

Earlswood Depot Flood Consequence Assessment

Version 1

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Contract

This report describes work commissioned by Rhys Edwards (Lawray) on behalf of Mid and West Wales Fire and Rescue Service. Hannah Bard of JBA Consulting carried out this work.

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Purpose

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1 Introduction

JBA Consulting were commissioned by Rhys Edwards (Lawray) on behalf of Mid and West Wales Fire and Rescue Service to prepare a Flood Consequence Assessment (FCA) to support a planning application for the change of use of the existing giraffe building at Earlswood Depot, Neath, from a vehicle repair workshop into a Carbonaceous Fire Training Unit and associated rooms and machinery. This FCA demonstrates the suitability of the proposed development and describes the flood mitigation measures recommended to manage flooding at the site.

1.1 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 should be addressed in all planning applications over their expected lifetime:

- 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 flood water 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

2.3 Site topography

The Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data¹ across the site is shown in Figure 2-2. The LiDAR data shows the site slopes gradually from 6.99mAOD at the southern boundary to 6.58mAOD at the northern boundary.

A detailed topographic survey was undertaken by UtiliMap Land & Utility Surveys in April 2022, as shown in Appendix A. The survey showed finished floor levels in the main part of the training centre (north of the ridge) as 6.74mAOD. To the south of the ridge finished floor levels are 6.77-6.78mAOD. External levels to the rear of the property are shown to be 6.53mAOD.

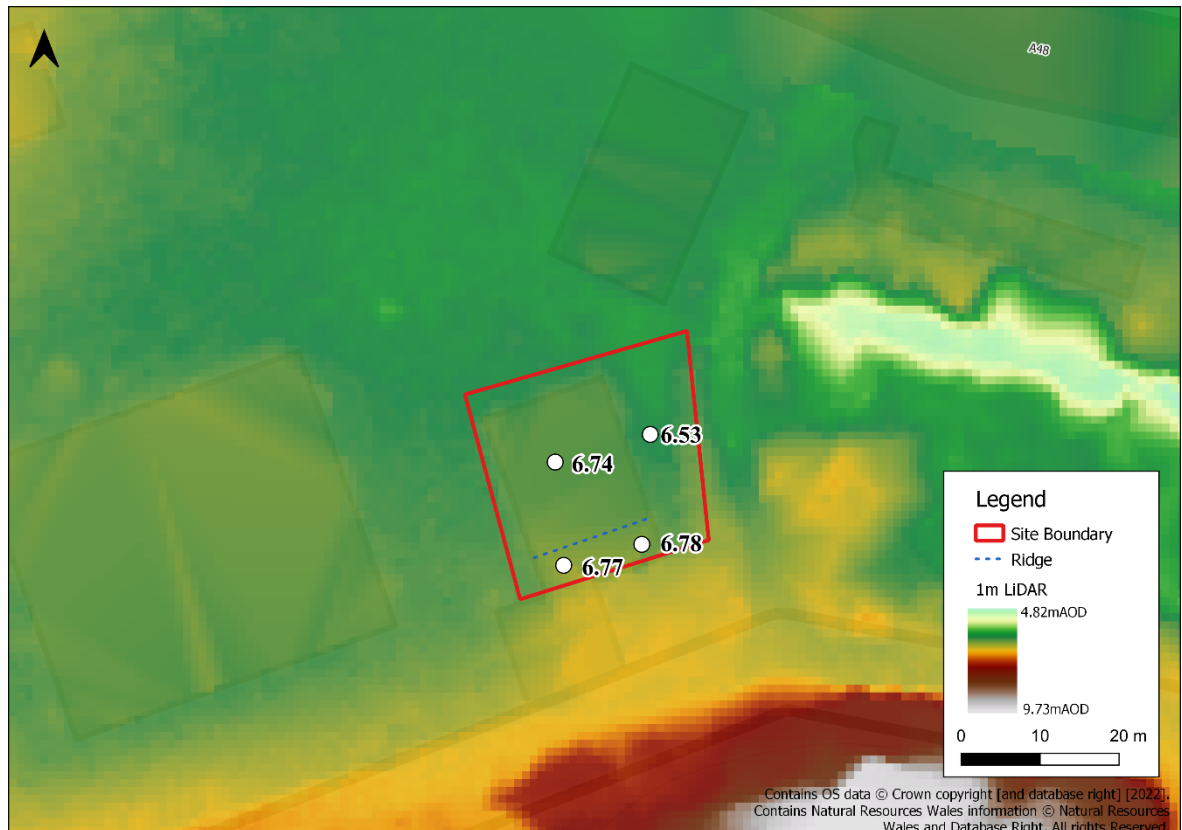


Figure 2-2: LiDAR Topographic data from NRW (1m resolution)

2.4 Soils and geology

The geology of the site has been assessed using the BGS Geology of Britain Viewer². The bedrock geology is shown to be Rhondda Member comprised of sandstone. Superficial geology at the site is comprised of clay, silt, sand and gravel.

The soils on site have been assessed on the Cranfield University Soilscales Viewer³ and are shown to be loamy and clayey floodplain soils with naturally high groundwater.

2.5 Proposed development

Development proposals for the Earlswood training centre are for a change of use of the existing giraffe building from a vehicle repair workshop to a Carbonaceous Fire Training Unit. Building refurbishments include a store room, de-brief room, control room and lobby at the south of the building. In addition to the building refurbishment, a smoke cleaning

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

² Geology of Britain Viewer. <https://bgs.ac.uk/map-viewers/geology-of-britain-viewer/>

³ Cranfield Soilscales Viewer. https://landis.org.uk/soilscales/HXS-JBAU-XX-XX-RP-Z-0001-S3-P01-Earlswood_Depot_FCA

unit is proposed to the rear of the building. There shall be no change in the building footprint as a result of the proposals. The proposed development layout is shown in Figure 2-3 and Appendix B.

