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CONSULTING CIVIL & STRUCTURAL ENGINEERS

FLOOD CONSEQUENCE ASSESSMENT (FCA)

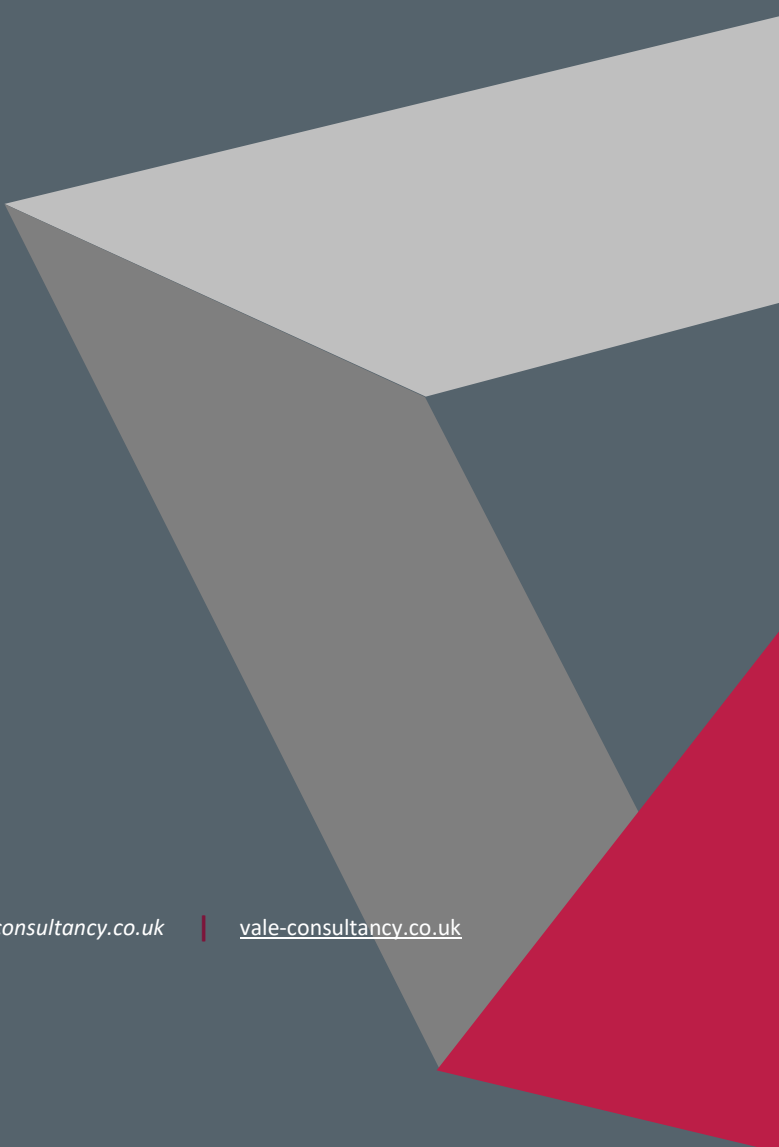
Canal Side Yard,
Canal Road,
Neath,
SA11 1 LJ

Prepared for: Sami Hussam
Project Ref: 23176 – FCA - 05

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All the Natural Resources Wales (NRW) mapping data used is under special license. Data is current as of **August 2026** and is subject to change.

The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. The study provides no guarantee against flooding of the study site or elsewhere, nor of the absolute accuracy of water levels, flow rates and associated probabilities.



1 INTRODUCTION

1.1 Background

Vale Consultancy has been instructed by Sami Hussam (*The Client*) to prepare a Flood Consequences Assessment (FCA) report to accompany a planning application for the proposed development located at Canal Side Yard, Canal Road, Neath, SA11 1LJ.

The assessment has been undertaken in accordance with the requirements of Technical Advice Note 15 (TAN 15) dated March 2025 and the Local Development Plan (LDP).

Natural Resources Wales (NRW) and Neath Port Talbot County Borough Council as the acting Lead Local Flood Authority (LLFA) have been consulted to inform the FCA.

Much urban development in Wales has taken place alongside rivers and in the coastal plain. It is therefore inevitable, despite the overall aim to avoid flood risk areas, that some existing development will be vulnerable to flooding and fall within areas prone to flood risk. Some flexibility is necessary to enable the risks of flooding to be addressed whilst recognising the negative economic and social consequences if policy were to preclude investment in existing urban areas, and the benefits of reusing previously developed (*Brownfield*) land. Further development in such areas, whilst possibly benefiting from some protection, will not be free from risk and could in some cases exacerbate the consequences of a flood event for existing development and therefore a balanced judgement is required.

Redevelopment and regeneration of existing urban areas can help them to adapt to climate change and the potential impact on flood risk. For instance, measures can be incorporated to ensure that they are more resistant and resilient to flood risk and any associated potential consequences, thus; providing betterment over the existing arrangement in accordance with the principles of Sustainable Development which can be defined as;

‘Meeting the needs of the present without compromising the ability of future generations to meet their own needs’.

This FCA is in support of a Planning Application for the construction of a portal frame unit.

Justification

The proposed development which includes the construction of a portal frame unit is typical and in keeping with the surrounding land use occupancy, and will enable the retention, enhancement, maintenance and usage of the site.

There is extremely limited scope for alternative development at the site (if any).

The proposals are in alignment with the LDP and is deemed to be in compliance with TAN15.

2 SITE DETAILS & PROPOSED DEVELOPMENT

2.1 Site Location

The approximately 2736m² is located on Canal Road, National Grid Reference (NGR) SS747973 (274798E, 197317N). See Figure 1 below.

The site is bounded by factory buildings to the north and east, the A465 to the west and a small woodland area and the A474 to the south of the site.



Figure 1: Site Location Satellite Imagery Plan

2.2 Existing Site

The existing site is comprised of an industrial yard with a warehouse building.

Refer to Appendix A (Existing Plans).

2.3 Proposed Development

The proposal relates to the construction of a new warehouse unit adjacent to the existing building. The proposed unit will be physically connected to the existing building via a covered walkway at first-floor level.

NPPF indicates that buildings used for general industry, storage and distribution are classified in the 'Less Vulnerable' to flood risk category.

The existing site is part of and therefore directly associated to the proposed portal frame unit. Therefore, the proposals do not constitute an increase in vulnerability classification, neither an intensification of use.

Refer to Appendix B (Proposed Site Plan).

Figure 2 below outlines the existing and proposed ground floor footprints at the site.



Figure 2: Existing and Proposed (Ground Floor Footprints)
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2.4 Surface Waterbodies in the Vicinity of the Site

The River Neath is located circa. 20m and the Tennant Canal is located circa. 138m to the west of the site.

The Neath Canal is found approximately 15m to the east.

The River Clydach is located circa. 0.9km to the west.

The River Neath and Clydach are both classified as main rivers. If you want to carry out works in, over, under or near a main river, or in a flood plain or flood defence (including a sea defence), you will need to apply for a Flood Risk Activity Permit.

NRW carry out regular maintenance, improvement or construction work on main rivers in Wales to manage flood risk.

The Gnoll Brook is located approximately 800m east / southeast from the site. The ordinary watercourse does not pose a flood risk to the site or proposed development over its 75-year lifetime expectancy.

The predominant and principal source of flood risk to the site and proposed development is the **River Neath**. The risk from the River Neath is tidally influenced.

2.5 Topographic Levels

In the absence of a topographic survey for this site, LiDAR data has been used to develop a Digital Terrain Model (DTM) of the site and surrounding area. **Refer to the DTM Extract, illustrated in Figure 3 below / overleaf.**



Site Levels are in the region of 5.49 - 7.88mAOD, generally falling in a south-westerly direction. It must be noted that the lowest ground levels are along the sites northwestern boundary which align with the presence of the southeastern bank of the River Neath.

The ground levels in the area of the proposed warehouse range between 6.53 – 7.63mAOD. This is a difference of 1.10m.

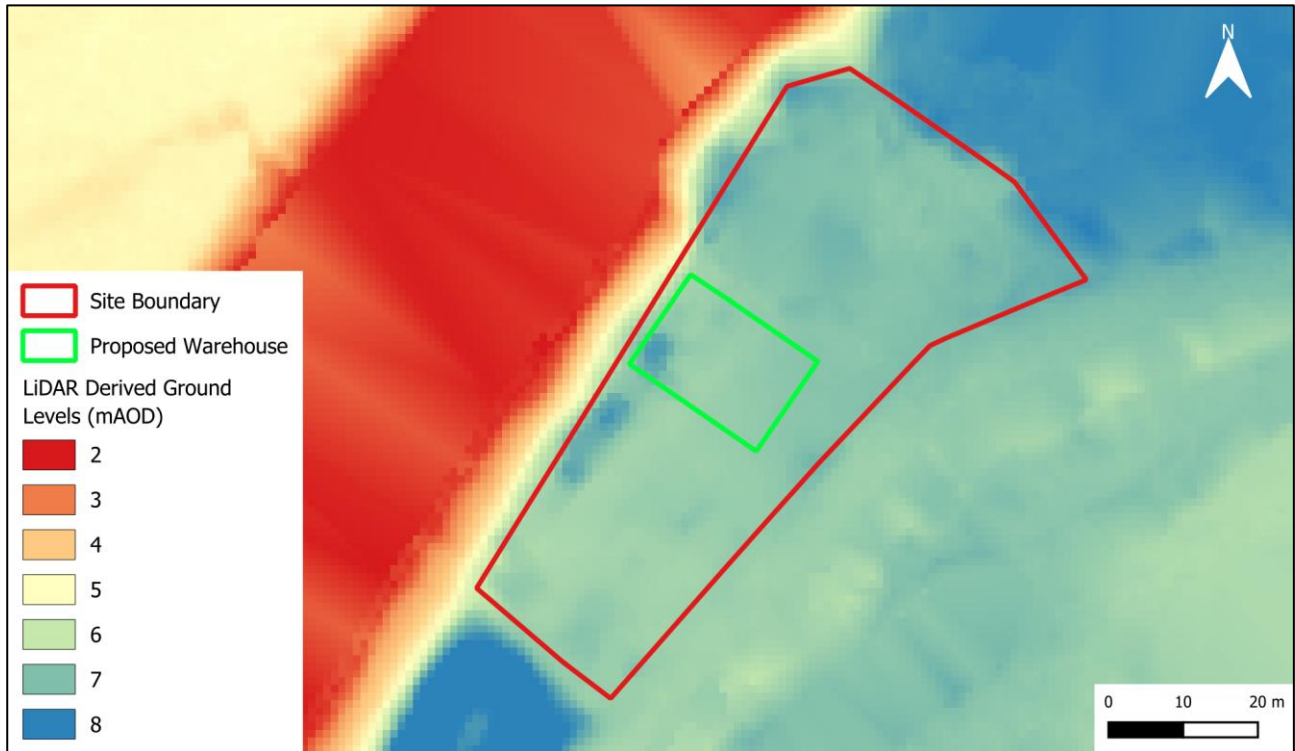


Figure 3: 1m Resolution LiDAR DTM (mAOD)
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3 PLANNING POLICY

3.1 National Planning Policy

Future Wales - the National Plan 2040 sets out the national development framework for Wales with a strategy for addressing key national priorities through the planning system, including sustaining and developing a vibrant economy, achieving decarbonisation and climate-resilience, developing strong ecosystems and improving the health and well-being of our communities.

Policy 8 - Flooding states that “flood risk management that enables and supports sustainable strategic growth and regeneration in National and Regional Growth Areas will be supported. The Welsh Government will work with Flood Risk Management Authorities and developers to plan and invest in new and improved infrastructure, promoting nature-based solutions as a priority. Opportunities for multiple social, economic and environmental benefits must be maximised when investing in flood risk management infrastructure. It must be ensured that projects do not have adverse impacts on international and national statutory designated sites for nature conservation and the features for which they have been designated”.

PPW sets out government's planning policies for Wales and how these are expected to be applied. TAN15 (2025) provides technical guidance which supplements the policy within PPW and seeks to ensure that flood risk is taken into account at all stages in the planning process and is appropriately addressed.

The general approach of TAN15 is to set out a precautionary framework to guide planning decisions in areas at high risk of flooding. The overarching aim of TAN15 is to provide a framework within which the flood risks arising from rivers, the sea and surface water, and the risk of coastal erosion can be assessed. It also provides advice on the consequences of the risks and adapting to and living with flood risk.

National policy requires that planning applications for new development proposals should incorporate SuDS to appropriate operational standards and with maintenance arrangements in place unless there is clear evidence that this would be inappropriate.

Statutory standards for sustainable drainage were published by Welsh Government in October 2018 in relation to the design, construction, operation and maintenance of sustainable drainage systems serving new developments of more than one house or where the construction area is equal to or greater than 100 m². These standards set out how surface water runoff generated during the 100%, 3.3% and 1% AEP rainfall events and for events exceeding the 1% AEP event should be managed, how peak runoff rates should be restricted and how runoff volumes should be controlled. Approval is subsequently required from the SAB before construction can commence.

3.2 Local Planning Policy

Neath Port Talbot Local Development Plan (2011-2026)

The Neath Port Talbot Local Development Plan (LDP) (2011-2026) was adopted by Neath Port Talbot County Borough Council in January 2016. The LDP frames a long-term vision of balanced growth, sustainability, and enhancement of quality of life across the borough, while respecting environmental constraints. The following policies relate to flood risk:

- The plan explicitly recognizes flood risk and coastal erosion as significant constraints.
- Development proposals in or near flood-risk zones must be accompanied by **flood risk assessments**.
- The plan requires the use of **appropriate defence, mitigation and management measures**, and discourages intervention which might transfer risk to other areas.
- Sustainable drainage, retention, and controlled discharge of water runoff are promoted.
- The plan supports the maintenance, improvement or provision of flood defence works, in consultation with relevant agencies.



3.3 Water Framework Directive

The WFD provides a legal framework for the protection, improvement and sustainable use of inland surface waters, groundwater, transitional waters, and coastal waters across England and Wales, and seeks to:

- Prevent deterioration in the status of surface water and groundwater bodies;
- Protect, enhance and restore surface water and groundwater bodies (except artificial or heavily modified water bodies) with the aim of achieving good ecological, chemical and groundwater quantitative status;
- Protect and enhance artificial and heavily modified water bodies with the aim of achieving good ecological potential and good chemical status;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment and progressively reduce pollution of groundwater.

The WFD applies to any proposed development which has the potential to impact on a waterbody. Where this is the case, NRW may require evidence demonstrating that the proposed development does not compromise the aims of the WFD.

This FCA determines that these proposals will not have any impact upon this legislation.

3.4 Environmental Permitting and Land Drainage Consent

Under the Environmental Permitting (England and Wales) Regulations 2016 an Environmental Permit for Flood Risk Activities is required from the Environment Agency for any permanent or temporary works, including works:

- In, over or under a designated main river;
- Within 8 m of the top of bank of a designated main river or of the landward toe of a flood defence (16 m if it is a tidal main river or a sea defence).

In addition, any permanent or temporary works within the floodplain of a designated main river may also require an Environmental Permit for Flood Risk Activities. A permit is separate to and in addition to any planning permission granted.

Land drainage consent may be required from the lead local flood authority or drainage board for work to an ordinary watercourse.

Undertaking activities controlled by local byelaws also requires the relevant consent.

