

Proposed Asphalt Plant Facility Flood Consequence Assessment

Final Report

January 2021

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This report describes work commissioned by Richard Bowen of Asbri Planning Ltd, on behalf of Gerald D Harries and Sons Ltd, by an email dated 26th November 2020. Hannah Booth of JBA Consulting carried out this work.

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Purpose

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1 Introduction

1.1 Terms of reference

JBA Consulting were commissioned by Richard Bowen of Asbri Planning Ltd, on behalf of Gerald D Harries and Sons Ltd, in November 2020 to prepare a Level 1 Flood Consequence Assessment (FCA) in support of a proposed planning application at the former Edwards Works, Llandarcy. This FCA demonstrates the suitability of the proposed development and describes flood mitigation recommended to manage flood risk at the site.

1.2 FCA requirements

This FCA follows Welsh Government guidance on development and flood risk set out in the Technical Advice Note 15: Development and Flood Risk (TAN15). Where appropriate the following aspects of flood risk will be addressed in all planning applications over its expected lifetime in flood risk areas:

- The likely mechanisms of flooding
- The likely source of flooding
- The depths of flooding through the site
- The speed of inundation of the site
- The rate of rise of flood water through the site
- Velocities of floodwater across the site
- Overland flow routes
- The effect of access and egress and infrastructure, for example public sewer outfalls, combined sewer outflows, surface water sewers and effluent discharge pipes from wastewater treatment works
- The impacts of the development in terms of flood risk on neighbouring properties and elsewhere on the floodplain

2 Site description

The site is located at the former Edwards Works, off the B4290 and is approximately 125m west of the M4 Motorway in the Llandarcy area of Neath. The site is approximately 0.78 hectares in size and forms part of a wider industrial estate. The red outline application boundary is brownfield in nature and considered to be predominantly underlain by hardstanding. Sole access to the site is via a lane off the B4290 330m north west of the site.

Table 2-1 Site summary

Site name	Former Edwards Works
Site area	0.78 Hectares
Existing land use	Industrial
Purpose of development	Industrial
OS NGR	SS725948
Local Planning Authorities	Neath Port Talbot Council
Lead Local Flood Authority	Neath Port Talbot Council

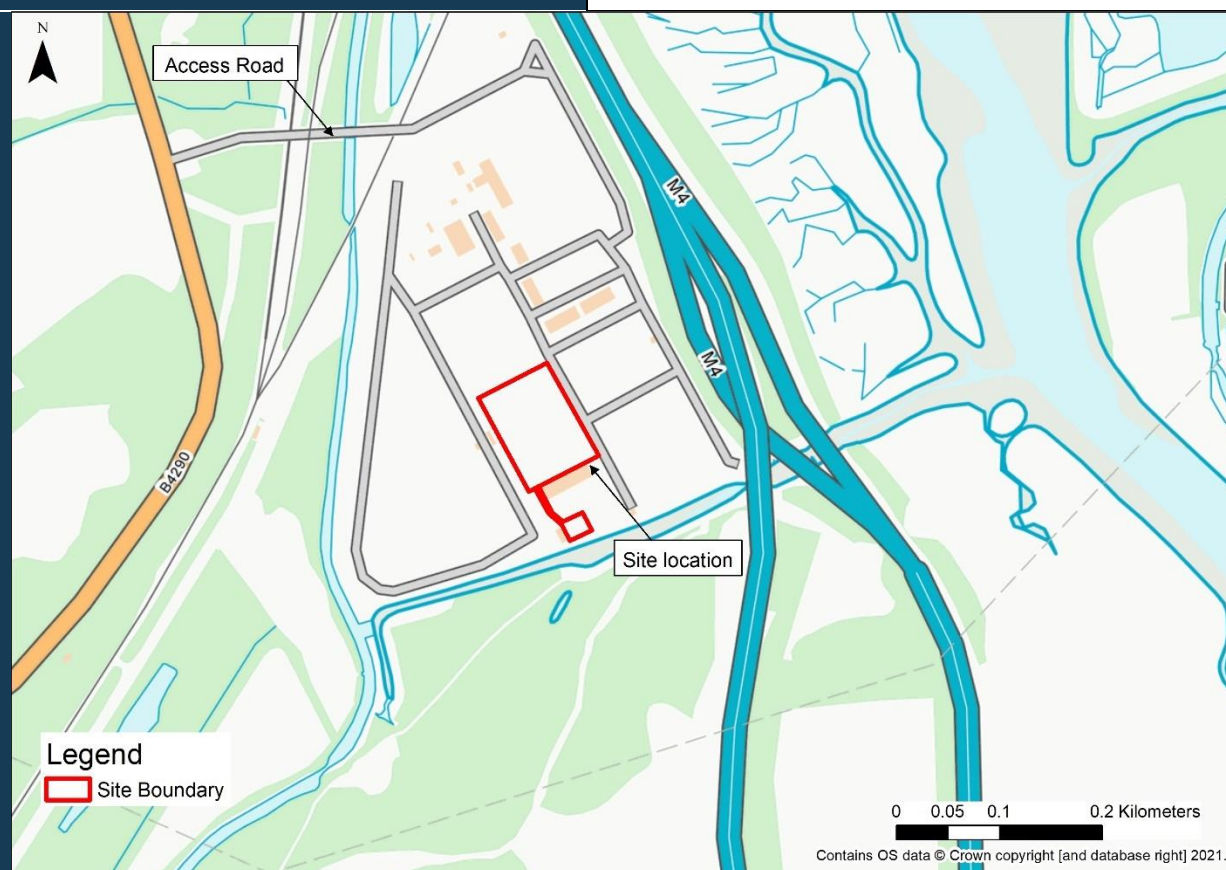


Figure 2-1 Proposed development site

2.1 Existing land use and site topography

Aerial images from Google Earth indicate that the site is currently used for ancillary industrial purposes such as storage and is predominantly vacant (as shown in Figure 2-2).



Figure 2-2 Aerial imagery of the site from Google Earth (Source: Google Earth 2021)

Natural Resources Wales' (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data¹ has been used to analyse existing ground levels across the site and within the surrounding area (shown in Figure 2-3). NRW LiDAR data demonstrates that the site is generally flat with ground levels ranging from 7.0mAOD along the western edge, to approximately 7.2mAOD towards the east of the site. The elevation of the access road along the eastern boundary of the site ranges between 7.2m and 7.3mAOD. The bridge across the railway and canal, at the industrial estate entrance, is not represented within the LiDAR outputs however, review of Google Street view indicates that bridge is at the same level as the access road, approximately 14.8m AOD.

