Flood Consequences Assessment (FCA) For:

Residential Development at
40 Victoria Road, Fleur-De-Lis
Blackwood, Caerphilly County Borough Council
NP12 3UG

Prepared for:

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17341 – FCA – R01

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LIMITATIONS

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All the Natural Resources Wales (NRW) mapping data used is under special license. Data is current as of June 2023 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.

Purpose of the report

The purpose of this report is to outline the potential flood risk to the site, the impact of the proposed development on flood risk elsewhere, and the proposed measures which could be incorporated to mitigate the identified flood risk. The report has been prepared in accordance with the guidance contained in Planning Policy Wales (PPW) and Technical Advice Note 15 (TAN15): Development and Flood Risk. This report has been prepared in consultation with Natural Resources Wales (NRW).

1 INTRODUCTION

Vale Consultancy has been instructed by The Client to undertake a Flood Consequences Assessment (FCA) for the proposed development, at 40 Victoria Road, Fleur-De-Lis, Blackwood, Caerphilly CBC, NP12 3UG (315488E, 196249N).

1 Existing Site & Location

For the purposes of this report; the application site is considered to be Brownfield or Previously Developed Land. For instance, the site was previously occupied by Coal Workings (mining), and now comprises / lies upon Made Ground.

The 0.746-hectare (ha) site is located adjacent (east) to the Rhymney River and to the rear of 40 Victoria Road (B4252), Fleur-De-Lis. The land subject of this application stretches behind the row of detached dwellings on Victoria Road. The existing dwelling lies almost in the middle section of the site on its eastern boundary and is set well back from the building line along Victoria Road. The rear (western) boundary of the site is made up of a tree-lined embankment, which is covered by a Tree Preservation Order No. 471 beyond which is the River Rhymney. The surrounding land use mostly comprises residential and industrial.

Victoria Road provides site access / egress.

The existing site comprises undeveloped land made up of grass and some woodland.

Refer to Figure 1 below and the Existing Site and Location Plan, Appendix A.

Figure 1 : Site Location Satellite Plan

1 Proposed Development

The proposal is for the development and erection of 5 detached residential dwellings with associated access, parking and gardens.

Refer to the Proposed Development Plans, Appendix B.

1 Existing Topography

A topographical survey has been undertaken and provided by Zenith in April 2023. The survey was carried out to an arbitrary local grid. The benchmark of 100.00 was set from station Z1 located on Victoria Road outside house number 24. There is a fall across the site from the east to the west and existing levels predominately range between 2.2m above benchmark on Castle Street opposite the site access to the east and 9.2m below benchmark to the far north west of the site.

Topographical data to metres Above Ordnance Datum (m AOD) have also been derived from a 1m resolution NRW composite 'Light Detecting and Ranging' (LiDAR) Digital Surface Model (DTM).

A review of the data generally corroborates the findings of the topographical survey.

In accordance with Building Regulations, finished floor levels (FFL) should be set 150mm above surrounding ground levels.

Refer to Topographical Data, Appendix C.

1 Existing Ground Conditions

Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates Superficial deposits underlaying the site as Devensian Till comprising Diamicton. Bedrock geology is recorded as Grovesend Formation comprising Sandstone.

Ground investigation (GI) works have been undertaken by Integral Geotechnique in the past.

Furthermore (and more recently), GI works and infiltration testing were undertaken by Gibbs GeoTechnical in May 2023. The GI works recorded Grassed loam from the surface level to 0.3m depth below ground (DBG). Grassed loam was present from surface level to 0.3m depth at which point a till / alluvium / clay mix was encountered until the full 1.0m depth was attained.

The GI undertaken by Integral Geotechnique recorded Made Ground underlying the site. Specifically; Competent in-situ soils within approximately 1m depth in the northern extent (Zone A); Competent in-situ soils or rocks within approximately 4m depth (Zone B & Zone C); and competent in-situ soils or rocks at typically 4 to 16m depth (Zone D).

Made Ground is an area where the pre-existing (natural or artificial) land surface is raised by artificial deposits.

Groundwater ingress or bedrock were not encountered throughout the GI's.

1 Existing Drainage Systems

DCWW asset plans shows that there is a 225mm Combined sewer which crosses the application site along the eastern boundary conveying flows from south to north. DCWW asset plans also indicate the presence of a 150mm surface water sewer within Victoria Road at the site access which convey flows from north to south.

The topographical survey also traces the 225mm combined sewer. It indicates that there is a chamber to the rear of the existing 40 Victoria Road site and that the size of the sewer is thought to be 150mm instead of 225mm. All connections from Plot 40, both surface water and foul connect into this manhole.

Given the exact routing of the sewer is unknown, a CCTV survey has been commissioned to ascertain the exact location of the DCWW sewer within the application site.

Refer to Appendix C - Topographical Information.

Refer to Appendix D - DCWW Assets Plans.

2 Flood Zone Category and Policy Context

Flood Zone Category

The Welsh Government Development Advice Map (DAM) has been developed for land use planning purposes. It is based on Natural Resource Wales' extreme flood outlines and the British Geological Survey drift data. The DAM should be used alongside Planning Policy Wales and Technical Advice Note (TAN) 15 to direct new development with respect to flood risk. Together, they form a precautionary framework to guide planning applications.

In addition to the DAM, the Flood Risk Assessment Wales map indicates long term risk of flooding from Rivers, the Sea, Surface Water and Small Watercourses and Reservoirs.

The DAM excerpt for the site (Appendix E) shows that the site falls within Zone A which is defined by TAN15 as;

Zone A – Considered to be at little or no risk of fluvial or tidal / coastal flooding.

The NRW Flood Risk Maps included in Appendix E show the site is outside of the extreme fluvial flood extent and is therefore classified as at 'Very Low' risk of flooding from fluvial flooding, meaning it has less than 1 in 1000 (0.1%) annual probability of flooding.

From the Sea (tidal flooding), the site is also shown to be outside of the extreme flood extent and therefore is at 'Very Low' risk of tidal / sea flooding, meaning it has less than 1 in 1000 (0.1%) annual event probability (AEP) of flooding.

Flood Maps for Planning (FMFP) Wales (New Tan 15)

A review of the forthcoming Flood Maps for Wales (which will replace the DAM) also shows the site to be located outside of the fluvial and tidal extreme flood extents and therefore is indicated to be at Very Low Risk of flooding from these sources.

The Flood Map for Planning has no official status for planning purposes until June 2023 but should be considered as the 'best available information' on flood risk to inform our planning advice. Furthermore, it should be noted that the extreme flood extents shown by the new FMFP are run as undefended and therefore do not take into consideration flood defences.

The site is shown to be located outside of the extreme flood extent for surface water and small watercourses.

Site access / egress (Victoria Road) is located outside of the fluvial, tidal and surface water and small watercourses extreme flood extents and is therefore considered to be at Very Low Risk of flooding from all of these sources.

Refer to Appendix E.

Development Vulnerability Classification

Residential development and associated infrastructure are proposed for the candidate site.

