



WHITTAM COX ARCHITECTS

Morrisons, Port Talbot

Flood Consequence Assessment

882226 R1 (00) - FCA



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RSK GENERAL NOTES

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK LDE Ltd.

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1 INTRODUCTION

RSK Land and Development Engineering Ltd (RSK) was commissioned to carry out a Flood Consequence Assessment (FCA) on behalf of Whittam Cox Architects (the 'client'). The assessment is in support of the planning submission for a small extension for a Home Shopping Pod at the existing Morrisons Store, Port Talbot.

This assessment has been prepared in accordance with the Planning Policy Wales¹ and its accompanying Technical Advice Note 15², the Interim Code of Practice for Sustainable Drainage³, BS 8533-2011 Assessing and Managing Flood Risk in Development Code of Practice⁴ and the Recommended Non-Statutory Standards for Sustainable Drainage (SuDS) in Wales⁵, with site-specific advice from Natural Resources Wales (NRW), the Lead Local Flood Authority (LLFA), the Local Planning Authority (LPA), the architect and the client.

The PPW / TAN 15 sets out the criteria for development and flood risk by stating that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. The key definitions are:

- “areas at risk of flooding” means land within Flood Zones B and C; or land within Flood Zone A which has critical drainage problems and which has been notified to the local planning authority by the NRW; and
- “flood risk” means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

For this site, the key aspects that require the assessment are:

- The Development Advice Map (**Figure 1.1**) shows the central areas of the site to lie within an area designated as Zone C1 – area of the floodplain which are developed and served by significant infrastructure, including flood defences;
- NRW Flood Map (**Figure 1.2**) shows the central areas of the site to lie within an area of Flood Zone 3 benefitting from defences; and
- The site is less than 1ha in size.

The comments given in this report and opinions expressed are subject to RSK Group Service Constraints provided in **Appendix A**.

¹ Welsh Assembly Government (2018) Planning Policy Wales Edition 10

² Welsh Assembly Government (2004), Planning Policy Wales Technical Advice Note 15: Development and Flood Risk

³ DEFRA (2004), 'Interim Code of Practice for Sustainable Drainage Systems' National SuDS Working Group

⁴ BSI (2011), 'BS 8533-2011 Assessing and managing flood risk in development Code of practice'

⁵ Welsh Assembly Government (2016) 'Recommended non-statutory standards for sustainable drainage (SuDS) in Wales – designing, constructing, operating and maintaining surface water drainage systems'



Figure 1.1: Development Advice Map (accessed October 2020)



Figure 1.2: NRW Flood Zone Map (accessed October 2020)

2 CONTEXT AND SCOPE OF WORK

A key element of project development is to prepare a FCA to establish the flood risk associated with the proposed development and to propose suitable mitigation, if required, to reduce the risk to a more acceptable level.

The scope of work relating to a FCA is based on the guidance provided in PPW and its accompanying TAN15.

A site-specific FCA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall. The scope of this assessment therefore comprises the following elements:

- To review architect plans, planning information and other studies to determine existing site conditions;
- To obtain information on the hydrology and hydrological regime in and around the site;
- To obtain the views of the NRW / LLFA including scope, location and impacts;
- To model the existing watercourse to assess any implications on the proposals of the site;
- To determine the extent of new flooding provision and the influence on the site;
- To assess the impact on the site from climate change effects and anticipated increases in rainfall over a 25-year period for a home shopping pod;
- To review site surface water drainage based on the proposed layout and, if necessary, to determine the extent of infrastructure required; and
- To prepare a report including calculations and summaries of the source information and elements reviewed.

3 SITE DESCRIPTION

3.1 Location

Site Location: Wm Morrison Supermarkets Plc Christchurch Road Baglan Industrial Park Port Talbot SA12 7DA. **Figure 3.1** shows a Site Location Map.

Site National Grid Reference: Easting: 274821; Northing: 191070

The proposed development is located to the rear (eastern edge) of the existing Morrisons Store. The development comprises a store extension for home shopping pod and new vehicle parking canopy within existing service yard to facilitate proposed home shopping. The latest development proposals are included as **Appendix B**.

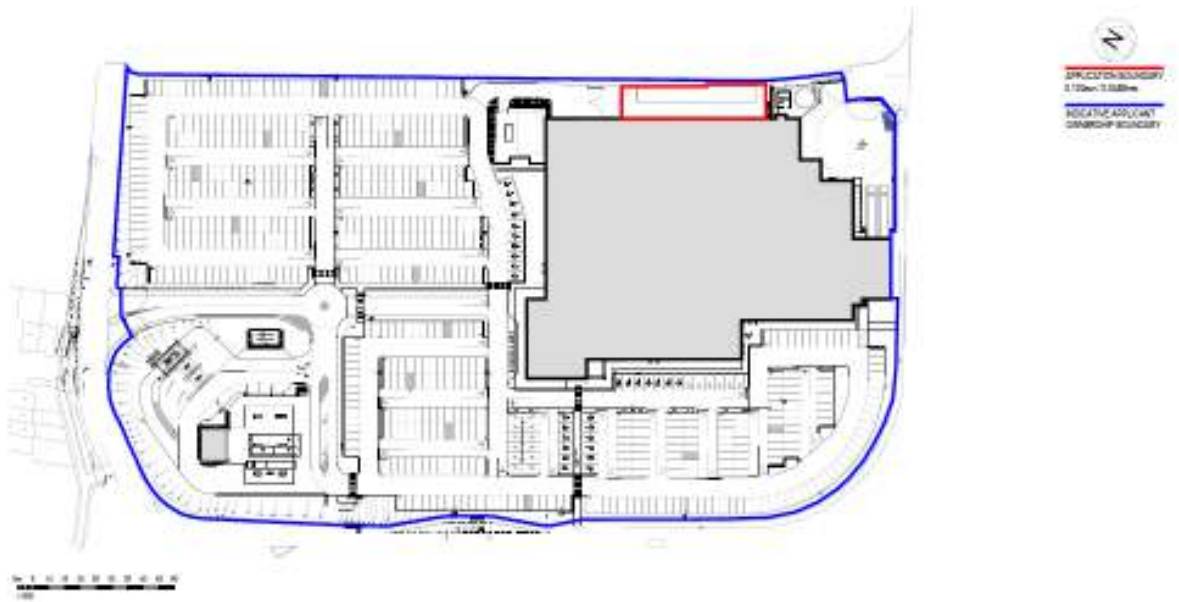


Figure 3.1: Site location plan

3.2 Hydrology

The nearest watercourse to the site is Baglan Brook located to the east between Ffordd Baglan Road and the M4 Motorway. This drain takes runoff from the M4 Motorway. Approximately 2km to the south of the site is the River Afan (Main River). It is understood that these are the main sources of flood risk to the site from fluvial sources. The River Afan discharges to Swansea Bay to the south of the site.

3.3 Geology

Based on published British Geological Survey online geological records⁶ for the area, the site exhibits the following geology:

- Superficial Geology: Tidal Flat Deposits - Clay, Silt And Sand. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by shoreline
- Bedrock Geology: South Wales Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone. Sedimentary Bedrock formed approximately 310 to 318 million years ago in the Carboniferous Period. Local environment previously dominated by swamps, estuaries and deltas.

3.4 Climate Change

Within the context of the existing flood risk at the site, and the requirements of the PPW and TAN15, climate change impacts from different flood sources have been considered alongside the present day scenario as described in Section 8.

As an overview; Climate change can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability.

In accordance with the requirements of the PPW and following consultation with Natural Resources Wales the latest climate change predictions will be considered within this assessment.

In line with the Flood Consequence Assessments: Climate Change Allowances⁷ it is noted that “The projected peak river flow change is a range, with the highest estimate equally likely to occur as the lowest estimate. For this reason, it is recommended that the central estimate, or change factor, for the 2050s for the relevant river basin district should be used to assess the potential impact of climate change as part of a flood consequence assessment.”

As such for the West Wales River Basin District, a climate change factor of 30% will be utilised to assess flood risk associated with climate change increases in flows.

⁶ British Geological Survey online mapping, available at <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?location=&gobBtn=go>

⁷ Welsh Assembly Government (2016) Flood Consequence Assessments: Climate Change Allowances,

4 LEGISLATION AND POLICY CONTEXT

4.1 National policy

Table 4.1: National legislation and policy context

Legislation	Key provisions
Planning Policy Wales Edition 10 (Nov 2018)	The aims of planning policy on development and flood risk are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.
Technical Advice Note 15 (2004)	PPW is supported by the Technical Advice Note 15, which provide additional guidance on flood risk.
Flood and Water Management Act 2010 ⁸	This legislation was formally ratified in May 2010 with the aim is to implementing the findings of the 2007 Pitt Review and co-ordinating control of drainage and flood issues. There are a number of increased responsibilities within the act that affect adoption of Sustainable Drainage Systems (SuDS) features and the role of the NRW to expand on the mapping data they provide. The implementation of SuDS features has many beneficial impacts on the treatment of surface water during remediation works.
Water Resources Act 1991 ⁹	Section 24 – NRW is empowered under this Act to maintain and improve the quality of ‘controlled’ waters Section 85 – It is an offence to cause or knowingly permit pollution of controlled waters Section 88 – Discharge consents are required for discharges to controlled waters
Water Framework Directive (2000) ¹⁰	The Water Framework Directive requires all inland and coastal waters to reach ‘good’ chemical and biological status. Flood risk management is unlikely to have a significant impact on chemical water quality except where maintenance works disturb sediment (such as de-silting) or where pollutants are mobilised from contaminated land by floodwaters. The main impact of the WFD on flood risk management, both now and in the future, relates to the ecological quality of water bodies. Channel works, such as straightening and deepening, or flood risk management schemes that modify geomorphological processes can change river morphology. The WFD aims to protect conservation sites identified by the EC Habitats Directive

⁸ Flood and Water Management Act 2010

⁹ Water Resources Act 1991

¹⁰ European Commission (2000), ‘Directive 2000/60/EC - Water Framework Directive’

Legislation	Key provisions
	and Birds Directive that have water-related features, by designating them as 'protected sites'.
Planning (Hazardous Substances) (Wales) Regulations 2015 ¹¹	These Regulations consolidate, with amendments, the Planning (Hazardous Substances) Regulations 1992 (S.I. 1992/656) and subsequent amending instruments insofar as they apply to Wales. They also include provision relating to the period for determination of procedure under sections 20 and 21 of the Planning (Hazardous Substances) Act 1990 ("the PHSA"). The regulations outline the quantity of hazardous substances that can be stored on site prior to the requirement for hazardous substances consent.

4.2 Local policy

Local policies ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and making development safe without increasing flood risk elsewhere and where possible, reducing flood risk. The Local Development Plan will set out a long term spatial vision, objectives and the planning and development strategy for the County. Relevant policies to flood risk, drainage and hydrology are outlined in **Table 4.2** below.

Table 4.2: Local policy context

LDP document	Key provisions and policies
Neath Port Talbot CBC Local Development Plan (2011-2026) (January 2016)	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 C2(8) 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.

¹¹ The Planning (Hazardous Substances) (Wales) Regulations 2015

5 TECHNICAL ADVICE NOTE 15

TAN15 provides technical guidance on flood risk and development which supplements the policy set out in Planning Policy Wales.

In line with Figure 2 of TAN15, the development category for the works is Less Vulnerable Development, which includes all retail development. In line with Figure 1 of TAN15, highly vulnerable development is acceptable in Flood Zones A – C2 (with the latter subject to the justification test and acceptability of consequences).

5.1 Justification Test

Where development is outlined in Flood Zone C1 or C2, the development will only be permitted if determined by the planning authority to be justified in that location. As such, development will only be justified if it can be demonstrated that:

1. 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
2. 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

3. It concurs with the aims of PPW and meets the definition of previously developed land; and
4. 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 (TAN15) found to be acceptable.

5.2 Assessing Flood Consequences

To satisfy the criteria of the assessment of flood consequences, the following conditions should be satisfied;

1. Flood defences must be shown by the developer to be structurally adequate;
2. The cost of future maintenance for all new / approved flood mitigation measures, including defences must be accepted by the developer and agreed with NRW;
3. The developer must ensure that future occupiers of the development area are aware of the flooding risk and consequences;
4. Effective flood warnings are provided at the site;
5. Escape / evacuation routes are shown by the developer to be operational under all conditions;
6. Flood emergency plans and procedures produced by the developer must be in place;
7. The development is designed by the developer to allow the occupier the facility for rapid movement of goods to areas away from the floodwaters;
8. Development is designed to minimise structural damage during a flooding event and

is flood proofed to enable it to be returned to its prime use quickly in the aftermath of the flood;

9. No flooding elsewhere.

6 SOURCES OF INFORMATION

6.1 Introduction

Reliance has been placed on factual and anecdotal data obtained from the sources identified. RSK cannot be held responsible for any omissions, misrepresentations, errors or inaccuracies with the supplied information. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report in whole or in part.

The information in this report has been prepared following consultation with third party consultees, and receipt of third party information. In some instances, this may only be verbal or informal responses.

Such information and opinions received from third parties are likely to be subjective to the individuals concerned, and may not necessarily represent the opinions of the bodies themselves. As such, said opinions may be subject to variation, clarification or expansion upon submission of more detailed proposals from the developer.

All opinions expressed are based upon current design standards and policies in force at the date of this report. These standards may be subject to change with the passage of time.

The opinions expressed herein are intended to provide general guidance as to how a problem related to a particular development might be resolved. Given the paucity of the original information, and the often-indirect nature of information received, they should not be relied upon as absolute or definitive guidance as to any particular solution. Such conclusions can only sensibly be arrived at upon detailed design.

