

Flood Consequences Assessment (FCA) For:

Residential Development at
28 Michna Street,
Port Talbot,
Neath Port Talbot Council,
SA12 6UH

Prepared for:

Mr Andrew Williams

16027 – FCA - 3

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Project	28 Michna Street
Client	Mr Andrew Williams
Vale Consultancy Ref:	16027 – FCA – 3

Document Checking:

Prepared By: R Peskett

Signed:

Checked By: S Hardacre

Signed:

Verified By: S Hardacre

Signed:

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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 **September 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).

This revision (3) of the FCA is following updated and revised proposed development plans.

1 INTRODUCTION

Vale Consultancy has been instructed by *The Client* to undertake a Flood Consequences Assessment (FCA) for the proposed development, at 28 Michna Street, Port Talbot, Neath and Port Talbot Council, SA12 6UH (275808E, 190138M).

The site comprises a plot of currently undeveloped land situated between 28 Michna Street (south west) and Julian Terrace (north east). Although the plot of land is currently 'undeveloped', it comes under the proprietorship of the owner of the adjacent 28 Michna Street property and has served (longstanding) as a general outdoor amenity / garden area.

Therefore, and for the purposes of this assessment, this area is considered to be *Brownfield* or *Previously Developed* Land. Refer to Existing Site and Location Plan, Appendix A.

1.1 Site Location

The site is located on Michna Street / Julian Terrace, Port Talbot; just east from Aberavon Court. The site is bounded on all sides by neighbouring residential properties and associated infrastructure. An electrical substation is sited immediately north east from the site. Refer to Figure 1 below and the Site Location Plan, Appendix A. Access to the site is provided by Julian Terrace.



Figure 1: Site Location Satellite Plan

1.2 Proposed Development

The proposal is for the erection of 2 No. self-contained flats with associated parking spaces. Refer to Proposed Development Plans, Appendix B.

1.3 Existing Topography

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

A level of 5.409m AOD is recorded at the site.

The immediate surrounding topography is relatively flat. Further afield, the wider topography slopes from north east to south west.

Refer to LiDAR Extract, Appendix C.

1.4 Existing Ground Conditions

Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the site is underlain by Superficial deposits defined as Tidal Flat Deposits comprising Clay, Silt and Sand. Bedrock geology is recorded as South Wales Middle Coal Measures Formation comprising Mudstone, Siltstone and Sandstone.

Most of Port Talbot is shown to be underlain by *Artificial, Made* or *Landscaped Ground*. Made Ground is an area where the pre-existing (natural or artificial) land surface is raised by artificial deposits. Landscaped Ground is an area where the land surface (natural or artificial) has been extensively remodelled, but where it is impracticable or impossible to delineate separate zones of Made Ground, Worked Ground, or Disturbed Ground.

1.5 Existing Site Drainage

Public sewer records have not been obtained from DCWW. Online internet mapping tools indicate that the site and site access / egress routes are served by formal surface water drainage infrastructure due to the presence of rainwater downpipes (RWPs), gullies and manhole covers.

The new surface water drainage system will incorporate Sustainable Drainage Systems (SuDS) features and achieve betterment in peak discharge rates and water quality over the current unfettered arrangement.

2 FLOOD ZONE CATEGORY AND POLICY CONTEXT

2.1 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 (FRAW) 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 D**) shows that the site falls within **Zone C1** which is defined by TAN15 as;

Zone C1 – Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.

The NRW Flood Risk Maps included in **Appendix D** show the site is at '**Low**' risk of flooding from fluvial flooding, meaning it has between 1 in 1000 (0.1%) and 1 in 100 (1%) annual probability of flooding.

From the Sea (tidal flooding), the site is shown 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 (AEP) of flooding.

Flood Maps for Planning Wales (New Tan 15)

A review of the forthcoming Flood Maps for Wales (which will replace the DAM in June 2023) show a considerably greater extent of flood zone which envelopes the site. The site is defined as a TAN15 defended area. The Flood Map for Planning (FMfP) Wales has no official status for planning purposes until June 2023 but should be considered as the 'best available information' on flood risk to inform planning advice.

FMfP Wales shows that the site is located within **Flood Zone 3** and therefore an area with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change. From the Sea (tidal flooding), the site is also shown to be within **Flood Zone 3** and therefore an area with more than 0.5% (1 in 200) chance of flooding from the sea in a given year, including the effects of climate change. It should be noted that the extreme flood extents shown by the new FMfP are run as *undefended scenarios* and therefore do not take into consideration flood defences.

This is of particular relevance in this case as the FMfP shows that the site benefits from both fluvial and tidal flood defences and is located within a **TAN15 Defended Area (Rivers and Sea)**. TAN15 Defended Zones are defined by NRW as;

'Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from rivers of 1:100 (plus climate change and freeboard)'.

And;

'Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from the sea of 1:200 (plus climate change and freeboard)'.

Therefore, the site is compliant with A1.14 of TAN15.

2.2 Development Vulnerability Classification

The proposal is for '**Highly Vulnerable Development**', in accordance with Figure 2 of the Welsh Government's TAN15. Highly vulnerable developments are considered to have a lifetime of 100 years.

The proposals are for development upon **Brownfield** or **Previously Developed** land.

Moreover, there are permitted development rights (1987) enabling the provision of a side extension to the existing house that would encroach into the garden (Ref: P1986/5843) which constitutes the location of the application site for this proposed development.

The proposed residential development is considered to be '*highly vulnerable development*'

TAN15 defines **Zone C1** as :

"Used to indicate that development can take place subject to application of justification test, including acceptability of consequences"

Paragraph 6.2 of TAN 15 states that highly vulnerable development should be permitted in Flood Zone C1, subject to the justification test and acceptability of consequences:

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 Neath Port Talbot County Borough Council Local Development Plan (LDP) (2011-2026) was adopted in January 2016 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:

Climate Change

3.0.2 Strategic Policy SP1 Climate Change

Policy SP 1

Climate Change

The causes and consequences of climate change will be addressed by implementing the following measures.

In relation to the causes of climate change:

1. The efficiency and sustainability of the County Borough's settlements will be enhanced through developing more cohesive and efficient settlements and settlement patterns, and consequently more sustainable travel patterns;
2. Greenhouse gas emissions from transport will be minimised through encouraging freight / commercial transport by alternatives to road (e.g. rail or sea);
3. Dependence on the private car and the need to travel in general will be reduced through promoting alternative means of transport and more efficient use of existing facilities, co-location and joint use of facilities;
4. Provision will be made for the County Borough's appropriate contribution to renewable and low carbon energy generation.

In relation to the consequences of climate change:

1. Likely increased flood risk will be taken into account and addressed by ensuring that there is greater resilience by avoiding development on land that is

5.5.13 Drainage systems should be designed to ensure that developments have no detrimental effects on the water environment or on flood risk. Normally this will involve the use of Sustainable Drainage Systems (SuDS) techniques.

at risk from flooding in the first instance in accordance with the sequential approach set out in national guidance or in locations that could increase the risk of flooding elsewhere;

2. The fragmentation of habitats will be minimised and opportunities made for habitat and species change and migration where possible.

LDP Objective: OB 1 and OB 2

3.0.3 Climate change is likely to affect the environment and future development of Neath Port Talbot in a range of significant ways, some of which are not fully predictable at present. It is also necessary to reduce greenhouse gas production as far as reasonably possible in order to minimise the causes of climate change. These issues are considered to be of fundamental importance to the LDP and have influenced every aspect of the Plan's development. Climate change is consequently seen as an overarching matter to be addressed by all topic areas.

3.0.4 The measures outlined in the climate change strategic policy have therefore fundamentally influenced the development of the Plan, and will be addressed and implemented through all its policies and proposals. Development allocations have been selected in accordance with sustainable development principles to be in locations that minimise as far as possible dependence on the private car and can benefit from local services and facilities, while encouraging the provision of locally based facilities in order to address the causes of climate change. At the same time, the effects of a changing climate (for example flood risk) have been taken into account as far as possible in all the Plan allocations and policies.

3.0.5 New developments will be expected to avoid unnecessary flood risk and to meet the requirements of TAN 15: Development and Flood Risk. No highly vulnerable development will be permitted within Development Advice Map (DAM) Zone C2⁹ and development will only be considered in areas at risk of flooding where it can be demonstrated that the site can comply with the justification and assessment requirements set out in the TAN.

2.3 Consultation

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

- Neath Port Talbot Strategic Flood Consequences Assessment September 2014
- Neath Port Talbot County Borough Council Local Flood Risk Management Strategy June 2013
- Neath Port Talbot County Borough Council Flood Risk Management Plan 2015
- Neath Port Talbot County Borough Council Preliminary Flood Risk Assessment Report March 2011 (including 2017 Addendum).

Product 5 and Product 6 data from the *Port Talbot_5_V3.0_2016* model has been provided by NRW, and the outputs of which are included in **Appendix D**, for reference. This has been reviewed and interrogated in conjunction with the modelling reports to enable quantitative interrogation of the fluvial / tidal flood risks posed to the site during various storm events. These are discussed in the proceeding section of the report.

3 SOURCES OF FLOODING AND PROBABILITY

3.1 Fluvial

The nearest watercourse to the site is the River Afan which is located approximately 470m away to the south east. The watercourse flows south west from here where it discharges into Swansea Bay. The River Afan is served by fluvial flood defences in the form of a flood wall along the river embankments. NRW data indicates the defence to be in good condition. At the location nearest to the site the wall has a design upper crest level (ucl) of 9.12m AOD. There is significant third-party infrastructure in between the watercourse and application site.

Baglan Brook is located approximately 1km north west from the site. The Ffrwd Wylt is located approximately 1.6km south east from the site. The River Neath is located over 4km north west from the site.

The nearest major sources of potential fluvial flooding originate from the River Afan and Ely which benefits from flood alleviation measures including formal hard-engineered river flood defences.

The candidate site falls within **Zone C1** on the Welsh Government DAM.

The NRW Flood Risk Map confirms that the site is at **Low Risk** of fluvial flooding – an area considered to have between a 0.1% (1 in 1000) and 1% (1 in 100) annual probability of fluvial flooding.

The new FMfP shows that the site is located within **Flood Zone 3** and therefore an area with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change. It should be noted that the extreme flood extents shown by the new FMFP are run as **undefended** and do not take into consideration flood defences. Therefore, they indicate a greater perceived risk than in reality.

The NRW 'Historic Flood Map' shows that there are no recorded historical flooding events at the site or in the immediate vicinity.

The site is recorded as a TAN15 Defended Zone (Rivers and Sea) on the new FMfP Wales and is served by significant flood defence infrastructure.

NRW Fluvial Flood Data

The most up-to-date flood modelled data (Product 5 & 6) was obtained from NRW and has been used to inform this FCA.

A maximum estimated (design) flood level of **5.65m AOD** is recorded at the site location during the Defended 1% annual event probability (AEP) Fluvial Event + CC.

Therefore, an applied finished floor level (FFL) of **5.7m AOD** will ensure that the proposed dwellings will remain flood-free during this event, thus demonstrating compliance with A1.14 of TAN15.

During the Defended 0.1% AEP Fluvial event, the site is shown to flood with a maximum estimated (design) flood level of 6.22m AOD. Therefore, and based on an FFL of 5.7m AOD; the dwelling could potentially flood by up to a maximum depth of 0.52m (520mm). This is within (below) the maximum indicative allowable thresholds as stipulated by A1.15 of TAN15.

Furthermore, during this (the above) scenario; the maximum estimated flood velocity at the site location is recorded as **0.137 m/s** which is within (below) the maximum indicative allowable thresholds as stipulated by A1.15 of TAN15.

Therefore, it can be concluded that it has been demonstrated that the site and proposed development are compliant with A1.14 and A1.15 of TAN15.

Refer to Appendix D.

3.2 Tidal

Port Talbot, parts of Baglan, and central Port Talbot have the potential to be affected by tidal flooding.

As already mentioned, the site is shown to be outside the extreme flood extent on the FRAW Map and therefore at '**Very Low**' risk of tidal / sea flooding, meaning it has less than 1 in 1000 (0.1%) annual probability (AEP) of flooding. The updated FMFP which has not come into formal use yet indicates a greater risk to the site from tidal / the sea as a source and has the site located within **Flood Zone 3**, which is defined as '*Areas with more than 0.5% (1 in 200) chance of flooding from the sea in a given year, including the effects of climate change.*'

NRW Tidal Flood Data

The NRW modelled flood data shows the site to be flood free during the T200 and T1000 flood events.

When climate change allowances are considered, the site is still shown to partially flood during the T200 (+ CC 2116) event. A maximum estimated (design) flood level of 5.37m AOD is recorded at the site location. Therefore, an applied FFL of 5.7m AOD will ensure the flats will remain flood – free (above the max flood level including freeboard).

