Minffordd Quarry Materials Processing Area, Penrhyndeudraeth

Flood Consequences Assessment & Drainage Statement

March 2024

Waterco

Assessment | Modelling | Design

Project Information	
Project:	Minffordd Quarry Materials Processing Area
Report Title:	Flood Consequences Assessment & Drainage Statement
Client:	Hochtief (UK) Construction Ltd
Instruction:	The instruction to undertake this Flood Consequences Assessment & Drainage Statement was received from David Grantham of Hochtief (UK) Construction Ltd.
File Ref:	C0233-OTH-GES-XX-AS-X-0001 P01 - FCA Quarry Processing

Approval Record	
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Document History		
Revision	**Date**	**Comment**
01	08/03/2024	First issue

This report will remain valid for a period of twelve months (from the date of last issue) after which the source data should be reviewed in order to reassess the findings and conclusions on the basis of latest available information.

Contents

Appendices

Introduction

Waterco has been instructed to prepare a Flood Consequences Assessment (FCA) and Drainage Statement in relation to a proposed materials storage and processing area at Minffordd Quarry, Penrhyndeudraeth, Porthmadog, LL48 6HP.

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

The proposal is associated with the Eryri Visual Impact Provision (VIP) scheme which aims to reduce the visual impact of National Grid's overhead line across the Dwyryd Estuary by removing a section of overhead line and replacing it with electricity cables buried in a tunnel underground. The proposed materials storage and processing area at Minffordd Quarry will store and process arisings extracted from the tunnel.

The purpose of this report is to assess the risk of flooding to the site using a range of information sources. The following has been undertaken as part of the assessment:

- Assessment of the topographical, hydrological and hydrogeological setting through review of information sourced from the British Geological Survey, Natural Resources Wales (NRW) and the Ordnance Survey.
- Review of readily available (online) flood risk mapping provided by NRW.
- Review of the flood data produced as part of a hydraulic modelling assessment carried out by JBA Consulting on behalf of NRW doc. Ref. *Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (January 2014).*

Site Description and Setting

The site is located north of Porthmadog Bypass at National Grid Reference (NGR): 259170, 339045. A location plan and an aerial image are included in Appendix A.

Online mapping (including Google Maps / Google Streetview imagery, accessed March 2024) shows that the existing site comprises an access road, storage area, car parking and an office/ welfare building associated with Minffordd Quarry. The proposed materials storage and processing area will be located in the western extent of the site with the existing access road and welfare facilities which fall within the application boundary retained.

The site is part of an existing working quarry and is bordered by the quarry workings to the north and west, agricultural land to the east and Porthmadog Bypass to the south. The Afon Glaslyn is located approximately 100m west of the site.

Local Topography

Topographic levels to metres Above Ordnance Datum (m AOD) have been derived from a 1m resolution Natural Resources Wales (NRW) composite 'Light Detecting and Ranging' (LiDAR) Digital Terrain Model (DTM). The LiDAR data shows that the location of the proposed materials storage and processing area is situated between 3.5m AOD and 2.8m AOD. The existing site access road is situated between 6m AOAD and 7m AOD with the existing welfare facilities situated at approximately 5.5m AOD. A LiDAR extract is provided as Appendix B.

Ground Conditions

Published Geology

The British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the majority of the site is underlain by superficial deposits of Alluvium, comprising of clay, silt, sand and gravel. The superficial deposits are identified as being underlain by bedrock of the Dol-Cyn-Afon Formation comprising of mudstone and siltstone.

The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a site-specific basis.

Local Drainage

Anecdotal information from the Client suggests that the location of the proposed materials storage and processing area does not currently benefit from a formal drainage system. Surface water from this area infiltrates to ground.

The nearest public sewer is located in Minffordd, approximately 300m south of the site.

Staff welfare facilities are currently available in the existing quarry office building in the eastern extent of the site.

Development Proposals

Proposals include the storage and processing of imported material (tunnel arisings). A plan identifying the site area is included in Appendix C.

The area proposed for storage and processing of imported material is currently used for storage and equipment parking associated with the quarry.

The storage and processing of imported material (tunnel arisings) is expected to take place over a period of 2 – 3 years. Once the operation is complete, the site will be returned to its current use.

Flood Zone Category and Policy Context

Flood Zone Category

The Welsh Government Development Advice Map, included in Appendix D, shows that the site is located within Flood Zone C2 and Flood Zone B. Flood Zone C2 is defined as an area considered to be at flood risk, without significant defence infrastructure, with a greater than 0.1% (1 in 1000) annual probability of flooding. Flood Zone B is defined as an area known to have flooded in the past, as evidenced by superficial deposits.

The NRW 'Flood Map for Planning - Rivers' (Appendix D), shows that the site is located within an area outside of the extreme flood extent (Flood Zone 1), meaning it has a less than 0.1% annual probability of flooding from rivers, including the effects of climate change.

The NRW 'Flood Map for Planning – Sea' (Appendix D) shows that the site is located within Flood Zone 3 – an area considered to have a greater than 0.5% (1 in 200) annual probability of tidal flooding, including the effects of climate change.

Development Vulnerability Classification

The proposed development is considered to be 'less vulnerable' development in accordance with Figure 2 of the Welsh Government's Technical Advice Note 15 – Development and Flood Risk (TAN15).

TAN15 states that less vulnerable development is acceptable within Flood Zone C2 subject to satisfying specific TAN15 acceptability criteria. It is noted that the site is an existing working quarry, and as such, less vulnerable development is already established at the site.

Sources of Flooding and Probability

Fluvial

The Afon Glaslyn is located approximately 110m west of the site and flows south-west in this location. Other watercourses in this area include an unnamed watercourse which is located approximately 45m south of the site and south of Porthmadog Bypass. The unnamed watercourse flows west and joins the Afon Glaslyn.

The Afon Glaslyn flows into the Dwyryd Estuary approximately 1.9km south-west of the site. Tide gates on the confluence of the Afon Glaslyn and Dwyryd Estuary limit the tidal impact on the Afon Glaslyn. However, when the tide gates are shut, fluvial flows in the Afon Glaslyn disperse upstream of the tidal gate across a large floodplain area downstream of the site (downstream of the Porthmadog Bypass Road Bridge).

The NRW 'Flood Map for Planning – Rivers' (Appendix D) shows that the site is located outside of the fluvial flood extent, meaning it has a less than 0.1% annual probability of flooding, including the effects of climate change.

A detailed hydraulic modelling study of the Afon Glaslyn was completed by JBA Consulting on behalf of NRW in January 2014 which assessed flood risk during the following fluvial return periods and scenarios:

- Defended and undefended events for the 1% Annual Exceedance Probability (AEP) plus 30% climate change (CC) and 0.1% AEP return periods. A defended event includes flood defences. An undefended event represents a removal of all flood defences in the model.

- Tidal gate blockage. Two blockage scenarios were considered, a 100% blockage of the River Glaslyn Tidal Gates and a 100% blockage of the 'Y Cyt Tidal Gate', both during the 1% AEP plus 30% CC event.

The model outputs have been processed to create flood depth and extent mapping provided as Appendix E.

As shown on the model outputs (Appendix E), the site is flood free during all events up to and including the 0.1% AEP defended and undefended events.

When considering a 100% blockage of the Afon Glaslyn Tidal Gates and a 100% blockage of the 'Y Cyt Tidal Gate', the site is flood free during all events up to and including the 1% AEP plus 30% CC event. Figures 1 and 2 show the flood extent during the 0.1% AEP defended event and during the 1% AEP plus 30% CC Afon Glaslyn Tidal Gates blockage event.

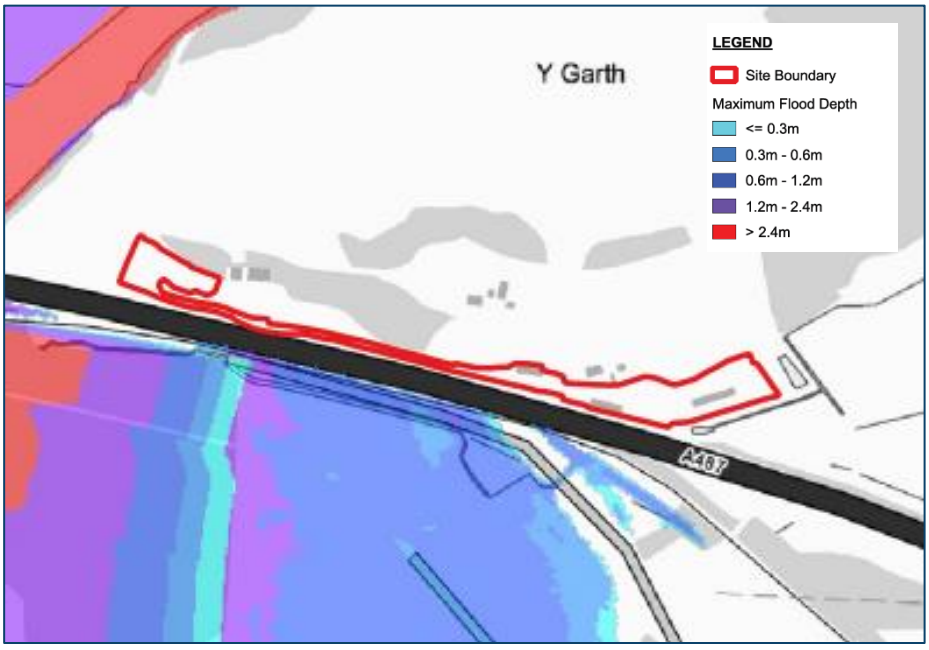

Figure 1 - Maximum Flood Depth - 0.1% AEP Fluvial Event - Defended

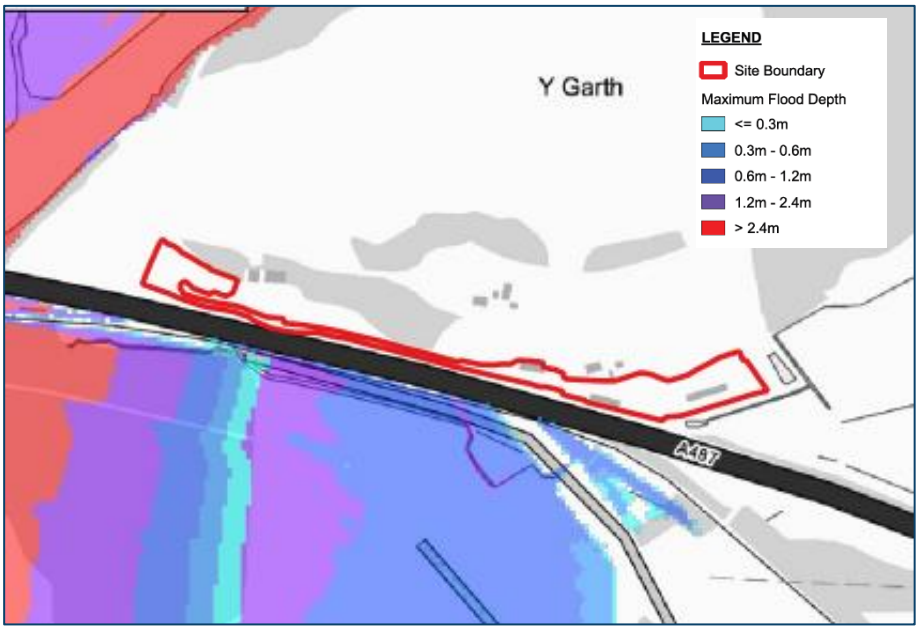

Figure 2 - Maximum Flood Depth - 1% AEP + 30% CC - 100% blockage of Afon Glaslyn Tidal Gates

It can therefore be concluded that the risk of fluvial flooding is very low.

Tidal

The NRW 'Flood Map for Planning – Sea' (Appendix D) shows that the site is located within Flood Zone 3 – an area considered to have a greater than 0.5% (1 in 200) annual probability of tidal flooding, including the effects of climate change. The NRW 'Flood Map for Planning – Sea' accounts for 100 years climate change (significantly beyond the lifetime of the development).

Tidal flood risk was also assessed as part of the detailed hydraulic modelling study completed by JBA Consulting on behalf of NRW in January 2014.

Modelled outputs include:

- Tidal (defended and undefended) for the 0.5% AEP and 0.1% AEP present day (2014) events. Modelled outputs are available for the 0.5% AEP plus CC event. A climate change allowance up to the year 2062 (shortest climate change duration considered in the modelling) has been considered. The development lifetime is 2-3 years.

- Tidal breach (a breach of the flood defences) for the 0.5% AEP and 0.5% AEP plus CC events. Multiple breach locations are considered.

- Tidal gate failure at the Glasyn tidal gates and 'Y Cyt' tidal gates for the 0.5% AEP and 0.5% AEP plus CC events.

Modelled outputs including flood depth and extent mapping are included in Appendix E.

Tidal (Defended and Undefended)

The site is shown to be flood free during the 0.5% AEP plus CC (year 2062) and 0.1% AEP (present day) events. An extract of the flood extent for the 0.5% AEP plus CC (year 2062) event is provided as Figure 3.

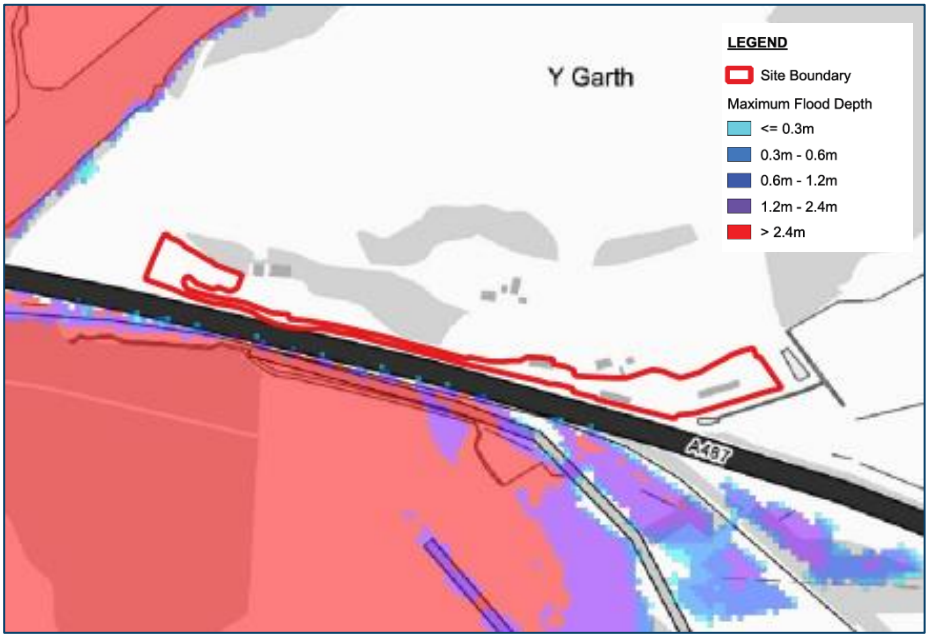

Figure 3 - Maximum Flood Depth – 0.5 AEP + CC (year 2062) Tidal Event - Undefended Scenario

Tidal Breach

For the breach events, three locations have been considered: Main Cob, Traeth side and Townward side. The individual breach locations are shown on the modelled outputs in Appendix E. As shown on the modelled output mapping (Appendix E), the site is flood free during all considered tidal breach events up to and including the 0.5% AEP plus CC (year 2062) event.

Tidal Gate Failure

Two tidal gate failures have been considered as part of the modelling study (Y Cyt tidal gate and the Afon Glaslyn tidal gate) and a joint failure has also been considered. As shown on the modelled output mapping (Appendix E), the site is flood free during all considered tidal gate failure events up to and including the 0.5% AEP plus CC (year 2062) event.

It can therefore be concluded that the risk of tidal flooding is very low.

Surface Water

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

The NRW 'Risk of Flooding from Surface Water & Small Watercourses' map (Appendix D) shows that the majority of the site is at very low risk of surface water flooding, meaning it has a less than 0.1% annual

probability of flooding.

As shown in Figure 4, the western extent of the site and location of the proposed materials storage and processing area is shown within surface water Flood Zones 2 and 3. Surface water Flood Zone 3 is defined as an area at flood risk with a greater than 1% annual probability of flooding, including the effects of climate change. Surface water Flood Zone 2 is defined as an area at flood risk with between a 1% and 0.1% annual probability of flooding, including the effects of climate change.

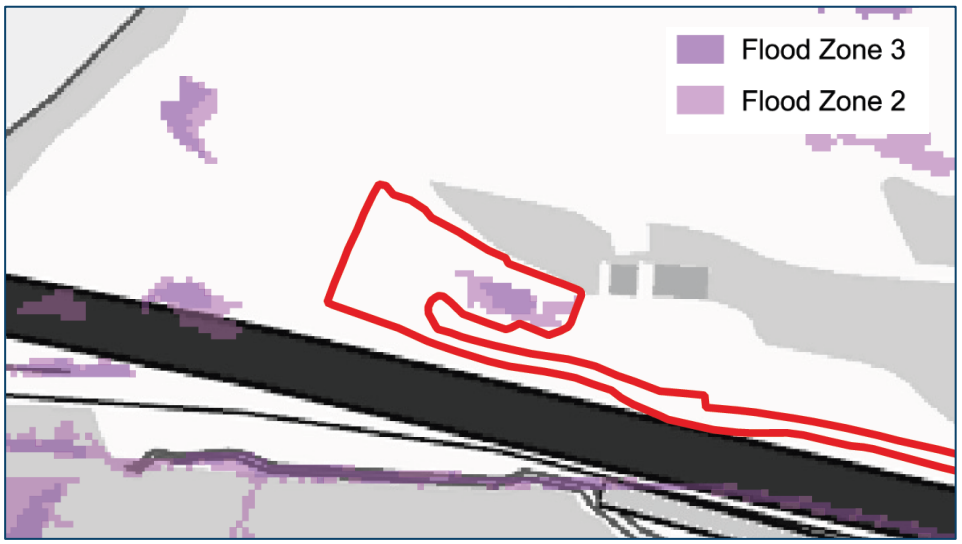

Figure 4 – NRW Surface Water Flood Zones

The surface water flooding identified on NRW flood mapping is associated with rainfall ponding within an isolated topographical low point. There are no distinct flow routes in this area which would direct any potential surface water flooding towards the site.

There are no records of surface water flooding affecting the site.

It can be concluded that the majority of the site is at very low risk of surface water flooding. However, a risk of surface water ponding during extreme rainfall events remains to the proposed materials storage and processing area.

Groundwater

Groundwater flooding occurs when water levels underneath the ground rise above normal levels. Prolonged heavy rainfall soaks into the ground and can cause the ground to become saturated. This results in rising groundwater levels which leads to flooding above ground.

There are no records of groundwater flooding at or near to the site. The Western Wales River Basin District Preliminary Flood Risk Assessment Report (PFRA) (NRW, December 2018) states that the geology (underlying rock type) and topography (steep sided valleys) mean that groundwater flooding is very unlikely to occur. Since 2011, there have been no recorded events of groundwater flooding within the Western Wales River Basin District.

It can therefore be concluded that the risk of groundwater flooding is very low.

Artificial Sources

There are no canals in the immediate vicinity of the site. The NRW 'flood Risk from Reservoirs' map (Appendix D) shows that the site is not at risk of flooding from reservoirs.