The proposed residential development is considered to be 'highly vulnerable development' in accordance with Figure 2 of the Welsh Government's TAN15. Highly vulnerable developments are considered to have a minimum lifetime of 100 years.

In terms of use within the precautionary framework TAN 15 defines Zone A as:

Zone A – Used to indicate that justification test is not applicable and no need to consider flood risk further.

Paragraphs 6.1 and 6.2 of TAN15 state:

6.1 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 zone C. 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 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.

And;

6.2 New development should be directed away from zone C and towards suitable land in zone A, otherwise to zone B, where river or coastal flooding will be less of an issue. In zone C the tests outlined in sections 6 and 7 will be applied, recognising, however, that highly vulnerable development and Emergency Services in zone C2 should not be permitted. All other new development should only be permitted within zones C1 and C2 if determined by the planning authority to be justified in that location. Development, including transport infrastructure, will only be justified if it can be demonstrated that: -

i. Its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement; or,

ii. Its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region.

And,

i. It concurs with the aims of PPW and meets the definition of previously developed land (PPW fig 2.1); and,

ii. The potential consequences of a flooding event for the particular type of development have been considered, and in terms of the criteria contained in sections 5 and 7 and appendix 1 found to be acceptable.

Local Policy

The Caerphilly County Borough Local Development Plan (LDP) was adopted in November 2010 and now forms the development plan that will form the basis of decisions on land use for planning in the area. The following policies relate to flood risk and drainage:

1.39 Some flexibility is necessary however to enable the risks of flooding to be addressed whilst recognising the negative economic and social consequences of precluding investment in existing urban areas, particularly within the Principal Towns and the benefits of reusing previously developed land. In assessing the suitability of previously developed land for new development a judgement has been made in terms of the social, environmental and economic benefits of redeveloping sites.

1.40 As a general principle the Plan seeks to locate development away from the floodplain. However where development is considered appropriate having regard to the role and function of settlements and can be justified within the context of TAN 15, suitable mitigation measures will need to be incorporated within the design of any new development to ensure that it is as safe as possible. In particular, where development is proposed in vulnerable areas, the need for a flood consequences assessment will be highlighted as a requirement of any future planning application on sites allocated in the LDP. These assessments will be prepared in consultation with the Environment Agency. Wherever possible in such locations, redevelopment will also be planned in such a way as to provide increased protection for existing vulnerable urban areas.

2.14 Climate change, increases in populations and changes in lifestyle have all had an impact upon the water environment and the pressures upon it. Climate change will affect the amount of rain that falls, it will impact upon river flows, replenishing of groundwater, the quality of water available and incidents of flooding, particularly localised, flash flooding. The demands and pressures on water resources will also change, with the scale and nature of the problem differing across Wales, as will the approach to dealing with the problems. The approach to the protection of the water environment will need to take into account the quality and quantity of the local water resource, and how this impacts upon the wider environment in terms of preventing further deterioration of aquatic ecosystems, associated habitats, fisheries, promoting the sustainable use of water, and controlling water abstractions. This is particularly important in terms of any development proposals that are likely to impact on the rivers Rhymney, Ebbw and Sirhowy.

E The incorporation of resource efficiency and passive solar gain through layout, materials, construction techniques, water conservation, and where appropriate the use of sustainable drainage systems

Consultation

As well as the LDP, the following documents have been consulted and reviewed as part of this FCA:

- Caerphilly County Borough Council Local Flood Risk Management Strategy (April 2013)
- Caerphilly County Borough Council Flood Risk Management Plan (December 2015)
- Caerphilly County Borough Council Preliminary Flood Risk Assessment Report (PFRA) (May 2011)

Product 5 & Product 6 data have been requested from the NRW. However, in their response, NRW have confirmed that there is no detailed flood modelled data available for this location as it lies outside of the extreme flood extents.

The CCBC Flood Risk Management Plan (FMP) identifies no site-specific flood risks. The FMP reports 'Blockage incidents' at Victoria Road and that 'The surface water flood map shows a low-risk overland path'.

3 SOURCES OF FLOODING AND PROBABILITY

Fluvial

The nearest watercourse to the site is the Rhymney River which is located approximately 20m away from the site, south west, at its nearest point and flowing south west from here. The Rhymney River discharges into the Severn Estuary further downstream at Cardiff Bay.

The Rhymney River is listed as a Main River by NRWs online mapping tools at this location.

There are no other notable fluvial / surface water features within the vicinity.

Main Rivers are usually larger streams and rivers but also include some smaller watercourses. In Wales, main rivers are legally designated by NRW.

There are no other watercourses or surface water features within the vicinity that would pose a fluvial flood risk to the site or proposed development. Therefore, the Rhymney River is considered the primary source of fluvial flood risk to the site (albeit a Very Low Risk).

The NRW Flood Risk Assessment Wales (FRAW) Map confirms that the site is at Very Low Risk of fluvial flooding – an area considered to have less than a 0.1% (1 in 1000) annual probability of fluvial flooding.

The new / forthcoming FMFP also shows that the site is at Very Low Risk of fluvial flooding – Areas considered to have less than a 0.1% (1 in 1000) annual probability of flooding from rivers in a given year, including the effects of climate change.

The NRW 'Historic Flood Map' shows that there are no records of historical fluvial flooding events at the candidate site which is shown outside of the historic flood records extent.

NRW Flood Data

Product 5 & Product 6 data have been requested from the NRW. However, in their response, NRW have confirmed that there is no detailed flood modelled data available for this location as it is situated outside of the extreme flood extents and alluding to the Very Low Flood Risk posed to the site.

Refer to Appendix E.

Tidal

The site is located significantly inland (>20km from the nearest coastline) and above sea level (>90m AOD). A minimum distance of 20km lies between the site and the point at which the Rhymney River discharges into the Severn Estuary at Cardiff. Furthermore, the catchment from the site to this point is relatively steep. Therefore, it is not envisaged that the site is at risk from combined tidal / fluvial events where water can 'back-up' within the watercourse causing flood risk to low – lying areas within a valley, inland.

As already mentioned, the site is shown to be outside the extreme flood extent and therefore at 'Very Low' risk of tidal / sea flooding, meaning it has less than 1 in 1000 (0.1%) annual probability of flooding.

The updated FMFP which has not come into formal use yet also indicates the site to be outside of the extreme flood extent and therefore at Very Low Risk of tidal / sea flooding, meaning it has less than 1 in 1000 (0.1%) annual probability of flooding, including the effects of climate change.

It can be concluded that the application site and proposed development are currently at Very Low / No Risk of tidal flooding / from the sea. Refer to Appendix E.

Surface Water

Surface water flooding occurs when rainwater does not drain away through the normal drainage system or soak into the ground. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is saturated, frozen or developed, resulting in overland flow and ponding in depressions in topography. Surface water flooding can occur anywhere without warning. However, flow paths can be determined by consideration of contours and relative levels.

The NRW 'Risk of Flooding from Surface Water' map (Appendix E) indicates the extent of flood risk from surface water and small watercourses. The flood map shows that the large majority of the candidate site is outside the extreme flood extent and therefore is at Very Low Risk of surface water flooding, meaning it has a less than 0.1% annual probability of flooding from surface water.