Furthermore, during this (the above) scenario; the maximum estimated flood velocity at the site location is recorded as **0.028 m/s** which is within (below) the maximum indicative allowable thresholds as stipulated by A1.15 of TAN15.

During the T1000 (+ CC 2116) event the site is shown to flood and a maximum estimated (design) flood level of **5.86m AOD** is recorded at the site location. Therefore, (and based on an applied FFL of 5.7m AOD) the site could flood by up to a maximum depth of 0.16m (160mm) which is within (below) the maximum indicative tolerable thresholds as stipulated by A1.15 of TAN15.

Furthermore, during this scenario; the maximum estimated flood velocity at the site location is recorded as 0.06 m/s which is within (below) the maximum indicative allowable thresholds as stipulated by A1.15 of TAN15.

Therefore, it can be concluded that it has been demonstrated that the site and proposals are compliant with A1.14 and A1.15 of TAN15.

The site is shown to fall within a TAN15 Defended Zone on the FMfP. This indicates 'Areas where flood risk management infrastructure provides a minimum standard of protection against flooding from the sea of 1:200 (plus climate change and freeboard).

Flood defence infrastructure asset information has been interrogated (see below / overleaf) using GIS software. The assets serving the site comprise flood walls with and upstream cover level (ucl) of 9.12m AOD and a downstream cover level (dcl) of 8.41 which are commensurate with the standard of protection (SOP) required for compliance with TAN15 and TAN15 Defended Zones.

The screenshot shows a 'Feature Information' window from a GIS application. The 'Name' field is highlighted with the value 'Wall - 1020952510201R01'. The 'Feature Type' is 'Unknown Line Type'. The 'Geometry' is '8 vertices, Length: 302.45 m, Bounds: [276147.480, 189679.311, 276394.361, 189842.628]'. The 'Layer' is 'NRW_SPATIAL_FLOOD_DEFENCES_WITH_ATTRIBUTES.shp [Index in Metadata...]'. The 'Description' is 'Defence'. Below this is a table of attributes and values.

Attribute	Value
objectid	1593
amxid	WALL1500468
nriarea	South West
subsubcata	FR/19/S167 - Afon Afan Uffm Sys
type	Defence
subtype	Wall
protection	Fluvial
name	Wall - 1020952510201R01
assetdescr	Flood Defence Wall
bank	Right
length	302.380000000000000000000000000000
builtdate	01/01/1987
currentcon	3 - Fair
lastaction	3 - Fair
currentsop	0.00000000000000000000000000000000
designsop	100.000000000000000000000000000000
effectivec	0.00000000000000000000000000000000
designndcl	8.41000000000000000000000000000000
actualdcl	0.00000000000000000000000000000000
designucl	9.12000000000000000000000000000000
actualucl	0.00000000000000000000000000000000

At the bottom of the window are buttons: Edit..., Delete, Vertices..., Fly-Through..., Graphs..., Notation..., and Copy to Clipboard.

Tidal flood events are managed and are subject to the Neath Port Talbot County Borough Council Flood Risk Management Plan (2015), which will implement suitable monitoring and management responses to the most extreme tidal events.

It is envisaged that flood defences will be maintained and improved in tandem with current and future climate change projections to protect important existing infrastructure including a hospital. This would also serve the site in question.

3.3 Surface Water and Small Watercourses (Pluvial)

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 D**) indicates the extent of flood risk from surface water and small watercourses. The flood map shows that the proposed development site is outside the 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.

There are no distinct flow routes in the area which would direct any excess surface water towards the site which is relatively flat. Site access / egress (Michna Street and Julian Terrace) is also shown to be outside of the flood extent and therefore at **Very Low** risk of surface water flooding. A small area to the rear (south) of the proposed development is shown to be at risk from surface water flooding. This is attributed to lower topographical levels associated with a pedestrian access path.

A new surface water drainage system incorporating Sustainable Drainage Systems (SuDS) features will provide betterment over the existing unfettered arrangement. Excess surface water will be discharged at a controlled rate in line with national, regional and sub-regional requirements.

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

3.4 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.

There are no distinct flow routes in the area which would direct any potential flooding arising from the sewer network within Michna Street / Julian Terrace which provide site access. It can be concluded that the risk of sewer flooding is low.

3.5 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.

The Neath Port Talbot SFCA states that:

Groundwater flooding is not well documented in the area and there is very little information available. In general terms, the greatest risk from groundwater flooding is from groundwater level rise in response to prolonged extreme rainfall (predominantly from chalk aquifers), from groundwater level rise on floodplains in response to high in-bank river levels (particularly affects basements of structures located close to rivers) or from groundwater diversion by artificial obstructions and pathways.

The Preliminary Flood Risk Assessment produced by the authority states that there are no specific areas of historical flooding recorded in the Neath Port Talbot area and overall groundwater is not believed to be a major source of flooding. NRW has supplied data for the Authority area indicating susceptibility to surface water flooding.

There are no known records of groundwater flooding incidents at or near to the site. Furthermore, hardstanding would prevent the ingress of groundwater to the surface. It can be concluded that the risk of groundwater flooding is low.

3.6 Artificial Sources of Flooding

There are no canals or other surface water bodies within immediate vicinity of the site or surrounding area which would pose a flood risk to the site. The harbour which is a man-made surface water feature is located approximately 750m south from the site. Water levels are monitored and controlled by a lock system and it does not pose a flood risk to the site.

The NRW 'Risk of Flooding from Reservoirs' map (**Appendix D**) 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 low.

3.7 Summary of Potential Flooding

It can be concluded that fluvial / tidal flooding are the main potential sources of flood risk to the site.

The site is indicated as being within **Zone C1** on the Welsh Government DAM, **Flood Zone 3** and a **TAN15 Defended Zone** on the FMfP. The proposed flats will be flood free during the Defended Q100 event plus CC and T200 event plus CC. Above this (i.e., modelled events of greater severity and with a lower probability of occurrence); the site is shown to flood. However, the parameters are within (below) the indicative allowable tolerable conditions of flooding as per A1.15 of TAN15.

Therefore, the site and proposals comply with TAN15 and this has clearly been demonstrated by this report. **Refer to Appendix D.**

Provision of suitable mitigation measures and flood evacuation / safe egress ensures the risks are residual.

The NRW 'Risk of Flooding from Surface Water' map (**Appendix D**) indicates that the proposed development site is outside the 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.

All other potential sources of flooding have been assessed and are concluded to be **Low**.

3.8 Assessment of Potential Displacement of Flood Water & Increase in Flood Risk Elsewhere

Given the extensive extreme fluvial floodplain (and relatively minor size and nature of the proposals which had received successful planning permission for a similar style development previously) a simple storage calculation has been undertaken to assess the potential displacement of flood waters during an extreme event due to the introduction of hardstanding / impermeable surfaces (namely roof area). The proposed flats have a maximum impermeable footprint of **47m²**. The proposed parking spaces will be overlain by a permeable surface.

The potential impact of the proposed development on floodplain storage volume has been calculated based on the following:

- Proposed net new building footprint within the Defended 1% AEP Fluvial Event + 30% CC extreme flood extent is 47m²;
- On-site Defended 1% AEP Fluvial Event + 30% CC records a maximum estimated (design) flood level of 5.65m AOD at the site location. Hence, an applied FFL of **5.7m AOD** is proposed and which will ensure that the proposals are fully compliant with TAN15.

- At 5.65m AOD, the proposed building footprint could potentially displace a maximum volume of water of up to approximately **15m³ (0.31m x 47)** during the Defended Q100 event plus 30% CC. During the Defended Q1000 event the building footprint could potentially displace a maximum volume of water of up to approximately **24.2m³ (0.52 x 47)**.
- Wider catchment area: **473383m²**

Estimated flood level increase as a result of the building offsetting flood waters:

$$= (\text{Volume offset at 5.65m AOD}) / \text{wider catchment area}$$

Therefore; Flood level increase as a result of the proposals overall footprint offsetting flood waters:

$$= 47 / 473383\text{m}^2$$

$$= 0.1\text{cm (10mm)}$$

With a potential increase in flood level of 10mm, it is safe to say that the impact of the increase in building footprint on site post development is considered to be completely negligible and certainly won't exacerbate flooding elsewhere or increase the consequences of flooding to third party land / infrastructure.

Hopefully common sense can prevail here.

These volumes could be attenuated on-site or more likely would cause shallow 'pooling' (due to minimal velocities) of flood waters over the soft landscaped areas / parking bays. Displaced flood water would *not* affect third party land / infrastructure. The developer accepts the potential consequences of flooding which it has been proven and demonstrated are compliant with A1.14 and A1.15 of TAN15. There are no grids (result outputs) to determine speed / time of inundation. However, a review of the model and model report reveals that the site location is one of the last places to flood due to mode and mechanisms. This point is reinforced by the fact flood velocities are at a minimal here and are at the furthest extent of the extreme flood extent in terms of distance from the source of flooding. There is significant and highly vulnerable infrastructure in between the source of flooding and the site. These will need to be protected and although this point cannot be used to prove compliance with TAN15 (which has already been covered); hopefully common sense prevails in that it will be and is understood the flood defences here will be maintained and improved in lieu of climate change projections in the future.

4 TAN15 ASSESSMENT

4.1 Justifying the Location

TAN15 advises that all new developments should only be permitted within Zones C1 if determined by the planning authority to be justified in the relevant location. Development, including transport infrastructure, should only be considered justified if it can be demonstrated that:

- Its location in Zone C is necessary to assist, or be part of the local authority regeneration initiative or a local authority strategy required to sustain an existing settlement or region; or
- 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
- It concurs with the aims of Planning Policy Wales 2002 and meets the definition of previously developed land; and
- The potential consequences of a flooding event for the development have been considered, and found to be acceptable.

In both these instances it is necessary that the development concurs with PPW and meets the definition of previously developed land. The potential consequences of a flooding event must be considered, and in terms of criteria identified in TAN15 found to be acceptable. The development site will provide additional affordable housing in the area and therefore satisfies the justification test outlined in Section 6 of TAN15. Furthermore, the proposal is in adherence with Policy BE1 of the LDP which states that development proposals should:

- *Making the best and most efficient use of the land available*
- *The layout and form of the development does not preclude the reasonable use of other adjacent land;*
- *Developing brownfield land in preference to greenfield land where possible.*

It is envisaged that the proposal makes the best use of the available (currently disused) **Brownfield** land for which otherwise alternative proposals are limited, and which maximises the accommodation provided while remaining in keeping with the surrounding area. It is concluded that the development concurs with the aims of PPW and meets the definition of Previously Developed Land. The potential consequences of flooding, to satisfy the latter part of these conditions, are assessed in terms of the requirements of TAN 15 in the following sections of the report.

The fact that the site is shown to be located within a TAN15 Defended Zone on the FMfP confirms and demonstrates compliance with A1.14. It has been demonstrated that raising the FFL to 5.7m AOD will ensure the site's full compliance with A1.15. An assessment has been provided of the potential effect of the proposed development due to loss of flood storage or diversion of flood flows thereby demonstrating compliance with the requirement for no increase in flooding elsewhere.

Interestingly, successful (approved) planning permission (*Ref: P2020/0303*) was received in 2020 for mixed-use (commercial with residential above) development at a nearby location (*275911E, 190063N*). which is shown to be at significantly **worse** flood risk than this application site. Furthermore, and crucially, the FCA for *P2020/0303* recommends that FFL are raised by 600mm above surrounding / adjacent ground levels to achieve compliance with TAN15 – i.e. above (flood-free) the design flood level for the Q100 Fluvial Event + Climate Change and T200 Tidal Event + Climate Change. Therefore, and again, it seems highly unreasonable, unjust and contradictory that NRW object to the proposed development based on flood risk.

Furthermore, and moreover, there are permitted development rights (1987) enabling the provision of a side extension to the existing house that would encroach into the garden (*Ref: P1986/5843*) which constitutes the location of the application site for this proposed development and this FCA.

The proposed development will assist with Policy SP7 listed in the LDP and will contribute to housing targets.

The potential consequences of flooding have been assessed and are deemed to be acceptable; posing no risk to human life or structural integrity of the building. Furthermore, any potential displacement of floodwaters will not affect third party land / infrastructure.

The proposed development site meets the criteria of previously developed land.

The level of detail provided within the FCA is commensurate with the size and nature of development. Further detail would be excessive and unreasonable.

5 MITIGATION & RECOMENDATIONS

The site is deemed to be at either low or residual risk from flooding from all of the potential sources assessed.

Taking a precautionary approach 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 and Flood Warnings cover the site. Site owners should register to receive Flood Alerts and where possible, Flood Warnings. 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 dwellings, 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.

It is highly recommended *the Client* (developer) consults the local authority's Emergency Planners to comment on the details of emergency and evacuation plans for the proposed site to deem if they are sufficient and accurate.

Observation and implementation of the *Mitigation Measures and Recommendations* will mean that the risks and associated consequences of flooding to the site are residual.

