon the availability of sunlight, daylight and overshadowing.

We note that it is accepted that the proposals do not overshadow existing properties, by virtue of the distance of the property (greater than 22 metres to the nearest property) and the limited scale of the proposals, being a storey and a half in height. As such the proposals would not provide a detrimental impact to neighbouring properties.

Policy PV7 of the ALDP and Policy 6 of NPF4 seek to protect and enhance woodland, trees and hedges that contribute to the nature conservation, heritage, amenity, townscape or landscape value of the area. NPF4 Policy 22 relates to flood risk and water management and the policy intent is to strengthen resilience to flood risk by promoting avoidance as a first principle and reducing the vulnerability of existing and future development to flooding. The policy states that development proposals at risk of flooding or in a flood risk area will only be supported if they are for: essential infrastructure where the location is required for operational reasons; water compatible uses; redevelopment of an existing building or site for an equal or less vulnerable use; or redevelopment of previously used sites in built up areas where the LDP has identified a need to bring these into positive use and where proposals demonstrate that long term safety and resilience can be secured in accordance with relevant SEPA advice. The ALDP states that the avoidance and mitigation of flood risk in new and existing development will be an important factor in determining development proposals.

Flood risk has been examined at great length and specialist independent hydrological engineering reports confirm that the proposals would not generate additional flood risk. SEPA also confirm within their correspondence that the proposals would not generate additional flood risk and have no objection to the latest revision of the design proposals. Flood concerns for the proposals have been negated and such should not count against a positive determination of the application. We would draw attention to the SEPA comments in this regard as the statutory consultee with jurisdiction of this matter.

The application site is not protected for another use, is located in a predominantly residential area, and residential development would be compatible with surrounding land uses. The principle of developing a site of this nature within a development boundary attracts some support from development plan policy.

As stated above by the Planning Officer, the principle of developing the site for a residential dwelling would be supported within the development plan policy. We would note that whilst the principle is acceptable, our design proposals were also deemed as acceptable, with no concerns raised as to the design of the dwelling. We were informed that the design of the dwelling was considered to be of a high standard, as is evidenced by the 3d visualizations included within the application.

The plot is of an acceptable size given the context of the area and the proposal would generally comply with recommended separation distances provided in council guidance. There is no reason to conclude the new dwelling would result in an unacceptable impact upon the availability of sunlight or daylight to neighbouring properties when assessed against relevant guidance.

We would agree with this statement.

An existing access would be utilised, and parking and waste storage provision would be provided within the site. The roads service has offered no objection to the development in terms of traffic likely to be generated by it and potential impacts upon the road network. The principle of the proposed

water supply and drainage arrangements are acceptable and Scottish Water has offered no objection. A flood risk assessment has been submitted which indicates an area of the site may be at risk from flooding from the Newtyle Burn which runs to the southeast of the site. The application has been amended to relocate the dwelling to a position outwith any area identified as being at risk from flooding. ***Both SEPA and the roads service in its capacity as flood prevention authority, have considered all available information and are satisfied the dwelling would not be at an unacceptable risk from flooding and the proposal would not increase flood risk elsewhere.***

There is no reason to consider that the proposal would adversely impact on infrastructure, having regard to the consultation responses received. In terms of the built and natural environment, the site is within an area with archaeological potential, but the archaeology service has reviewed the proposal and offers no objection.

The site is not within an area designated for natural heritage reasons, but it does contain a large number of mature trees. The submitted information suggests that no trees would require to be felled to accommodate the development (one tree is to be felled due to its condition) and that only a small root area of one tree would be affected by the house foundations. It is suggested that this could be protected during construction and the safeguarding of trees during the construction process could be dealt with by planning condition. ***There is no reasonable basis to conclude that the construction of a house on the site would give rise to unacceptable impact on the built or natural environment.***

We would agree with this statement

There are several aspects of the proposal which are compatible with development plan or could be made compatible subject to relevant planning conditions. However, development plan policy also requires development proposals to provide a good residential environment and level of amenity for prospective occupants of any dwelling, and it also requires development proposals to provide a high quality of design, contributing positively to the character and sense of place of an area and to fit with the character and pattern of development in the area.

In this case, the application site is located adjacent to a watercourse and in an area characterised by large trees that contribute significantly to the character of the village. While the proposed house has been carefully located such that it would not be at unacceptable flood risk, submitted information indicates that a reasonably significant area of the garden ground amounting to around 25-30% of the plot area, would be at flood risk.

The above statement is incorrect. Millard Consulting, hydrological engineers, have modelled the potential flooding scenario for a 1 in 200-year flood event, plus climate change, plus at 75% watercourse blockage – as the worst possible case event. It is a scenario that is modelled as occurring once in 200 years, *with* the addition of a significant theoretical blockage to the watercourse.

Even in this event the dwelling, driveway and external terraces are outwith the notional flood area and as such there could be no reasoning for the installation of temporary measures (as was SEPAs response in their recent confirmation of no objection to the proposals). This worst possible case event has been used within our plan information and plotted on our siteplan drawings. In a 1 in 200 Year flood event, plus climate change, plus 75% blockage scenario, the proposed dwelling and more than 80% of the amenity garden ground (1209m2) has been demonstrated to be outwith any flood risk - regardless of the most extreme notional scenarios. Of the 1530m2 site area only 287m2 of the garden ground, within the unusable banked areas and South East corner would be affected by the 1

in 200 year flood event; 18% of the garden ground, the majority of which is within the embankment area.