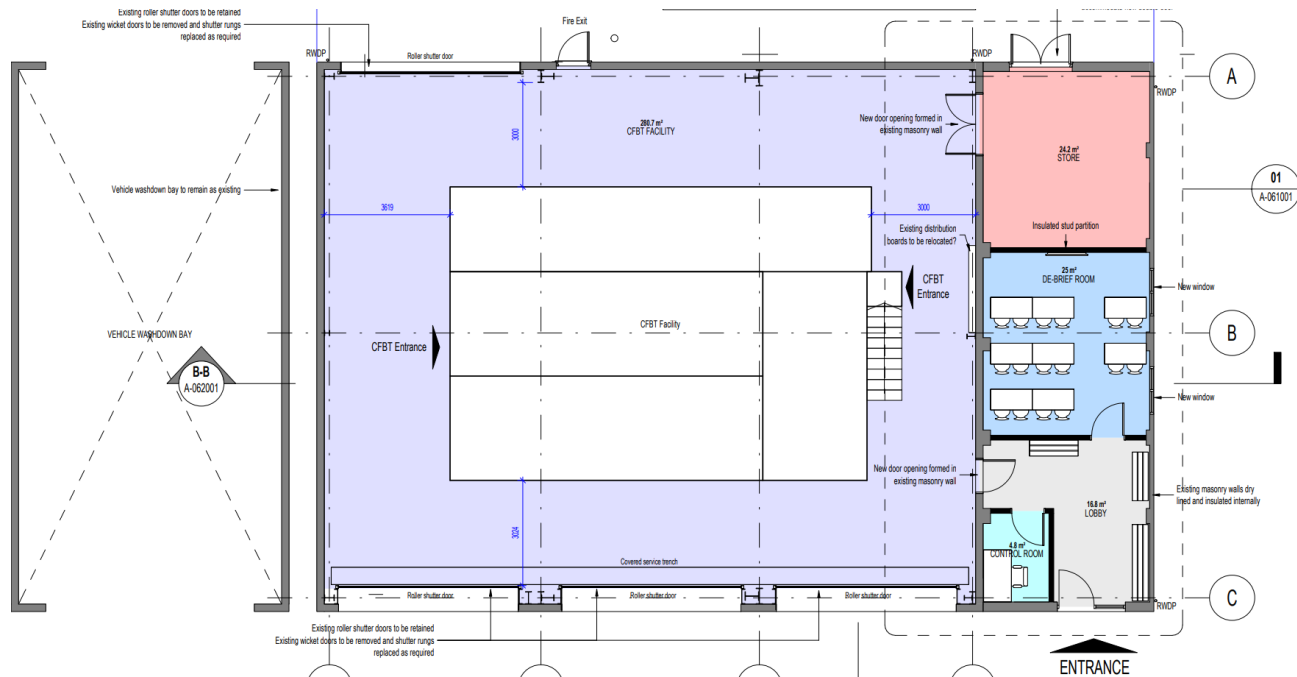


Figure 2-3 Layout of proposed development

3 Planning Policy and flood risk

3.1 Planning context

Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales. These policies have the aim that all development in Wales is sustainable and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015.

PPW uses a series of Technical Advice Notes to provide more guidance on areas of planning and development in Wales. Technical Advice Note 15 (TAN15), introduced by the Welsh Government in 2004, provides technical guidance relating to development planning and flood risk in Wales.

The initial requirements of TAN15 are to identify the vulnerability classification(s) and flood zones relevant to the proposed development, and to apply this information to the application of the justification tests.

3.2 Vulnerability classification

As shown in Table 3-1, TAN15 assigns one of three flood risk vulnerabilities to development. Paragraph 5.2 of TAN15 states that "*The Emergency Services category describes facilities which need to be operational and accessible at all times.*"

The building will be used for training and not operational for emergency response. Furthermore, the building will be used for occasional training and shall not be in constant use. Consequently, the proposals have not been classified under 'emergency services' but have rather been classified as 'less vulnerable development' due to its general industrial and employment function.

The proposed development will not result in any change in the vulnerability classification.

Table 3-1: Development categories as defined by TAN15

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.

3.3 Development Advice Map classification

The Development Advice Map (DAM) created by the Welsh Government is used to trigger different planning actions based on a precautionary assessment of flood risk. Figure 3-1 shows that the site is located in DAM Zone B and DAM Zone C2, triggering the need for an FCA.

Zone B is described as “areas known to have been flooded in the past evidenced by sedimentary deposits”. Zone C2 is described as “areas of the floodplain without significant flood defence infrastructure”. Less vulnerable development can take place within Zone C2 subject to the application of the Justification Test, including acceptability of consequences.