As a consequence of the above, RSK LDE will not be held liable for any consequential losses, howsoever caused, as a consequence of inaccurate missing, incomplete, or erroneous data contained in this report, nor any data capable of being subject to variable interpretation by means of its generalised nature.

6.2 NRW consultation

6.2.1 Flood zone maps

NRW Flood Zone mapping study for Wales is available on their website at <https://naturalresources.wales/our-evidence-and-reports/maps/flood-risk-map/?lang=en>

The current displayed map is reproduced as **Figure 1.2** and shows the site to lie within Flood Zones 1, 2 and 3, showing the site with low risk of flooding from fluvial or tidal sources.

The Welsh Assembly Government's Development Advice Maps which are available at:

<http://data.wales.gov.uk/apps/floodmapping/>

This map has been reproduced as **Figure 1.1** and shows the Welsh Assembly Government's TAN15 data.

6.2.2 Consultation

NRW was contacted with regard to fluvial / tidal flood levels in the vicinity of the site. NRW provided the mapped outputs from the latest flood modelling exercise the

model uses a flow increase of 30% to represent climate change, (**Appendix C**).

6.3 Neath Port Talbot County Borough Council Planning Response

A response to the submitted planning application for the site (Application Ref: P2020/0809) has been provided by Neath Port Talbot County Borough Council. In order to validate the application, the following comments need to be addressed:

- Your application should be accompanied by a statement to demonstrate how the proposed development meets the tests/refined tests of Technical Advice Note 15 (TAN15) 'Development and Flood Risk' (2004). The submitted Flood Risk Statement would be insufficient I'm afraid and this is not something that can be conditioned.
- A Flood Consequences Assessment (FCA) will be required in accordance with Technical Advice Note 15 'Development and Flood Risk' (2004) for all applications that involve development within flood zones C1, C2 and those parts of zone B where flooding has been identified as a material consideration to allow for localised problems.
- The FCA should be appropriate to the size and scale of the proposed development and should examine the likely mechanisms that cause the flooding, and the consequences on the development of those floods. It should also establish whether appropriate mitigation measures can be incorporated within the design of the development and should take account of climate change.
- The FCA should be carried out by a suitably qualified competent person and inform the process of detailed design and the selection of mitigation measures. Technical Advice Note 15: 'Development and Flood Risk' (2004) provides comprehensive guidance for both local planning authorities and applicants in relation to the undertaking of FCAs.

7 SOURCES OF FLOOD RISK

7.1 Criteria

In accordance with PPW and advice from NRW, a prediction of the flood sources and levels is required along with the effects of climate change from the present for the design life of the development (in this case assumed to be 25 years). To consider these effects of climate change, new standard industry guidance recommends consideration of a 30% increase in peak river flows over this timeframe.

The flood risk elements that need to be considered for any site are defined in BS 8533 as the “Forms of Flooding” and are listed as:

- Flooding from Rivers (fluvial flood risk);
- Flooding from the Sea (tidal flood risk);
- Flooding from the Land;
- Flooding from Groundwater;
- Flooding from Sewers (sewer and drain exceedance, pumping station failure etc); and
- Flooding from Reservoirs, Canals and other Artificial Structures.

The following section reviews each of these in respect of the subject site.

7.2 Development Advice Maps

The latest Welsh Government Development Advice Maps (**Figure 7.1**) shows that the site is designated as Zone C1 (served by significant infrastructure, including flood defences).



Figure 7.1: Development Advice Map (accessed October 2020)

7.3 NRW Flood Maps

The latest NRW 'Risk of Flooding from Rivers and Sea' flood map (**Figure 7.2**) indicates that the site is located within Flood Zone 3 though in an area benefitting from defences and is defined as having a low chance of flooding which translates to between a 1 in 1000 year and 1 in 100 year chance of flooding when factoring in the defences in the location. The NRW flood maps class the risk of flooding from rivers and the sea at this location as **low**.



Figure 7.2: NRW Flood Zone Map (accessed October 2020)

7.4 Flooding from rivers (fluvial flood risk)

The site is believed to be at risk from fluvial sources as shown on the flood risk mapping from NRW. With the presence of the defences in the area, the site is afforded protection from flooding, as shown in the hydraulic modelling outputs provided by NRW (**Appendix C**). A range of fluvial events have been modelling including the 100 year +30% climate change and the 1000 year event with the site remaining outside of the flood envelope for both these events. The historic flood map provided on the NRW online mapping service does not show the site to have experienced flooding in the recent past.

7.4.1 Climate change

Fluvial flooding is likely to increase as a result of climate change. A greater intensity and frequency of precipitation is likely to raise river levels and increase the likelihood of a river overtopping its banks. Climate change has been considered in the modelled results as provided by NRW.

7.5 Flooding from the sea (tidal flood risk)

The coastline consists of sandy beaches backed by extensive sand-dune systems, at Aberavon there is an extensive promenade and beach. There are no recent records of events overtopping the dunes. The tide affects the River Afan as far upstream as Velindre, and the lower reaches of the River Kenfig. The tides affect the watercourses that drain into the affected parts of the rivers and depending on the timing of the tides and the flows in the watercourses there is the potential to cause in-combination flooding.

The NRW tidal flood risk maps (**Figure 7.3**) shows the site to be located outside of the area at risk from this source.

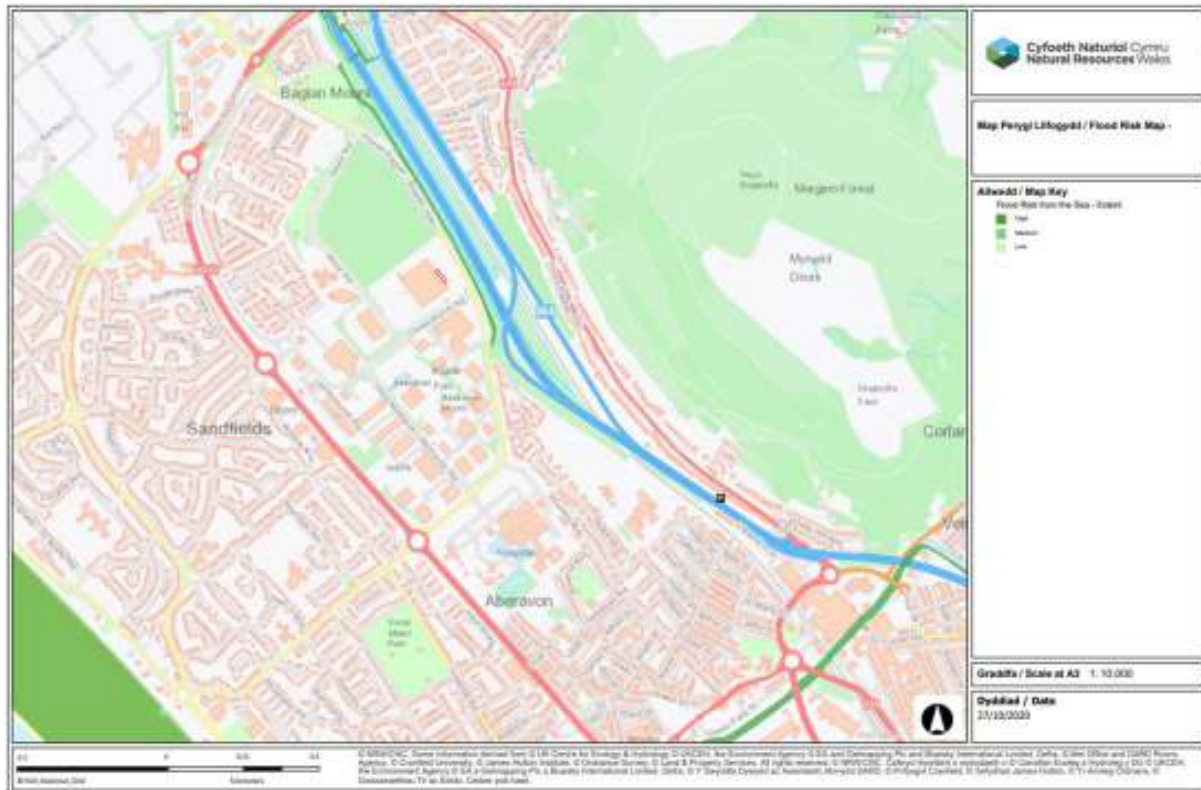


Figure 7.3: NRW Tidal food risk map (Accessed October 2020)

7.6 Flood Defences

NRW has mapped the locations of flood defences in Neath Port Talbot. These are largely designed to prevent flooding near to main rivers. Areas benefiting from flood defences are also indicated, in central Port Talbot (Aberafan) and central Pontardawe (Alloy Industrial Estate). The identified flood defences are in the following locations:

- Ystalyfera: along riverbank adjacent to Glan yr Afon;
- Resolven: along the canal between Abergarwed and Resolven;
- Resolven: Clydach Brook adjacent to A465;
- Glynneath: along riverbank adjacent to Craig Nedd and Pentre Street;
- Glynneath: adjacent to Canal Place; and
- Port Talbot: along both banks of the River Afon from Velindre through the town centre to Water Street.

It is understood from the flood model outputs that the flood defences afford protection to the site and the surrounding areas up to and including the 1000 year event.

7.7 Flooding from the land (overland pluvial flood risk)

If intense rain is unable to soak into the ground or be carried through manmade drainage systems, for a variety of reasons, it can run off over the surface causing localised floods before reaching a river or other watercourse.

Generally, where there is impermeable surfacing or where the ground infiltration capacity is exceeded, surface water runoff will occur. Excess surface water flows from the site are believed to drain naturally to the local water features, either by overland flow or through infiltration.

NRW's surface water flood map (**Figure 7.4**) shows that the site is not at a risk of flooding from pluvial sources. In line with the NRW data, the risk of pluvial flooding to the site can be considered **very low**.



Figure 7.4: NRW surface water flood risk map (Accessed October 2020)

7.7.1 Climate change

Surface water flooding is likely to increase as a result of climate change in a similar ratio to fluvial flooding. Increased intensity and frequency of precipitation is likely to lead to reduced infiltration and increased overland flow.

7.8 Flooding from groundwater

Groundwater flooding tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional

groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

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.

The risk of groundwater flooding affecting the site is therefore considered **low**.

7.8.1 Climate change

Climate change could increase the risk of groundwater flooding as a result of increased precipitation filtering into the groundwater body. If winter rainfall becomes more frequent and heavier, groundwater levels may increase. Higher winter recharge may however be balanced by lower recharge during the predicted hotter and drier summers. This is less likely to cause a significant change to flood risk than from other sources, since groundwater flow is not as confined. It is probable that any locally perched aquifers may be more affected, but these are likely to be isolated. The change in flood risk is likely to be low.

7.9 Flooding from sewers

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its conveyance capacity, the system becomes blocked or it cannot discharge due to a high water level in the receiving watercourse. A sewer flood is often caused by surface water drains discharging into the combined sewer systems; sewer capacity is exceeded in large rainfall events causing the backing up of floodwaters within properties or discharging through manholes.

Most adopted surface water drainage networks are designed to the criteria set out in Sewers for Adoption¹². One of the design parameters is that sewer systems be designed such that no flooding of any part of the site occurs in a 1 in 30 year rainfall event. By definition a 1 in 100 year event would exceed the capacity of the surrounding sewer network as well as any proposed drainage.

To ensure that sewer and surface water flooding is not exacerbated; surface water must be considered within the design of the site. This ensures that any additional surface water and overland flows are managed correctly, to minimise flood risk to the site and the surrounding area. Any new surface water network on the site should be designed to ensure exceedance of the network has been considered.

The residual sewer flood risk posed to the site will remain **low**.

7.9.1 Climate change

The impact of climate change is likely to be negative regarding flooding from sewers. Increased rainfall and more frequent flooding put existing sewer and drainage systems under additional pressure resulting in the potential for more frequent surcharging and potential flooding. This would increase the frequency of local sewer flooding but would not be significant in terms of the proposed development.

¹² WRC (2012), 'Sewers for Adoption' 7th Edition

7.10 Reservoirs

Flood events can occur from a sudden release of large volumes of water from reservoirs, canals and artificial structures.

Reservoir flooding is also extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. Since then reservoir safety legislation has been introduced to ensure reservoirs are maintained.

The NRW reservoir flood map shows that the site is not in an area at risk of flooding from this source.

7.10.1 Climate change

Reservoirs can be managed over time, controlling inflow/outflow of water and therefore there is the capacity to control the effects of climate change. Increased rainfall has the potential to increase base flow, but this should be minimal. It is unlikely that there will be a substantial change to the risk of flooding for this site.

7.11 Canals

There are no Canal & River Trust owned canals within the vicinity of the site, therefore no risk is attributed to this source.

7.12 Historic Flooding

There has been recorded tidal flood events throughout wider Port Talbot area, though there are no direct references to flooding within the site boundary within these documents. According to the mapping from NRW and mapping there are no mapped historic flood events which have been outlined as affecting the site.

7.13 Flood risk resulting from the development

The proposed development will use the latest best practice guidance to ensure that flood risk is not increased as a result of the development. The proposed development is located in an area of paved parking bays, as such will not contribute additional runoff into the drainage systems. Whilst it is acknowledged that there is a residual flood risk to the site this will not be increased to the site or the surrounding area as a result of the development.

8 SURFACE WATER DRAINAGE STRATEGY

8.1 Scope

The TAN15 states that SuDS should be considered wherever practical. The use of SuDS is also encouraged and the surface water drainage strategy should seek to implement a SuDS hierarchy that aspires to achieve reductions in surface water runoff rates to greenfield rates.

8.2 Surface water runoff post-development situation

It is assumed that the proposals are for a minor development, which is currently 100% impermeable and as a result it is anticipated that there will be no increase in impermeable area.

The site is currently actively drained and it is believed that the current drainage network will be retained and will be sufficient to deal with proposals for the redevelopment.

