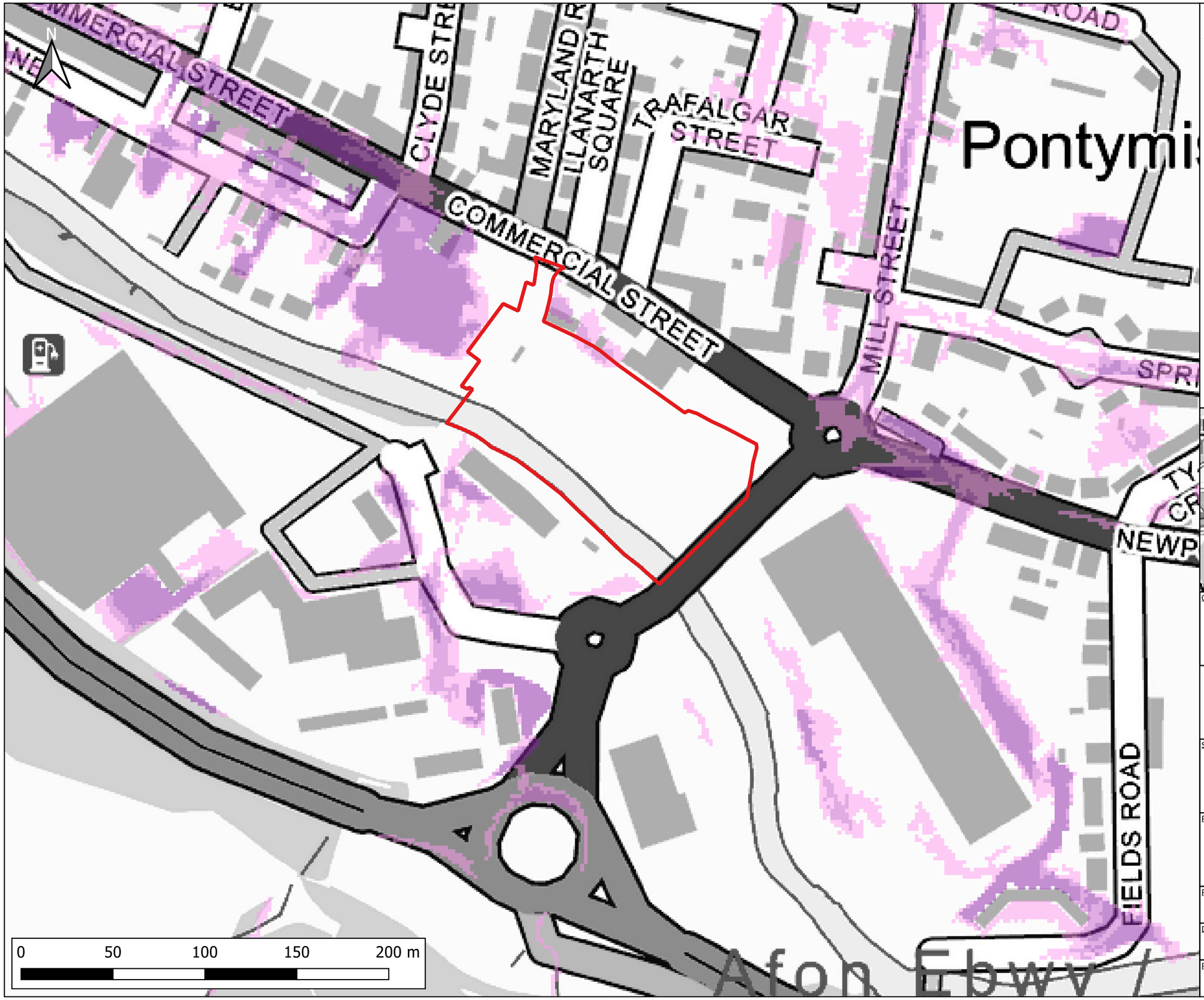


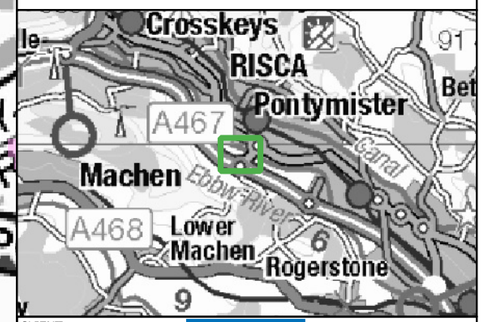
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