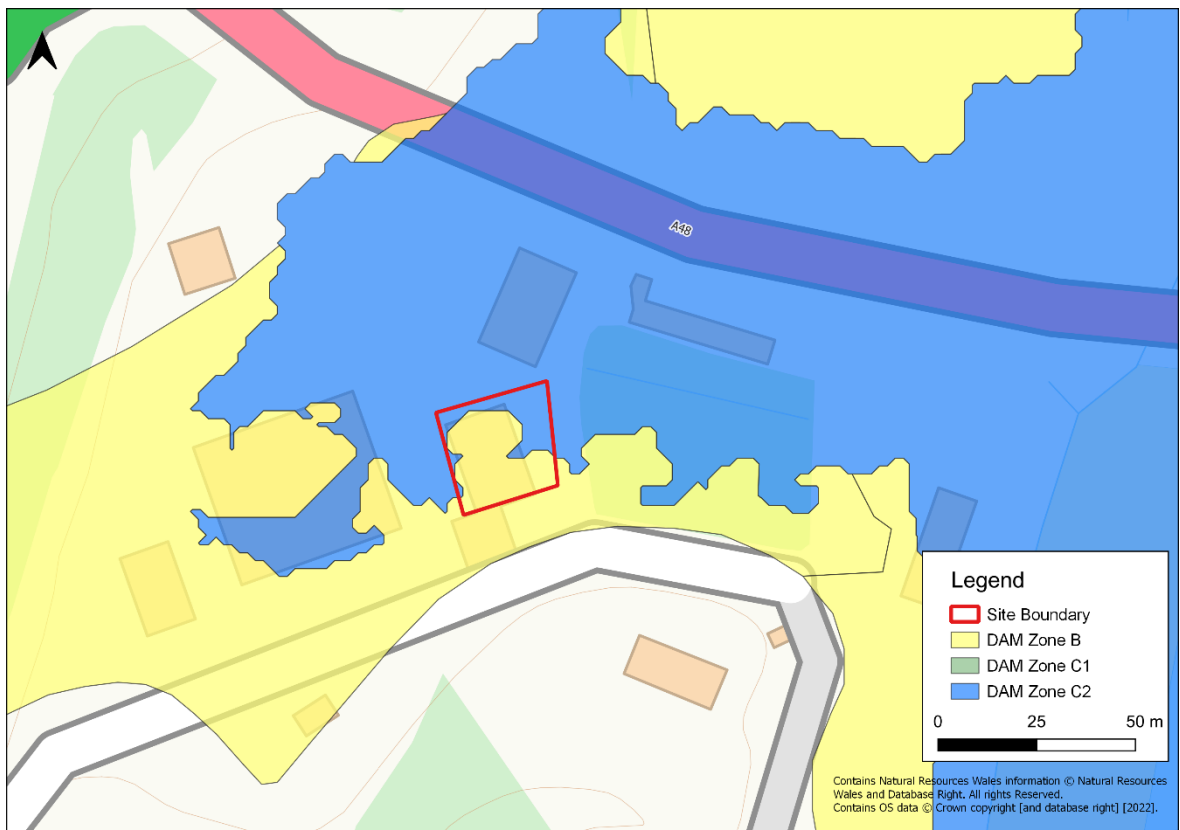


Figure 3-1: Development Advice Map

3.4 Flood Map for Planning

An update for TAN15 was released in October 2021 and was due to come in force on the 1st December 2021. However, Welsh Government have since suspended the implementation of the new TAN15 until 1st June 2023. The new TAN15 will replace the DAM with the Flood Map for Planning (FMfP), which will be used to trigger different planning actions based on a precautionary assessment of flood risk. Whilst the new TAN15 is not a material consideration until implemented, it does illustrate the current policy thinking of Welsh Government and in some cases the FMfP may constitute best available information. Consequently, information on the FMfP is provide for information only.

The site is located in Flood Zone 1 of the Flood Map for Planning for Rivers. This means that there is less than a 0.1% Annual Exceedance Probability (AEP) chance of fluvial flooding in any given year, including climate change. This is shown by a transparent layer on the Flood Map for Planning and as such a map has not been provided in this assessment.

As shown in Figure 3-2, the site is located in Flood Zone 3 of the Flood Map for Planning for the Sea. This means the site has a greater than 0.5% (1 in 200) chance of tidal flooding in a given year, including the effects of climate change.

The site is located in Flood Zone 1 of the Flood Map for Planning for Surface Water and Small Watercourses, as shown in Figure 3-3. This means that there is less than a 0.1% Annual Exceedance Probability (AEP) chance of flooding from these sources in a given year.

