

Warehouse No. 2, Bedwas House Industrial Estate- Flood Consequences Assessment

Version 1

December 2023

Prepared for:

Eriez Magnetics

Bedwas House Ind Estate

Bedwas

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ERIEZ

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This report describes work commissioned by Eriez Magnetics. The Client's representative for the contract was Gareth Thomas of Eriez Magnetics. William Addison - Atkinson and Amy Evans of JBA Consulting carried out this work.

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Abbreviations

AEP	Annual Exceedance Probability
BGS	British Geological Survey
FCA	Flood Consequence Assessment
FMfP	Flood Map For Planning
FRMP	Flood Risk Management Plan
LDP	Local Development Plan
LiDAR	Light Detection And Ranging
NGR	National Grid Reference
NRW	Natural Resources for Wales
OS NGR	Ordnance Survey National Grid Reference
PFRA	Preliminary Flood Risk Assessment

1 Introduction

1.1 Terms of reference

JBA Consulting were commissioned by Eriez Magnetics Limited to undertake a Flood Consequences Assessment (FCA) in support of a planning application for a lightweight storage warehouse at the existing Eriez Magnetics site off Greenway in Bedwas Industrial Estate, Caerphilly.

1.2 FCA requirements

This FCA follows Welsh Government guidance on development and flood risk set out in Technical Advice Note 15: Development and Flood Risk (TAN-15). 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 Site description

2.1 Site Summary

The lightweight unit is proposed within the existing Eriez Magnetics Ltd site, which is located to the south-west of Bedwas, approximately 1.8km north-east of the town centre of Caerphilly, as shown in Figure 2-1.

The site is bound to the north, east and west by existing commercial and industrial infrastructure. The River Rhymney is located south of the site.

The proposed warehouse will have a footprint of approximately 375m² and will comprise of a lightweight storage structure. The proposed site of the storage structure is currently used for open-air storage. The proposed warehouse footprint is referenced as 'development boundary' in Figure 2-1. The wider Eriez Magnetics Ltd site ownership boundary is also shown. The proposed development site is summarised in Table 2-1.

Table 2-1 Site Details

Site name	Eriez Magnetics Bedwas Industrial Estate
Proposed footprint	375m ²
Existing land-use	Industrial area, predominantly concrete hardstanding
Purpose of development	Construction of a lightweight storage structure for industrial purposes on existing hardstanding.
OS NGR	ST 15985 88917
Country	Wales
County	Gwent
Local Planning Authority	Caerphilly County Borough Council
Lead Local Planning Authority	Caerphilly County Borough Council

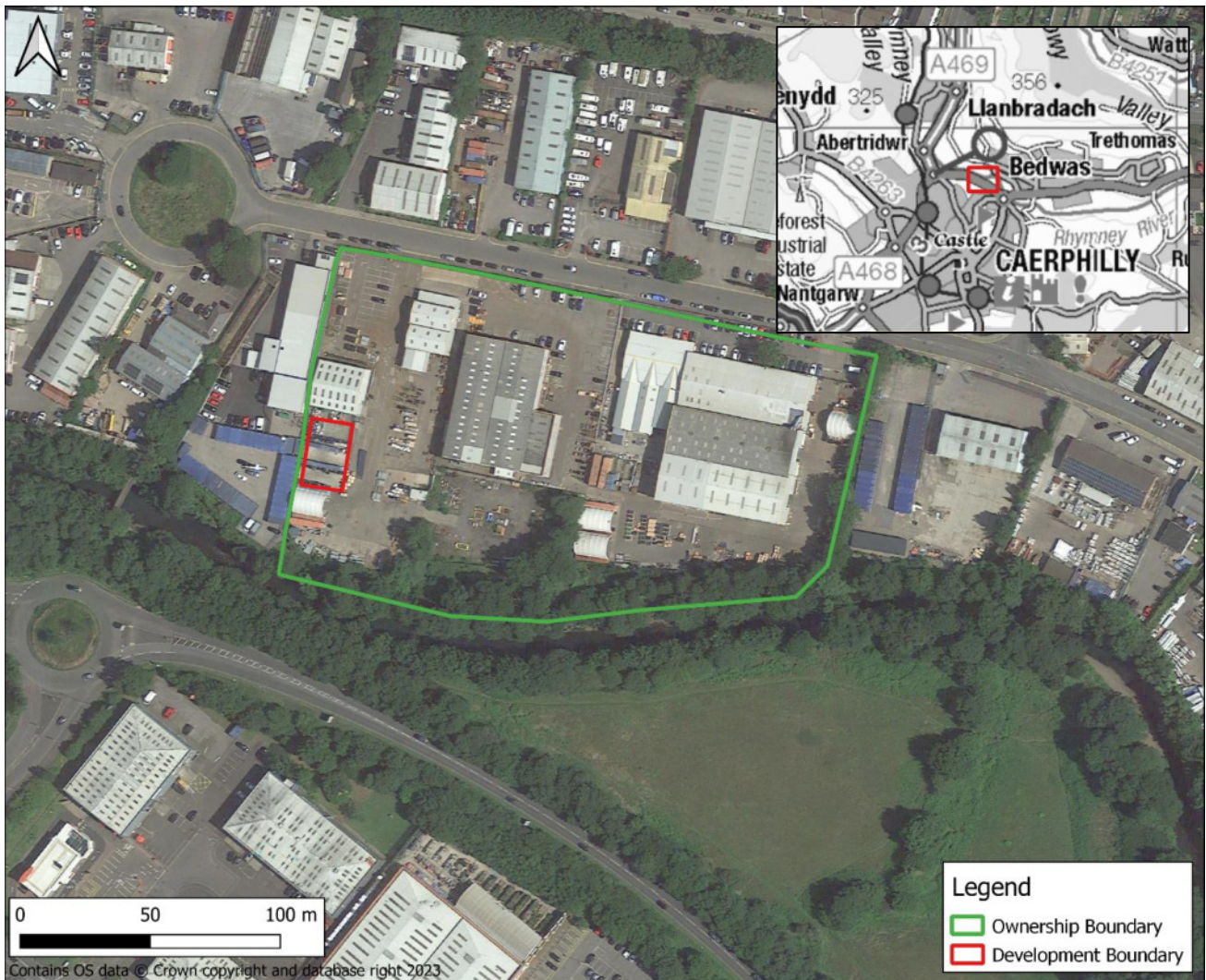


Figure 2-1 Site location

2.2 Site Topography

A topographic survey of the Eriez Magnetics site is included in Appendix A. Figure 2-2 below shows Natural Resources Wales (NRW) Open Source 1m Light Detection and Ranging (LiDAR) data which provides an illustration of the Eriez Magnetics site topography. The proposed warehouse's footprint is predominantly flat with ground levels ranging between 68.2mAOD and 68.5mAOD. The wider ownership boundary has ground levels ranging between 66.50mAOD and 69.0mAOD with a fall in elevation from west to east.

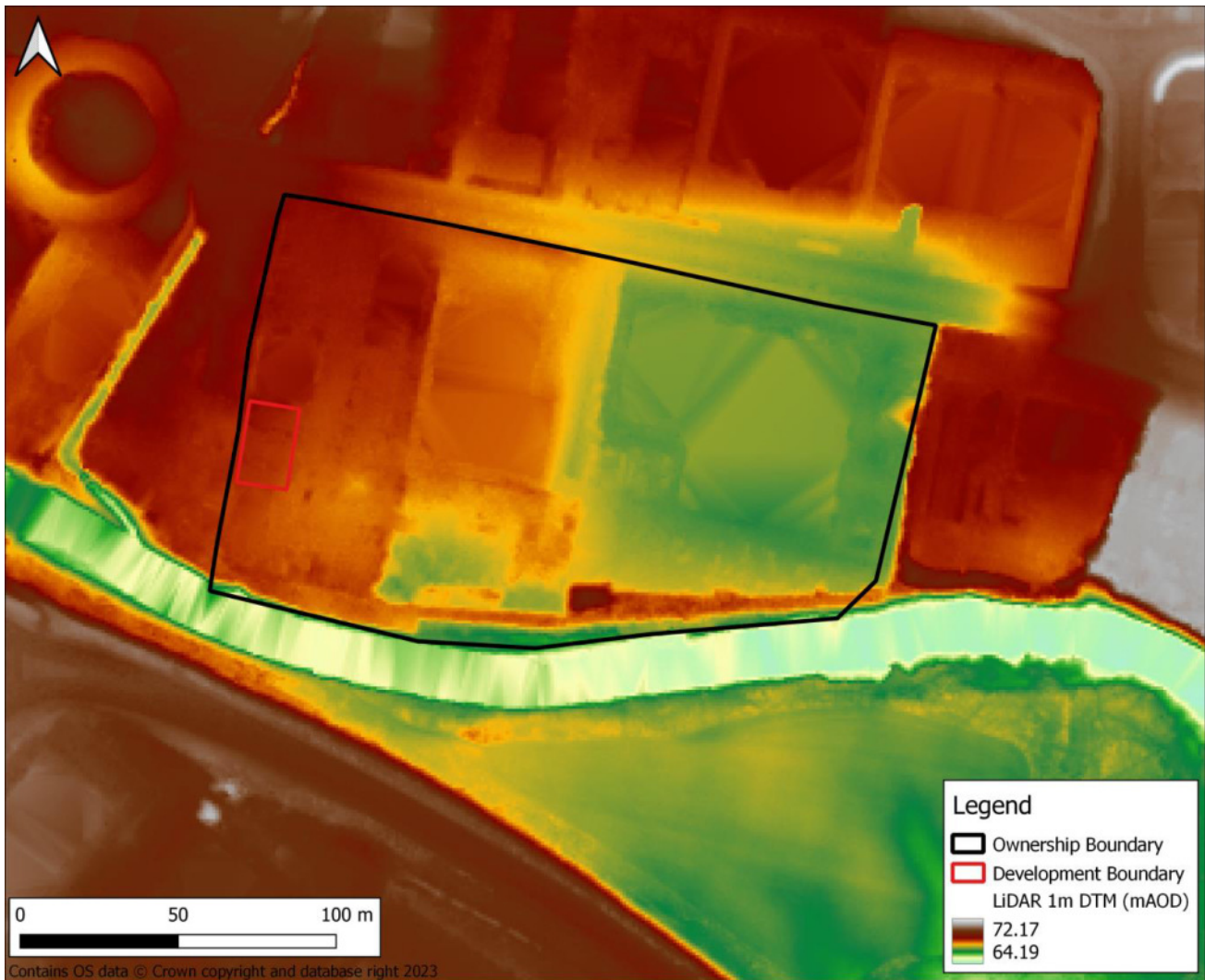


Figure 2-2 Topography of the site

2.3 Soils and Geology

The geology of the site has been assessed using the British Geological Survey (BGS) GeoIndex¹. The bedrock is shown to be Grovesend Formation comprised of mudstone, siltstone, and sandstone. The superficial geology is formed of Alluvium comprised of clay, silt, sand, and gravel. The soils are described on the Cranfield University Soilscape viewer² as freely draining and loamy soils. The surface is hardstanding where the lightweight storage units will be positioned.

