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Flood Risk Consequences

Redevelopment Site At Miners Road, Llay, North Wales

Redevelopment Site – Miners Road, Llay, North Wales

Ref : 1710-FRC-001-A 27 July 2026

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Introduction

Design Coordination Limited has been instructed to prepare a Flood Consequences Assessment (FCA) in respect of a proposed Commercial redevelopment of an Existing Brownfield Site located on Miners Road, Llay, North Wales.

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). The 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.

Existing Conditions

The site covers an area of approximately 0.535 hectares (ha) with the full site proposed to be redeveloped and is located at National Grid Reference (NGR) 332281, 356375. An aerial Image is included in Appendix A.

Local Topography

A topographical survey has been undertaken the topographical survey shows that the site is relatively flat with levels varying between 92.100m in the North Western corner to 91.162m in the South Western corner with the general falls across the site from North to South with an average ground level of 91.700m Above Ordnance Datum (m AOD).

Topographical information is provided as Appendix D.

Ground Conditions

At present the site has not undertaken a full phase II investigation, with the assumptions of the ground conditions being clay the use of soakaways will not be suitable for the site.

Local Drainage

Public sewer records have been obtained from Dwr Cymru Welsh Water (DCWW) and are included in Appendix C. The DCWW sewer records show that there are no public sewers within the site, with a public surface water sewer being shown to be present within Miners Road, with both Foul & Surface Water Public Sewers crossing the site.

The existing public sewers within the site have been cctv surveyed which highlight the existing 600mm surface water sewer being partially blocked by debris which restricted the extent of the cctv survey.

Due to the location of the existing foul public sewer located on the site, the current proposals for redevelopment will require a sewer diversion to be carried out to facilitate such with agreements to be obtained post planning.

Development Proposals

The proposed development is for 2 No units with associated access, service yards and parking.

The site wide drainage design looks to utilise below ground storage attenuation to limit flows from site to equivalent greenfield runoff rates, with the attenuation storage volume being designed to accommodate the 1 in 100 + climate change allowance with no flooding off site.

Flood Zone Category

The Welsh Government 'Development Advice Map', included in Appendix B, shows that the site is located within Surface Water - Flood Zone3, (High) with parts of the site considered as (Low & Medium) .

All development (buildings) levels will be adjusted to place The Buildings outside of Surface Water Flood Zone High Risk by adopting FFL's above the flood risk level.

The NRW 'Flood Risk Assessment Wales' map (Appendix E), shows that the site is located within the High, Medium and Low Surface Water Flood Risk (Zone 3), with records indicating No previous flood instances being recorded for the site or surrounding area.

We would highlight the existing surface water public sewer within the site is currently partially blocked which was discovered during the cctv survey of the existing sewers within the site.

Development Vulnerability Classification

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

All development (buildings) will be placed above the flood risk levels for the site, so as to mitigate the risk associated with Flood Risk to the buildings with the access Road and Service Yards to the rear being kept lower to maintain any such existing overland flood routes. Therefore the TAN15 Justification Test is considered to be passed.

Local Policy

The Flintshire County Council Unitary Development Plan 2000-2015 (adopted September 2011) contains the following policies relating to flood risk:

STR1 New Development

New development will be required to respect physical and natural environmental considerations such as flooding and land stability.

EWP 16 Water Resources

Development which would enhance the existing water treatment and supply infrastructure will be permitted where it would not have an unacceptable adverse impact on local amenity, landscape, nature conservation or heritage interests.

All other development affecting water resources will only be permitted where the development meets the following criteria:

a) it would not have a significant direct or indirect adverse impact on the capacity and flow of groundwater, surface water, or coastal water systems;

b) it would not pose an unacceptable risk to the quality of groundwater, surface water, or coastal water;

c) it would have access to adequate water supply, sewerage and sewage treatment facilities which either already exist, or will be provided in time to serve the development, without detriment to existing abstractions, water quality, fisheries, amenity or nature conservation.

EWP 17 Flood Risk

Development which would seek to reduce the impact and frequency of flood risk to areas at risk of flooding will be generally supported provided:

a) the design and character of the works is appropriate to the locality:
b) the works do not adversely impact on interests of acknowledged nature conservation and recreation importance; and
c) the works do not increase flood risk elsewhere

Other development within areas at risk of flooding will only be permitted where the Council considers that the development is justified and is satisfied that:

a) the consequences of a flooding event can be effectively managed;
b) it would not increase the risk of flooding elsewhere;
c) appropriate alleviation or mitigation measures have been incorporated into the proposal and will be available for the lifetime of the development; and
d) it would not have any adverse effects on the integrity of tidal and fluvial flood defences.

Local guidance documents including the Flintshire County Council Strategic Flood Consequences Assessment (SFCA) (July 2018), the Flintshire County Council Preliminary Flood Risk Assessment (PFRA) (June 2011) and the Flintshire County Council PFRA Addendum (December 2017) have been reviewed and inform this report.

Flood risk

The site lies within Zone 3 as defined by the Flood Maps for Planning (FMfP) referred to under Technical Advice Note (TAN) 15 Development and Flood Risk (31 March 2025). Our Flood Map confirms the site to be located within the 0.1% (1 in 200) annual exceedance probability (AEP) event flood outlines.

The development proposal is for the construction of a number of commercial units, which would be classified as 'less vulnerable' development in accordance with Figure 2 of TAN15.

The FCA demonstrates that the proposal complies with the requirements of A1.15 of TAN15, in relation to safe site access and egress.

Sources of Flooding and Probability

Fluvial

The nearest watercourse is located near the south eastern corner of the site and is identified as a drainage ditch on the Ordnance Survey maps.

The Existing Watercourse appears to flow in a south easterly direction and joins anther water course/drainage ditch approximately 130m away from the south east corner of the site.

As the proposed drainage ditch would require 3rd party approvals to make a connection through land in which is privately owned we have excluded this from being the point of discharge for the surface water flows generated from the site redevelopment and adopted the use of below ground attenuation to manage the flows generated to that equivalent of greenfield rates for the site.

Blockage Events

No known blockage events are believed to affect the development site, however the existing public surface water sewer which passes through the site is currently partially blocked (recorded during a cctv survey in 2026).

River & Sea

The site is located approximately 2.35km north east of the River Dee.

There are no records of tidal flooding affecting the site.

The output mapping (Appendix B) shows that the site is not at risk of river flooding during all tidal events up to and including the 0.1% AEP plus CC (year 2115) event.

It can therefore be concluded 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 'Flood Risk from Surface Water & Small watercourses' map (Appendix B) shows that the site is at High risk of surface water flooding.

Any potential surface water flooding arising at or near to the site would be directed south-east, away from the Proposed Buildings, following the existing local topography and maintain the existing flood exceedance routs through the site as indicated on the flood maps.

It can therefore be concluded that the risk of surface water flooding is defined as being High Risk, with mitigation measures to reduce the risk of flooding to the proposed buildings by setting FFL's at an appropriate level above the anticipated flood level.

Sewer

Flooding from sewers can occur when a sewer is overwhelmed by heavy rainfall, becomes blocked, is damaged, or is of inadequate capacity. Flooding is mostly applicable to combined and surface water sewers.