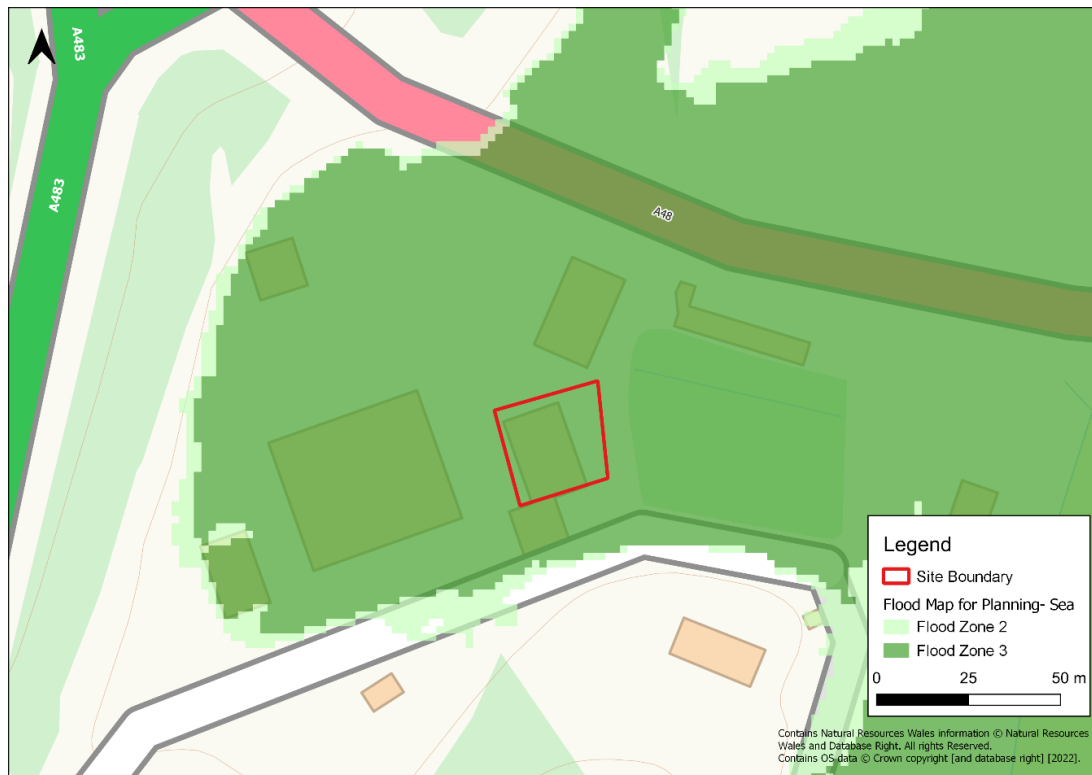


Figure 3-2 Flood Map for Planning – Sea

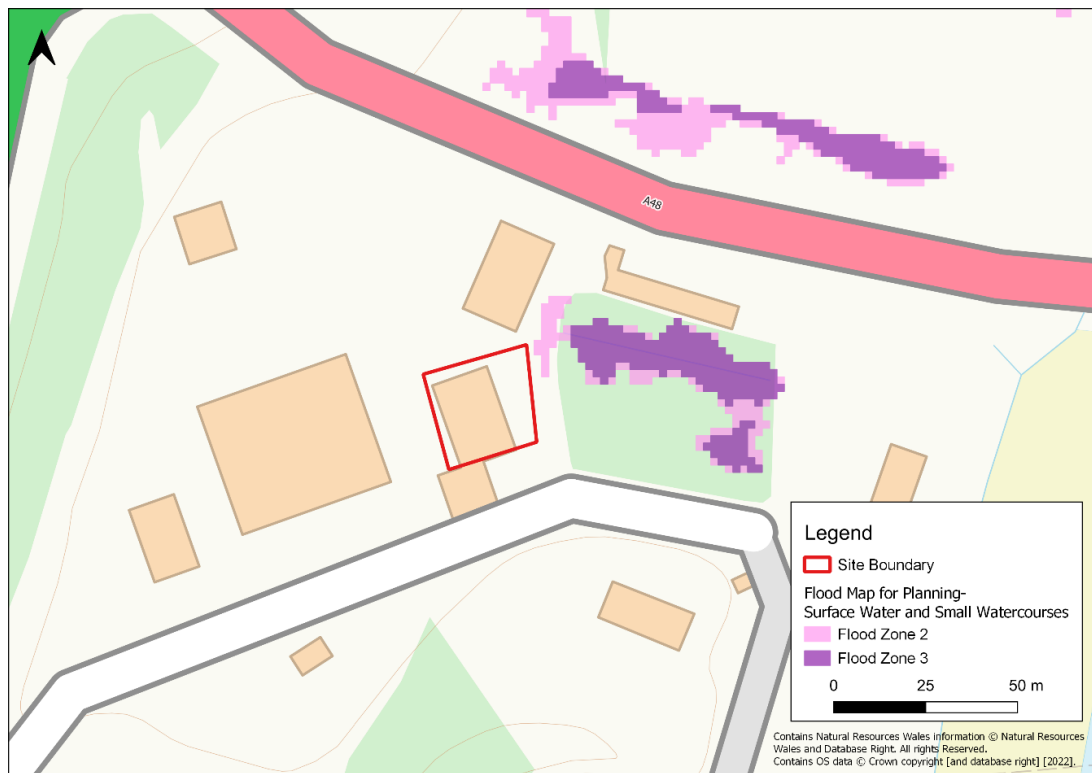


Figure 3-3 Flood Map for Planning – Surface Water and Small Watercourses

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3.5 Lifetime of development

Paragraph A1.5 of TAN15 identifies that a proposed development must provide a safe and secure living and/or working environment throughout its lifetime.

Welsh Government's latest climate change guidance⁴ states "*A rule of thumb is that residential development has a lifetime of 100 years while a lifetime of 75 years is assumed for all other developments.*"

Although not a material consideration, guidance under the new TAN15 (paragraph 7.15) states "*Generally, it is appropriate to think of new dwellings as having a lifetime of 100 years. Lifetimes for other types of development will vary, but 75 years is considered a reasonable rule of thumb. Planning authorities should apply this principle in a precautionary manner in relation to all types of development.*"

As a 'rule of thumb' it is appropriate that site-specific consideration is given to the lifetime of the development used in this assessment. This is particularly relevant where existing 'less vulnerable' buildings are being repropoed, as in this case. The proposed development is a refurbishment of an existing light industrial building, which is otherwise approaching the end of its useful life. Once refurbished, the residual life of the building is expected to be extended to no more than 30 years. Consequently, the FCA is based on a lifetime of development of 30 years.

3.6 Local Development Plan

The Neath Port Talbot Local Development Plan (LDP), adopted in 2016 provides land use policies and proposals to encourage sustainable growth within the Neath Port Talbot Council area until 2026.

The proposed development will contribute to the overarching objectives OB12 by assisting to increase economic activity and reduce the unemployment rate in the area. Furthermore, it will comply with policy SP11, by safeguarding an existing employment area.

Overarching objective OB3 aims to deliver sustainable, safe and confident communities. The proposed development provides new training facilities for Mid And West Wales Fire and Rescue Service, assisting to deliver safer communities.

3.7 Justification Test

Section 6 of TAN15 set out the tests for 'Justifying the location of development'. The tests of Section 6.2 of the TAN specifically relate to 'new development'. As a refurbishment project, with no change vulnerability classification, the proposals should not be classed as 'new development'. However, notwithstanding this point, the justifications tests of Section 6.2 have been examined below for completeness.

⁴ Welsh Government. Flood Consequences Assessment: Climate Change Allowances (Sept 2021)
https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequence-assessments_0.pdf.

Table 3-2 below summarises how the proposed development would meet the requirements set out within the Justification Test. All of 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	Achievable?
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 assist with the relevant policies listed in the Local Development Plan and will contribute to employment and safety objectives in Neath Port Talbot.	✓
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 proposed development is an existing building within the Earlswood training centre. It therefore meets the definition of previously developed 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 consequences at the site has been undertaken to demonstrate the proposed development's acceptability. See Section 4 and Section 5.	✓

4 Flood risk assessment

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

4.1 Review of existing flood risk data

The latest available information on flood risk at the site, published by Natural Resources Wales (NRW) is summarised in Table 4-1 below.