It can therefore be concluded that the risk of flooding from artificial sources is very low.

Summary of Potential Flooding

The risk of fluvial and tidal flooding is very low over the lifetime of the development. A risk of surface water flooding associated with rainfall ponding within an isolated topographical low point remains to the proposed materials storage and processing area. The associated risk has been used to inform mitigation measures.

Mitigation

No new buildings or fixed structures are proposed within the surface water flood extent. In order to minimise the consequences of a surface water flooding event (from rainfall ponding in an isolated low point), all plant / machinery susceptible to flood damage should be stored outside of the surface water flood extent identified on NRW mapping, where possible. Alternatively, the following mitigation measures could be applied:

- Any plant which is susceptible to flood damage could be set on raised plinths / supports above surrounding ground levels (600mm above ground level).
- The ground levels in the location of the proposed materials storage and processing area could be raised (with permeable materials) as to remove the topographical low point, therefore removing the risk of rainwater ponding.

Impact Elsewhere

No new buildings or fixed structures are proposed. The site is flood free during all considered tidal and fluvial flood events and therefore does not provide a flood storage function. As such, the proposed development will not increase flood risk elsewhere.

Surface Water Management and Foul Drainage

Surface Water

No new hardstanding or fixed structures are proposed. The proposed materials storage and processing area will be formed with permeable hardstanding (maintaining the existing permeable surfacing). Surface water will therefore continue to infiltrate to the ground as per the existing situation.

Foul Drainage

No new foul drainage infrastructure is proposed. The existing toilets in the quarry site offices in the eastern extent of the site will be utilised.

Conclusions

Proposals include the storage and processing of imported material (tunnel arisings). The area proposed for storage and processing of imported material is currently used for storage and equipment parking associated with the quarry. The storage and processing of imported material (tunnel arisings) is expected to take place over a period of 2 – 3 years. Once the operation is complete, the site will be returned to its current use.

The NRW 'Flood Map for Planning – Rivers' shows that the site is located outside of the fluvial flood extent, meaning it has a less than 0.1% annual probability of flooding, including the effects of climate change. Detailed modelled outputs for the Afon Glaslyn have been obtained from NRW and confirms that the site is flood free during all fluvial events up to and including the 1% AEP plus 30% CC and 0.1% AEP events.

The NRW 'Flood Map for Planning – Sea' shows that the site is located within Flood Zone 3 – an area considered to have a greater than 0.5% (1 in 200) annual probability of tidal flooding, including the effects of climate change. However, detailed modelled outputs for the tidal Afon Glaslyn have been obtained from NRW and show that the site is flood free during all tidal events up to and including the 0.5% AEP plus climate change (up to the year 2062) event. The site is also flood free when accounting for a breach of the tidal flood defences and a failure of the tidal flood gates.

The western extent of the site and location of the proposed materials storage and processing area is shown within surface water Flood Zones 2 and 3. The surface water flooding identified on NRW flood mapping is associated with rainfall ponding within an isolated topographical low point. There are no distinct flow routes in this area which would direct any potential surface water flooding towards the site.

In order to minimise the consequences of a surface water flooding event (from rainfall ponding in an isolated low point), all plant / machinery susceptible to flood damage should be stored outside of the surface water flood extent identified on NRW mapping, where possible. Alternatively, the following mitigation measures could be applied:

- Any plant which is susceptible to flood damage could be set on raised plinths / supports above surrounding ground levels (600mm above ground level).
- The ground levels in the location of the proposed materials storage and processing area could be raised (with permeable materials) as to remove the topographical low point, therefore removing the risk of rainwater ponding.

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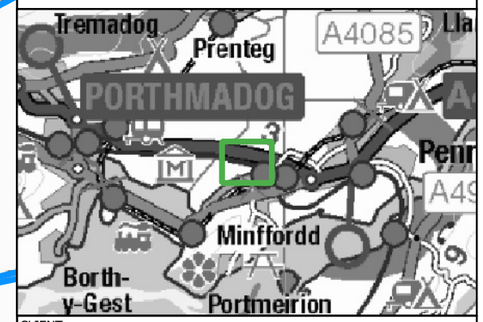
Appendix A Location Plan and Aerial Image

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Watercourses
- Waterbodies



CLIENT:
Hochtief (UK) Construction Ltd

www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
Location Plan

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:2500

PLOT NAME:	REVISION:
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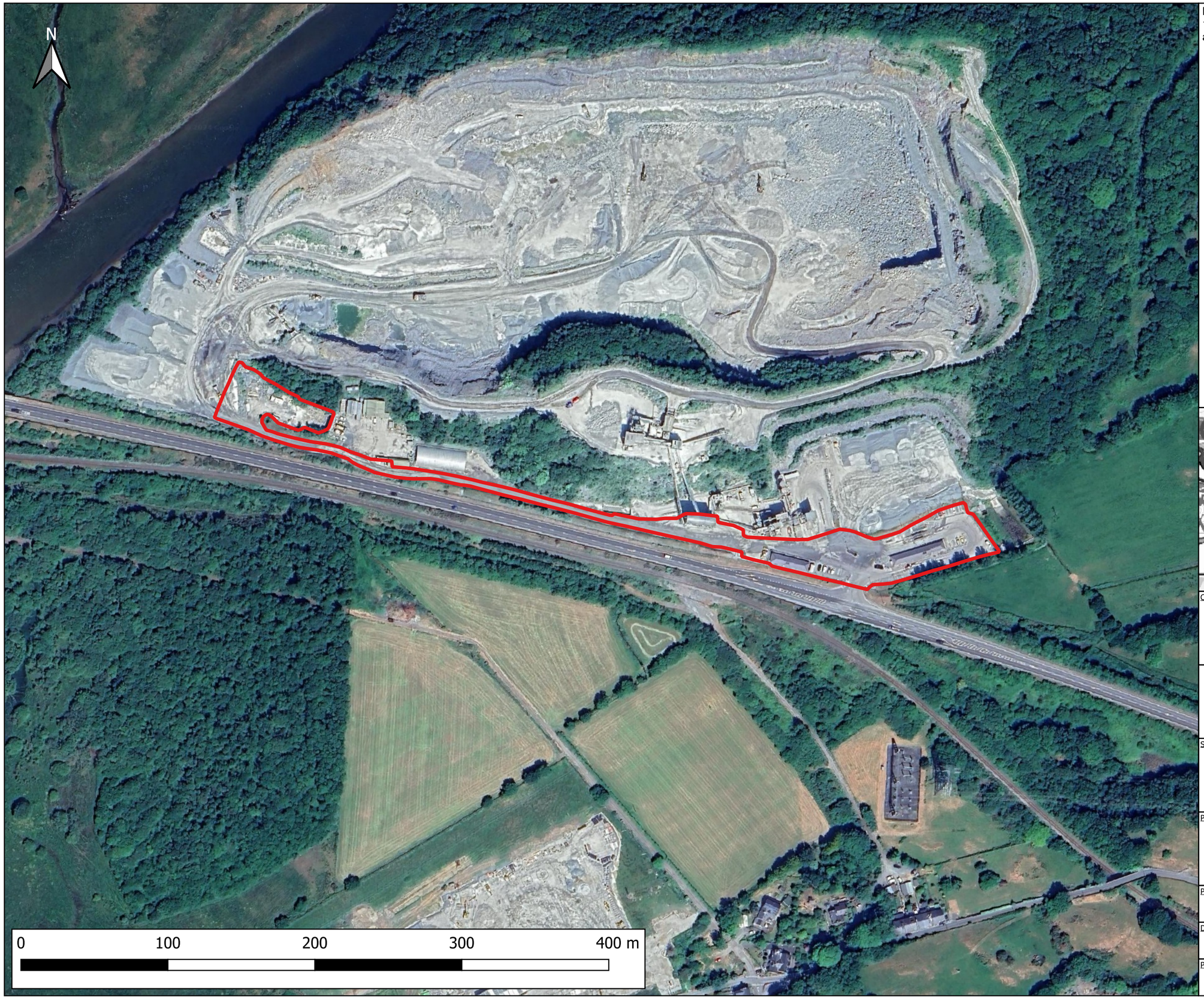
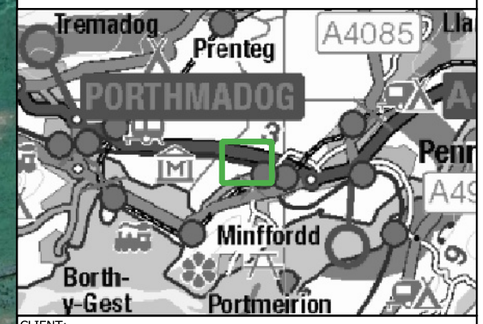


Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

Site Boundary



CLIENT:

Hochtief (UK) Construction Ltd

waterco

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SCHEME:

Minffordd Quarry Materials Processing Area

PLOT TITLE:

Aerial Plan

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:2500

PLOT NAME:	REVISION:
15055_Aerial_Plan	-

Appendix B LiDAR Extract

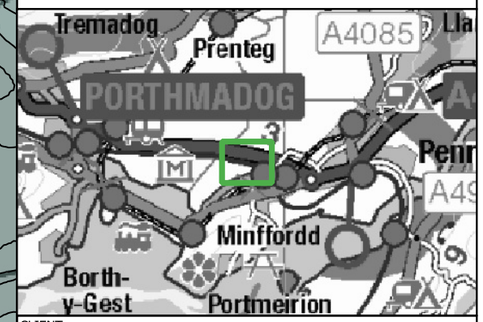
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Site Levels (m AOD)

Ground Elevations (m AOD)

- <= 0
- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- 16 - 18
- 18 - 20
- 20 - 22
- 22 - 24
- 24 - 26
- > 26



CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
LiDAR Plan
1m Resolution
Data from Natural Resources Wales

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:2500

PLOT NAME:	REVISION:
15055_LiDAR_Plan	-

Appendix C Development Plans


N
Legend
Application Boundary
Spreads
Collects
Issues
Path (um)
CR
Ford
FB
Drain
Mile Post
118
0
50
100
© Crown copyright and database rights
2024 Ordnance Survey 0100031673
BREEDON
Minffordd Quarry
Application Boundary
Drawn by: MC/caw
Date: 19-02-2024
Scale @ A3 - 1:2 500
Drawing No: 2024_02_19_M19_001 -
Revision:
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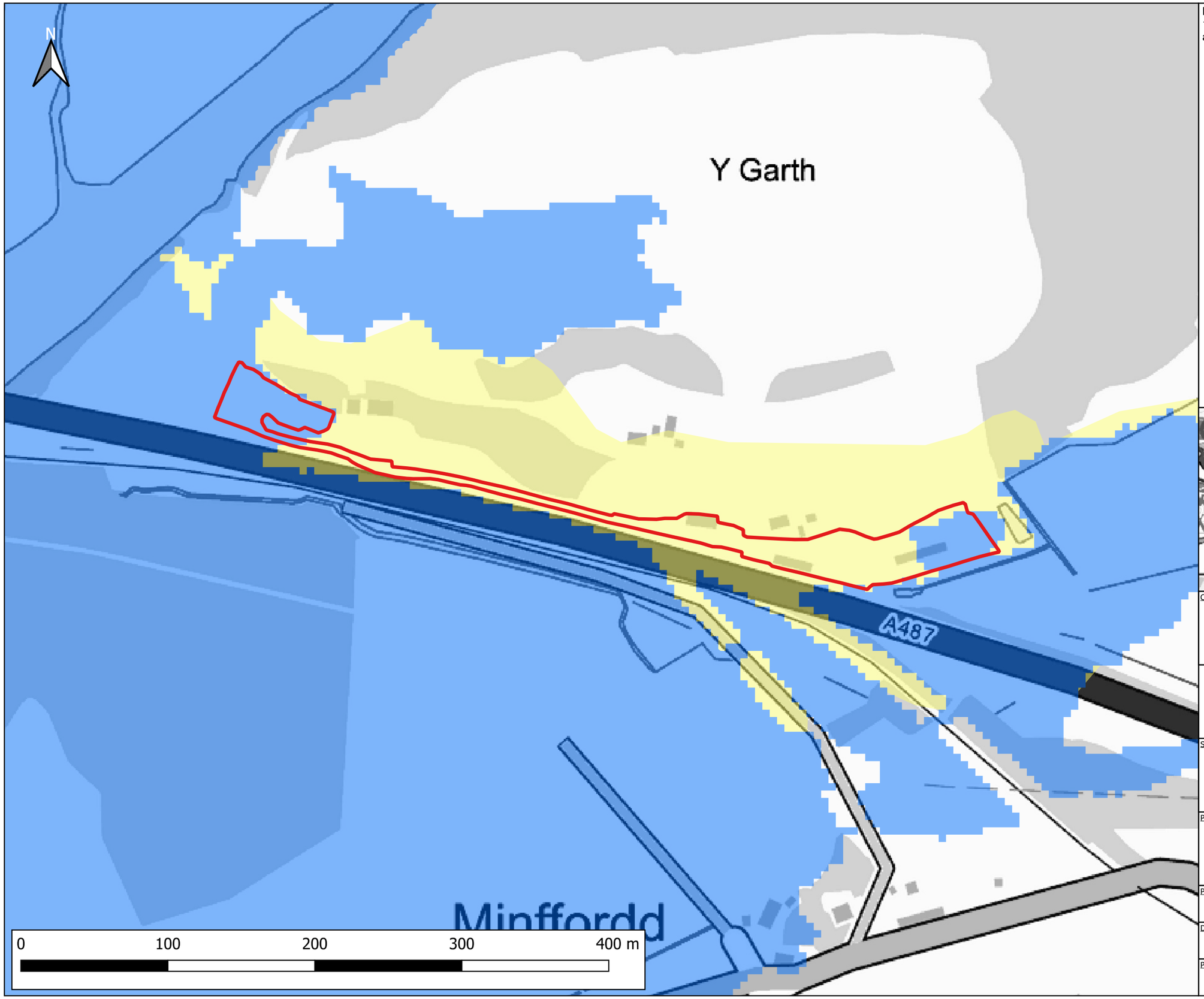
Appendix D NRW Flood Maps



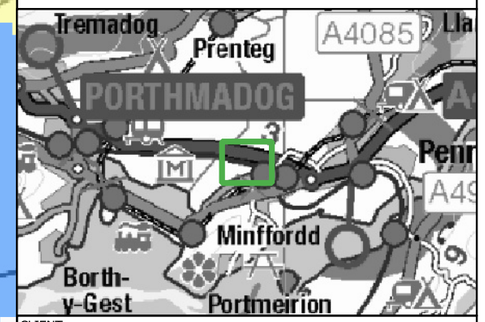
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary

Development Advice Map (TAN15)

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



CLIENT:
Hochtief (UK) Construction Ltd

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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
NRW Development Advice Map
Data Accessed February 2024
Data from DataMapWales

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
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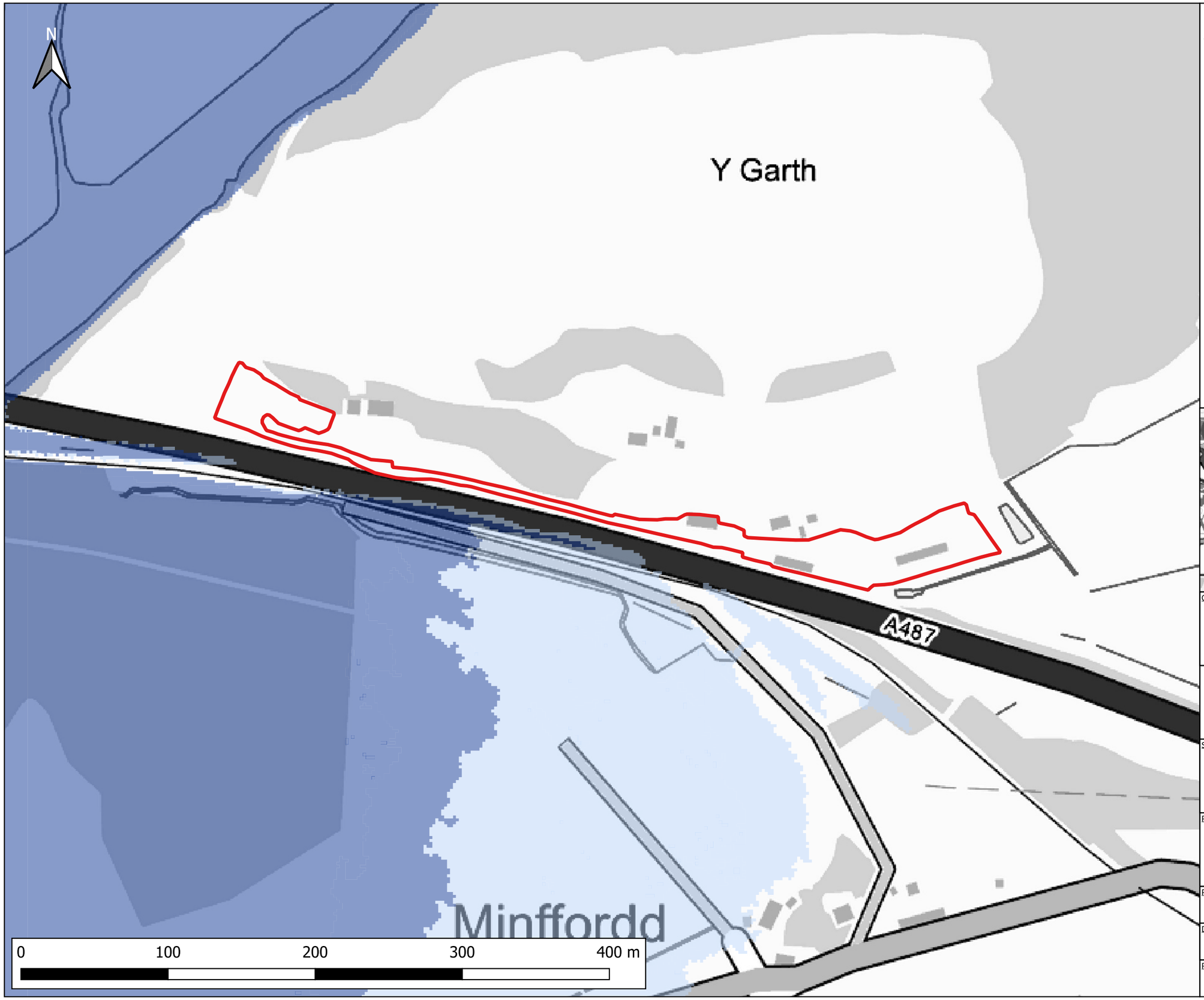


Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

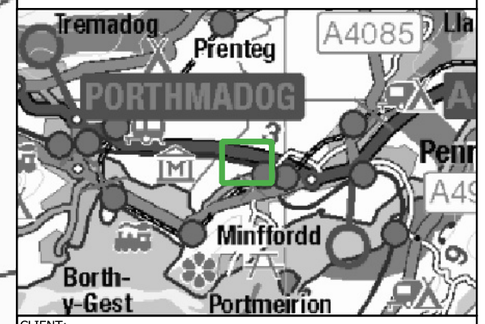
LEGEND

Site Boundary

NRW Flood Map for Planning - Rivers

Flood Zone 3

Flood Zone 2



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SCHEME:

Minffordd Quarry Materials Processing Area

PLOT TITLE:

NRW Flood Map for Planning - Rivers
Data accessed February 2024
Data from DataMapWales

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
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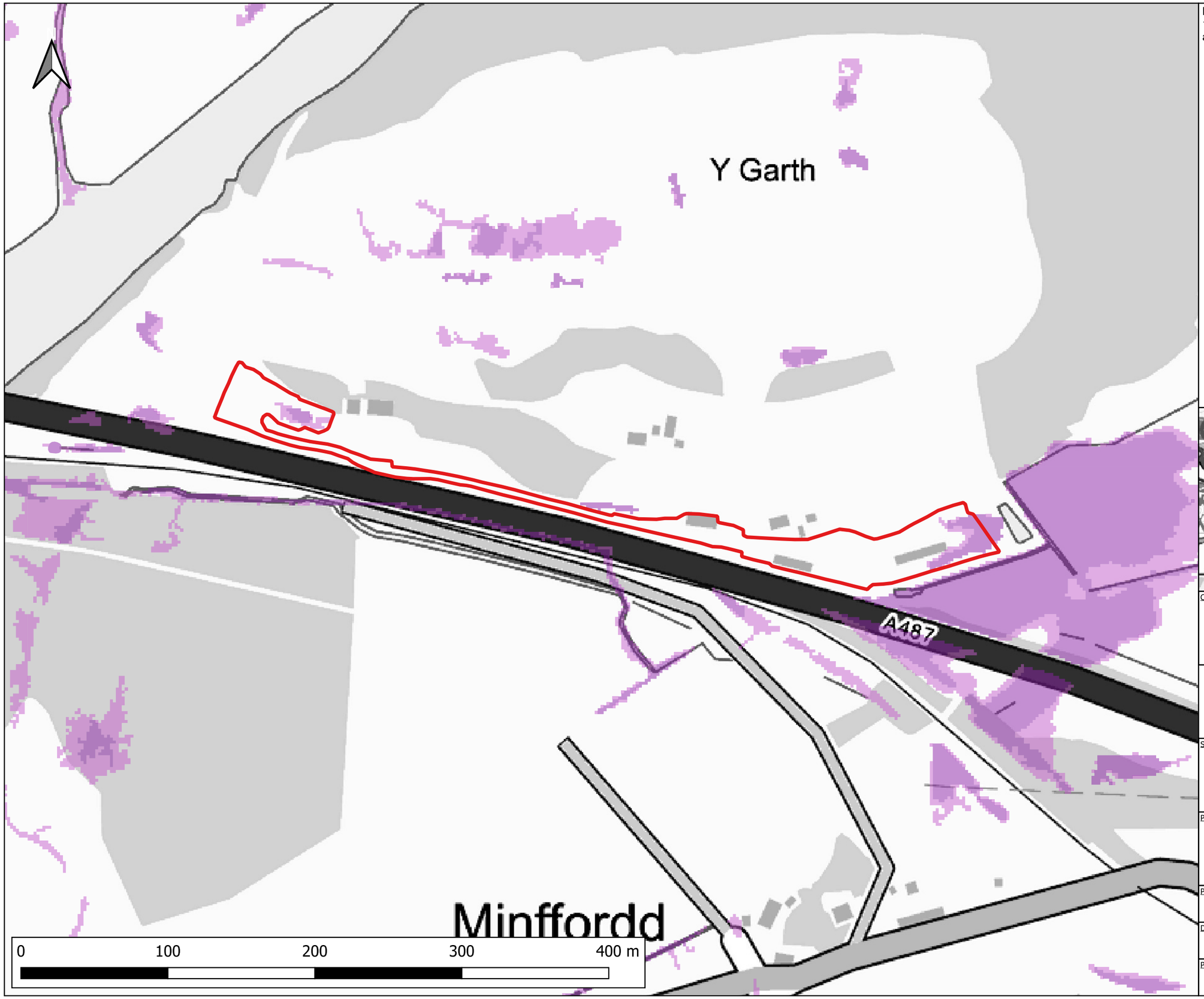


Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

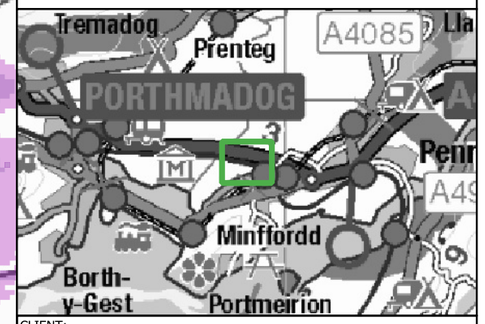
LEGEND

Site Boundary

NRW Flood Map for Planning - Surface Water and Small Watercourses

Flood Zone 3

Flood Zone 2



CLIENT:

Hochtief (UK) Construction Ltd

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SCHEME:

Minffordd Quarry Materials Processing Area

PLOT TITLE:

NRW Flood Map for Planning - Surface Water & Small Watercourses
Data accessed February 2024
Data from DataMapWales

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
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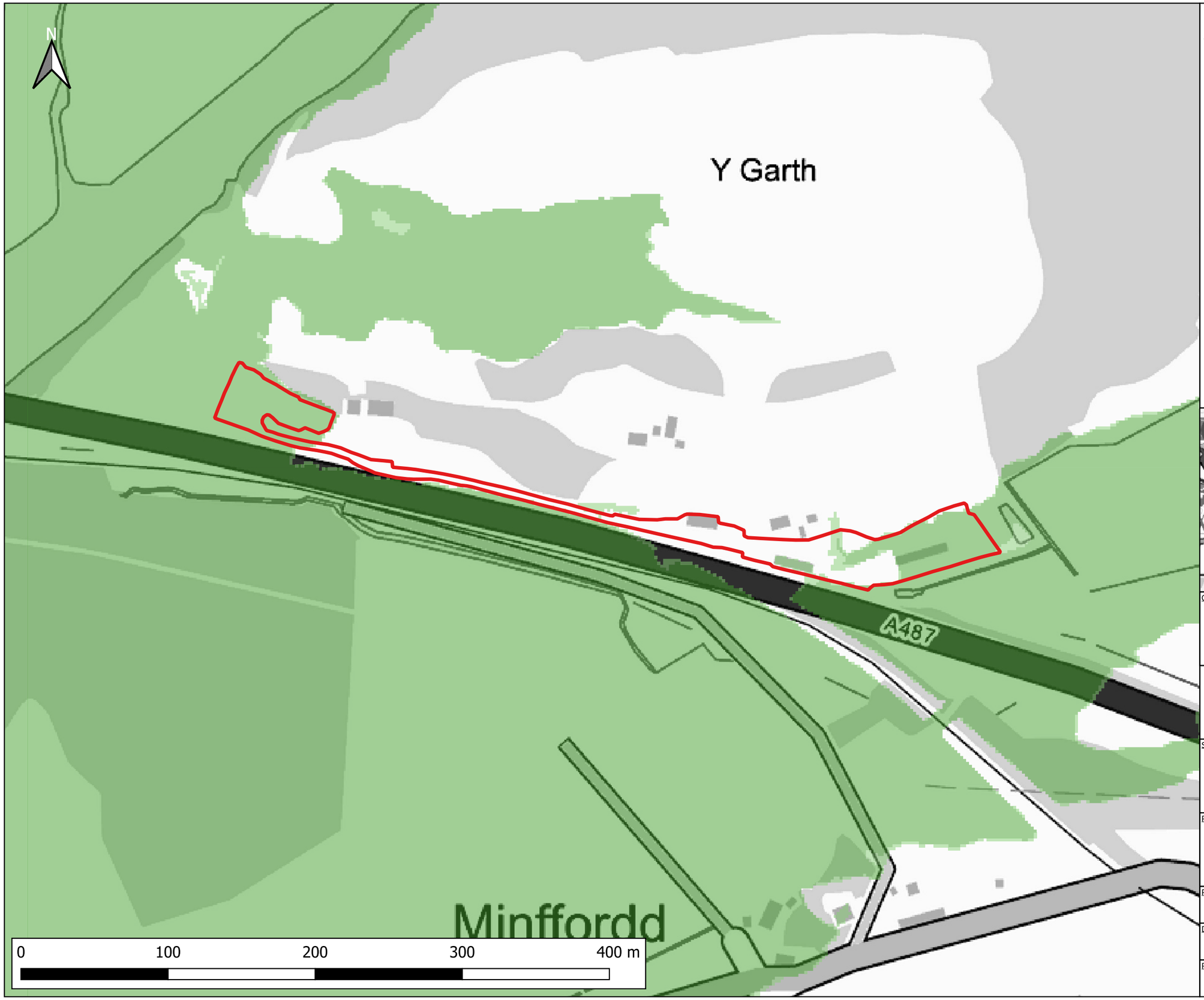

Notes:
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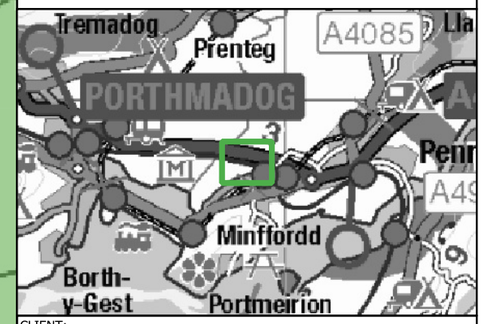
LEGEND

Site Boundary

NRW Flood Map for Planning - Sea

Flood Zone 3

Flood Zone 2



CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

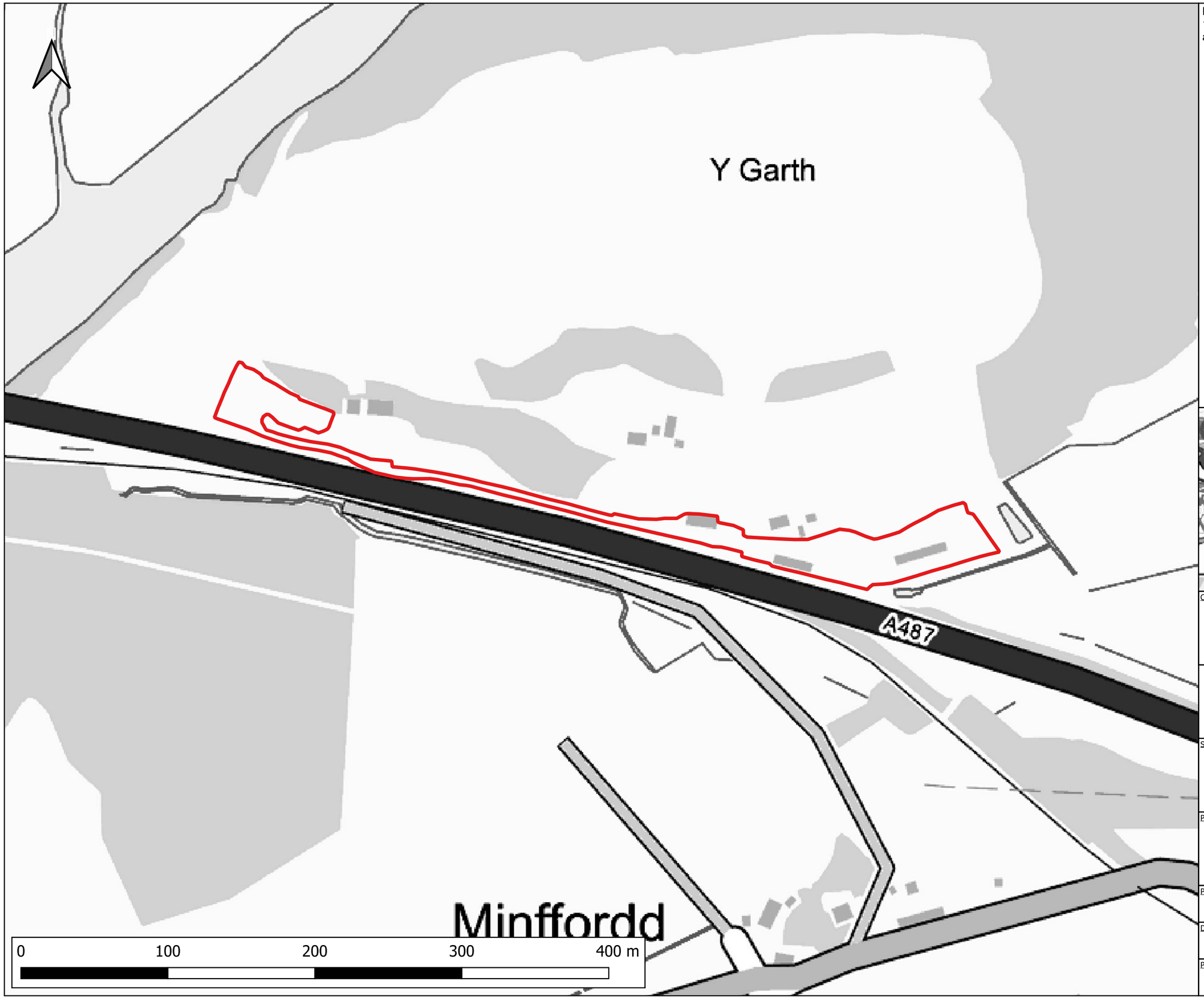
SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
NRW Flood Map for Planning - Sea
Data accessed February 2024
Data from DataMapWales

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:2500

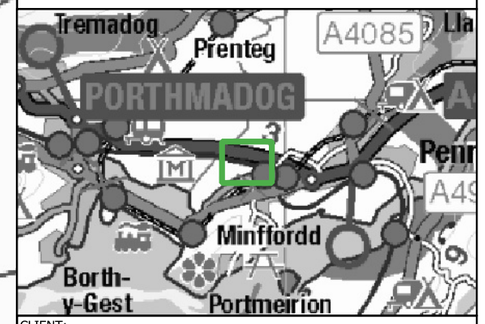
PLOT NAME:	REVISION:
15055_NRW_FmFP_Sea	-



Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- Risk of Flooding from Reservoirs - Extent



CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
NRW Flood Risk from Reservoirs
Data accessed February 2024
Data from DataMapWales

PLOT STATUS:	DATE:
FINAL	28-02-2024

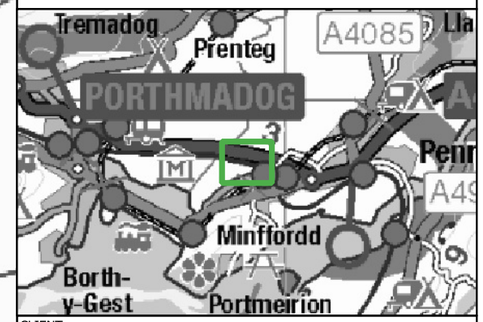
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:2500

PLOT NAME:	REVISION:
15055_NRW_Flood_Risk_from_Reservoirs	-

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary
- NRW Recorded Flood Extent



CLIENT:

Hochtief (UK) Construction Ltd

Waterco
www.waterco.co.uk

SCHEME:

Minffordd Quarry Materials Processing Area

PLOT TITLE:

NRW Historic Flood Risk
Data accessed February 2024
Data from DataMapWales

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:2500

PLOT NAME:	REVISION:
15055_NRW_Historic_Flood_Risk	-

Appendix E Modelled Outputs

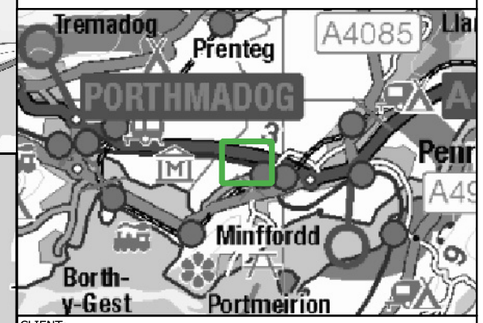
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