2.4 Watercourses

The River Rhymney is the closest watercourse to the site and is approximately 37m from the southern boundary of the proposed warehouse's footprint. The River Rhymney is an

1 [Geology of Britain viewer - British Geological Survey \(bgs.ac.uk\)](http://bgs.ac.uk)

2 [Soilscales soil types viewer - Cranfield Environment Centre. Cranfield University \(landis.org.uk\)](http://landis.org.uk)

NRW designated Main River and flows in a predominantly easterly direction south of the site.

The Nant y Bwch, also a designated NRW Main River is a tributary of the River Rhymney and is located approximately 43m from the proposed warehouse's footprint. The Nant y Bwch flows in a predominantly southerly direction to its confluence with the River Rhymney. A smaller ordinary watercourse flows west of the Nant y Bwch, which is located approximately 178m from the warehouse's footprint.

Flood defences, in the form of an embankment, are in place and run along these stretches of river south of the Industrial Estate. This is illustrated below in Figure 2-3.

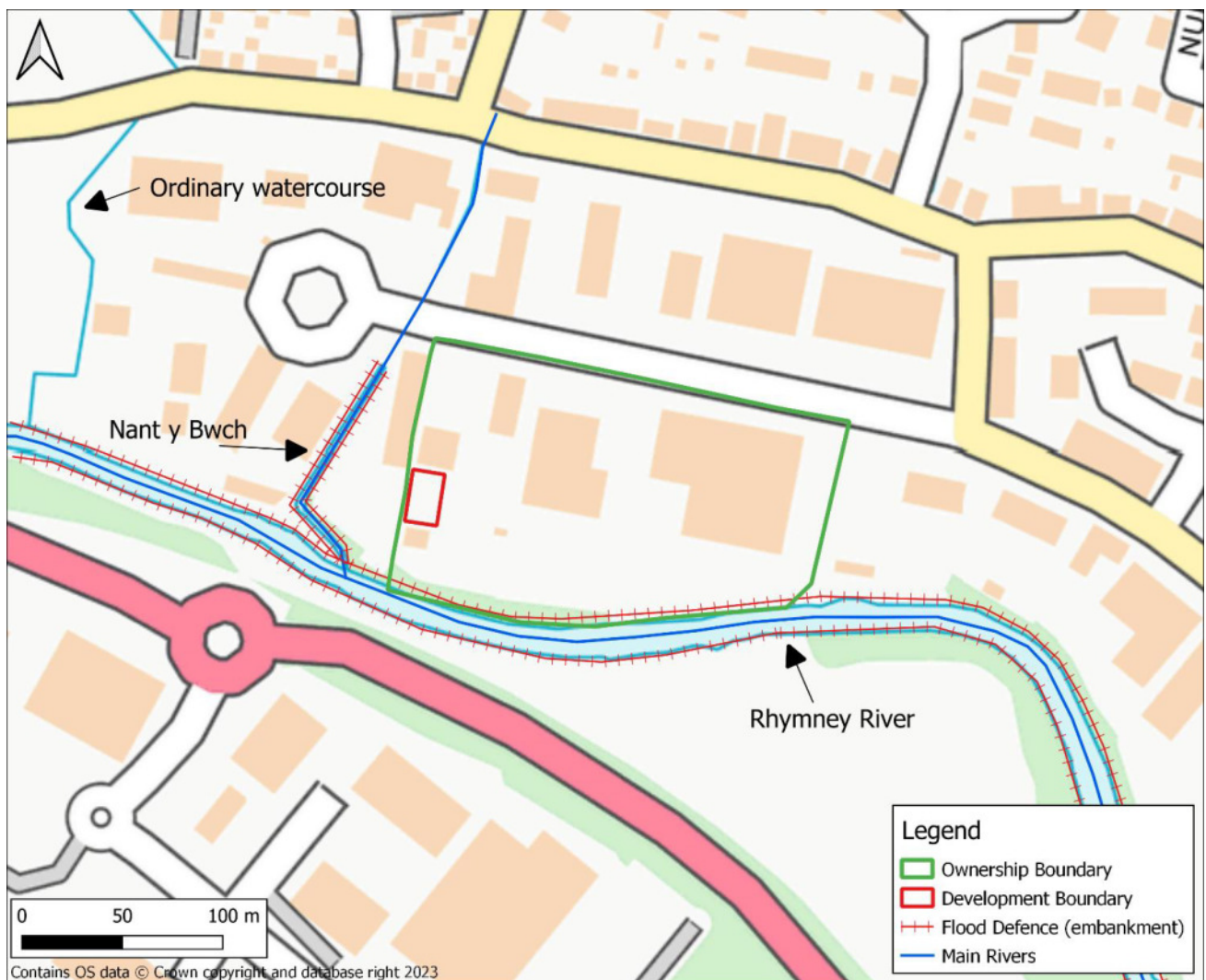


Figure 2-3 Watercourses: The Rhymney River and Nant y Bwch tributary

2.5 Development Proposal

The proposed development is the construction of a lightweight storage structure for industrial use. The footprint of the storage warehouse shall measure 25x15m. The proposed storage structure will be situated on a concrete base and formed of a simple lightweight steel frame. The sides shall be covered in trapezoid metal cladding and the roof formed of a heavy-duty tarpaulin. The proposed storage structure will have one main sliding door and a fire door.

The storage structure's purpose is to provide undercover storage for materials and components.

The proposals shall not result in any change in existing ground levels.

The proposed lifetime of development is <50 years.

Drawings detailing the proposed warehouse is included in Appendix B.

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 and improve the social, economic, environmental, and cultural wellbeing of Wales as set out in the Wellbeing of Future Generations Act 2015.

Technical Advice Note (TAN-15) introduced by the Welsh Government in 2004, provides technical guidance relating to development planning and flood risk in Wales. The initial requirements of TAN-15 are to identify the vulnerability classification(s) and flood zones within the Development Advice Map (DAM) relevant to the proposed development, and to apply this information to the application of the justification tests.

A draft update for TAN-15 was released in October 2021. However, Welsh Government subsequently suspended the adoption of this, and it is not currently known when the new TAN-15 will be published in its final form and implemented.

Although the new TAN-15 is not a material consideration, Welsh Government and NRW advise that some consideration is given to the Flood Map for Planning (FMfP) as best available information. Therefore, where a site is located in a FMfP flood risk zone it is recommended that an FCA is carried out.

As a result of the above, both the DAM and FMfP are considered as part of this FCA, although only the current TAN-15 has been applied to the assessment.

3.2 Vulnerability Classification

TAN-15 assigns one of three flood risk vulnerability classifications to a development, as shown in Table 3-1. The proposed lightweight storage structure is for industrial purposes which is categorised as **less vulnerable development**.

Table 3-1 Development categories defined by TAN-15

Development category	Types
Emergency services	Hospitals, ambulance stations, fire stations, police stations, coastguard stations, command centres, emergency depots and buildings used to provide emergency shelter in time of flood.
Highly vulnerable development	All residential properties (including hotels and caravan parks) public buildings, (e.g., schools, libraries, leisure centres), especially vulnerable industrial development (e.g., power

Development category	Types
Less vulnerable development	stations, chemical plants, incinerators), and waste disposal sites. 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) is used to trigger different planning actions based on a precautionary assessment of fluvial and tidal flood risk. Figure 3-1 shows that the proposed unit's footprint and wider Eriez Magnetics site is located within Zone C1. The C1 DAM Zone is defined as "areas of a floodplain which are developed and served by significant infrastructure, including flood defences". Less vulnerable development can occur in Zone C1 subject to the Justification Test and the Acceptability of Flood Consequences.