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.

5.1 Access and Egress

Safe access / egress is provided south west to an area outside of the extreme flood extent, firstly via the pedestrian access path to the rear of the proposed development, followed by Thomas St, Pendarvis Terrace, Victoria Road (crossing the A4241 / Afan Way. **Refer to Flood Evacuation / Safe Egress Route, Figure 2, below / overleaf.**



Figure 2: Proposed Flood Evacuation / Safe Egress Route

5.2 Safe Refuge Area and Flood Procedure

In the 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 Neath Port Talbot Council, and the local emergency services will be responsible for public care and safety. In the highly unlikely event of the site flooding before site users have an opportunity to evacuate via the route specified - the occupants should seek refuge on the first floor as and where possible until flood waters have dispersed and it is safe to leave the building.

5.3 Finished Floor Level (FFL)

Due to the topographical information available and concerns raised by NRW regarding flood risk - the FFL of the proposed dwelling will be set at 5.7m AOD. This will ensure compliance with TAN15. An analysis demonstrates that the potential displacement of inundation waters is absolutely minimal and would not affect third party land or increase flood risk elsewhere.

6 CONCLUSIONS

The proposal is for the erection of 2 No. self-contained flats with associated parking spaces on Brownfield or Previously Developed Land. The proposal is considered to be 'highly vulnerable development'.

Successful planning permission was received for a similar development proposal at the site. A proposed mixed-used (including residential) development not far from the location of the application site received successful planning permission and no objection in terms of flood risk from NRW. The site is at significantly greater flood risk than that of this (the application) site.

The DAM shows that the site falls within Zone C1. The FMfP shows the site to be within Flood Zone 3 and also a TAN15 Defended Zone and is therefore served by formal NRW fluvial and tidal flood defences. It is envisaged that these will be improved to account for rising sea levels as a result of climate change and global warming. It can be concluded that fluvial and tidal flooding are the main potential sources of flood risk to the site. Having said this, it has been established that the risks are considered to be either low / residual and manageable.

Interrogation of the asset information indicates the defences provide the necessary SOP.

It has been demonstrated that the proposed flats will be flood-free during the Q100 / T200 events + CC as per the requirement of a1.14 of TAN15. Also, all parameters are within (below) the maximum indicative tolerable thresholds of flooding for extreme events in excess of the Q100 / T200 + CC.

There are no records of historical flooding at or near to the site.

All other potential sources of flooding have been assessed and are concluded to be low.

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

APPENDIX A: Site Location / Existing Site Plan

28, MICHNA STREET, PORT TALBOT, SA12 6UH

Supplied by: www.ukmapcentre.com

Serial No: 248015

Centre Coordinates: 275800,190130

Production Date: 06/09/2022 11:00:04



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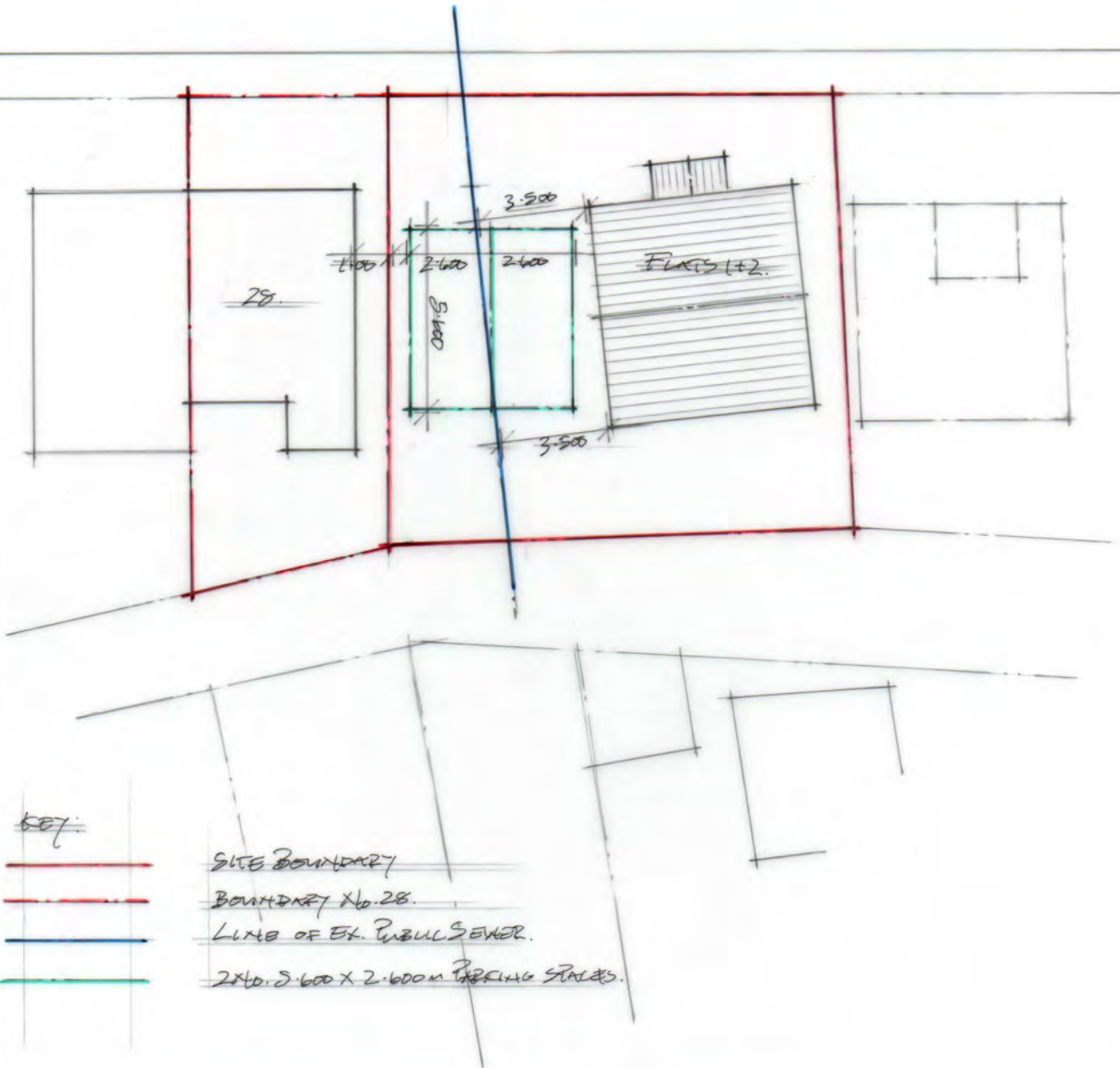
0m 1cm = 12.5m 62.5m

Scale 1:1250

Rev. A. August 23rd.

APPENDIX B: Proposed Development Plans

MUCHKA STREET



TITLE:

2 NO. SELF CONTAINED FLATS.

BLOCK PLAN + KEY: SCALE: 1:200.

SCALE: 1:200.

DATE: AUG. 23'