¹ LLe Geoportal for Wales: <http://lle.gov.wales/catalogue/item/LidarCompositeDataset/?lang=en>

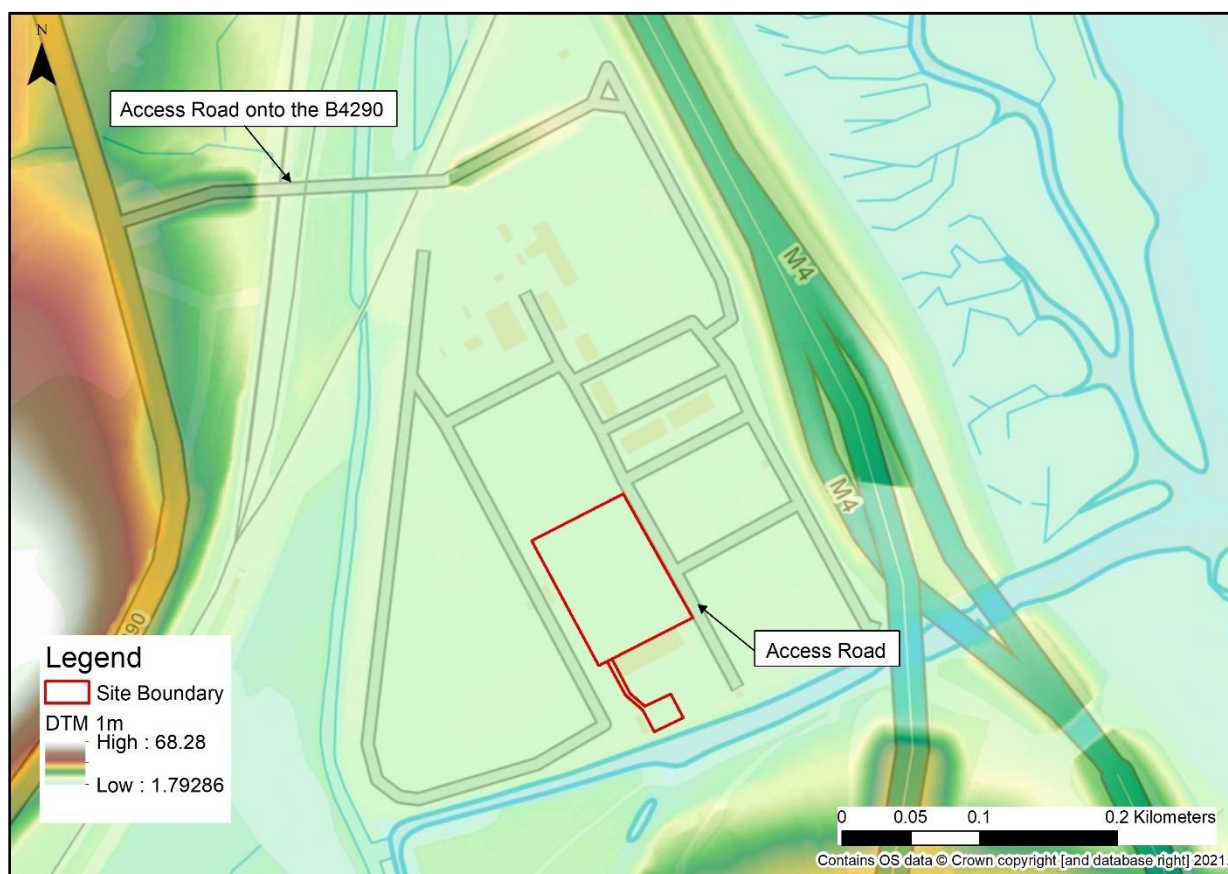


Figure 2-3 LiDAR Topographic data from NRW (1m resolution)

2.2 Soils, geology and watercourses

Cranfield University Soils² describes the underlying strata as loamy and clayey floodplain soils with naturally high groundwater. Soils are reported to drain to local groundwater before feeding into the river.

According to the British Geological Survey (BGS) Geology of Britain Viewer³, bedrock at the site is described as Brithdir Member comprised of Sandstone. The superficial deposits are identified as being Tidal Flat Deposits comprised of clay, silt and sand.

Three watercourses are in close proximity to the site, as shown in Figure 2-4. The site is located approximately 390m from the western bank of the tidal River Neath and 200m to the east of the Tennant Canal. A third, tidal channel is located 75m south of the site and is named Red Jacket Pill. This watercourse passes below the M4 Motorway and discharges into the River Neath.

² Cranfield University Soils: <http://www.landis.org.uk/soils/>

³ BGS Geology of Britain Viewer: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html?>