The DCWW sewer records (Appendix C) show that there are no public sewers in the immediately vicinity of the site. The nearest sewer is a public surface water sewer in Drome Road and located in line with the south westerly corner of the site.

There are no records of sewer flooding affecting the site.

The site is currently served by a foul sewer on site however the full records of this do not appear to be shown on the DCWW sewer records and given the existing site precedes the 2010/2011 shared sewer asset transfer the sewer record plans appear to indicate there is no foul sewers an any of the buildings which is unlikely to be correct and just that these records have not been updated since the asset transfer from 2010/2011.

It can therefore be concluded that the risk of sewer flooding is High.

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.

Artificial Sources

There are no canals in the immediate vicinity of the site. The NRW 'Reservoirs Flood Map' (Appendix B) 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 and Mitigation

All Buildings will be set at a FFL to be above the current identified flood level for the site to minimise the risk of flooding causing damage to within the buildings.

The service yards and car parking areas will be set lower to allow areas to flood and also to maintain the existing flood exceedance routes which appear to be defined on the flood maps.

The developable area of the site is therefore compliant with Sections A1.14 and A1.15 of TAN15 and no mitigation measures are considered necessary, however the proposal to set the building FFL above the flood level is deemed practical.

Flood Warnings and Evacuation

Flood alerts are not currently available for surface water flooding.

Impact on Flood Risk Elsewhere

The site does not look to pose flood risk to other sites if the proposed drainage on site is designed to contain all flows within the development site with limiting discharge to greenfield runoff rates up to and including the 1 in 100 year + Climate Change Allowance. Given the proposal is a brownfiled site the proposal to adhere to greenfield rates for the proposed discharge will improve the existing scenario significantly.

Conclusions

The proposed development is for 2 No commercial units with associated access, service yards and parking.

The site is located within Flood Zone 3 (Surface Water and Small Water course), with no historic evidence of flooding occurring previously.

The proposed Buildings Will be set with a FFL to mitigate the flood levels identified to limit the risk of flooding occurring to within the building with the external areas allowed to flood.

Recommendations

1. Submit this Flood Consequences Assessment to the Planning Authority in support of the Planning Application.
2. Undertake further investigation in relation to the existing ground conditions.
3. Notify the Welsh Water of the current partial blockage within the existing surface water sewer on site.

Appendix A - Site Aerial Image



Appendix B - Flood Risk Maps

Cyfoeth Naturiol Cymru
Natural Resources Wales

Flood risk information for the area around:

R R C CRANE HIRE LTD, UNIT 31, MINERS ROAD, LLAY INDUSTRIAL ESTATE, LLAY, WREXHAM, LL12 0PJ

This information is for the area **within 10 metres of the address above**. It shows the **highest** risk level for each type of flooding.

The risk levels are: High, Medium, Low and Very low.

Very low risk	**Flooding from rivers** Risk less than 0.1% chance each year.
Very low risk	**Flooding from the sea** Risk less than 0.1% chance each year.
High risk	**Flooding from surface water and small watercourses** Risk greater than 3.3% chance each year.
This area	**Does not benefit from flood defences**.

Please note

We provide the flood risk information for the area around the property address. We cannot give the flood risk for individual buildings because this depends on building features, such as internal floor levels, and other local factors like drainage conditions.

The risk level takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail. View our Flood Risk Map to understand the flood risk across the area.

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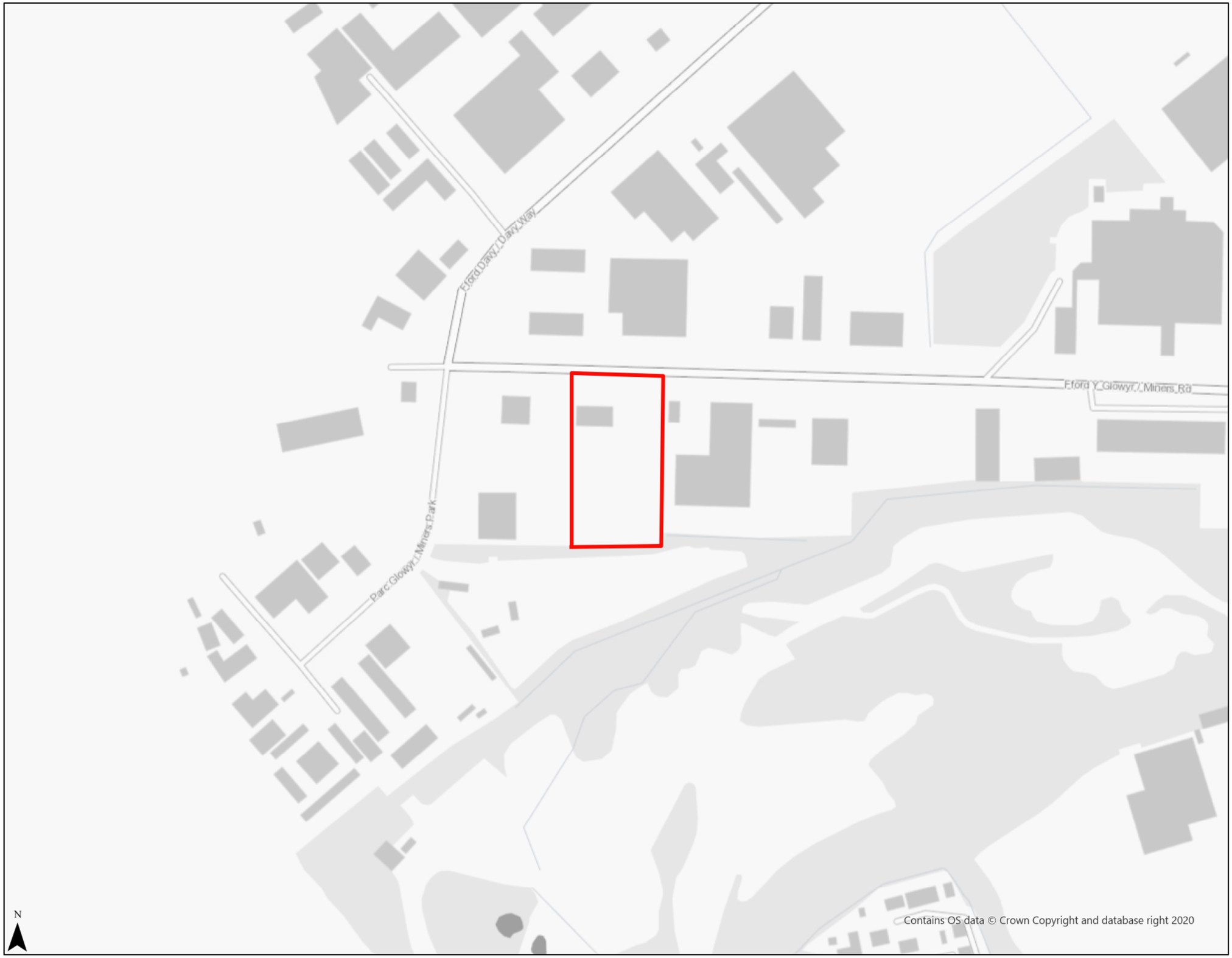
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29/07/2026