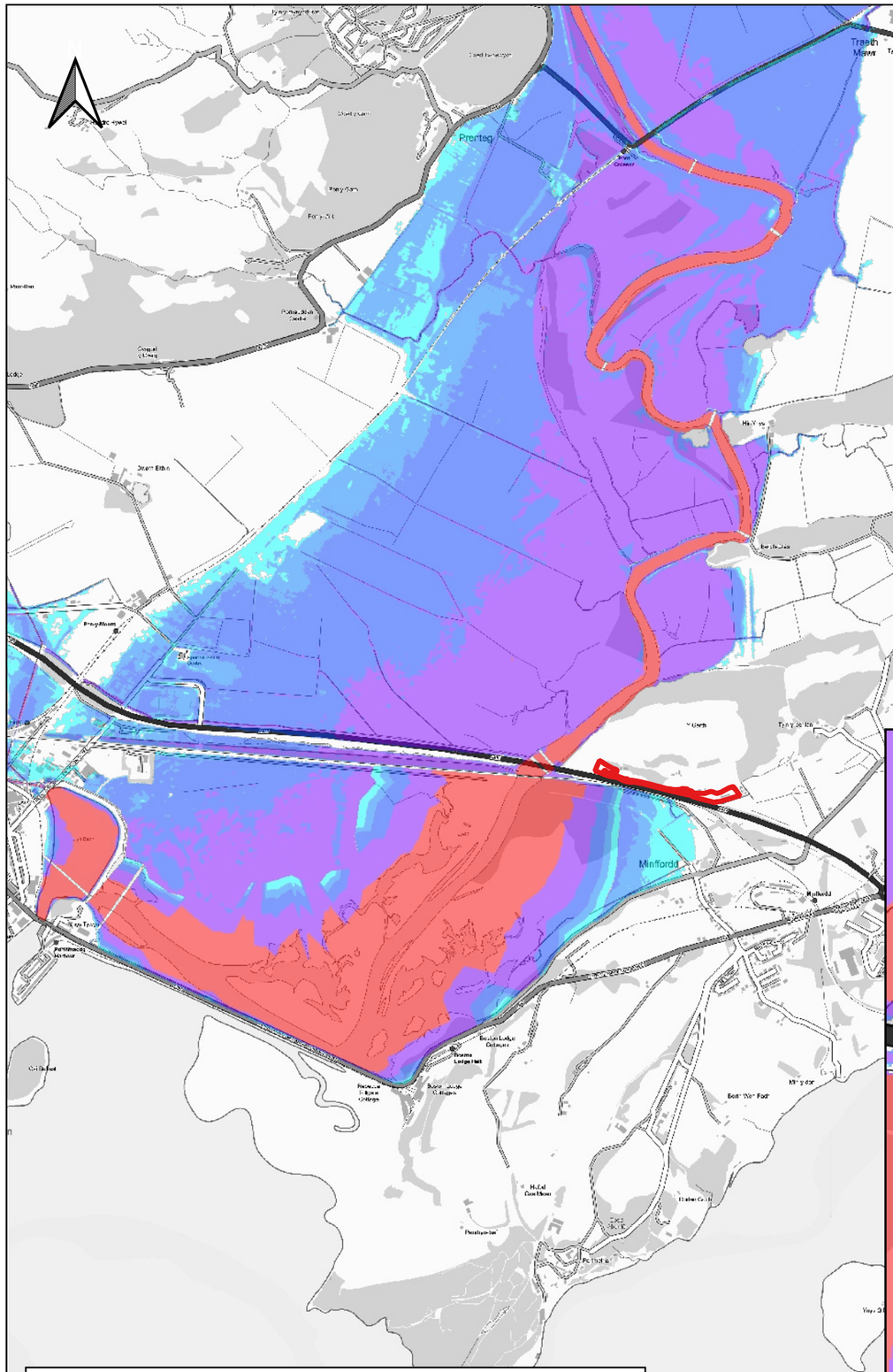
LEGEND

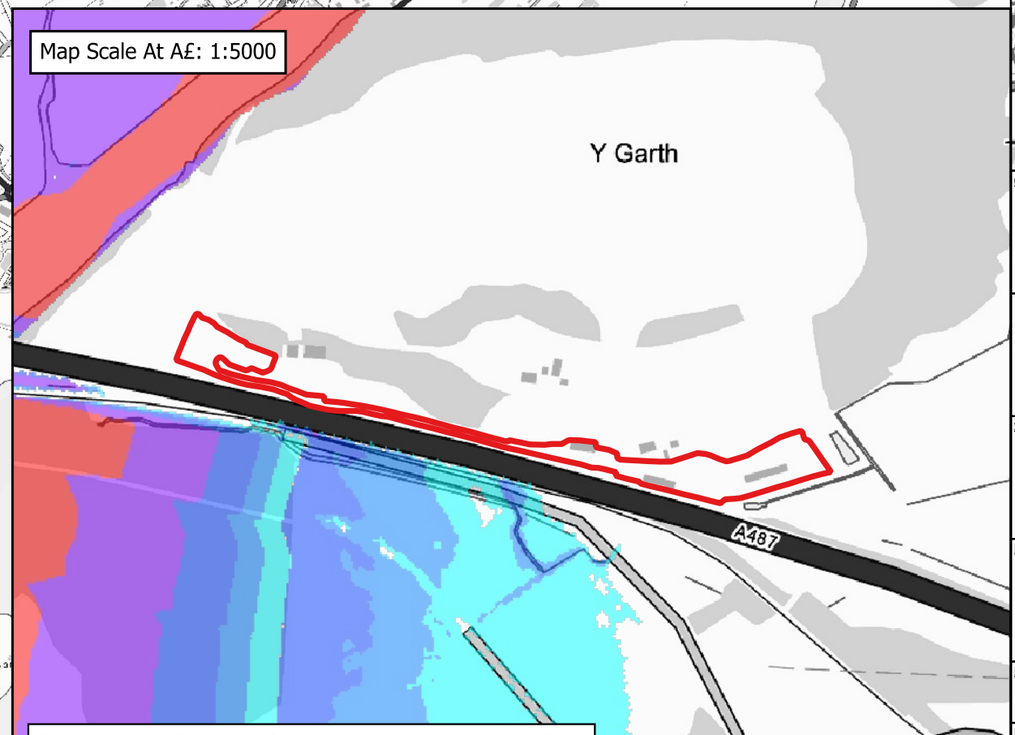
- Site Boundary

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m







CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
1% AEP PLUS 30% CLIMATE CHANGE (24HR) FLUVIAL EVENT
DEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_Q100CC_24HR_D_MAX	-

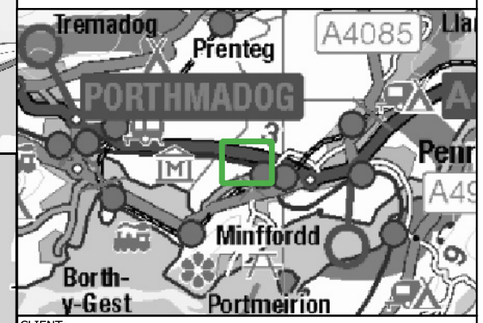
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

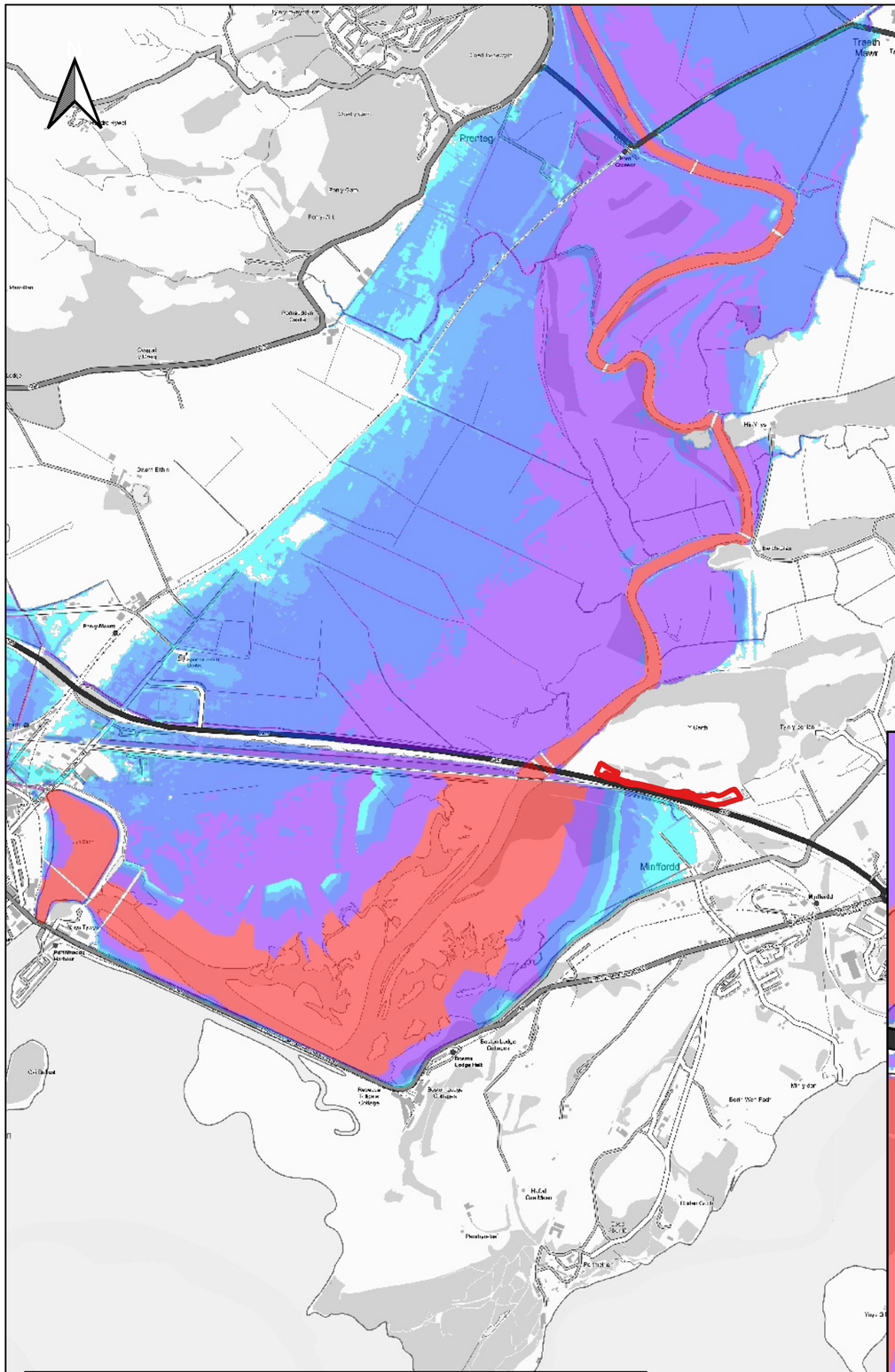
LEGEND

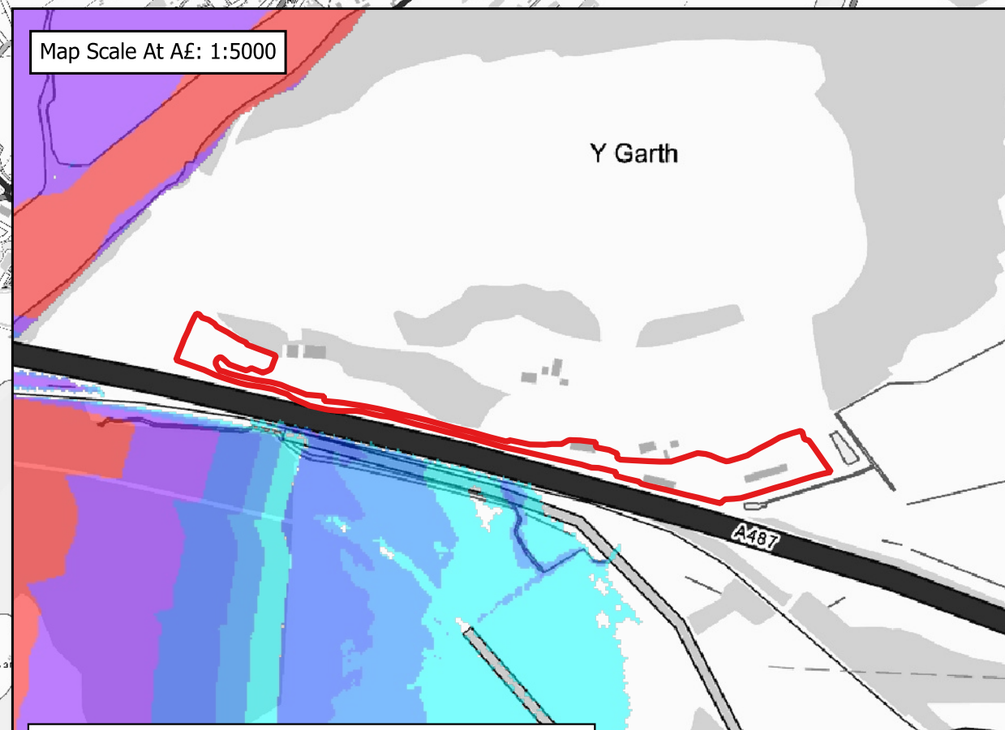
- Site Boundary

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m







CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
1% AEP PLUS 30% CLIMATE CHANGE (24HR) FLUVIAL EVENT
UNDEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_UNDEF_Q100CC_24HR_D_MAX	-

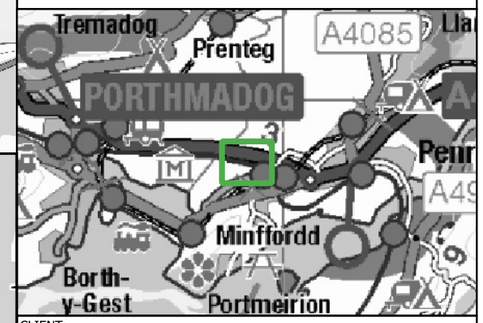
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

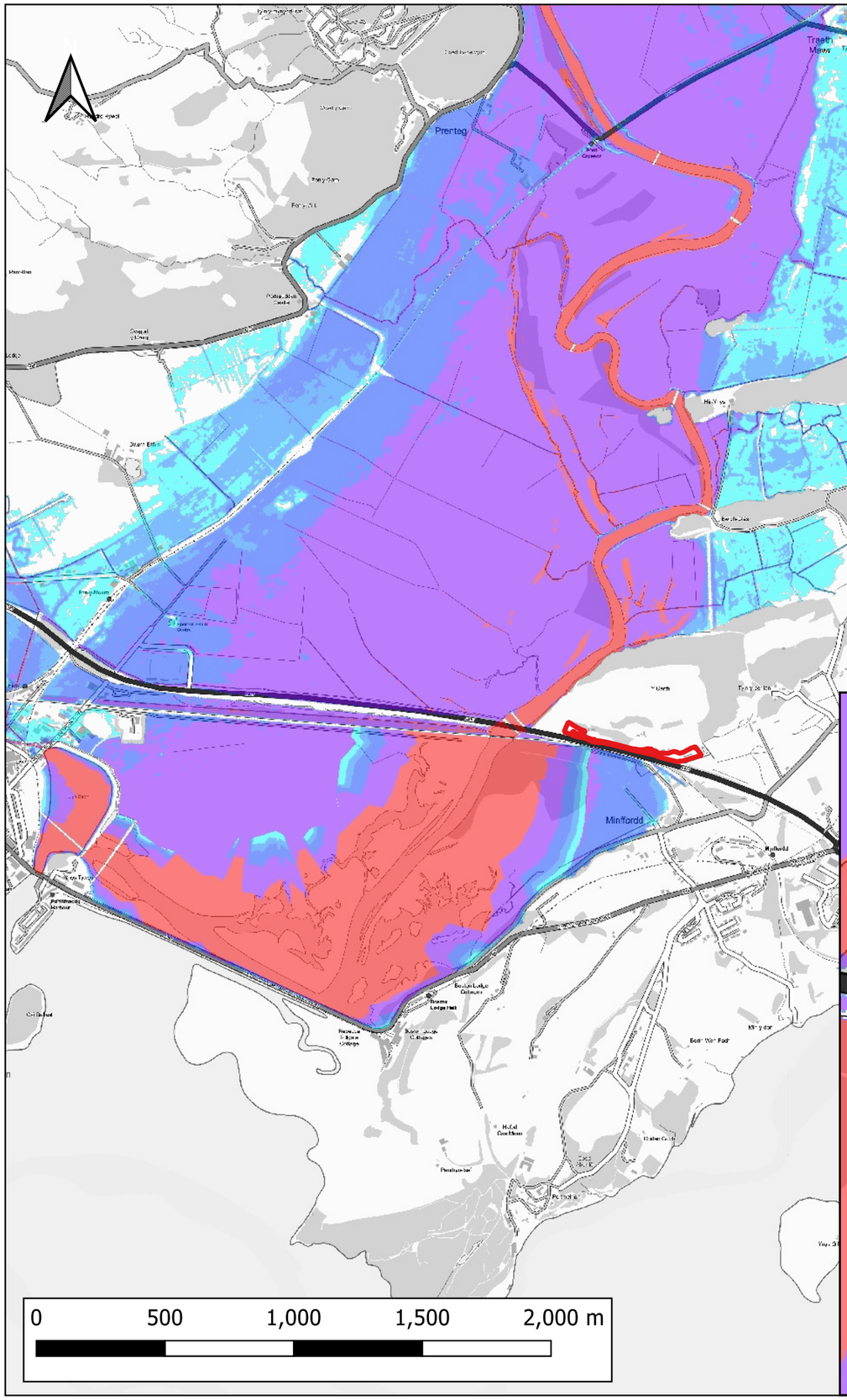
- Site Boundary

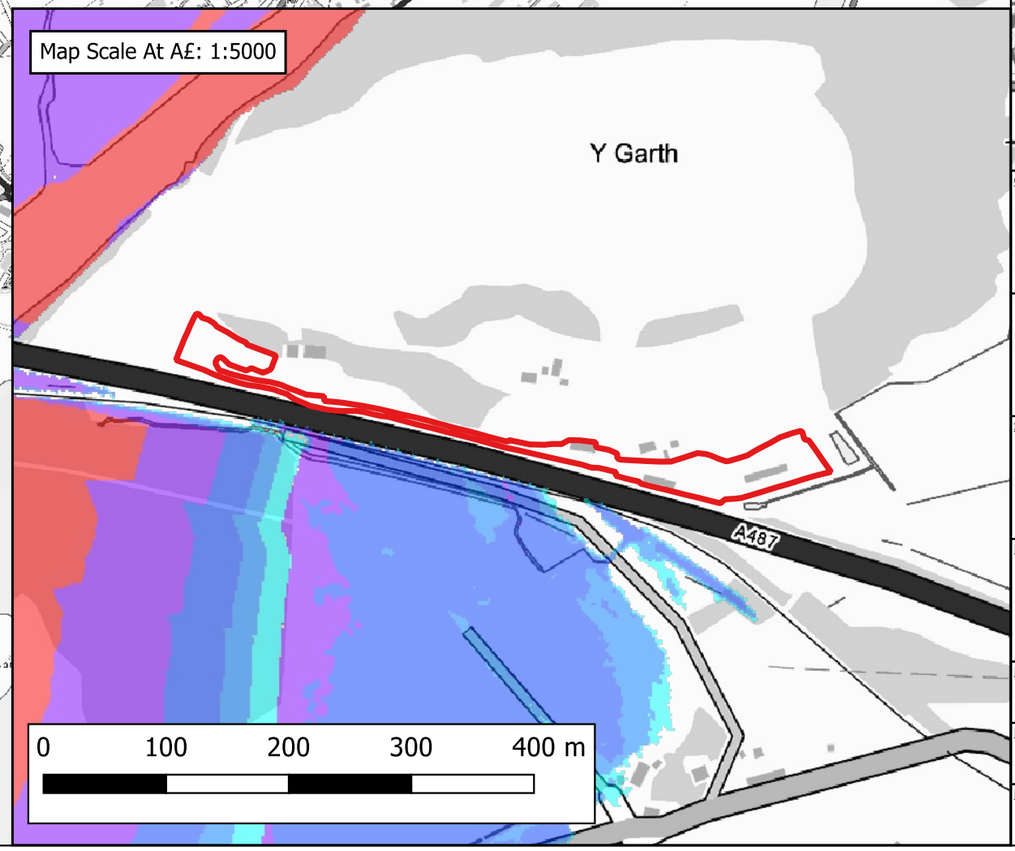
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.1% AEP (24HR) FLUVIAL EVENT
DEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_Q1000_24HR_D_MAX	-

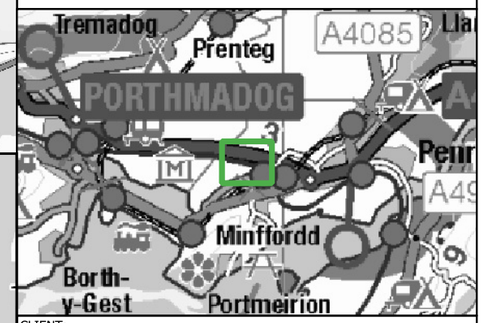
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.1% AEP (24HR) FLUVIAL EVENT
UNDEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_UNDEF_Q1000_24HR_D_MAX	-

Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m

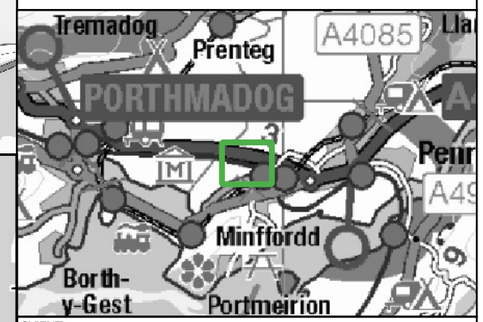
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