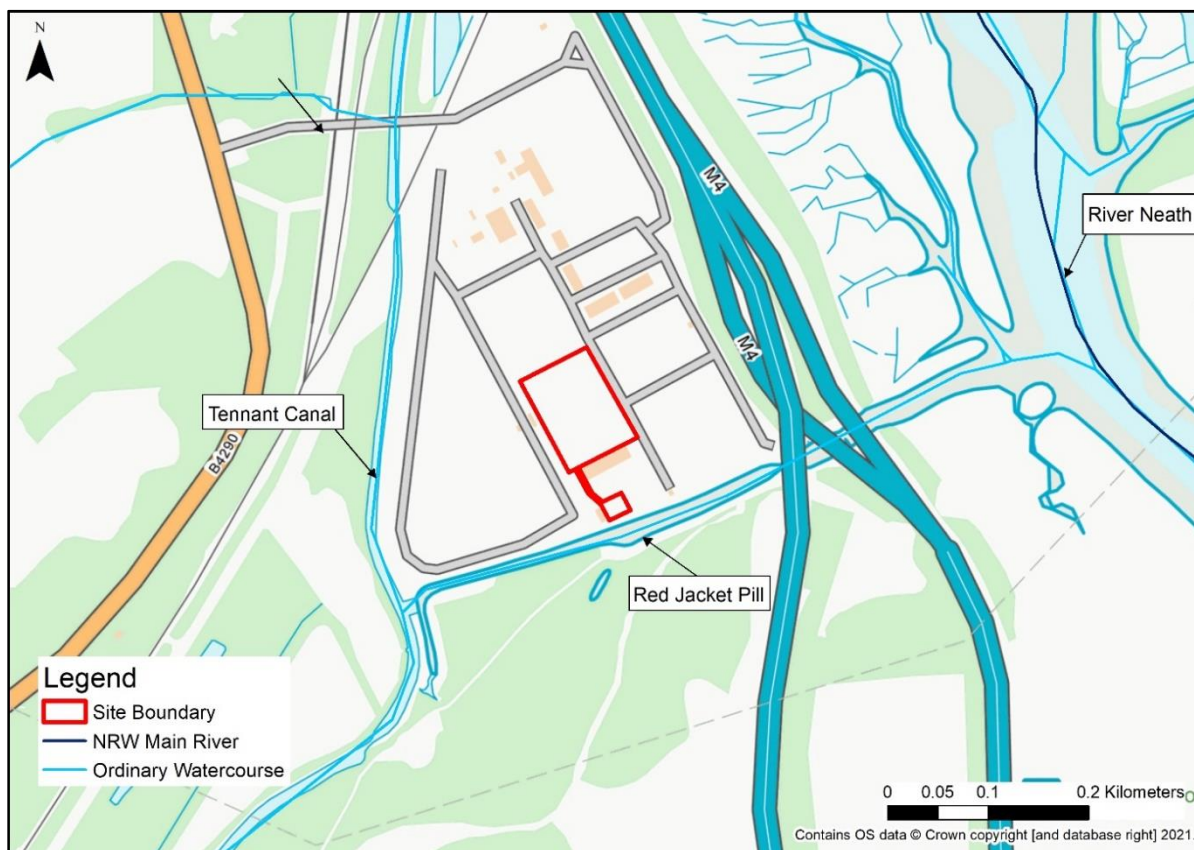


Figure 2-4 Watercourses around the site

2.3 Development proposal

The proposal is for development of a new asphalt plant which would be used to serve local contracting companies and provide material to Gerald D Harries & Sons Ltd (GDH) own asphalt contracting division.

The proposed installation is comprised of a number of elements including:

- Cold Feed Hoppers;
- Dryer Drum;
- Mixing Tower;
- Skip system;
- Finished product storage silos;
- Bitumen Storage Tanks;
- Conveyors;
- Motor Control Cabin;
- LPG Gas storage tanks; and,
- A weighbridge and control cabin.

The new asphalt plant will be accessed via the existing road to the east of the site. Proposed site layout plans and elevations are shown in Appendix A.

3 Planning Policy and flood risk

3.1 Planning context

TAN-15 was introduced in 2004 by the Welsh Assembly Government. It is technical guidance related to development planning and flood risk using a sequential characterisation of risk based on the Welsh Government's Development and Flood Risk Advice Map (DAM). Its initial requirement is to identify the flood zones and vulnerability classification relevant to the proposed development, based on an assessment of current and future conditions.

TAN-15 assigns one of three flood risk vulnerability classifications to a development as shown in Table 3-1. The proposed development at the former Edwards Works is for construction an asphalt plant, which is considered industrial use. Consequently, the development is classified as less vulnerable development.

Table 3-1: Development categories defined by TAN-15

Development category	Types
Emergency services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	All residential premises (including hotels and caravan parks), public buildings, (e.g. schools, libraries, leisure centres), especially vulnerable industrial development (e.g. power stations, chemical plants, incinerators), and waste disposal sites.
Less vulnerable development	General industrial , employment, commercial and retail development, transport and utilities infrastructure, car parks, mineral extraction sites and associated processing facilities, excluding waste disposal sites.

3.2 DAM zoning and vulnerability classification

Figure 3-1 shows that the proposed development site falls into Zone C2 of the DAM. The DAM is used to trigger different planning actions based on a precautionary assessment of flood risk. Zone C2 is described as areas of the floodplain without significant flood defence infrastructure. Less vulnerable development, such as that proposed within Zone C2 can take place subject to the application of a Justification Test, including the acceptability of consequences.



Figure 3-1: Development Advice Map

3.3 Neath Port Talbot County Borough Council's Local Development Plan

In January 2016, Neath Port Talbot County Borough Council (NPTCBC) adopted their Local Development Plan (LDP) (2011-2026)⁴. This LDP provides the basis for decisions on land use planning up to 2026.

Objective 11 aims "to promote and protect a diverse portfolio of employment land and employment opportunities to meet the needs of residents and businesses and stimulate economic growth".

In addition, objective 12 of NPTCBC LDP aims to "improve and strengthen the economic base of Neath Port Talbot to increase economic activity, reduce the unemployment rate in line with the Welsh average and negate some of the impacts of a reduced working age population".

The proposed development will generate employment for the local area and will therefore help to meet both objectives 11 and 12 of NPTCBC LDP.

The proposed application will create roles for five asphalt plant staff and five HGV drivers. In addition, it is estimated that ten further staff will be required within the asphalt contracting and maintenance team as the service expands into the area.

3.4 Justification test

TAN-15 states that development will be justified if it can be demonstrated that:

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;

⁴ NPTCBC LDP (2011-2026): https://www.npt.gov.uk/media/7321/ldp_written_statement_jan16.pdf

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 and meets the definition of previously developed land;

and,

The potential consequences of a flooding event for the particular type of development have been considered and found to be acceptable.

The proposed development has been assessed against the requirements of the Justification Test with the results summarised in Table 3-2. All the criteria have been satisfied with regards to the proposed development.

Table 3-2: Justification Test applied to the proposed development

TAN 15 Justification Criteria	Comments	Achieved
Its location is necessary to assist a local authority regeneration initiative or strategy, or contribute to key employment objectives, necessary to sustain an existing settlement or region	The proposed development will contribute to objectives 11 and 12 of the Neath Port Talbot County Borough Council Local Development Plan (2011-2026) by promoting a sustainable economy.	✓
The site meets the definition of previously developed land (i.e. it is not a Greenfield site) and concurs with the aims of Planning Policy Wales (i.e. the presumption in favour of sustainable development)	The site is located on previously developed brownfield land.	✓
A Flood Consequence Assessment has been produced to demonstrate that the potential consequences of a flood event up to the extreme flood event (1 in 1000 chance of occurring in any year) have been considered and meet the [Acceptability Criteria] in order to be considered acceptable	An assessment of the flood risk at the site has been undertaken to demonstrate acceptability for the proposed development. See Section 4	✓

4 Flood Risk Assessment

This section assesses the risk to the proposed development from all sources of flooding, the risk of increasing flooding to others, and how flood risks can be managed. As a Level 1 FCA, the assessment of flood risk is based solely on a desk-desked analysis of existing flood risk data.

The primary objectives of this FCA are to determine the following:

- Whether the site is at significant risk from any source of flooding;
- If the site is at risk of flooding, determine if safe access to and from the site will be maintained during an extreme flood event; and,
- The impact of the development on flood risk to others.

4.1 Review of existing flood risk data

The latest available information of flood risk at the site, published by NRW is summarised in Table 4-1.