A small, isolated portion of the site (northern extent) is identified to be at risk from surface water flooding / from small watercourses and lies within Flood Zone 2 and 3.

Surface Water and Small Watercourses Flood Zone 2 is defined as: 'Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and / or small watercourses in a given year, including the effects of climate change'.

Surface Water and Small Watercourses Flood Zone 3 is defined as: 'Areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change'.

There are no distinct flow routes as defined by local topographic levels in the area which would direct any excess surface water towards the site. Site access / egress is shown to be outside of the flood extent and therefore at Very Low Risk of surface water flooding.

The proposed development will need to incorporate a sustainable surface water drainage strategy including SuDS and a successful SAB approved application which will likely improve the existing arrangement (provision of betterment) and therefore reduce the surface water flood risk to the site.

There are no official records of flooding from surface water or small watercourses at the site, or within the vicinity.

It can be concluded that the risk of surface water flooding to the proposed development is Low.

Sewer Flooding

Flooding from sewers can occur when a sewer is overwhelmed by heavy rainfall, becomes blocked, is damaged, or is of inadequate capacity.

There are no known records of notable flooding from sewers at the site or in the near vicinity.

The CCBC Flood Risk Management Plan states;

'The sewer network in the Caerphilly County Borough Council area is mostly made up of combined sewers that take both foul sewage and surface water. These are all in the ownership of DCWW. Flows in these pipes are usually controlled through the installation of Combined Sewer Overflows, which operate to allow excess flows to be removed from the system and discharged into natural drainage channels, protecting properties from sewer flooding'

There are no distinct flow routes in the area which would direct any potential flooding arising from the local sewer network which serves the area. It can be concluded that the risk of sewer flooding is Low.

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 site-specific comments regarding flood risk from groundwater within the FMP.

However, the FMP does comment on flood risk from groundwater to the neighbouring / nearby communities:

The majority of Pengam is shown to have low susceptibility to groundwater flooding based on the underlying geology (or is unclassified). There are several old mine shafts in the area where groundwater flooding could occur as dewatering operations have ceased. However no specific incidents of groundwater flooding have been identified so this is not considered a significant issue.

And;

The majority of Tir-y-berth is shown to have low susceptibility to groundwater flooding, based on the underlying geology (or is unclassified). There are several old mine shafts which are potentially a source of groundwater flooding where dewatering operations have ceased. However, no specific incidents of groundwater flooding have been identified so this is not considered a significant issue.

There are no known records of groundwater flooding incidents at or near to the site. Furthermore, the proposed plots will be overlain predominantly by hardstanding which would prevent the ingress of groundwater to the surface.

It can be concluded that the risk of groundwater flooding is Low.

Artificial Sources of Flooding

There are no canals or other artificial / man-made surface water bodies within the immediate vicinity of the site or surrounding area which would pose a flood risk to the site.

The NRW 'Risk of Flooding from Reservoirs' map (Appendix E) shows that the site is not at risk of flooding from reservoirs. The risk of flooding from reservoirs is extremely unlikely to happen.

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 work carried out.

It can be concluded that the probability of flooding from artificial sources is Very Low.

Summary of Potential Flooding

It can be concluded that surface water (pluvial) flooding is the main potential source of flood risk to the site.

However, this is often where the local drainage system is not effective in capturing runoff due to inept or poorly maintained systems. CCBC have acknowledged this in their FMP. For instance;

'The Flood Risk Maps and other available data indicate the main local flood risks relate to surface water flooding, where the local drainage system is not effective in capturing runoff. The reported flood incidents indicate this is often due to (or exacerbated by) blocked gullies, sewers or culverts'.

And;

'The surface water flood map takes a generalised approach to the representation of drainage systems. However, the mapping is indicative of areas most affected during high intensity storms or due to blockages. Many of the reported flood incidents relate to blocked gullies or drains'.

In the FRAW Map, the site is shown to be located outside of the extreme flood extents (fluvial and tidal). A small, isolated section of the site is shown to be within Flood Zone 2 / 3 for Surface Water and Small Watercourses.

In the forthcoming and updated FMfP Wales, the whole of the candidate site is still in Flood Zone 1 (Rivers and Sea) whilst the vast majority of the site lies outside of the extreme pluvial flood extent; a small section of the site is shown to be at Risk (Flood Zone 2 and 3) of surface water flooding. Site access is shown to be in Flood Zone 1 (Rivers, Sea and Surface Water and Small Watercourses) in all of the NRW flood maps.

There are no records of historic flooding or incidents at the site.

It can be concluded that the site is either at Low, Very Low or No Risk of flooding from all other potential sources, including fluvial and tidal. For instance, the site is shown to be located outside of the extreme flood extent from all sources, with the exception of pluvial flood risk.

4 TAN15 Assessment

Justifying the Location

As previously mentioned, the site falls within Zone A of the NRW DAM map which is defined as:

Zone A – Considered to be at little or no risk of fluvial or tidal / coastal flooding

And ;

Zone A – Used to indicate that justification test is not applicable and no need to consider flood risk further.

It is envisaged that the proposal makes the best use of the available (currently disused) Brownfield or Previously Developed Land for which otherwise alternative proposals are limited, and which maximises the candidate site potential while remaining in keeping with the surrounding area and in alignment with the key policies and strategies of the LDP.

It can be concluded that the candidate site is fully complaint with TAN15 and that flood risk need not be considered any further. No further justification is required and the proposal meets the requirements of national, regional and sub-regional planning policy.

5 MITIGATION AND RECOMMENDATIONS

It can be concluded that surface water (pluvial) flooding is the main potential source of flood risk to the site.

It can be concluded that the site is either at Low, Very Low or No Risk of flooding from all other potential sources, including fluvial and tidal.

Taking a precautionary approach to design and as an additional factor of safety, mitigation measures should be incorporated into the proposed development.

Additional internal alterations that should be introduced where practically possible to the development include:

- Raised electronic control units and sockets
- Install smart air bricks or air brick covers
- Provide low level flood guards on all access points
- Use plastic and stainless-steel fixtures and fittings and avoid wooden alternatives
- Use solid flooring (tiled, resin, concrete) at lower ground level, where possible
- Ensure that with the time afforded by advance warning, evacuation of property via safe egress and removal of valuables from the building can be implemented
- Clearance of the existing surface water drainage system to improve drainage of the site and follow necessary maintenance procedures (to new & existing SW drainage) to ensure that the system functions to optimum capacity
- The predicted depths, rise, speed of inundation and velocities are likely to satisfy the TAN 15 suggested tolerable conditions for more extreme events
- Use robust flood resistant construction techniques as detailed the RIBA publication -

"Improving the Flood Performance of New Buildings, Flood Resilient Construction" (May 2007).

Flood Alerts & Flood Warnings

Flood Alerts and Flood Warnings do not currently cover this area (see Appendix E) due to the fact that the site is in Flood Zone 1 and is largely at Very Low / Low Risk of flooding from all sources.