Cyfoeth Naturiol Cymru
Natural Resources Wales

Flood Risk Maps

Miners Road - Flood Defences



Legend

Areas Benefitting from Flood Defences

- Rivers
- Sea
- Rivers and Sea
- Risk Level Under Review

Scale at A3: 1:2,500

Date: 22/06/2026

0.1 0.05 0 0.1

km

British National Grid

Disclaimer

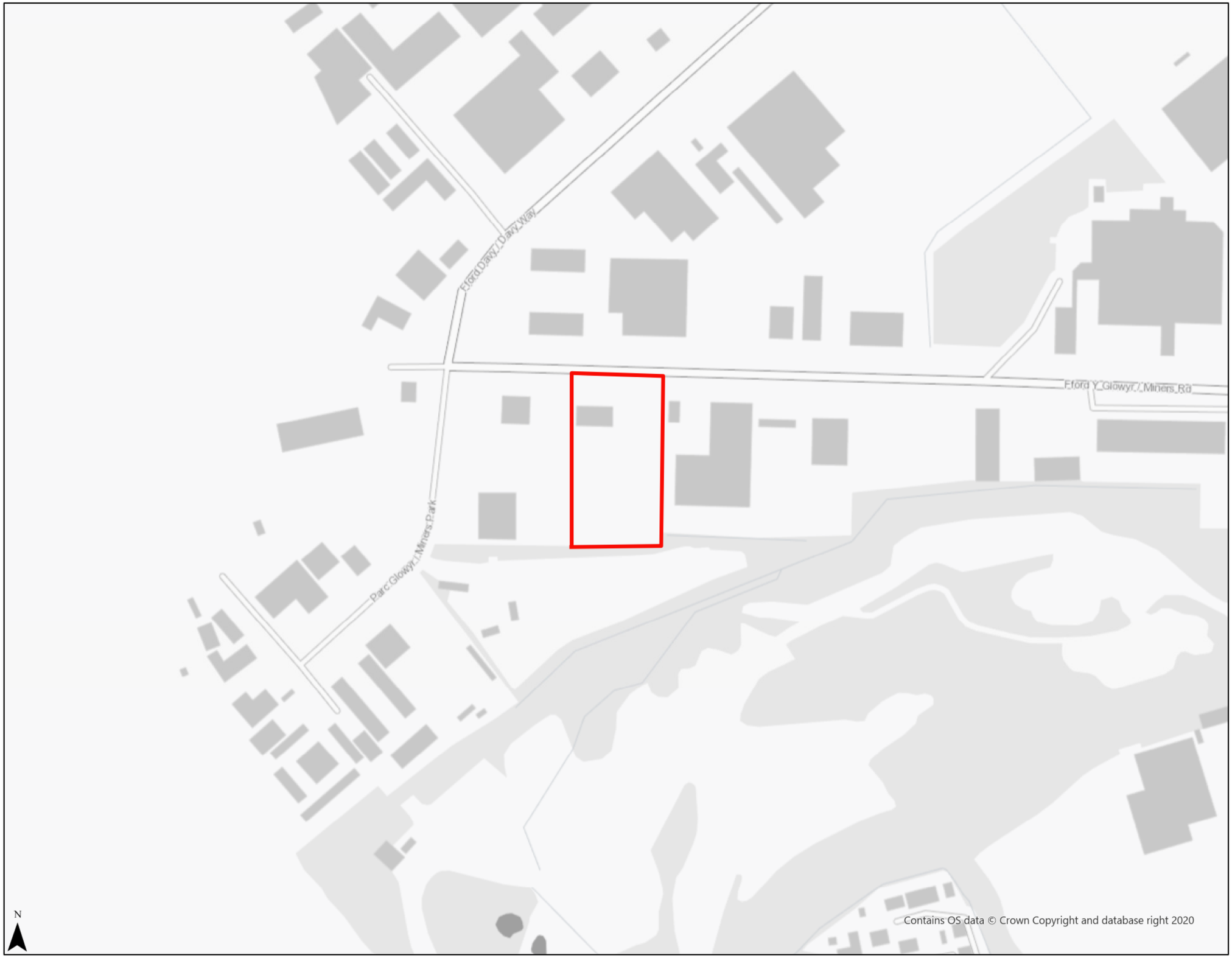
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Flood Risk Maps

Miners Road - FR From Reservoirs



Legend

Areas Benefitting from Flood Defences

- Rivers
- Sea
- Rivers and Sea
- Risk Level Under Review
- Flood Risk from Reservoirs

Scale at A3: 1:2,500

Date: 22/06/2026

0.1 0.05 0 0.1
km

British National Grid

Disclaimer

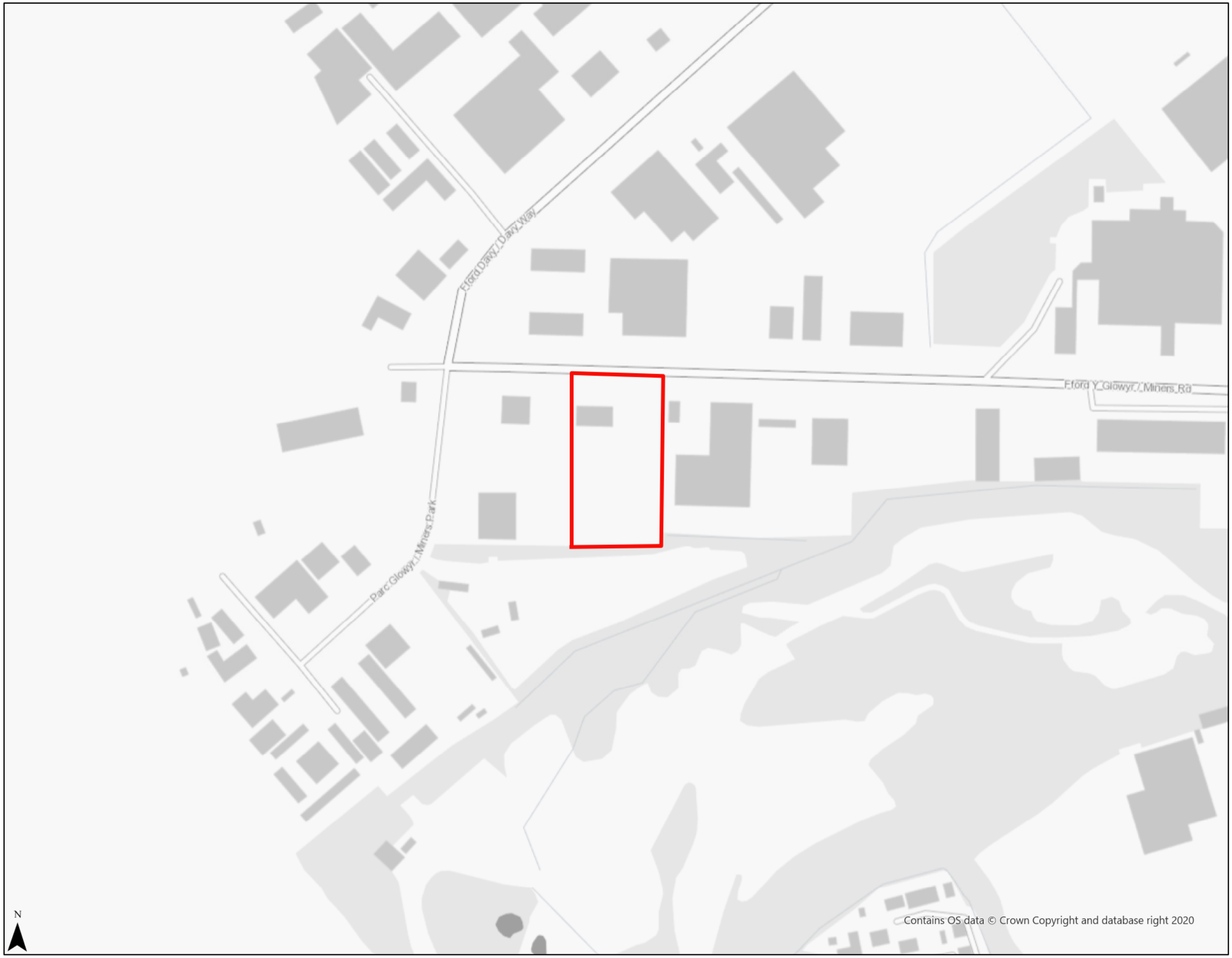
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Natural Resources Wales