Table 4-1: Summary of flood risk

Source of Flooding	Onsite Presence	Description
Fluvial	x	The site is not considered to be at risk of fluvial flooding
Tidal	x	The site is located outside of the area at risk of tidal flooding.
Surface Water and small watercourses	x	The site is not at risk of flooding from surface water or small watercourses.
Groundwater	x (see section 4.4)	The site is at a low risk of flooding from groundwater.
Reservoirs	x	The site is not considered to be at risk of flooding from reservoirs.
Sewers	x	There is no evidence to suggest that the site is at risk of flooding from sewers.

4.2 Historical flooding

NRW's map of historic flood outlines shows no evidence of historical flooding at the site. There is no mention of historical flooding in Neath Port Talbot County Borough Council's Flood Risk Management Plan 2015⁵ for the ward of Coedffranc West, in which the site is situated.

4.3 Tidal flood risk

The NRW Tidal National Flood Hazard Maps show that the site is not at risk of flooding during the High (1 in 30-year), Medium (1 in 200-year) or Low (1 in 1,000-year). To gain a better understanding of the flood risk associated with tidal flooding as a result of climate change, further assessment of tidal flood risk was undertaken and is discussed in Section 5.

5 NPTCBC Flood Risk Management Plan 2015: <https://www.npt.gov.uk/media/5399/floodriskmanagementplan15.pdf>

4.4 Groundwater flood risk

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerging at the ground surface, or within manmade structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months and can result in damage to property. This risk of groundwater flooding depends on the nature of the geological strata underlying the site, as well as on the local topography.

The NPTCBC Flood Risk Management Plan 2015 states that there are “no specific areas of historical groundwater flooding recorded in the NPT area”. It can therefore be concluded that the risk of groundwater flooding at the site is low.

5 Detailed Assessment of Tidal Flood Risk

Tidal flood risk has been identified as the single significant source of flood risk to the site. Consequently, a more detailed assessment of this flood risk source has been carried out and is reported in the following section.

5.1 Extreme Sea Level Estimates

Extreme sea level estimates have been taken from the Environment Agency Coastal Flood Boundary Conditions for UK Mainland and Islands; Design Sea Levels (ref. SC060064). Extreme estuary sea level predictions are provided at node locations at approximately 2km spacing along the River Neath.

Node 484 was used to provide the 2017 extreme sea level estimates for the following return periods:

0.5% AEP = 6.49 m AOD

0.1% AEP = 6.76 m AOD

For all coastal locations, sea level rise is a major consideration and should be applied to the extreme sea level estimates. The proposed design life for this development is believed to be 50 years. Notwithstanding this, in accordance with Welsh Government Guidance on Climate Change Allowances for Planning Purposes⁶ the 75-year cumulative Sea Level Rise needs to be considered for industrial land-uses. Both the 50-year and 75-year cumulative sea level rises have been analysed further as part of this assessment.

The climate change uplifts applied to the extreme sea level estimate are shown in Table 5-1.

Table 5-1 Cumulative Sea Level Rise

Period	No. of Years	mm Increase per year	Cumulative Rise (mm)	Total Sea Level Rise to 2096 (mm)
2017-2021	5	3.5	17.5	772.5
2022-2025	3	3.5	10.5	
2026-2055	30	8.0	240	
2056-2085	30	11.5	345	
2086-2096	11	14.5	159.5	

Using the climate change uplifts for Node 484, the projected still water levels for the 2071 and 2096 epochs have been calculated for both the 0.5% AEP and 0.1% AEP events. This is shown in Table 5-2.

⁶ Welsh Government Guidance on Climate Change Allowances for Planning Purposes:
<https://gov.wales/sites/default/files/publications/2018-11/flood-consequence-assessments.pdf>

Table 5-2 Projected Still Water Level

Return Period	Still Water Level 2021 (mAOD)	Still Water Level 2071 (mAOD)	Still Water Level 2096 (mAOD)
0.5% AEP Event	6.51	6.94	7.26
0.1% AEP Event	6.78	7.21	7.53

5.2 Tidal Projection Modelling

Depth grids, using 1m LiDAR Digital Terrain Model (DTM) data and the projected still water level, were created to determine the predicted depth and extent of flooding at the proposed development site for the 2021 and 2096 0.5% AEP and 0.1% AEP events. This method of predicting tidal flood risk does not truly represent the connectivity of areas to tidal water, therefore, it may suggest areas are at flood risk when there is no route for the tidal water to reach it.

5.3 Present day Flood Risk

5.3.1 0.5% AEP Event (2021)

Figure 5-1 shows that the site is flood free in the 2021 0.5% AEP event. The still water level for this event is approximately 6.5mAOD. As such, the entire development site is elevated at least 0.5m above the 2021 0.5% AEP flood level.

Additionally, the projected still water level is lower than the reported elevation of the access road at the entrance to the site (7.2mAOD).

**Figure 5-1 2021 0.5% AEP tidal flood event flood depths**

5.3.2 0.1% AEP Event (2021)

Figure 5-2 shows that the site is flood free in the 2021 0.1% AEP tidal flood event using projected 2021 extreme sea levels. The still water level for this scenario is approximately 6.78mAOD. Therefore, the site and the access road, with elevations of at least 7.0m AOD and 7.2m AOD, respectively, are located entirely above the 2021 0.1% AEP tidal flood level.



Figure 5-2 2021 0.1% AEP tidal flood event flood depths

5.4 Flood risk for the lifetime of the development

The development lifetime is considered to be approximately 50 years. Comparison of projected still water levels for the 2071 epoch with the site topography indicates that the entire development is located above the 0.5% AEP extent.

A flood level of 7.21m AOD has been extrapolated for the 2071 0.1% AEP event. Comparison of this flood level with LiDAR elevation data indicates that low levels of flooding of up to 200mm may be experienced at the site during the 2071 0.1% AEP event.

Notwithstanding this, the Welsh Government Guidance on Climate Change Allowances for Planning Purposes suggests that a lifetime of 75 years should be assumed for non-residential developments. As such, the flood levels for the 2096 epoch are explained further in the following sections.

5.4.1 0.5% AEP Event (2096)

The site is predicted to flood in the 2096 0.5% AEP tidal flood event with a predicted still water level of 7.26mAOD. Figure 5-3 demonstrates that flood depths over much of the site are generally predicted to be less than 300mm. An isolated area in the north west of the site could experience depths of up to 310mm however, upon review this appears to be associated with a localised depression and as such is not considered representative of the risk posed to the site.

The site access road is predicted to flood up to 200mm during this event.