Site Boundary

Flood Risk from Surface Water & Small Watercourses

- High (greater than 3.3% AEP)
- Medium (between 1% and 3.3% AEP)
- Low (between 0.1% and 1% AEP)



CLIENT:

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Waterco
www.waterco.co.uk

SCHEME:

Land at Pontymister, Risca

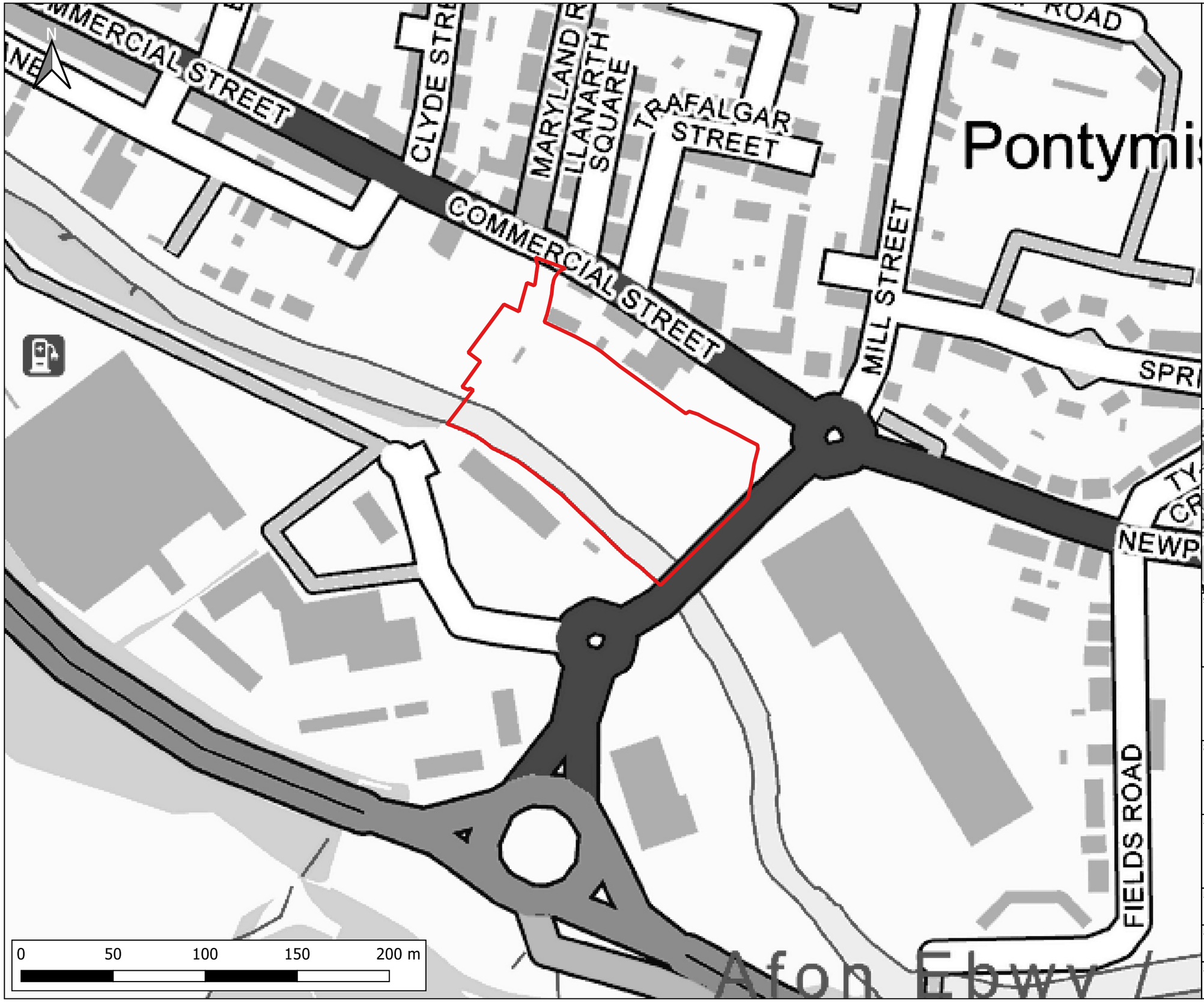
PLOT TITLE:

NRW Flood Risk from Surface Water & Small Watercourses
Data published May 2024

PLOT STATUS:	DATE:
FINAL	26-11-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
MH	AA	LS	1:2000

PLOT NAME:	REVISION:
15679_NRW_Flood_Risk_from_Surface_Water	-



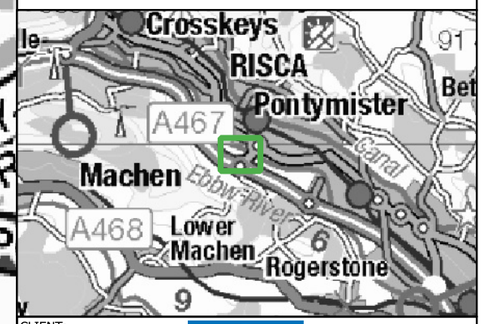
Notes:
1) All dimensions are in metres and all levels in metres above Ordnance Datum unless stated otherwise

LEGEND

- Site Boundary

Flood Risk from the Sea

- High (greater than 3.3% AEP)
- Medium (between 0.5% and 3.3% AEP)
- Low (between 0.1% and 0.5% AEP)



CLIENT:

www.waterco.co.uk

SCHEME:

Land at Pontymister, Risca

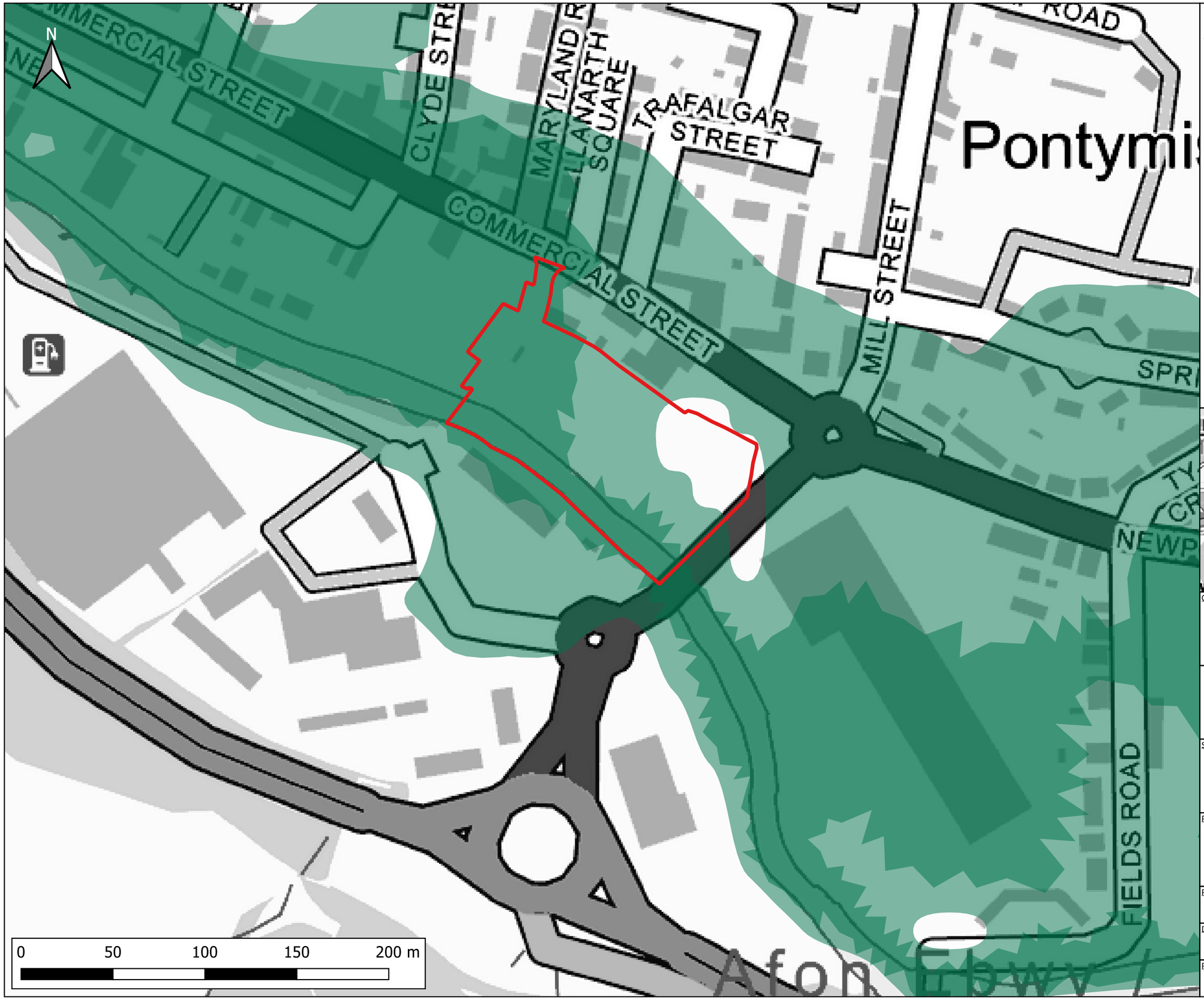
PLOT TITLE:

NRW Flood Risk from the Sea
Data published May 2024

PLOT STATUS:	DATE:
FINAL	26-11-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
MH	AA	LS	1:2000

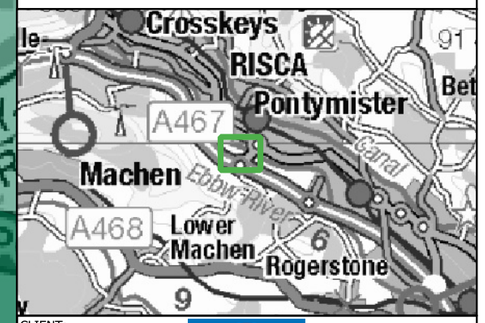
PLOT NAME:	REVISION:
15679_NRW_Flood_Risk_from_the_Sea	-



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

LEGEND

- Site Boundary
- Flood Risk from Reservoirs Extent



CLIENT:

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SCHEME:

Land at Pontymister, Risca

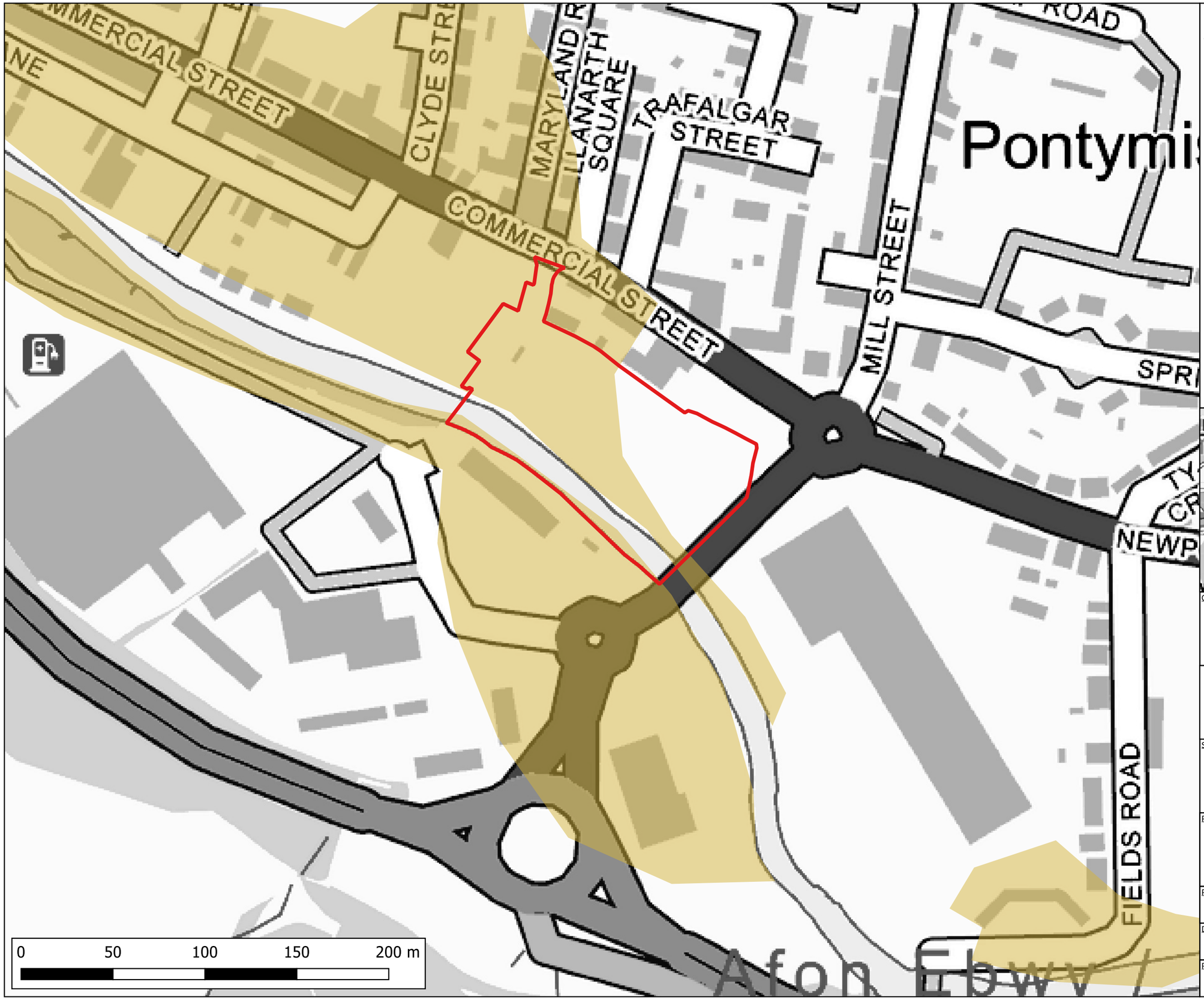
PLOT TITLE:

NRW Flood Risk from Reservoirs
Data published February 2017

PLOT STATUS:	DATE:
FINAL	26-11-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
MH	AA	LS	1:2000

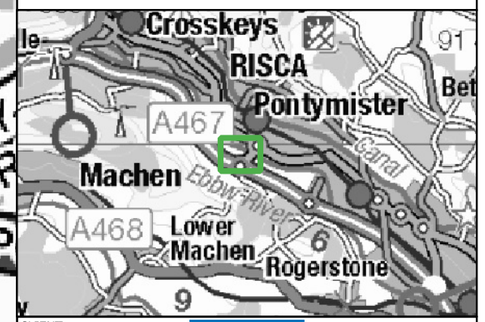
PLOT NAME:	REVISION:
15679_NRW_Flood_Risk_from_Reservoirs	-



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

LEGEND

- Site Boundary
- NRW Recorded Flood Extents



CLIENT:

www.waterco.co.uk

SCHEME:

Land at Pontymister, Risca

PLOT TITLE:

NRW Recorded Flood Extents
Data published May 2024

PLOT STATUS:	DATE:
FINAL	26-11-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
MH	AA	LS	1:2000

PLOT NAME:	REVISION:
15679_Recorded_Flood_Extents	-

15679 – Land at Pontymister, Risca
Proposed hydraulic modelling methodology for NRW comment – Existing NRW Model Build

March 2024

Background

We are currently undertaking hydraulic modelling of the River Ebbw through Risca to inform a Flood Consequences Assessment for a proposed commercial development site at Commercial Street, Risca, Newport, NP11 6EE (NGR: 324398, 189871). A location plan and aerial image is included in Appendix A.