9 MITIGATION

9.1 Flood Warning and Flood Alerts

The provision of flood warning systems is the responsibility of Natural Resources Wales.

Natural Resources Wales provides a free flood warning service for many areas at risk of flooding from rivers and the sea. The Natural Resources Wales free flood warning service can provide advance notice of flooding and can provide time to prepare for a potential flood event.

Flood Warning and Flood Alert Areas can be viewed on the Natural Resources Wales website. The Natural Resources Wales issue flood warnings to homes and businesses when flooding to properties is expected. Upon receipt of a flood warning, occupants should take immediate action. The Natural Resources Wales also issue flood alerts when flooding to low lying land and roads is expected. Flood alerts cover larger areas than flood warnings and are issued more frequently. Upon receipt of an alert, occupants should be prepared for flooding and to take action. Flood warnings and flood alerts are signed up to separately, however when signing up for flood warnings homes and businesses must agree to receive flood alerts.

9.2 Flood Warning Codes

What the flood warning codes mean and what action to take.

Four codes are used for flood warnings. They can be issued in any order, usually ending with an 'all clear'.

9.2.1 Flood Alert



What it means

Flooding is possible. Be prepared.

When it's used

Two hours to two days in advance of flooding.

What to do

Be prepared to act on your flood plan.

Prepare a flood kit of essential items.

Monitor local water levels and the flood forecast on the NRW website.

9.2.2 Flood Warning



What it means

Flooding is expected. Immediate action required.

When it's used

Half an hour to one day in advance of flooding.

What to do

Move workers / on site staff and visitors to a safe place.

Turn off gas, electricity and water supplies if safe to do so.

Secure loose plant and equipment if unable to move to a safe place

Put flood protection equipment in place.

9.2.3 Severe Flood Warning



What it means

Severe flooding. Danger to life.

When it's used

When flooding poses a significant threat to life.

What to do

Stay in a safe place with a means of escape.

Be ready should you need to evacuate from site.

Co-operate with the emergency services.

Call 999 if you are in immediate danger.

9.2.4 Warnings no longer in force

What it means

No further flooding is currently expected in your area.

When it's used

When river or sea conditions begin to return to normal.

9.3 Flood Warning Procedures

All duty managers should be aware of the active flood plan for their business. This should include but not be limited to:

- A list of important contacts, including Floodline, building services, suppliers and evacuation contacts for staff;
- A description or map showing locations of key property, protective materials and service shut-off points;
- Basic strategies for protecting property, preventing business disruption and assisting recovery;
- Checklists of procedures that can be quickly accessed by staff during a flood.

On receipt of a **flood alert**, the on-duty store manager should make preparations for a full evacuation of the premises based on the specific flood plan for that business. There is no requirement to actively evacuate the premises, however closure of the unit should be considered to prevent additional customers entering the store.

On receipt of a **flood warning**, the premises should be evacuated with all customers and staff leaving the site and exiting the flood zone, a plan showing the extent and depth is included in the figures above.

The store should be secured with all services (i.e. gas/electricity) turned off, if safe to do so. Should unit specific flood protections measures be available, these should be activated to limit the impact of a flood event.

Access to the site should be prohibited until the flood warning has been revoked and it is deemed safe to enter the site.

Within the proposed development site, there are a number of areas where dry refuge could be sought which are located above the predicated flood levels. This should only be considered as a last resort, as egress from the floodplain is a safer option.

10 CONCLUSIONS AND RECOMMENDATIONS

This FCA complies with the PPW and its Technical Guidance (TAN15) and demonstrates that flood risk from all sources has been considered in the proposed development. It is also consistent with the Local Planning Authority requirements with regards to flood risk.

The site is shown to lie within Flood Zone C1 (area of the floodplain which are developed and served by significant infrastructure, including flood defences) in accordance with the Development Advice Maps.

The proposed development is on existing impermeable ground and as such there will be no change to the existing impermeable area on site.

This flood consequence assessment has concluded that:

- The latest Welsh Government Development Advice Maps (Figure 1.1) shows that site is shown to lie within Flood Zone C1.
- The latest NRW 'Risk of Flooding from Rivers and Sea' flood map (Figure 1.2) indicates that the site is located in an area of Flood Zone 3 benefitting from defences and is defined as having between a 1 in 1000 and 1 in 100 annual probability of river flooding;
- Based on the NRW data provided, the site is not shown to be at risk of flooding from the present day 1 in 100 or 1 in 1000 year events;
- Flood risk from surface water is very low at the site;
- Flood risk from other sources – groundwater, sewers, reservoirs and artificial sources – is demonstrated to be low;
- The development (both during and post construction) will have minimal to no impact on other forms of flooding;
- It is believed that surface water runoff resulting from the development will be managed in a similar way as per the existing development; and,
- The FCA has demonstrated that the proposed developments in the locations assessed are justifiable and have acceptable consequences of flooding in line with TAN15.

Overall, taking into account the above points, the developments at the location outlined should not be precluded on flood risk grounds.

APPENDIX A

SERVICE CONSTRAINTS

RSK Group service constraints

1. This report and the Drainage design carried out in connection with the report (together the "Services") were compiled and carried out by RSK LDE Ltd (RSK) for Whittam Cox Architects (the "client") in accordance with the terms of a contract between RSK and the "client". The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable Civil Engineer at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services, which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to



this report, RSK did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.

7. The Services are based upon RSK's observations of existing physical conditions at the site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.

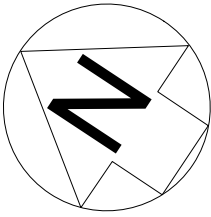
8. The phase II or intrusive environmental site investigation aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and RSK] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.



APPENDIX B

PROPOSED SITE PLANS



APPLICATION BOUNDARY
0.120acr / 0.0485hec

INDICATIVE APPLICANT
OWNERSHIP BOUNDARY

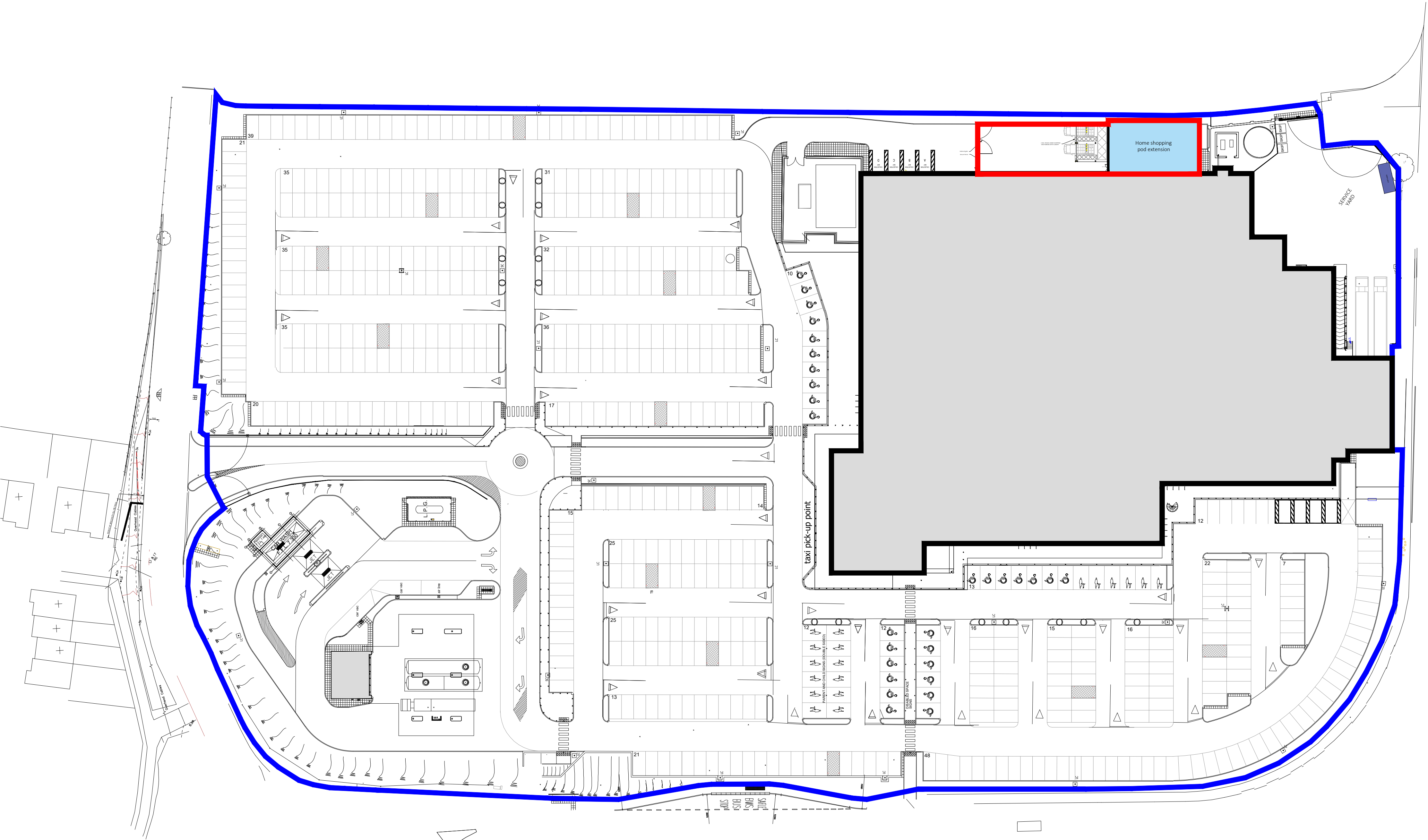
SCHEDULE OF INFORMATION:

ADDITIONAL ACCOMMODATION:	
HOME SHOPPING	2,849 SqFt / 264.7 SqM
TOTAL	2,849 SqFt / 264.7 SqM

CAR PARK:
Approximate parking schedule

EXISTING SPACES = 597
inclusive of disabled bays and parent & child bays

PROPOSED SPACES = 601
inclusive of disabled bays and parent & child bays



0m 5 10 15 20 25 30 35 40 45 50
1:500

A	08/09/20 Drawings updated to reflect updated scheme	LH/GT
No.	Date	Description
CLIENT		Drawn/Checked by



PROJECT
096 PORT TALBOT
HOME SHOPPING

TITLE
PROPOSED SITE PLAN

DRAWING STATUS

PLANNING

DRAWN	LH	CHECKED	JG
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SCALE 1:500

DATE JULY 2020

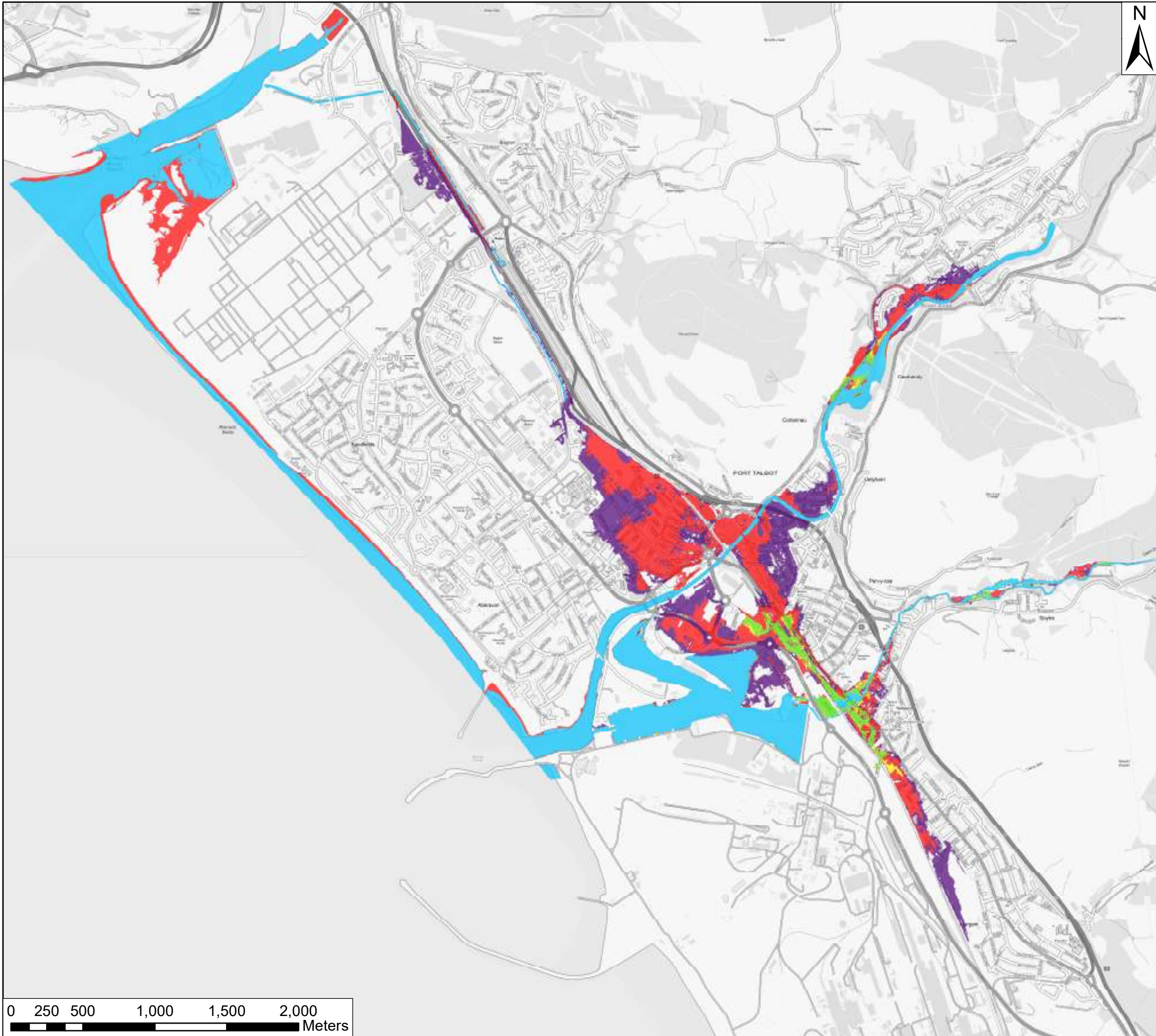
Whittam Cox ARCHITECTS whittamcox.com
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London / 020 3388 6019
Leeds / 0113 468 2450