Flood Risk Maps

Miners Road - FR From Rivers



Legend

Flood Risk from Rivers

- High
- Medium
- Low
- Risk Level Under Review

Scale at A3: 1:2,500

Date: 22/06/2026

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km

British National Grid

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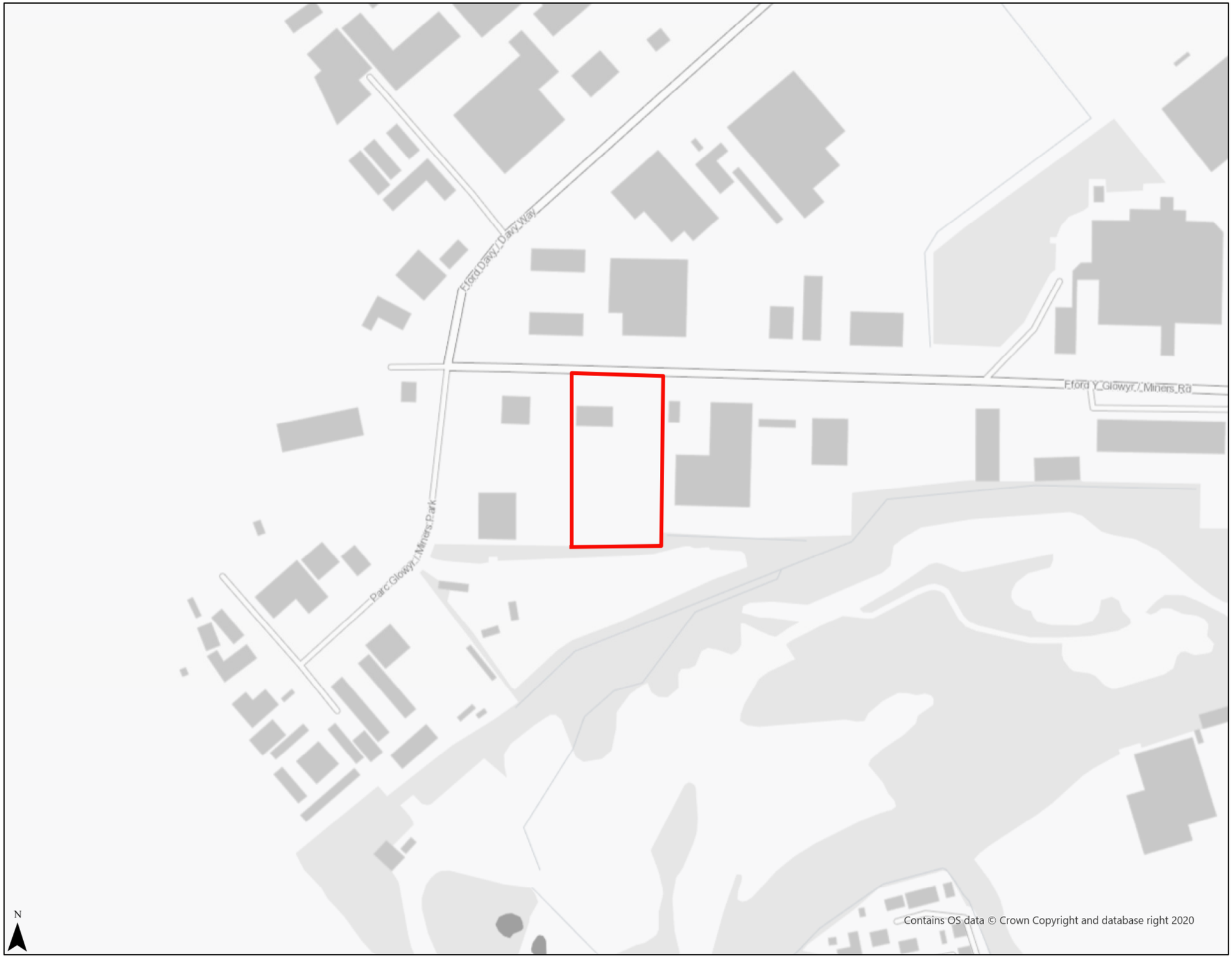
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Natural Resources Wales