In addition, while the proposed house has been carefully positioned to minimise potential impact on existing trees, information submitted with the application demonstrates that most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year. Dappled shade provided by a woodland setting can add to the amenity of a garden area and can be regarded as a desirable feature. However, trees within the site and those close to it are large and have potential to give rise to significant shading.

We would refute the statement that *'most of the garden area would experience shadowing effects caused by the trees for substantial periods of the year'.* Please refer to the images below which illustrate the open nature of the site and the lack of shadowing. We believe the shadow extents have been picked up incorrectly in assessment by assumption that the RPAs (Root Protection Areas) included on the plan drawing reference the canopy size; this is not the case, RPA outlines are not an indicator of canopy size. Had the site been heavily populated by trees we would understand this claim; however, the actuality is a large open site bordered border in areas by tall, narrow pines with a small circumference canopy. We would suggest a site visit in this regard.

As has been extensively covered, within our design statement and correspondence, the trees do not unacceptably shadow amenity spaces. Shadows, by virtue of the sun position, move across the site at different times of the day. The majority of tall trees are positioned on the North elevation (bordering South Street) with some trees positioned to the West. Trees positioned to the North do not cast shadow into the site, rather they cast shadow to the North, by virtue of the sun being in a Southerly direction generally, moving from East to West from morning to afternoon. During the course of the day shadows will be cast into the site, predominantly by the trees located to the West. The line of trees to the West site boundary is a minimum of 28 metres from the dwelling. It could not be stated that these trees will unacceptably shadow the dwelling. Indeed, should the dwelling be bordered by other buildings, as is usually the case, the shadows cast into the site would be far greater. At all times of the day, and year, we have demonstrated that there would be an area of greater than 954m2 which is not within shadow. This figure is considerably in excess of Angus Council requirements for total amenity ground provision for new build dwellings (250m2). Shadows move dynamically; as with all gardens there will be areas that receive more sunlight at different times, our proposals include for different external terrace areas for enjoyment of the property. Should one be in shade in the early morning another area may be used.

Notwithstanding the above, we would draw attention to the following points with regards to trees on the application site:

1. It is of key importance with the climate change crisis that buildings have a degree of shading and solar control. Areas of shade should not be considered as 'bad'. Trees absorb heat through their leaves and provide shade, reducing the overall temperature of the surrounding environment, including the areas near buildings. This helps to combat the heat island effect and lowers the ambient temperature around the home, essential for the comfort of the occupants.
2. Seasonal Shading. Deciduous trees, which lose their leaves in the autumn (seen predominantly on the Western Boundary), are particularly beneficial because they provide shade during the hot summer months to amenity garden ground while allowing sunlight to reach the building in the winter when the leaves have fallen. This seasonal cycle helps

prevent overheating in the summer while taking advantage of solar warmth during the winter.

3. Assessment. New build developments are bordered by other buildings, which are in most cases taller and in all cases denser than trees, the degree of overshadowing would be higher. Had the proposed site been confined by existing neighbouring buildings, as is most often the case, the degree of shadowing would be far greater than the actual site conditions – as a large open site with a tree lined boundary.
4. Privacy and Noise Reduction. The trees to the periphery of the site (and hedgerows) act as natural barriers, offering more privacy from neighbours and reducing noise pollution, creating a quieter, more peaceful environment; as was the desire of our client.
5. Stormwater Management. We have proposed to retain all mature trees in order to absorb rainwater, reducing runoff and further lessening the likelihood of flooding or erosion to the site.
6. Whilst it may not constitute a material consideration in within the Planning policy, it *must* be noted and understood in assessment that it is a matter of personal preference as to whether the resident wishes to live with a view of surrounding trees and a degree of natural shading. In this case the client chose the site to build a dwelling precisely to have a degree of tree cover, to enjoy a natural environment setting and privacy. Many of our client's approach us with the same wish and are averse to recent new build developments which in cases include no mature tree cover or significant natural planting.

In summary, the limited shade from trees bordering the site reduces the direct impact of solar radiation on the building, lowers surrounding temperatures, and can significantly improve comfort levels inside, preventing overheating during hot weather. At all points of the year (and time of day) the area of amenity ground with no shading far exceeds the minimum requirements for useable garden ground (250m2). Notwithstanding the latter, nearly all new build developments are bordered by neighbouring buildings of a scale and mass far greater than boundary trees, thus providing a greater degree of overshadowing. Whilst we understand that assessment on this point is subjective, it is our view that it would not be reasonable to suggest that that the presence of trees on the site in itself offers reasoning for a negative determination.

Above, Images of the site in its current condition, taken following damage from Storm Babet.

The trees that lie outwith but adjacent to the site, particularly those that effectively form a line along the south and southwest boundary, which include trees in the region of 20m in height, would constitute a high hedge in terms of high ledge legislation. With that in mind, guidance provided in the 'Hedge Height and Light Loss' document published in 2005 by the Office of the Deputy Prime Minister (ODPM) would suggest that the trees in that area could be required to be reduced in height if an application was made under high hedge legislation. That may not be the current applicant's intention, but it does indicate that the trees, which are otherwise of importance to the character of the area could be susceptible to future pressure for lopping, topping, or felling.