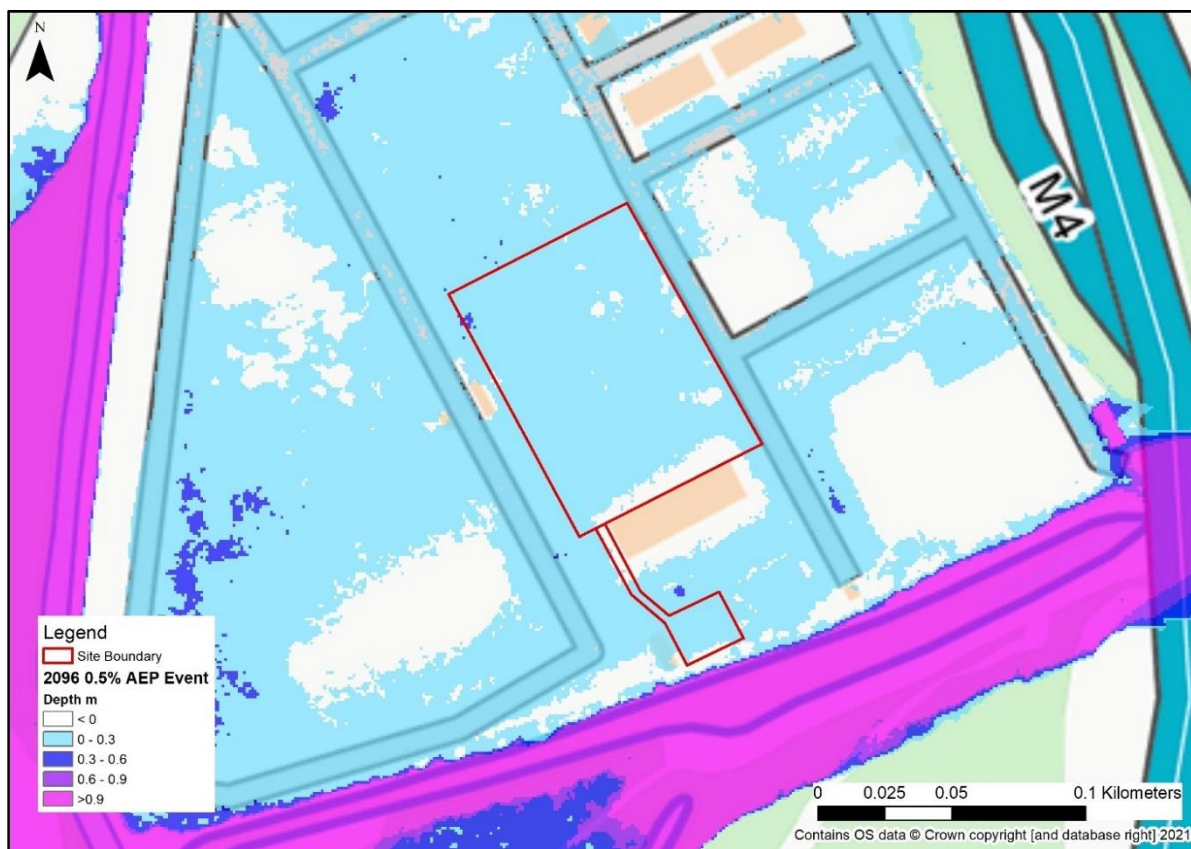


Figure 5-3: 2096 0.5% AEP tidal flood event flood depths

5.4.2 0.1% AEP Event (2096)

Figure 5-4 shows predicted flood depths at the site for the 2096 0.1% AEP flood event. During this scenario the average flood depth across the site is predicted to be 400mm, whilst the aforementioned localised depression could experience flood depths of up to 600mm

During a flood event, the site access road is predicted to flood up to 400mm.

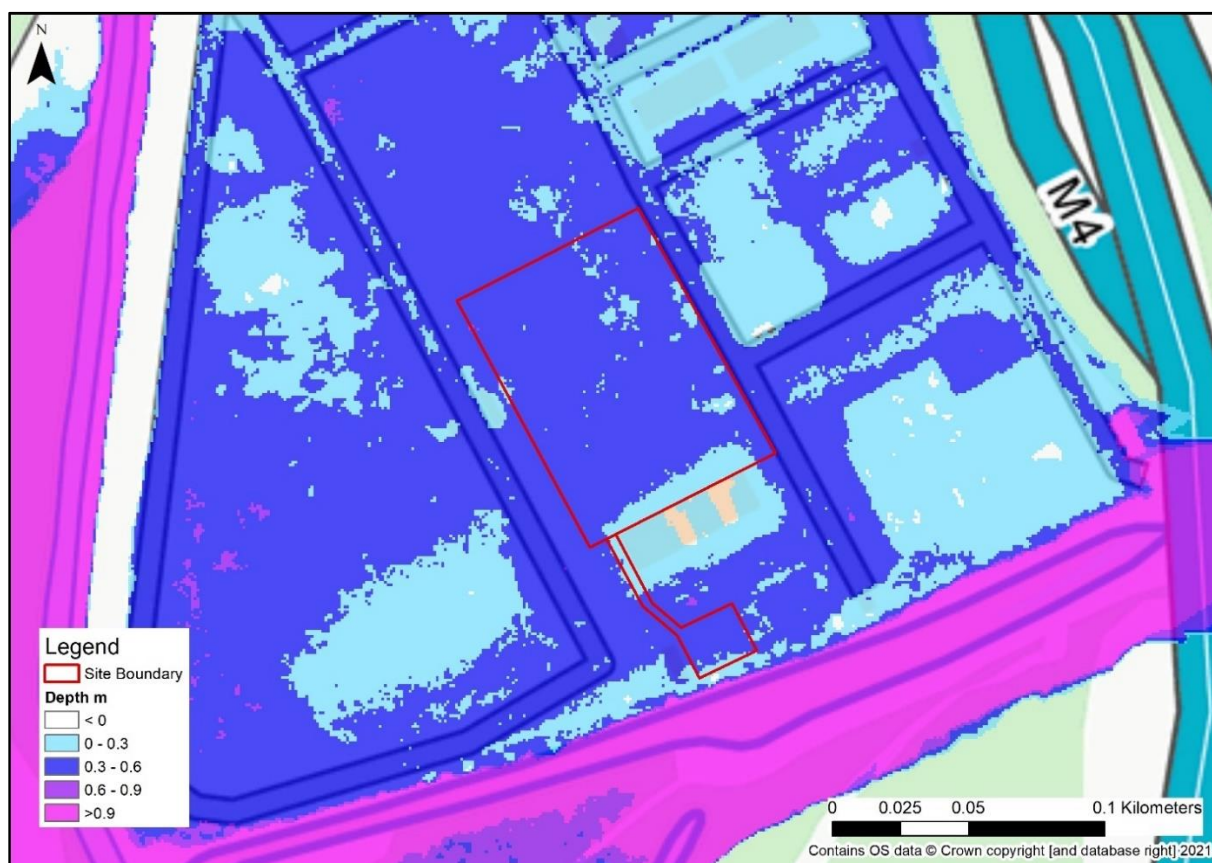


Figure 5-4: 2096 0.1% AEP tidal flood event flood depths

5.5 Flood risk summary and compliance with TAN-15

The site is currently flood free during the present day (2021) 0.5% AEP and the 0.1% AEP tidal projected modelling. In addition, the site is shown to be located above the 2071 0.5% AEP flood level. However, 200mm of flooding could be experienced at the site during the 2071 0.1% AEP event. In the future (2096) 0.5% AEP and the 0.1% AEP tidal projected modelling, flooding is anticipated to occur during both scenarios to an average depth of 200mm in the 0.5% AEP scenario and 400mm during the 0.1% AEP scenario.