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200308	PL_03	A



APPENDIX C

MAPPED FLOOD OUTLINES



KEY

- 5% AEP flood outline
- 1.33% AEP flood outline
- 1% AEP flood outline
- 1% AEP + climate change outline
- 0.1% AEP flood outline

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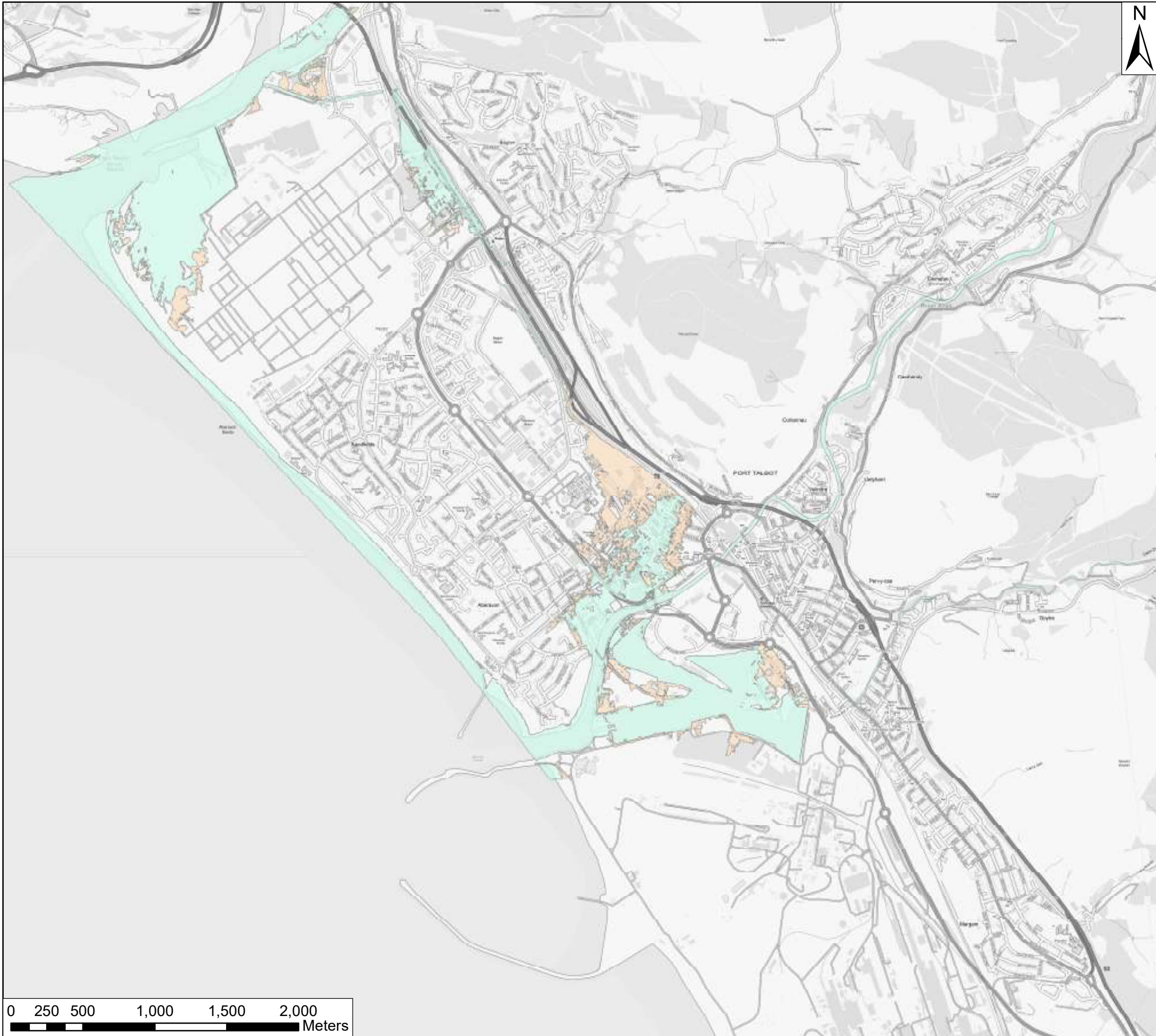
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for
Neath Port Talbot County Borough Council

Port Talbot Harbourside PAR
Fluvial Flood Outlines

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	Approved	GB	04/05/2017
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Drawing 2016s4827_PT_001		Sheet No.: 1 of 16	Rev.: A

0 250 500 1,000 1,500 2,000
Meters



KEY

- 0.5% AEP tidal flood outline (2116)
- 0.1% AEP tidal flood outline (2116)

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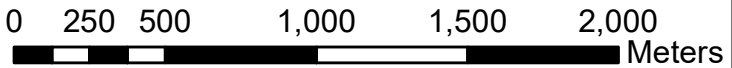


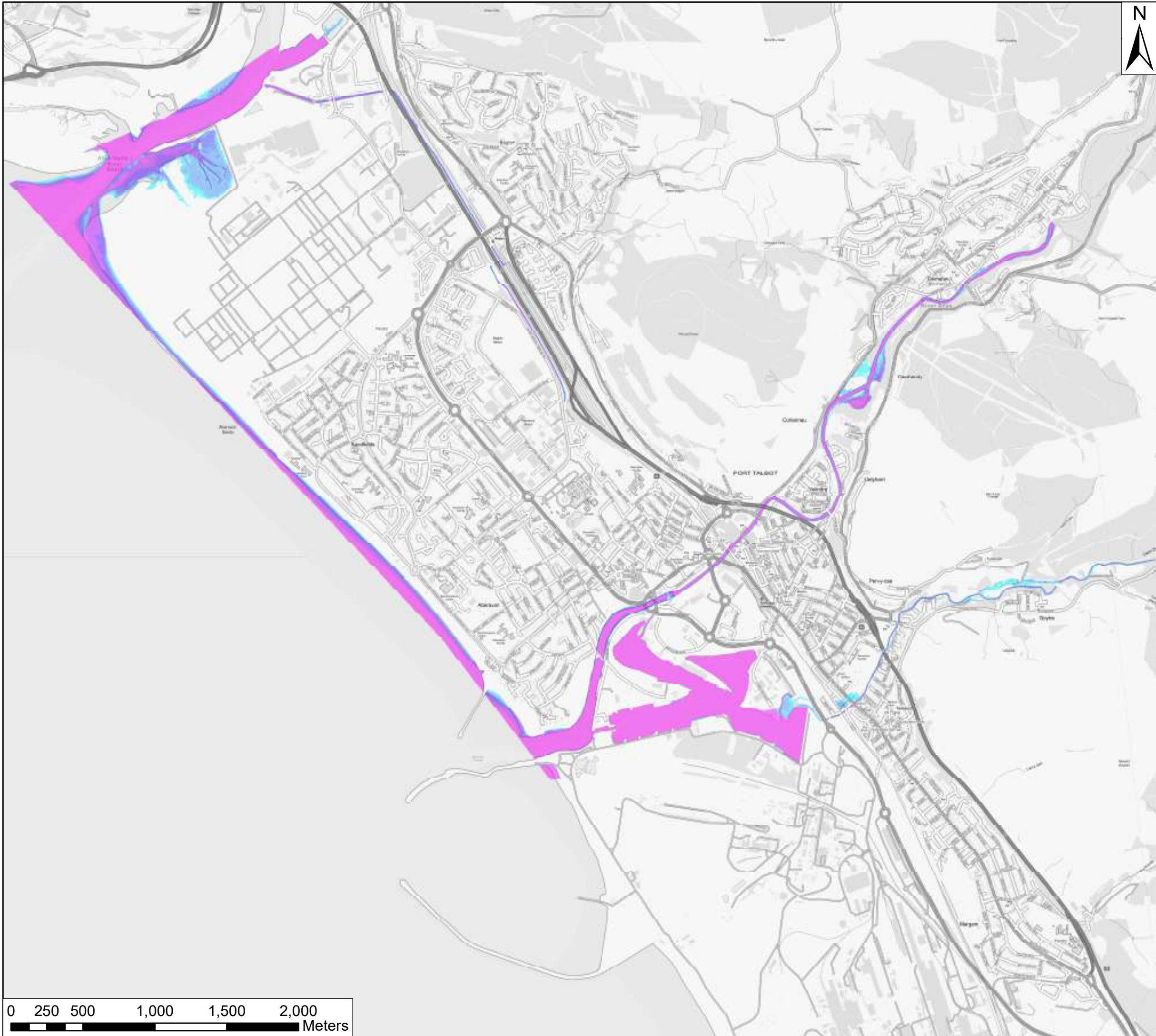
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Port Talbot Harbourside PAR
Tidal Flood Outlines

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Drawing 2016s4827_PT_002		Sheet No.: 2 of 16	Rev.: A





KEY

Fluvial 5% AEP event

Depth (m)

0 - 0.25

0.25 - 0.5

0.5 - 0.75

0.75 - 1

1 - 1.5

1.5 +

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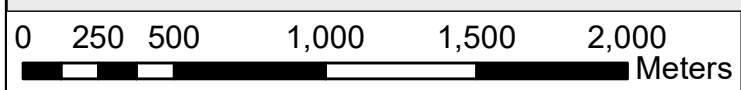
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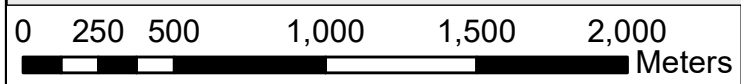
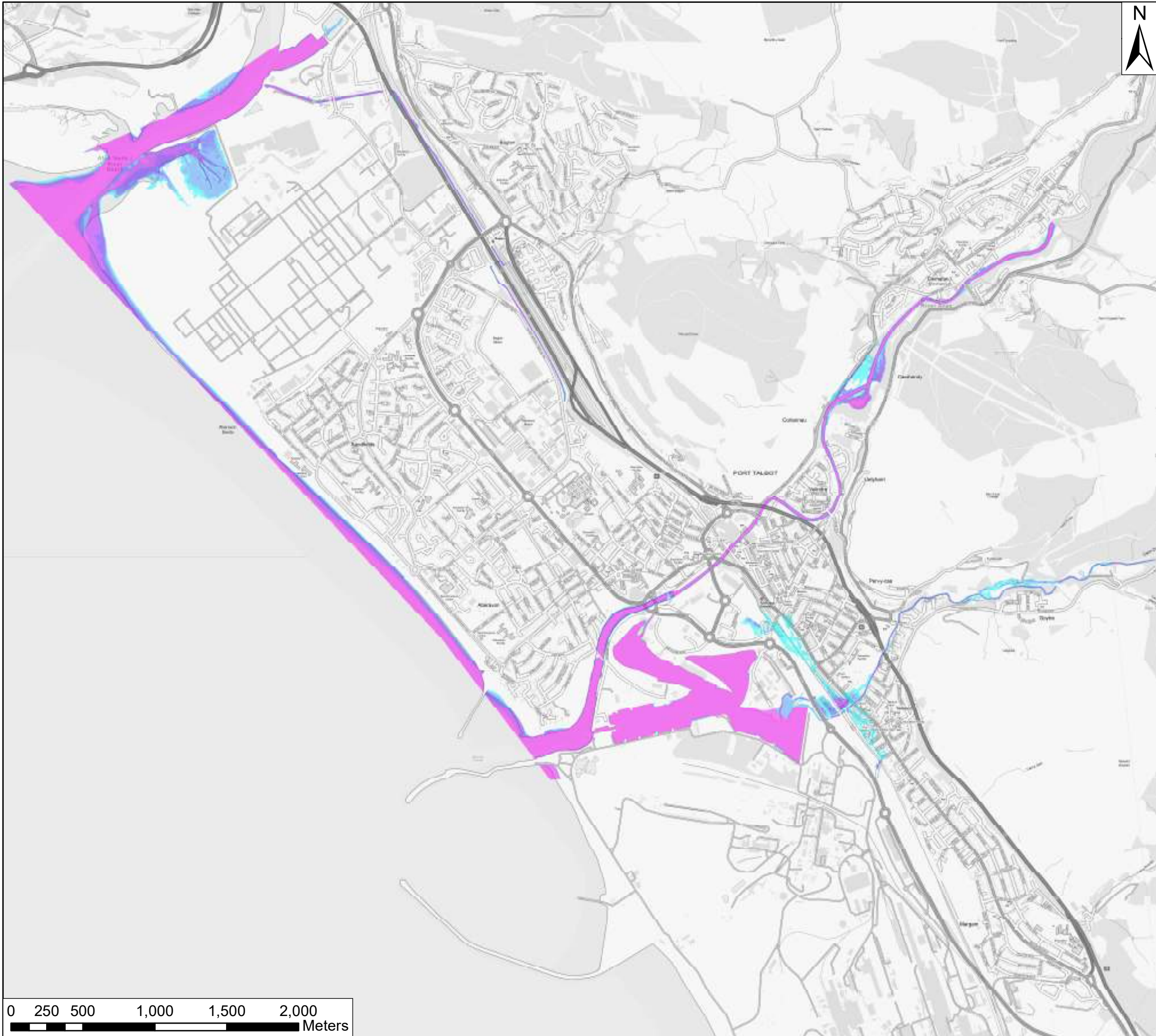
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Port Talbot Harbourside PAR
Fluvial Depth Grid - 5% AEP