Flood Risk Maps

Miners Road - FR From Sea



Legend

Flood Risk from the Sea

- High
- Medium
- Low
- Risk Level Under Review

Scale at A3: 1:2,500

Date: 22/06/2026

0.1 0.05 0 0.1

km

British National Grid

Disclaimer

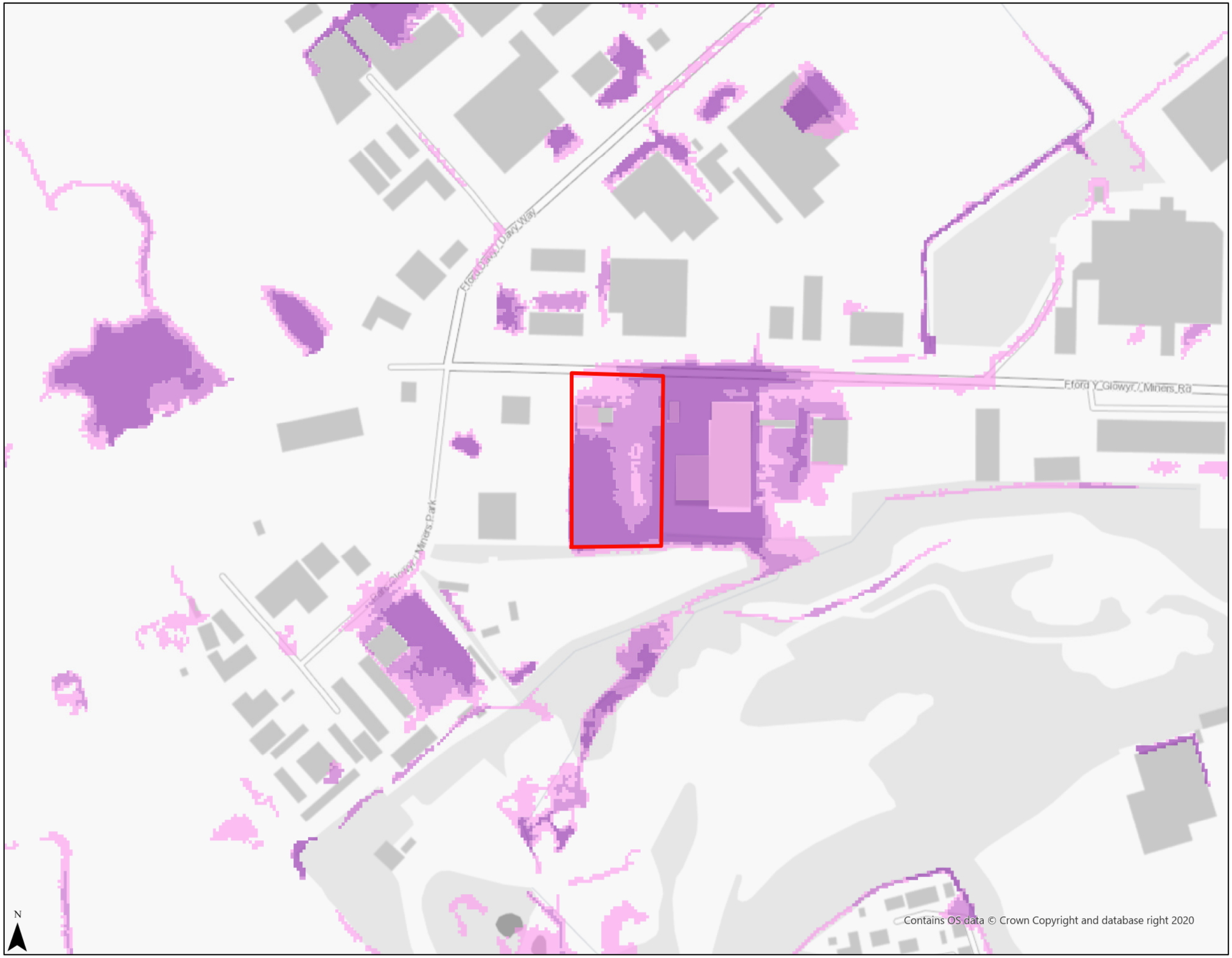
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Natural Resources Wales

Flood Risk Maps

Miners Road - FR Surface Water



Legend

Flood Risk from Surface Water & Small Watercourses

- High
- Medium
- Low
- Risk Level Under Review

Scale at A3: 1:2,500

Date: 22/06/2026

0.1 0.05 0 0.1

km

British National Grid

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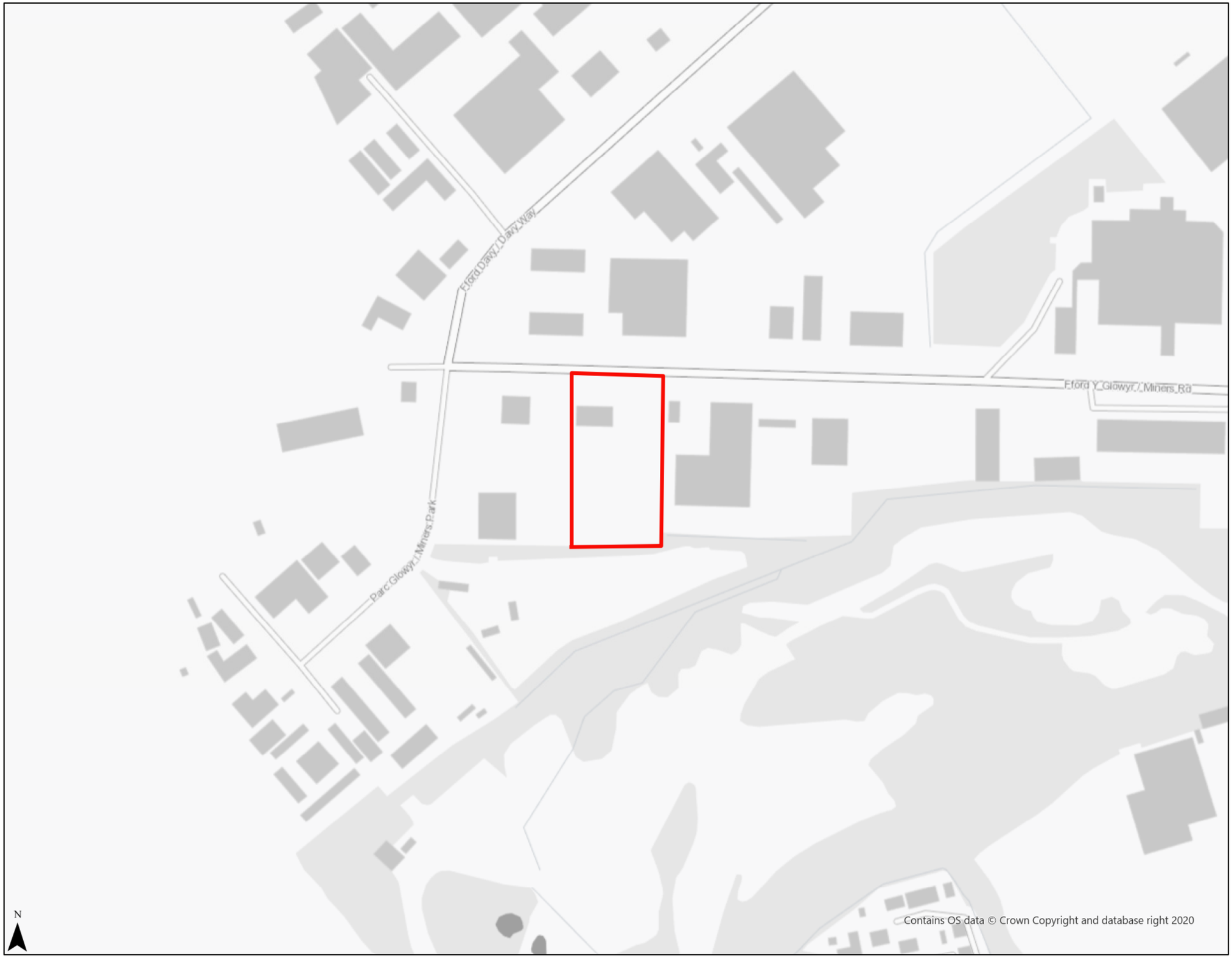
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Flood Risk Maps