Prior to progressing works further, we are seeking your advice and comment with regard to our proposed modelling methodology. We find that discussing our approach with Natural Resources Wales (NRW) at the early stage saves all parties involved time and ensures your team's site-specific requirements are fully accounted for. As such, please find below our proposed methodology for your consideration. Your advice or comment would be very much appreciated.

Model Details & Requirements

Waterco have been provided with the NRW River Ebbw Integrated Catchment model (2019) in a recent data request (January 2024 – ATI 26398a). A detailed review of the existing model has been carried out by Waterco to assess its suitability for use to inform the flood risk to the proposed development. The results of the model review are as follows:

- The site is located within the Risca domain. At this stage, we are not proposing to truncate the model, however if run times or model stability becomes an issue, then this would be reviewed.
- There are a sensible number of cross sections in the vicinity of the site, spaced ~20m to ~50m apart.
- The downstream boundary of the model is tidally influenced. There is no tidal influence at the site and therefore tidal calculations will not be updated. This will also not be applicable if the model is truncated at a later date.
- The model will be run in the latest versions of the software.
- Most recent climate change allowances would need to be considered on the appropriate events. Please see below for more details.
- The model DTM will be reviewed against latest available data. If there are differences in levels within the model extent then the latest data will be used within the model.

Based on the findings of the model review, it is believed the model is fit for purpose (post review updates) to provide an up-to-date, site-specific assessment of flood risk at the existing (EXG) site. Therefore, we propose to utilise the current NRW hydraulic model of the River Ebbw to provide the required output data. Given the existing model was a detailed and thorough assessment of the flood risk to the catchment, and that the nature of the development is 'less vulnerable' development, it is deemed a proportionate approach. The existing model will also be used to quantify the impact of the development on flood risk elsewhere (if any) through simulation and comparison of the proposed development (DEV) site arrangement. Model outputs will then be used to support the Flood Consequences Assessment being prepared for the development.

Please advise if you are your team are aware of any pre-existing issues with the model – any additional information at this stage is useful. Thank you.

The site is shown to be located within NRW Defended Flood Zone 3 on the 'NRW Flood Map for Planning – Rivers'.

Model and Simulation Type

Software:	FMP-TUFLOW
Approach:	Fluvial and Tidal.
Extent:	Please find the model extent included in Appendix B.

Hydrological Calculations

A robust and detailed hydrology assessment was carried out by NRW (July 2019) to produce the model inflows. The flows were also calibrated to local data to improve confidence in the model inflows. Due to the detail of the previous hydrology assessment carried out in the existing model, we propose to utilise the existing watercourse inflows and boundary conditions contained in the model and simply re-run with site-specific updates. We trust this is acceptable.

Events / Scenarios Considered

Model study to simulate and compare the flood risk at the site for the existing (EXG) and proposed development (DEV) level. Table 1 provides a summary of the proposed events and scenarios.

Proposed Climate Change Allowance (CCA) for this site during the 3.33%, 1% AEP and 0.1% AEP events are + 25% (Central – CC1) and 70% (Upper – CC2) in accordance with NRW guidance (Site located in River Severn River Basin; development considered 'less vulnerable' with predicted 100 year lifetime).

- Site located in the Severn River Basin Management Catchment District.
- Development considered 'less vulnerable'.

Blockage Scenario

Blockage scenarios based on the latest NRW blockage guidance document will be carried out simulating a 25% blockage of the B4591 Road Bridge (at approximately NGR: 324440, 189784) during the 1% AEP plus CC1, 1% AEP plus CC2 and 0.1% AEP events only. A 25% blockage has been deemed applicable due to the size of the bridge.