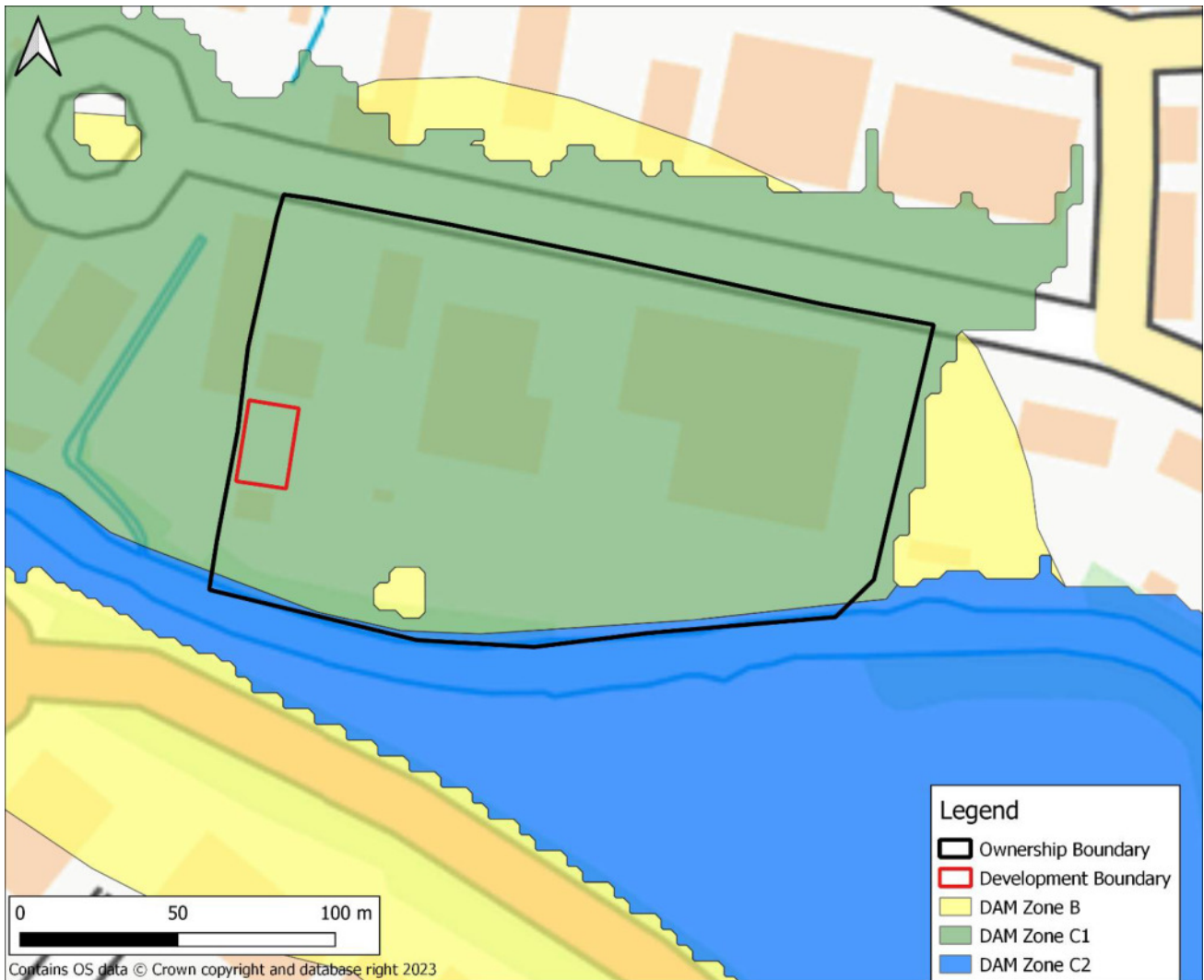


Figure 3-1 NRW's Development Advice Map

3.4 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 Guidance on Climate Change Allowances for Planning Purposes (September 2021)³ advises that "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."

The "rule of thumb" recommendation of Welsh Government points toward flexibility in the lifetime of development, particularly in relation to Less Vulnerable Development. The design life of the lightweight storage structure is likely to be <50 years.

³ Welsh Government. Flood Consequences Assessment: Climate Change Allowances (Sept 2021) https://gov.wales/sites/default/files/publications/2021-09/climate-change-allowances-and-flood-consequenceassessments_0.pdf.

3.5 Flood Map for Planning Classification

The Flood Map for Planning is used to trigger different planning actions in support of the forthcoming update to TAN-15. Although the new TAN-15 is not a material consideration, the new Flood Map for Planning is useful in that it shows the flood risk with an allowance for climate change over a 100-year lifetime of development.

The proposed development is mainly located in Flood Zone 3 of the Flood Map for Planning for Rivers, as shown in Figure 3-2. This flood zone represents areas which have a greater than 1% AEP chance of flooding in a given year, including climate change, and assuming no defences are in place. Flood Zone 2 for the Flood Map for Planning for Rivers represents areas which have between a 0.1% - 1% AEP chance of flooding in a given year, including climate change, and again assuming no defences are in place.

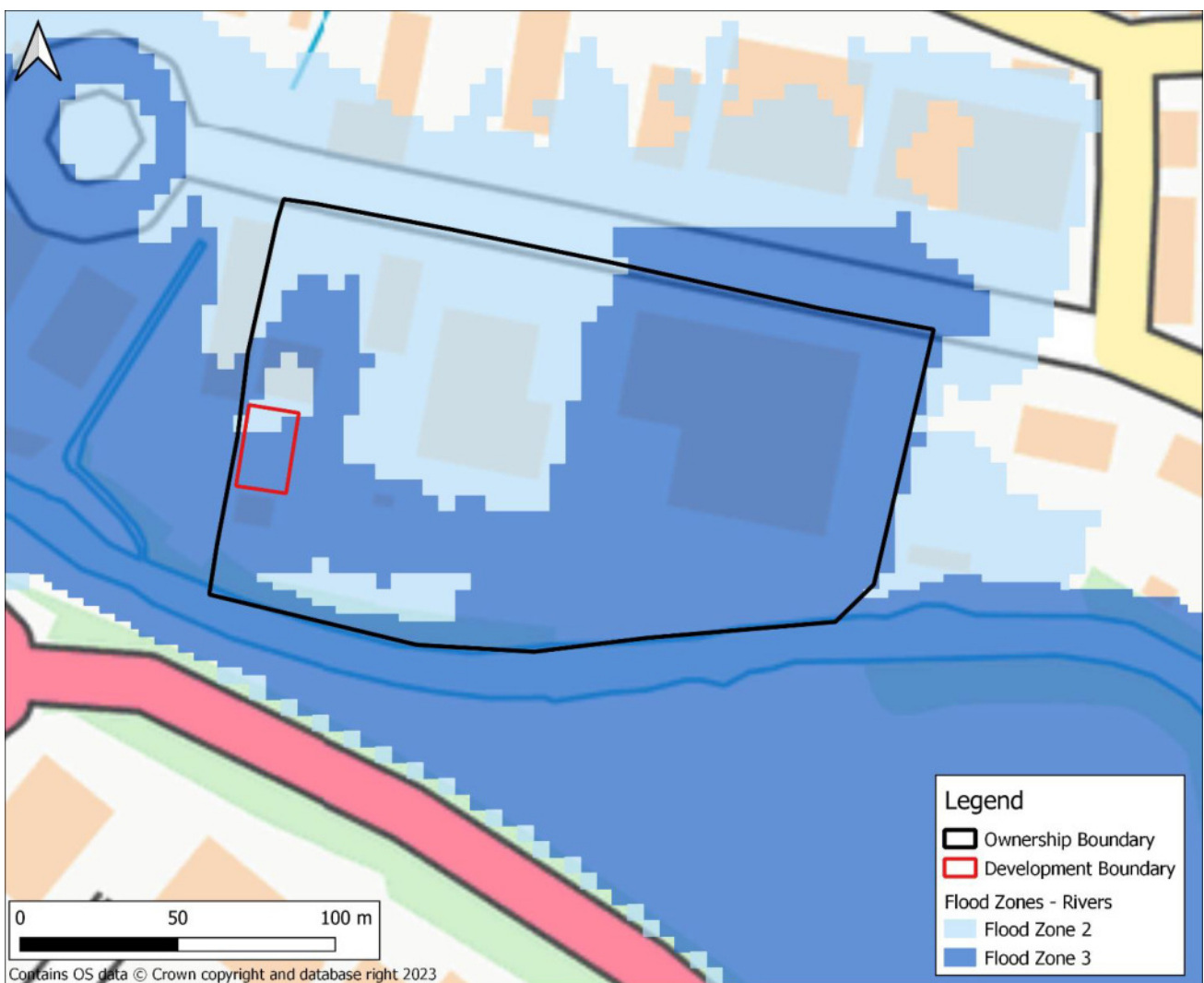


Figure 3-2 Flood Map for Planning Rivers

3.6 Local Development Plan

The Local Development Plan (LDP) is a land use document which sets out how the County Borough will be developed over 11 years (2010-2021)⁴. The current LDP was adopted by Caerphilly County Borough Council (CCBC) on 23rd November 2010, and was reviewed on 1st June 2021.

The site is subject to policy EM2 - Employment Sites Protection, subsection EM2.33 - Bedwas House Industrial Estate. The site is therefore protected for employment uses, protecting the site from development outside of the relevant business use classes, B1, B2 and B8.

Local Development Plan policies SP16 (Managing Employment Growth) and SP17 (Promoting Commercial Development) apply to the site. The policies include promoting economic development by increasing the economically active working population to 75% or over, realise an overall increase of 10% in employment levels compared to 2006, and increasing employment levels in commercial services.

3.7 Justification Test

Development in Zone C1 is subject to the justification test. TAN-15 states that the development will be justified if it can be demonstrated that:

Its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement.

or

Its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region;

and

It concurs with the aims of Planning Policy Wales and meets the definition of previously developed land;

and,

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

The proposed development has been assessed against the requirements of the Justification Test, with the results summarised in Table 3-2.

⁴ Caerphilly County Borough Council Local Development Plan 2010.