A1.14 of TAN-15 outlines the requirement for development to be flood free in the 0.5% AEP plus climate change. The development lifetime is believed to be 50 years. The site is located entirely above the 2071 0.5% AEP flood level therefore is considered to pass A1.14 of TAN-15. Despite this, given that the site is anticipated to experience flooding during the 2096 0.5% AEP event, flood mitigation measures have been recommended to provide further protection (these are outlined in section 5.6).

A1.15 of TAN-15 provides indicative guidance with regard to the tolerable conditions for an industrial site during the 0.1% AEP event. For the proposed development site, TAN-15 advises that flood depths should not exceed 1000mm within the property and the access to the site. Flood depths for the 0.1% AEP event are a maximum of 600mm on the site, therefore, the proposed development complies with the indicative guidance contained within TAN-15.

5.6 Flood risk mitigation

5.6.1 Raised Slab Levels

The entire site is shown to be located above the 2071 0.5% AEP flood level. However, the projected still water level for the 2096 0.5% AEP tidal flood event is 7.2mAOD.

The client has confirmed that all structures will be developed upon a slab set 200-300mm above the existing ground levels. As such, the Finished Floor Level (FFL) of the development is considered to be at least 7.3m AOD, based upon the average ground level at the site and assuming a minimum slab depth of 200mm.

Construction of the asphalt plant upon a slab elevated at 7.3m AOD will result in the development being flood free during the 2096 0.5% AEP event, in compliance with TAN-15.

Additionally, based on a FFL of 7.3mAOD, the predicted flood depths for the 2096 0.1% AEP event will be reduced to approximately 300mm, further complying with the requirements of TAN-15.

Whilst the installation of slabs will raise ground levels at the site there will be negligible impact to third party land. Flood risk at the site is tidally sourced therefore any displacement as a result of the proposed works will be immaterial.

5.6.2 Flood warning service

NRW flood warnings for tidal surge events are typically provided 24hrs in advance of an event. Flood Warnings give notice that "flooding is expected" and "immediate action is required". A lower grade Flood Alert is used to prepare for possible flooding and will normally be issued with a greater lead-time of up to two days.

The site is covered by the 'Swansea Bay and the Gower peninsula coast' flood alert area. It is recommended that the property developer and commercial occupants sign up to these flood warnings for the lifetime of the development.

5.6.3 Emergency flood plan

The developer should prepare a Flood Emergency Plan prior to occupation. This should give consideration for effective flood warning, evacuation and access/egress routes in the event of flooding for the lifetime of the development, including details of the access road to the site from the B4290. The plan should be passed on to subsequent site owners should the site be sold.

5.6.4 Flood resilient design

The proposed development site is predicted to flood to depths of up to 300mm during the 2096 0.1% AEP event, taking the raised slab into account. It is therefore recommended that the developer considers the use of Property Flood Resilience Measures such as raised electrical sockets, tiled floors and water resilient plaster, where appropriate. Installation of these measures will enable the development to recover from a flood event quickly and in a cost-effective manner.

6 Assessment of Acceptability Criteria

TAN-15 states that for less vulnerable development to be considered within Zone C2, the proposed development must meet the requirements set out within the Justification Test including the Acceptability Criteria. An assessment of the Acceptability Criteria is summarised in Table 6-1 below. These criteria must be satisfied for the proposed development to comply with TAN-15.

Table 6-1: Acceptability Criteria for TAN-15

TAN-15 Acceptability Criteria	Comments	Assessment
Flood defences must be shown by the developer to be structurally adequate particularly under extreme overtopping conditions (i.e. that flood with a probability of occurrence of 0.1%)	N/A - There are currently no flood defences which benefit the site.	✓
The cost of future maintenance for all new/approved flood mitigation measures, including defences must be accepted by the developer and agreed with NRW.	No flood defences are required for the development. Mitigation measures are proposed to raise the site above projected the 2094 0.5% AEP sea level.	✓
The developer must ensure that future occupiers of development are aware of the flooding risks and consequences	Upon sale or transfer of the land to new occupiers, the developer should inform them of the flood risk at the site.	✓
Effective flood warnings are provided at the site	The site is within the Swansea Bay and the Gower coast flood alert area. The occupier should ensure they are signed up for the NRW flood warning service.	✓
Escape/evacuation routes are shown by the developer to be operational under all conditions	Flood depths along the access road for the site are below 1000mm (as required in TAN-15) during the 2096 0.1% AEP tidal flood event.	✓
Flood emergency plans and procedures produced by the developer must be in place	Emergency flood plans should be prepared and	✓