Site owners / users should register to receive Flood Alerts and where possible, Flood Warnings if they become available to the site in the future. Flood Warnings Direct is a free service that provides prior warnings of a fluvial 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.

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

The site owner should draw up an evacuation procedure for implementation during an extreme event. This should be done in conjunction with the appropriate professional bodies. An evacuation procedure should be

drawn up after the developer has completed an action plan. The action plan is carried out and based on an assessment of the consequences of an extreme flood on the building. The extent of 'dry proofing' measures incorporated is determined by the assessment of the social and economic impact of a flood.

The evacuation procedure should be a written document which should outline the course of action to site users during a flood.

The evacuation procedure should address 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 (building and site)
- Safe exit route to higher ground outside the flood risk area (building and site), kept and displayed on site.

Flood proofing measures should be incorporated as far as is practically possible.

It is proposed that the new building will be constructed with materials with inherently good wet proofing performance. Wet proofing is the use of more flood resistant building materials in the floors, walls and doors, i.e., concrete ground slab and masonry wall construction in this case.

Access and Egress

Safe access / egress routes have not been specified as the whole of the candidate site lies within Flood Zone 1 (Rivers and Sea), and is largely outside of the extreme pluvial flood extent (FRAMW). Site access is not shown to be at risk of flooding from any sources and is generally unrestricted with good accessibility.

Safe Refuge Area and Flood Procedure

In the highly unlikely event that the site floods the competent warning authority is the NRW and a lead time of several hours in advance of flooding is typically provided, excluding potential breaches of defences. When a flood is expected CCBC, and the local emergency services will be responsible for public care and safety. In the highly unlikely and improbable event of the site flooding before site users have an opportunity to evacuate - the occupants should seek refuge on the first floors as and where possible until flood waters have dispersed and it is safe to leave the building or assistance from the emergency services arrives.

Finished Floor Level (FFL)

In accordance with Building Regulations, finished floor levels (FFL) should be set 150mm above surrounding ground levels.

5.5 Impact on Flood Risk Elsewhere

No displacement of inundation waters or loss of flood storage will result from the proposal. It can be concluded that the proposed development will not increase flood risk elsewhere and will not affect any third-party land.

Although flood compensatory storage is not required; there is plenty sufficient space to accommodate for areas of flood compensatory storage and surface water attenuation across the site.

Surface Water Drainage

Any development that takes place across the candidate site will require and be subject to a successful SAB approved application comprising a sustainable surface water drainage and management strategy for the site which incorporates sustainable drainage systems (SuDS). This will provide betterment over the existing arrangement (which is unfettered); both in terms of discharge rate / volume into the existing system and also water quality.

6 CONCLUSIONS

Residential development and associated infrastructure are proposed for the candidate site.

The proposed residential development is considered to be 'highly vulnerable development' in accordance with Figure 2 of the Welsh Government's TAN15. Highly vulnerable developments are considered to have a minimum lifetime of 100 years.

In terms of use within the precautionary framework TAN 15 defines Zone A as:

Zone A – Used to indicate that justification test is not applicable and no need to consider flood risk further.

Therefore, highly vulnerable development at the candidate site is deemed to be fully compliant with TAN15 and no further justification is required.

The application site falls outside of the extreme flood extent (Flood Zone 1) from all sources with the exception of surface water and small watercourses (pluvial). A small, isolated section in the north extent of the site is shown to be at risk from pluvial flooding (Flood Zone 2 and 3).

Observation and implementation of the Mitigation Measures and Recomendations will ensure that any risks are residual, acceptable and manageable over the lifetime of the development. The developer (client) accepts the risks and associated consequences of flooding.

It can be concluded that surface water flooding is the main potential source of flood risk to the site (albeit a Low Risk with minimal / no anticipated associated consequences.

The site is currently considered to be at Very Low Risk from fluvial and tidal flooding.

All other potential sources of flooding have been assessed and are concluded to be either Very Low or Low Risk.

The risk of flooding to the development proposal has been addressed and a balanced judgement has been applied in recognising the important benefits of using previously developed land. Suitable and recommended flood mitigation measures have been discussed and outlined.

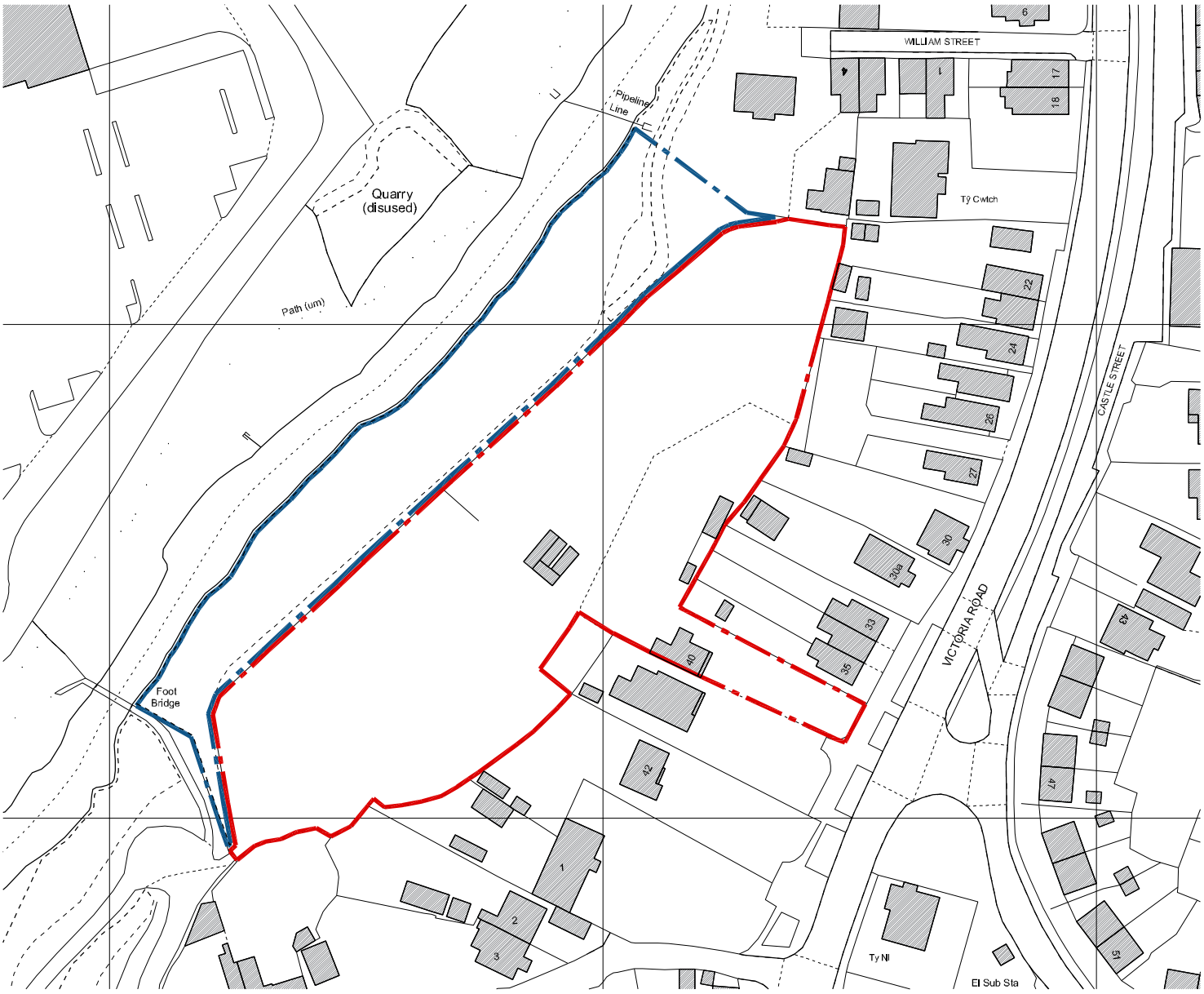
It can be concluded that the proposed development is fully compliant with PPW and TAN15.