[http://www.caerphilly.gov.uk/Business/Planning-and-building-control-for-business/Local-Development-Plan/Local-Development-Plan-2010-\(Adopted\)](http://www.caerphilly.gov.uk/Business/Planning-and-building-control-for-business/Local-Development-Plan/Local-Development-Plan-2010-(Adopted))

Table 3-2 Justification Test

TAN 15 Justification Criteria	Comments	Achievable?
<p>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</p>	<p>The proposed development site will assist with the relevant policies listed in the Local Development Plan (Section 3.6)</p>	<p>✓</p>
<p>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)</p>	<p>The site is a hardstanding brownfield site and currently used for industrial purposes therefore meets the definition of previously developed land.</p>	<p>✓</p>
<p>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</p>	<p>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.</p>	<p>✓</p>

4 Flood Risk Assessment

This section assesses the risk to the site from all sources of flooding. Information is taken from publicly available data sources.

4.1 Review of Existing Flood Risk Data

A summary of the flood risk assessment is shown in Table 4-1 below. The data which informs this is discussed in subsequent sections.

Table 4-1 Summary of flood risk

Sources of Flooding	Onsite Presence	Description
Flood risk from rivers	✓	The site is at Low risk of river flooding
Flood risk from the sea	✗	The site is at very low flood risk from the sea
Flood Risk from Surface Water and Small Watercourses	✗	The site is mainly at very low flood risk from surface water and small watercourses
Flood Risk from Groundwater	✗	The site is at very low flood risk from groundwater
Flood Risk from Reservoirs	✗	The site is at very low flood risk from reservoirs
Flood risk from sewers	✗	The site is at very low flood risk from sewers

4.2 Historical Flooding

NRW's map of recorded flood extents show that there is a record of historical flooding at the proposed development site as shown in Figure 4-1. However, this occurred in 1979, which pre-dates the construction of the flood defences now in place.

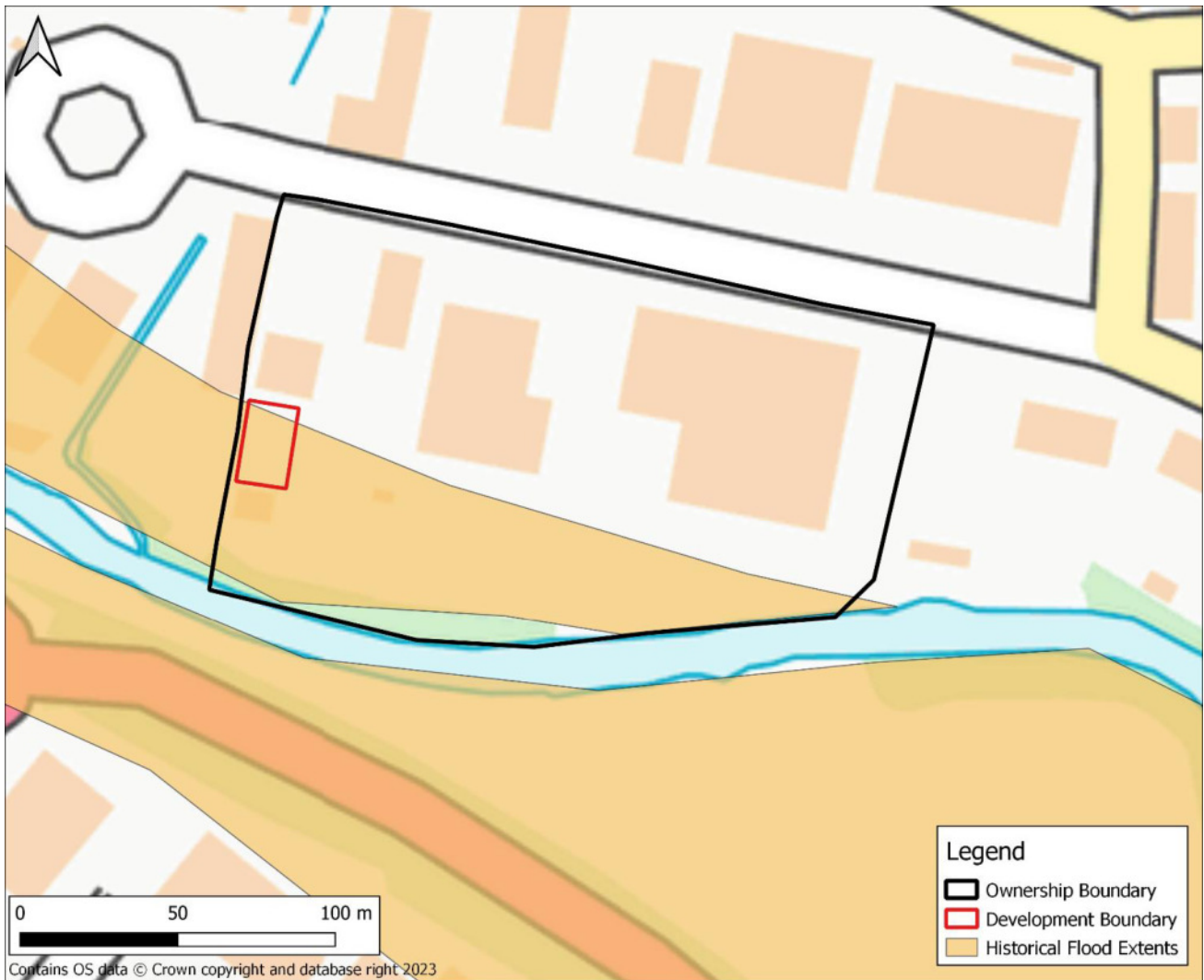


Figure 4-1 Historical Flooding

4.3 Flood Risk from Rivers

NRW's Flood Risk Assessment Wales (FRAW) flood mapping indicates that the site is at **Low risk** from river flooding as shown in Figure 4-2. The FRAW data takes into account the presence of flood defences. It can be seen that the site benefits from the embankment flood defence. However, the site is not located within an 'Area Benefiting from Flood Defences (Rivers)' as designated by NRW's Flood Risk Assessment Wales Map.

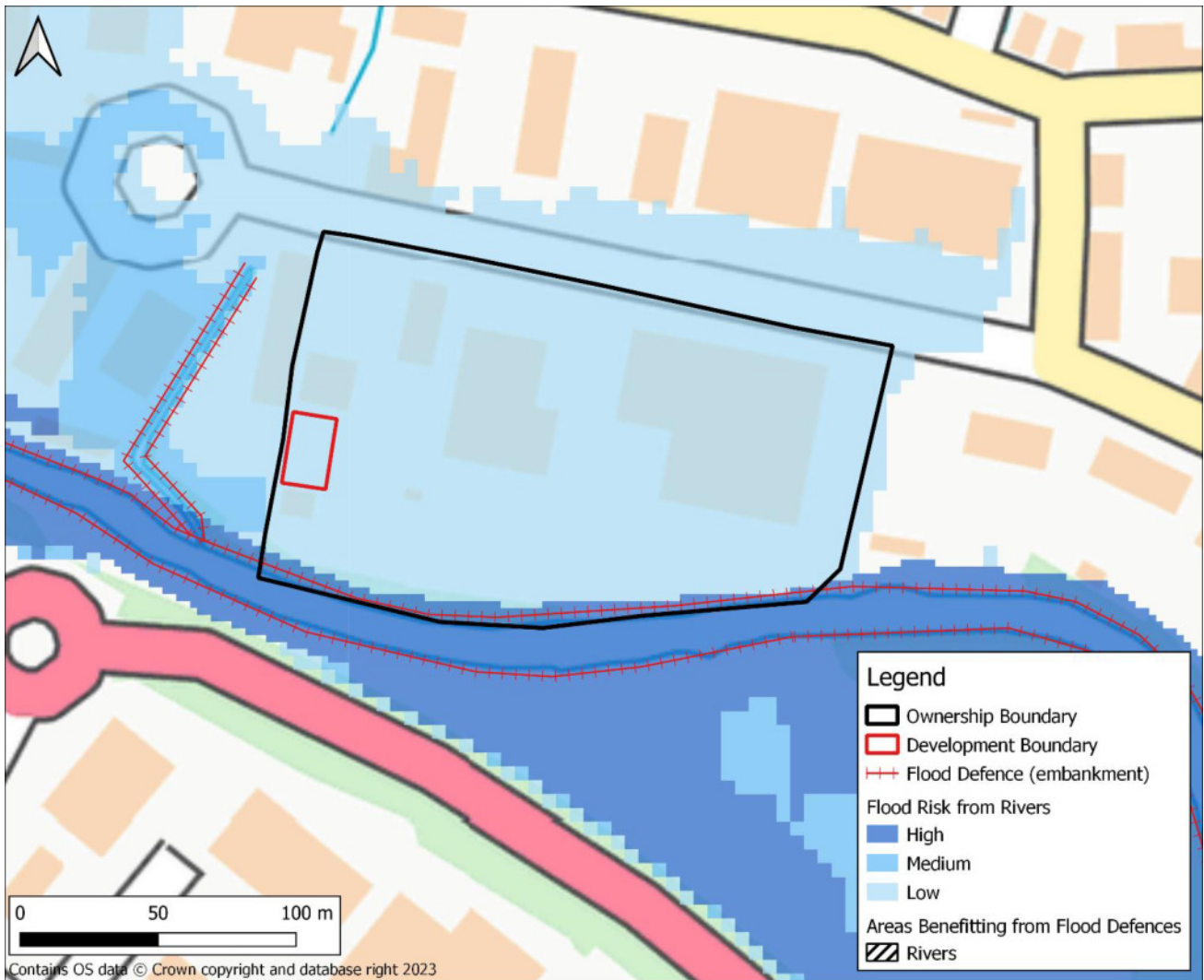


Figure 4-2 FRAW Flood Risk from Rivers

4.3.1 Hydraulic modelling review and updates

JBA have recently completed a more detailed assessment of the fluvial flood risk at the wider Eriez Magnetics site.