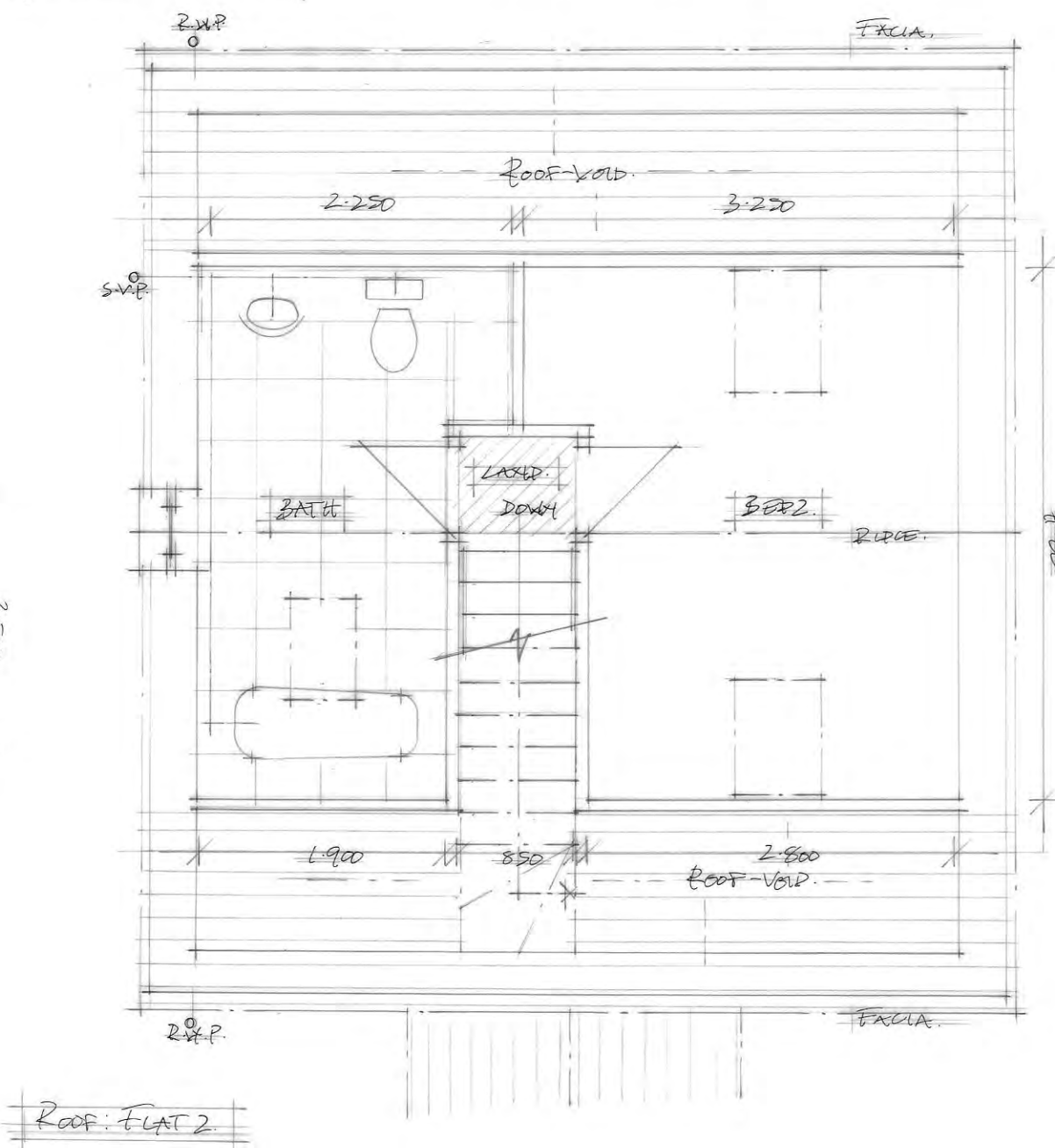
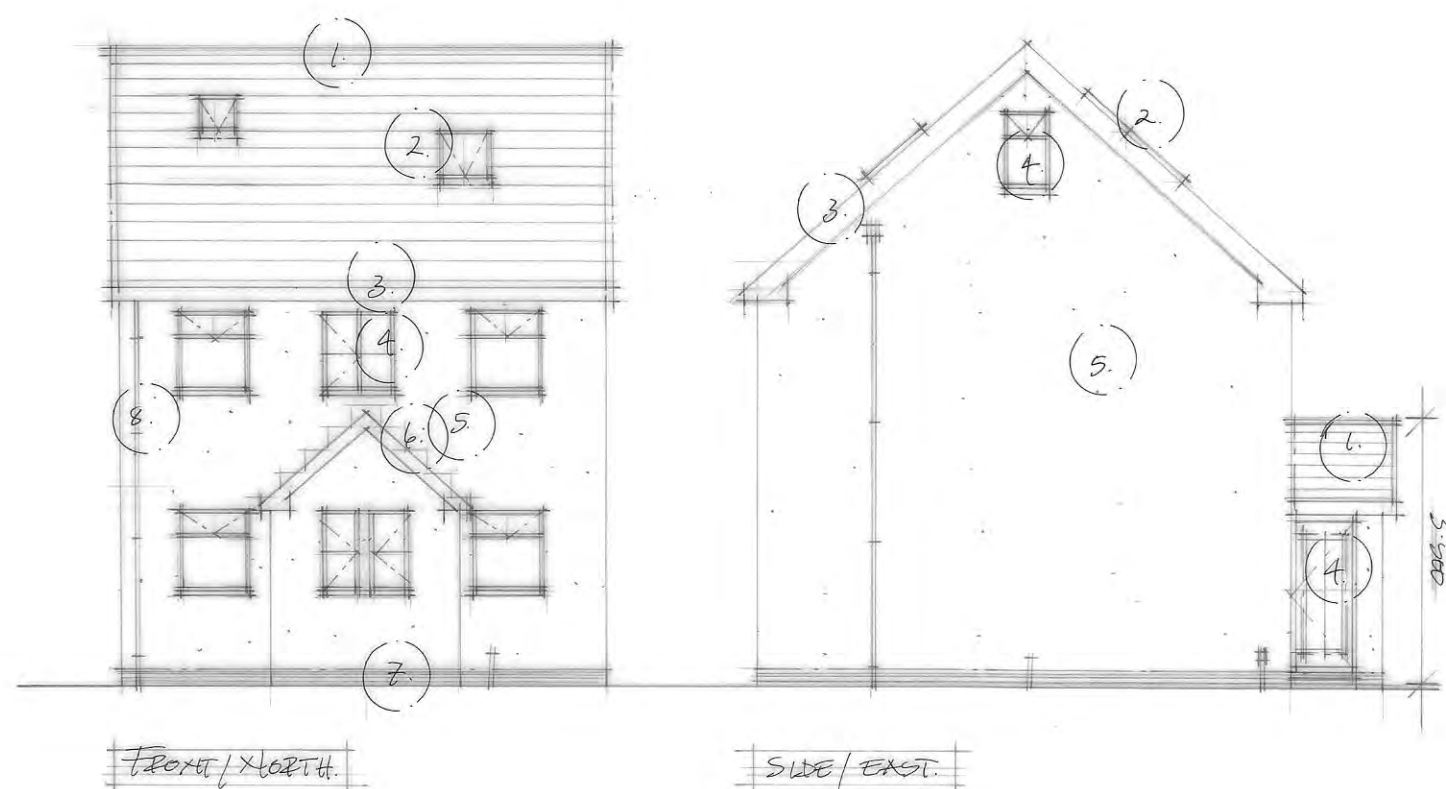
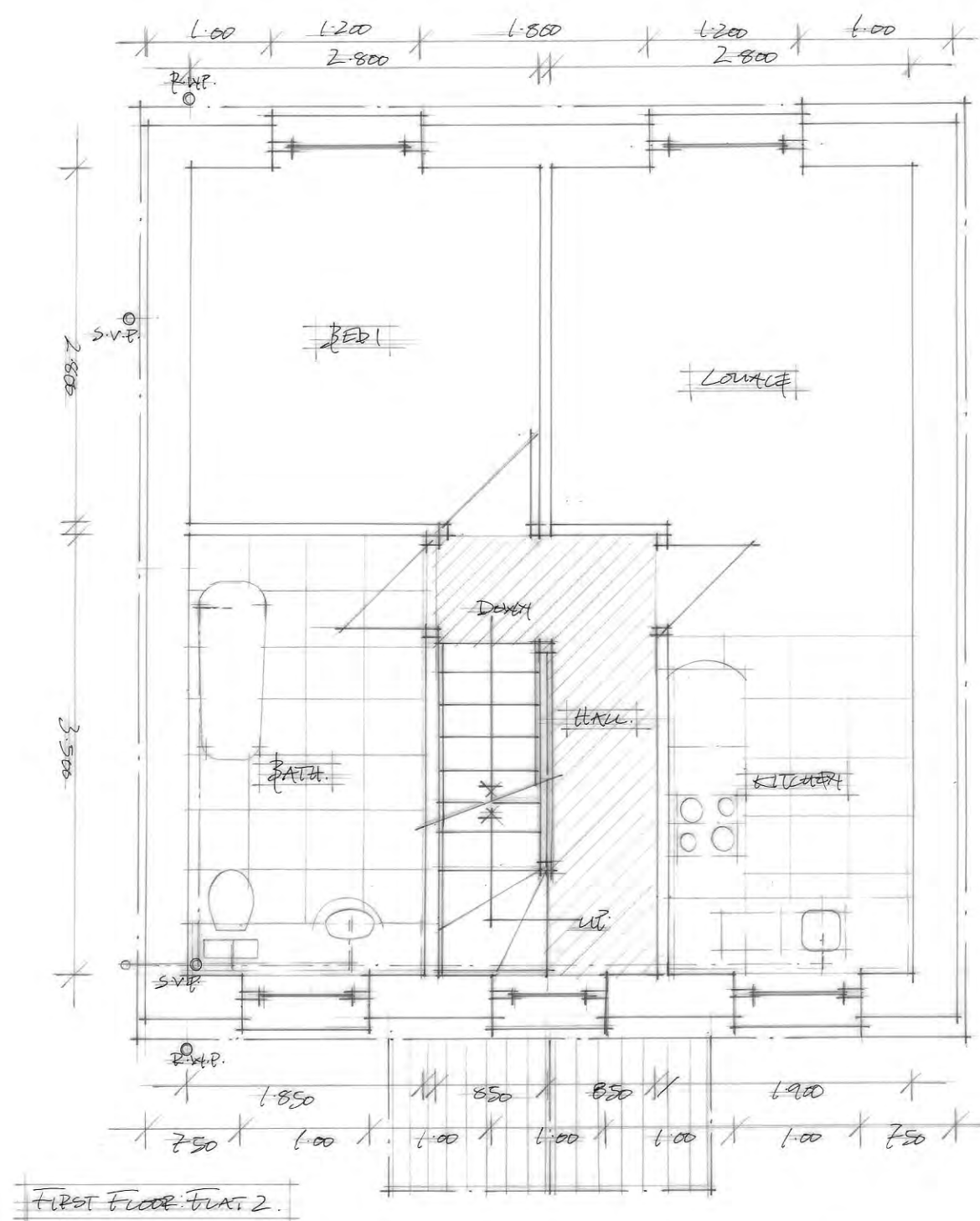
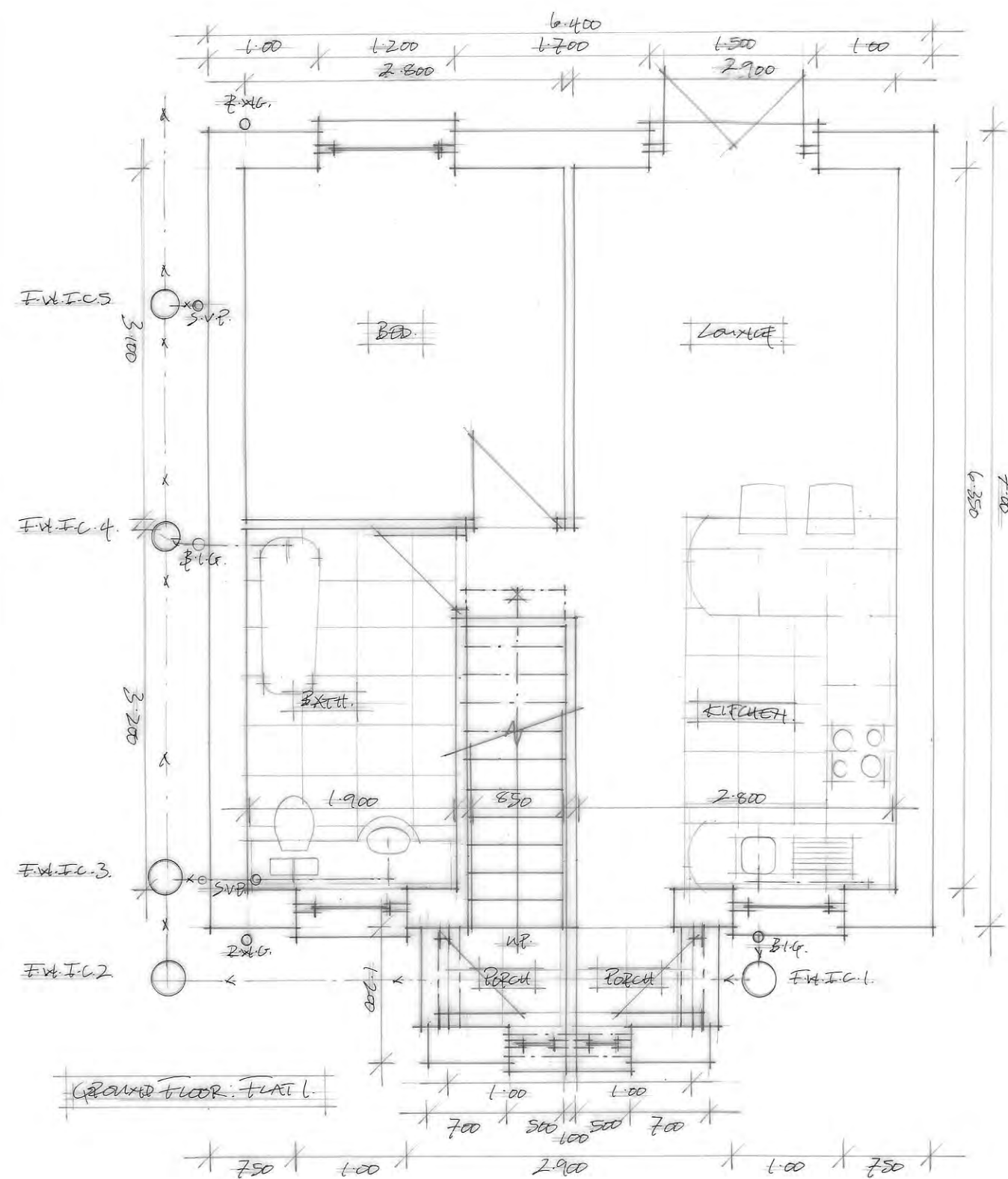
ADDRESS:

LAND ADJ. 28, MUCHKA STREET,
PORT TALBOT.

FOR:

F+G. PROPERTY DEVELOPMENTS LTD.

DWG. NO. BLOCK PLAN: REV. A AUG. 23'



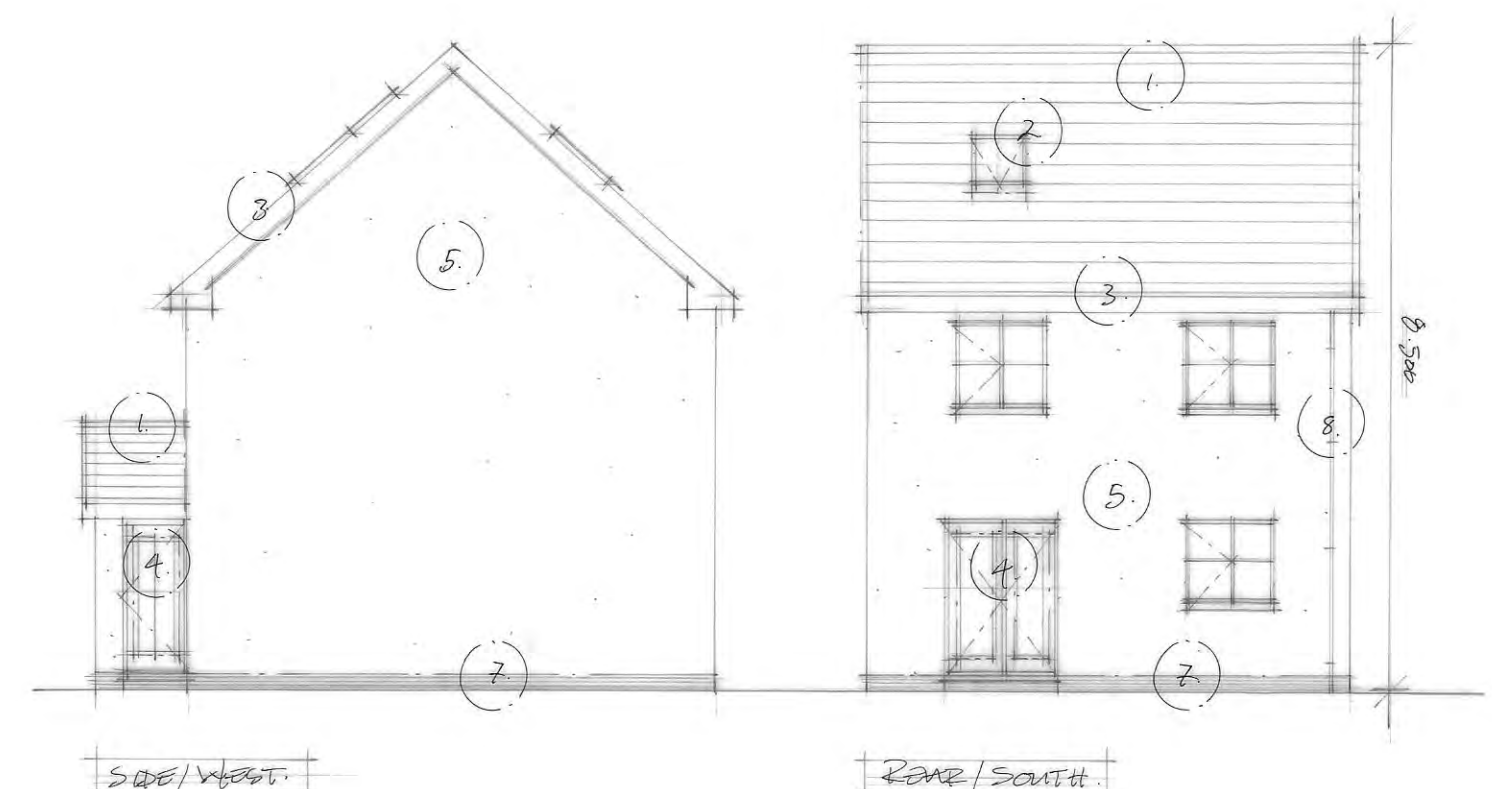
LOBBY:
EXTERNAL FINISHES:

1. GREY / BROWN CONCRETE TILE / SLATE.
2. VELUX ROOF - LIGHTS.
3. COLOUR CODED UPVC FACIA.
4. COLOUR CODED UPVC OR POWDER COATED ALUMINIUM WINDOW / DOORS.
5. COLOUR CODED FLAT RENDER.
6. CORE 5 LEAD TRAY + FLASHINGS.
7. FACIA & BRICK PLINTHS.
8. COLOUR CODED 25.0 & 25.0 P.V.C. DRAIN WATER GOODS.
- 9.