Sensitivity Tests

Sensitivity Tests (ST) will not be considered as we are proposing to utilise the existing NRW model, which has undergone sensitivity testing and calibration previously. However, if the model is truncated at a later stage, a sensitivity test will be carried out on the downstream boundary.

Table 1 Summary Table of Proposed Model Scenarios and Events

Event (AEP)	Scenario		
	Existing site layout and level (EXG)	Proposed site layout and levels (DEV)	Blockage (BL)
5%	✓	✓	
3.3%	✓	✓	
3.3% + CC1	✓	✓	
3.3% + CC2	✓	✓	
1%	✓	✓	
1% + CC1	✓	✓	✓
1% + CC2	✓	✓	✓
0.1%	✓	✓	✓
0.1% + CC1	✓	✓	
0.1% + CC2	✓	✓	

For Your Consideration

Please provide comment on our above methodology and whether you are in agreement with the approach outlined? Please also confirm if any hydrology updates are required?

Waterco Contact

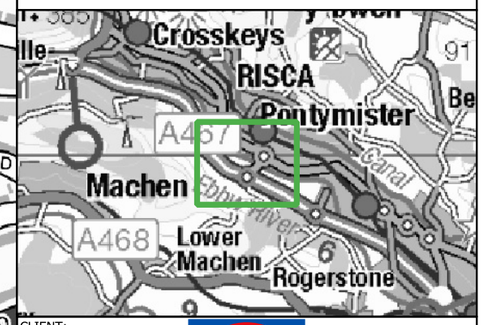
Awel Roberts
01244 986024
01824 702220
awel.roberts@waterco.co.uk

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
- Location of NRW Flood Defences
- Watercourses
- Waterbodies



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SCHEME:

Land at Pontymister, Risca

PLOT TITLE:

Location Plan

PLOT STATUS:	DATE:
FINAL	28-02-2024

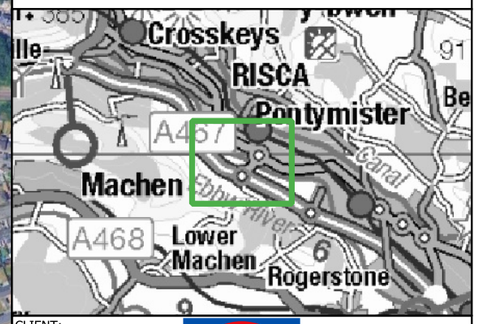
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AMR	AP	1:5000

PLOT NAME:	REVISION:
15679_Location_Plan	-

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

LEGEND

Site Boundary



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SCHEME:

Land at Pontymister, Risca

PLOT TITLE:

Aerial Plan

PLOT STATUS:			DATE:
FINAL			28-02-2024
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AMR	AP	1:5000
PLOT NAME:			REVISION:
15679_Aerial_Plan			-

Appendix B Proposed Model Extent

N

Map Scale At A3: 1:20000

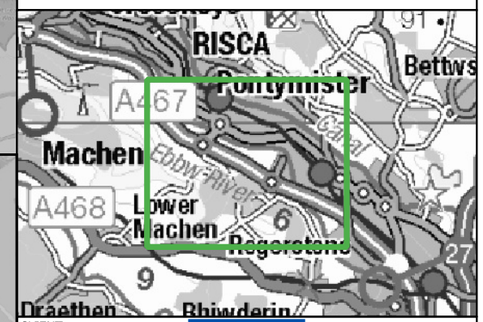
0 2,000 4,000 6,000 8,000 m

0 250 500 750 1,000 m

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

LEGEND

- Site Boundary
- Existing NRW Model Extent
- Existing NRW Risca 2D Domain
- Existing NRW 1D Network Channel
- Waterco Proposed Blockage Location



CLIENT:

LIDL

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www.waterco.co.uk

SCHEME:
Land at Pontymister, Risca

PLOT TITLE:
Proposed Model Extent Plan

PLOT STATUS:	DATE:
FINAL	28-02-2024

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE AT A3:
RM	AMR	AP	1:110000

PLOT NAME:	REVISION:
15679_Proposed_Model_Extent_Plan	-