The Caerphilly Tributaries (Caerphilly_5_V3.1_2017) hydraulic model was obtained under licence (ATI-24948b) from NRW. The model covers the tributaries around Caerphilly as well as the River Rhymney which flows in an easterly direction to the south of the site. The 2017 model was reviewed to determine its appropriateness for an assessment of flood risk at the site.

Following the model review, the River Rhymney model inflow hydrology was updated. In addition, the following model updates were undertaken to bring the modelling in line with current best practise, reflecting the latest available data and suitability for a site-specific assessment:

- Underlying LiDAR data representing the surrounding area of Caerphilly was updated with a recently collated digital terrain model (DTM). This was obtained from Welsh Government's 'Data Map Wales' online portal.
- Site topography was updated using site-specific topographic survey obtained from Usk Land Survey in July 2023. This was represented with a separate 1m resolution DTM covering the site. Current site buildings were represented as 2d_zsh files with a finished flood level.
- Updated Flood Modeller and TUFLOW software versions were used, with Flood Modeller version 5.0 and TUFLOW version 2023-03-AB being utilised.
- Minor fixes and model stability improvements, including alterations to the model's 1D_WLL (water level lines) and 1D-2D linkages were actioned.
- The model was trimmed back to reduce model run-times. The original model included all Caerphilly tributary networks (Nant yr Aber, Porset Brook and Nant Gledyr watercourses). The part of the model representing the tributaries was removed and these watercourses were instead represented as an intervening area with their combined hydrological inputs entering the River Rhymney from the west.

4.3.2 Hydraulic modelling results

Figure 4-3 shows the maximum flood depths during the modelled 1% AEP event. The figure shows that the site does not flood during this event due to the presence of flood defences along the left bank of the Rhymney River. Flood water overtops the left bank some 500m upstream of the site and flows along the northern floodplain in an easterly direction but does not reach the site.

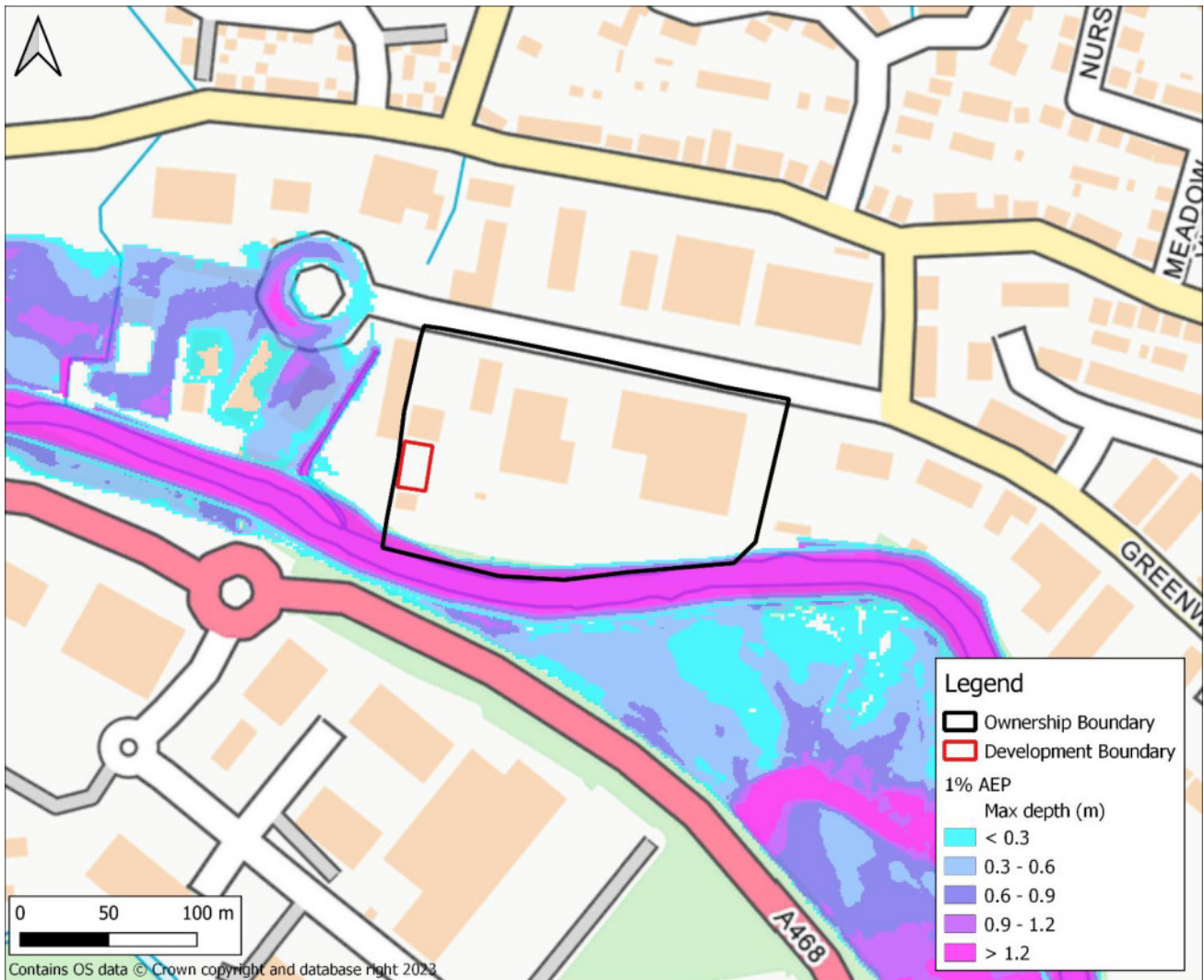


Figure 4-3 1% AEP event - maximum flood depths

Figure 4-4 shows the maximum flood depths during the modelled 1% AEP plus climate change (25%) event. The figure shows that the proposed site floods during this event.

Depths range from 3mm at the northern part of the proposed warehouse's footprint to 152mm at the southern part of the proposed warehouse's footprint. Water levels reach a maximum of 68.59m AOD across the proposed warehouse's footprint. As with the flood mechanisms seen during the 1% AEP modelled event, flood water overtops the left bank some 500m upstream of the site and flows along the northern floodplain in an easterly direction.

It is however noteworthy, that the allowance for climate change used within the fluvial modelling reflects a 100-year design life and is therefore slightly conservative for the development proposed which will have a lifetime of less than 50 years.

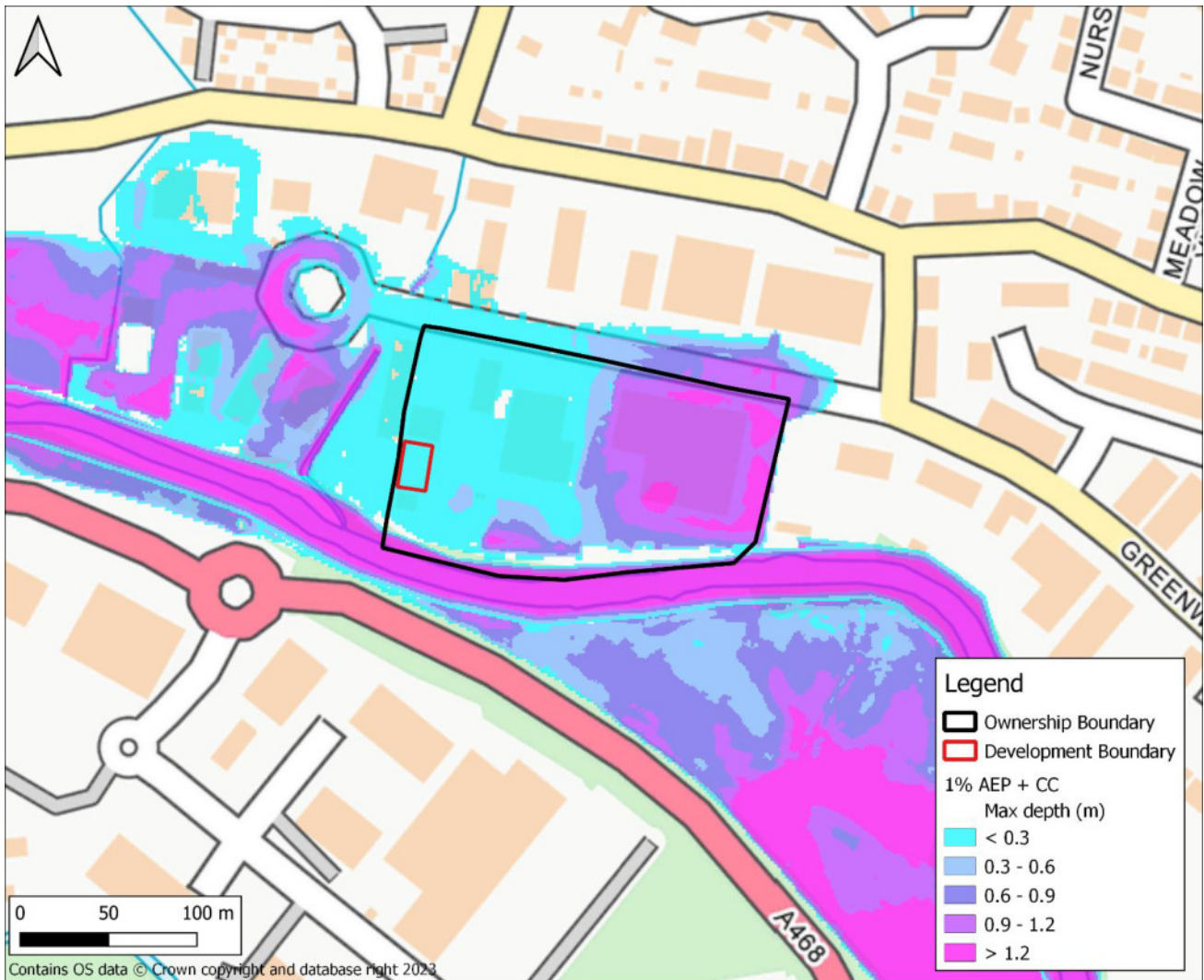


Figure 4-4 1% AEP event plus climate change

Figure 4-5 shows the maximum flood depths during the modelled 0.1% AEP event. It can be seen that flooding across the proposed development site is exacerbated during this event, with depths ranging from 157mm on the northern part of the proposed warehouse's footprint to 357mm on the southern part of the proposed warehouse's footprint. Water levels reach a maximum of 68.71m AOD across the warehouse's footprint. As with the flood mechanisms seen during other modelled event, flood water overtops the left bank some 500m upstream of the site and flows along the northern floodplain in an easterly direction.