The above could not be considered a credible point in assessment in our view, particularly relative to the specific circumstances of this of this application. This legislation would apply to *any and all* residential site(s) with trees that lie outwith but adjacent to that site; the same theory could be applied to existing properties on South Street and indeed any number of recently approved Planning Applications for the erection of dwellings within the Angus Council catchment.

The logical conclusion of this argument would be that *all* applications for new dwellings are assessed with a theoretical presumption that a future resident of the dwelling may undertake significant tree works outwith their own site. Clearly this could not be the case as it would lead to the majority of new applications dwellings being assessed with a negative outcome. If, however, this argument is targeted only at this application we would question the validity of the argument and indeed why it should be raised in this instance.

Notwithstanding the above, the key point is that an application would require to be made under high hedge legislation. Any theoretical/potential future works therefore would require to be submitted and assessed by Angus Council Planning, before they were undertaken. As such, the control of the tree height remains with the local authority. We would also remind at this point that the Planning Application is for a modest environmentally focussed eco home, with the intention of being rooted within a natural setting. Whilst we understand not a material consideration, there is no desire from the client to remove the trees, which indeed are a key component of her attraction to the site.

It is also a strong indication that the overshadowing associated with the trees could be regarded as adversely affecting the enjoyment of the domestic property which an occupant of that property could reasonably expect to have. The individual and cumulative impact on amenity associated with potential flood risk to a significant area of the garden ground and the overshadowing of much of the garden area by large trees is such that the proposed plot is not considered to provide a good level of residential amenity and the proposal does not comply with relevant policy in that respect.

Our response is as detailed within the above statements, it is not reasonable in our view to suggest that the trees lining the site would "*adversely affect the enjoyment of the domestic property which an occupant of that property could reasonably expect to have".* Conversely it is the trees lining the site, the sense of tranquillity, of nature and of dappled light which are key drivers in the client's desire for future enjoyment of the site. Notwithstanding, the result area unaffected by shadow is in excess of Angus Council standards for usable amenity ground.

New Build Dwelling
South Street, Newtyle

View 2. Looking North to South Street

New Build Dwelling
South Street, Newtyle

View 4. Looking to living spaces and master bedroom

Above: Visual of proposed garden area and external terrace

Above: Site photograph (October)

Above: Site photograph (October)

It would not be unreasonable to anticipate that occupants of the property might take steps to minimise flood risk to the garden area, and that might include temporary works that would not require planning permission. Such works might increase flood risk elsewhere.

It has been confirmed by SEPA, as the independent specialist regulatory body, that the proposals would not increase flood risk. SEPA have not provided an objection and indeed have explicitly detailed in their statutory response that additional flood risk mitigations would not be required, we would refer to their public response in this regard. We do not believe it a credible statement to suggest that temporary measures to prevent may be adopted when the qualified regulatory body states in defined terms that this is not the case, particularly when that regulatory body has undertaken their own investigations over a 12 month period, with significantly robust theoretical flooding scenarios. Millard Consulting, hydrological engineers, have modelled the potential flooding scenario for a 1 in 200-year flood event, plus climate change, plus at 75% watercourse blockage – as the worst possible case event. It is a scenario that is modelled as occurring once in 200 years, *with* the addition of a theoretical blockage to the watercourse.

Even in this event the dwelling, driveway and external terraces are outwith the notional flood area and as such there could be no reasoning for the installation of temporary measures (as was SEPAs response in their recent confirmation of no objection to the proposals). This worst possible case event has been used within our plan information and plotted on our siteplan drawings. In a 1 in 200 Year flood even, plus climate change, plus 75% blockage scenario, the proposed dwelling and more than 80% of the amenity garden ground (1209m2) has been demonstrated to be outwith any flood risk - regardless of the most extreme notional scenarios.

Similarly, and as discussed above, given the preliminary calculations that have been undertaken using the hedge height and light loss guidance, it is not unreasonable to anticipate that future occupants of the property might seek to have works done to trees within or adjacent to the site to reduce the impact of overshadowing.

As outlined above, such works would first require permission to be granted by the local authority, whom remain in control of the future works could refuse permission at will. We also note that a condition could also be incorporated within the Planning Permission, thus negating any potential concerns.

The submitted tree survey recognises that many of the trees are of significant value and any such work would be likely to have a detrimental impact on the character of the area.

The proposals do not suggest the removal of mature trees, as is evidenced throughout our supporting documents.

The constraints associated with flood risk as well as root protection zones and overshadowing associated with trees limit the developable area of the site and has resulted in amendment to the position of the proposed building during consideration of the application. In particular, the house was initially proposed closer to the burn and therefore further from South Street. However, following revision to address flood risk, the proposed house would now be positioned closer to South Street and it would be visible from the street.

Following the modelling of the worst case scenario, 1 in 200 year flood event, plus climate change, plus 75% watercourse blockage scenario, the footprint of the dwelling was moved marginally further away from the watercourse as a best practice approach, also negating any possible flooding concerns. The footprint of the house in the previous proposals was 6.5m to the burn, the current

proposals are 8.3m to the burn. We consulted the Planning Department at the time of this repositioning and concerns were not relayed to us (as is evidenced in correspondence) with regards to being marginally closer to the street edge.