Miners Road - Flood Storage



Legend

Areas Benefitting from Flood Defences

- Rivers
- Sea
- Rivers and Sea
- Risk Level Under Review
- Flood Storage Areas

Scale at A3: 1:2,500

Date: 22/06/2026

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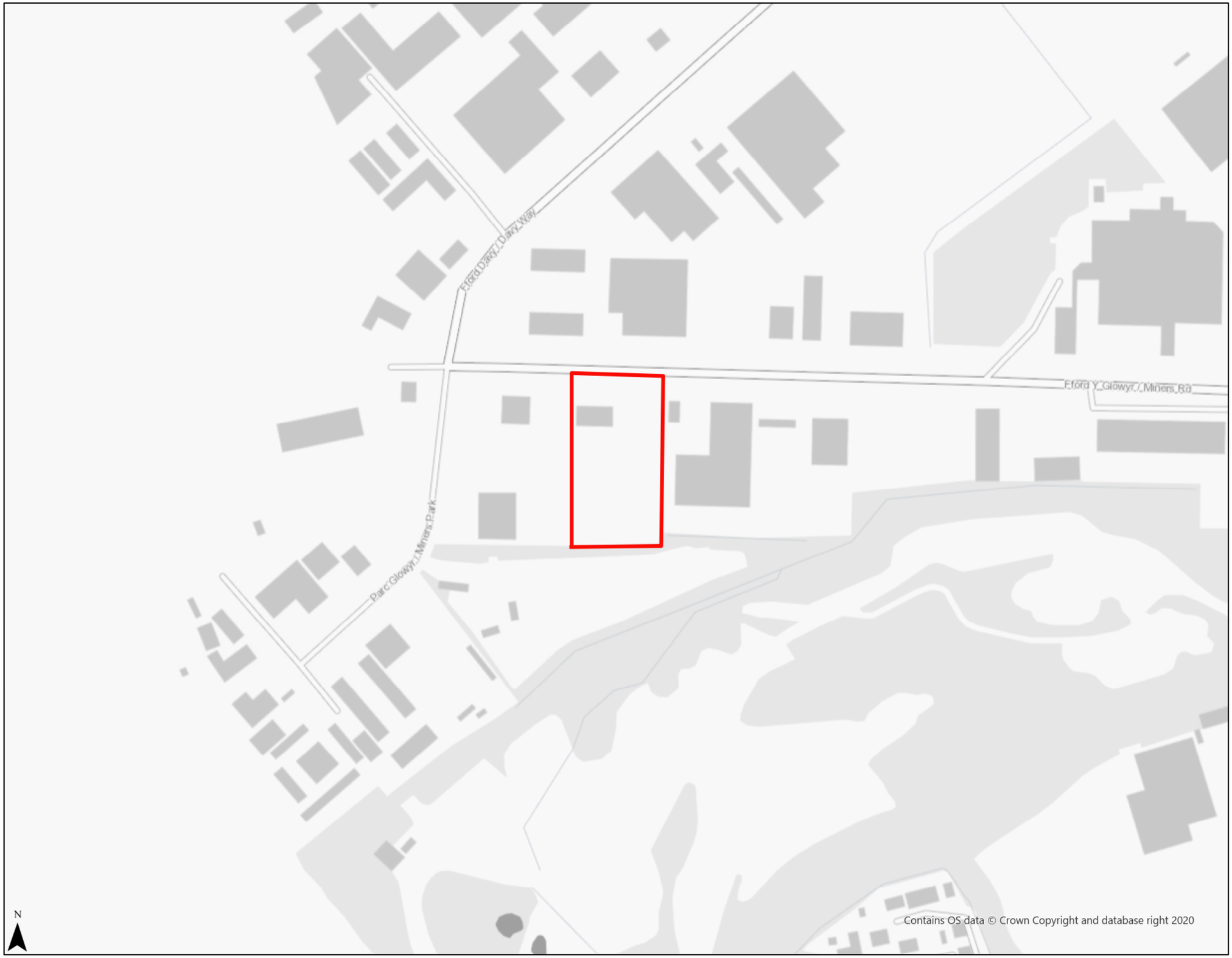
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Flood Risk Maps

Miners Road - Flood Events

Legend

Areas Benefitting from Flood Defences

- Rivers
- Sea
- Rivers and Sea
- Risk Level Under Review
- Recorded Flood Extents

Scale at A3: 1:2,500

Date: 22/06/2026

0.1 0.05 0 0.1

km

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Appendix C – Existing Sewer Records

Dŵr Cymru
Welsh Water

31, MINERS ROAD, WREXHAM, LL12 0PJ

N
W E
S

LEGEND(Representative of most common features)

Waste network:

- Foul chamber
- Surface water chamber
- Combined chamber
- Combined sewer overflow
- Special purpose chamber
- Treatment works
- Pumping station
- Outfall
- Lamphole
- Storm Overflow
- Rising main
- Gravity sewer
- Private sewer
- Private sewer subject to Sect. 104 adoption agreement
- Private Sewer Transfer
- Lateral Drain
- Inspection Chamber

NB: Sewer symbol colour indicates the type.

RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former S24 sewers (for indicative purposes only)

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF) . It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation

Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best Information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

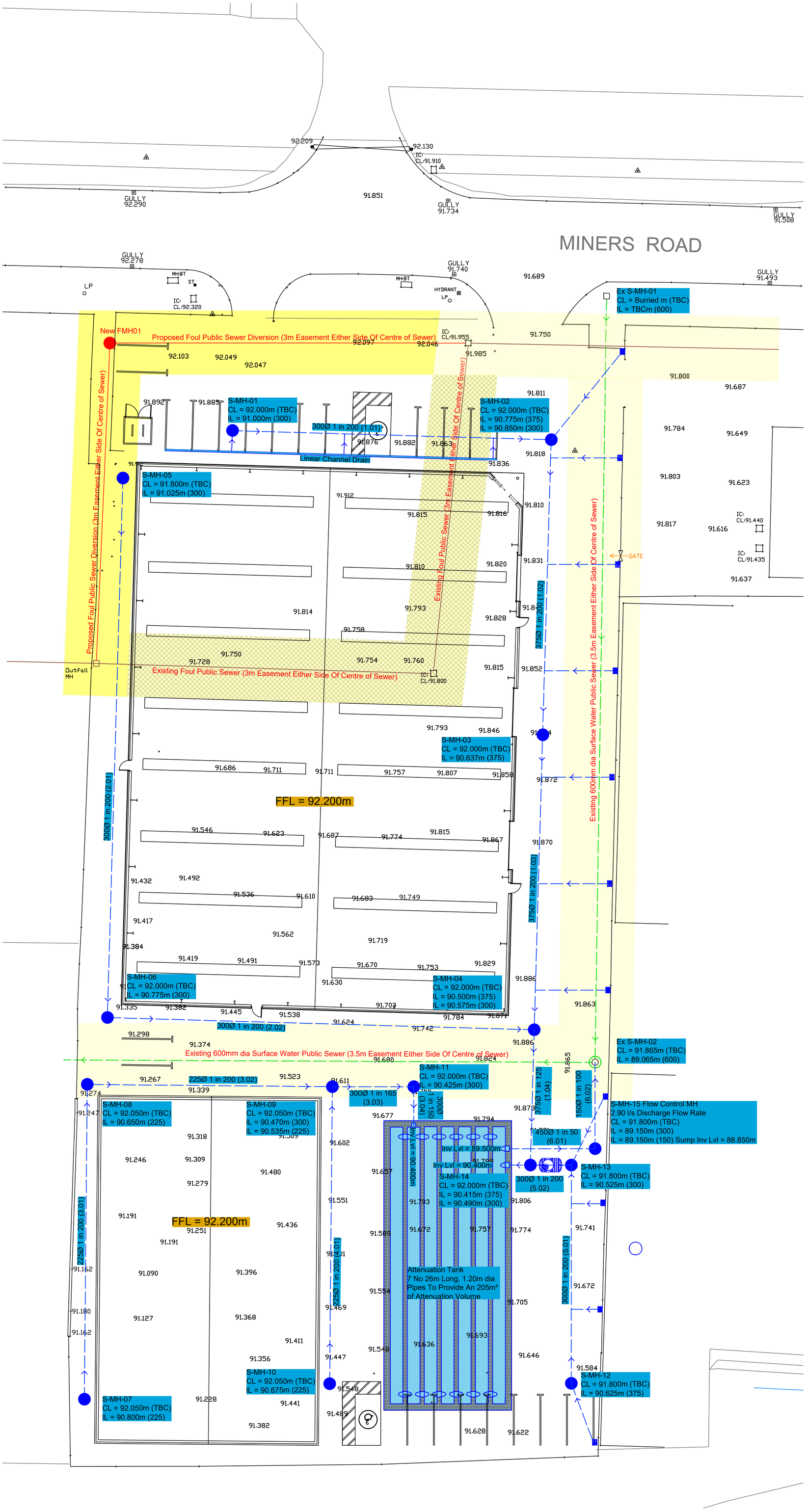
Service pipes are not generally shown but their presence should be anticipated.