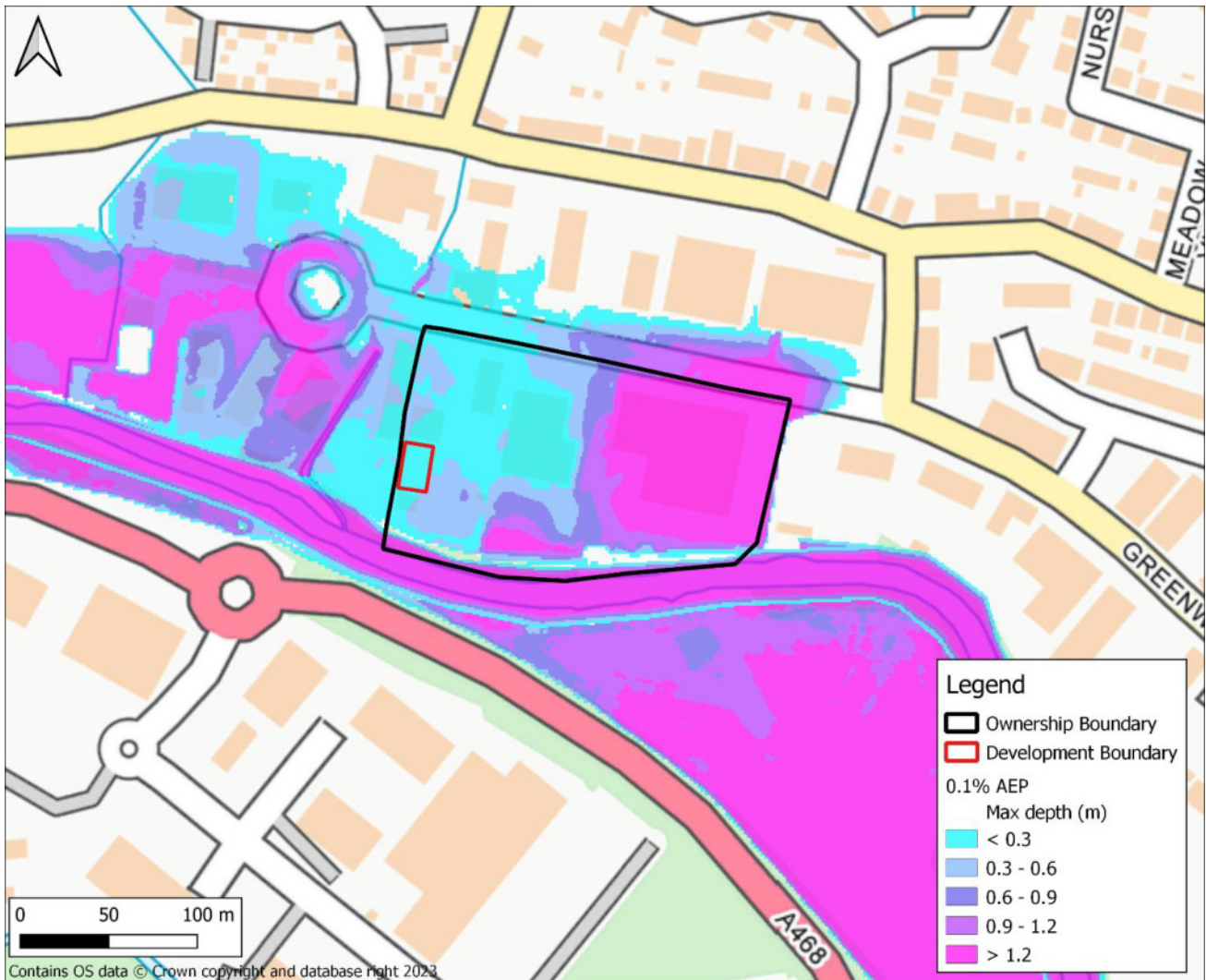


Figure 4-5 0.1% AEP event

The purpose of the proposed storage structure's is to provide undercover storage for low value materials and components. The proposed development does not involve a change in vulnerability or use.

The proposed warehouse will not displace any floodwater or change existing ground levels. Therefore, the proposed development will have no impact on flood risk elsewhere.

Given the results of the updated hydraulic modelling, and the shallow flood depths predicted in extreme events, the overall fluvial flood risk to the proposed lightweight warehouse is considered to be **moderate**, and in line with the acceptability criteria of TAN15.

4.4 Flood Risk from the Sea

NRW's FRAW flood mapping indicates that the site is not located within a tidal region, it can therefore be concluded that the risk of tidal flooding at the site is **very low**.

4.5 Flood Risk from Surface Water and Small Watercourses

NRW's FRAW Surface Water and Small Watercourses map, included in Figure 4-6, shows that the entire proposed unit's footprint is at a **very low** risk of flooding from surface water sources. This suggests that there is less than a 0.1% AEP chance of the site flooding from surface water and small watercourses in any given year.

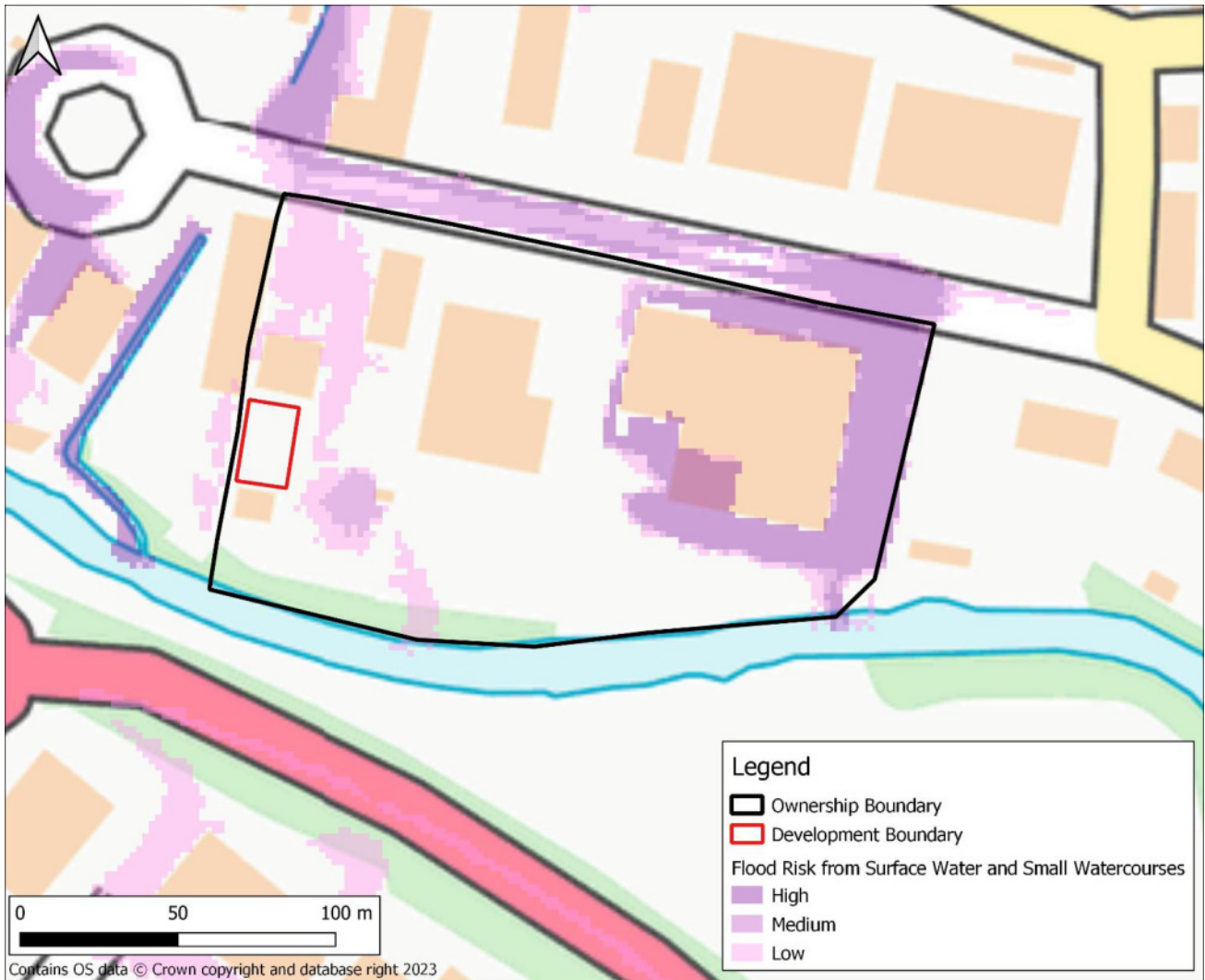


Figure 4-6 FRAW Flood Risk from Surface Water and Small Watercourses

4.6 Flood Risk from Groundwater

Groundwater flooding is caused by unusually high groundwater levels. It occurs as excess water emerges 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. Caerphilly Flood Risk Management Plan⁵ does not mention any specific areas of historical groundwater flooding recorded in the Bedwas area. Given the above and the fact that the proposed unit will be constructed directly on the existing hardstanding without impacting the ground beneath, the risk of flooding from groundwater flooding is considered to be **very low**.