The site and proposals are exempt from any specific environmental permitting and / consents / applications in regard to flood risk.



4 SOURCES OF FLOODING AND PROBABILITY

4.1 Historical Records of Flooding

The Flood Map for Planning - Recorded Flood Extents and associated database indicates that there are no records of flooding at or within the immediate vicinity of the site.

4.2 Flood Risk Summary

The Flood Map for Planning (FMfP) - indicates the site to be located within **Flood Zone's 2 and 3** (Rivers). The site is located within **Flood Zone 3** (Tidal / The Sea) and **Flood Zone 1** (Surface Water and Small Watercourses, or Pluvial sources).

Areas located within **Flood Zone 2 (Fluvial)** are considered to be at 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.

Areas located within **Flood Zone 3 (Fluvial)** are considered to be at more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.

Areas located within **Flood Zone 3 (Tidal / The Sea)** are considered to be at more than 0.5% (1 in 200) chance of flooding from the sea in a given year, including the effects of climate change.

Areas located within **Flood Zone 1 (Surface Water and Small Watercourses)** are considered to be at less than 0.1% chance (probability) of flooding from surface water and / or small watercourses in a given year, including the effects of climate change.

4.3 Sea (Tidal / Coastal) and Rivers (Fluvial)

As shown in **Figure 4**, the site is located within an area at risk of flooding from both fluvial and tidal sources associated with the River Neath.

The NRW Flood Map for Planning identifies the site as being located within tidal and fluvial Flood Zone 3. Flood Zone 3 represents areas at risk of flooding from rivers during events with a greater than 1% annual exceedance probability (AEP), and from the sea during events with a greater than 0.5% AEP. The site's location adjacent to the River Neath means that both tidal and fluvial flood mechanisms have been considered as part of this assessment.

Whilst the Flood Map for Planning provides an indication of the potential extent of flooding, it represents a strategic assessment and does not account for site-specific factors such as detailed topography, hydraulic structures, floodplain interactions or the influence of the proposed development. Previous iterations of this FCA have been submitted in support of the proposed development and, following correspondence with Natural Resources Wales (NRW), a site-specific hydraulic model was commissioned to provide a more detailed understanding of flood risk at the site and to assess the potential impact of the proposed development.

Site-Specific Hydraulic Model

To help inform this report, Wallingford HydroSolutions (WHS) Ltd were commissioned to undertake a site-specific hydraulic model of the proposed development. The modelling was undertaken using the NRW River Neath tidal-fluvial hydraulic model to assess compliance with the relevant requirements of TAN15, including:

- Figure 5 – ensuring less vulnerable development is flood free during the 1% AEP + climate change fluvial event and 0.5% AEP + climate change tidal event;



- Figure 6 – ensuring flood consequences remain acceptable during the 0.1% AEP extreme event; and
- Section 11.4 – demonstrating that the development does not result in an increase in flooding elsewhere.

The assessment utilised the NRW **Neath_5_v1.1_2023** hydraulic model, which is a linked 1D–2D ESTRY-TUFLOW model capable of representing both fluvial and tidal flood mechanisms within the River Neath catchment. As part of the modelling assessment, WHS updated the baseline model to incorporate the latest NRW climate change allowances. This included updating fluvial inflows to reflect a 35% climate change allowance and incorporating a 1m uplift to tidal levels, which exceeds the current NRW allowance for the assessment period. The model was also updated from the TUFLOW Classic solver to the HPC solver, alongside minor model updates to ensure compatibility with the updated software version.

The proposed development was incorporated into the hydraulic model as a post-development scenario, with the proposed warehouse represented using a raised z-shape at the proposed Finished Floor Level (FFL) of **7.62mAOD**. The FFL was derived from the modelled flood level during the design tidal event, with an additional 300mm freeboard applied to account for uncertainty within the hydraulic model. The modelled events assessed as part of the WHS hydraulic modelling study are summarised below:

Fluvial:

1% AEP
1% AEP + 35% CC
0.1% AEP
0.1% AEP + 35% CC

Tidal:

0.5% AEP
0.5% AEP + CC (1m uplift)
0.1% AEP
0.1% + AEP + CC (1m uplift)

Hydraulic Modelling Results

The results of the hydraulic modelling demonstrate that the proposed development remains unaffected by fluvial flooding during all assessed events. The post-development model outputs show that flooding does not encroach upon the proposed warehouse footprint during the 1% AEP + climate change fluvial event or the extreme 0.1% AEP + climate change fluvial event (Figures 4-2 and 4-3 of the WHS Hydraulic Modelling Report – see **Appendix D**). Consequently, it was concluded that the development is suitably safe from the design fluvial events, and no further investigation was required.

For tidal flood risk, the modelling indicates that the proposed development is not affected by flooding during the 0.5% AEP tidal event (Figure 4-4 – **Appendix D**). During the 0.5% AEP + climate change tidal event, floodwater surrounds the proposed warehouse, with a maximum modelled flood level of **7.32mAOD** (Figure 4-5 – **Appendix D**). This event represents the TAN15 design event for less vulnerable development, and the proposed FFL of 7.62mAOD provides a 300mm freeboard above the predicted flood level.

Moreover, the extreme 0.1% AEP tidal event and 0.1% AEP + climate change tidal events were also assessed. During the 0.1% AEP event, flooding encroaches towards the proposed warehouse from the south, with a maximum modelled flood level of 6.77mAOD (Figure 4-6 – **Appendix D**). During the 0.1% AEP + climate change event, the maximum modelled flood level increases to 7.60mAOD, which remains below the proposed finished floor level of 7.62mAOD (Figure 4-7 – **Appendix D**).

Furthermore, a comparison between the baseline and post-development model results has also been undertaken to assess whether the proposed development would increase flood risk elsewhere. The depth

change plots presented within Figures 4-8 to 4-11 of the WHS Hydraulic Modelling Report (**Appendix D**) demonstrate that flood levels remain generally unchanged (<5mm) or identical to the baseline scenarios on the land surrounding the site.

Overall, the site is located within tidal and fluvial Flood Zone 3 and is therefore considered to be at risk of flooding from both tidal and fluvial sources; however, the site-specific hydraulic modelling undertaken by WHS provides a more detailed assessment of flood risk and demonstrates that the proposed development can satisfy the relevant requirements of TAN15.

The modelling confirms that the proposed development remains flood free during the required design fluvial and tidal events through the implementation of an appropriate FFL of **7.62mAOD**. Furthermore, the assessment demonstrates that the proposed development does not result in a material increase in flood risk elsewhere, subject to the considerations discussed within Section 5.

4.4 Surface Water & Small Watercourses (Pluvial)

The site is located within **Flood Zone 1** (Surface Water and Small Watercourses) and is therefore considered to be at **Low** Risk of flooding from Pluvial Sources. Refer to Figure 4.

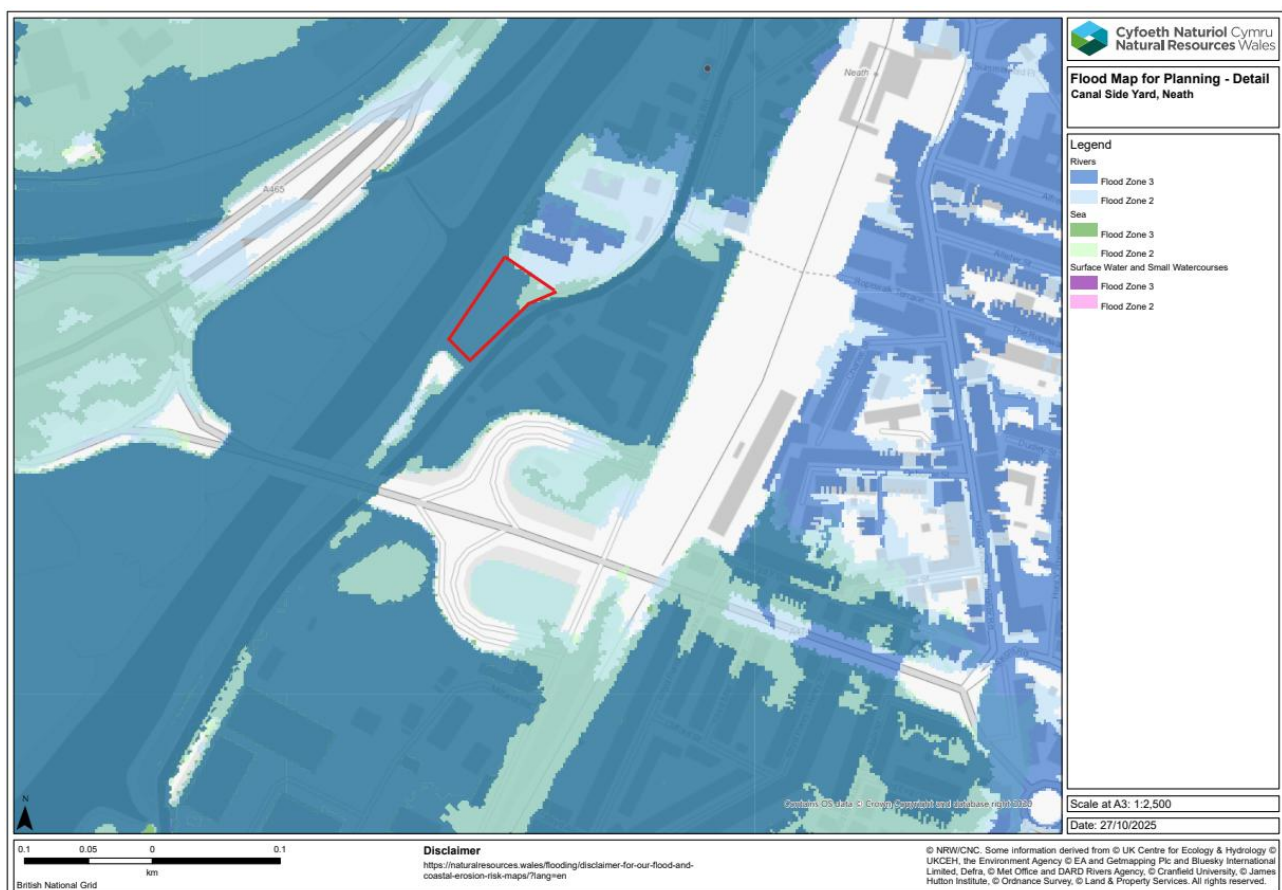


Figure 4: NRW Flood Map for Planning

4.5 Groundwater Flooding

Groundwater flooding occurs when water levels underneath the ground rise above normal levels. Prolonged heavy rainfall soaks into the ground and can cause the ground to become saturated. This results in rising groundwater levels which leads to flooding above ground. There are no known records of groundwater flooding incidents at or near to the site. The local authority Flood Risk Management Strategy (FRMS) states that there are no specific areas of historical groundwater flooding recorded in the area and therefore the risk



of flooding from this source is considered to be small. Furthermore, the existing and proposed development is / will be overlain by hardstanding, thus preventing any groundwater ingress to the surface.

Therefore, the risk of groundwater flooding is concluded to be **Low**.

4.7 Artificial Sources of Flooding

There are two canals within the immediate vicinity of the site or surrounding area which could pose a flood risk to the site. They are the Neath Canal and the Tennant Canal. However, canals are man-made engineered structures whereby hydraulic flows are carefully managed and conveyed and very rarely flood. There are no records of the canal flooding here. It can be concluded that the canals pose a **Low** flood risk to the site and proposed unit. The NRW 'Risk of Flooding from Reservoirs' map shows that the site is not at risk of flooding from reservoirs. The risk of flooding from reservoirs is extremely unlikely to happen. For instance, all large reservoirs must be inspected and supervised by a reservoir panel engineer, as the enforcement agency the NRW ensure that reservoirs are inspected regularly, and essential safety / maintenance work is carried out.

Therefore, it can be concluded that the probability of flooding from artificial sources is **Low / Residual**.



5 FLOOD RISK MITIGATION

This report has so far evaluated all potential flood risk sources that may affect the site. The following sections describe the identified flood risks in the context of the proposed development and provide recommendations, where required, for the mitigation or reduction of those risks to enable safe development and comply with local and national guidance.

5.1 Design Flood Event

Planning Policy Wales and TAN15 guidance identifies that new developments should be designed to provide adequate flood risk management, mitigation, and resilience against the 'design flood' for their lifetime. The primary source of the risk at the development is tidal and therefore, based on government guidance, development should be designed to be flood free during the 0.5% tidal flood event.

Figure 6 of TAN 15 states that within the extreme 0.1% CC flood event, development would be expected to flood up to tolerable limits (600mm). The site-specific hydraulic modelling undertaken by WHS predicts a maximum tidal flood level of 7.60mAOD during the 0.1% AEP + climate change event. This remains below the proposed Finished Floor Level (FFL) of 7.62mAOD, demonstrating that the proposed development would remain flood free during the extreme tidal event and within the tolerable limits identified by TAN15.

Welsh Government guidance (2026) for assessing climate change indicates that developments should be assessed against the 70th percentile to inform design levels of the lifetime of the development (**2101**). The guidance also states that an assessment should also be made against the 95th percentile to inform mitigation measures, access and egress routes and emergency evacuation plans.

5.2 Acceptability of Flood Consequences

In accordance with Figure 2 and Paragraph 11.4 of TAN15, developers must ensure that there is no increase in flooding elsewhere.

The proposed development is classified as Less Vulnerable and has been assessed against the relevant design and extreme flood events using the site-specific hydraulic model undertaken by WHS. The modelling demonstrates that the proposed development remains flood free during the 0.5% AEP + climate change tidal design event, with the proposed FFL of 7.62mAOD providing 300mm of freeboard above the maximum modelled flood level of 7.32mAOD. During the extreme 0.1% AEP + climate change tidal event, the maximum modelled flood level of 7.60mAOD also remains below the proposed FFL.

A comparison of the baseline and post-development model results demonstrates that the proposed development would not result in a material increase in flood risk elsewhere, with flood level changes generally remaining below 5mm in the surrounding area. The modelling therefore demonstrates that the proposed development would not adversely affect flood risk on or off site.

Accordingly, the proposal would not result in any increase in flood risk on or off site and is therefore consistent with the requirements of TAN15, which seeks to ensure that development does not exacerbate flood risk beyond the site boundary.



5.3 Design Principles for Development

It is recommended that, based on the current design proposals, the following design principles should be incorporated to demonstrate its long-term resilience to flood risk in the future.

This FCA has been informed by freely available LiDAR data, which has informed the level discussed in **Table 1**.

Design Flood Level	For the purposes of this assessment the design flood event is the 0.5% AEP tidal flood event including climate change, representative of the 75-year lifetime of the proposed development (up to 2101).
Finish Floor Level (FFL)	The proposed FFL is 7.62mAOD, which: A) Provides a 300mm freeboard above the maximum modelled flood level of 7.32mAOD during the 0.5% AEP + CC design flood event. B) Provides a 20mm freeboard above the maximum modelled flood level of 7.60mAOD during the extreme 0.1% AEP + CC event.
External Levels	External levels should be profiled away from the proposed building footprint and towards the nearest drainage point.