We would note that the dwelling was not designed to be invisible from South Street; the marginal shift in positioning could not convert the street view from being invisible to visible, rather, it would always have been visible. In having a degree of presence and visibility the dwelling assists to reinforce an edge condition and provides a carefully considered active street frontage. Please refer to the massing visuals attached from the geolocated 3D model illustrating views from the street. As can be seen from these drawings, the proposed dwelling integrates well with the existing context in terms of mass, scale, positioning and high-quality design. It is not of an inappropriate scale nor or of an anomalous positioning. We would also note that the driveway and vehicle access for the house, in this position, were granted Planning Permission in 2024, with the works now complete.

Above: View as proposed from the existing vehicle entrance at 33 South Street. Top of roof visible, reflective of other neighbouring properties in the street in terms of massing and orientation.

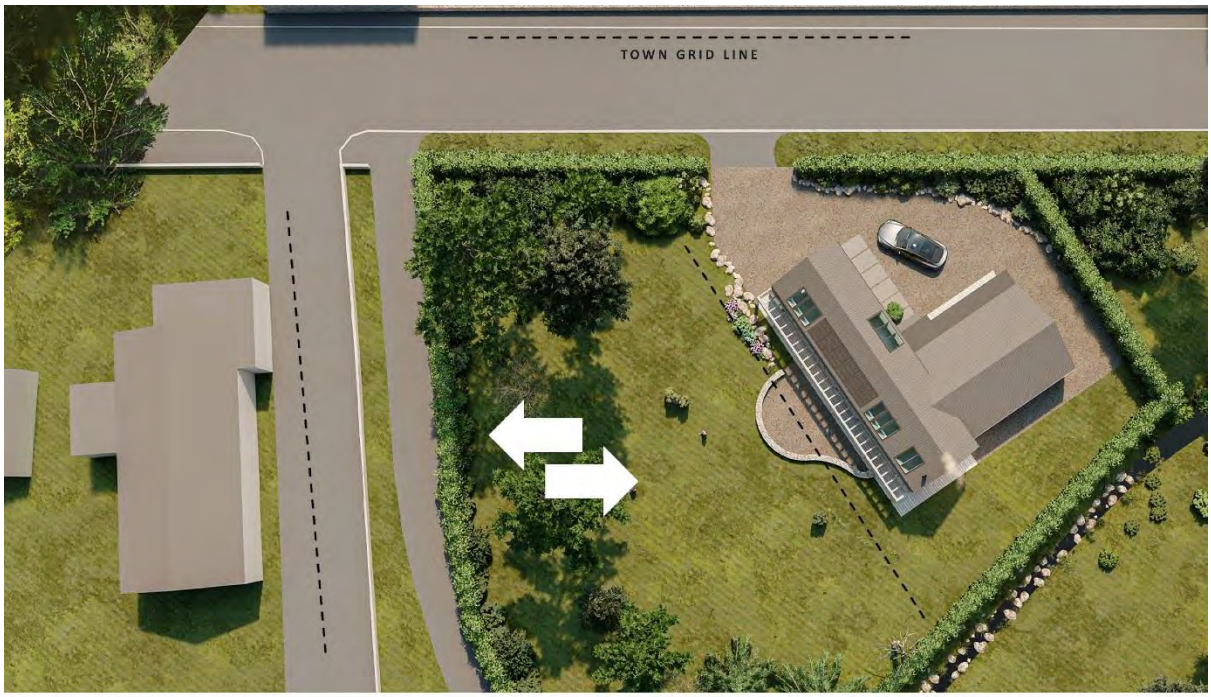
Above: View as proposed from the from 26 South Street. Massing can be clearly read with neighbouring number 29a. The house is set back from the street by an appropriate distance to allow privacy and reflective of the pattern of development of the area.

Above: View as proposed opposite new vehicle entrance. A modest ecologically sensitive home on this site would allow the required ongoing maintenance of the site, ensuring a positive character to the immediate locale, as attractive, maintained gardens- rather than overgrown scrubland (and the issues with littering/flytipping/loitering and security that would entail).

The L-shaped plan and orientation of the proposed building would be such that both ridges of the roof would be set an angle relative to the carriageway of South Street. However, Newtyle is a planned village, and it generally follows a rigid grid iron street pattern. Buildings are typically orientated such that their ridges run parallel or at right angles to the adjacent streets.

Please refer to the Nolli Plan and pattern of development diagrams provided. Newtyle has developed organically over a long period of time, with many houses and streets which do not conform to a rigid grid pattern, providing a degree of variety and richness of identity. Since 2021 (the time of submission of the Planning Application) WPA have not received any comment with regards to orientation from the Planning Department or the L shaped plan. The proposals have been orientated to align exactly with the existing house at Burnbank and with a roof pitch format matching that of the neighbouring 291. The proposed dwelling also aligns with the watercourse. The orientation and plan of the house has been carefully considered to allow a degree of privacy to the buildings adjacent, whilst establishing a compact and well-integrated driveway (Planning Permission has been previously granted for this); consequently the main entrance is in view from the public facing elevation, yet a degree of privacy is maintained to the public areas to the South. These moves assist in screening and softening the visual appearance of the dwelling, already modest in scale and form. Please refer also to the proposed street view visualizations below. The proposed dwelling is set back from the road by 8.4m, which is exactly comparable to the neighbouring property of 29a, set back by 8.4 metres.