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.

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Map Ref:	332294,356375
Map scale:	1:1250
Printed by:	Johnathan Finnie
Printed on:	26 Jan 2026

Appendix D – Proposed Outline Drainage Layout



DRAINAGE NOTES

1. This drawing shall be read in conjunction with all other relevant drawings
2. Any ambiguities, omissions and errors on Drawings, shall be brought to the Engineers attention immediately.
3. The Contractor shall confirm the location and level of existing drainage outfalls prior to commencement of the drainage works.
4. Exact locations of proposed manholes and inspection chambers to be determined on site.
5. All pipes built into the manhole inverts shall be installed with soffits levels. Unless shown otherwise.
6. Connections to road gulleys shall be in 150mm nominal bore. Connections to other terminal fittings shall be in 100mm nominal bore pipe. Unless shown otherwise.
7. Cover levels shown are approximate and shall be adjusted and confirm on site by the Contractor.
8. The Contractor shall control accurate line and level of pipe laying by use of an optical laser.
9. The Contractor shall protect the pipeline from damage by site traffic during construction.
10. Pipework and fittings shall comply with the following requirements except where noted otherwise:
11. All rest bend to stacks of more than 3 storeys (i.e extending above Ground + 3) to be 750mm below lowest branch, i.e min 650mm below GFFL. All other rest bends to be minimum 450mm below FFL.
12. All drains passing through walls or foundations to have 600mm long rocker pipes either side with concrete surround and soft joint at coupling.
13. All SVP and stub stack connections to have sealed access covers for rodding and cleaning.
14. Pipework with less than 600mm cover from finished road level shall be protected with a 150mm C20 concrete bed and surround. Flexible joints shall be maintained at 5 metre centres on pipe joints with compressable sheet 18mm thick.

Trenches in highways and car parking areas shall be backfilled with Type 1 granular sub-base.

15. Soft spots in the trench formation shall be removed and replaced with granular bedding unless instructed otherwise.
16. Road gulleys shall be constructed using a 900mm deep x 375mm diameter gulley pot, surrounded by 150mm thickness C20 concrete, with rodding eye and chained stopper.
17. Gulley covers shall be Grade B captive hinged ductile iron to BS497 black coated.
18. Unless noted otherwise manhole covers shall be ductile iron to BS497 black coated with 600 x 600 square opening as follows:-
    Highways - Class D400
    Car Parks - Class C250
    Landscaped - Class B125
19. Connections in pipes between manholes runs shall be formed by using purpose made 45" junction fittings to BS65. Bend fittings shall be provided where appropriate to direct the flow into the main runs. Alternatively main pipes may be diamond cored to take lateral connections with a saddle fitting to BS65 and 150mm C20 concrete surround.
20. The Contractor shall confirm the location of all existing statutory undertakers apparatus and service connections by trial pits prior to opening up for the works.
21. All inlet and Outlet pipes from manholes require rocker pipes in accordance with UU standard Details.

Materials

1. Protection to drains and gully connections may be concrete bed and surround between cover depths of 450mm to 200m.
2. All pipes and joints for use in drains shall comply with the manufacturers requirements.
3. Clay Pipes

a. Clay pipes to be used for sewage shall be British Standard pipes and pipes for surface water shall be either 'British Standard' or 'British Standard

b. Surface Water' all manufactured to the requirements of BS EN 295 and BS65:1991. The pipes shall be Type 1 sockets and supplied complete with the manufacturer's recommended flexible joints, or with Type 2 Sockets for cement mortar joints or plan ended pipes supplied with sleeve couplings;

c. Watertight Flexible Joints for clayware pipes shall comply with BS EN 295 and BS65:1991.

4. Concrete Pipes

a. Concrete pipes for general drainage shall comply with the requirements of BS EN 1916:2002 and BS5911-1:2002, except that they may be complete

b. with watertight flexible joints, as supplied by the manufacturer

c. Watertight flexible joints shall be so constructed as to tolerate a longitudinal movement of ±10mm without breaking the seal;

5. Un-plasticised Polyvinyl Chloride (PVC-U) Pipes shall conform to BS EN 1401-1:2009, BS EN 13598-1:2003, BS3506:1969 and BS4660:2000 for pipes up to 160mm nominal external diameter and to BS EN 1401-1:2009 for pipes above 200mm nominal external diameter
6. Pipe bedding and backfill of Underground pipes should be in accordance with BS EN 5955: Part 6 Installation of PVC-u pipework for gravity drains and sewers, or the BBA Certificate.
7. Suitable material is defined as granular material in accordance with the recommendations of BS EN 5955: Part 6: 1980 having a nominal particle size not exceeding 10mm or 14mm for 110mm and 160mm diameter pipes respectively, or that which passes the tests described in appendix A of the above standard.
8. Drains under buildings :

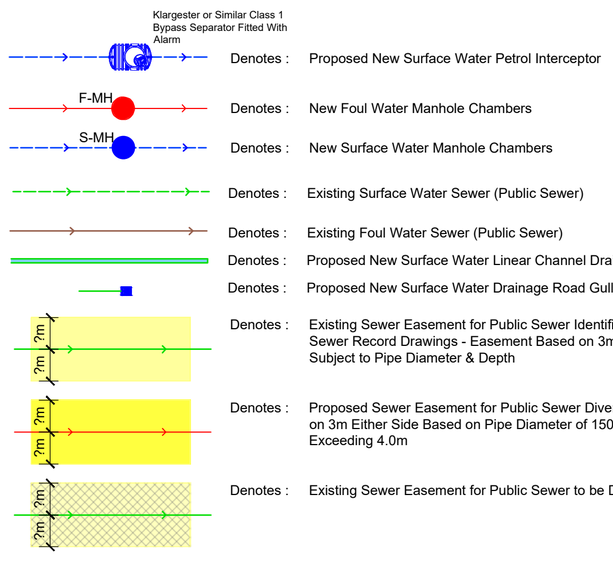
a. Where drains are required to be laid under buildings, deep hardcore from within the foundation boundaries should be compacted prior to excavating the trench for the pipe. Suitable material should then be employed for the bedding and backfilling.

b. When trenches are dug from original ground, pipes may be laid and surrounded with appropriate material before the top layer of hardcore is placed.
Where pipes pass through a wall or foundations of a building, they should be protected by a lintel or sleeve.

c. Shallow drains : Where there is risk of damage, pipes laid at less than 600mm depth (not under a road) should be protected by use of a paving slab or similar. A minimum 75mm cushioning layer of granular material must be laid between any slab and the crown of the pipe.

d. Pipes laid under roads : The minimum cover under roads should be 0.9m from the top of the pipe. Where this is less than 0.9m additional protection is required ie. reinforced bridging slabs.