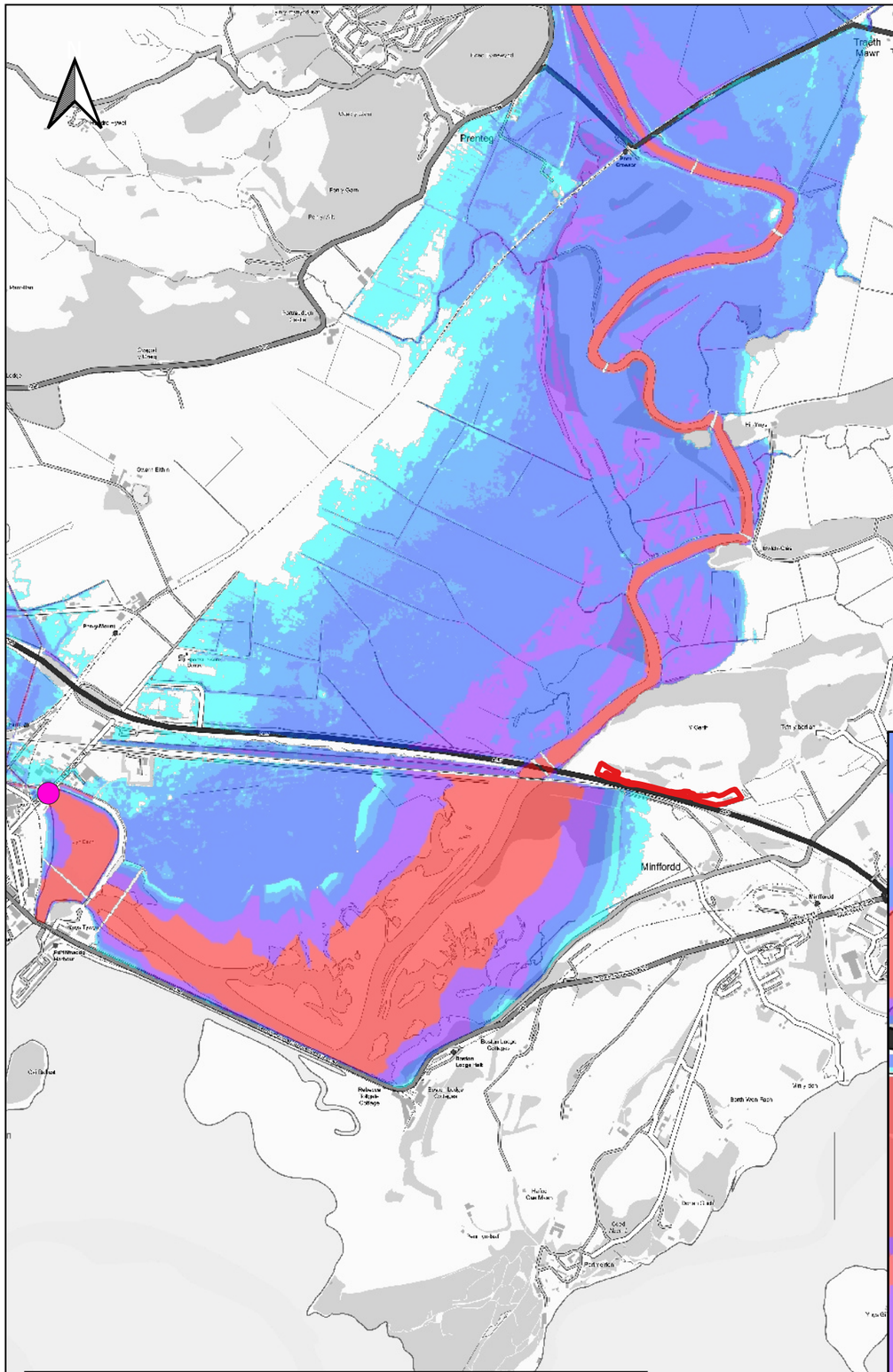
- Site Boundary
- Location of Y Cyt Tidal Gate

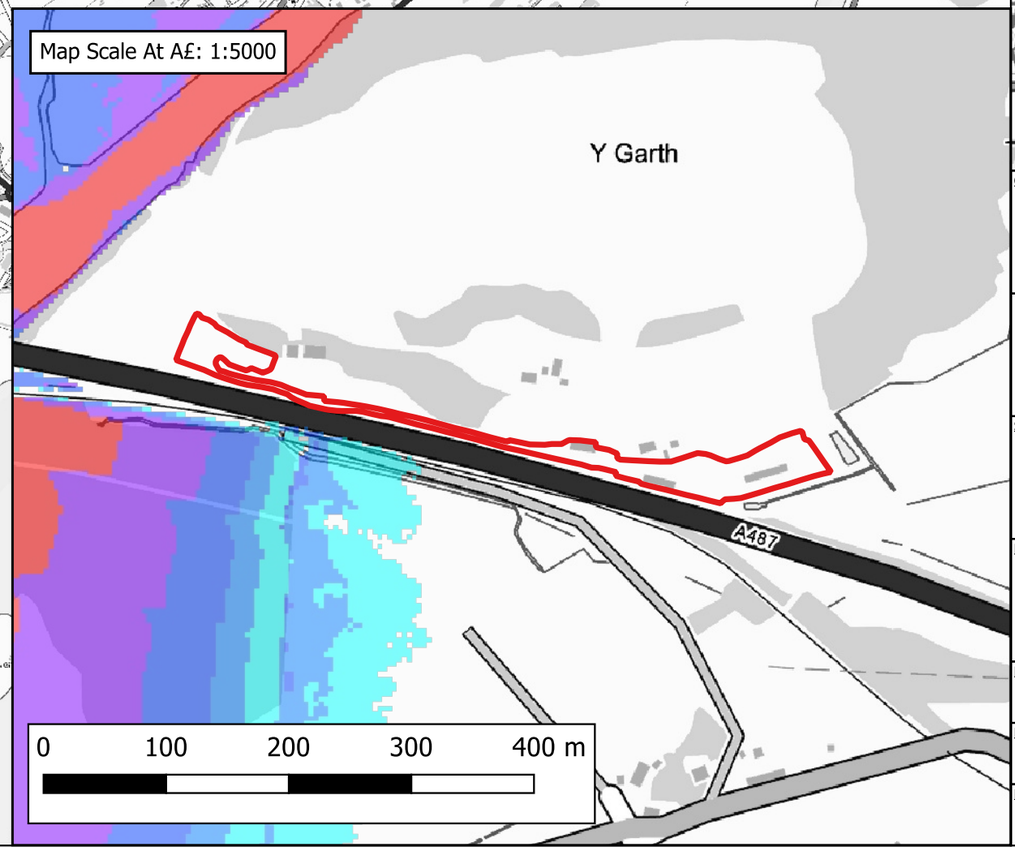
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





CLIENT:
Hochtief (UK) Construction Ltd

www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
1% AEP PLUS 30% CLIMATE CHANGE FLUVIAL EVENT
Y CYT TIDAL GATE HIGH (100%) BLOCKAGE SCENARIO

PLOT STATUS:			DATE:
FINAL			04-03-2024
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME: 15055_Y_CYT_100%_BLOCKAGE_DMAX_G004

REVISION: -

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of River Glaslyn Tidal Gates

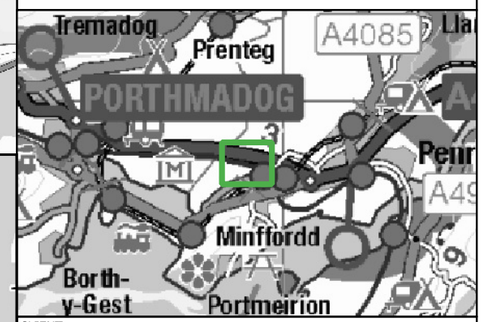
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m



CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
1% AEP PLUS 30% CLIMATE CHANGE FLUVIAL EVENT
RIVER GLASLYN TIDAL GATES (100%) BLOCKAGE SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_GLASLYN_100_BLOCKAGE_DMAX_G004	-

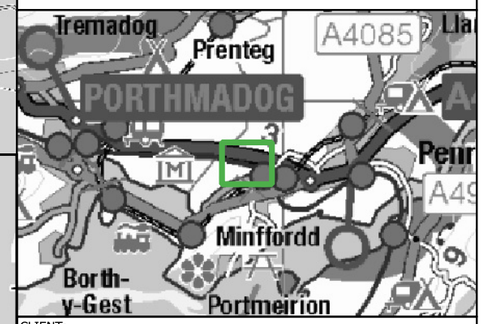
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

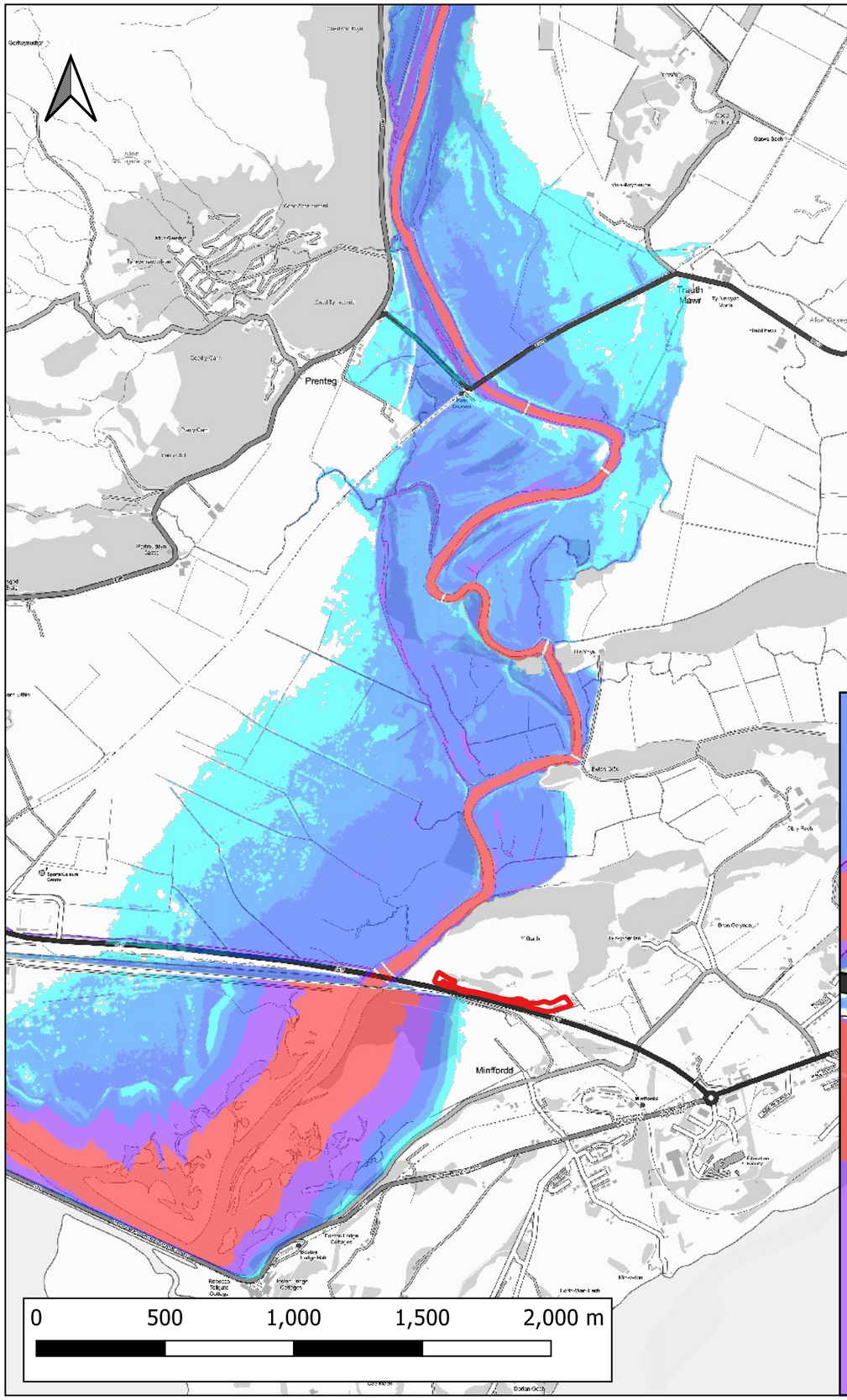
- Site Boundary

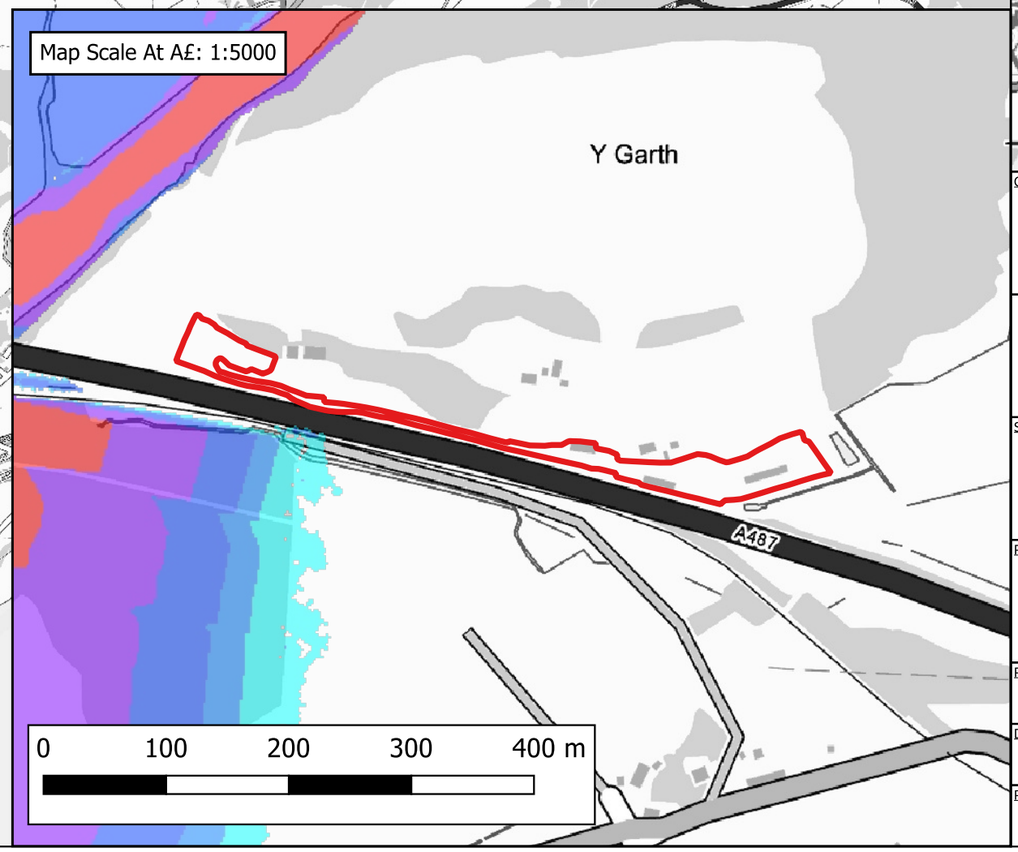
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





CLIENT:
Hochtief (UK) Construction Ltd

www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP (PRESENT DAY) TIDAL EVENT
DEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_DEF_T200_D_MAX	-

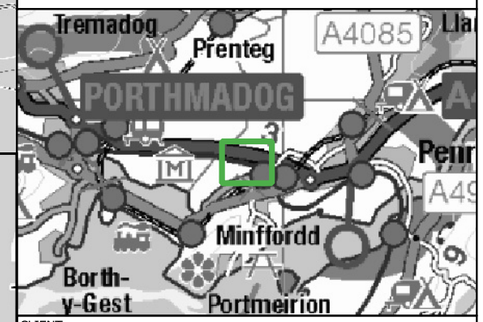
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

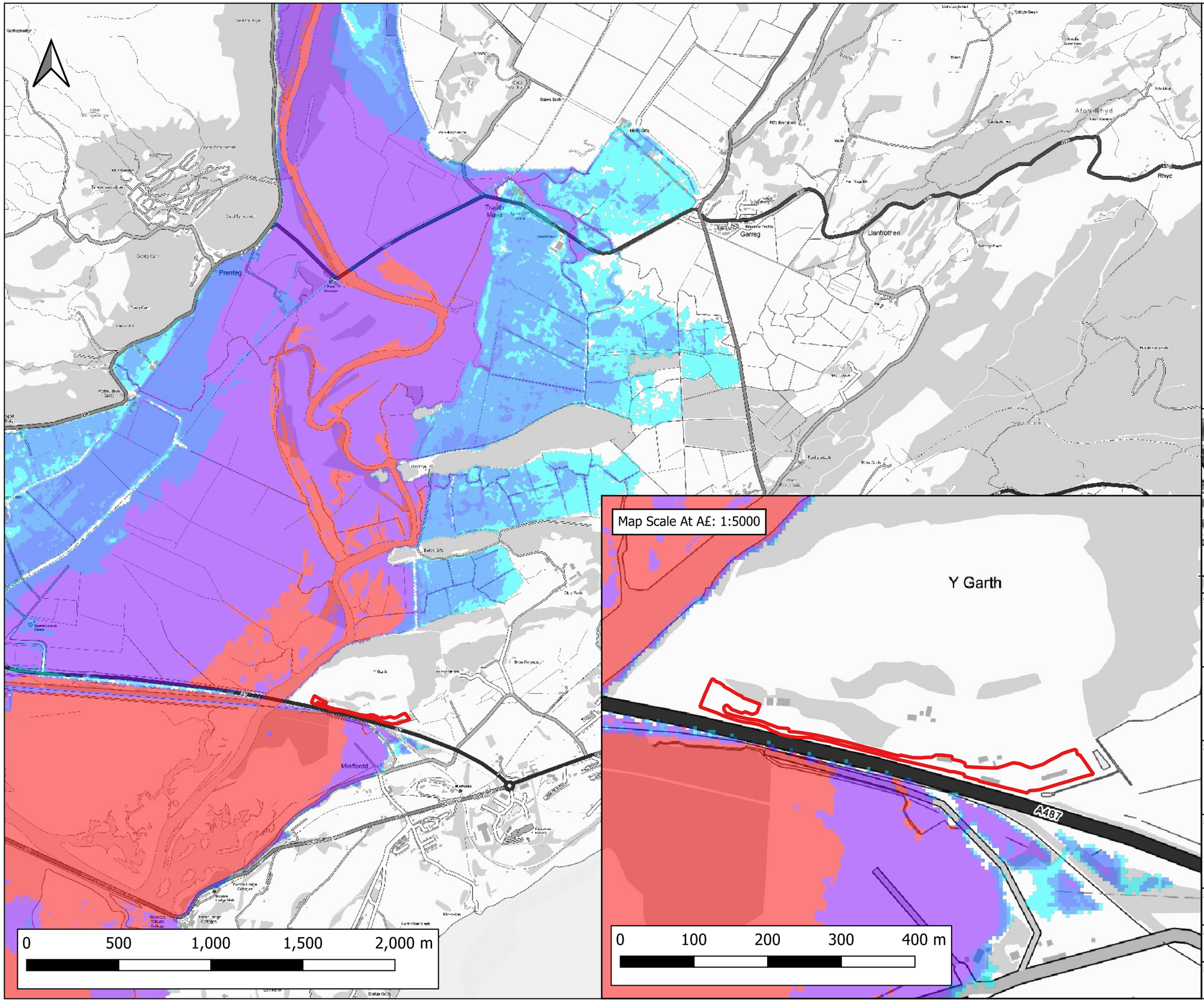
- Site Boundary

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000



CLIENT:	Hochtief (UK) Construction Ltd
	www.waterco.co.uk
SCHEME:	Minffordd Quarry Materials Processing Area
PLOT TITLE:	AFON GLASLYN & TRIBUTARIES MAXIMUM FLOOD DEPTH 0.5% AEP (PRESENT DAY) TIDAL EVENT UNDEFENDED SCENARIO
PLOT STATUS:	FINAL
DATE:	04-03-2024
DRAWN:	RM
CHECKED:	AW
APPROVED:	MW
PLOT SCALE AT A3:	1:20000
PLOT NAME:	15055_UNDEF_T200_D_MAX
REVISION:	-