Table 4-1: Summary of flood risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	✖	The site is in at very low risk of flooding from rivers (Section 4.3).
Flood Risk from the Sea	✓	The site is at low risk of tidal flooding (Section 4.4).
Flood Risk from Surface Water and Small Watercourses	✖	The site is at very low risk of surface water flooding (Section 4.5).
Flood Risk from Groundwater	✖	The site is at very low risk of flooding from groundwater (Section 4.6).
Flood Risk from Reservoirs	✖	The site is not at risk of flooding from reservoirs (Section 4.7).
Flood Risk from Sewers	✖	There is no evidence to suggest that the site is at risk of flooding from sewers (Section 4.8).

4.2 Historical flooding

We are not aware of any past flood incidents at the site. The site is not located within NRW's historic flood outline. No historic flooding was at the site was identified in the Neath Port Talbot Flood Risk Management Plan⁵ (2015), nor was the area highlighted as one of the top communities at risk.

⁵ Neath Port Talbot County Borough Council Flood Risk Management Plan (2015)
<https://www.npt.gov.uk/media/5399/floodriskmanagementplan15.pdf?v=20170627002320>
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4.3 Flood risk from rivers

The site is at **very low risk** of flooding from rivers according to NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from the Rivers map shown in Figure 4-1. This means that there is less than a 0.1% AEP chance of fluvial flooding in any given year.

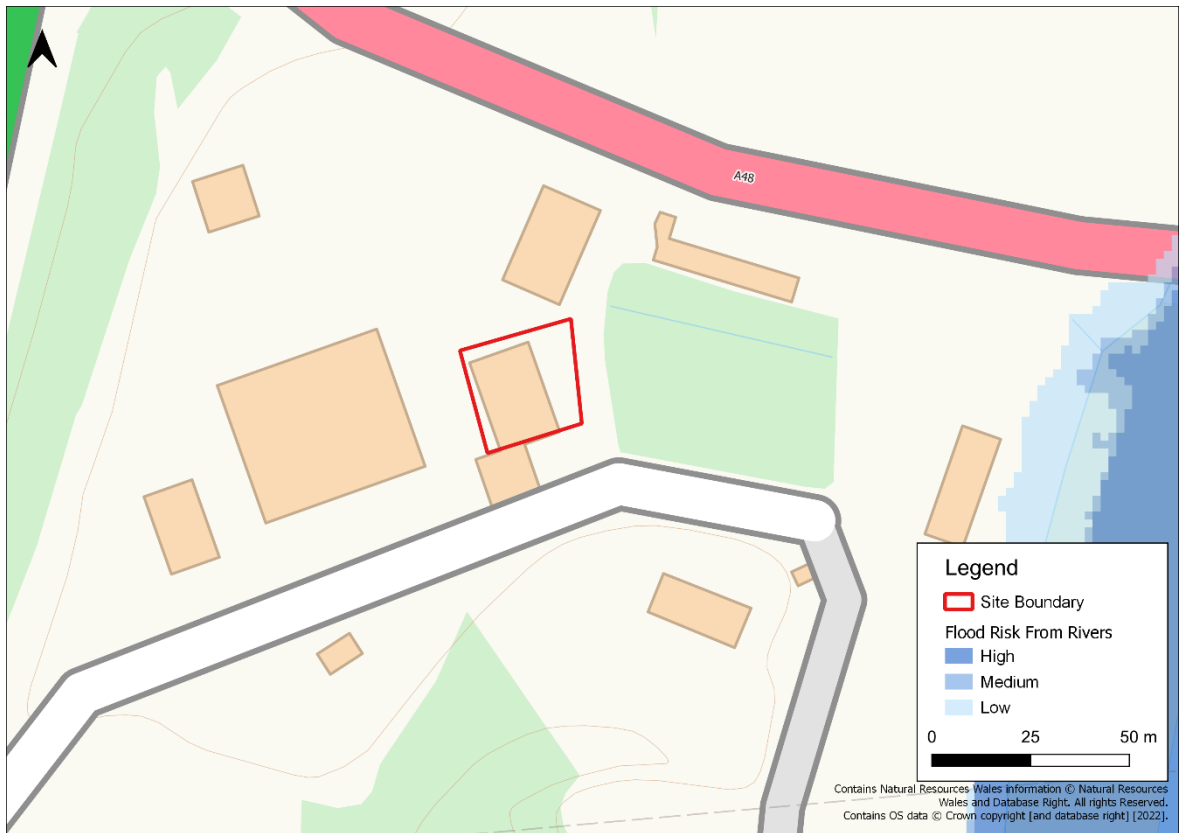


Figure 4-1 Risk of flooding from rivers

4.4 Flood risk from the sea

The site is at **low risk** of flooding from the sea according to NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from the Sea map shown in Figure 4-2. This means there is between a 0.1% AEP and 0.5% AEP chance of tidal flooding in any given year.

This prediction does not allow for the effects of climate change and rising sea levels, which will increase the flood risk from the sea over time.