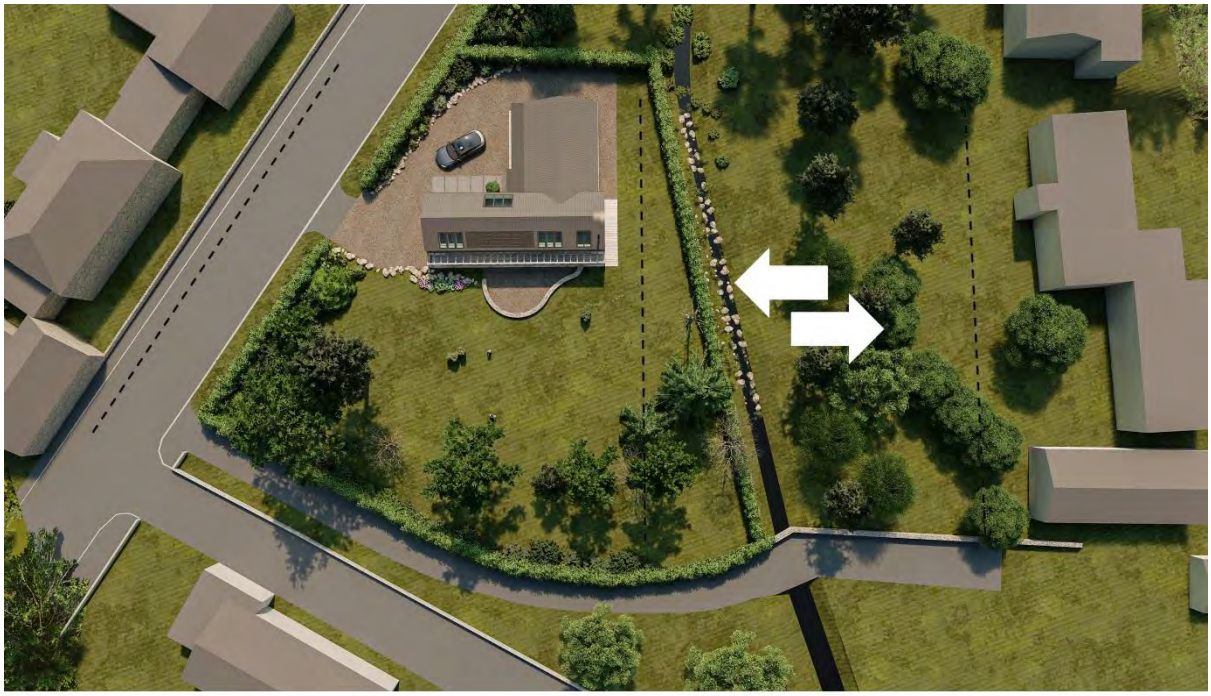
As can be seen from the diagrams, the dwelling fits with the pattern of development in the area and is clearly read with the existing building of Burnbank and screened by hedgerows.



Above: Diagram illustrates the orientation and distance from the street edge relative to the neighbouring property of 29a. It is this property, on this side of the street, which the proposals will be read with. It is our view that this is very much in-keeping with the pattern of development in the area.

While existing properties at Burnbank and Milton depart from that pattern, they are set back from South Street by significant distance and landscape planting reduces their visibility from the street.

The current sizeable and undeveloped garden areas associated with those properties that sit adjacent to South Street add to the character and appearance of the area. The orientation of the proposed building relative to the street would depart markedly from the character of the area, and development of the existing woodland garden area would erode the chatter and established pattern of development in the area.



Above: Diagram illustrates the orientation and distance from the street edge relative and neighbouring properties. The proposals read in alignment with both the existing properties to the South East (Burnbank) and neighbouring 29a. The footprint of the house is directly comparable to near all houses lining South Street.

Above: Nolli Plan illustrates that the pattern of development is not confined to a strict grid arrangement and that the proposals offer a continuation of the South side of South Street.

As per our responses above (and drawings illustrate) the proposed dwelling is positioned back from the road by some 8.4 metres and of a type and scale matching existing properties to South Street. South Street has a mix of roof pitch orientations along the length of the street. It is our view that it could not be reasonably stated to be 'marked departure' from the character of the area, as has been demonstrated. That the proposed footprint follows the angle of the nearest property (and the one to which it will be read with, being on the same side of the street) we do not feel to be a valid reason for a negative determination of the Planning Application, particularly when the difference in angle to other neighbouring properties is slight, as can be seen throughout the village.

Case 1 – Dundee Road

Dundee Road and South Street, in close proximity to the application site. Many of the existing houses are angled from the street edge whilst the street does not follow a grid form. The dwellings are set back from the street in order to provide a degree of parking and privacy, the degree to which they are set back is comparable to the proposals presented here.

Case 2

Dunarn Street, some 250m from the application site. The majority of the houses do not follow a grid from and many are not aligned to the street edge; the pattern of development illustrates a rich sense of variety and layering, establishing an identity and sense of place, rather than adhering to a notional arbitrary grid form.

Case 3

Kinpurnie Gardens – recently constructed new build development. This recently approved development, some 200 metres from the application site does not conform to any suggested rigid grid plan form, similarly the dwellings are not aligned in the majority of cases perpendicular to the street edge. In our view it could not be reasonably stated that the proposals presented here deviate from the pattern of development or character of the area

Case 4

Bulb Farm Road and Commercial Street, some 300-350m from the application site. Again, buildings are not aligned to the street edge, have L Shaped plan forms and are set back some distance from the street edge for privacy and accommodation of car parking.