4.7 Flood Risk from Reservoirs

The NRW FRAW Flood Risk from Reservoirs flood map indicates that the proposed development site is **not at risk** of flooding due to reservoir failure, as shown in Figure 4-7. It can therefore be concluded that the risk of reservoir flooding at the site is **very low**.

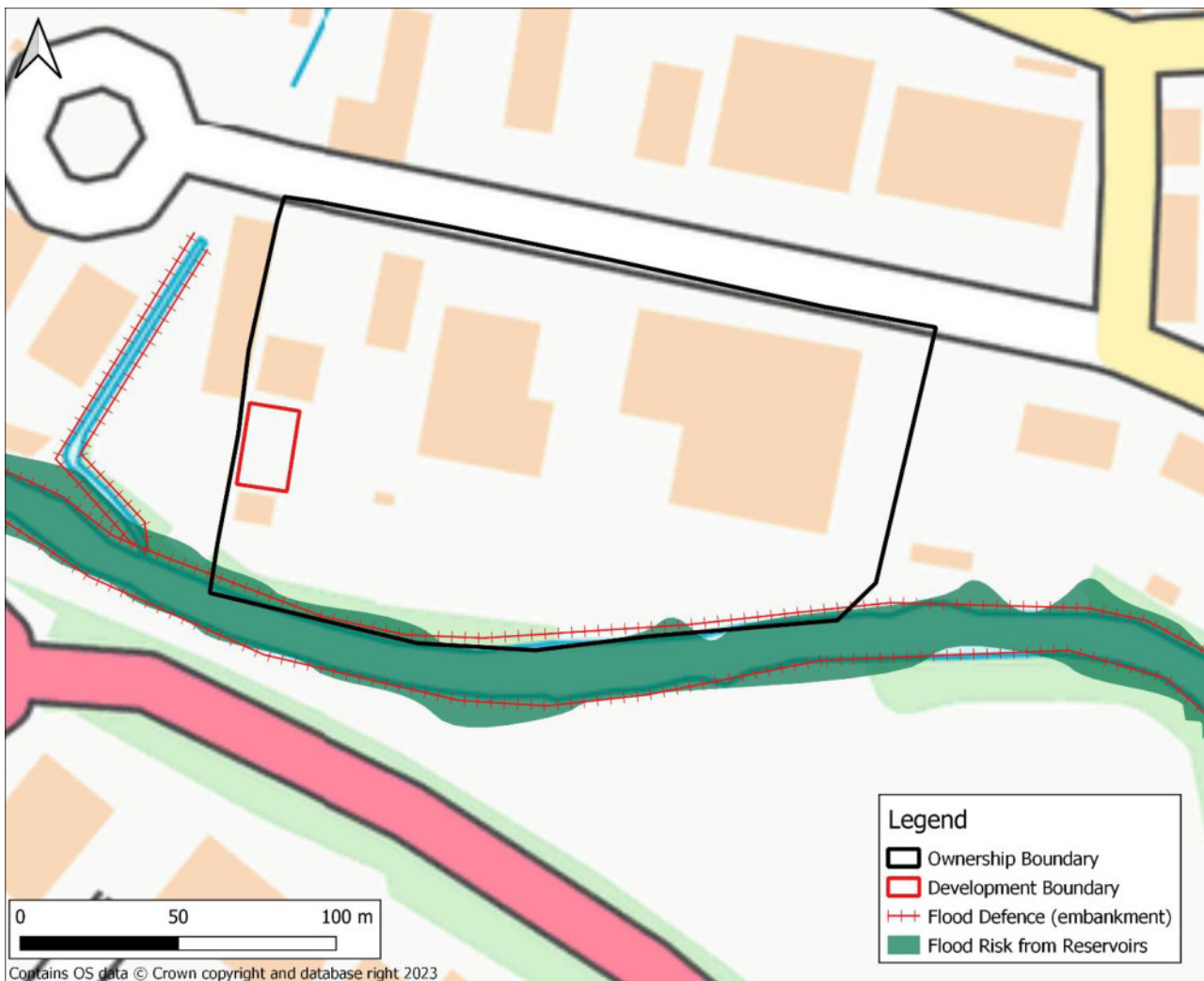


Figure 4-7: NRW's FRAW Flood Risk from Reservoirs Map

⁵ Caerphilly County Borough Council Flood Risk Management Plan 2015
<https://www.caerphilly.gov.uk/caerphillydocs/roads-and-pavements/flood-risk-mgt-plan-dec2015.aspx>

4.8 Flood Risk from Sewers

Sewer flooding is often caused by excess surface water entering the drainage network. Dŵr Cymru Welsh Water (DCWW) investigated the occurrence of sewer flooding incidents across Caerphilly Borough Council. It was found that there was a total of 306 sewerage flooding events that have been recorded by Welsh Water over the past decade. With regards to the proposed development site, it is understood that the risk to sewer flooding is **very low** based on the Caerphilly Borough Council Preliminary Flood Risk Assessment Report⁶.

⁶ Caerphilly County Borough Council Preliminary Flood Risk Assessment Report 2011
<https://www.caerphilly.gov.uk/services/roads-and-pavements/flood-risk-management/flood-risk-strategies,-plans-and-policies/preliminary-flood-risk-assessment-report?lang=en-GB>

5 Assessment of Accessibility Criteria

TAN-15 states that for development to be considered within DAM Zone C1, the site must meet the Acceptability Criteria.

Table 5-1 details the acceptability criteria required by TAN-15 and the proposed development's compliance against these criteria.

Table 5-1 Acceptability Criteria

TAN 15 Justification Criteria	Comments	Achieved
Developer is required to demonstrate that the site is designed to be flood free for the lifetime [Ref: TAN-15 A1.5] of development for a 1 in 100 (1%) chance (fluvial) flood event including an allowance for climate change in accordance with TAN-15 A1.14.	<p>The proposed warehouse is predicted to be flood free during the 1% AEP event.</p> <p>The hydraulic modelling shows that the warehouse will flood with shallow depths of <150mm during the 1% AEP plus climate change event.</p> <p>TAN-15 A1.14 states that the threshold frequency stated within the table should not be regarded as prescriptive but provides indicative guidance as to what that frequency threshold could be for different types of development.</p> <p>The purpose of the proposed storage structure's is to provide undercover storage for low value materials and components. The proposed development does not involve a change in vulnerability or use.</p> <p>In addition, the allowance for climate change used within the fluvial modelling reflects a 100-year design life and is therefore slightly conservative for the development proposed.</p> <p>In conclusion, the flood frequency for the proposed development aligns with the requirements and objectives of TAN-15 A1.14.</p>	Yes
The development should be designed so that in an extreme (1 in 1000 chance) event there would be less than 600mm of water on access roads and within the property in accordance with TAN-15 table A1.15.	<p>The site is predicted to flood in the 0.1% event to shallow depths. The maximum depth is 357mm. This is below the TAN-15 A1.15 guidance of <600mm.</p> <p>The maximum flood level is predicted to be 68.71m AOD.</p>	Yes
No flooding elsewhere.	The proposed development will not change ground levels and consequently will not displace flood water. Therefore, there is little	Yes

TAN 15 Justification Criteria	Comments	Achieved
	or no potential for the development to increase flooding elsewhere.	
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).	The site benefits from flood defences, which are NRW owned assets that must be maintained to protect significant communities and key infrastructure.	Yes
The developer must ensure that future occupiers of development are aware of the flooding risks and consequences.	The developer will provide future occupants and purchasers with information on flood risk in the form of this report.	Yes
Effective flood warnings are provided at the site.	The site is located within the NRW River Rhymney at Bedwas House Industrial Estate Flood Warning Area and River Rhymney Flood Alert Area. Occupants of the building should sign up to these flood warnings.	Yes
Escape/evacuation routes are shown by the developer to be operational under all conditions.	The shallow flood water predicted during the extreme event is unlikely to interfere with safe access and egress.	Yes
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.	The proposed lightweight storage structure has been designed to allow rapid movement of goods and possessions via the large sliding doors.	Yes
Development is designed to minimise structural damage during a flooding event and is flood proofed to enable it to be returned to its prime use quickly in the aftermath of the flood.	The lightweight storage structure is by its nature relatively resilient to flooding.	Yes

6 Conclusion and Recommendations

JBA Consulting were commissioned by Eriez Magnetics Limited to undertake a Flood Consequences Assessment (FCA) in support of a planning application for a lightweight storage structure at the existing Eriez Magnetics site off Greenway in Bedwas Industrial Estate, Caerphilly.

The proposed warehouse's footprint is existing hardstanding and is currently used for storage purposes. The site is therefore considered to be brownfield land and the proposed development does not change the vulnerability classification of the development.

The River Rhymney is an NRW designated Main River and flows in a predominantly easterly direction south of the site. Flood defences, in the form of an embankment, are in place and run along these stretches of river south of the Industrial Estate.

The proposed warehouse will have a footprint of approximately 375m² and will comprise of a lightweight storage structure with a lifetime of development of <50 years. The proposed storage structure's purpose is to provide undercover storage for low value materials and components. The proposal shall not result in any changes to the existing ground level.

The site is subject to policy EM2 - Employment Sites Protection, subsection EM2.33 - Bedwas House Industrial Estate. The site is therefore protected for employment uses, protecting the site from development outside of the relevant business use classes, B1, B2 and B8. The policies include promoting economic development by increasing the economically active working population.