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	Approved	GB	04/05/2017
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KEY

Fluvial 1.33% AEP event

Depth (m)

0 - 0.25

0.25 - 0.5

0.5 - 0.75

0.75 - 1

1 - 1.5

1.5 +

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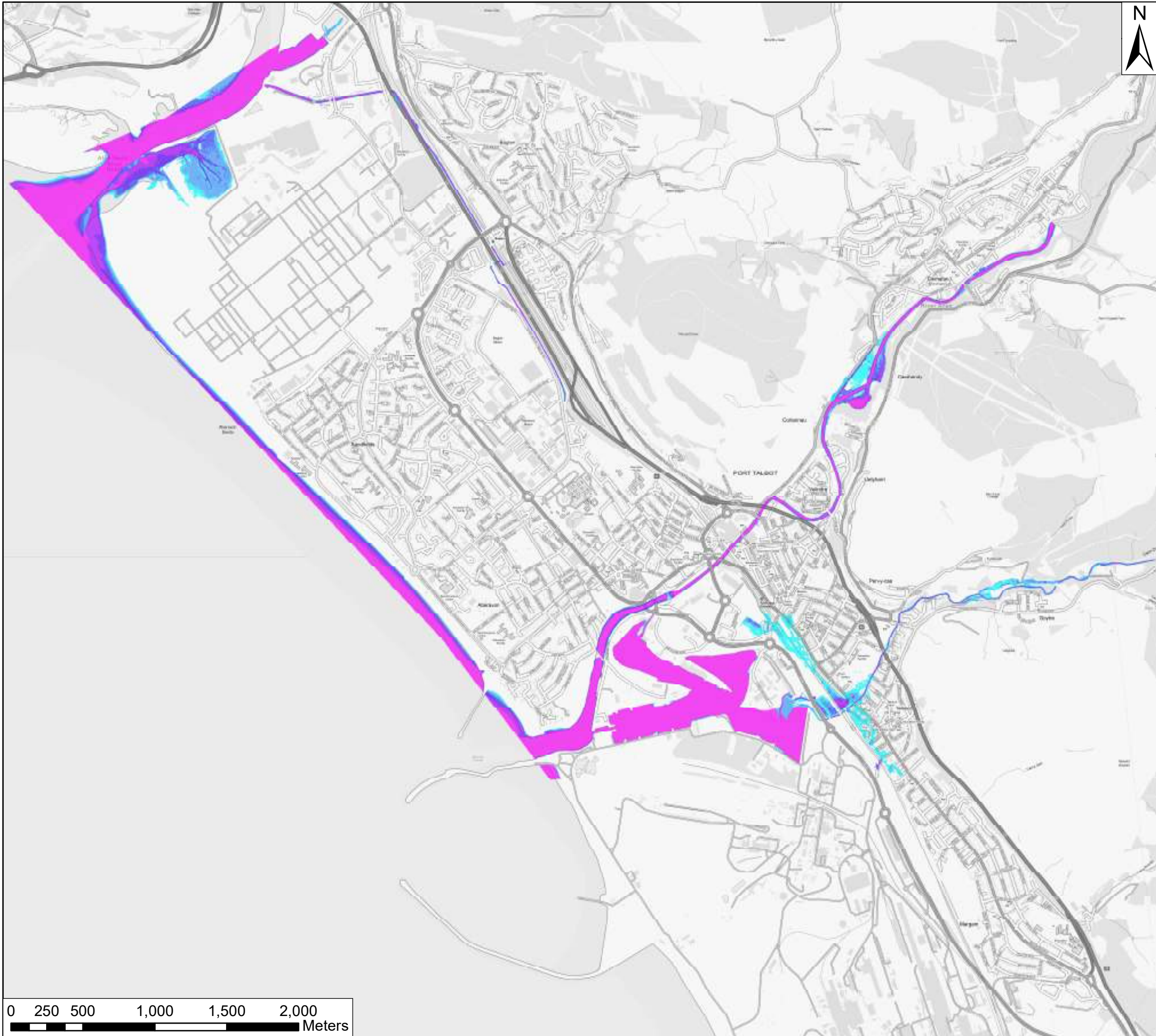
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Port Talbot Harbourside PAR
Fluvial Depth Grid - 1.33% AEP

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KEY

Fluvial 1% AEP event

Depth (m)

- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 +

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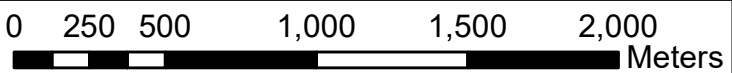
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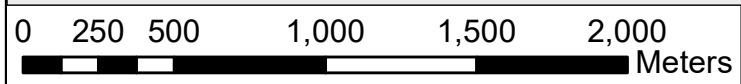
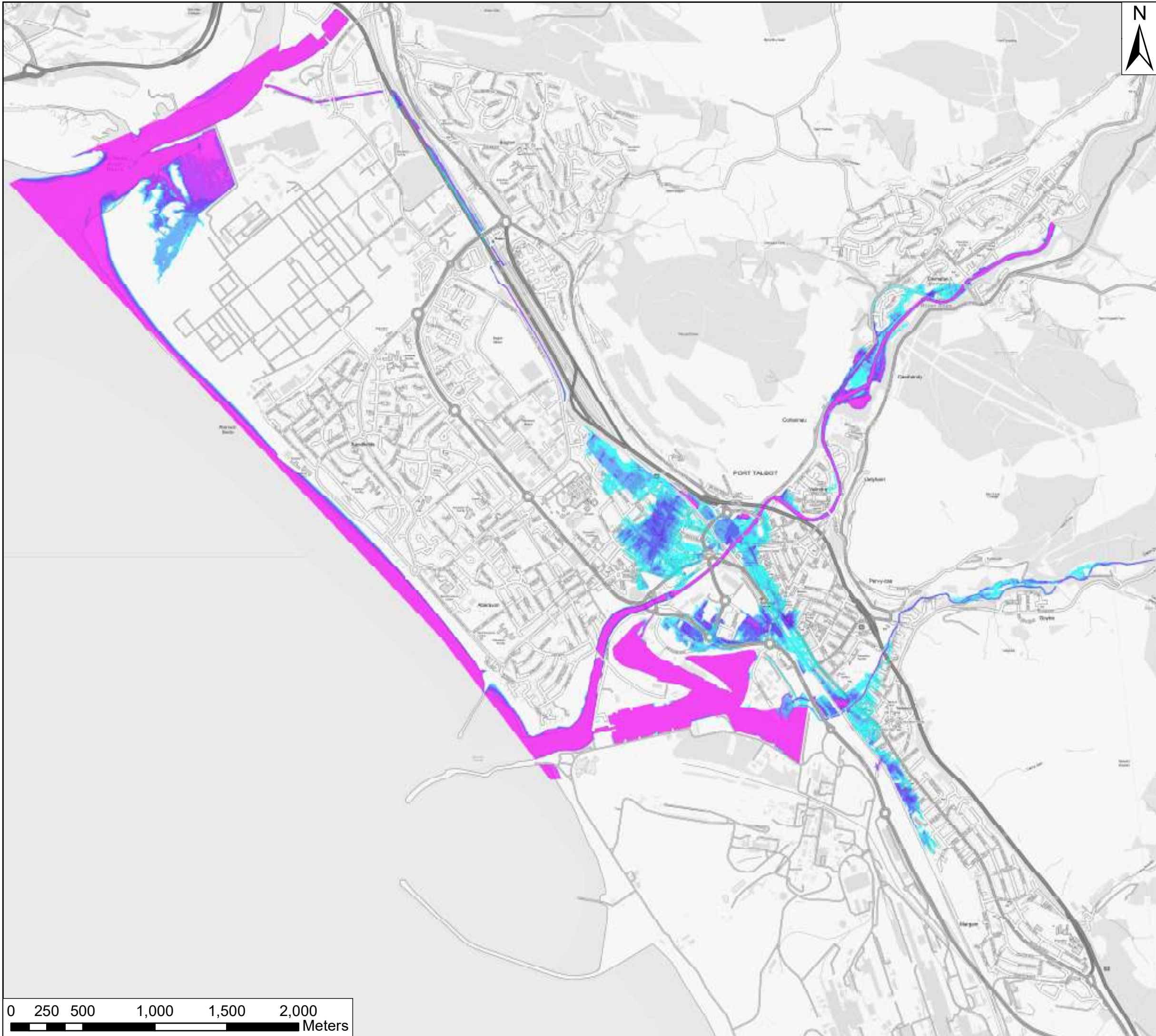
Port Talbot Harbourside PAR
Fluvial Depth Grid - 1% AEP

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Drawing 2016s4827_PT_005	Sheet No.: 5 of 16	Rev.: A
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KEY

Fluvial 1% AEP event + climate change

Depth (m)

0 - 0.25

0.25 - 0.5

0.5 - 0.75

0.75 - 1

1 - 1.5

1.5 +

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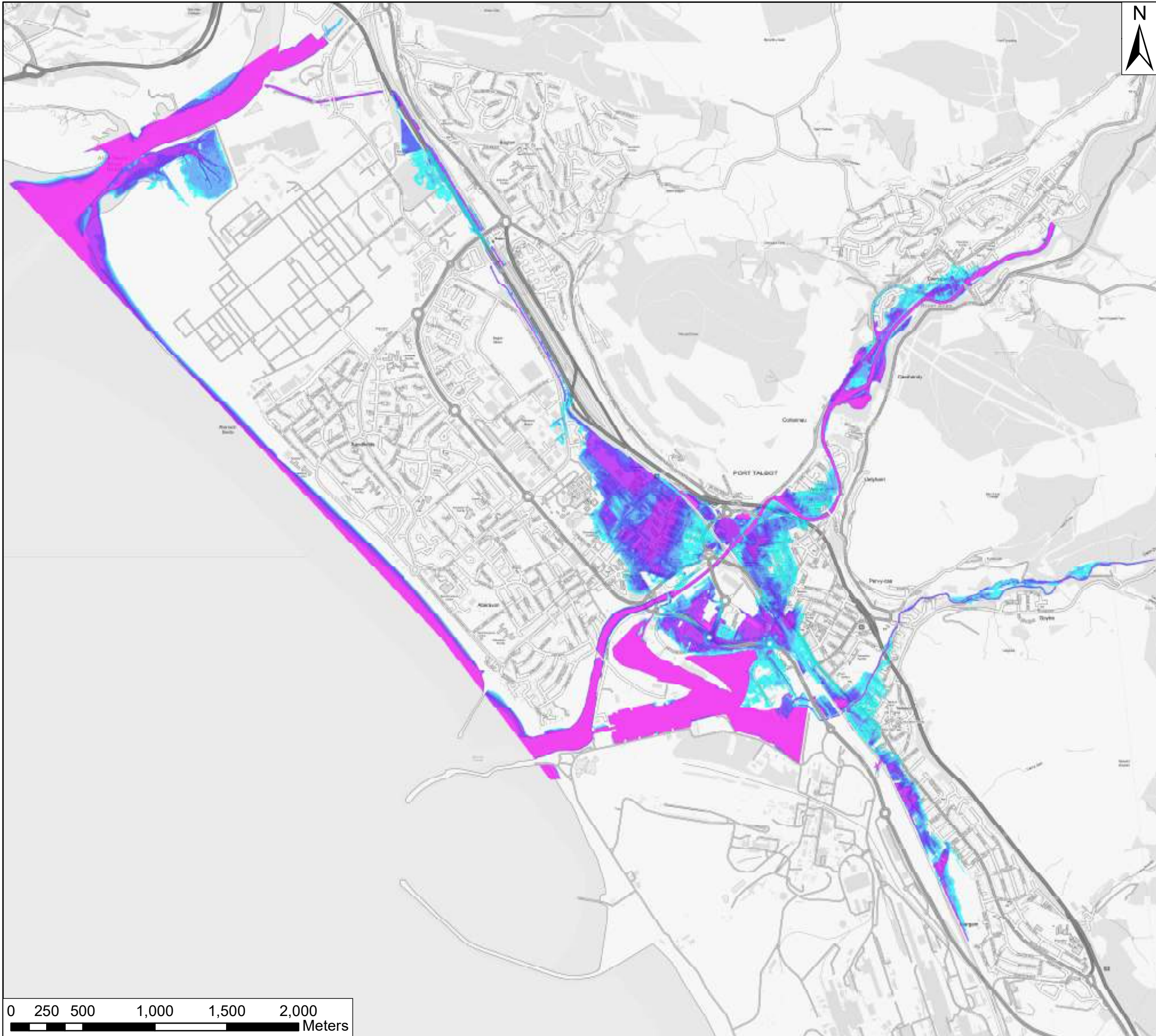
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Port Talbot Harbourside PAR
Fluvial Depth Grid - 1% AEP
plus Climate Change

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	Approved	GB	04/05/2017

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Drawing 2016s4827_PT_006	Sheet No.: 6 of 16	Rev.: A
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KEY

Fluvial 0.1% AEP event

Depth (m)