Case 5

Smiddy Road, some 250-300m from the application site. The street does not conform to a rigid grid pattern and all nearly all houses vary to a degree in orientation from the street edge, as opposed to an estate type grid pattern; again, a degree of identity, character and interest is generated, with a reading of historical layering.

It would not respect and respond to the local context where this makes a positive contribution to the existing character of the area and it would not integrate with the surrounding development pattern as required by the council's design guidance. The proposal is not compatible with relevant development plan design policies. In addition, Newtyle is in a rural area as defined by the Scottish Government's Urban Rural Classification 2020. As such policy 17 of NPF4 is relevant to determination of the application. It requires proposals to be suitably scaled, sited and designed to be in keeping with the character of the area. The application is not consistent with that requirement for the reasons set out above.

We have demonstrated, at considerable length, that the proposals would are suitably scaled, sited and designed to be in keeping with the character of the area

1. Scale. The proposed footprint of the building is 141m2.

The footprint of neighbouring buildings (measured from OS Data) is as follows:

- Number 29 – 168 m2
- Number 24 – 148 m2
- Number 26 – 142 m2
- Number 20- 130m2
- Number 29 – 155 m2
- Number 18 – 135m2

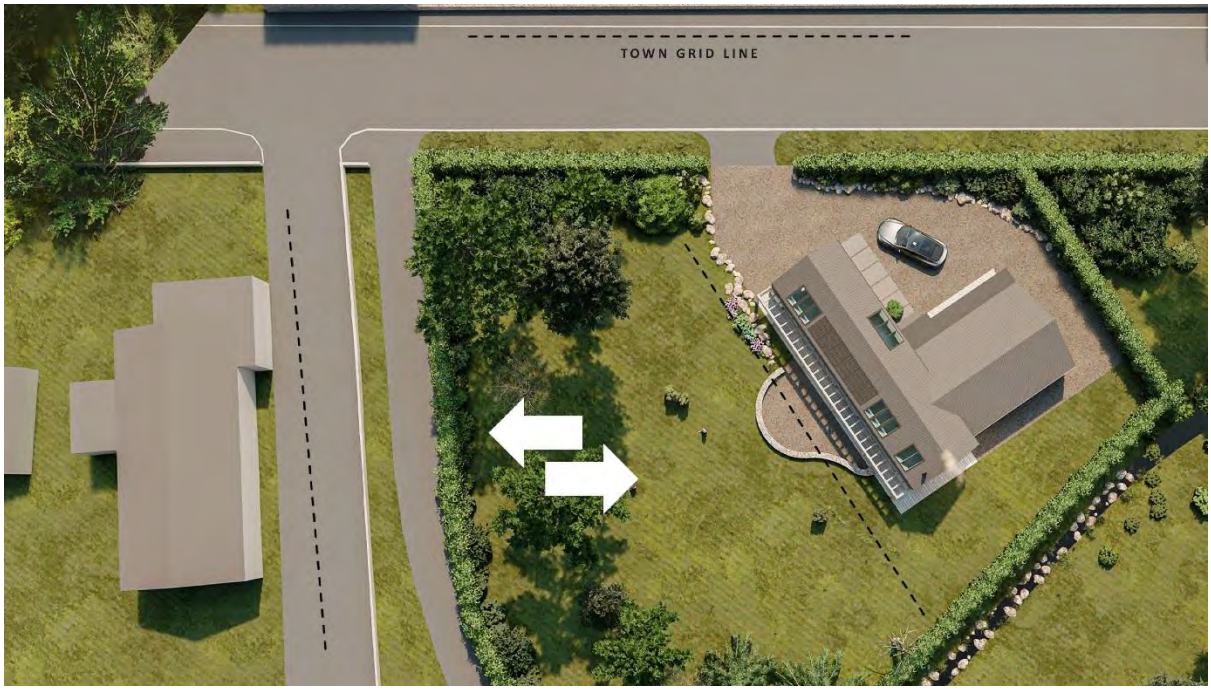
Weighted average (878 / 6) – 146m2. The proposed footprint is of a scale exactly matching the pattern of development of neighbouring properties and immediate locale and could not be reasonably stated to be otherwise.

2. Massing / form. The form of the dwelling is of a modest storey and a half scale, with the highest ridge point 6.8 metres from adjacent ground level, the same massing as all other storey and a half properties lining South Street. There are also a number of 2 storey properties lining the street, however the majority are of one and a half storeys. The massing is therefore exactly comparable to nearly every existing dwelling on the street and could not be stated to be inappropriate.

3. Design. The design of the proposals is of a high quality, considered form of the Scottish vernacular, with a classic pitched roof and L shaped building form seen throughout the village and indeed across the Angus area. None of the form(s), design language or proportioning is at odds with what is seen within the immediate area. The design is bespoke, carefully considered to capture views to areas of the garden, ensure privacy to bedrooms and capitalise on South sunlight, with private external terraced areas. It has been designed exactly and only for this site.

   We have received no compliant or concern with the architectural design of the proposals during the course of the application from the Planning Officer, we were informed that the architectural design was of a high quality and a point of concern. The materials are natural, of a high quality and as seen thought the immediate area; the design has been constructed to be comprehensively appropriate to the rural setting and we would robustly challenge an argument to the contrary, seeking evidence as to how that could be the case.