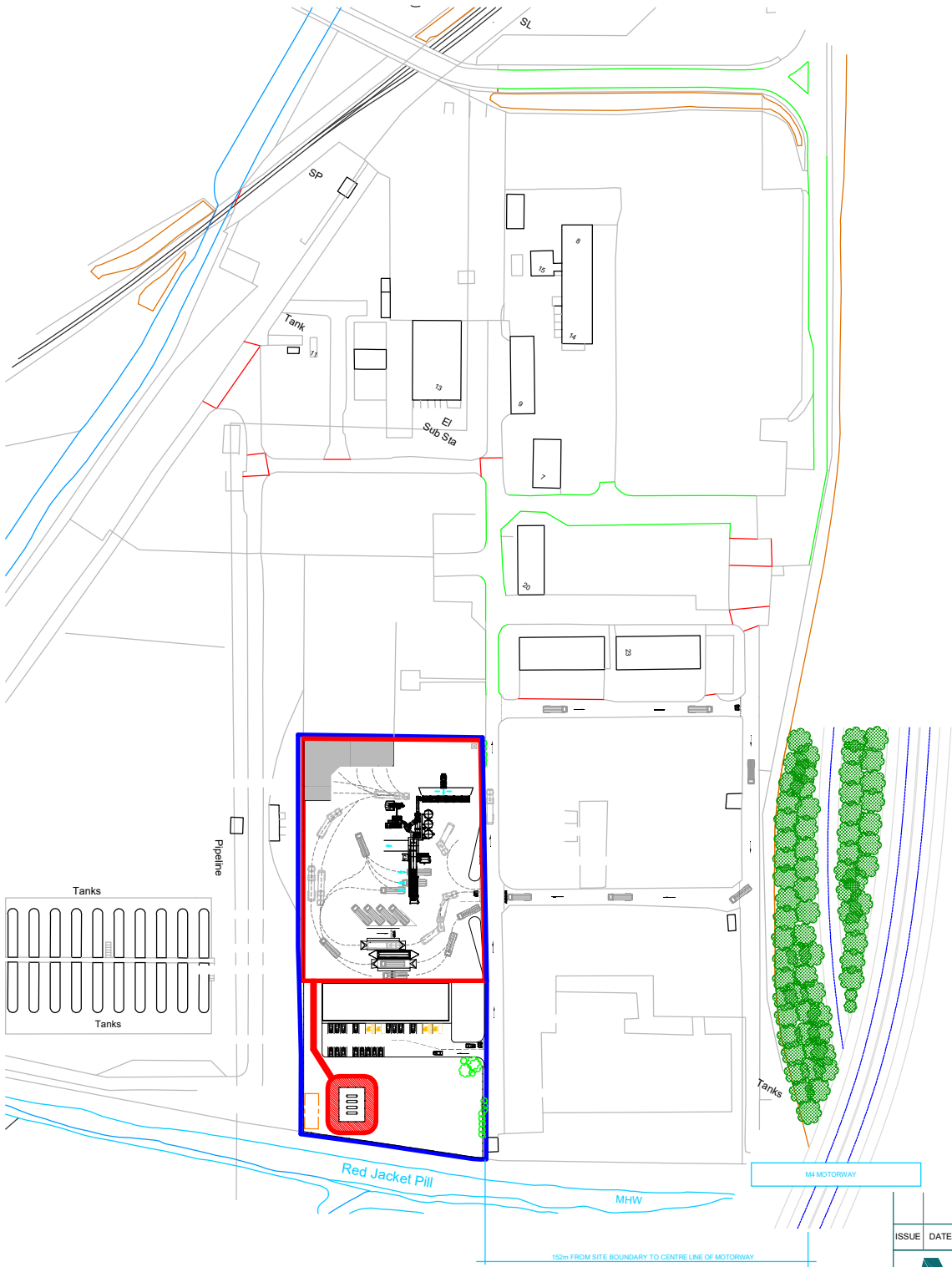
	adopted by the occupants.	
The development is designed by the developer to allow the occupier the facility for rapid movement of goods/possessions to areas away from the floodwaters	Flood resilience measures should be considered to ensure goods can be safely stored during the 2096 0.1% AEP tidal event. Appropriate actions in the event of a flood alert should be documented within a Flood Action Plan.	✓
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	The proposed development is at risk of flooding during the 2096 0.1% AEP event. Flood resilience measures have been recommended and should be considered in the design of the development.	✓
No flooding elsewhere	The risk of flooding to the site is tidal. As such, displacement caused raising land is immaterial and impact to third parties negligible.	✓
The development should be designed to be flood free during the 0.5% tidal flood	The proposed development is predicted to be flood free during a 2021 and 2071 0.5% AEP events. A slab will be constructed as part of the development raising the FFL to 7.3mAOD. As such, post development, the site is predicted to be flood free during a 2096 0.5% AEP event.	✓
The development should be designed so that in an extreme (1 in 1000 chance) event there would be less than 1000mm of water on access roads and within the property	Post development, flood depths at the site, and along the access road, are not anticipated to exceed 330mm during the 2096 0.1% AEP event.	✓

7 Conclusions and recommendations

- JBA Consulting were commissioned by Gerald D Harries and Sons Ltd, to prepare a Level 1 Flood Consequence Assessment (FCA) in support of a planning application at the former Edwards Works, Llandarcy for industrial use.
- The site is in close proximity to the River Neath, with the Red Jacket Pill tidal channel off the River Neath located to the south of the site. The Tennant Canal is located 200m to the east of the site.
- The proposal is for an asphalt plant with a design life of approximately 50 years.
- The proposed development site falls within Zone C2 of NRW's Development Advice Maps. Zone C2 is described as "areas of the floodplain without significant flood defence infrastructure". The proposed development is classified as "less vulnerable development" and is therefore subject to the application of a Justification Test, including the Acceptability Criteria.
- The proposed industrial development is on brownfield land and will contribute to objectives 11 and 12 of the Neath Port Talbot County Borough Council Local Development Plan by promoting a sustainable economy.
- The site is not shown to be at risk of flooding from tidal, fluvial or surface water and small watercourses flood risk sources according to the National Resources Wales National Flood Hazard Maps.
- Flood risk from groundwater is considered to be low.
- Detailed assessment of tidal flood risk shows that the proposed development site is predicted to be flood free during the 2021 0.5% AEP and 0.1% AEP events. In addition, the development is shown to be flood free during the 2071 0.5% AEP flood event.
- In the 2096 0.5% AEP and 0.1% AEP tidal events, flooding is anticipated to occur at the site with average depths of 200mm modelled for the 0.5% AEP scenario and 400mm during the 0.1% AEP scenario.
- TAN-15 requires development to be flood free in a 0.5% AEP tidal event for its design lifetime. The proposed development site is currently flood free during the 2071 0.5% AEP event, which represents 50 years of climate related sea level increases.
- The client has confirmed that all structures will be developed on a slab set 200-300mm above existing ground levels. As a result, the development will be flood free during the 2096 0.5% AEP event. With the proposed development raised 200-300mm above surrounding ground levels, flood depths during the 0.1% AEP (2096) event will be reduced to approximately 300mm.
- The proposed development satisfies the requirements of the Justification Test including managing flood risk in line with the acceptability criteria. The development complies with the aims of TAN-15 and Planning Policy Wales.