The site is located in Zone C1 of the DAM Map. Zone C1 indicates areas of the floodplain which are developed and served by significant infrastructure, including flood defences. The proposed use is categorised as less vulnerable development. Less vulnerable development can occur in Zone C1 subject to the Justification Test and the Acceptability of Flood Consequences

The proposed warehouse's footprint is at low or very low risk of flooding from the sea, surface water and small watercourses, groundwater, reservoirs, and sewers.

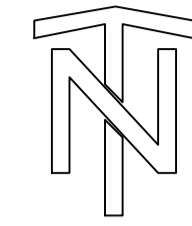
Detailed fluvial flood modelling shows that the storage warehouse is predicted to be flood-free during the 1% AEP event. In the 1% AEP event plus climate change the warehouse is predicted to flood to shallow depths of approximately <150mm. In the 0.1% AEP event the warehouse is predicted to flood to depths of <400mm.

The proposed development will not change ground levels and consequently will not displace flood water. Therefore, there is little or no potential for the development to increase flooding elsewhere.

An assessment of the Justification Test including the Acceptability Criteria has been undertaken, with all aspects found to be satisfied for the proposed development.

Consequently, it is concluded that on the grounds of flood risk, the proposed development meets the requirements set out in TAN-15 and the aims and objectives of Planning Policy Wales.

A Topographical survey



Notes:

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2. Due to unavoidable inaccuracies during the reproduction process these drawings should not be scaled. Where dimensions are critical Usk Land Survey should be requested to confirm dimensions based on survey information. Scales appearing at the base of this plan are for indicative purposes only.
3. This plan has been prepared in accordance with B.S. 1192, Part 1 in relation to scale and dimension. Tolerances permitted within the British Standard should be observed.
4. All dimensions and particulars should be checked on site. Any discrepancies should be reported to Usk Land Survey before any work commences.

Revision	By	Checked	Approved	Date	Description

SURVEY LEGEND	
AB	AIR BRICK
AV	AIR VALVE
B	BOLLARD
BB	BELISHA BEACON
BDY	BOUNDARY
BOH	BOREHOLE
BP	BORE PILE
BL	BED LEVEL
BRK	BRICKWORK
BS	BUS STOP
BM	BENCH MARK
BW	BRICK WALL
BWF	BARRIED WIRE FENCE
CBF	CLOSE BOARDED FENCE
CF	CORRUGATED IRON FENCE
CL	COVER LEVEL
CLP	CHAIN LINK FENCE
CONC	CONCRETE
CP	CONCRETE POST
CPF	CONCRETE PILING FENCE
CR	CYCLE RACK
CTV	CABLE T.V. MANHOLE
CUL	CULVERT
DK	DROP KERB
DL	DOCK LEVEL
DP	DOWNPIPE
DPC	DAMP PROOF COURSE
DR	DRAIN
DWB	DWC WASTE BIN
EA	ENVIRONMENT AGENCY
EB	ELECTRICITY BOX
ECP	ELECTRIC CABLE FENCE
EGP	ELECTRICITY CABLE PIT
EMH	ELECTRICITY MANHOLE
EP	ELECTRICITY POLE
ER	EARTHING ROD
ETL	ELECTRICITY TRANSMISSION LINE
FB	FLOWER BED
FBR	FOOTBRIDGE
FI	FIRE HYDRANT
FHM	FIRE HYDRANT MARKER
FL	FLOOR LEVEL
FP	FENCE POST
FWM	FUUL WATER MANHOLE
G	GULLY
GL	GROUND LEVEL
GP	GATE POST
GM	GAS MARKER
GV	GAS VALVE
HW	HEAD WALL
IC	INSPECTION CHAMBER
I	INLET LEVEL
IRF	IRON RAILING FENCE
IRFV	INTERLOCKED FENCE
JB	JUNCTION BOX
KIB	KERB INLET GULLY
LB	LEFT BANK
LFB	LIFEBODY
LP	LAMP POST
MB	MOORING BOLLARD
MF	MISCELLANEOUS FENCING
MH	MANHOLE
MKR	MARKER
MP	MOORING PILE
MS	MILE STONE
MSF	METAL RAILING FENCE
NB	NOTICE BOARD
NBA	NATIONAL BUREAU AUTHORITY
OHC	OVERHEAD CABLE
OS	ORDNANCE SURVEY
OSR	OPEN STEEL RAILINGS
P	PILL
PB	PILLAR BOX
PM	PARKING METER
PO	POST
PPF	POST & RAIL FENCE
PTM	PARKING TICKET MACHINE
PWF	POST & WIRE FENCE
RB	RIGHT BANK
RE	RODDING EYE
RMS	ROAD SIGN
RTW	RETAINING WALL
RWP	RAINWATER PIPE
SC	STOP COCK
SDP	STAND PIPE
SK	SKANKWAY
SL	SOFFIT LEVEL
SMH	SURFACE WATER MANHOLE
SMP	SHEET METAL PILING
SP	SIGN POST
STN	STATION
SV	SUICIDE VALVE
SVP	SOIL VENT PIPE
SWF	SHEEP WIRE FENCE
TBM	TEMPORARY BENCH MARK
TB/TCB	TELEPHONE CALL BOX/POST
TMH	TELECOM MANHOLE
TL	THRESHOLD LEVEL
TLT	TRAFFIC LIGHT
TLB	TRAFFIC LIGHT BOX
TP	TELEGRAPH POLE
TRS	TIMBER RUBBING STRIP
TS	TREE STUMP
TSR	TUBULAR STEEL RAILINGS
VP	VENT PIPE
WB	WASTE BIN
WL	WATER LEVEL/WATER LINE
WM	WATER METER
WMF	WIRE MESH FENCE
WP	WOODEN POST
WPR	WOODEN POST & RAIL FENCE
WV	WATER VALVE
YG	YARD GULLY

(Abbreviations apply to survey data only)

STN	CO-ORDINATES	LEVEL	STN	CO-ORDINATES	LEVEL
STN1	316181.22	188964.72	66.77		
STN2	316162.82	188946.91	66.66		

NATIONAL GRID.	CONTROL USED:	VALUE(M)
TYPE	REFERENCE	

Client
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 Swansea, SA1 8AS

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Project
 Eriez Magnetics
 Topographical Survey

Site
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 Greenway
 Bedwas, Caerphilly
 CF83 8DW

Surveyed by J.Barton Date: May 2017
 Checked by J.Barton Date: May 2017
 Drawn by J.Barton Date: May 2017

Drawing No. _____ Revision _____

Topo _____

Drawing Scale: 1:500 Job Ref 0600

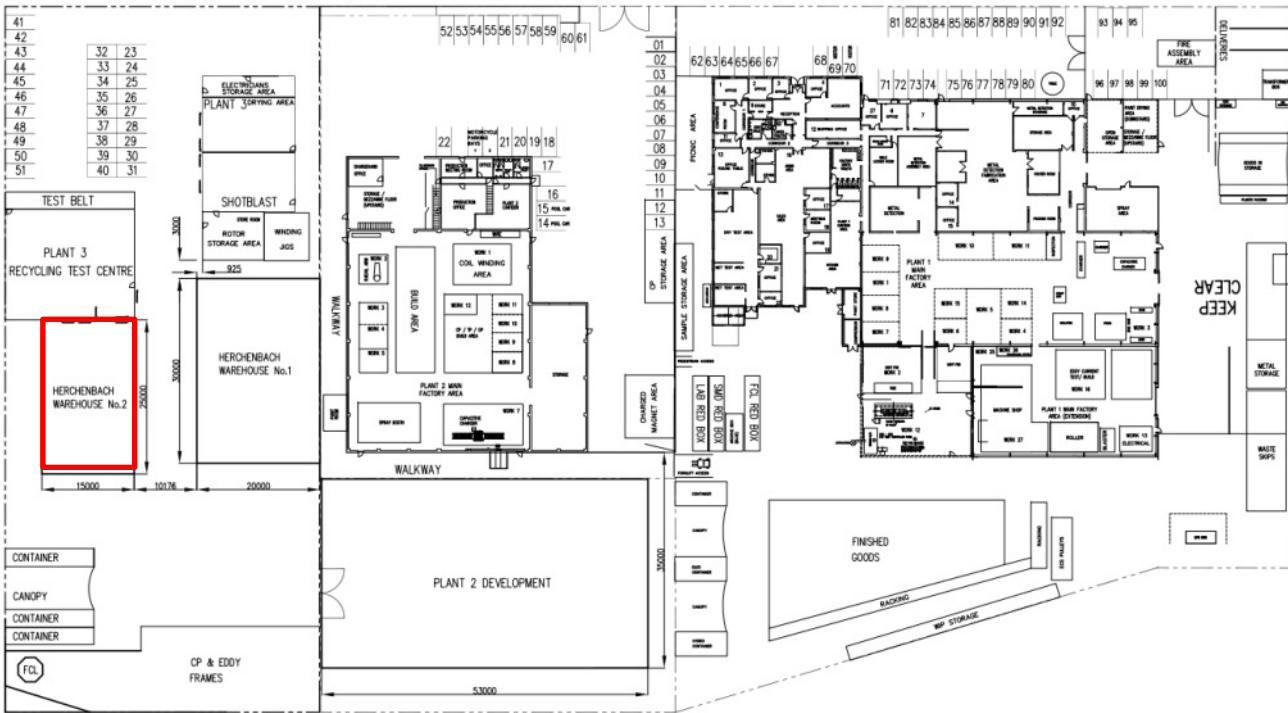
CAD Filename: 0600.dwg Plot Scale: 1=1

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B Development Proposal

The proposed unit is shown in the figure as Herchenbach Warehouse N0.2 outlined in the red polygon.



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