Surface water drainage is to be suitably designed in line with local and national requirements.

APPENDIX A : Existing Site and Location Plan

40 Victoria Road, Fleur-de-lys

0 50 100



HYDE design

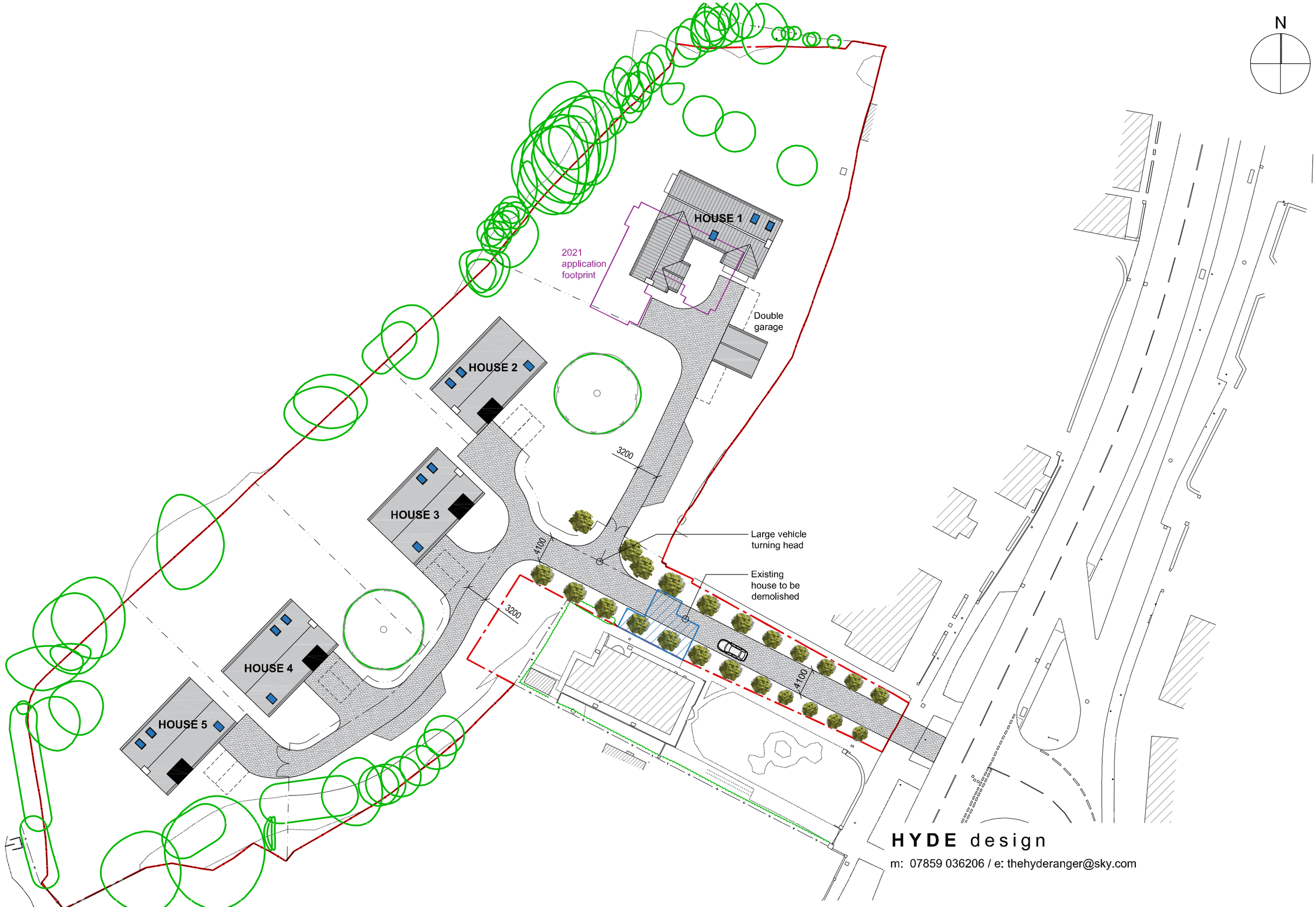
m: 07859 036206 / e: thehyderanger@sky.com