Table 1 – Design Flood Level and FFL(s)

Furthermore, although the proposed building is predicted to remain flood free internally during the assessed flood events, a series of measures are recommended to provide additional resilience against the extreme 0.1% AEP + climate change event and to support the long-term resilience and recoverability of the development should flooding occur. Property Flood Resilience (PFR) measures are therefore recommended along all external elevations (up to 0.3m) and internally within the building footprint. These measures could include:

- **Floor Finish:** The floor finish on the ground floor should be kept as flood resilient as possible (resin/ceramic/concrete tiles as opposed to lino/vinyl/carpet) so the floor can be easily cleaned down following any future flooding.
- **Critical Infrastructure/Electrical Sockets:** Raise all electronic control units and sockets (0.3m) above external ground levels to mitigate against any future flooding.
- **Drainage Systems:** Routinely maintained, inspected and cleared (ensuring it is performing to optimal capacity).
- **Duct Sealing:** Seal all cables and pipes entries with duct sealing.
- **Non-Return Valves (NRV):** NRVs could be installed to all drainage outlets to mitigate against future risk of the local drainage network surcharging.
- **Airbricks:** Utilise self-closing airbricks where possible

These mitigation measures should be applied as far as is practically possible.

Flood Awareness

The site is partially located within two Flood Alert Areas (River Neath - ref: 102WAFF18) and (Swansea Bay and the Gower coast – ref: 102WABT04) (**Figure 5**), and a located approximately 5m to the northwest of the nearest Flood Warning Area (River Neath at Neath - ref: 102FWF112B). The site owner and occupants should register¹ to receive both.

¹ [Natural Resources Wales / Sign up to receive flood warnings](#)



Flood Warnings Direct is a free service that provides prior warnings of a fluvial / tidal flood event. Areas at risk of flooding from rivers (fluvial) and the sea (tidal) are warned, which relies on direct measurements of rainfall, river levels, tide levels, in-house predictive models, rainfall data and information from the Met Office. This service operates 24 hours / day 365 days a year. If flooding is forecast, warnings are issued using a set of easily recognisable codes.



Figure 5 – NRW Flood Alert and Warning Areas

Appropriate documentation should be displayed to inform any users of the site of the potential flood risk. Documentation will be displayed at an appropriate position. The documentation will indicate the risk of flooding and contain information on how prior warnings will be sent. Further information on the documentation will comprise of the Floodline Warnings Direct telephone number, emergency services numbers and exit plans and egress directions, as identified in the evacuation procedure for the site.

The site owner should undertake a Flood Evacuation Management Plan (FEMP) for implementation during an extreme event. This should be done in conjunction with the appropriate professional bodies including and in particular Neath Port Talbot County Borough Council Emergency Planning Department. The FEMP would be a written document which should outline the course of action to all users/employees during a flood. The evacuation procedure should address (but not be limited to) the following topics:

- A list of important contacts, building services, suppliers and evacuation contacts for officers and users;
- A description or plan showing locations of key property, protective materials and service shut-off points;
- Basic strategies for protecting property and assisting recovery;
- Checklist of procedures that can be quickly accessed by users during a flood;
- Safe exit-plan;
- Safe exit route to higher ground outside the flood risk area (building and site), kept and displayed on site.



Access/Egress

Provision of safe access / egress is from Canal Road onto Milland Road then on the A474 and A465 heading north-east beyond all maximum modelled fluvial and tidal extents.



6 CONCLUSIONS

Vale Consultancy were commissioned by Sami Hussam to undertake a FCA in support of the planning application for the proposed development at Canal Side Yard, Canal Road, Neath, SA11 1LJ.

To help inform this report Wallingford HydroSolutions (WHS) Ltd were commissioned to undertake a site-specific hydraulic model of the proposed development (see **Appendix D**). This updated FCA has therefore utilised the results to provide a more site-specific assessment of tidal and fluvial flood risk, in order to address NRW's concerns.

The risk of flooding to the site from pluvial, groundwater and artificial sources is considered Low.

Moreover, the site-specific hydraulic modelling demonstrates that the proposed development would remain flood free during the relevant 0.5% AEP + climate change tidal and 1% AEP + climate change fluvial design events. The modelling also confirms that the proposed development remains flood free during the extreme 0.1% AEP + climate change events, with the maximum modelled tidal flood level of 7.60mAOD remaining below the proposed FFL of 7.62mAOD. Furthermore, comparison of the baseline and post-development scenarios demonstrates that the proposed development would not result in a material increase in flood risk elsewhere which is compliant with the requirements of TAN15.

Additionally, the site qualifies for and meets the requirements for / of Previously Developed or '*Brownfield Land*'. In relation to **8.3** and **8.4** of TAN15; the proposals are for **Redevelopment** and not **New Development**. Redevelopment is defined as; 'Any Development in previously developed land as defined in Planning Policy Wales (PPW)'. PPW generally gives preference to the reuse of previously developed land before greenfield land. Furthermore, the proposals are compliant with TAN15 (2025) and the aims and objectives of the LDP.

Overall, this report demonstrates sufficient justification for the proposed works, in relation to the flood risk and any potential inherent consequences.

The FCA has been undertaken by suitably qualified personnel and is commensurate to the scale and nature of the proposed works.



APPENDIX A: Existing Site Plans

Location Plan



Scale: 1: 1250





1 : 100



1 : 100



1 : 100



1 : 100



1 : 100



1 : 100

Do not scale from this drawing, any dimensions show are indicative only and are subject to verification onsite. The contractor is to set out, check and co-ordinate all dimensions on site during the course of the works. This drawing is to be read in conjunction with all other plans, structural calculations and specifications.

All works to be carried out in accordance with the latest appropriate codes of practice and to comply with current building regulation
Prior to commencement of the building works the contractor should:

1. Ensure that all drawings are approved for used by the planning department and (if applicable) by building control.

2. Inform the building control department that works have commenced onsite.

3. Verify the boundary lines and ground conditions, including checking of all the services (gas, water, electric, telecom and sewers) prior to any excavation work.

4. Request a copy of the party wall award where works affect a party wall or involve excavations within 3m of adjoining buildings.

5. Where the works include demolition to ensure that all elements of the building and adjoin structures are accounted for and that all necessary propping and temporary works are in place.

6. Works carried out under a building notice or prior to the approval of the drawings all works are at the contractors own risk.

7. Any discrepancies either between the written dimension and the site dimensions or between the drawing and other consultants/ suppliers drawings should be brought to the attention of the client.

[illegible]

CODE	SUITABILITY DESCRIPTION
STATUS	PURPOSE OF ISSUE



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PROJECT

Project Name

TITLE

Existing Plans

CLIENT

Mr Liam Phillips

DRAWN BY CCS	CHECKED BY Client	DATE 10/02/25
SCALE (@ A1) 1 : 100	PROJECT NUMBER 28092025	
DRAWING NUMBER A101		REV



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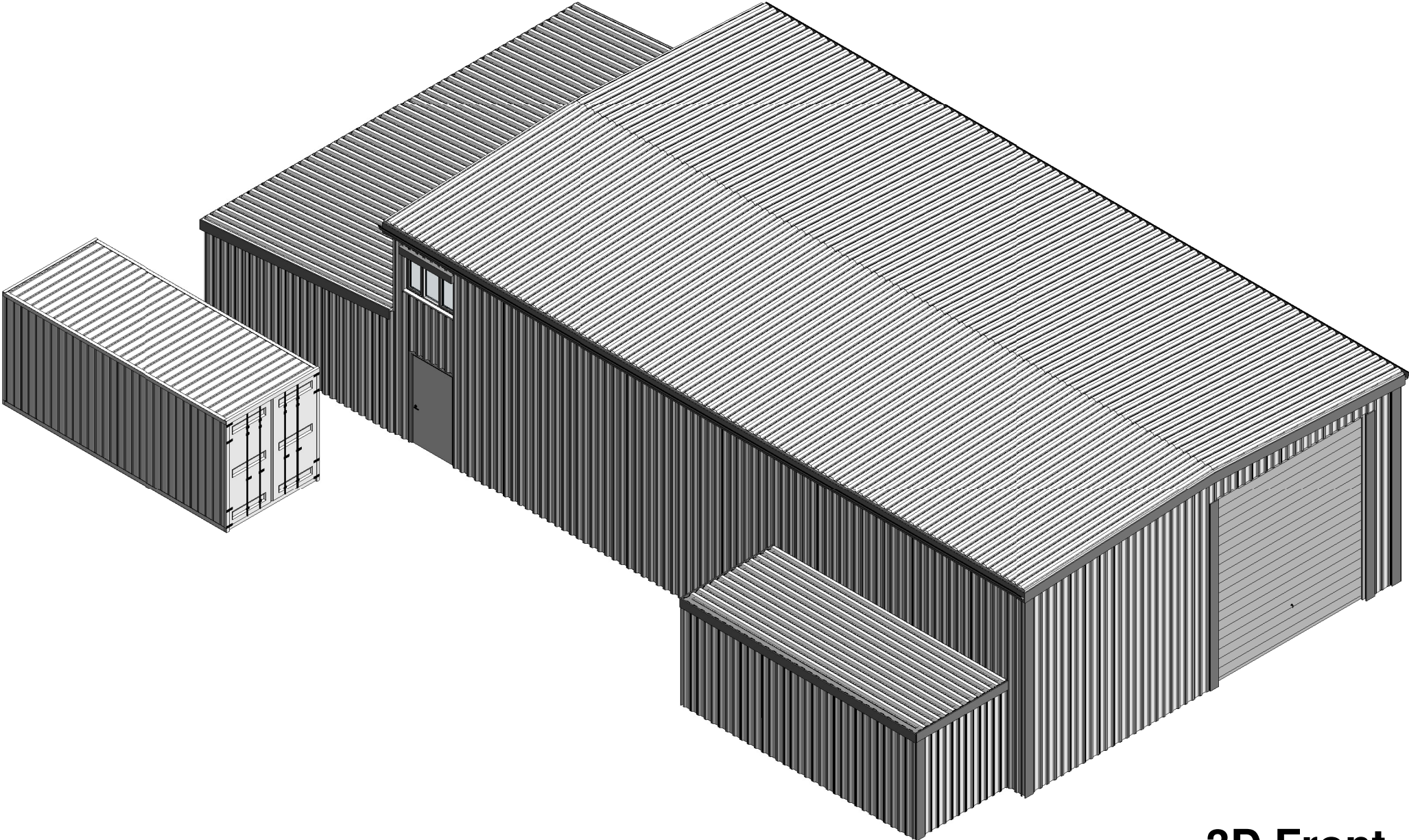
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3D Front

No.	Description	Date

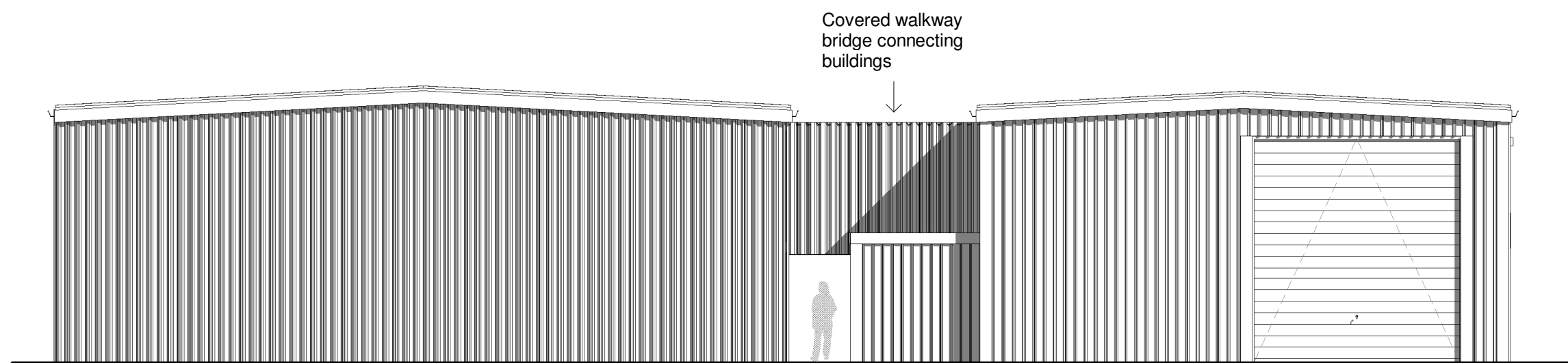
 www.ccs-solutions.co.uk			
CODE	STATUS	SUITABILITY DESCRIPTION	PURPOSE OF ISSUE

PROJECT	Phillips & Son Roofing
SHEET	Existing 3D

CLIENT			Mr Liam Phillips	
Date	28/09/2025	Project number	28092025	Scale (@ A3)
Drawn by	CCS	DRAWING NUMBER		REV
Checked by	Client	A303		

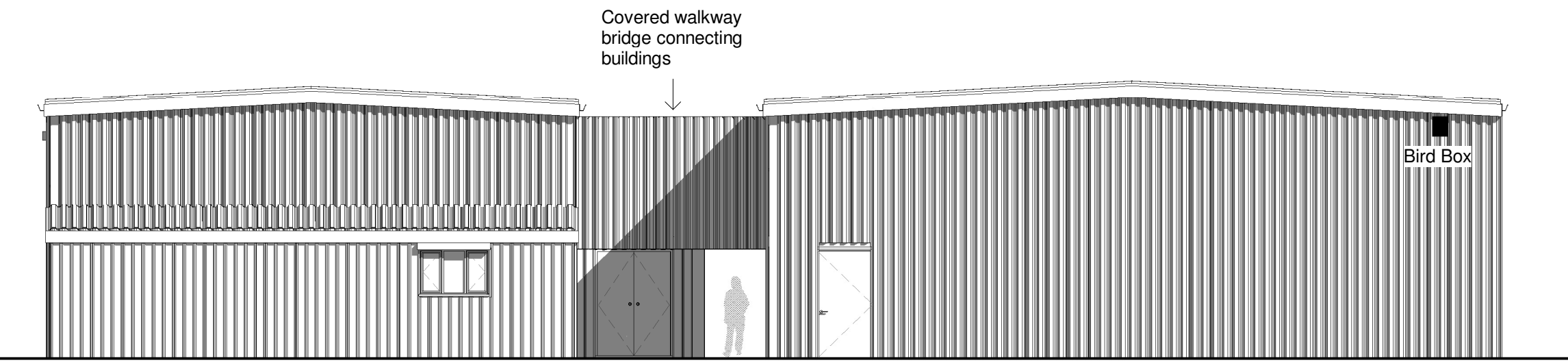


APPENDIX B:
Proposed Site Plans



Front Elevation

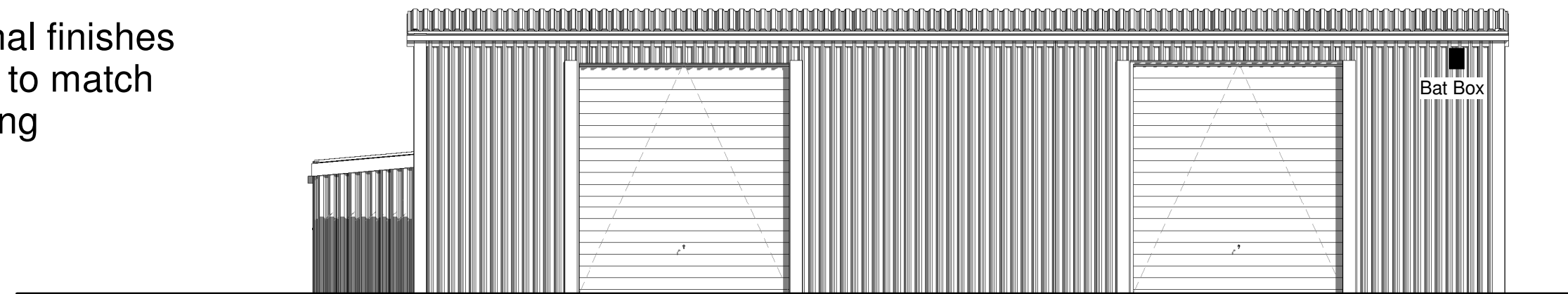
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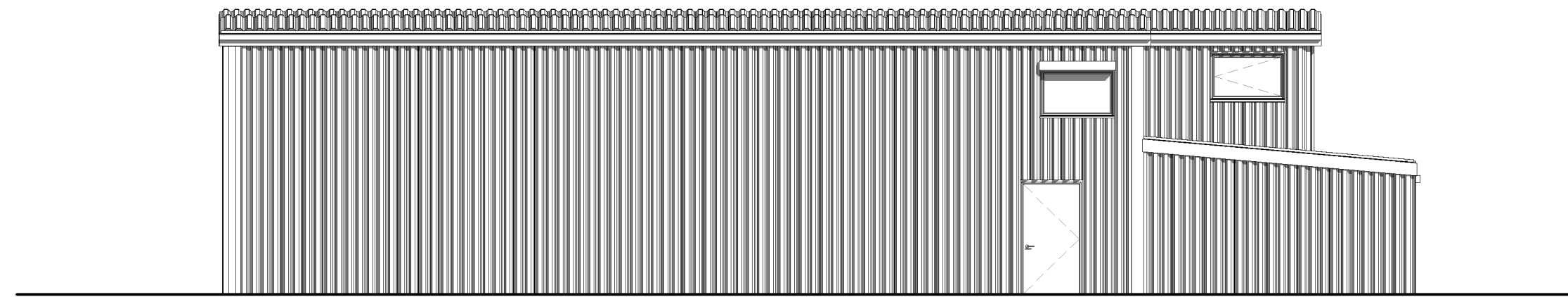
Rear Elevation