Drainage Key



Easement minimum distances from buildings/structures for sewers proposed for adoption that are not located within the adoptable highway.

Sewer Diameter / size (mm)	Less than 150	150 - 299	300 - 449	450 - 600	601 - 749	750 - 924	925 - 1000	1001- 1124	1125- 1399	1400 or greater	Box culverts
Depth to Invert of sewer (m)											
Less than 3.0	3.0	3.0	3.0	3.5	3.5	4.0	5.0	5.0	5.0	5.0	4.0m from centreline or 2.0m from outside edge
3.0 to 4.0	3.0	3.0	3.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0m from centreline or 2.5 from outside edge
4.0 to 5.0	4.0	4.0	4.0	5.0	5.0	5.0	6.0	6.0	6.5	6.5	6.0m from centreline or 2.5m from outside edge
5.0 to 6.0	5.0	5.0	5.0	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.0m from centreline or 2.5m from outside edge
6.0 to 7.5	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5	6.5	6.0m from centreline or 2.5m from outside edge
7.5 or greater	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	6.0	6.0m from centreline or 2.5m from outside edge

Proposed Foul Drainage For the Site Will Be Finalised When the Internal Layouts Have Been Developed. Existing Foul Drainage Sewers Are Available on Site.

Rev.	Date	Description	Status	Rev. by
P1	29.07.2026	First Issue	Preliminary	MDJ

Project: Miners Road, Llay

Title: Proposed Drainage Layout

Client: .

Status: Preliminary

Scale: 1:200 @ A1

Date: 29 July 2026

Drawing Number: 1710-26-01-002

Rev.: P1

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Appendix F – Greenfield Runoff Estimate

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

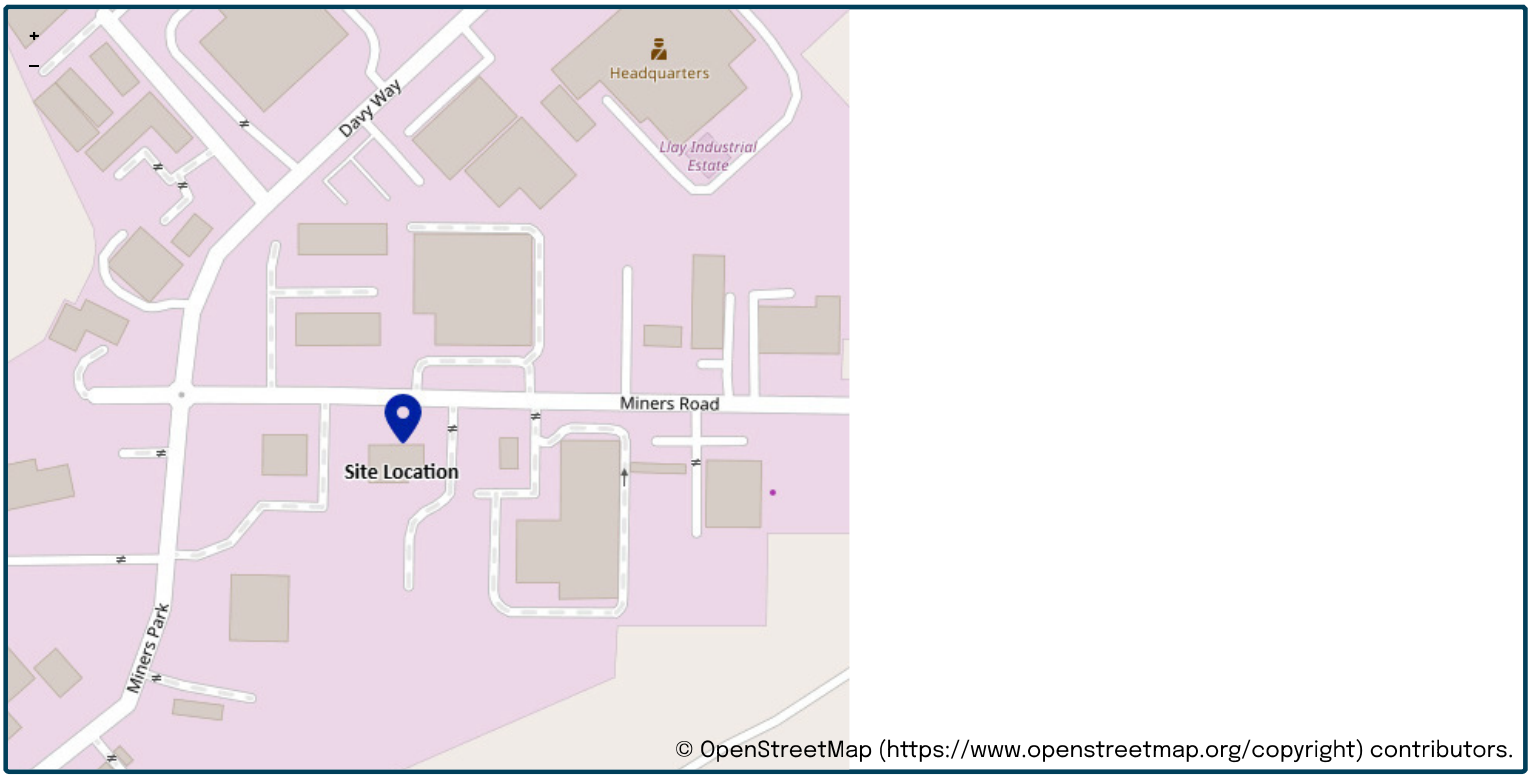
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	27/07/2026
Calculated by	
Reference	
Model version	2.2.3

Location

Site name	Miner Road
Site location	Llay, North Wales



Site easting (British National Grid)	332277
Site northing (British National Grid)	356393

Site details

Total site area (ha)	0.5358 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	766 mm		766
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		2
SPR	0.47		
QBar (IH124) (l/s)	2.9 l/s		

Growth curve factors

	My value		Map value
Hydrological region	9		9
1 year growth factor	0.88		
2 year growth factor	0.93		
10 year growth factor	1.42		
30 year growth factor	1.78		
100 year growth factor	2.18		
200 year growth factor	2.46		

Results

Method	IH124
Flow rate 1 year (l/s)	2.5 l/s
Flow rate 2 year (l/s)	2.7 l/s
Flow rate 10 years (l/s)	4.1 l/s
Flow rate 30 years (l/s)	5.1 l/s
Flow rate 100 years (l/s)	6.3 l/s
Flow rate 200 years (l/s)	7.1 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.