ALL NEW EXTERNAL FINISHES TO THE APPROVAL OF THE L.P.A.

SAMPLES OF EXTERNAL FINISHES PROVIDED ON PURCHASE + REQUEST OF THE L.P.A.

ALL DIMENSIONS TO BE CHECKED ON-SITE BY THE APPOINTED CONTRACTOR.
ALL WORKS TO BE KEPT WITHIN THE CURTILAGE OF THE PROPERTY.
DO NOT SCALE FROM THIS DRAWING.



TITLE:
2 NO. SELF-CONTAINED FLATS + ASSOCIATED PARKING.

PROPOSED FLOOR PLANS + ELEVATIONS.

SCALE: 1:50, 1:100

DATE: AUG. 23.

ADDRESS:
LLOYD A.D. 28, MIDWAY STREET,
PORT LADDO.

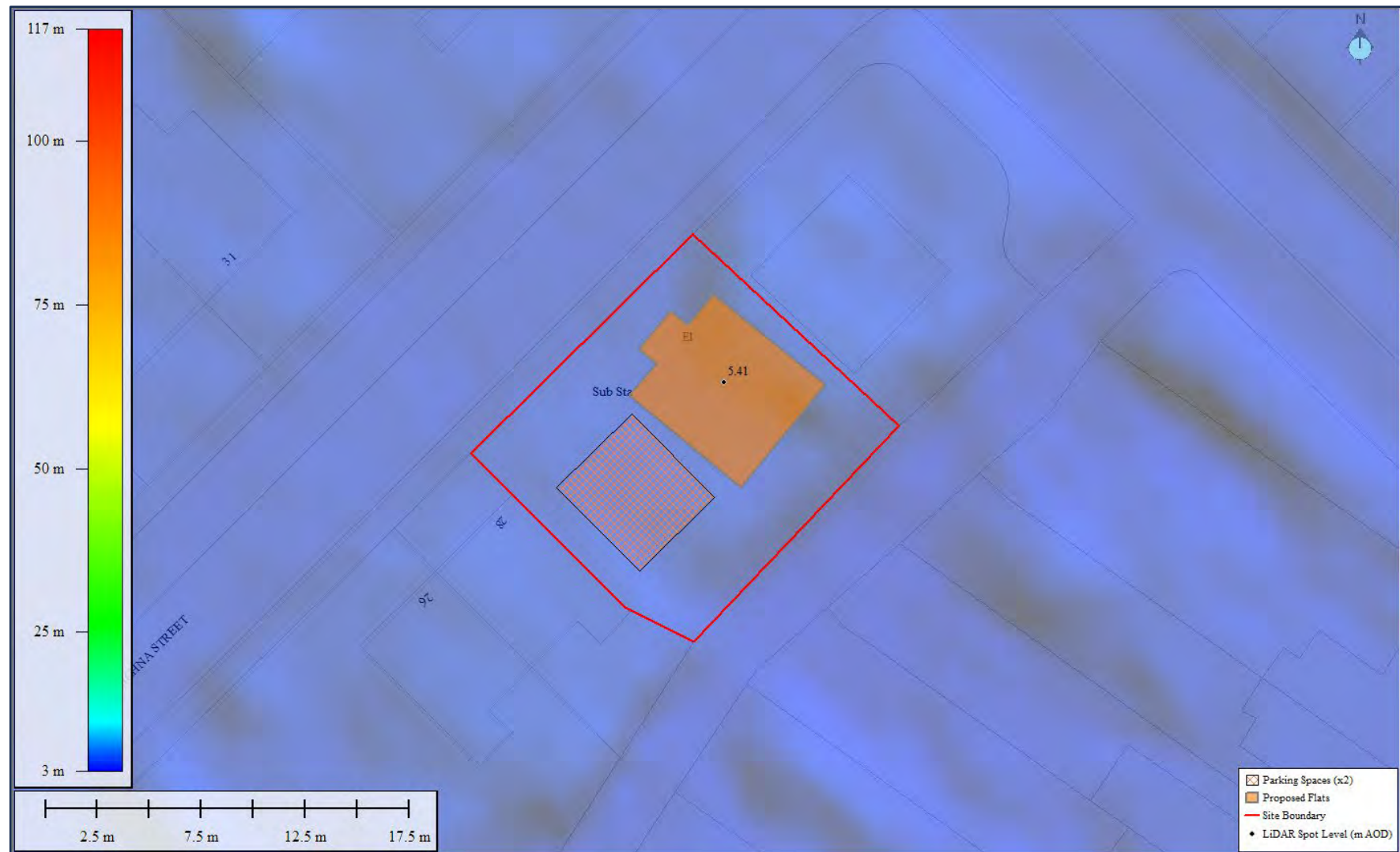
FOR:
F & S PROPERTY DEVELOPMENTS LTD.

DATE: AUG. 23.

DRAWN: LOFL. REV. A. AUG. 23.

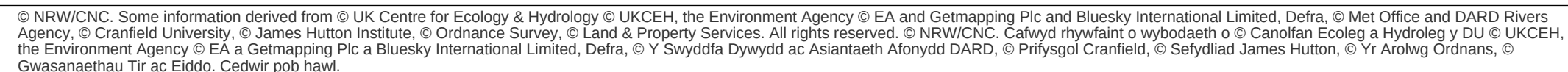
APPENDIX C: LiDAR Data

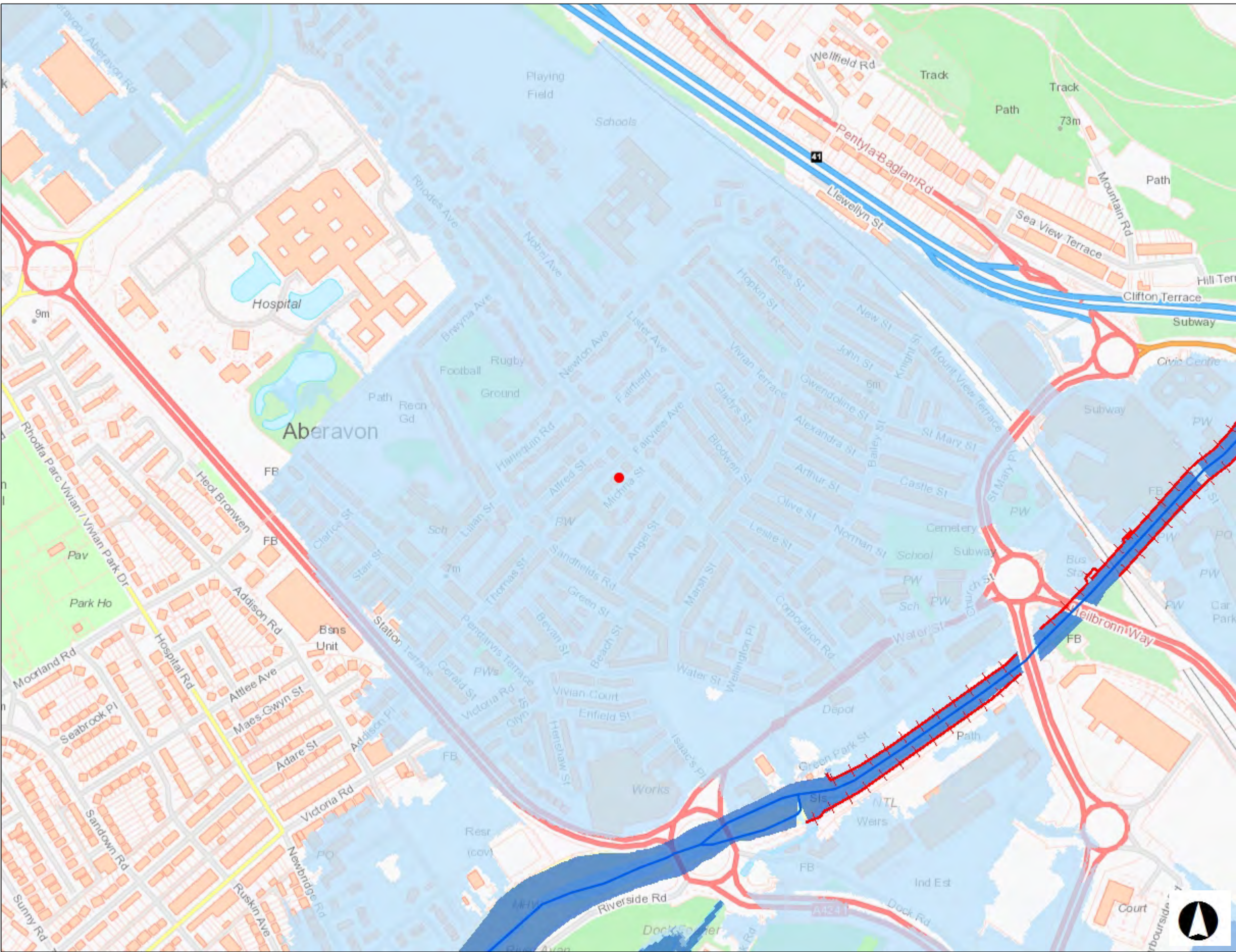
16027 – Michna St



1m resolution DTM NRW LiDAR Tile

APPENDIX D: NRW Flood Maps, Product 5 / 6 data & Correspondence





16027 - 28 Michna Street

Allwedd / Map Key

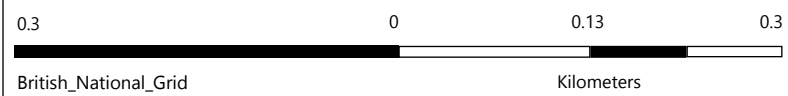
- Main Rivers
- + Flood Defence Locations

Flood Risk from Rivers - Extent

- High
- Medium
- Low

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
22/11/2022



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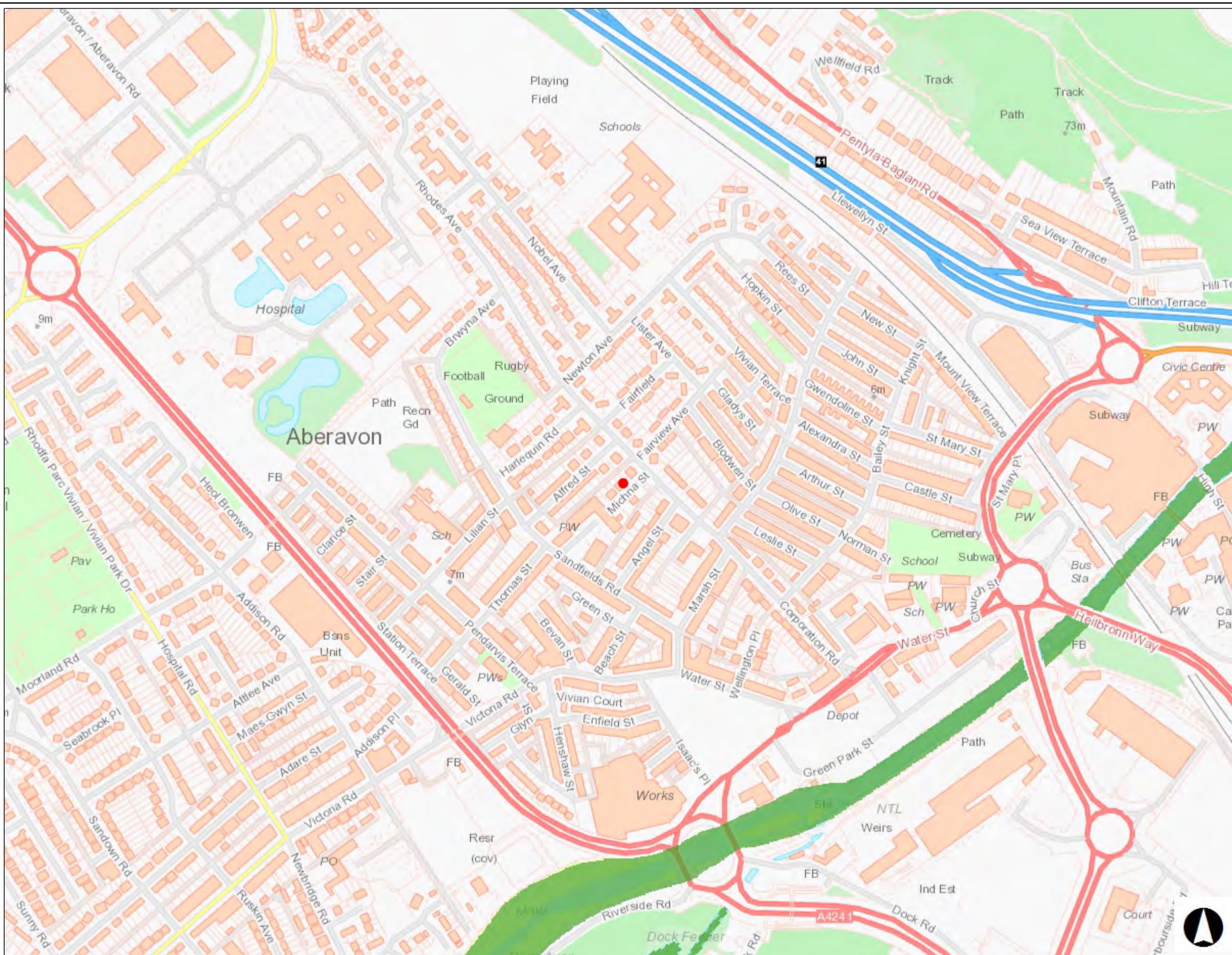
Allwedd / Map Key