N

PLANNING - Ordnance Survey Plan

DRAWING NO. 2123-AL(PL)02 / SCALE: 1:1250 @ A4 / 31.10.22 / REV: /

APPENDIX B: Candidate Site Plans



HYDE design
m: 07859 036206 / e: thehyderanger@sky.com

PLANNING - SITE PLAN/LAYOUT

40 Victoria Road, Fleur-de-lys

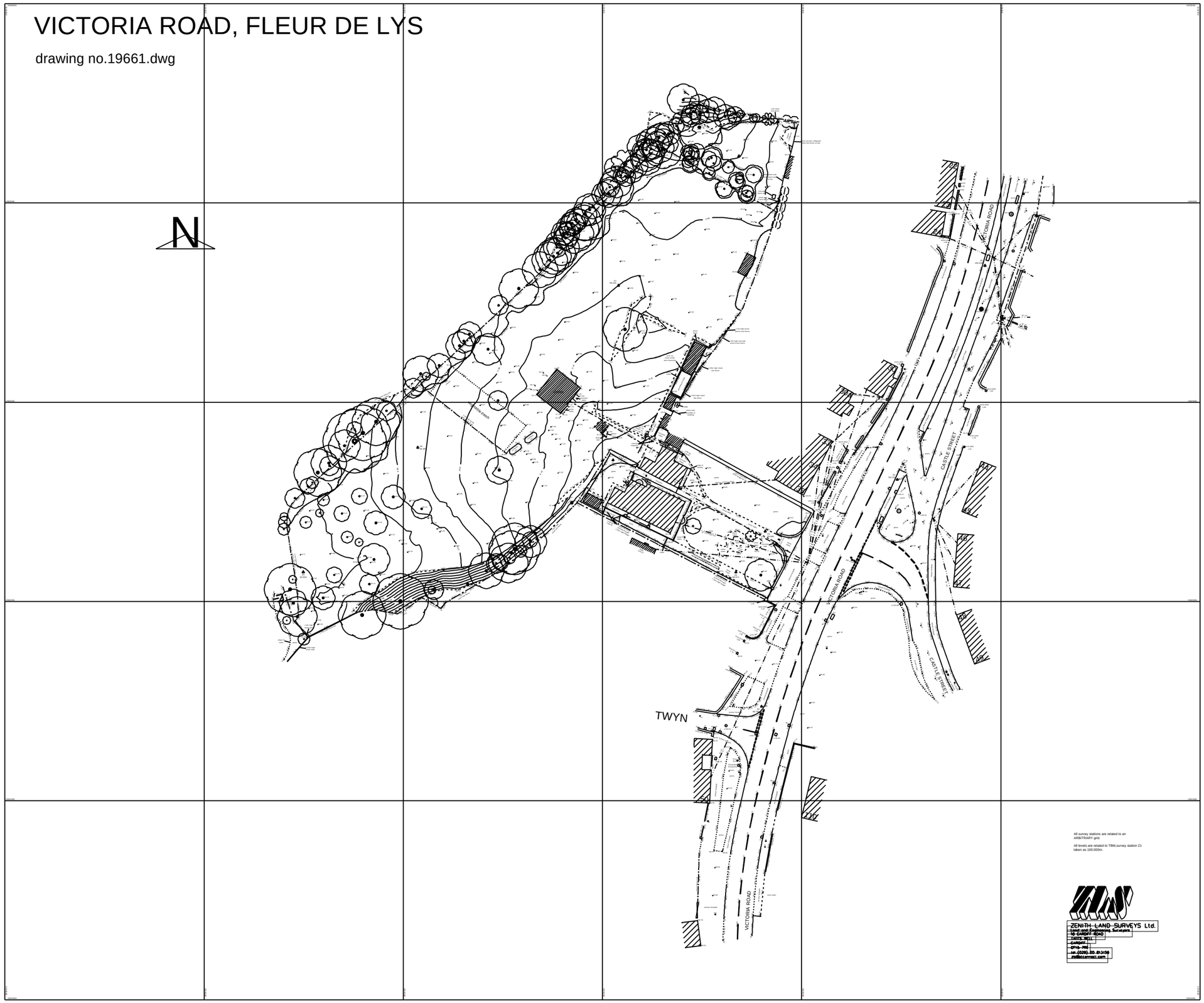
0 10 20 30

DRAWING NO. 2123-AL(PL)01 / SCALE: 1:500 @ A3 / 31.10.22 / REV: /

APPENDIX C: Topographical Information / Data

VICTORIA ROAD, FLEUR DE LYS

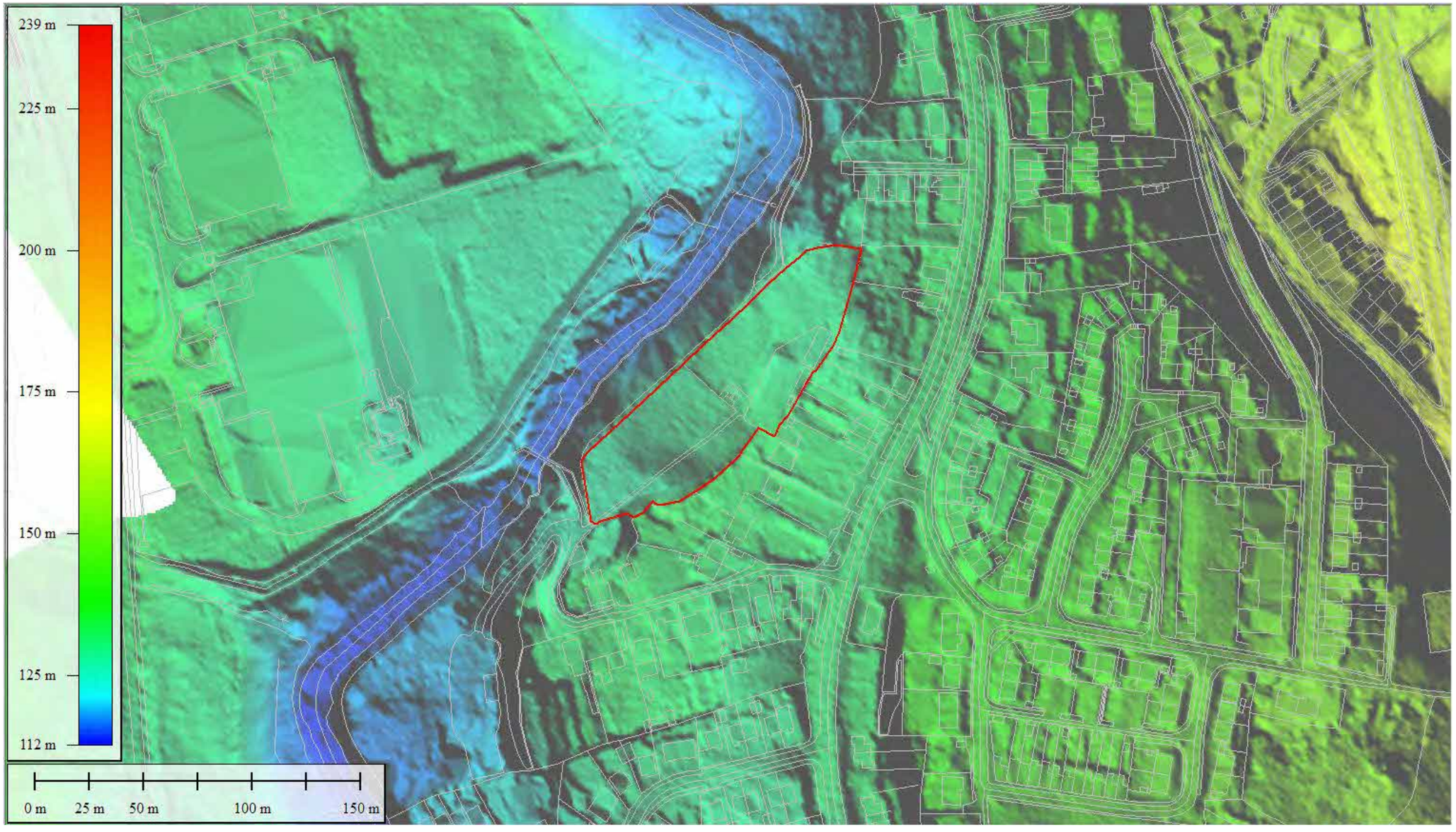
drawing no.19661.dwg



All survey stations are related to an ARBITRARY grid.

All levels are related to TBM survey station 21 taken as 100.000m.