Note:

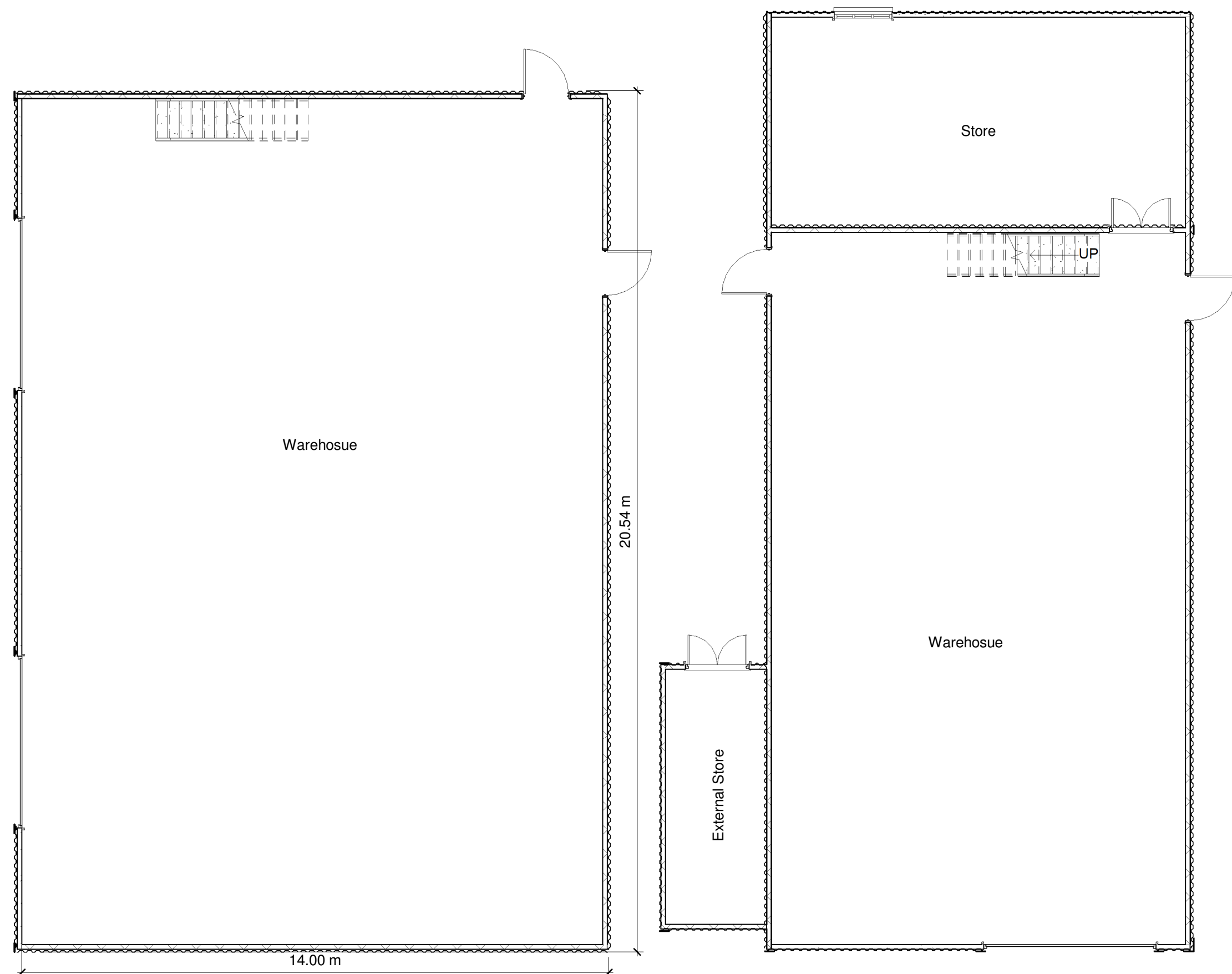
All new external finishes
and materials to match
existing building



Left Elevation

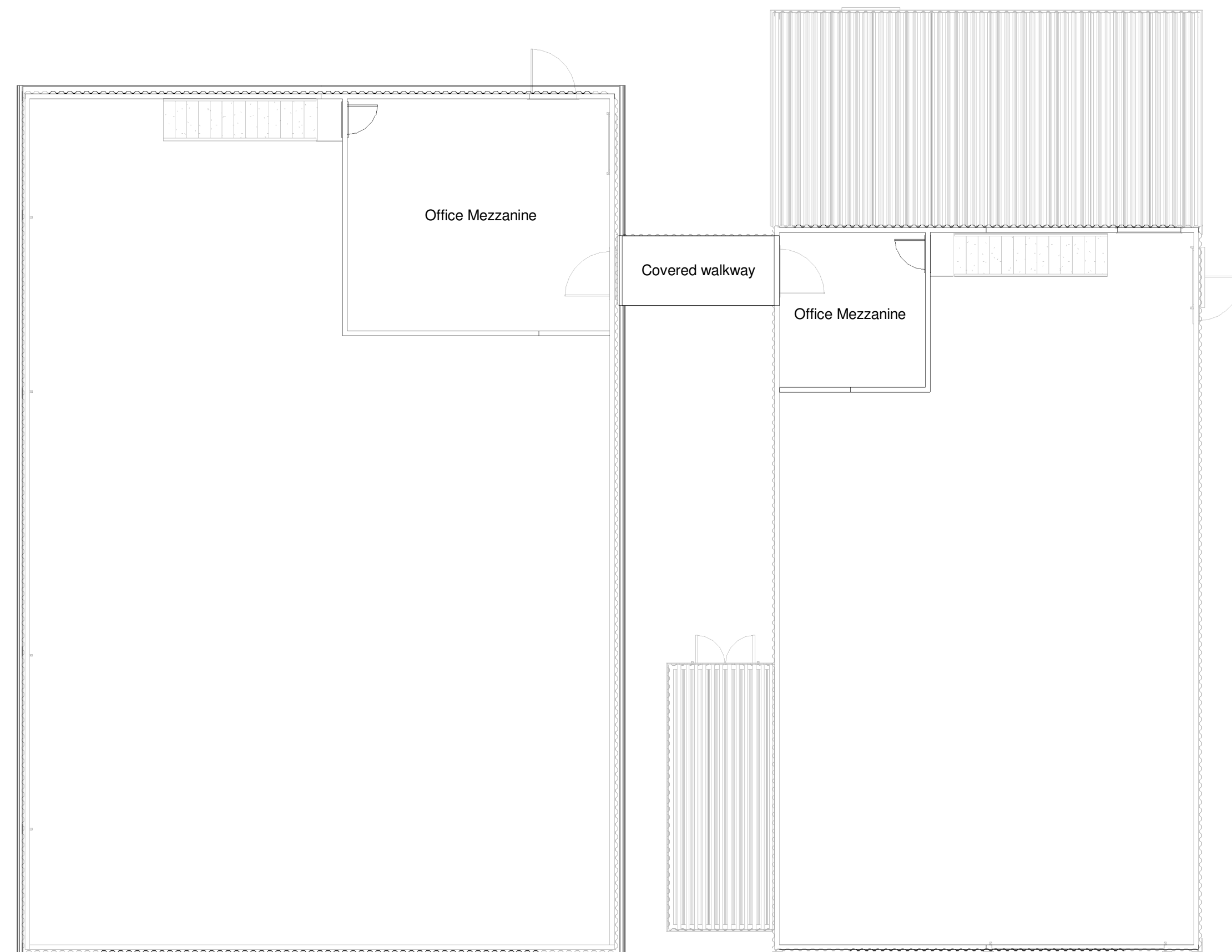


Right Elevation



Ground Floor

1 : 100



First Floor
1 : 100

Do not scale from this drawing, any dimensions show are indicative only and are subject to verification only. The contractor is to set out, check and co-ordinate all dimensions on site during the course of the works. This drawing is to be read in conjunction with all other plans, structural calculations and specifications.

All works to be carried out in accordance with the latest appropriate codes of practice and to comply with current building regulation

Prior to commencement of the building works the contractor should:

1. Ensure that all drawings are approved for used by the planning department and (if applicable) by building control.
2. Inform the building control department that works have commenced onsite.
3. Verify the boundary lines and ground conditions, including checking of all the services (gas, water, electric, telecom and sewers) prior to any excavation work.
4. Request a copy of the party wall award where works affect a party wall or involve excavations at in 3m of adjoining buildings.
5. Where the works include demolition to ensure that all elements of the building and adjoin structures are accounted for and that all necessary propping and temporary works are in place.
6. Works carried out under a building notice or prior to the approval of the drawings all works are at the contractors own risk.
7. Any discrepancies either between the written dimension and the site dimensions or between the drawing and other consultants/ suppliers drawings should be brought to the attention of the client.

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CODE	SUITABILITY DESCRIPTION
STATUS	PURPOSE OF ISSUE



PROJECT

Phillips & Son Roofing

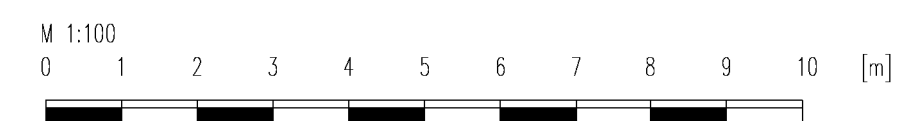
TITLE

Proposed Plans

CLIENT

Mr Liam Phillips

DRAWN BY CCS	CHECKED BY Client	DATE 10/02/25
SCALE (@ A1) 1 : 100	PROJECT NUMBER 28092025	
DRAWING NUMBER A104		REV





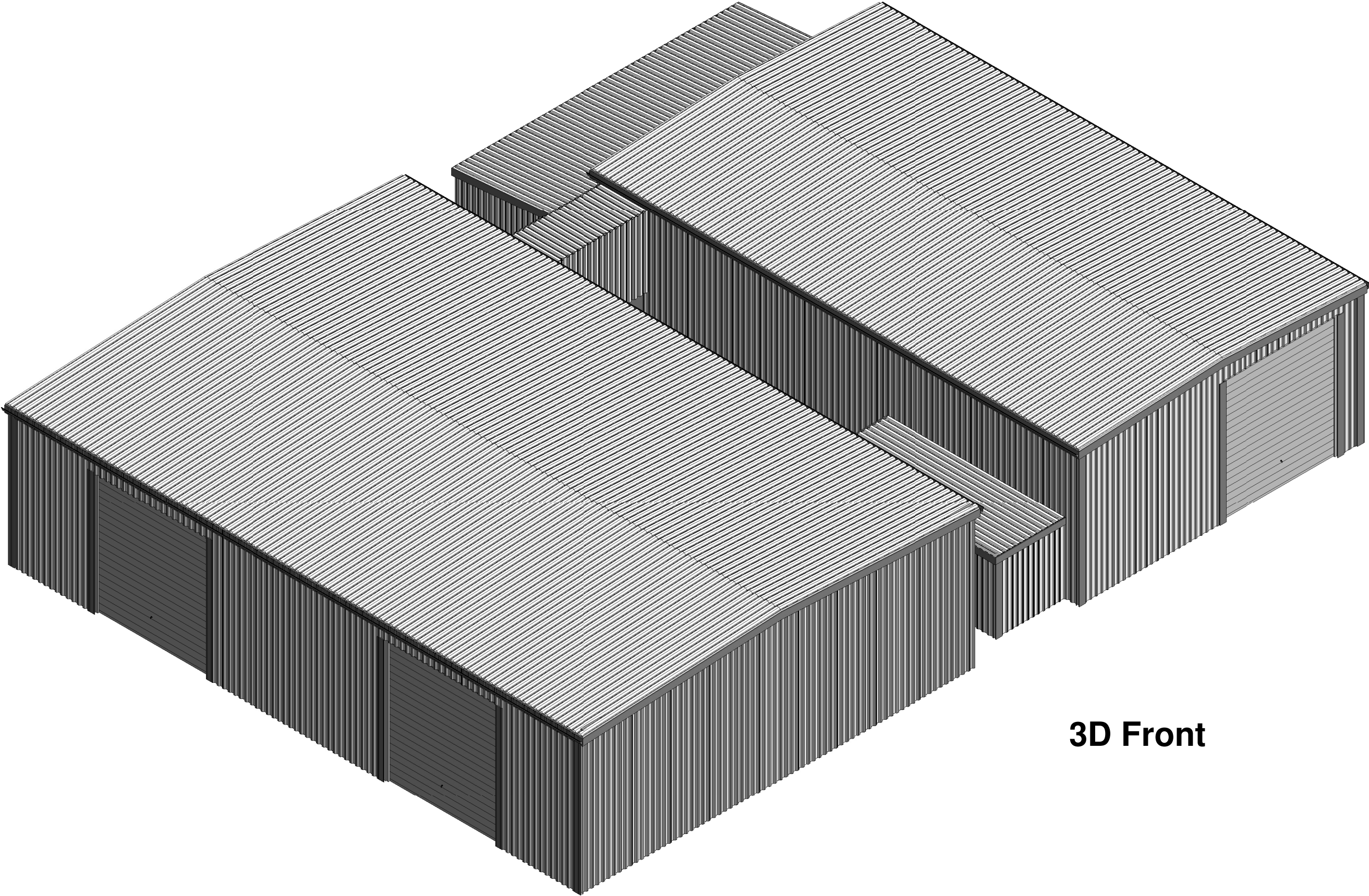
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3D Front