Flood Risk from the Sea

- High
- Medium
- Low

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
22/11/2022



0.3 0 0.13 0.3
British_National_Grid Kilometers

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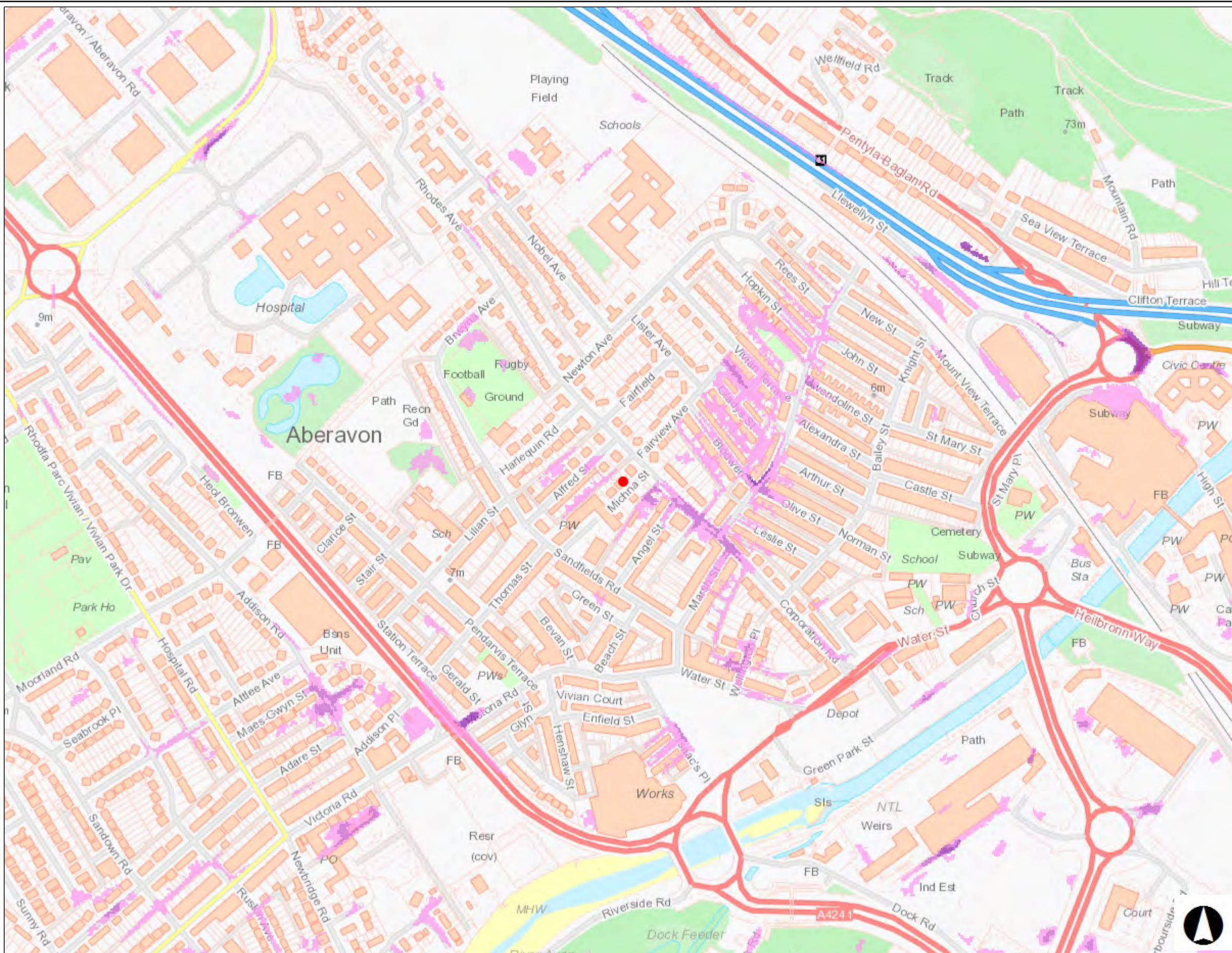
Allwedd / Map Key

Flood Risk from Surface Water & Small
Watercourses - Extent

- High
- Medium
- Low

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
22/11/2022



0.3 0 0.13 0.3
British_National_Grid Kilometers

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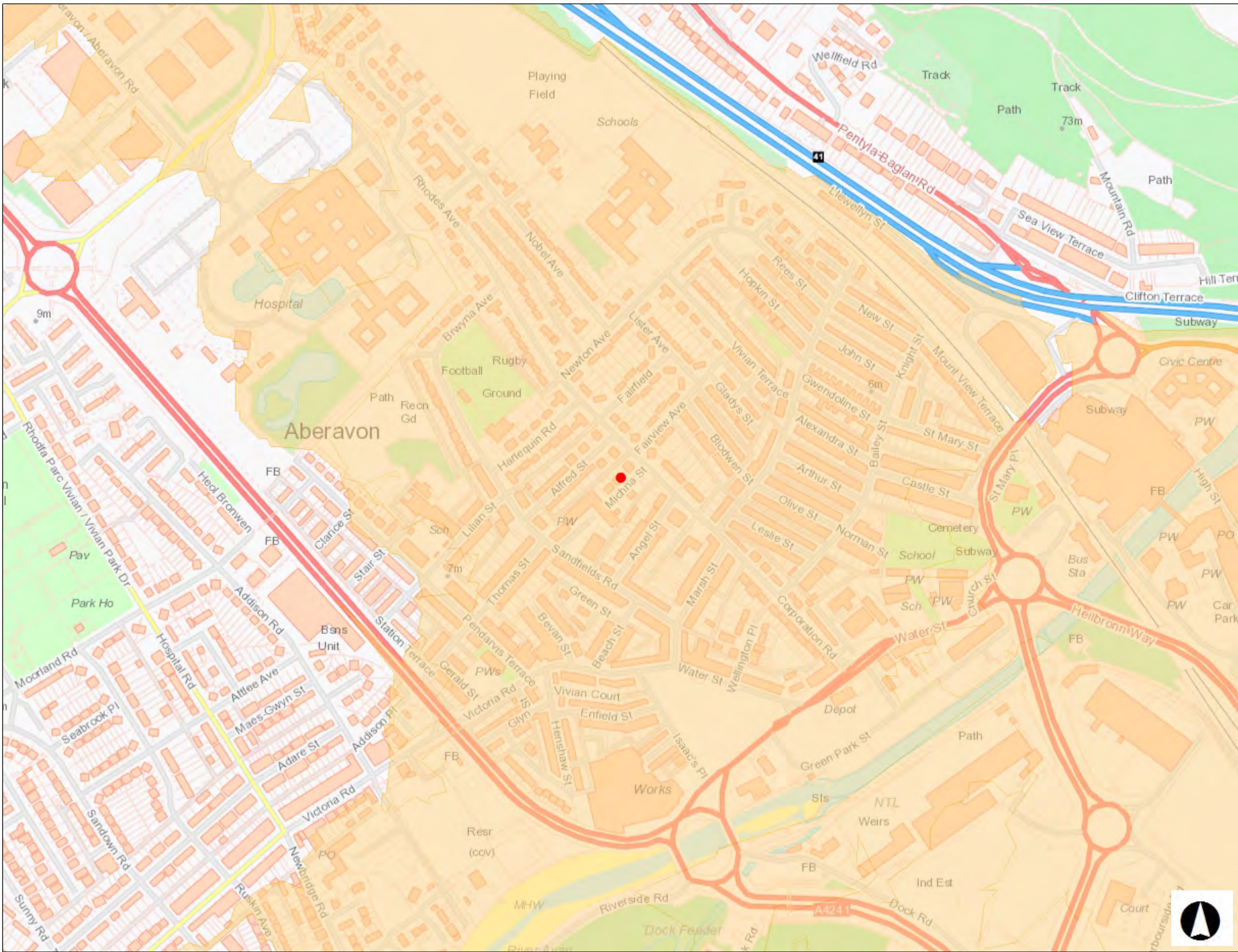
Allwedd / Map Key

- Recorded Flood Extents
- Flood Risk from Reservoirs

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
22/11/2022





16027 - 28 Michna Street

Allwedd / Map Key

 Flood Alert Areas

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
22/11/2022

Flood Map for Planning 16027 - 28 Michna Street

Legend

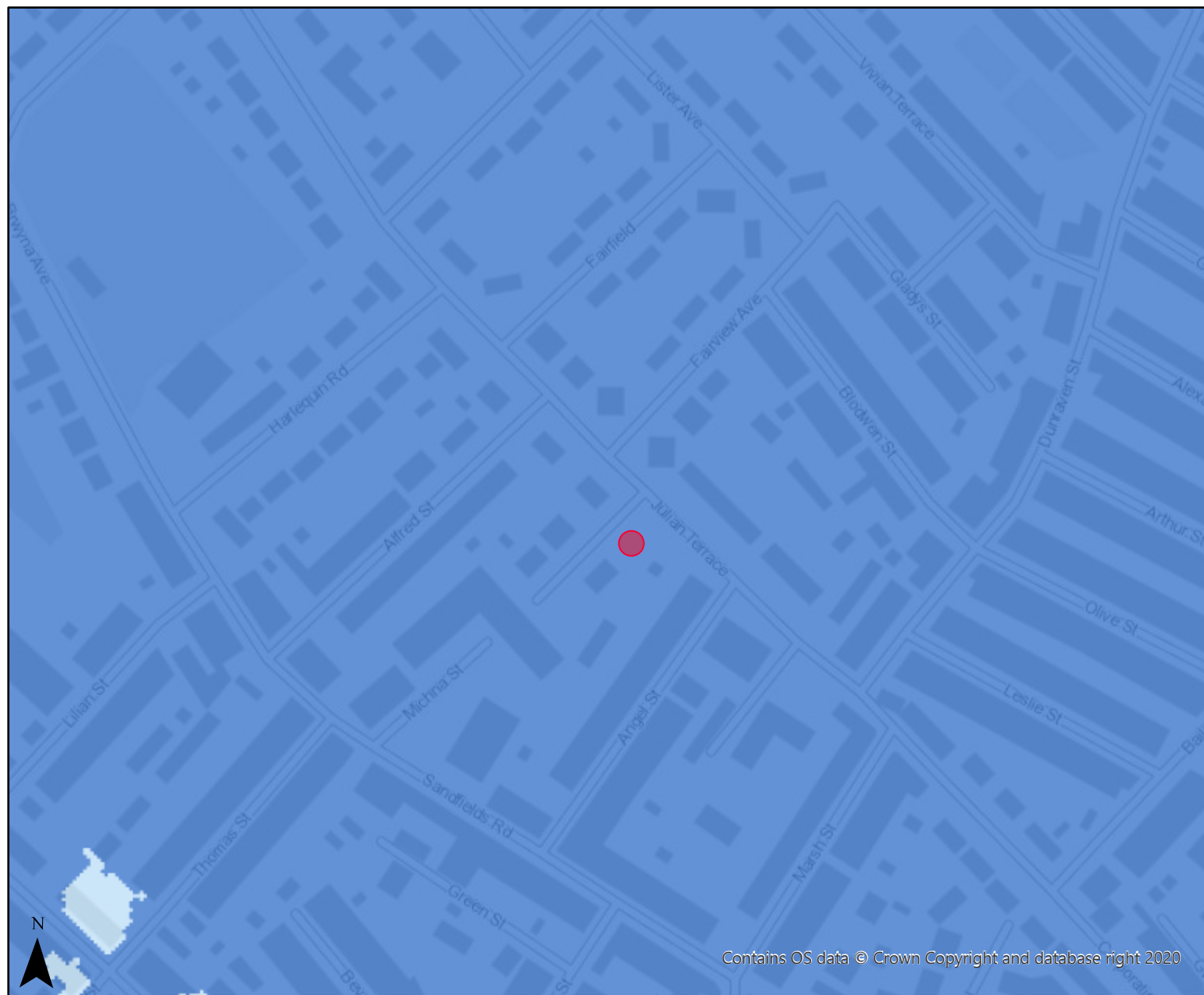
Rivers

Rivers

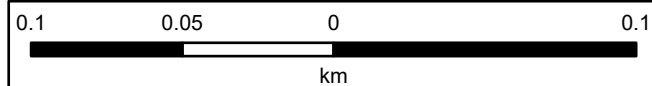
-  Flood Zone 3
-  Flood Zone 2

Scale: 1:2,500

Date: 22/11/2022



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Flood Map for Planning 16027 - 28 Michna Street