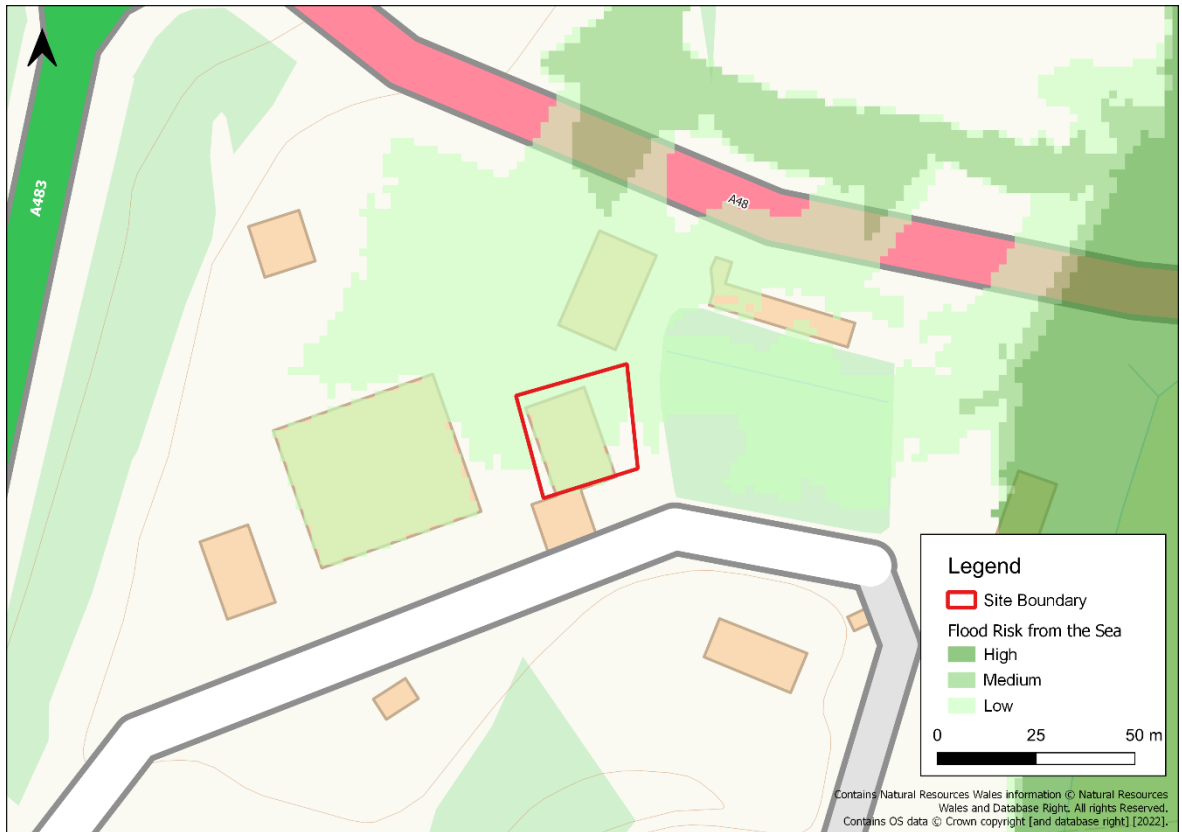


Figure 4-2 Risk of flooding from the sea

4.5 Flood risk from surface water and small watercourses

The site is at **very low risk** of flooding from surface water and small watercourses according to NRW's Flood Risk Assessment Wales (FRAW) Flood Risk from the Surface Water and Small Watercourses map shown in Figure 4-3. This means that there is less than a 0.1% AEP chance of flooding from these sources in any given year.

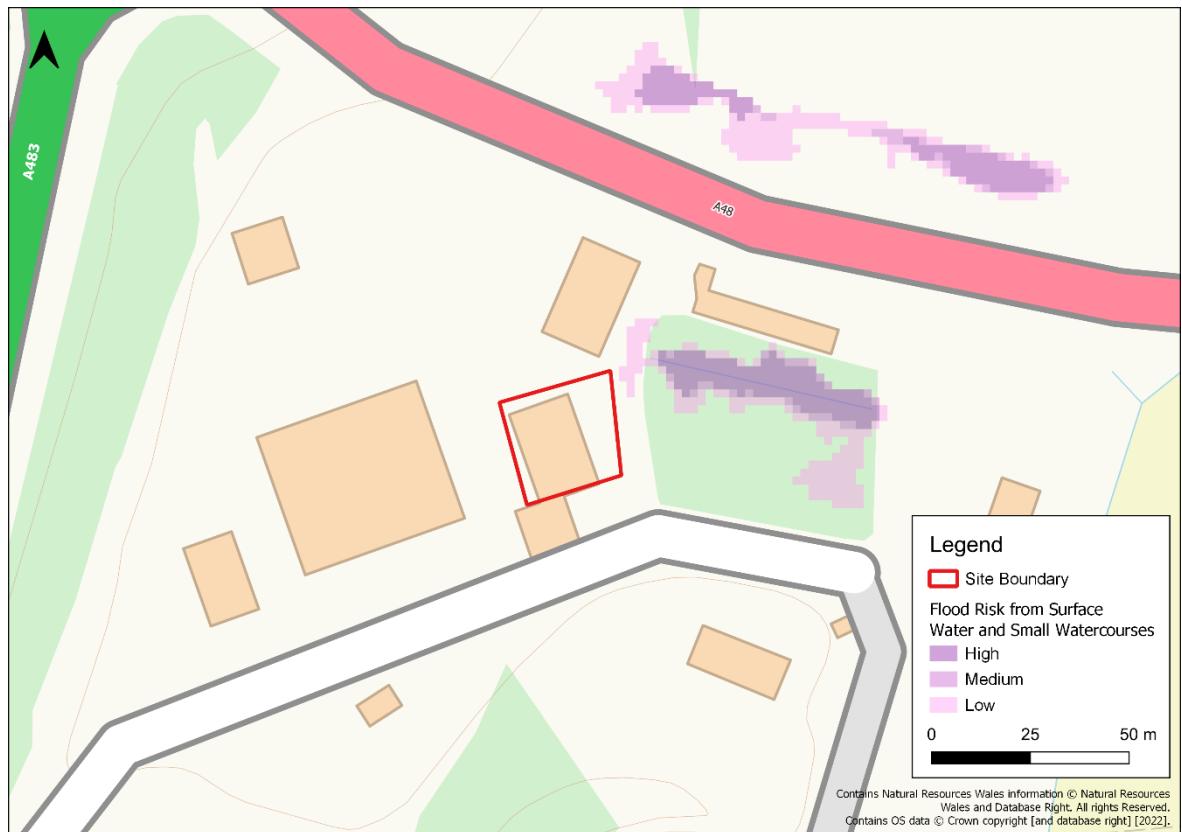


Figure 4-3: Risk of flooding from surface water and small watercourses.

4.6 Flood risk from groundwater

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 and the local topography.

The Neath Port Talbot Flood Risk Management Plan⁵ states there is '*no specific areas of historical groundwater flooding recorded in the NPT area*'. The risk of groundwater flooding at the site is therefore considered to be **very low**.