	No.	Description	Date	 www.ccs-solutions.co.uk				PROJECT Phillips & Son Roofing		CLIENT Mr Liam Phillips		
								SHEET Proposed 3D		Date 28/09/2025	Project number 28092025	Scale (@ A3)
				CODE	STATUS	SUITABILITY DESCRIPTION	PURPOSE OF ISSUE	Drawn by CCS	DRAWING NUMBER		REV	
								Checked by Client	A306			



APPENDIX C: NRW Flood Maps

Flood Map for Planning - Detail
23176 - Canal Side Yard, Canal Road

Legend

--- Flood Defence Locations

TAN15 Defended Zones

▨ Rivers

▨ Sea

▨ Rivers and Sea

Surface Water and Small Watercourses

■ Flood Zone 3

■ Flood Zone 2

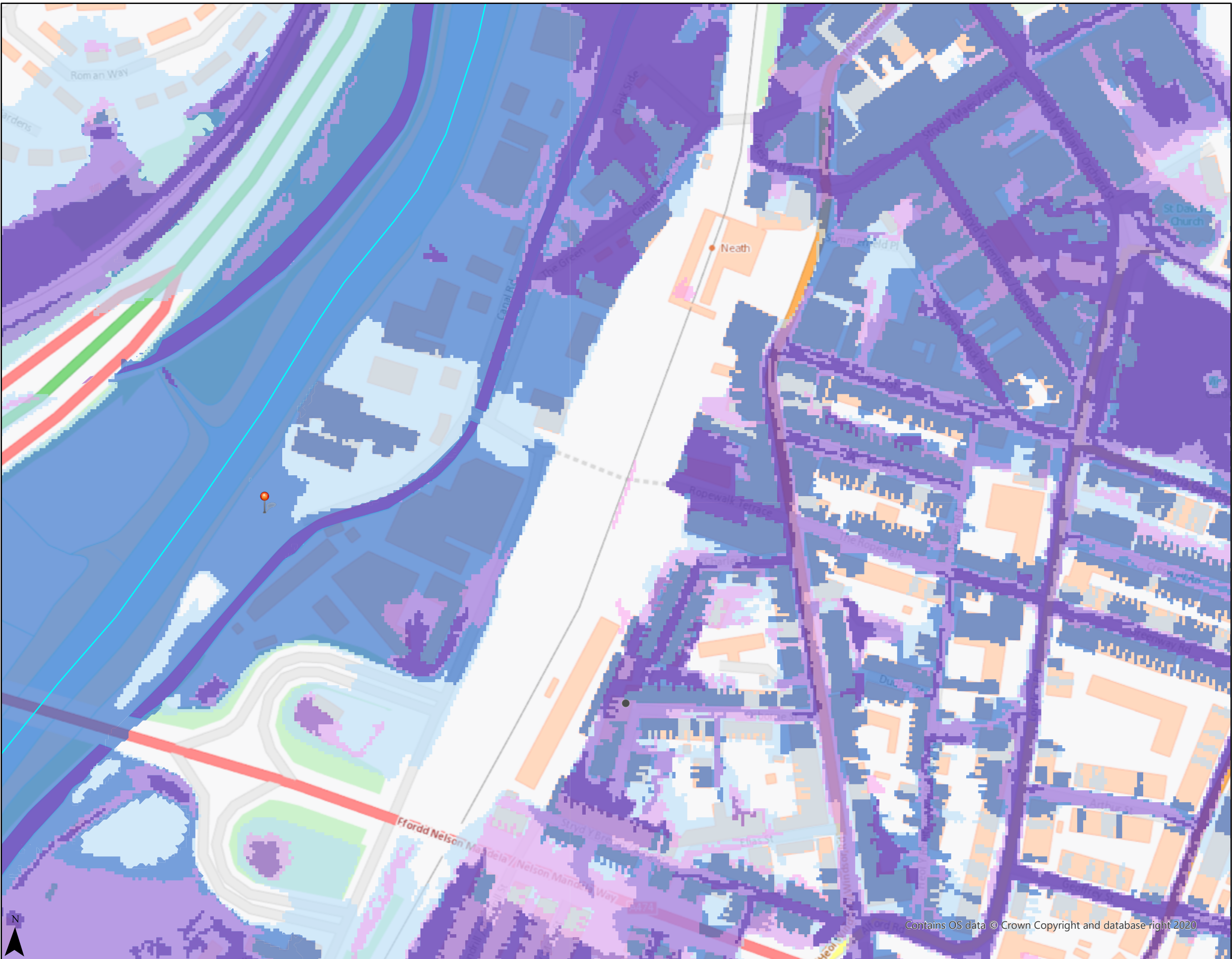
— Main Rivers

Rivers

■ Flood Zone 3

■ Flood Zone 2

● Recorded Flood Extents



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Scale at A3: 1:2,500

Date: 02/10/2025

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km

British National Grid

Flood Map for Planning - Detail
23176 - Canal Side Yard, Canal Road

Legend

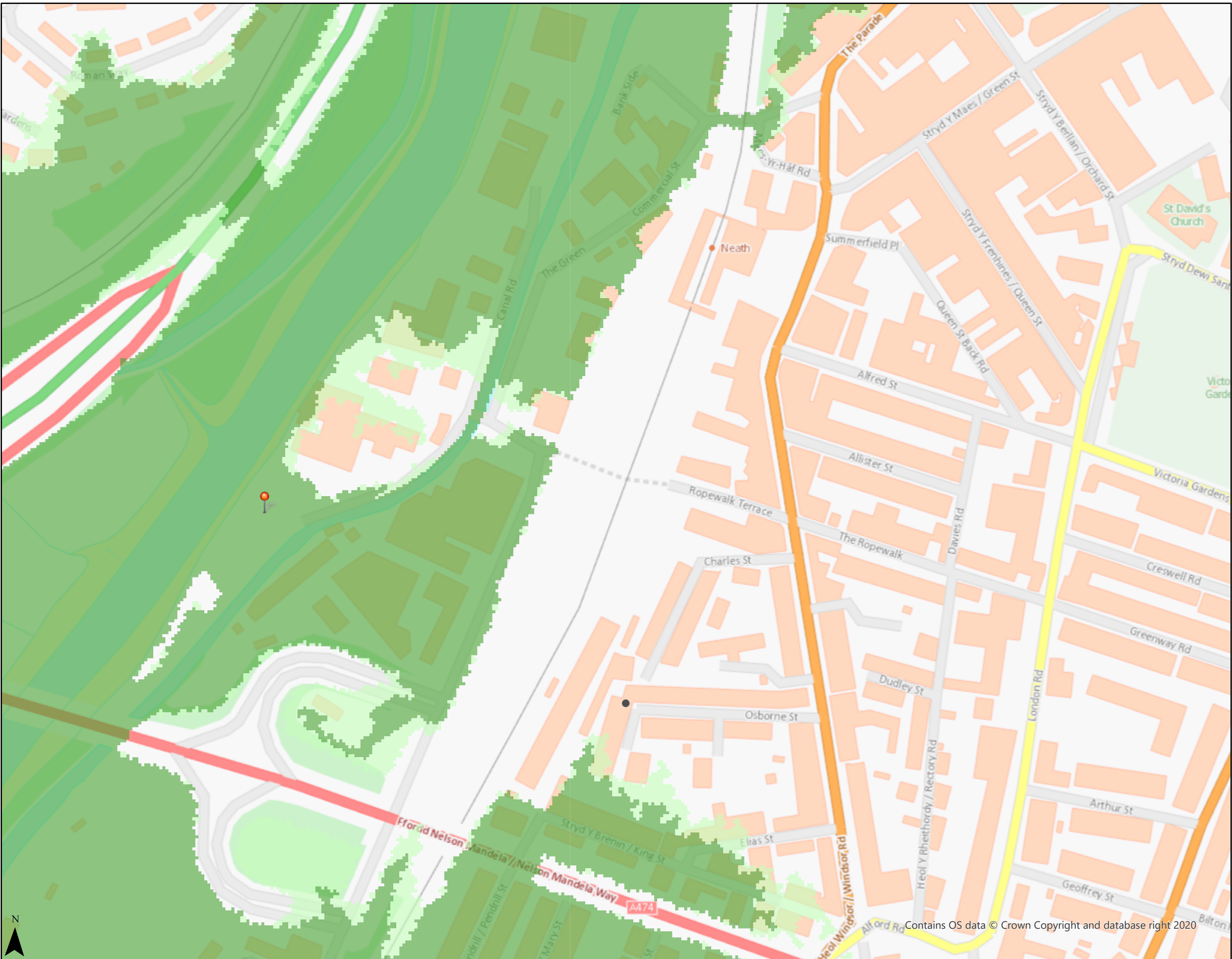
Sea

Flood Zone 3

Flood Zone 2

Scale at A3: 1:2,500

Date: 02/10/2025

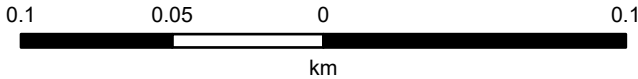


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British National Grid



APPENDIX D:
WHS Site-Specific Hydraulic Model

Vale Consultancy

August 2026

Canal Side Yard Modelling



WHS

Vale Consultancy

Canal Side Yard Modelling

Document issue details

WHS10312

Version	Issue date	Issue status	Prepared By	Approved By
1.0	06/08/2026	Draft	Joseph Bentley (Consultant)	Sam Pucknell (Senior Consultant)

For and on behalf of Wallingford HydroSolutions Ltd.

This report has been prepared by WHS with all reasonable skill, care and diligence within the terms of the Contract with the client and taking account of both the resources allocated to it by agreement with the client and the data that was available to us. We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above. This report is confidential to the client and we accept no responsibility of any nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.



The WHS Quality & Environmental Management system is certified as meeting the requirements of ISO 9001:2015 and ISO 14001:2015 providing environmental consultancy (including monitoring and surveying), the development of hydrological software and associated training.



Registered Office Stables 4, Howbery Business Park, Wallingford, OX10 8BA
www.hydrosolutions.co.uk

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1 Introduction

1.1 Background

Wallingford HydroSolutions (WHS) has been commissioned by Vale Consultancy to undertake hydraulic modelling to assess the compliance of the proposed development with aspects of TAN15¹. To complete this work, WHS have run a post-development scenario in the 1D-2D tidal-fluvial model of the River Neath².

Natural Resources Wales (NRW) have objected to a Flood Consequence Assessment submitted by Vale Consultancy for a proposed industrial development on brownfield land in Neath (E:274787, N:197303). NRW have objected on the grounds that the FCA did not comply with figures 5, 6 and section 11.4 of TAN15¹. The relevant aspects of TAN15 to this study are as follows:

- **Figure 5:** Less vulnerable development must be flood free for the 1.0%+Climate Change (CC) fluvial event and 0.5%+CC tidal event.
- **Figure 6:** During the 0.1% extreme flood event, less vulnerable development is flooded by a maximum of 600mm, with flood velocities of less than 0.3m/s.
- **Section 11.4:** There is no increase in flooding elsewhere caused by the development.

1.2 Proposed Development

The proposed development is a warehouse, its footprint is approximately 300sqm, located on paved land next to a pre-existing warehouse, approximately 150m along the Neath Canal Towpath, south of Canal Road in Neath. The new warehouse will be connected to the pre-existing warehouse via an elevated walkway. The site is surrounded by industrial development to the north and east, and the River Neath to the south and west. The site location is shown in Figure 1-1 below.

¹ Welsh Government. 2026. Technical Advice Note (TAN) 15: Development, flooding and coastal erosion. Available at: <https://www.gov.wales/technical-advice-note-tan-15-development-flooding-and-coastal-erosion>

² JBA Consulting. 2017. Neath - Phase 2 Modelling Report.

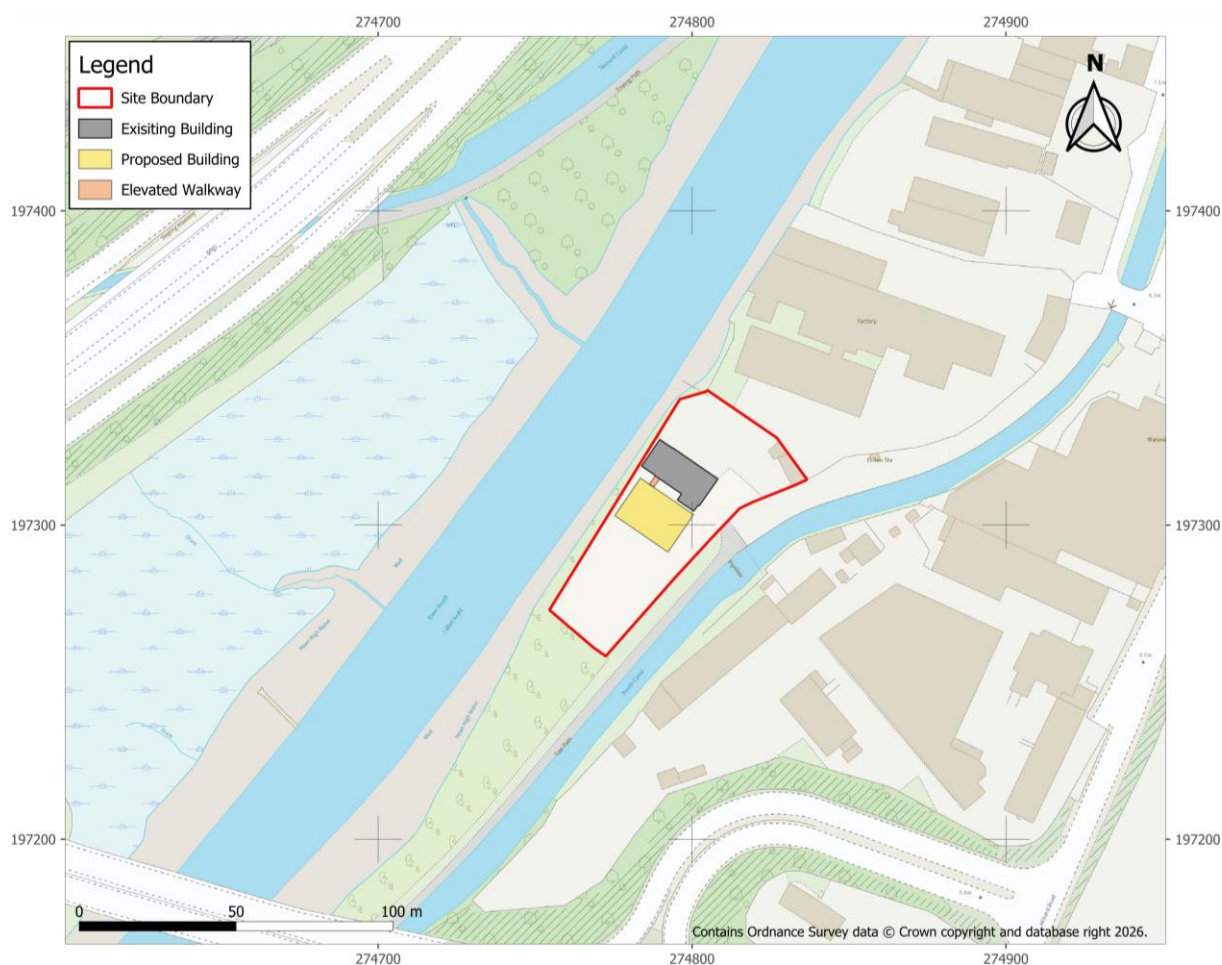


Figure 1-1 - Proposed Location of the Development

1.3 Assumptions

A series of assumptions have been made as part of this modelling work, which are outlined below.