Legend

Sea

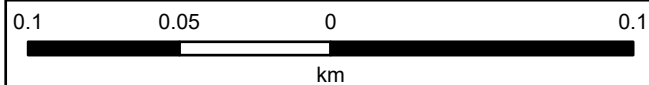
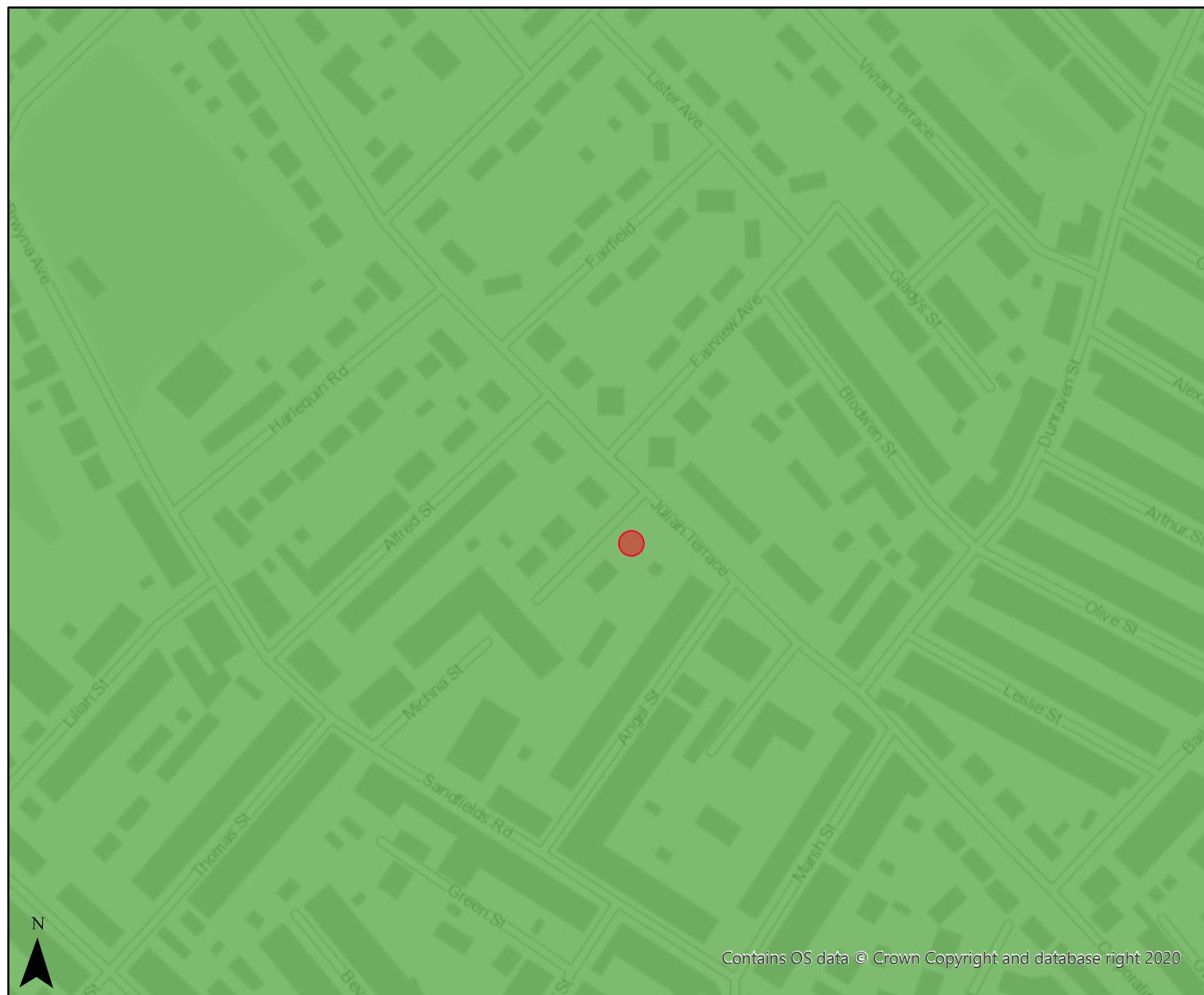
Sea

 Flood Zone 3

 Flood Zone 2

Scale: 1:2,500

Date: 22/11/2022



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Flood Map for Planning 16027 - 28 Michna Street

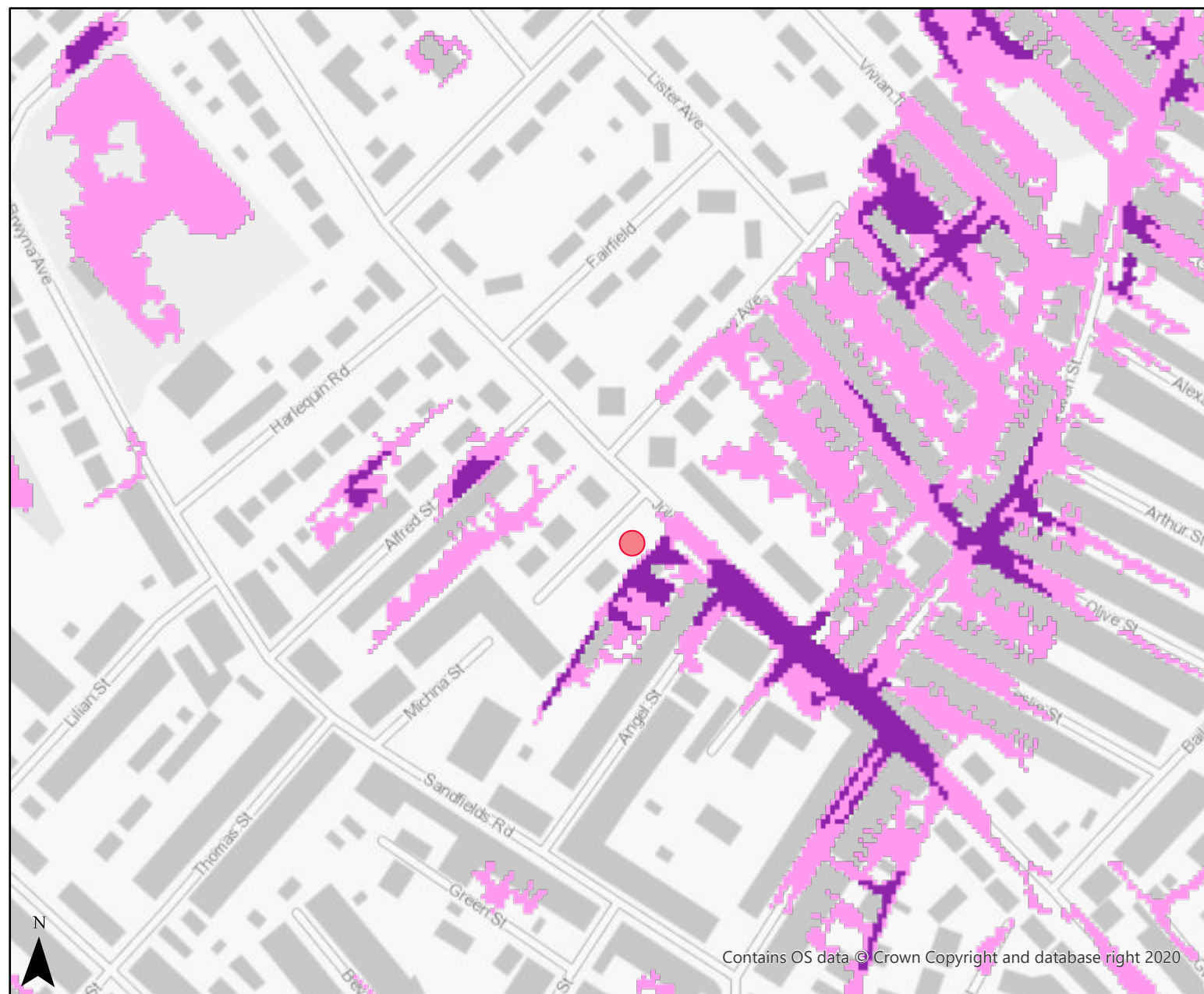
Legend

Surface Water and Small Watercourses

Surface Water and Small Watercourses

 Flood Zone 3

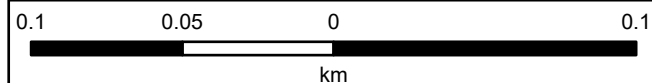
 Flood Zone 2



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Scale: 1:2,500

Date: 22/11/2022



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Flood Map for Planning 16027 - 28 Michna Street

Legend

Flood Defence Location

 Flood Defences

TAN15 Defended Zones

TAN15 Defended Zones

 Rivers
 Sea
 Rivers and Sea



Scale: 1:5,000

Date: 22/11/2022

0.2 0.1 0 0.2
km

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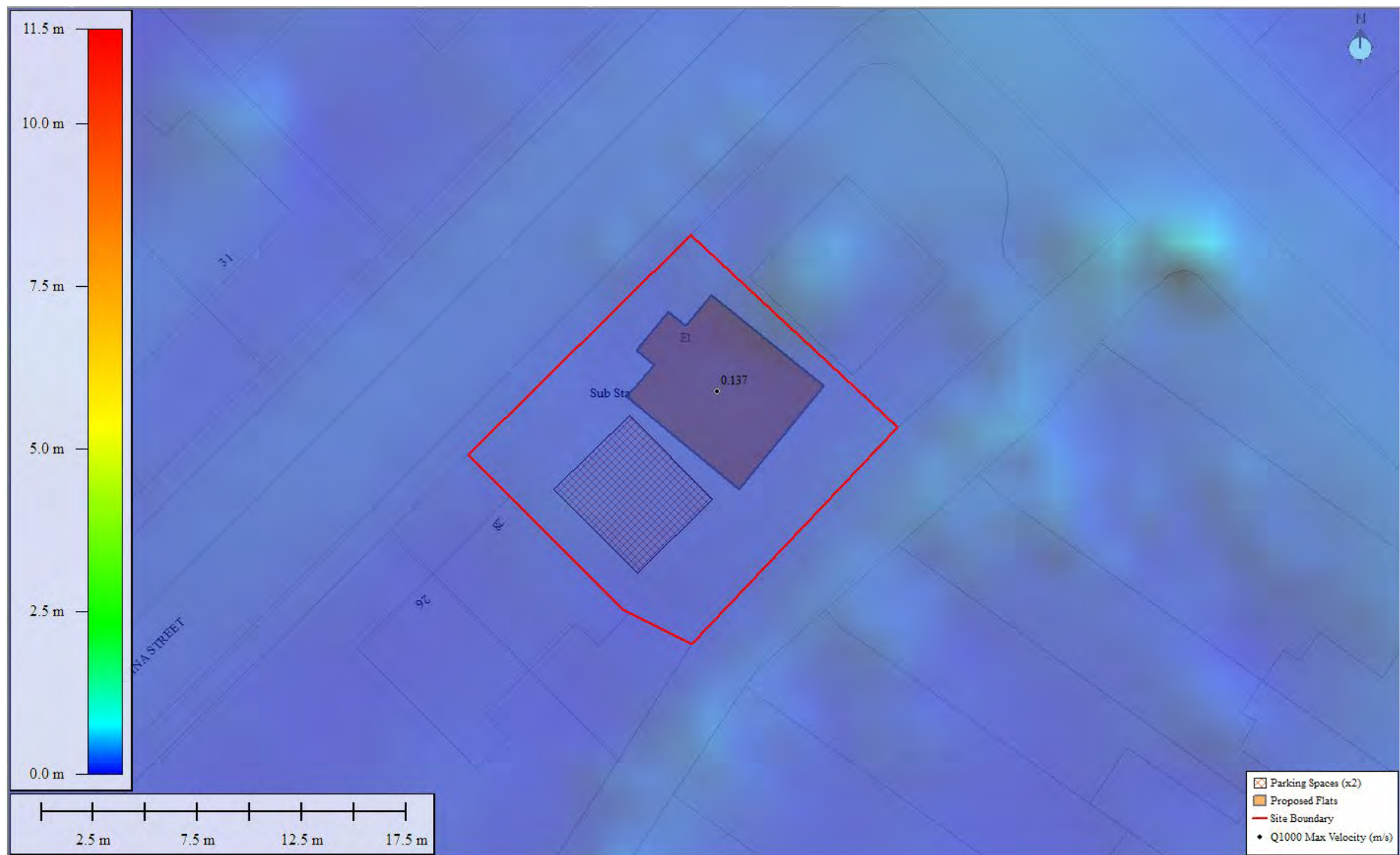
Defended Q1000 DFL (m AOD)