   The appearance of the building is of a restrained pallete of materials – natural stone, natural timber, and standing seam slate coloured metal cladding; it is of a modest scale and comprehensively rooted within its specific setting. The design uses materials, massing, scale, architectural forms and detailing as seen within the immediate area; as such we would request the assessment in this regard is reconsidered.



While the proposal is compatible with some aspects of development plan policy, it is not consistent with those that require a new house to provide a good living environment, or with those aspects that require it to be in keeping and contribute positively to the character and sense of place of the area. In overall terms, the proposal is contrary to the development plan. In addition to development plan policy, it is necessary to have regard to other material considerations. In this case those are the information submitted in support of the application, and the comments submitted both in support of and in objection to the proposal. The information submitted in support of the application has been considered and taken into account in the assessment set out above. While that information suggests that the proposal complies with relevant policy, that position is not supported for the reasons set out above. There is nothing in the supporting information that justifies approval of the application in circumstances where it is contrary to development plan policy.

Throughout the course of the application determination process, since 2021, requests have been made by the Planning Department for additional information from ourselves and various consultants in order to provide additional information to demonstrate compliance with policy. We have, in every case, actioned the requests for additional information and in cases provided significantly extensive reports to demonstrate this compliance. In each of these cases we have appropriately and empirically demonstrated compliance; consequently, we would refute that the proposals are contrary to development plan policy and would argue that it has been evidenced as such.

The representations submitted in support of the application are noted. However, for the reasons set out above it is concluded that the proposal is contrary to development plan policy. The identity of the applicant and whether they intend to live in the property as a long-term residence is not a material consideration. The representations submitted in objection to the proposal support refusal of the application in so far as they raise concern regarding conflict with the character and pattern of development in the area, and the quality of the residential environment that would be created due to flood risk and overshadowing from trees. However, it is relevant to note that while there may be other areas in Newtyle allocated for residential development, that does not preclude the grant of permission for additional small-scale residential development. Lack of historic or future maintenance

of the existing trees or the Newtyle Burn is not a matter material to the consideration of this application. The information submitted in support of the application is considered adequate to allow proper determination of the application. Neighbour notification has been undertaken in accordance with relevant statutory requirements. In conclusion, while aspects of the proposal attract some support from the development plan, the erection of a dwelling on the site in the manner proposed does not comply with the policies of the development plan for the reasons set out above. It would not be in keeping and contribute positively to the character and sense of place of the area and it would not provide a good living environment as its garden area would be subject to flood risk and significant overshadowing from trees that are otherwise important to the townscape of the area. Account has been had for all information and representations submitted both in support of and in objection to the proposal. However, the application is contrary to the development plan and there are no material considerations which justify approval of planning permission contrary to the provisions of the development plan.

In conclusion, we strongly believe that the proposal aligns with the development plan and has demonstrated compliance with all relevant policies, as evidenced by our extensive supporting documentation and consistent cooperation with requests from the Planning Department and statutory consultees. The design of the dwelling respects the character and scale of the surrounding area, with careful consideration given to both the architectural design and the site's specific conditions. The dwelling's footprint, massing, and material choices are in keeping with the character and nature of the locale and existing development pattern of development. The positioning of the house and driveway addresses both flood risk and privacy concerns.

Furthermore, we have provided robust evidence confirming that the proposed development will not increase flood risk, with independent hydrological modelling and extensive investigation. The proposed home has been designed to blend harmoniously into the community, contributing positively to its character and providing an attractive, well-maintained garden that complements the existing landscape.

Some points to consider re the proposed planning appeal at 33 South Street Newtyle.

Burnbank and the proposed plot was an established previously ***neglected*** gardens. The picture submitted by Marianne and James Robertson in stage 5 was taken within the 5 year period that I lived there and this is confirmed by my garden furniture and my car being in the picture. I worked extremely hard and spent in excess £10k on this garden to develop it again into a pleasant biodiverse space again after being neglected for the prior ten years. In the five years that I lived at Burnbank the only trees taken down were ones that were deemed dangerous by tree specialists and a couple of trees came down due to storm damage which has made the plot a light and pleasant living space. In keeping, I have insisted on maintaining trees due to enjoying them and the need for shade in particular in the summer with a potential south facing house. The new driveway also adds a large amount of light into the plot where the large beech hedge was placed. I would urge any officials to visit the site to see how pleasant the site plot is this would ensure a factual impression re overshadowing etc. Given the requirement of housing in Newtyle at present.

The proposed site was neglected and overgrown and plants trees and shrubs were in a dead or dying state due to the lack of light and general neglect. This is also evidenced in the Community Council Minutes below.

'Issue with large trees in the front garden of a property in South Street, where there is an absentee owner. The crow population has increased, and trees are also blocking light. Every windy day there are broken limbs and trapped debris falling from these trees' (anguscommunitiescouncils Newtyle & Eassie CC minutes **May 2019**).

The street side front garden was being used as a piece of waste ground. Where individuals would allow their dogs to foul (CC minutes Nov/Dec2017) and attracted anti-social behavior especially in the dark winter nights (alcohol bottles and general

rubbish is left there by individuals that have entered the ground) that has continued on. Without some sort of development on the site it could easily return to the same condition prior to my purchasing Burnbank. As you can see from the pictures that any potential build would hardly be seen from street side.