ZENITH LAND SURVEYS Ltd.
Land and Engineering Surveyors
42 CARDIFF ROAD
TAFFS WELL
CARDIFF
CF15 7RE
tel (029) 20 813456
zenith@email.com



NRW 1m resolution Digital Terrain Model (DTM) LiDAR data to m AOD

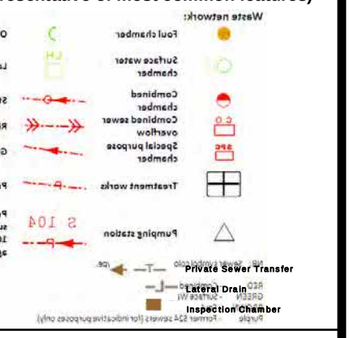
APPENDIX D: DCWW Asset Plans

Dŵr Cymru
Welsh Water

40 Victoria Road Fleur-de-lis Blackwood
NP12 3UG

N
W
E
S

LEGEND(Representative of most common features)

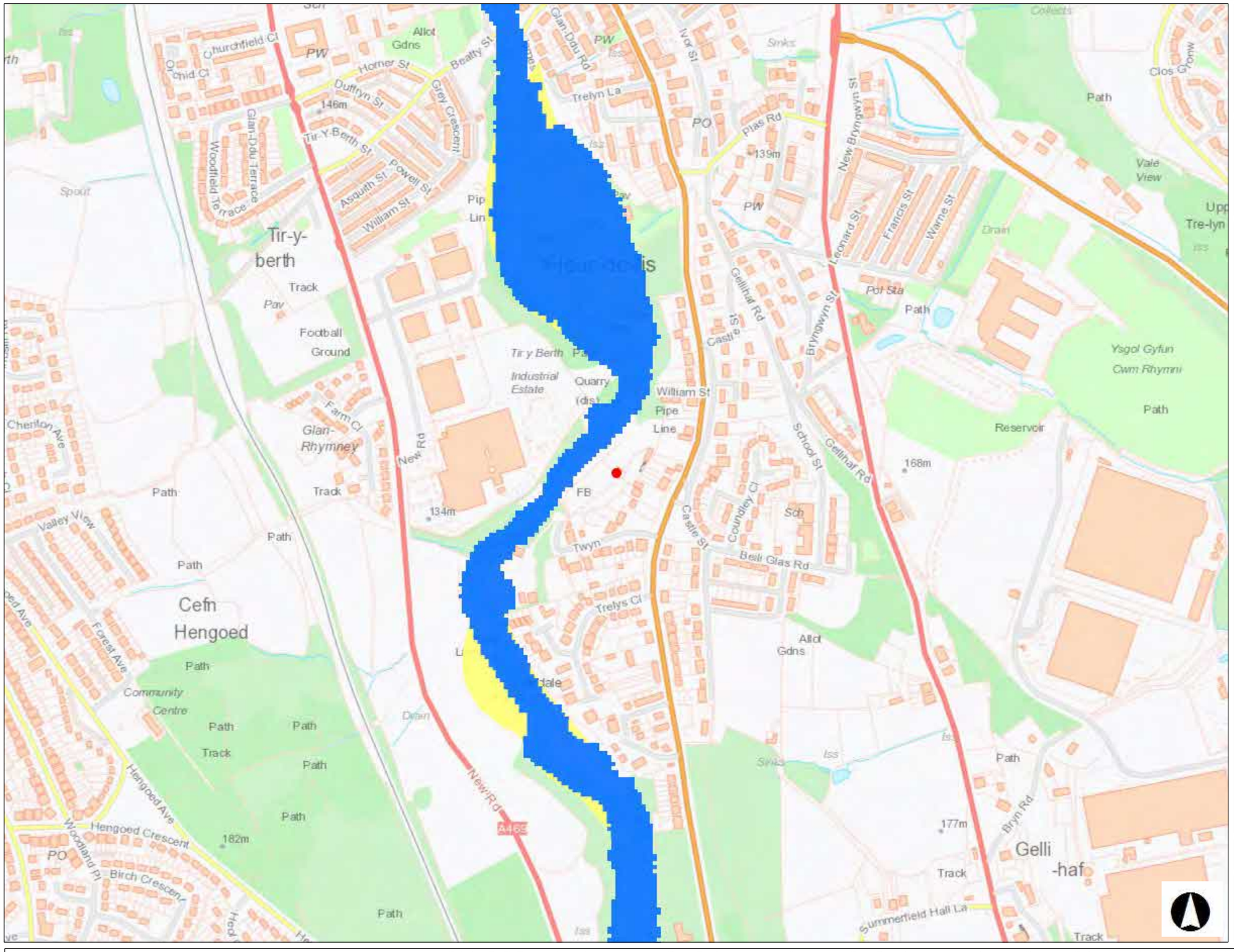


Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF) . It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Map Ref:	315514,196234
Map scale:	1:1250
Printed by:	Zara Howells
Printed on:	27 Apr 2023

APPENDIX E: NRW Flood Maps



Cyfoeth Naturiol Cymru
Natural Resources Wales

17341 - Land at rear of 40 Victoria Rd
NRW Development Advice Map (DAM)