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

Map Scale At A£: 1:5000

Prenteg

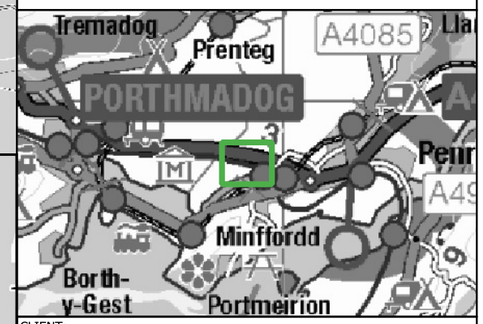
Minffordd

Y Garth

A487

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m



CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
DEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_DEF_T200_2062_D_MAX	-

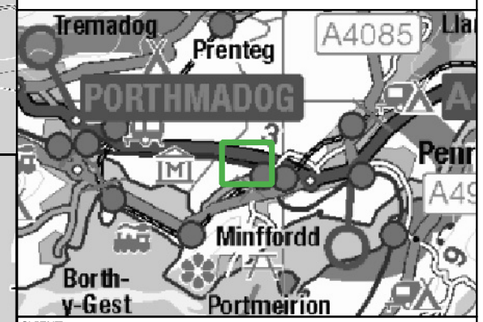
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

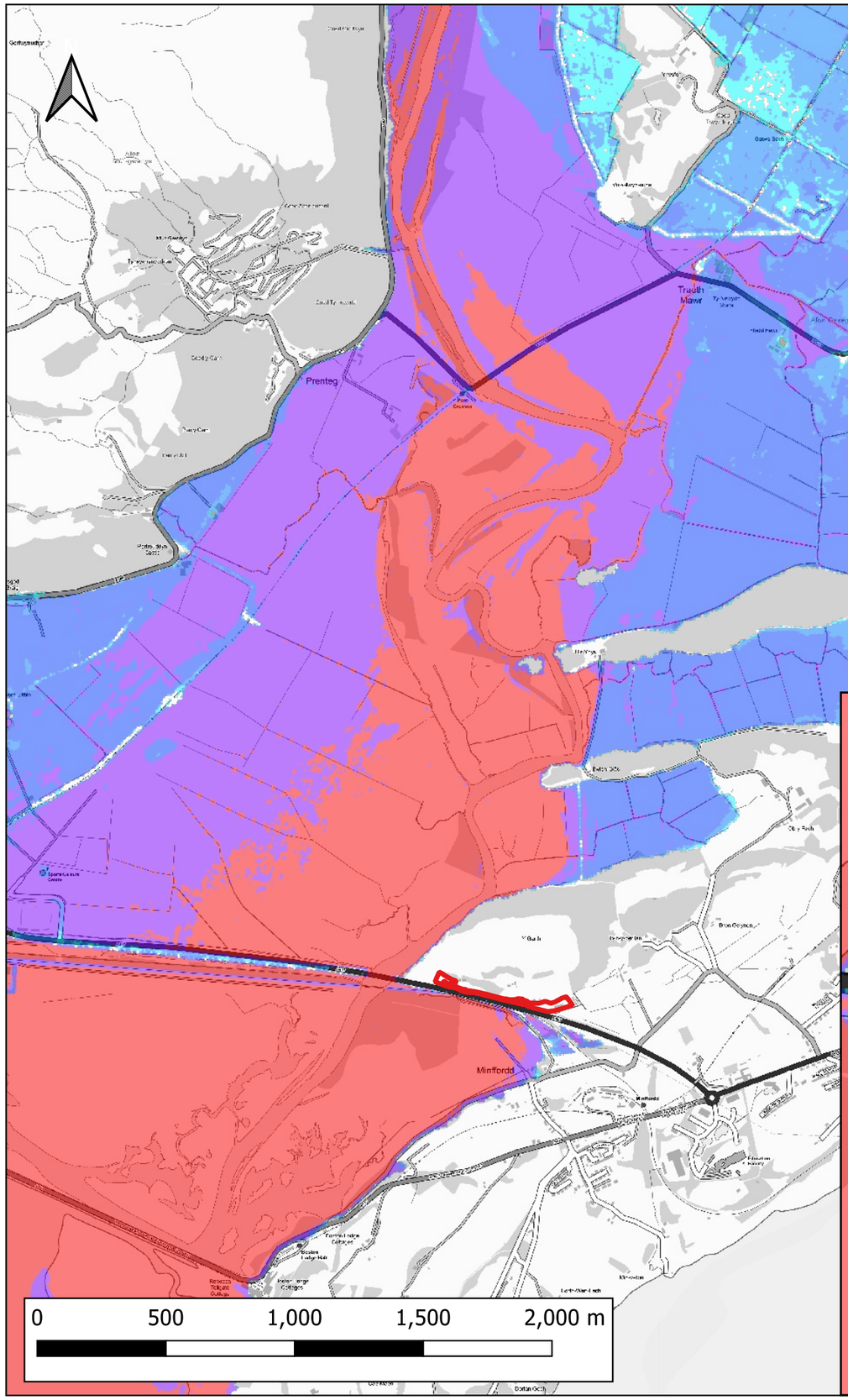
- Site Boundary

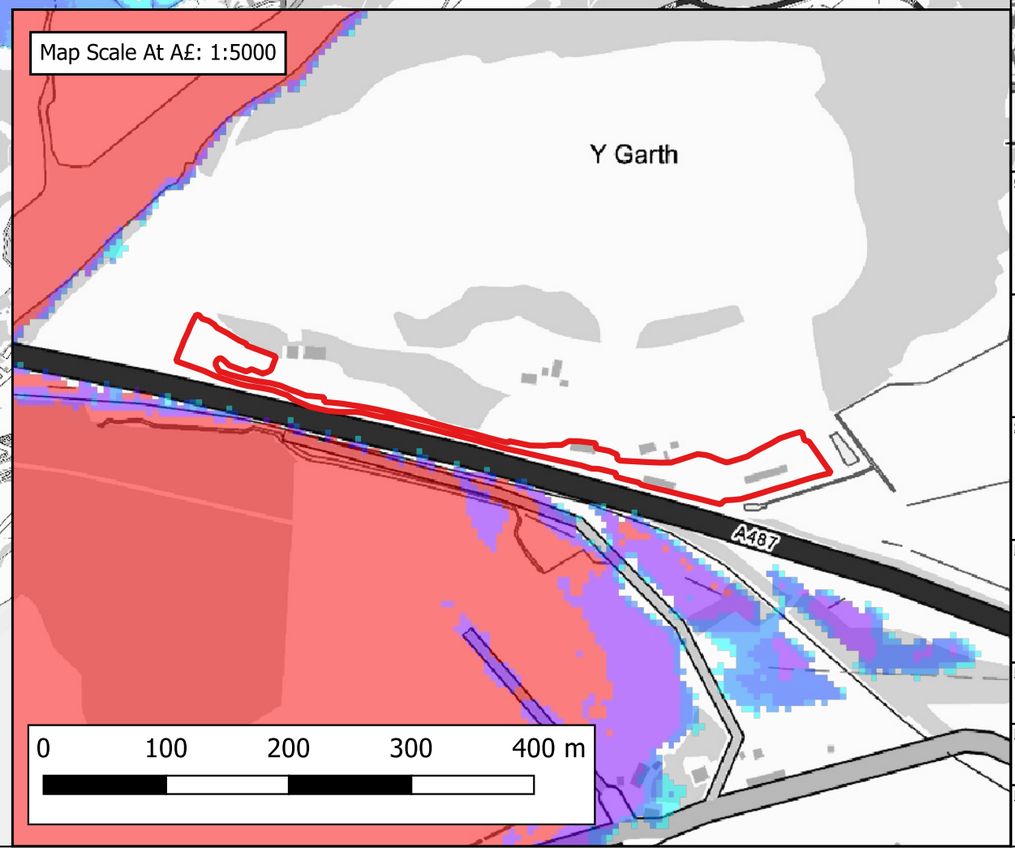
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





CLIENT:
Hochtief (UK) Construction Ltd

waterco
www.waterco.co.uk

SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
UNDEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_UNDEF_T200_2062_D_MAX	-

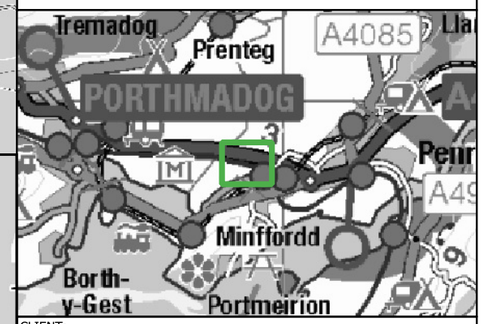
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m

CLIENT:	Hochtief (UK) Construction Ltd
	www.waterco.co.uk
SCHEME:	Minffordd Quarry Materials Processing Area
PLOT TITLE:	AFON GLASLYN & TRIBUTARIES MAXIMUM FLOOD DEPTH 0.1% AEP (PRESENT DAY) TIDAL EVENT DEFENDED SCENARIO
PLOT STATUS:	FINAL
DATE:	04-03-2024
DRAWN:	RM
CHECKED:	AW
APPROVED:	MW
PLOT SCALE AT A3:	1:20000
PLOT NAME:	15055_DEF_T1000_D_MAX
REVISION:	-

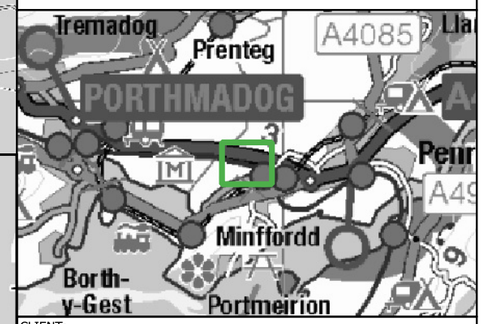
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

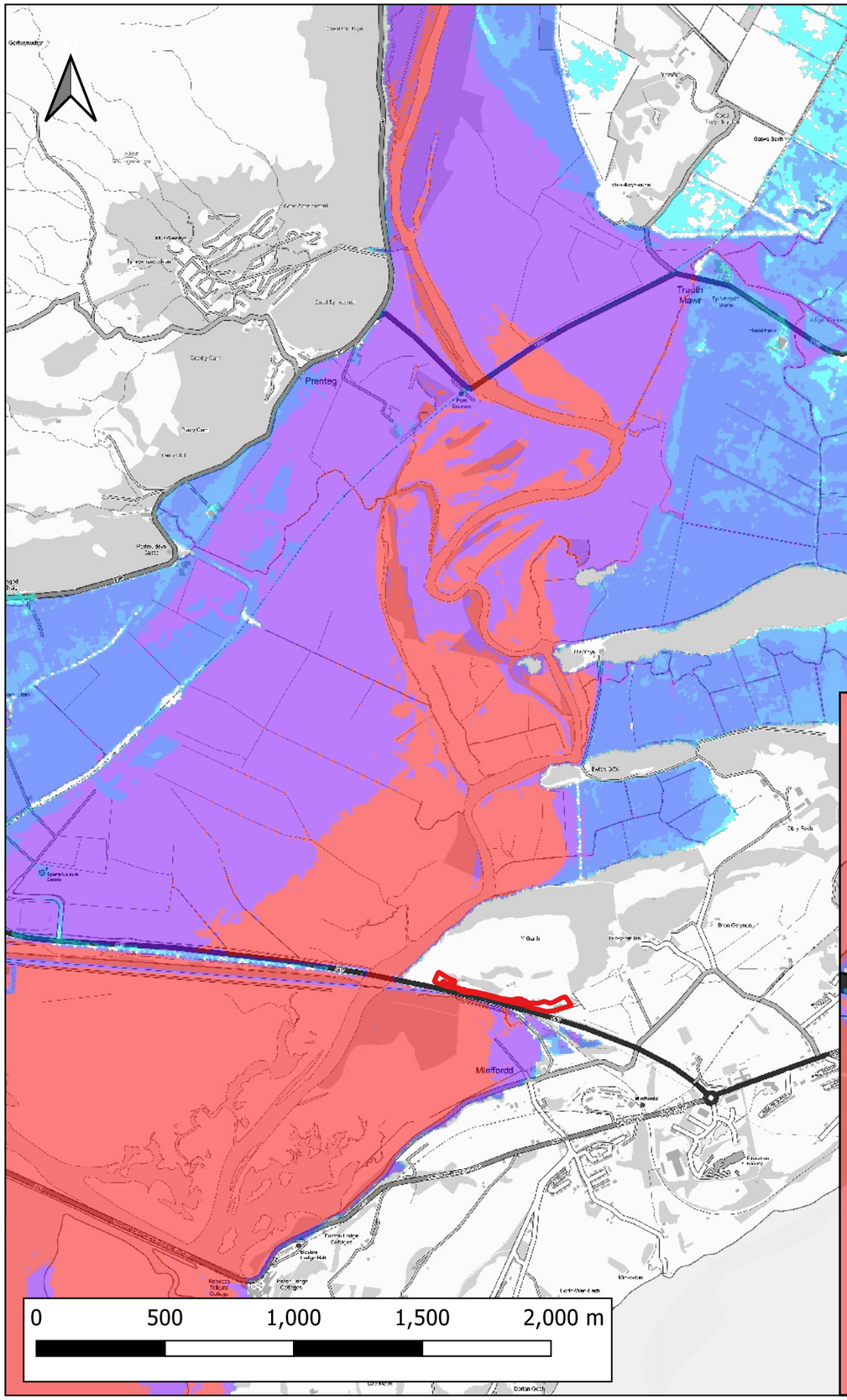
- Site Boundary

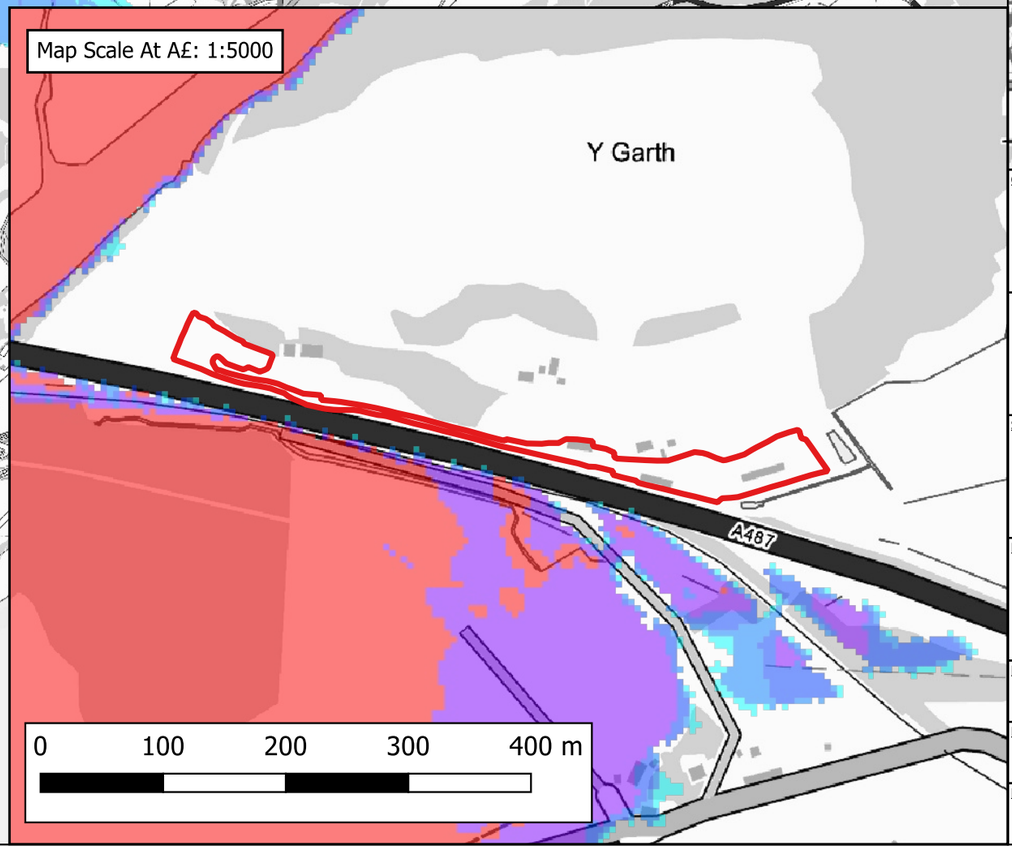
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





CLIENT:
Hochtief (UK) Construction Ltd

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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.1% AEP (PRESENT DAY) TIDAL EVENT
UNDEFENDED SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_UNDEF_T1000_D_MAX	-

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of Cob Crwn Breach - Town-Ward Side

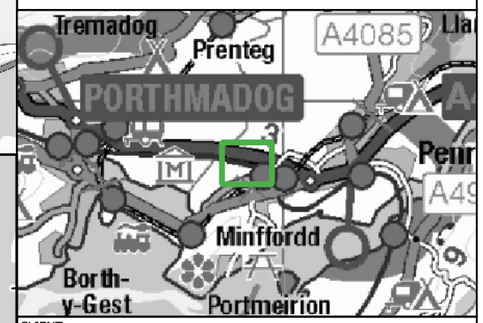
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m



CLIENT:
Hochtief (UK) Construction Ltd

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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP (PRESENT DAY) TIDAL EVENT
COB CRWN - TOWNWARD SIDE BREACH

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_CRWN_TOWNWARD_T200_D_MAX	-

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of Cob Crwn Breach - Traeth Side

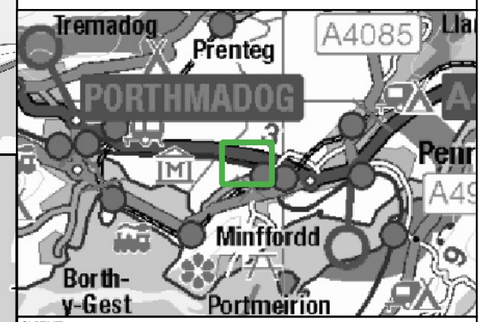
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m



CLIENT:
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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP (PRESENT DAY) TIDAL EVENT
COB CRWN - TRAETH MAWR SIDE BREACH

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_CRWN_TRAETH_T200_D_MAX	-

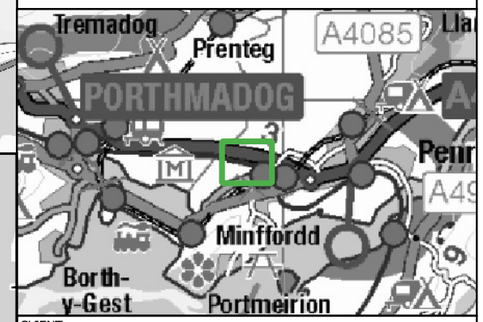
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of Main Cob Breach

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:
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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP (PRESENT DAY) TIDAL EVENT
MAIN COB BREACH

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_MAIN_COB_T200_D_MAX	-

Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of Cob Crwn Breach - Town-Ward Side