4.7 Flood risk from reservoirs

Given the absence of any nearby reservoirs, the NRW's reservoir flood map shows the site, and its surrounding area is not at risk of reservoir flooding. This is shown by a transparent layer on the NRW mapping and as such a map has not been provided in this assessment.

4.8 Flood risk from sewers

The Neath Port Talbot Flood Risk Management Plan⁵ identified a number of sewer flooding events recorded by water companies. There was however no evidence of historic sewer flooding on or close to the development site. It can therefore be concluded that the risk of sewer flooding at the site is **very low**.

5 Detailed assessment of tidal flood risk

5.1 Detailed flood modelling

The Flood Map for Planning identifies tidal flooding as the main flood risk to the site. Consequently, a more detailed assessment of tidal flooding has been carried out to understand predicted flood depths at the site. Extreme sea level estimates have been calculated and mapped for the 0.5% and 0.1% AEP events, for the present day (2022) and with 30 years lifetime of development (2052).

5.2 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)⁶. Extreme sea level predictions are provided at node locations at approximately 2km spacing along the coastline. For this assessment the closest extreme sea level node is Node 484.2 located in the River Neath, approximately 800m south of the site. The extreme sea level estimates for this node are shown in Table 5-1:

Table 5-1 Extreme sea level estimates (2017)

Event (AEP)	Predicted sea level (mAOD)
0.5%	6.43
0.1%	6.69

The UKCP18 User Interface⁷ has been used in accordance with Welsh Government Guidance on Climate Change Allowances for Planning Purposes (September 2021)⁴ to provide climate change uplifts for Swansea Bay. The cumulative increase in sea level has been calculated between 2017 and 2022 to uplift extreme sea level estimates to present day, and then furthermore to 2052 (30 year lifetime of development). The climate change uplifts applied to the extreme sea level estimates are shown in Table 5-2.

Table 5-2 Cumulative sea level rise

Period	Cumulative sea level rise (m increase)
2017-2022	0.03
2017-2052	0.24

Using the extreme sea level estimates and climate change uplifts calculated in Table 5-3, the predicted still water levels have been compared to the topographic survey.

Table 5-3 Predicted tidal flood levels

Event (AEP)	2022 Still Water Level (mAOD)	2052 Still Water Level (mAOD)
0.5%	6.40	7.09
0.1%	6.69	7.38

⁶ UK Government (2019) Coastal flood boundary conditions for the mainland UK coasts and islands <https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/coastal-flood-boundary-conditions-for-the-mainland-uk-coasts-and-island>

⁷ UK Climate Projections User Interface. <https://ukclimateprojections-ui.metoffice.gov.uk/ui/home>.
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This method of predicting tidal flood risk does not truly represent the hydraulic connectivity of areas to tidal water, but rather assumes the same water levels is maintained across all areas irrespective of the distance from the coast for intervening landform features for structures. It is therefore important to note that tidal projection modelling is typically conservative by nature.

5.3 Tidal flood risk

As shown in Table 5-4, the proposed development is predicted to be flood free in the 2022 0.5% AEP, 2022 0.1% AEP and 2052 0.5% AEP events. Tidal projection modelling shows the building is predicted to flood to a maximum depth of approximately 190mm in the 2052 0.1% AEP event.

TAN15 states the maximum depth of flooding for commercial properties is 600mm, and 1000mm for industrial buildings. The flood depths modelled are well below these values in all scenarios. The flood risk is therefore well within the recommended tolerable limits of TAN15 A1.15.

Table 5-4 Predicted flood depths

Event	Still Water Level (mAOD)	Flood depth in CFBT facility (mm)	Flood depth in ancillary rooms (mm)	External flood depth (mm)
2022 0.5%	6.46	0	0	0
2022 0.1%	6.67	0	0	140
2052 0.5%	6.72	0	0	190
2052 0.1%	6.93	190	160	400

6 Assessment of Acceptability Criteria

Table 6-1 assesses the proposed refurbishment against the acceptability requirements.

Table 6-1 Acceptability Criteria for TAN15

TAN15 Acceptability Criteria	Comments	Assessment
Developer is required to demonstrate that the site is designed to be flood-free for the lifetime of development for a 1 in 100 (1% AEP) chance (fluvial) and 1 in 200 (0.5%) chance (tidal) flood event including an allowance for climate change in accordance with TAN15 Table A1.14.	The site is predicted to be flood free during the 2052 0.5% tidal flood event and all fluvial flooding events.	✓
In respect of the residual risk to the development it should be designed so that in an extreme (1 in 1000 chance) [0.1% AEP] event there would be less than 600mm of water on access roads and within the property, the velocity of any water flowing across the development would be less than 0.4m/s.	The site is flood free in the 0.1% AEP 2022 event. In the 0.1% AEP 2052 event flood depths are predicted to be 190mm in the CFBT facility and 160mm in the ancillary rooms.	✓
No flooding elsewhere	The proposed development shall not increase flood risk elsewhere, as a refurbishment project available floodplain storage will remain unaffected. Furthermore, it is not generally possible to displace tidal flood waters.	✓
Flood defences must be shown by the developer to be structurally adequate particularly under extreme overtopping conditions (i.e. that flood with a 1 in 1000 chance of occurring in any given year).	There are currently no flood defences which benefit the site.	N/A
The developer must ensure that future occupiers of the development are aware of the flooding risks and consequences.	Upon sale or transfer of the land to new occupiers, the developer should inform occupiers of flood risk at the site.	✓
Effective flood warnings are provided at the site.	The site is located within the Swansea Bay and the Gower coast Flood Alert Area.	✓
Escape/evacuation routes are shown by the developer to be operational under all conditions.	The development proposes to utilise access road to the south of the site. This road remains flood free in all events. Furthermore, due to the nature of flooding a greater lead time (>24 hours) is available to allow for safe evacuation.	✓