In 2020 my husband died, we had always thought that as we got older the plot/street side gardens could be developed into a retirement house for both of us. In 2021 I decided to apply for planning permission to build a small passive house for myself. I eventually decided to sell the main house in 2024 and continue with my pursuit of planning for the plot of land to build a small passive house and this is still my ambition. My experience of managing a garden the size at Burnbank was difficult due to a lack of gardeners willing to take on such a large garden. This may explain the neglected state of the gardens when I moved in. The design of the proposed build was open and we listened to council planners. Dunarn 29 South Street (next door to Burnbank) built a modern bungalow (29a) in its large garden around 20 years ago with no objections that I am aware of.

Dunarn and now Dunarn cottage did a similar project appox. twenty year ago. See picture below. Picture 1

The new proposed build at 33 South Street is similar to the garage that the new owners of Burbank have built see below. It appears that the new proposed build would fit into the existing environment at 33 South Street. Rather than take away could actually enhance the new garage. From the start we have worked together with the Planners and were happy to adapt the design to what they thought would be in keeping with the environment. I would again urge any officials to visit the site to see the area in an effort to reduce subjectivity. See Burnbank's new garage Picture 2

The Community Council when in existence had been alerted to this proposed planning proposal and has raised no objections to it.

It has been disappointing to see the vicarious comments made by the objectors which time has proven to be untrue and their ever changing narratives after each consultants report negated any misinformation portrayed.
These same objectors continue to, present incorrect facts and harass myself and any workmen that are doing maintenance on my land to the extent that [redacted] are on a final warning by the Scottish Police Force for interfering with my home and harassment. These objectors are all close friends with each other and in addition friends with [redacted] this friendship was only acknowledged in 2024 highlighting there was a conflict of interest that had not been highlighted prior to 2024.

In response to the comments made by James Robertson and his wife Marianne:-
I would like to confirm that the burn has never flooded at Burnbank and this is confirmed by SEPA and previous occupants the Walton family who still live in the village and lived at Burnbank since the 1940's. In my opinion this is mainly due to the plot side being appox. 2 meters higher than Burnbank side of the house. Once again flooding has not ever been an issue to date at Burnbank the sides of the burn are dry stone dyked which also aids the boundry between the burn and land. Thus it would also benefit the committee to see this as they would understand clearly that the plot is uphill and water runs downhill.

In response to Johnathan Fenwick and Astrid Leeson re ground work:-
The intention is to follow minimum damage and be eco- friendly in the build by using an integrated raft foundation method. Re flooding once again it does not matter how many times it is stated. It has never flooded at Burnbank in the main house or proposed plot.

In response to Jamie Wilson:-

The proposed plot was little more than a piece of waste ground with some poor lawn and plants. The plot area was the most overgrown in the gardens and required cutting back just to gain access.

As the trees are remaining this will not change amenity value.

As Mr. Wilson is probably aware the wildlife and biodiversity environment at Burnbank is co-dependent on the surrounding properties in the village and is constantly changing. I have chosen to keep the non-indigenous trees because they may actually increase the biodiversity of wildlife (Schlaepfer 2018). There are no bats or evidence of any protected species at Burnbank.

Jamie Wilsons property Dalnaglack drainage pipes are connected to the burn evidenced below:-
'This 5 bedroom house in Blairgowrie, Perthshire, PH12 is now on the market. ... As the main focal point there is a beautiful pond, fed by the Newtyle Burn' (Knightfrank 2017).
As a result if not maintained can cause flooding. He is correct in saying I complained to him about the flooding of his land was impacting mine when he poked a drain with a stick the flooding subsided. More about lack of maintenance than climate change.

The biodiversity of wildlife at Burnbank has increased by taking a neglected garden to being a restored garden in all gardens apart from the proposed plot. We are mindful of the biodiversity and have been replanting continuously for the last five years with as many different varieties that attract different types of wildlife. In addition we have installed birdfeeders, compost heaps, rotting log pile and introduced lavender to name a few actions. The fruit trees are again bearing fruit and this will further increase the biodiversity. The proposed site is outwith the existing trees and hedges and the proposed site is not a wildlife idyll rather previously been considered a neglected site see (CC minutes May 2019). The Biodiversity and the general wildlife should continue to provide habitat and nesting.

It is also simply incorrect to say Burnbank is the last large garden in Newtyle. Next door we have Dalnaglack 31 South Street whose garden is 3 times larger than Burnbank and Mundamalla to name a few.

Historically the houses of South street and Newtyle are varied and mixed. Some older than others and I could have stayed in Burnbank but felt that a family could benefit from the main house and building a energy efficient house would add to the housing stock in Newtyle.

In summary I would be would like the appeal committee if possible to visit the site and they can see the potential of another quality energy efficient house in the Newtyle. Where housing is in short supply in particular for the retirement age group. I returned to Angus where I was brought up and raised and enjoy living in Newtyle in my retirement and would like to stay.
The proposed plot was an eyesore before I bought the property and required a lot of maintenance to bring it back to the condition that it is in at present. The potential overshadowing is negligent in my opinion due to the size of the plot and the way it stands makes it a desirable plot. This house could potentially blend with the new garage at Burnbank and improve the overall look due to this land being occupied rather than a neglected land.

Dr Maria Jemicz