0 - 0.25

0.25 - 0.5

0.5 - 0.75

0.75 - 1

1 - 1.5

1.5 +

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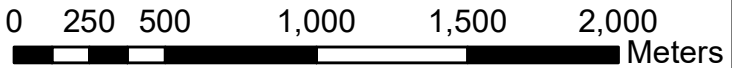
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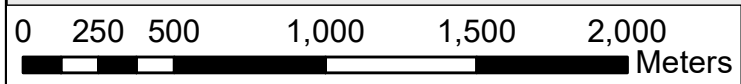
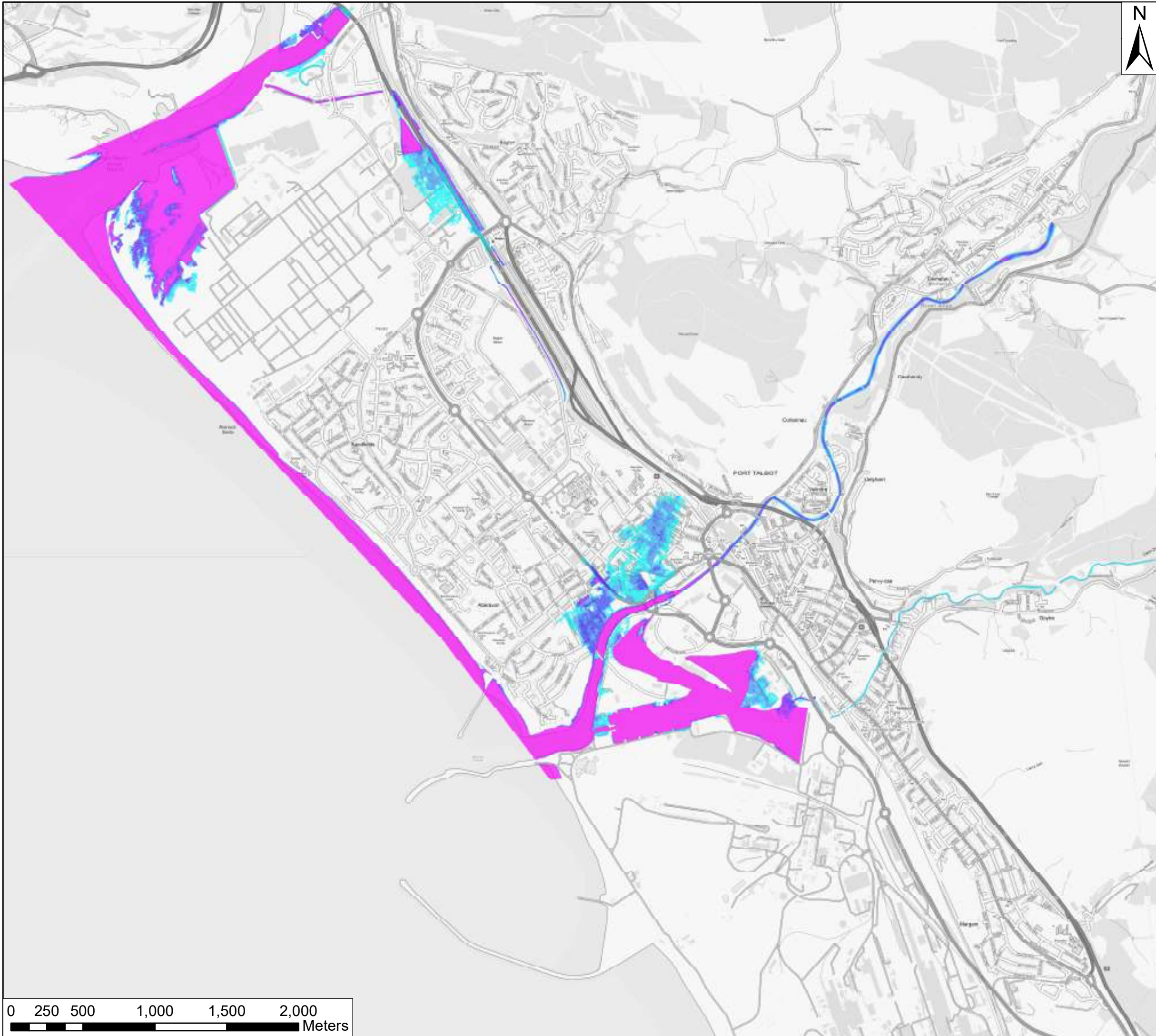
for

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Port Talbot Harbourside PAR
Fluvial Depth Grid - 0.1% AEP

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KEY

Tidal 0.5% AEP event (2116)
Depth (m)

0 - 0.25

0.25 - 0.5

0.5 - 0.75

0.75 - 1

1 - 1.5

1.5 +

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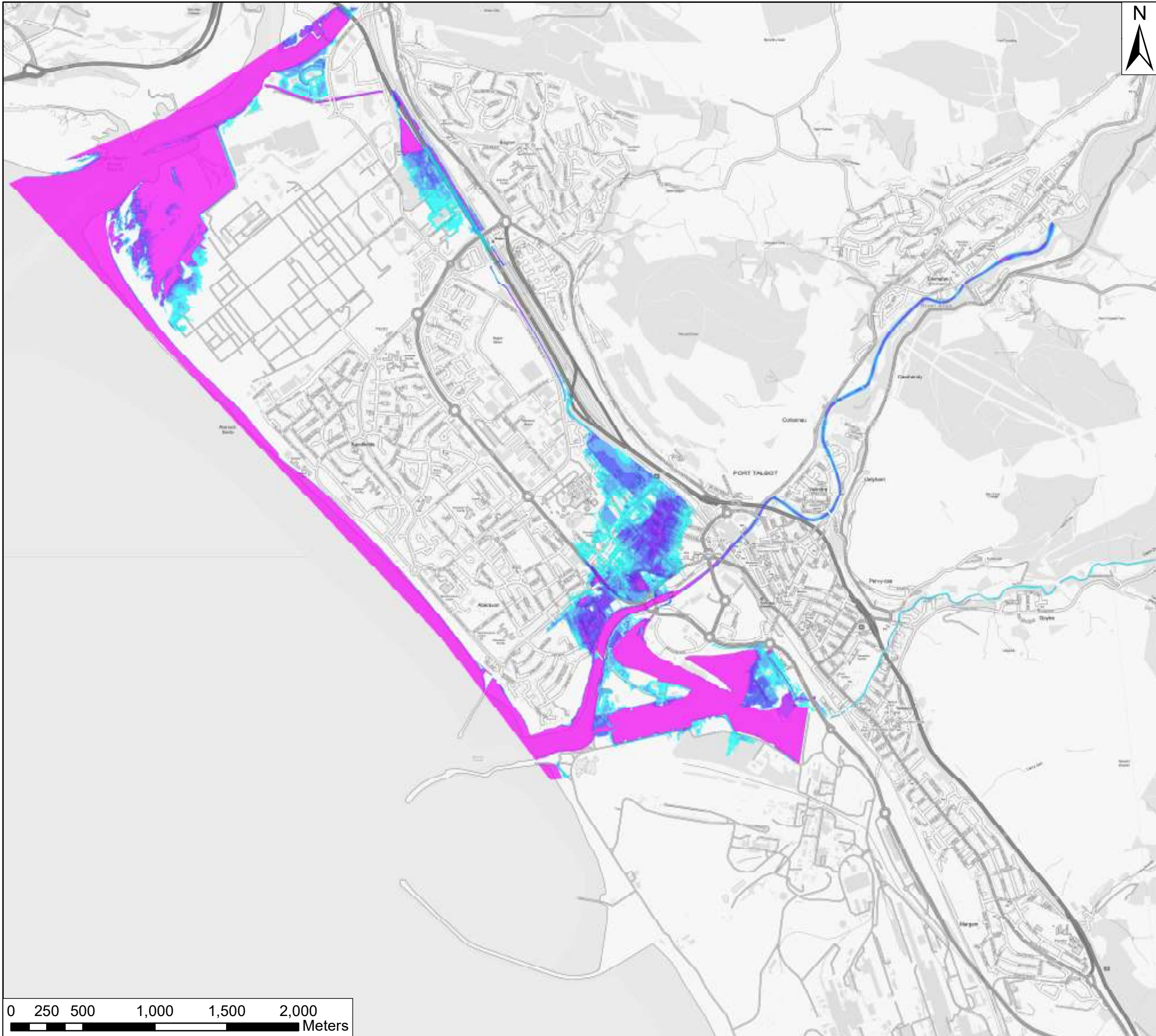
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Port Talbot Harbourside PAR
Tidal Depth Grid - 0.5% AEP

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	Approved	GB	04/05/2017

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Drawing 2016s4827_PT_008	Sheet No.: 8 of 16	Rev.: A
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KEY

Tidal 0.1% AEP event (2116)

Depth (m)

- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 +

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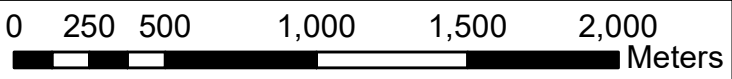


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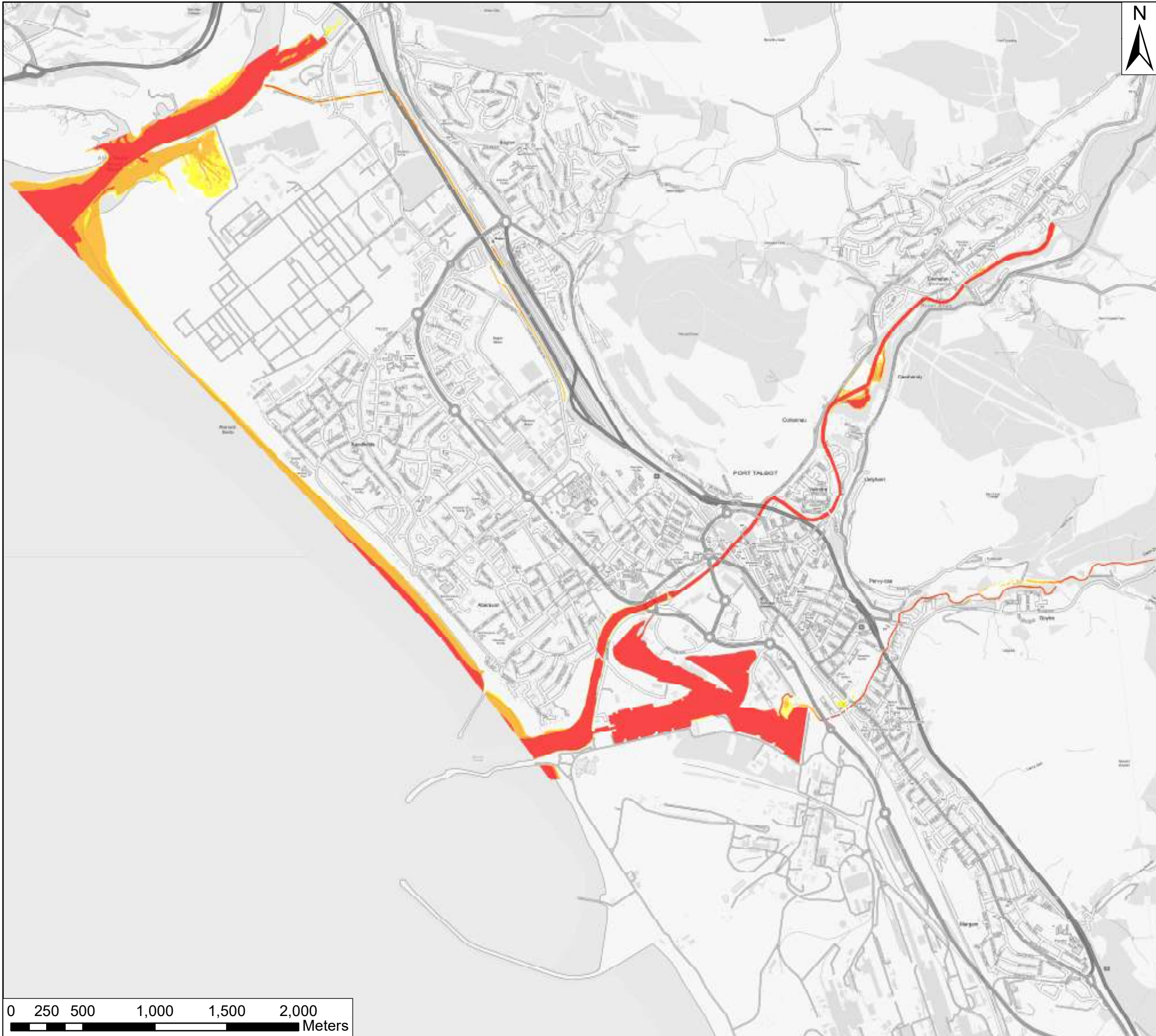
for

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Port Talbot Harbourside PAR
Tidal Depth Grid - 0.1% AEP

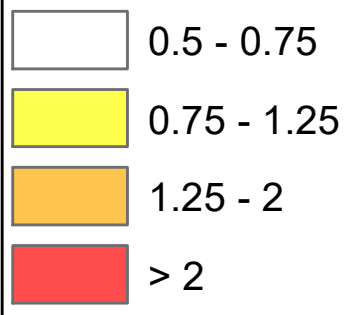


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Drawing 2016s4827_PT_009		Sheet No.: 9 of 16	Rev.: A



KEY

**Fluvial 5% AEP event
Flood Hazard Values**



KEYPLAN



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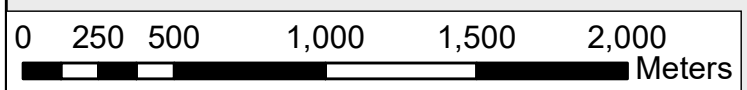