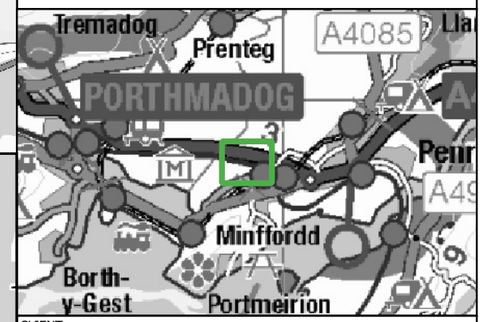
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

Map Scale At A£: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m



CLIENT:
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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
COB CRWN - TOWNWARD SIDE BREACH

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_CRWN_TOWNWARD_T200_2062_D_MAX	-

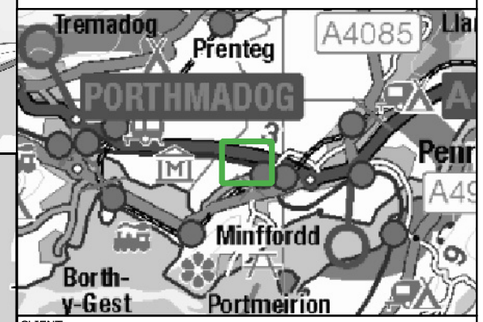
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

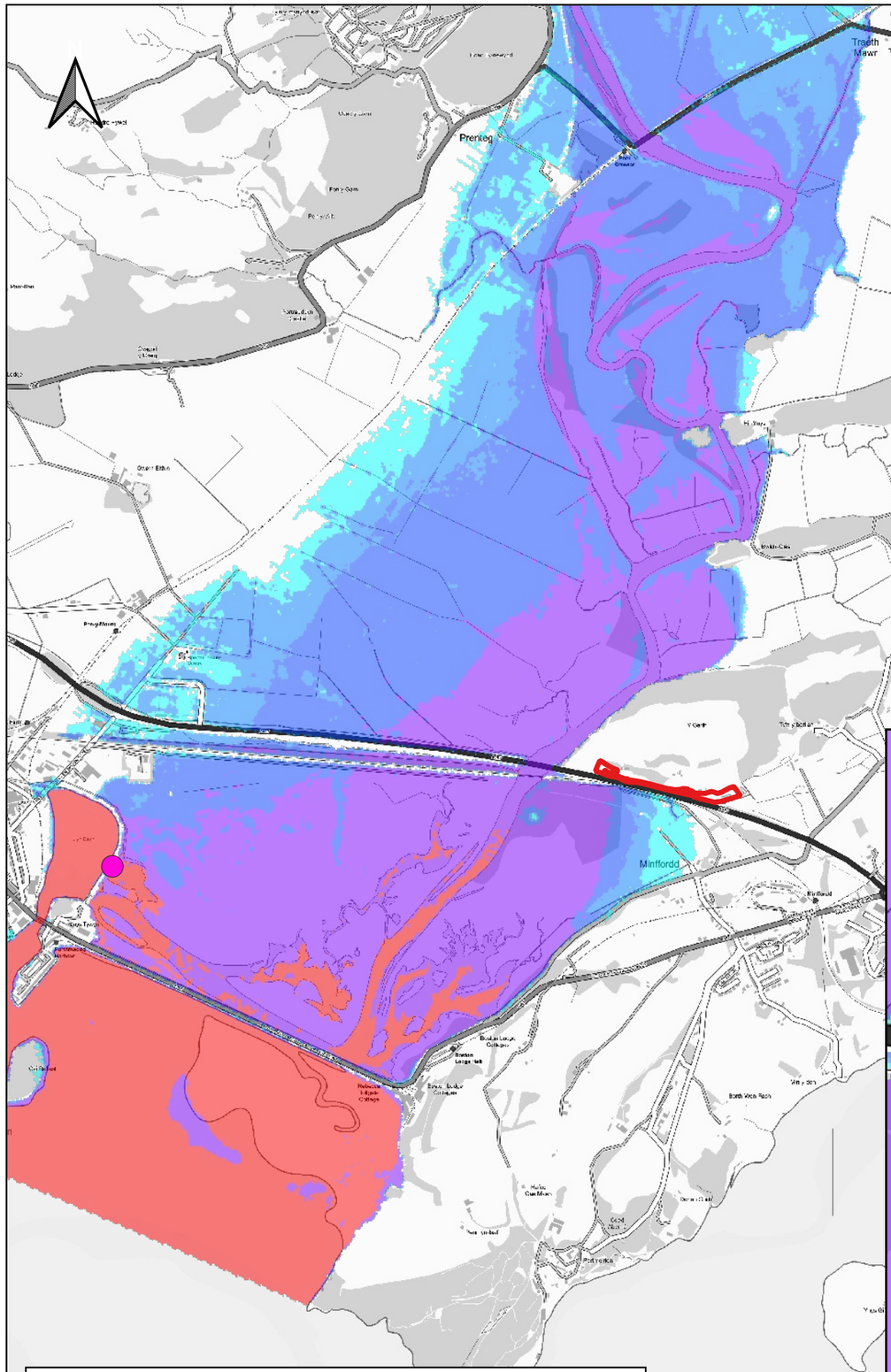
- Site Boundary
- Location of Cob Crwn Breach - Traeth Side

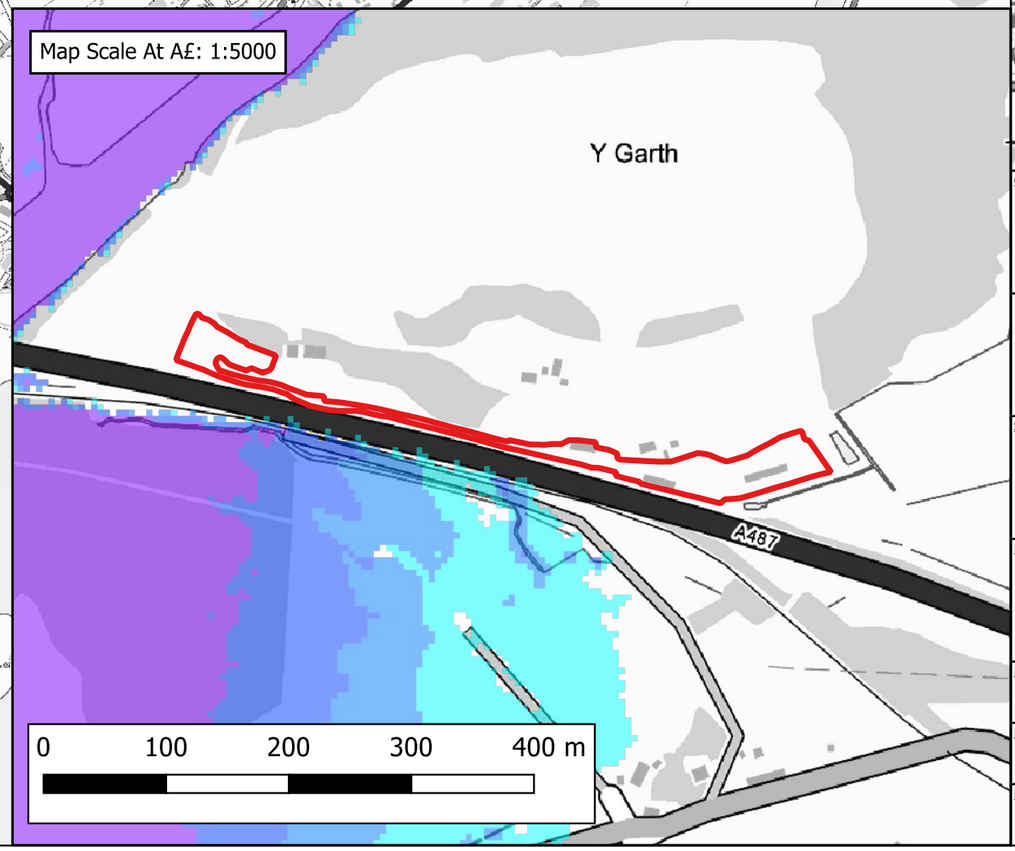
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





CLIENT:
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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
COB CRWN - TRAETH MAWR SIDE BREACH

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_CRWN_TRAETH_T200_2062_D_MAX	-

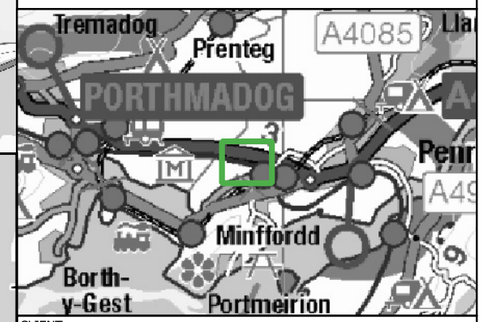
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

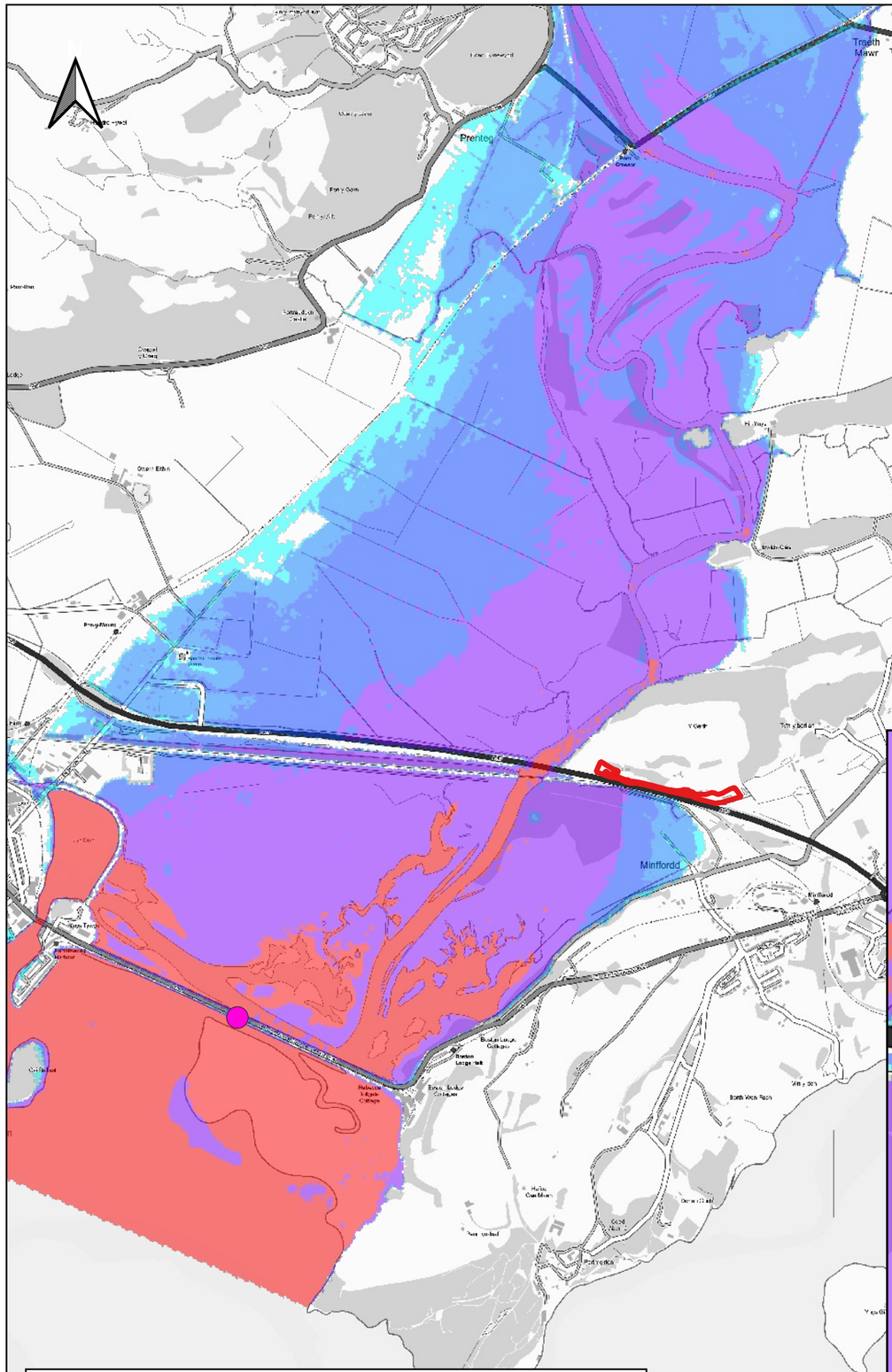
- Site Boundary
- Location of Main Cob Breach

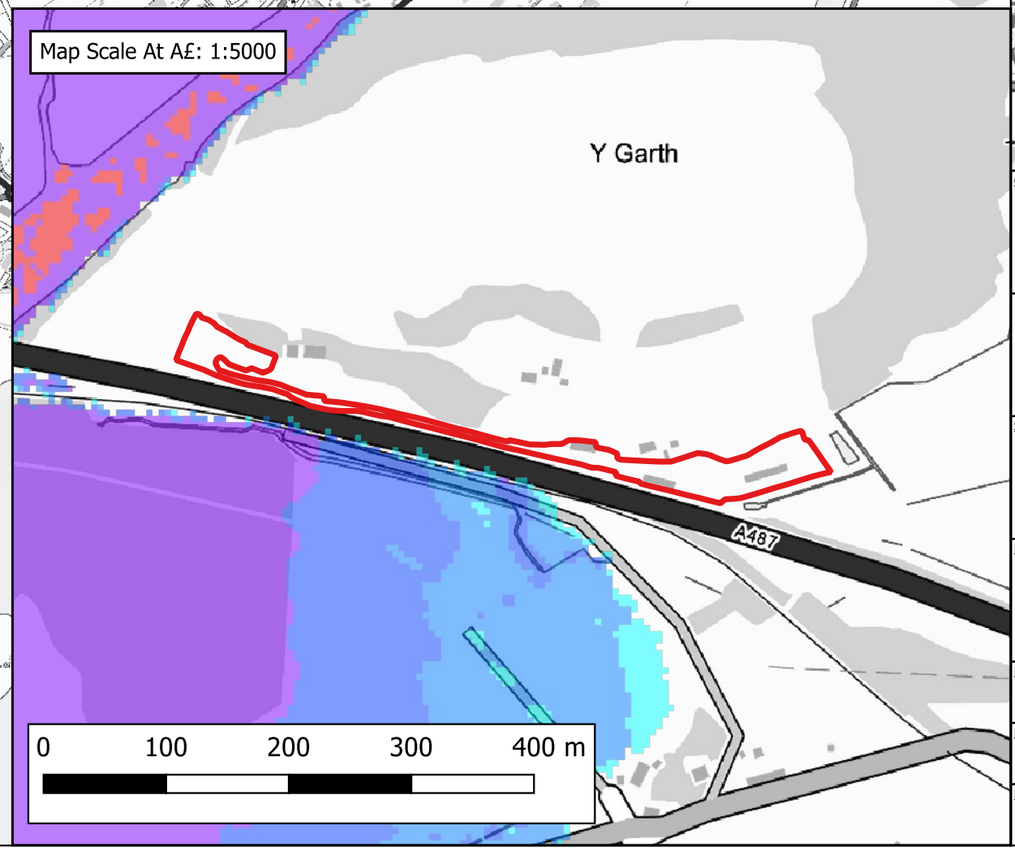
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A£: 1:5000





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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
MAIN COB BREACH

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_MAIN_COB_T200_2062_D_MAX	-

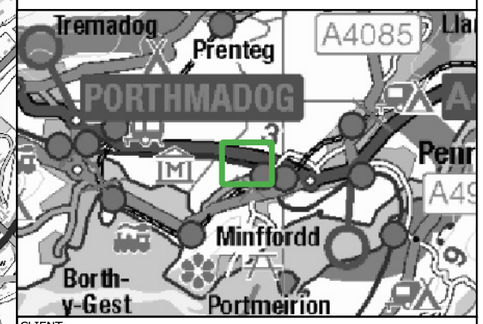
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of Y Cyt Tidal Gate

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



CLIENT:	Hochtief (UK) Construction Ltd
	www.waterco.co.uk
SCHEME:	Minffordd Quarry Materials Processing Area
PLOT TITLE:	AFON GLASLYN & TRIBUTARIES MAXIMUM FLOOD DEPTH 0.5% AEP (PRESENT DAY) TIDAL EVENT Y CYT TIDAL GATE FAILURE SCENARIO
PLOT STATUS:	FINAL
DATE:	04-03-2024
DRAWN:	RM
CHECKED:	AW
APPROVED:	MW
PLOT SCALE AT A3:	1:15000
PLOT NAME:	15055_Y_CYT_T200_D_MAX
REVISION:	-

0 500 1,000 1,500 2,000 m

Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of River Glaslyn Tidal Gates

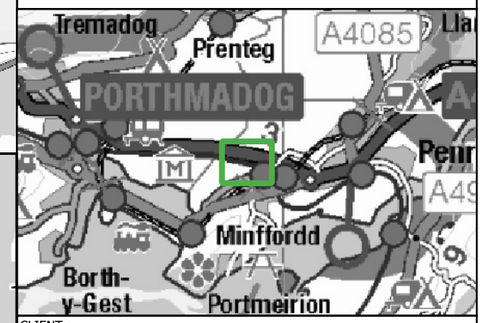
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m

Map Scale At A3: 1:5000

0 500 1,000 1,500 2,000 m

0 100 200 300 400 m



CLIENT:
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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP (PRESENT DAY) TIDAL EVENT
RIVER GLASLYN TIDAL GATES FAILURE SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_GLASLYN_T200_D_MAX	-

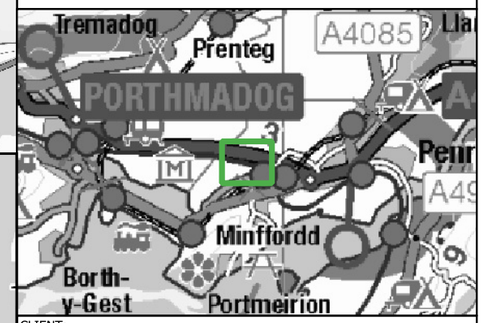
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