Appendices

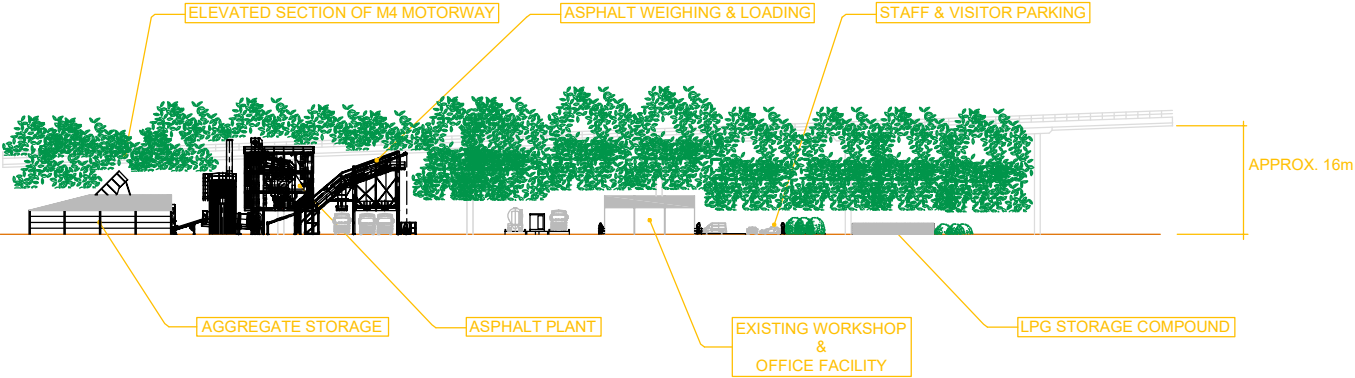
Appendix A- Proposed Plans



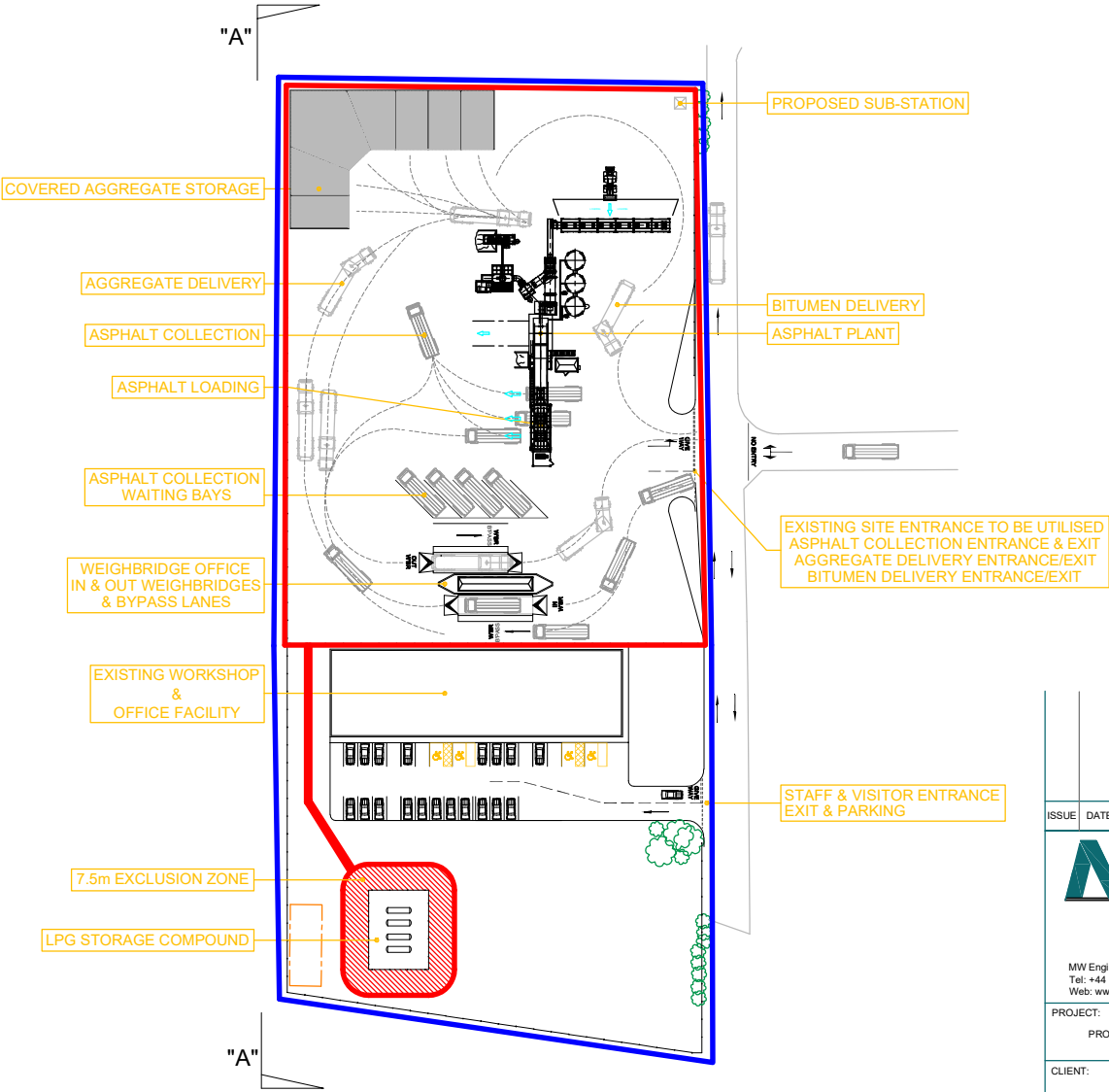
PLAN VIEW

CONSTRUCTION AREA	BOUNDARY AREA
7,586 sq/m	12,157sq/m
1.875 Acres	3.004 Acres
0.759 Hectares	1.215 Hectares

 MW Engineering Solutions Ltd Tel: +44 (0) 7703 193107 Web: www.mwengineeringsolutions.co.uk			DRN BY	APP BY
ISSUE	DATE	REVISION		
PROJECT: PROPOSED ASPHALT PLANT FACILITY (LLANDARCY)				
CLIENT: SIGMAROC LTD				
DRAWING TITLE: SITE DEVELOPMENT DRAWING				
ORIGINATOR: MW	DATE: 16.11.20	SIG:		
CHECKED: MW	DATE: 16.11.20	SIG:		
MWES DRAWING No.: SIGMAROC - LLANDARCY - SITE DEVELOPMENT DRAWING				
CLIENT DRAWING No: N/A			SHEET SIZE A2	
REVISION:	SCALE: 1:1.25		SHEET No. 1 OF ***	



ELEVATION ON "A"- "A"



PLAN VIEW
SCALE FACTOR 2

ISSUE	DATE	REVISION		DRN BY	APPD BY
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CLIENT: SIGMAROC LTD					
DRAWING TITLE: PLAN VIEW AND ELEVATION DRAWING					
ORIGINATOR: MW		DATE: 16.11.20		SIG:	
CHECKED: MW		DATE: 16.11.20		SIG:	
MWES DRAWING No.: SIGMAROC - LLANDARC'Y - PLAN & ELEVATION					
CLIENT DRAWING No.: N/A				SHEET SIZE A2	
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