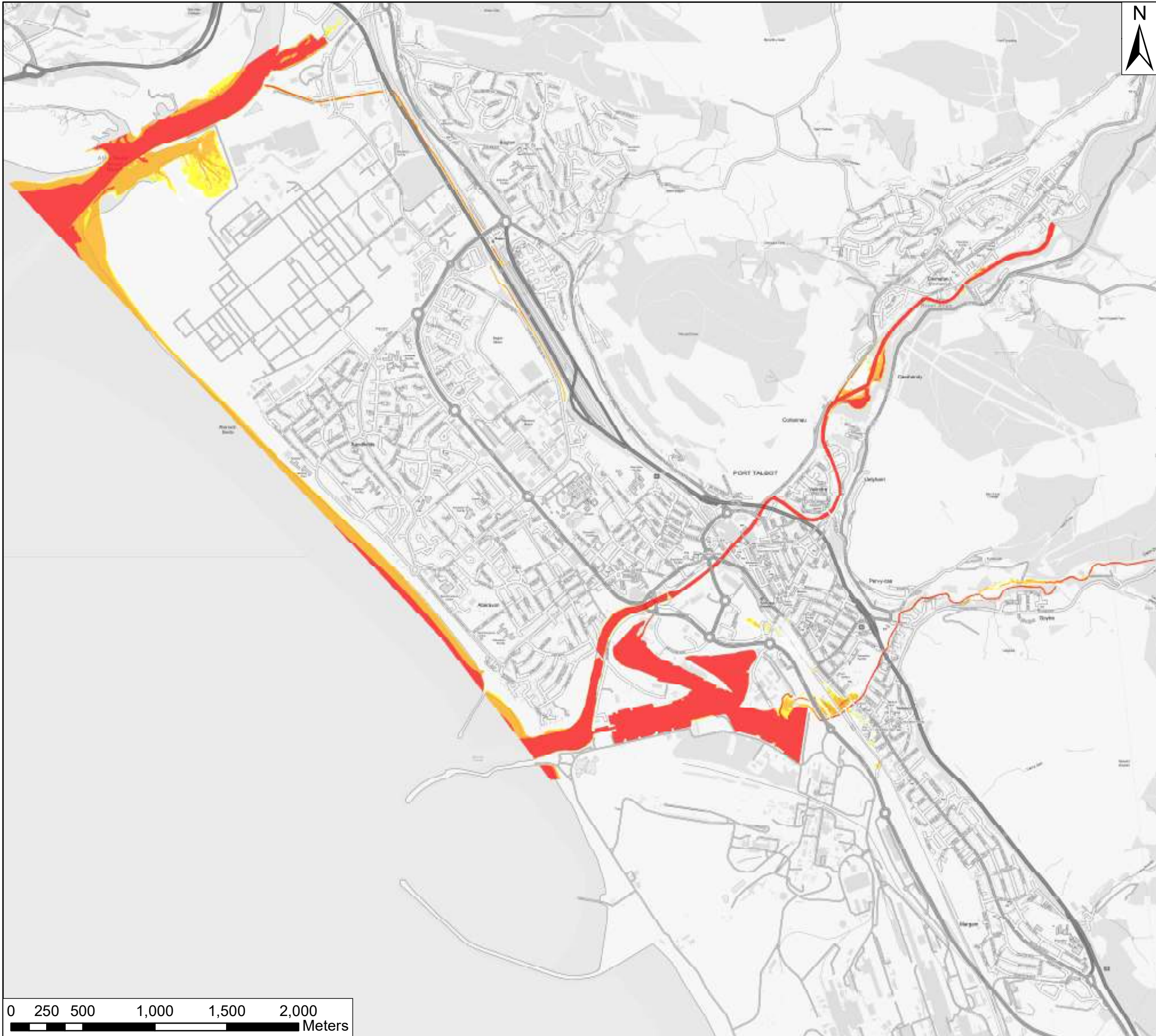
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Port Talbot Harbourside PAR
Fluvial Hazard Grid - 5% AEP

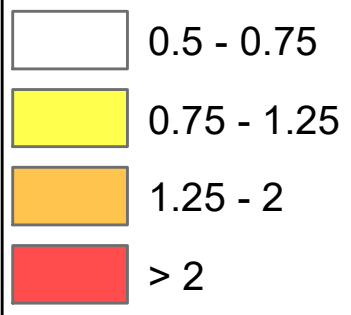
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KEY

**Fluvial 1.33% AEP event
Flood Hazard Values**



KEYPLAN



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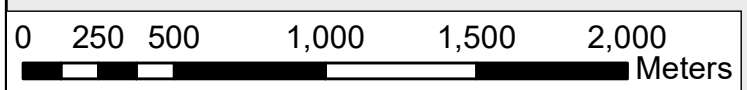


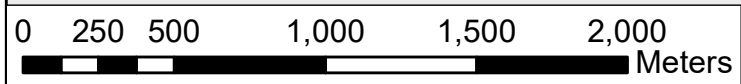
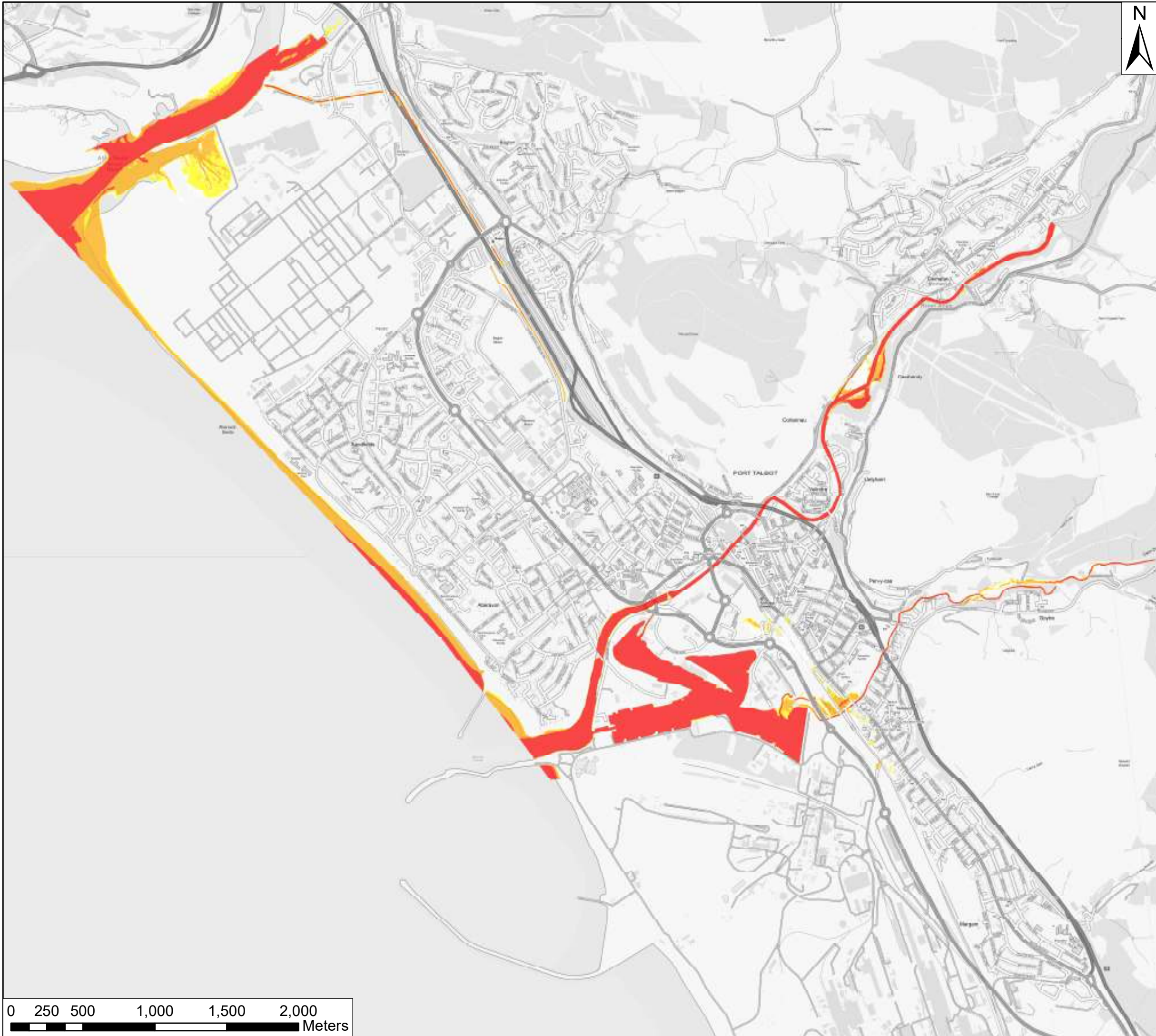
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for
**Neath Port Talbot County
Borough Council**

Port Talbot Harbourside PAR
Fluvial Hazard Grid - 1.33% AEP

Scale: 1:25,000 Original @ A3	Drawn	MOF	04/05/2017
	Checked	GB	04/05/2017
	Approved	GB	04/05/2017
Digital File Name: 2016s4827_PT_011.MXD			
Drawing 2016s4827_PT_011		Sheet No.: 11 of 16	Rev.: A





KEY

Fluvial 1% AEP event
Flood Hazard Values

0.5 - 0.75

0.75 - 1.25

1.25 - 2

> 2

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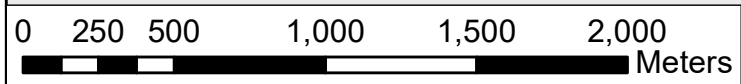
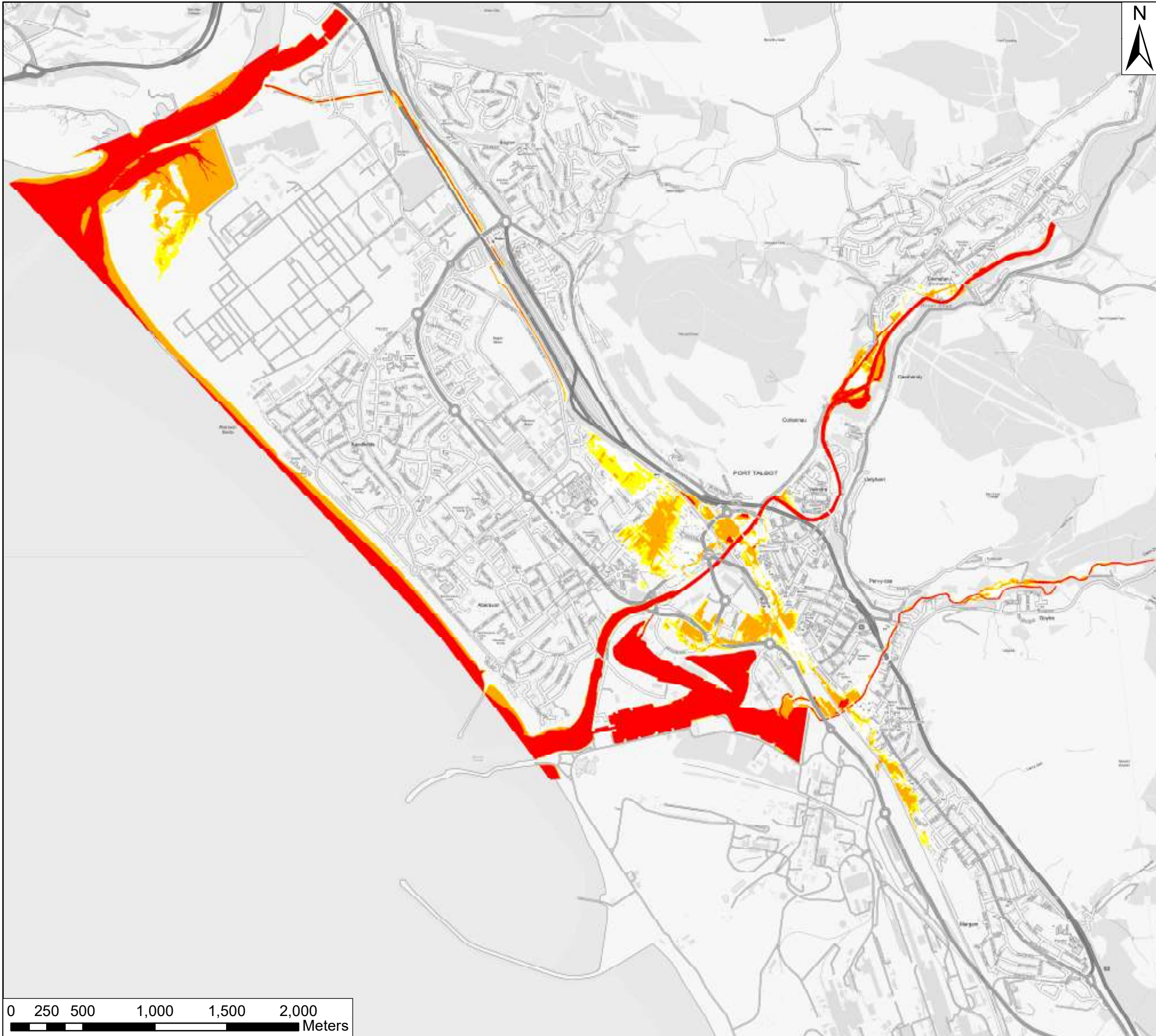
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Port Talbot Harbourside PAR
Fluvial Hazard Grid - 1% AEP

Scale: 1:25,000 Original @ A3	Drawn	MOF	04/05/2017
	Checked	GB	04/05/2017
	Approved	GB	04/05/2017

Digital File Name: 2016s4827_PT_012.MXD

Drawing 2016s4827_PT_012	Sheet No.: 12 of 16	Rev.: A
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KEY