The development is designed by the developer to allow the occupier of the facility for rapid movement of goods/possessions to areas away from flood waters.	If goods need to be removed from the building the tidal nature of flooding provides a long lead time (> 24 hours).	✓
Development is designed to minimise structural damage during a flood event and is flood proofed to enable it to be returned to its prime use quickly in the aftermath of a flood.	The structure should be able to withstand the shallow flood waters that will be present in the 2052 0.1% AEP event.	✓

7 Conclusions

- JBA Consulting were commissioned by Rhys Edwards on behalf of Mid and West Wales Fire and Rescue Service to prepare a Flood Consequence Assessment (FCA) to support a planning application for the change of use of the existing giraffe building at Earlswood Depot, Neath, from a vehicle repair workshop into a Carbonaceous Fire Training Unit.
- The building will be used for occasional training and not operationally for emergency response. Consequently, the proposals have been classified as 'less vulnerable development' due to its general industrial and employment function. The proposed development will not result in any change in the vulnerability classification.
- The proposed development lies in Zone B and Zone C2 of the Natural Resources Wales (NRW) Development Advice Map (DAM). Zone B is described "*areas known to have been flooded in the past evidenced by sedimentary deposits*". Zone C2 is described as "*areas of the floodplain without significant flood defence infrastructure*".
- The development lies within Flood Zone 3 of the draft Flood Map for Planning for the Sea.
- NRW's Flood Risk Assessment Wales maps shows the site has a low risk of flooding from the sea and a very low risk of flooding from all other sources of flooding.
- Welsh Government climate change guidance states that "*75 years is considered a reasonable rule of thumb*" for the lifetime of non-residential development. The proposed development involves the refurbishment of an existing industrial building which is otherwise approaching the end of its useful life. Once refurbished, the residual life of the building is expected to be extended to no more than 30 years. Consequently, the FCA is based on a lifetime of development of 30 years.
- Extreme sea level calculations show the site to be flood free in the 0.5% AEP event with an allowance for climate change. In the 0.1% AEP event with an allowance for climate change, flood depths are predicted to reach a maximum of 190mm.
- This FCA has demonstrated that all aspects of the Justifications Tests, including acceptability criteria, set out in TAN15 have been satisfied. Consequently, we conclude that on the grounds of flood risk, the proposed development meets the requirement set out in TAN15 and the aims of Planning Policy Wales.

Appendices

A Topographic Survey



SURVEY STATIONS			
Name	Easting	Northing	Height
UM01	273070.951	194218.434	6.539
UM02	273120.301	194185.903	6.320
UM03	273122.725	194181.307	7.190
UM04	273104.988	194180.662	6.811

22/04/2022

BANK BOTTOM

BANK TOP

BUILDING

BUILDING CANOPY

CONCRETE

DECKING

EAVE

EDGING

FENCE

KERB

KERB DROP

KERB TOP

OVERHEAD LINE

PAVING

RIDGE

SOFFIT

STONE

VERGE

WATERS EDGE

VEGETATION/CANOPY

OVERGROWTH

HEDGE

AREA UNABLE TO SURVEY

SIGN/NAME PLATE

GATE

TREE WITH SPREAD, DIAMETER & HT

BORE HOLE

UM UTILIMAP SURVEY STATION & ID

SHRUB OR PLANTER

ABBREVIATIONS

AC Air Conditioning Unit

BB Bellsha Beacon

BOL Bollard

EP Electricity Pole

ER Earth Rod

FH Fire Hydrant

GV Gas Valve

IC Inspection Cover

JB Junction Box

MH Manhole

MW Monitoring Well

RE Rodding Eye

RWP Rain Water Pipe

ST Stop Tap

TP Telegraph Pole

UTR Unable To Raise

WL Water Level

WO Wash Out

WV Water valve

CR Cable Riser

EP Electricity Pole

FFL Finish Floor Level

GR Gas Riser

Gully

IL Invert Level

LP Lamp Post

MP Marker Post

PB Post Box

RS Road Sign

SP Soil Pipe

TW Top of Wall

TL Traffic Light

VP Vent Pipe

WM Water Meter

WR Water Riser

FENCE ABBREVIATIONS

ARMCO Armco Barrier

C/B Closed Board

CL Chainlink

H/R Hand Rail

PAL Palisade

PNL Panel

PKT Picket

P/R Post & Rail

P/W Post & Wire

W/I Wrought Iron

WALL ABBREVIATIONS

CONC Concrete

BLK Block

BRK Brick

ST Stone

NOTES

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GRID AND LEVEL RELATED TO OSGB15 DATED 23.04.2022. LEVELS RELATIVE TO STN UM01.

LEVELS

LOCAL DATUM: ☐ G

GPS OS DATUM: ☐ O

PREVIOUS SURVEY: ☐ P

GRID

LOCAL & ARBITRARY: ☐ L

GPS OS GRID: ☐ G

PREVIOUS SURVEY: ☐ P

NORTH INDICATING ONLY

APPROX.

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Utility Mapping Surveys

Topographical Surveys

Cross Section Surveys

CCTV Drainage Surveys

Client

lawray architects

Title

EARLSWOOD FIRE TRAINING CENTRE TOPOGRAPHICAL SURVEY

REVISION HISTORY

REV	ISSUE DATE	EXPIRY DATE	DRAWING CHANGE
R1	26.04.2022	26.04.2023	TOPOGRAPHICAL SURVEY
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Original Scale: 1:200 @ A1

Dimension In: Levels: m Depths: m

Drawn: LG

Checked: SW

Date: APR 2022

Date: APR 2022

Drawing Number: ACAD-EARLSWOOD-FIRE-TRAINING-CENTRE

Rev: R1

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B Proposed site layout



DRAWING NO 41-211-2007 41-221-16 SS EN 19019560	1132 Project - Originator	Volume	Level	Type	Role	Number	REVISION
	19550 Project - Originator	Functional	Spatial	Form	Discipline	Number	
	Breakdown Breakdown						
EFT-LAW-X-X-DR- A-061001 P0							
DO NOT SCALE	Any discrepancy or query concerning this drawing should be referred to the Architect						
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