- Aside from a few small amendments, the model received from NRW is suitable for this modelling work.
- The channel geometry is suitably represented in the model and has not changed significantly since the survey was undertaken.
- No significant changes to the channel or floodplain roughness has occurred since the model's release.
- The hydrology remains suitable for use and the adopted storm duration is appropriate for the site.

1.4 Summary of the Baseline Model

Product 5, 6 and 7 data for the Neath area was requested from NRW in May 2026. NRW provided product 7 model data for the Neath_5_v1.0_2015 model and product 6 data for the following models: Neath_5_v1.0_2015 and Neath_5_v1.1_2023.

The Neath_5_v1.1_2023 contains tidal re-runs of the 2015 model, wherein the tidal climate change allowance was updated to align with the most recent NRW guidance. While product 7 data was not available for the Neath_5_v1.1_2023 model data, the product 6 data contained the updated 1D flows

as a part of the 1D BC check file, which allowed climate change updates to be replicated as part of this modelling exercise, see Section 2.2 for further details on the implementation of the 0.5% AEP + CC event.

The model is a 1D-2D ESTRY-TUFLOW model which was built and run in TUFLOW Classic. The domain of the model is centred around the River Neath; from Abergarwed to the railway north of Brynhyfryd. The model allows for both fluvial and tidal events to be run and therefore can be used to assess both fluvial and tidal risk to the site. Both a defended and an undefended scenario was provided by NRW, only the defended scenario was assessed as a part of this project, in-line with the FCA produced by Vale Consultancy.

2 Baseline Updates

The following updates were made to the 2015 model provided by NRW, to generate new baseline grids;

- Updated software version to version 2025.2.2 and switched from TUFLOW Classic to Heavily Parallelised Compute (HPC) solver,
- Flow constriction file updated to a layered flow constriction file and stipulated a preferred approach (Method B); the flow constriction file is obsolete in HPC,
- Initial condition files generated for both the 1D and 2D domains,
- Additional scenario option added to the control file to enable post-development runs,
- All flows updated to account for the latest climate change values and NRW methods in the 2023 P6 model data.

2.1 Software Version

The 1D-2D model was built and run using ESTRY-TUFLOW software. The previous model was run in version 2016-03-AD, which was updated to TUFLOW version 2025.2.2 for this study.

The solver was also switched from Classic to HPC, the former is a finite difference solver and the latter is a finite volume solver. This results in a significant time saving in model computational time, seeing a reduction in simulation run time from 11.3 hours down to 4.3 hours for the 0.5% Annual Exceedance Probability (AEP) + CC tidal event. One model file had to be updated on account of this change: The 2015 model contained 2D flow constriction shapes with a 90% blockage to represent buildings, this was updated to a 2D layered flow constriction shape with a 90% blockage. While the two were implemented to be functionally identical, the layered flow constriction shape has superseded the flow constriction shape when using the HPC solver.

2.2 Climate Change

NRW periodically update their guidance on climate change uplift across Wales. The relevant, up-to-date guidance³ as of August 2026 is as follows:

- For fluvial flows, the central allowance (2080s epoch) should be applied for the West Wales River Basin District for less vulnerable development. This value is 35%.
- For tidal flows, the upper central allowance (70th percentile), 2007-2100 should be used to assess less vulnerable development with a 75-year lifetime. For Neath Port Talbot, this value is 0.86m.

³ NRW. 2026. Climate change allowances and flood consequence assessments. Available at: <https://www.gov.wales/climate-change-allowances-and-flood-consequence-assessments> [Accessed 27/07/2026]

For the modelled fluvial scenario, inflows for the 1.0% AEP +CC event were updated from 20% (as in the received model) to 35%, to reflect the most up-to-date guidance.

Two key differences were identified when comparing the tidal inflows from the Neath_5_v1.0_2015 and the Neath_5_v1.1_2023 model.

- Constant fluvial inflows were applied in the 2015 model, while the 2-year fluvial event was applied to the fluvial inflows in the 2023 model.
- A modified tidal curve was implemented in the 2023 model. Figure 2-1 illustrates the difference between the 0.5% AEP tidal curve found in the 2015 and 2023 models.

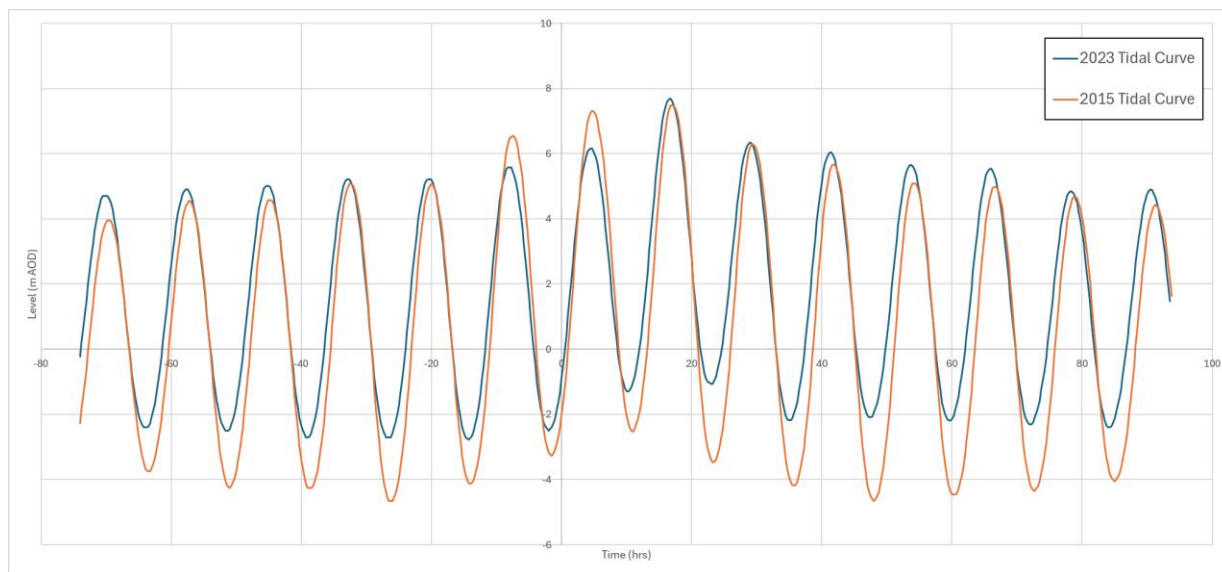


Figure 2-1 - Updated Tidal Curve, 0.5% AEP.

It was assumed that these changes were completed based on NRW instruction; where updated tidal curve includes more recent data and the fluvial inflows were applied to ensure that storage from rivers were not being underestimated. No reporting is available to confirm this assumption.

For this modelling exercise, the 2-year fluvial inflows were applied to all tidal events, replacing the constant inflows used in the 2015 iteration. The tidal curve was also updated to the 2023 iteration. The tidal curve in the climate change model runs was uplifted by 1m (as done in the Neath_5_v1.1_2023 model). A 1m uplift exceeds the required 0.86m stipulated by NRW guidance and is therefore suitable for assessing the site.

3 Post-Development Modelling

The development has been implemented as a z-shape, set to the proposed finished floor level of the building, 7.62 mAOD. The finished floor level is based on the 0.5% +CC tidal event, the derivation of the finished floor level is explained further in Section 4.3. The z-shape ensures that no flow passes through the proposed building below the finished floor level.

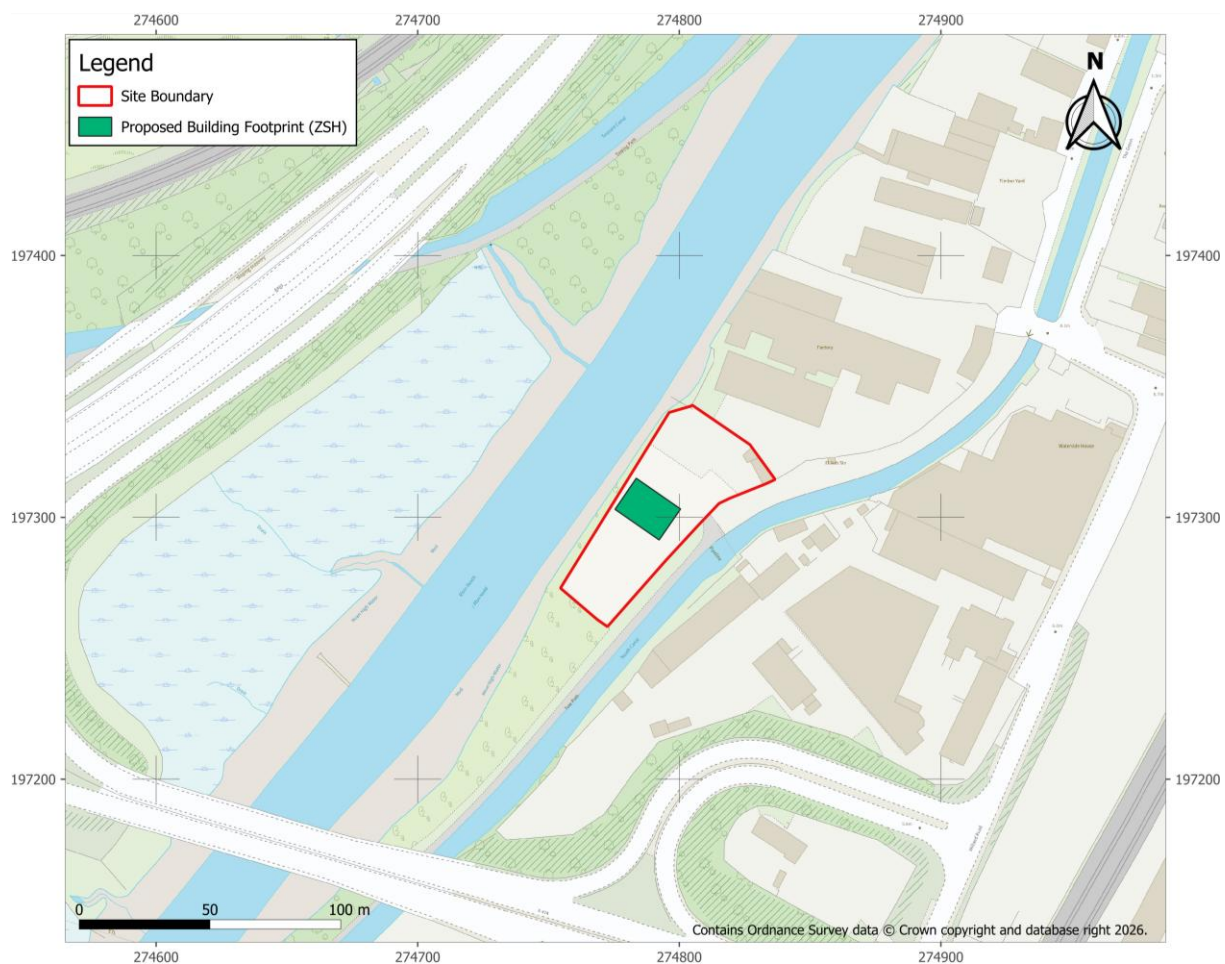


Figure 3-1 - Post-development layout.

4 Results

4.1 Summary of Design Runs

A summary of all the design runs simulated as a part of this study is provided in Table 4-1 below. For each of the runs stated in Table 4-1, both a post-development and baseline run was completed. In total there are 16 design runs. These events were chosen as they are the required durations to ensure compliance with TAN15.

Table 4-1 - Summary of design runs

Scenario	1.0%	1.0%+CC	0.5%	0.5%+CC	0.1%	0.1%+CC
Fluvial	✓	✓			✓	✓
Tidal			✓	✓	✓	✓

4.2 Fluvial Events

During all four of the modelled defended scenario fluvial events, the flooding does not encroach upon the development footprint. Because of this, it is concluded that the development is suitably safe from the design fluvial events and no further investigation is required. Figure 4-1, Figure 4-2 and Figure 4-3 illustrate the 1.0% AEP, 1.0% AEP +CC, and 0.1% AEP +CC modelled flood depths respectively. Because the fluvial flood extents do not overlap with the building, depth change analysis for the fluvial events is not required.

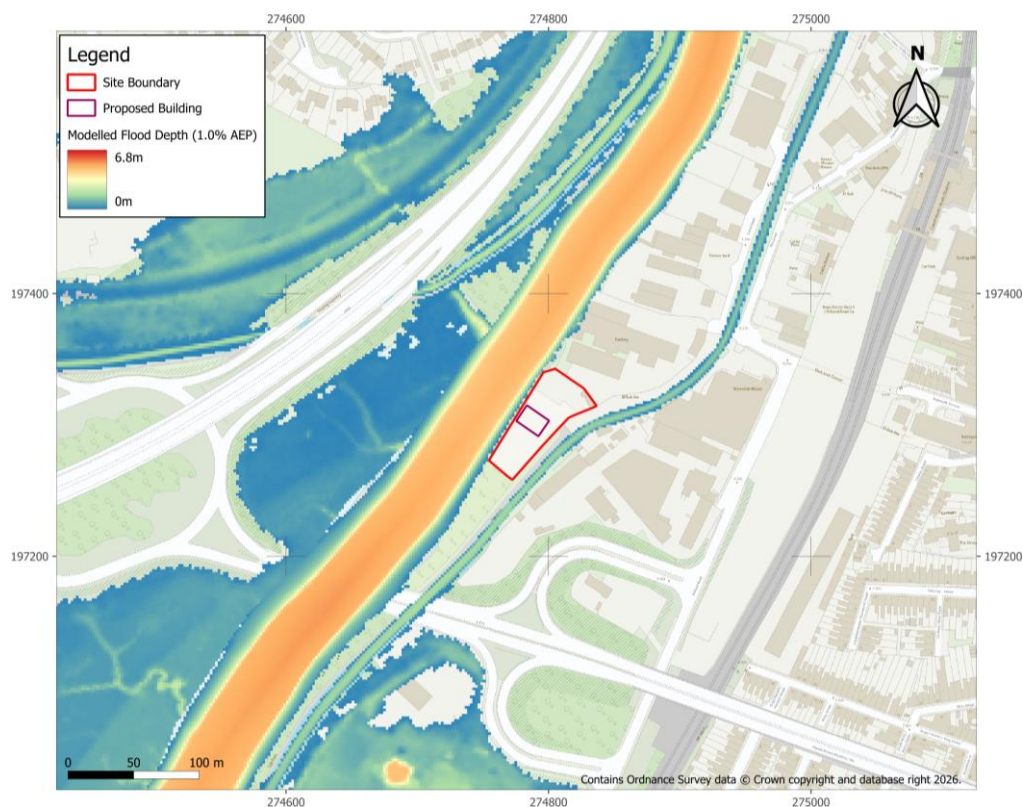


Figure 4-1 - Post-Development Flood Depths. 1.0% AEP. Fluvial



Figure 4-2 - Post-Development Flood Depths. 1.0% AEP +CC (35%). Fluvial.