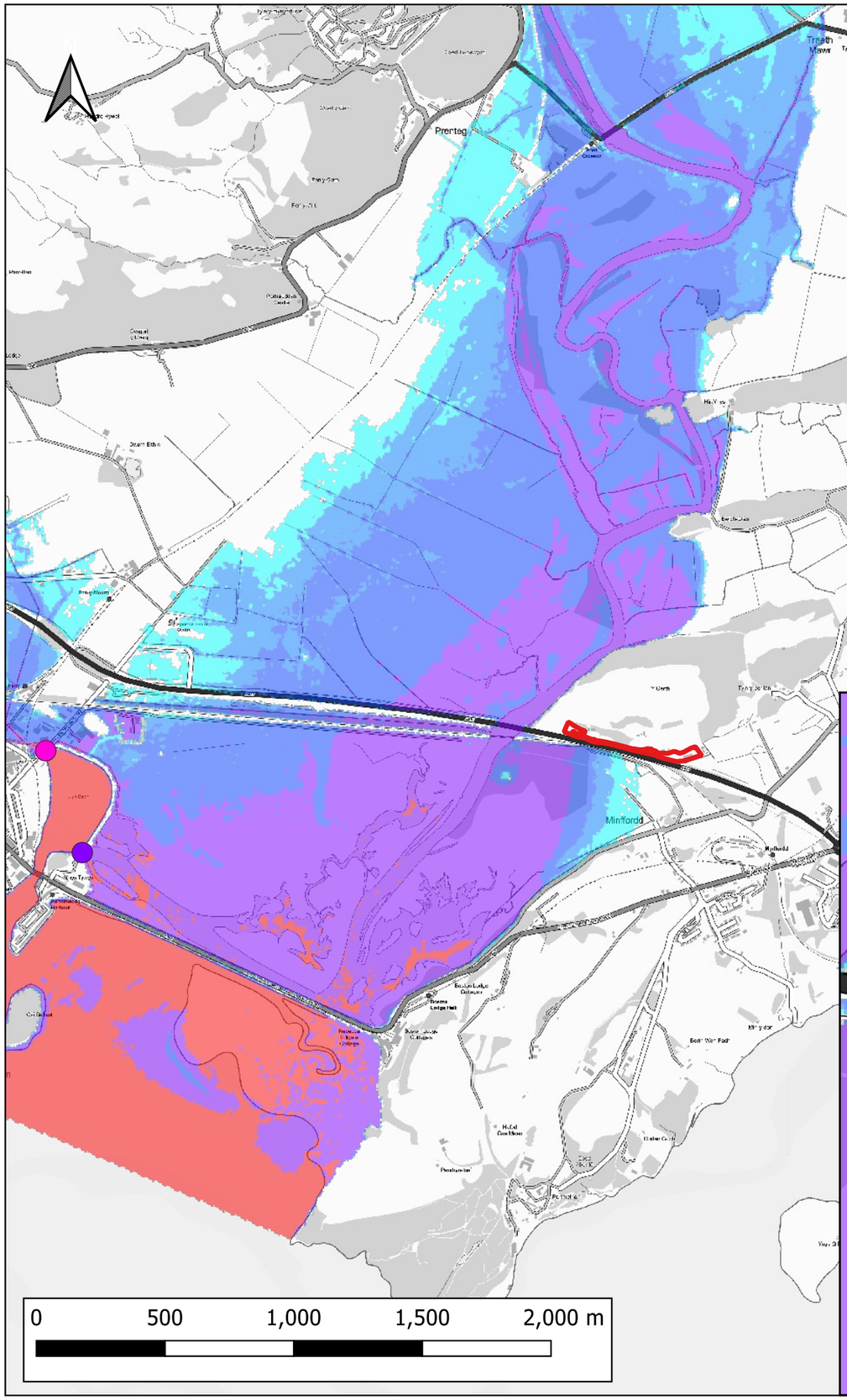
- Site Boundary
- Location of Y Cyt Tidal Gate
- Location of River Glaslyn Tidal Gates

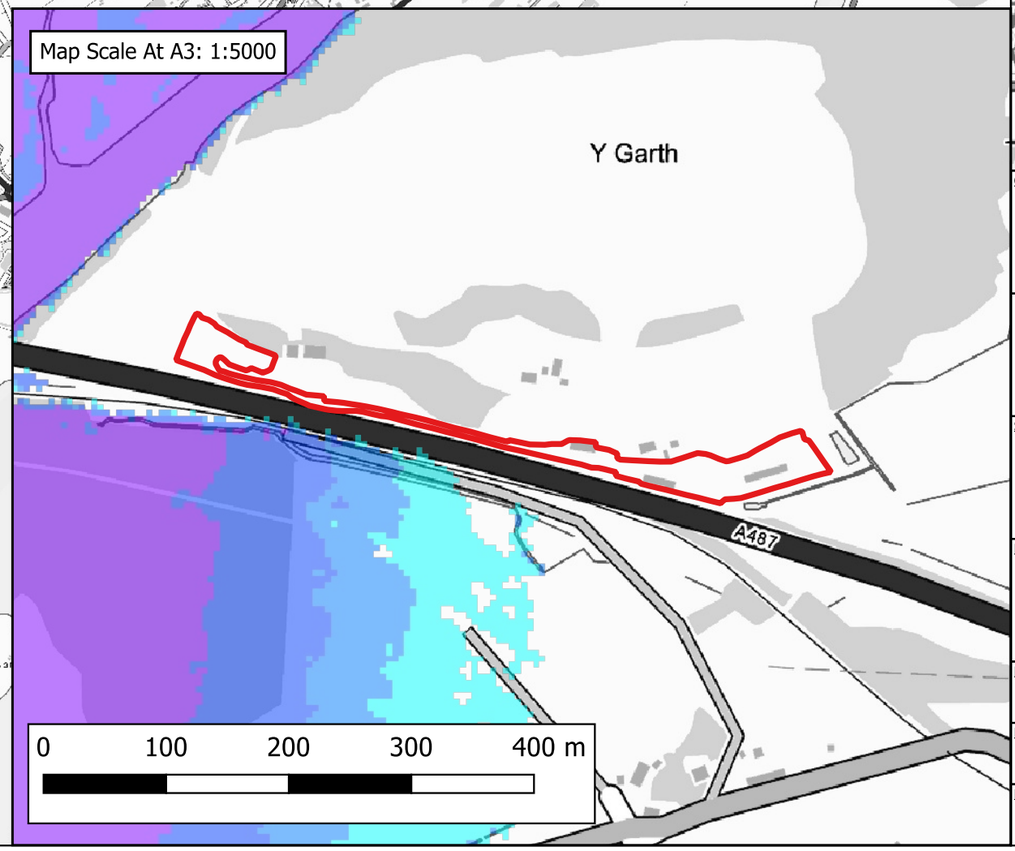
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A3: 1:5000





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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP (PRESENT DAY) TIDAL EVENT
Y CYT & RIVER GLASLYN TIDAL GATES FAILURE SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_ALL_T200_D_MAX	-

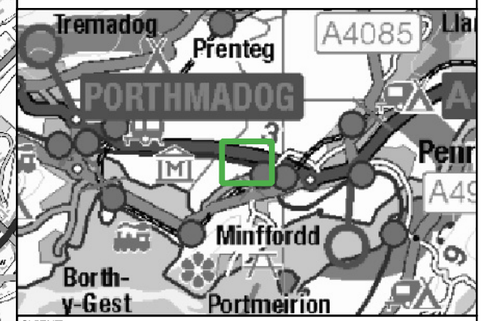
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

- Site Boundary
- Location of Y Cyt Tidal Gate

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



0 500 1,000 1,500 2,000 m

CLIENT:
Hochtief (UK) Construction Ltd

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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
Y CYT TIDAL GATE FAILURE SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:15000

PLOT NAME:	REVISION:
15055_Y_CYT_T200_2062_D_MAX	-

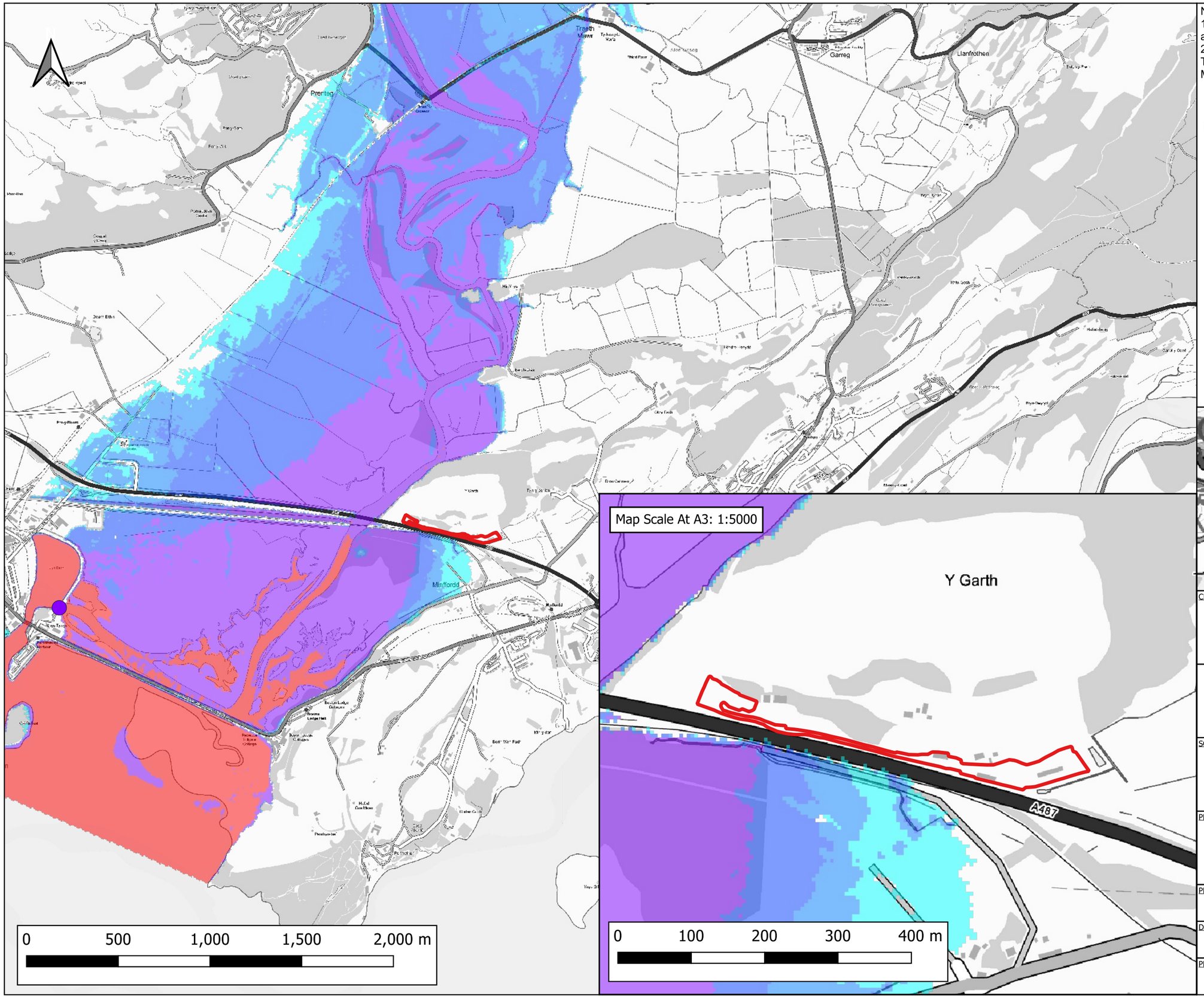
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

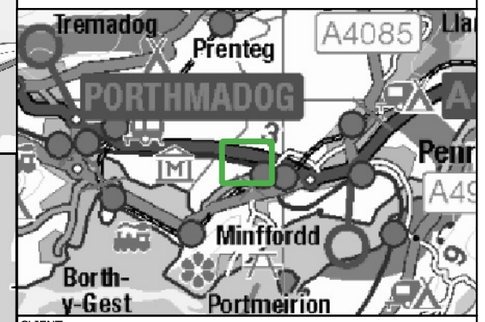
LEGEND

- Site Boundary
- Location of River Glaslyn Tidal Gates

Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m





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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
RIVER GLASLYN TIDAL GATES FAILURE SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_GLASLYN_T200_2062_D_MAX	-

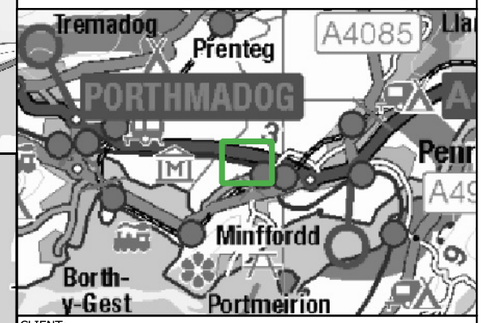
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise.
2) Modelled Outputs taken from the 'Afon Glaslyn & Tributaries at Porthmadog Flood Risk Study (2014) Model'.

LEGEND

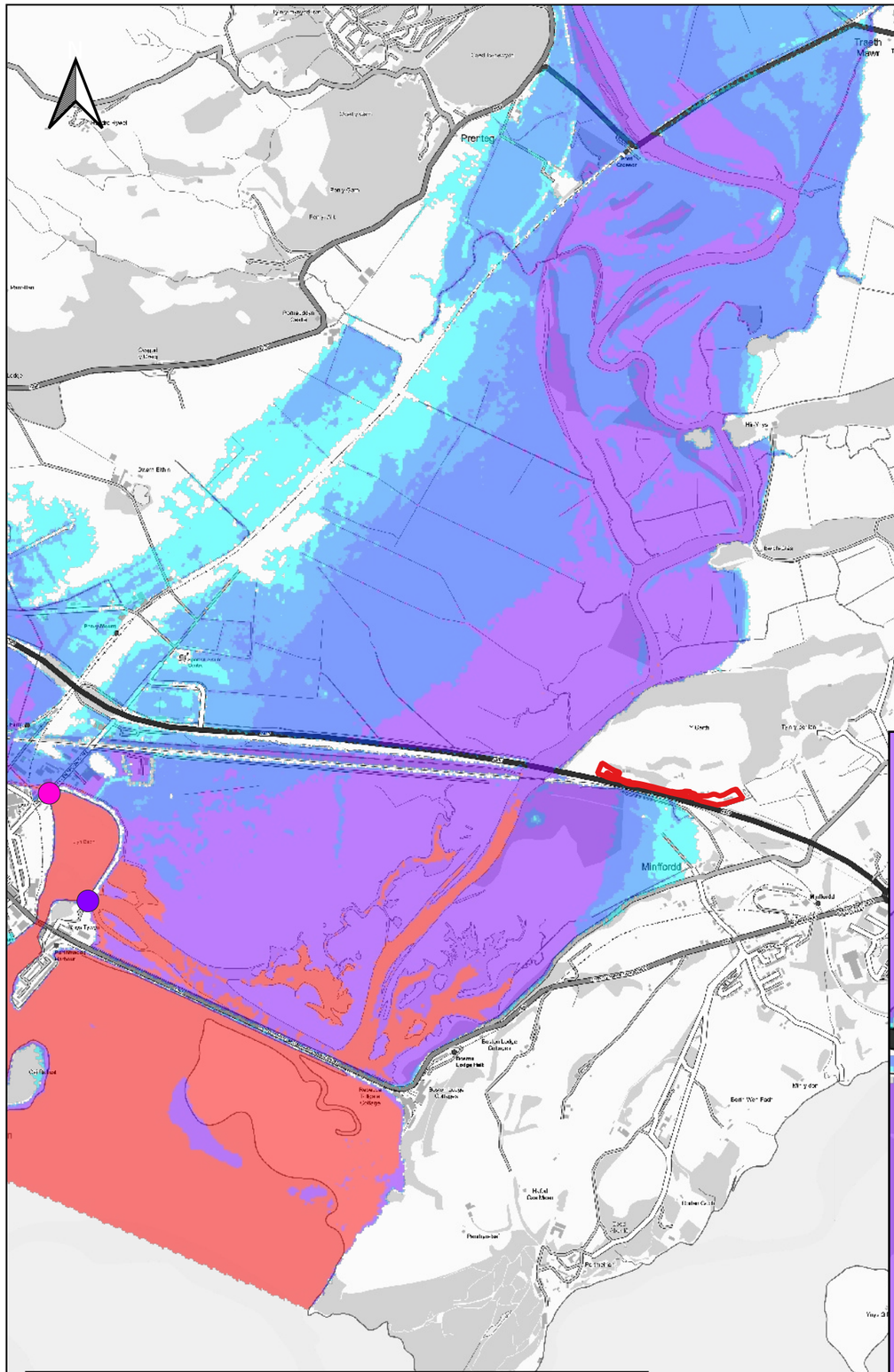
- Site Boundary
- Location of Y Cyt Tidal Gate
- Location of River Glaslyn Tidal Gates

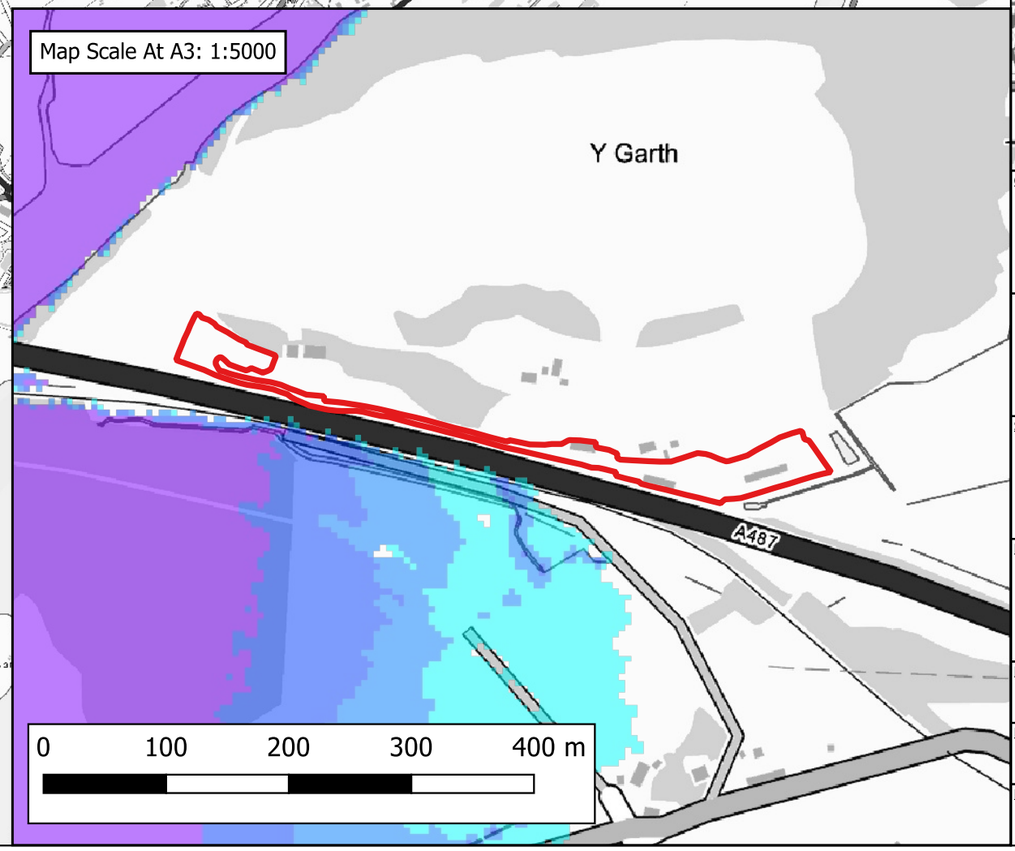
Maximum Flood Depth

- <= 0.3m
- 0.3m - 0.6m
- 0.6m - 1.2m
- 1.2m - 2.4m
- > 2.4m



Map Scale At A3: 1:5000





CLIENT:
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SCHEME:
Minffordd Quarry Materials Processing Area

PLOT TITLE:
AFON GLASLYN & TRIBUTARIES
MAXIMUM FLOOD DEPTH
0.5% AEP PLUS CLIMATE CHANGE (YEAR 2062) TIDAL EVENT
Y CYT & RIVER GLASLYN TIDAL GATES FAILURE SCENARIO

PLOT STATUS:	DATE:
FINAL	04-03-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AW	MW	1:20000

PLOT NAME:	REVISION:
15055_ALL_T200_2062_D_MAX	-