Fluvial 1% event + climate change

Flood Hazard Values

0.5 - 0.75

0.75 - 1.25

1.25 - 2

> 2

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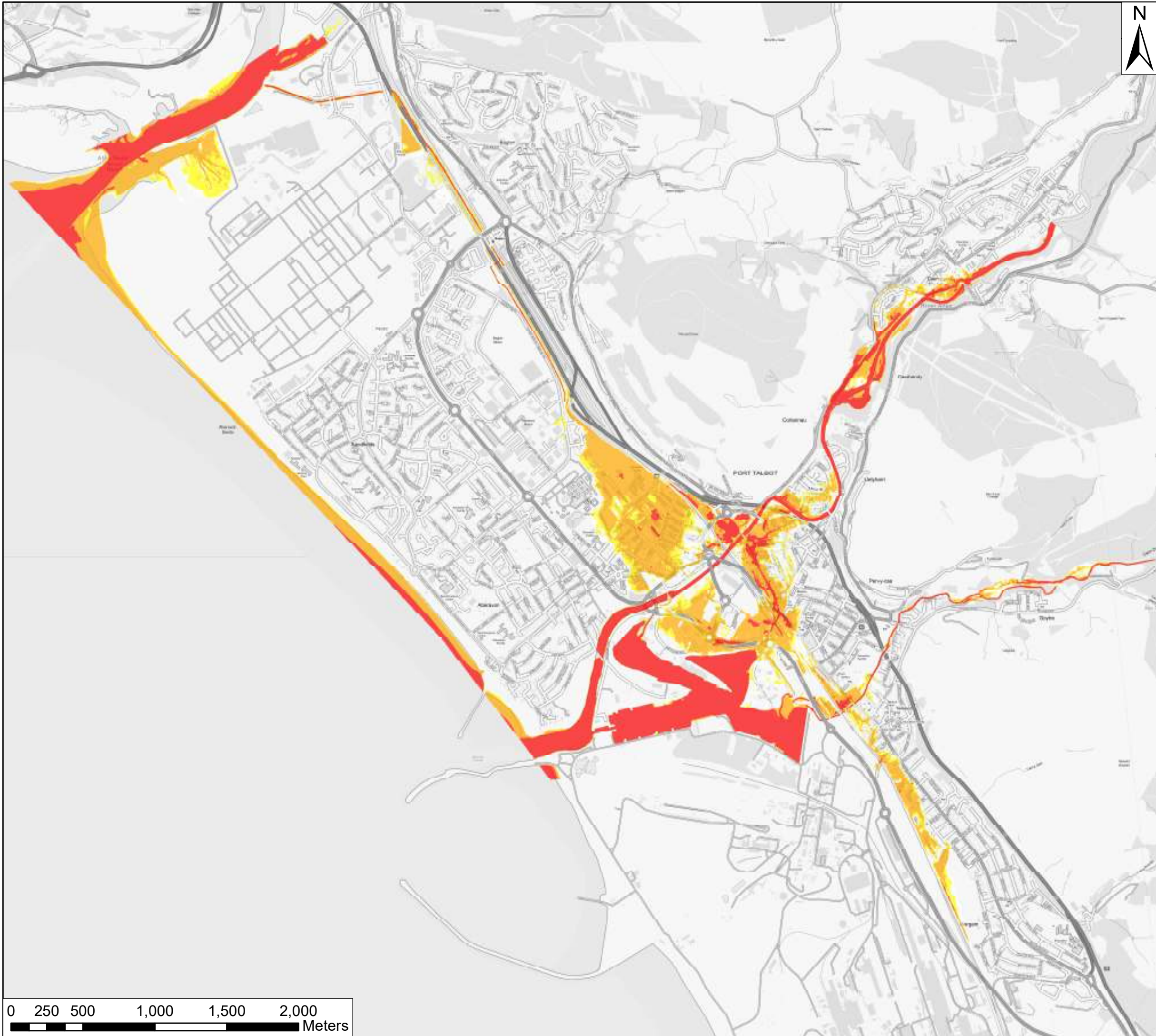
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Port Talbot Harbourside PAR

Fluvial Hazard Grid - 1% AEP

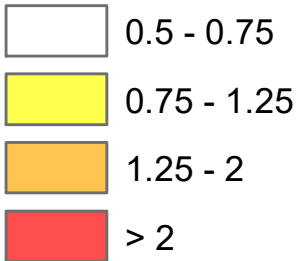
Plus Climate Change

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	Approved	GB	04/05/2017
Digital File Name: 2016s4827_PT_013.MXD			
Drawing 2016s4827_PT_013		Sheet No.: 13 of 16	Rev.: A



KEY

**Fluvial 0.1% AEP event
Flood Hazard Values**



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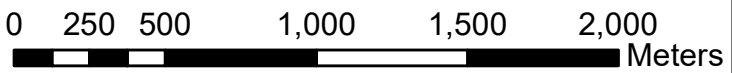
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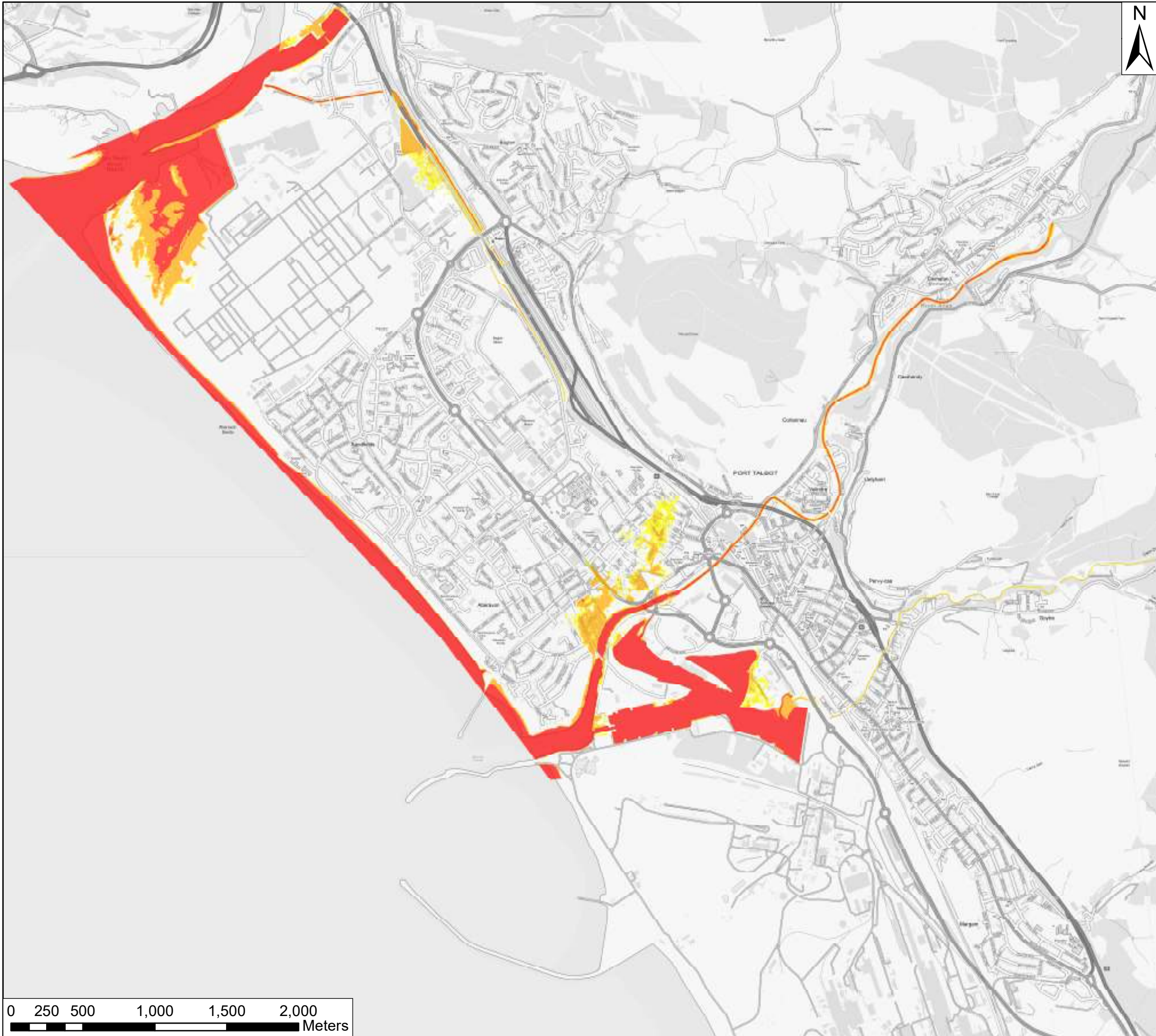
Port Talbot Harbourside PAR
Fluvial Hazard Grid - 0.1% AEP

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	Checked	GB	04/05/2017
	Approved	GB	04/05/2017

Digital File Name: 2016s4827_PT_014.MXD

Drawing 2016s4827_PT_014	Sheet No.: 14 of 16	Rev.: A
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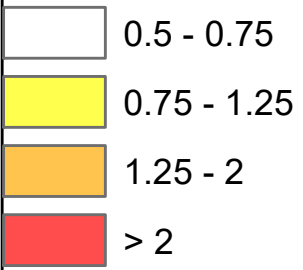




KEY

Tidal 0.5% AEP event (2116)

Flood Hazard Values



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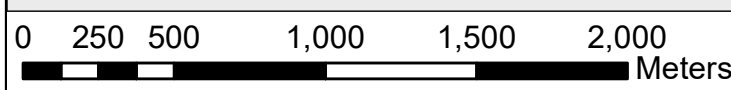


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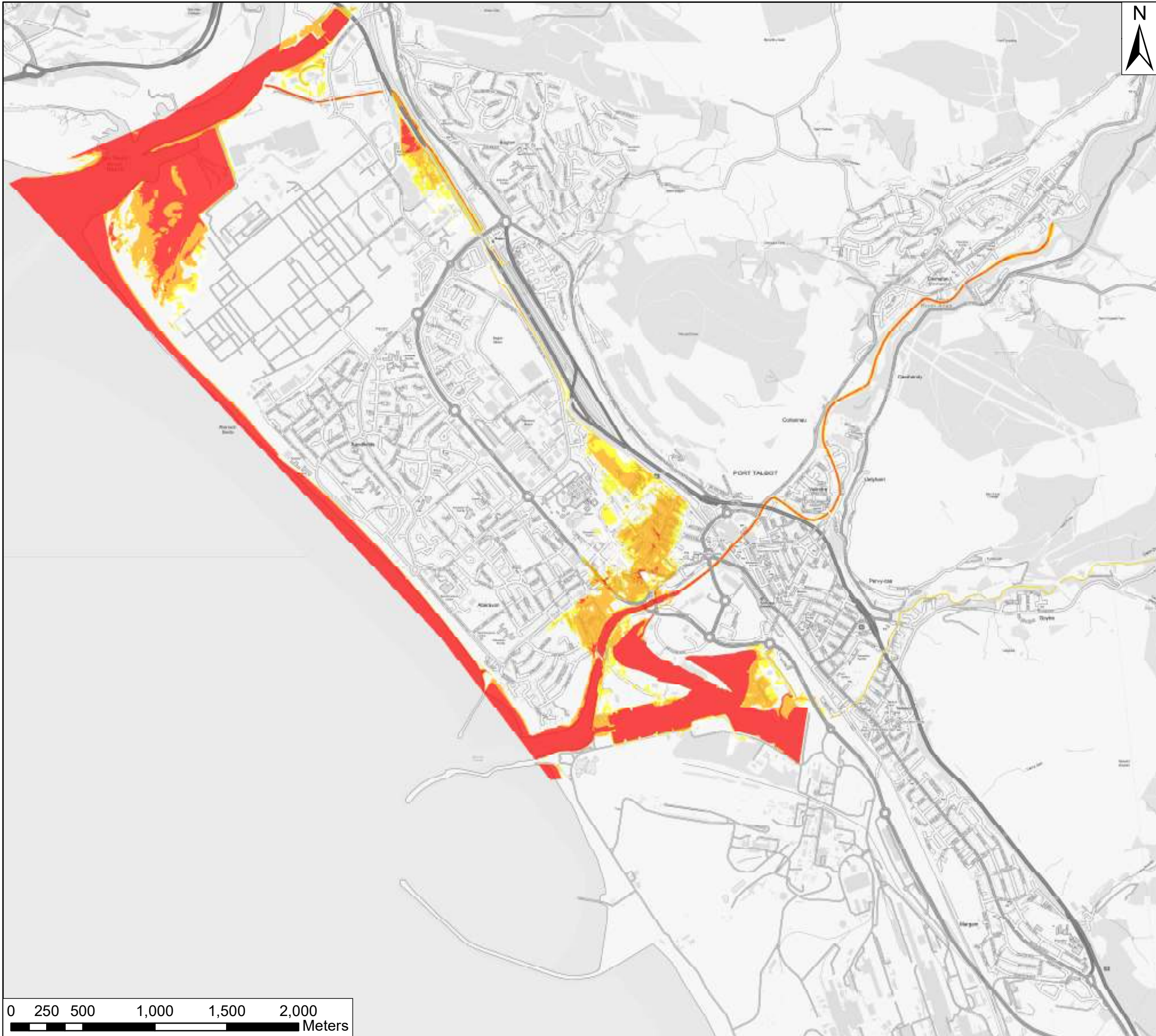
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Neath Port Talbot County Borough Council

Port Talbot Harbourside PAR
Tidal Hazard Grid - 0.5% AEP (2116)



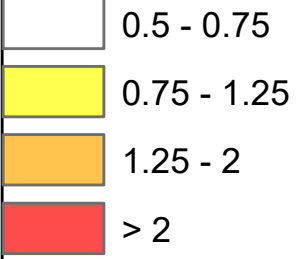
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Digital File Name: 2016s4827_PT_015.MXD			
Drawing 2016s4827_PT_015		Sheet No.: 15 of 16	Rev.: A



KEY

Tidal 0.1% AEP event (2116)

Flood Hazard Values



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for

Neath Port Talbot County
Borough Council

Port Talbot Harbourside PAR
Tidal Hazard Grid - 0.1% AEP (2116)

Scale: 1:25,000

Original @ A3

Drawn	MOF	04/05/2017
Checked	GB	04/05/2017
Approved	GB	04/05/2017

Digital File Name: 2016s4827_PT_016.MXD

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