Allwedd / Map Key

- Zone C1
- Zone C2
- Zone B
- Zone A

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
04/05/2023

0.3 0 0.13 0.3
British_National_Grid Kilometers

Cyfoeth Naturiol Cymru
Natural Resources Wales

17341 - Land at 40 Victoria Rd, Blackwood

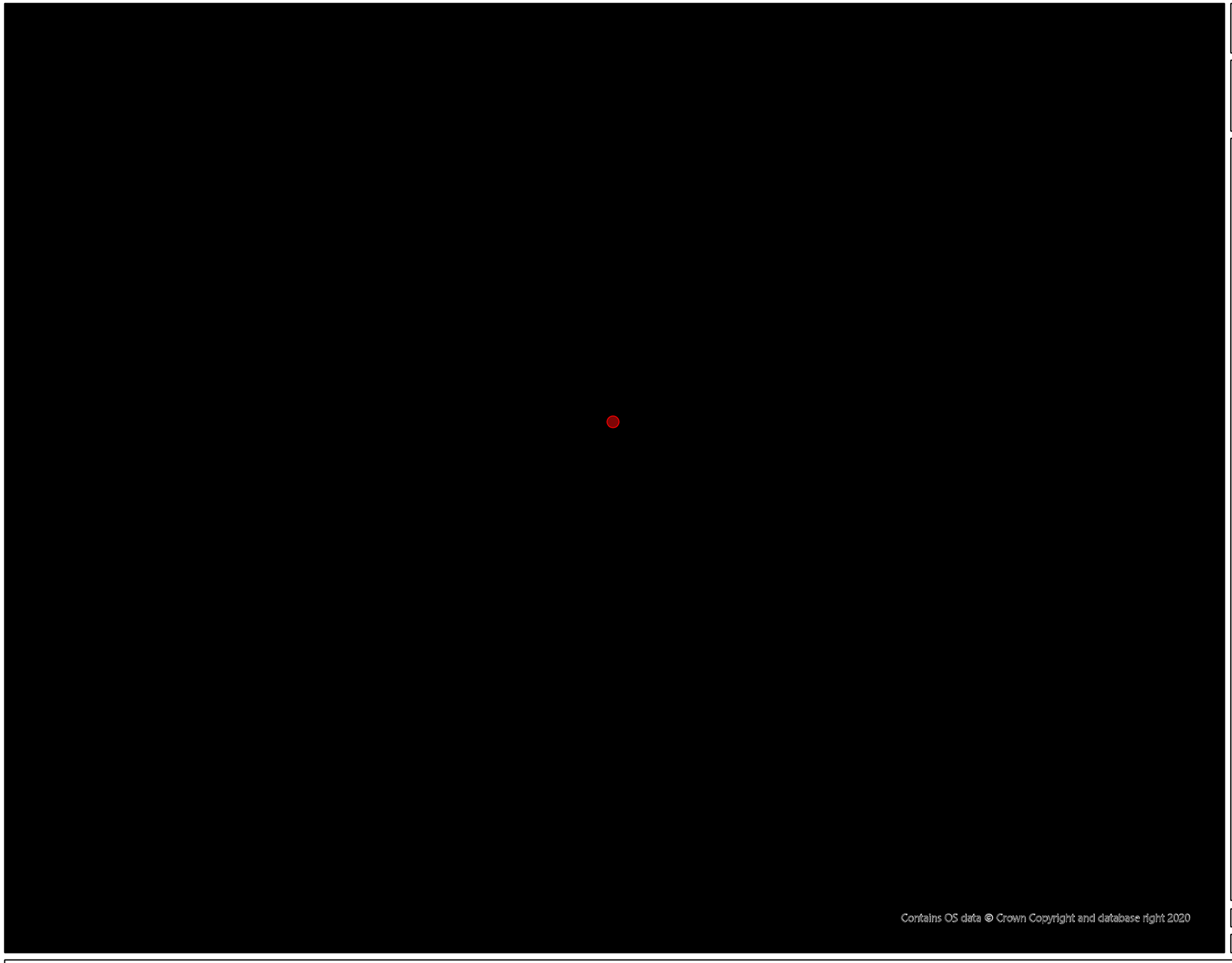
Allwedd / Map Key

- Main Rivers
- Flood Defence Locations
- Areas Benefitting from Flood Defences
  - Rivers
  - Sea
  - Rivers and Sea
- Flood Risk from Rivers - Extent
  - High
  - Medium
  - Low
- Flood Risk from the Sea
  - High
  - Medium
  - Low
- Flood Risk from Surface Water & Small Watercourses - Extent
  - High
  - Medium
  - Low

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
26/04/2023

0.3 0 0.13 0.3
British_National_Grid Kilometers



Cyfoeth Naturiol Cymru
Natural Resources Wales

Flood Map for Planning

17341 - 40 Victoria Rd, Blackwood

Legend

Flood Defence Location

Flood Defences

TAN15 Defended Zones

TAN15 Defended Zones

Rivers

Sea

Rivers and Sea

Rivers

Rivers

Flood Zone 3

Flood Zone 2

Main Rivers

Main Rivers

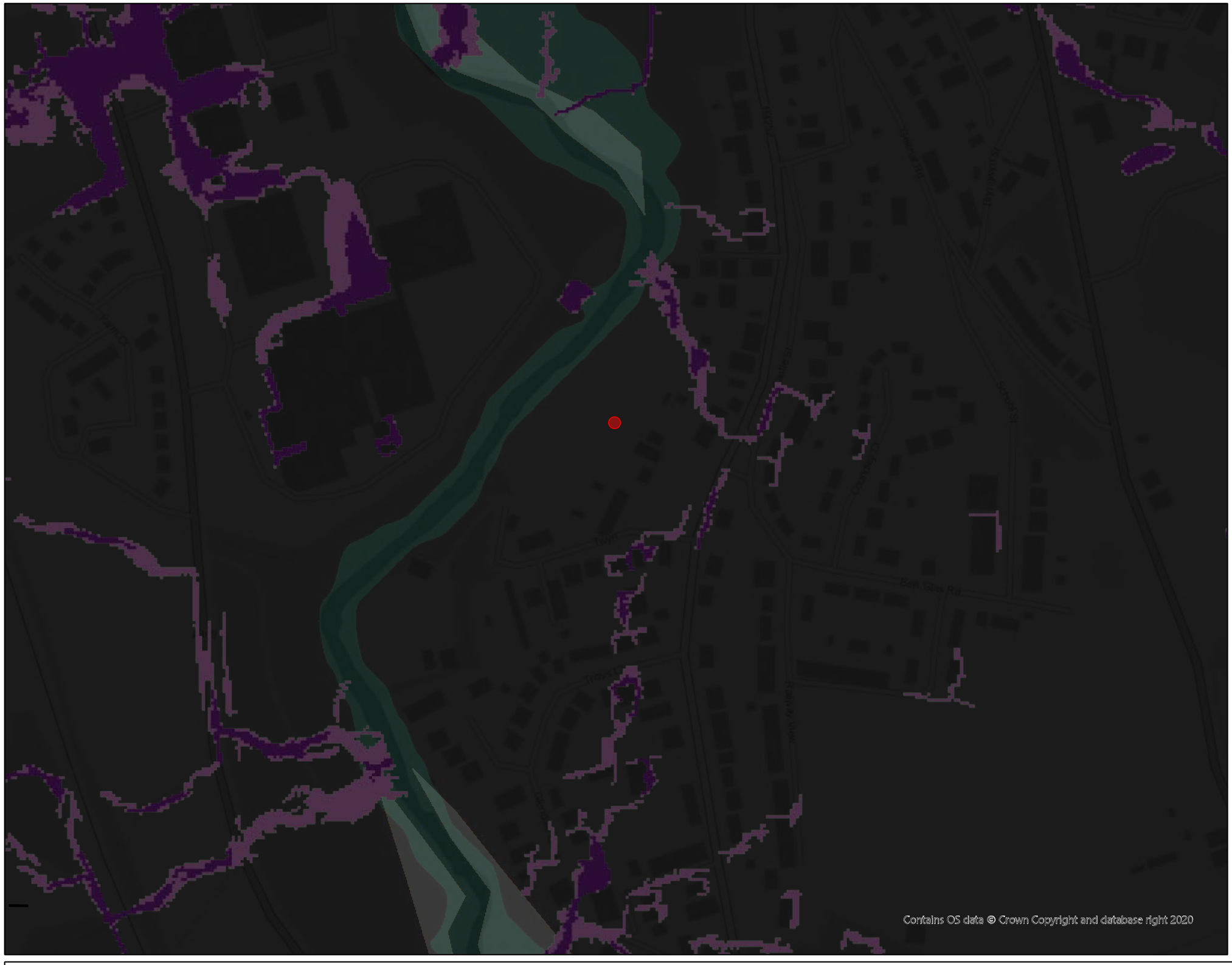
Scale: 1:2,500

Date: 26/04/2023

0.1 0.05 0 0.1

km

British National Grid



Cyfoeth Naturiol Cymru
Natural Resources Wales

Flood Map for Planning

17341 - 40 Victoria Rd, Blackwood

Legend

Sea

Sea

Flood Zone 3

Flood Zone 2

Surface Water and Small Watercourses

Surface Water and Small Watercourses

Flood Zone 3

Flood Zone 2

Recorded Flood Extents

Recorded Flood Extents

Flood Risk from Reservoirs

Flood Risk from Reservoirs

Scale: 1:2,500

Date: 26/04/2023

0.1 0.05 0 0.1

km

British National Grid