16027 – Michna St

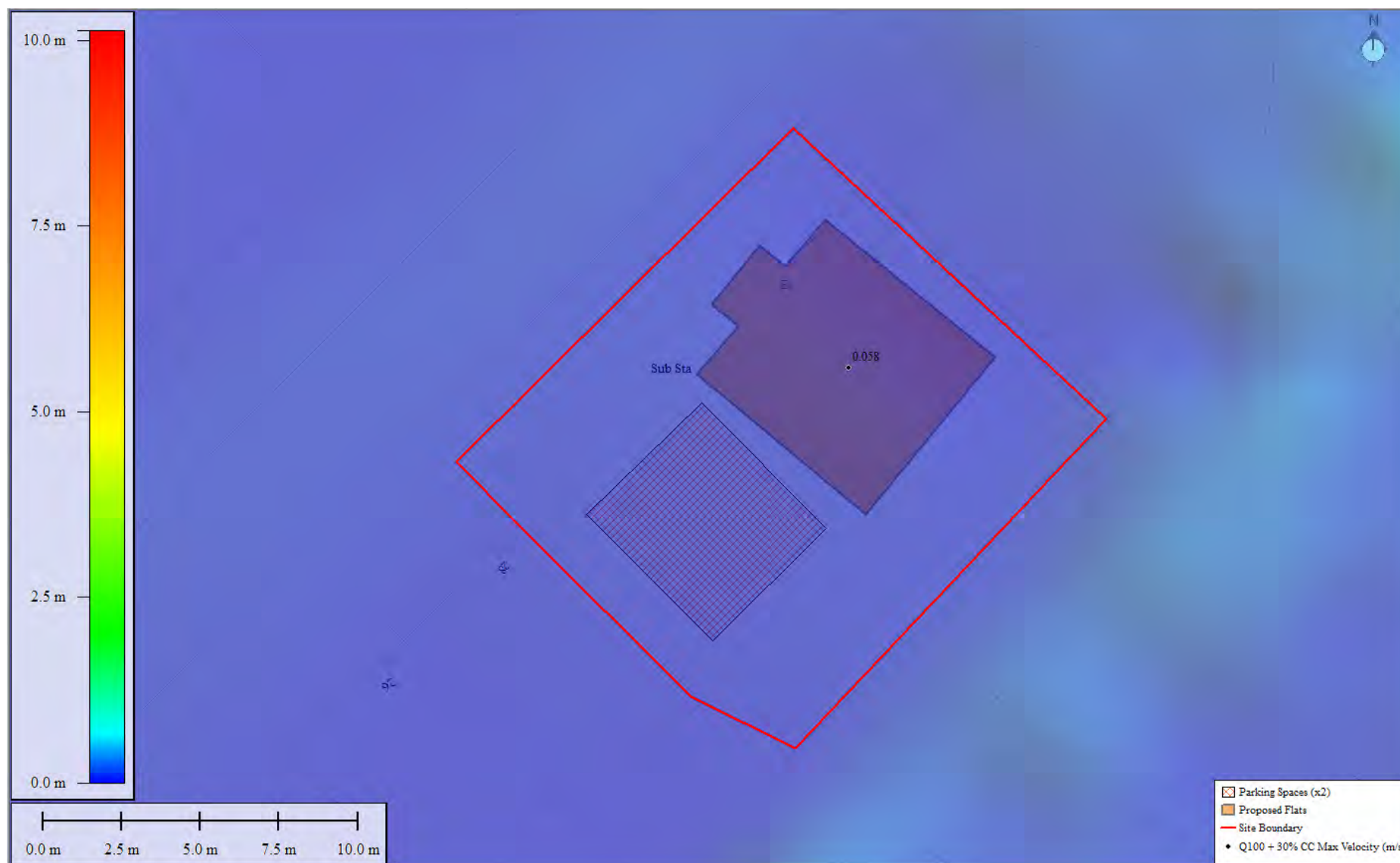


Defended Q100 + 30% CC DFL (m AOD)

16027 – Michna St



Defended Q1000 Maximum Estimated Flood Velocity (m/s)

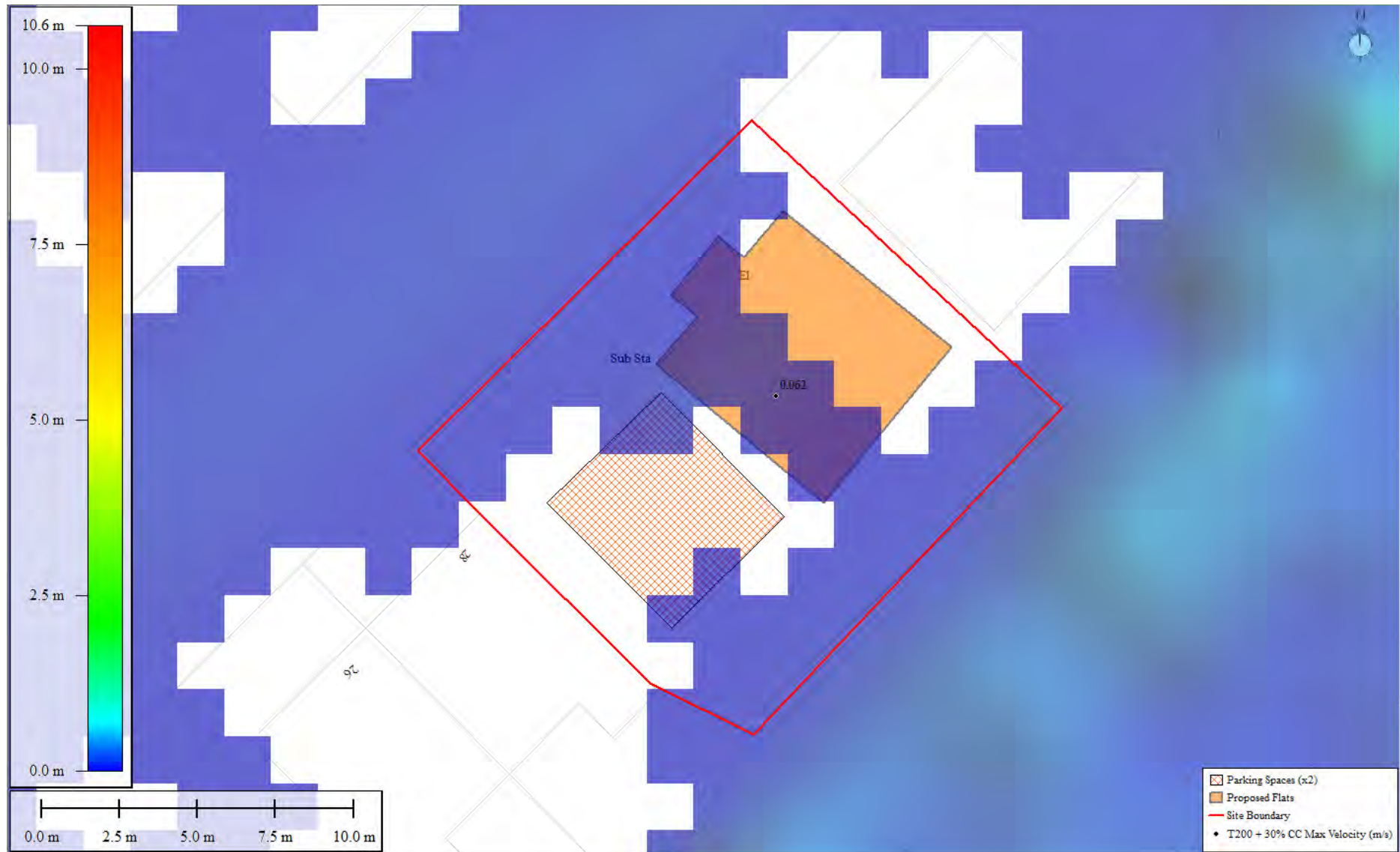


Defended Q100 + 30% CC Maximum Estimated Flood Velocity (m/s)

16027 – Michna St

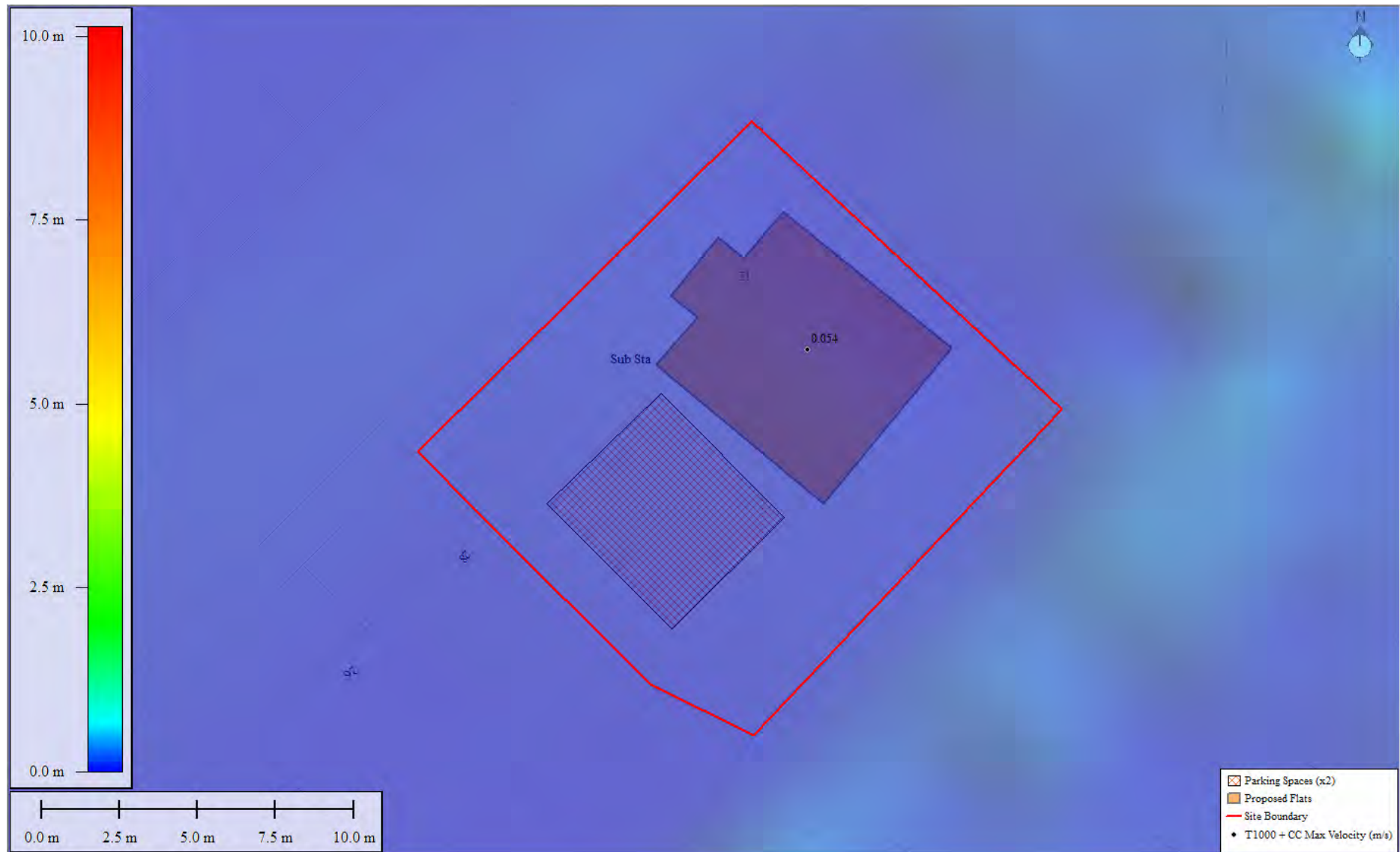


Defended T200 + 30% CC DFL



Defended T200 + 30% CC Max Velocity (m/s)





Defended T1000 + CC Max Velocity (m/s)