Figure 4-3 - Post-Development Flood Depth. 0.1% AEP +CC (35%). Fluvial.

4.3 Tidal Events

4.3.1 Depth

Flood depths for the 0.5% AEP and 0.5% AEP + CC (the design event) events have been presented in Figure 4-4 and Figure 4-5 respectively. The 0.5% AEP event shows no relevant flooding to the proposed building. Flood water during the 0.5% AEP + CC event surrounds the proposed building, this is associated with a maximum flood level of 7.32 mAOD. This level approximately equates to depths of between 0.4m-0.8m in the land adjacent to the proposed building. The 0.5% AEP + CC is the design event and therefore the finished floor level should be set based on the flood level identified during this event, plus a 300mm freeboard to account for any uncertainty in the model data. In this instance, the finished floor level of the building should be set to 7.62 mAOD.

The 0.1% AEP and 0.1% AEP + CC events can be seen in Figure 4-6 and Figure 4-7 respectively. During the 0.1% AEP event, flooding encroaches on the proposed building from the south. The modelled level is 6.77 mAOD which is significantly below the proposed finished floor level for the development (7.62 mAOD). The 0.1% AEP + CC event shows flooding with a very similar extent to the 0.5% AEP + CC associated with a maximum flood level of 7.60 mAOD. This level is below the proposed finished floor level of 7.62 mAOD for the development.



Figure 4-4 - Post-Development Flood Depths. 0.5% AEP. Tidal.

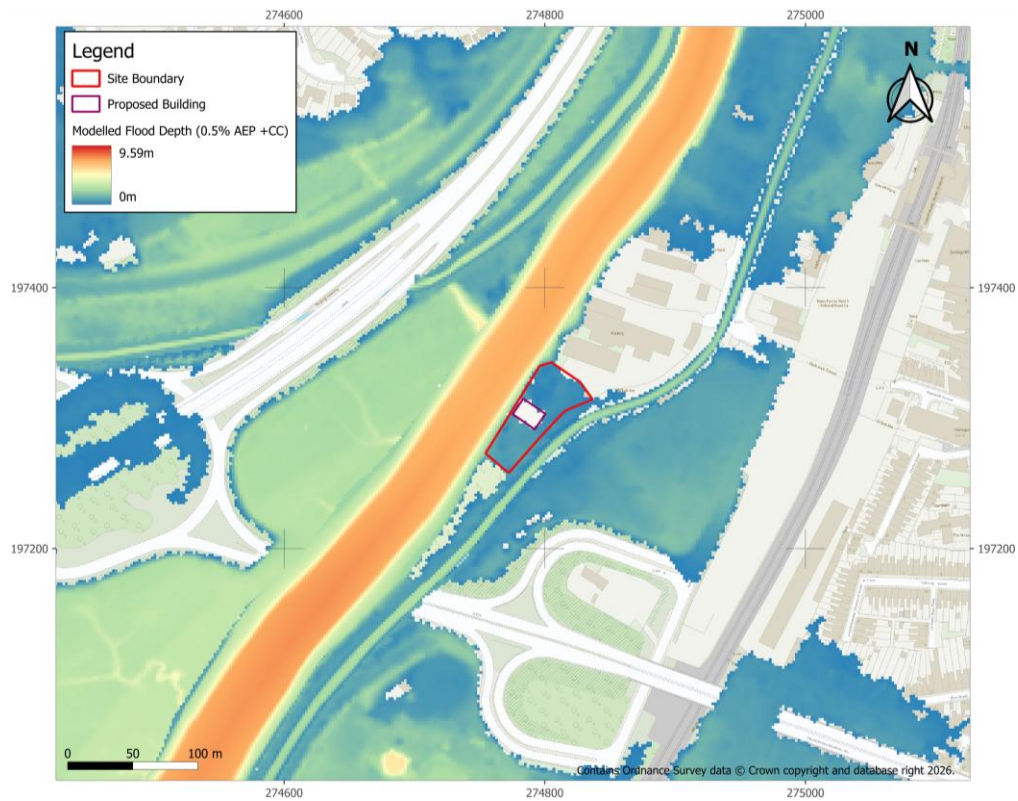


Figure 4-5 - Post-Development Flood Depths. 0.5% AEP + CC (1m). Tidal.



Figure 4-6 - Post-Development Flood Depths. 0.1% AEP. Tidal.

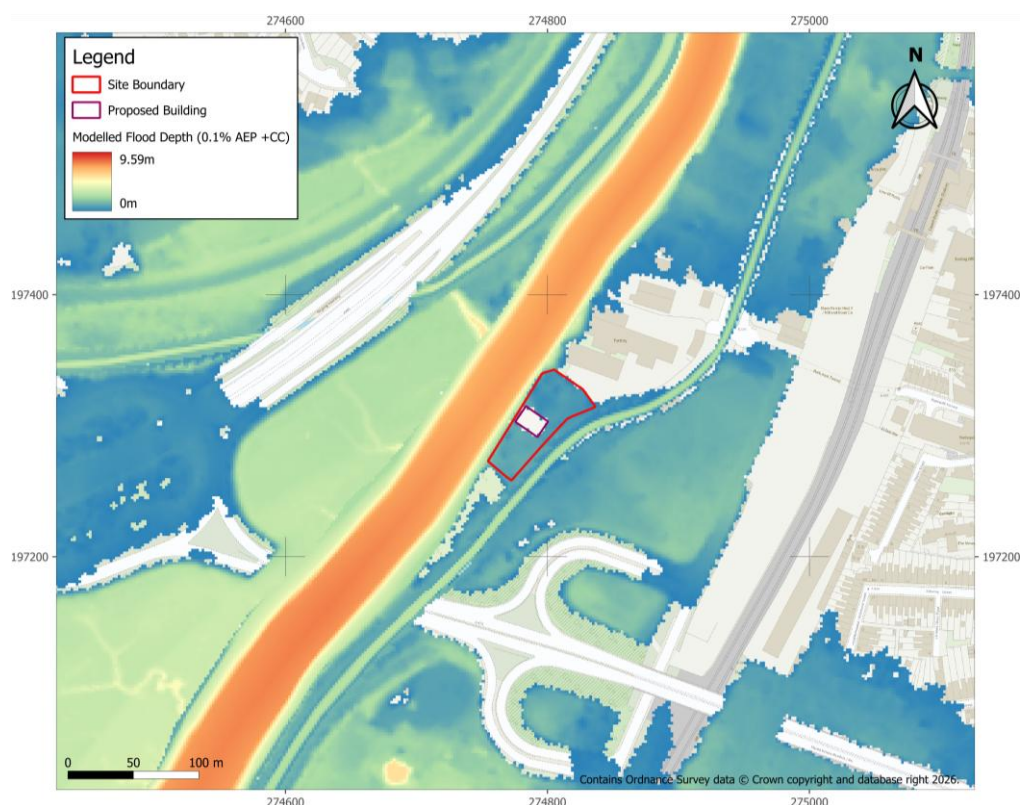


Figure 4-7 - Post-Development Flood Depths. 0.1% AEP + CC (1m). Tidal.

4.3.2 Depth Change

To assess the impact of the proposed building, depth change plots have been generated which compare the baseline to the post-development scenario. The depth change plots for the four key events; 0.5% AEP, 0.5% AEP +CC, 0.1% AEP and 0.1% AEP+CC are displayed in Figure 4-8, Figure 4-9, Figure 4-10 and Figure 4-11, respectively. All four events present a similar outcome, wherein flood levels remain very similar (<5mm) or identical to the baseline scenario on the land surrounding the site. As can be seen during all modelled events, there is a variable amount of depth change far to the west of the proposed building, centred around a bridge under the A465 (E:273786, N:197156). The depth change varies from positive to negative, without a consistent trend or area of impact, it is suspected that this is occurring due to an unstable section of structure in the model, which is amplifying the minor changes caused by the development. The investigation into this is described in in section 4.3.3.

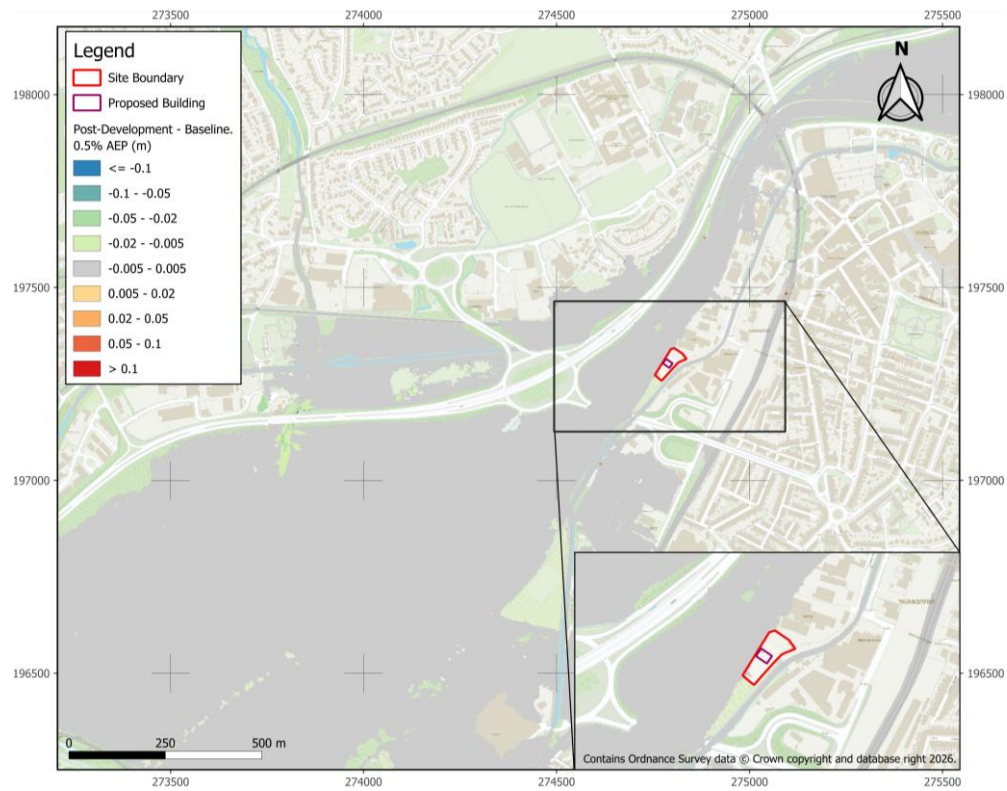


Figure 4-8 - Depth Change Plot. 0.5% AEP. Tidal.

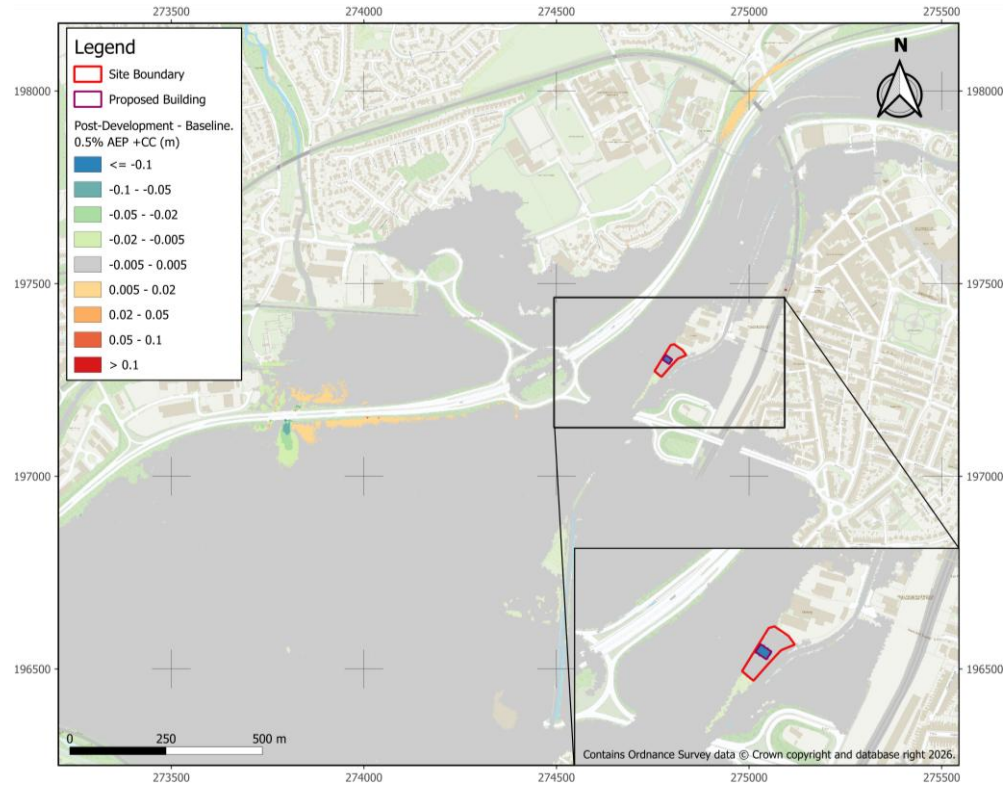


Figure 4-9 - Depth Change Plot. 0.5% AEP + CC (1m). Tidal.

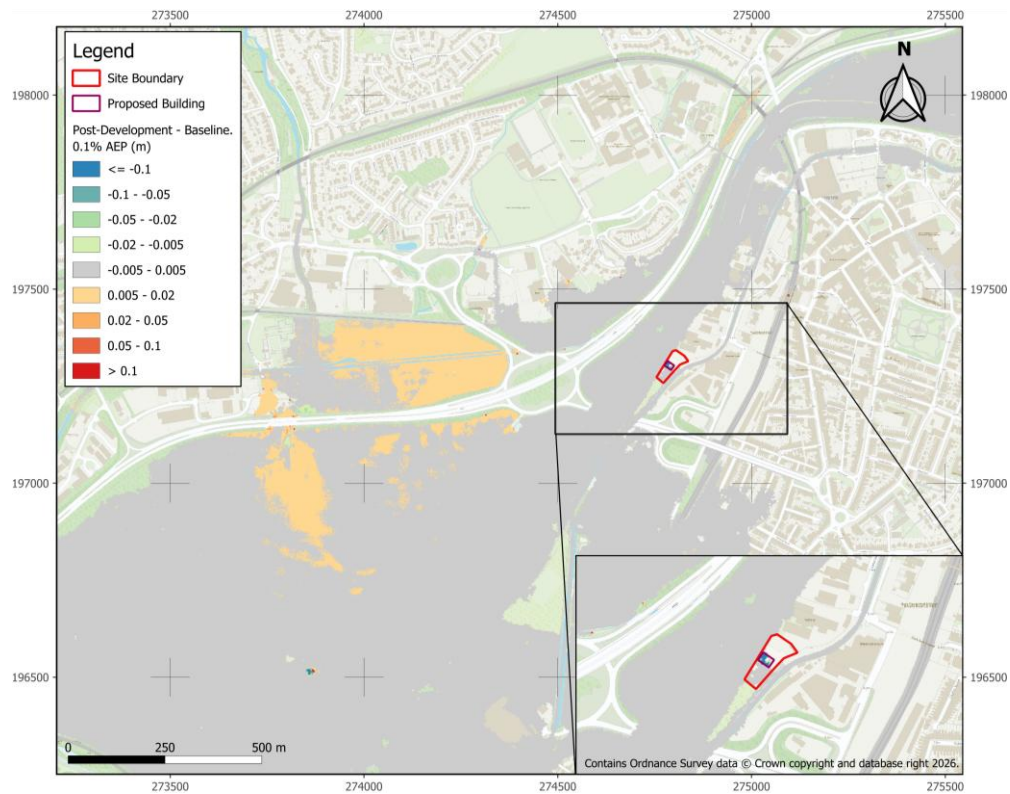


Figure 4-10 - Depth Change Plot. 0.1% AEP. Tidal.

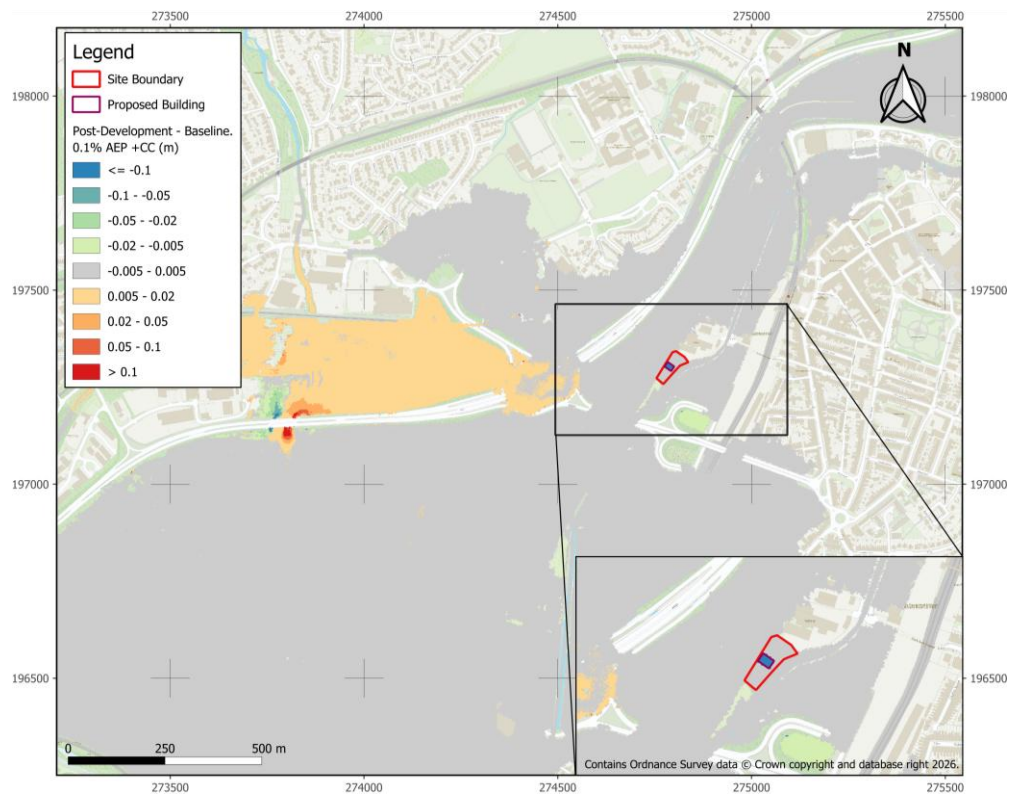


Figure 4-11 - Depth Change Plot. 0.1% AEP +CC (1m). Tidal.

4.3.3 Instability

Through the depth change analysis it was identified that detriment was observed in the wider floodplain. These changes largely occur north of the A465 and not near to the site. These changes do not appear proportionate considering the size and scale of the development. The area north of the A465 is fairly isolated from the remainder of the floodplain, with only two entry points near the site. A series of the 1D cross-sections from the hydraulic model were selected to understand the reason for the depth changes. Figure 4-12 illustrates the location of each selected cross-section. The reason each section was selected is as follows:

- TIDAL_02U and NCAN1187M3 were selected as they are directly adjacent to the proposed development on either side. These would be expected to be impacted the most by the development.
- Tidal_05D was selected as a node far from the site (800m), to observe whether the impacts are dissipating as they travel away from the site.
- CLYD0564B (along with BL and BR) and TCAN1495U were selected as they are the only two entries near the site, below the A465.

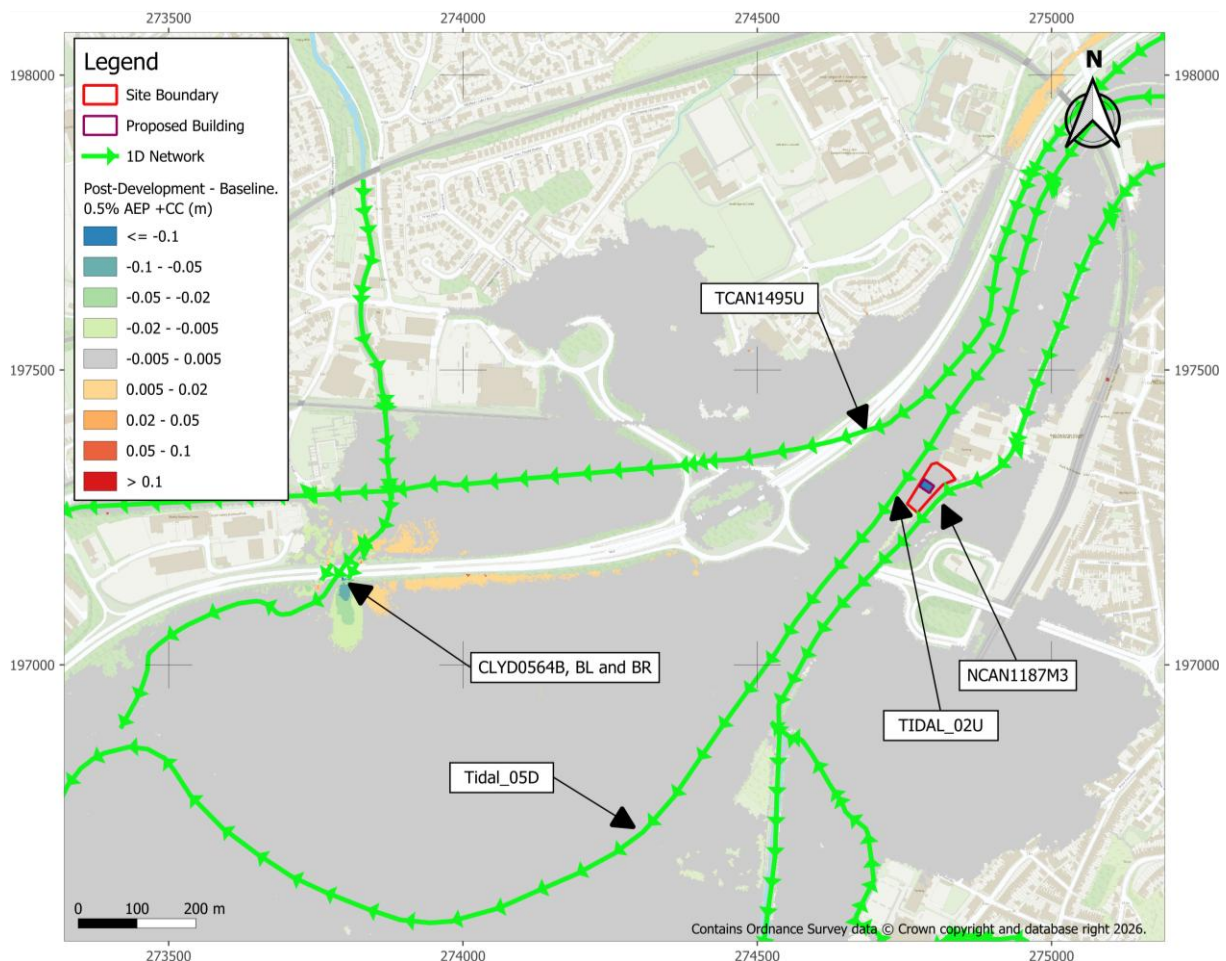


Figure 4-12 - Locations for Further Assessment. Underlain by the Wider 0.5% +CC Tidal Depth Change Plot.

Figure 4-13 below illustrates the flow modelled for the critical event (0.5% AEP +CC) at each of the chosen cross-sections, comparing the post-development with the baseline runs. The majority of the cross-sections show a negligible change in flow from baseline to post-development. The locations

directly adjacent to the proposed development (Tidal_02U and NCAN1187M3) saw minimal ($<0.5\text{m}^3/\text{s}$) changes when compared to the baseline. These minor changes are reflective of the previously identified changes in peak flood level surrounding the site which were less than 5mm and near identical to the baseline for the most case.

The three cross-sections which showed notable deviations in flow from the baseline were those surrounding the CLYD0564B structure (CLYD0564B, CLYD0564BL, CLYD0564BR). In CLYD0564BL and CLYD0564BR, flow reverses on very short frequencies during the peak of the tidal event. This oscillation is present in both the baseline and post-development runs, which is indicative of poor model stability at the structures, rather than the poor stability related to the post-development runs. At CLYD0564B, flow increased by $18.5\text{m}^3/\text{s}$ during the peak and decreased by $13.8\text{m}^3/\text{s}$ when the river receded, prior to the peak. Besides model instabilities in this area, there is no other clear reason why such a small modification should cause such a dramatic difference in flow, especially when the modification is located 1km away from the site. Furthermore, the detriment during all events is concentrated near to or north of CLYD0564B. It has been concluded that the detriment north of the A465 should be ignored because this is a result of existing instabilities present in CLYD0564B, CLYD0564BL, CLYD0564BR which are not responding realistically to change implemented in the post-development scenario.

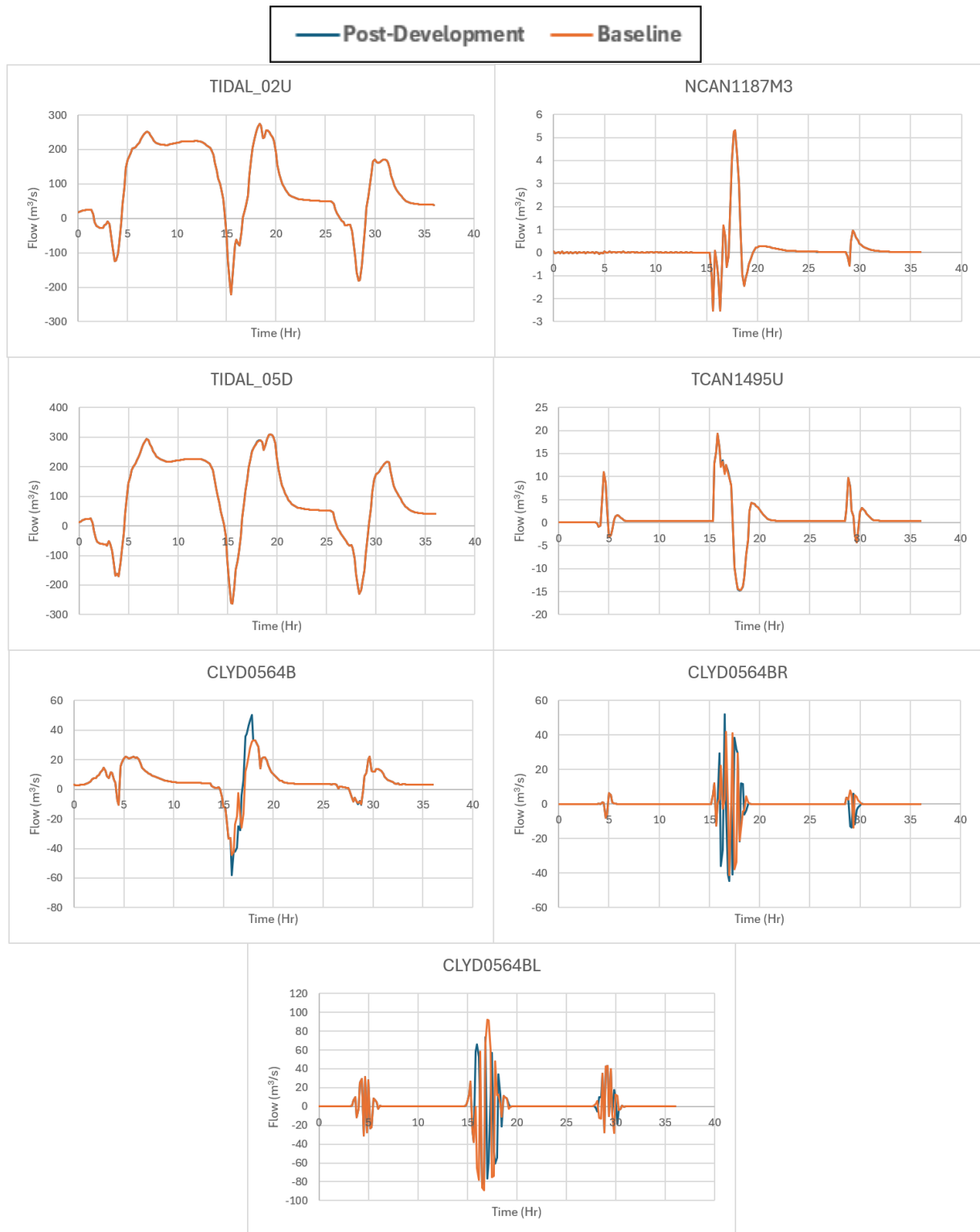


Figure 4-13 - 1D Network Graphs at each selected location.

5 Summary and Conclusion

This report has detailed the methodology used to complete the modelling assessment for Canal Side Yard. The following points summarise the modelling undertaken and the conclusions drawn from the work:

- WHS obtained product 7 data for the River Neath from NRW. The hydraulic model has been converted to HPC and minor updates have been made to the 2D domain and the tidal inflows.
- The hydraulic model has been run for the relevant design events, which are required to comply with the TAN15 guidelines.
- WHS have implemented and run a post-development scenario, raising the proposed building using a z-shape to a proposed finished floor level.
- Results from the hydraulic modelling show that the proposed building is not inundated for any event if an appropriate finished floor level is set.
- The finished floor level should be set at 7.62 mAOD. The flood level for the design event (Tidal 0.5% AEP + CC) is 7.32 mAOD, plus a 300mm freeboard to account for any uncertainties in the model.
- When comparing the baseline results to the post-development, depth changes are not observed on the land directly adjacent to the site. During all events depth change is observed centred around a bridge structure under the A465 (nodes CLYD0564B/BL/BR). These changes are attributed to model instability at the structures. Model flows through these nodes show unrealistic flow increases and rapid directional reversals, indicating instability.
- It is concluded that Figure 5 of TAN15 is satisfied because the development is flood free for the 0.5% AEP +CC tidal and 1.0% AEP +CC fluvial flood events, due to the finished floor levels.
- It is concluded that Figure 6 of TAN15 is satisfied because the finished floor level of the site is set so that no flooding occurs during the 0.1% AEP plus climate change event for fluvial or tidal flooding.
- The model shows that the development does not cause impacts outside of the site boundary (considering the mitigating circumstance of the unstable structure) and is therefore compliant with the aspects of Section 11.4 relevant to this modelling study.