Land North of Dinas Powys Preliminary Flood Risk Assessment and Drainage Strategy

Version 1

June 2022

www.jbaconsulting.com

Persimmon Home East Wales
Llantrisant Business Park
LLANTRISANT
CF72 8YP

JBA Project Manager

Revision History

Revision Ref/Date	Amendments	Issued to
June 2022		

Contract

Purpose

Copyright

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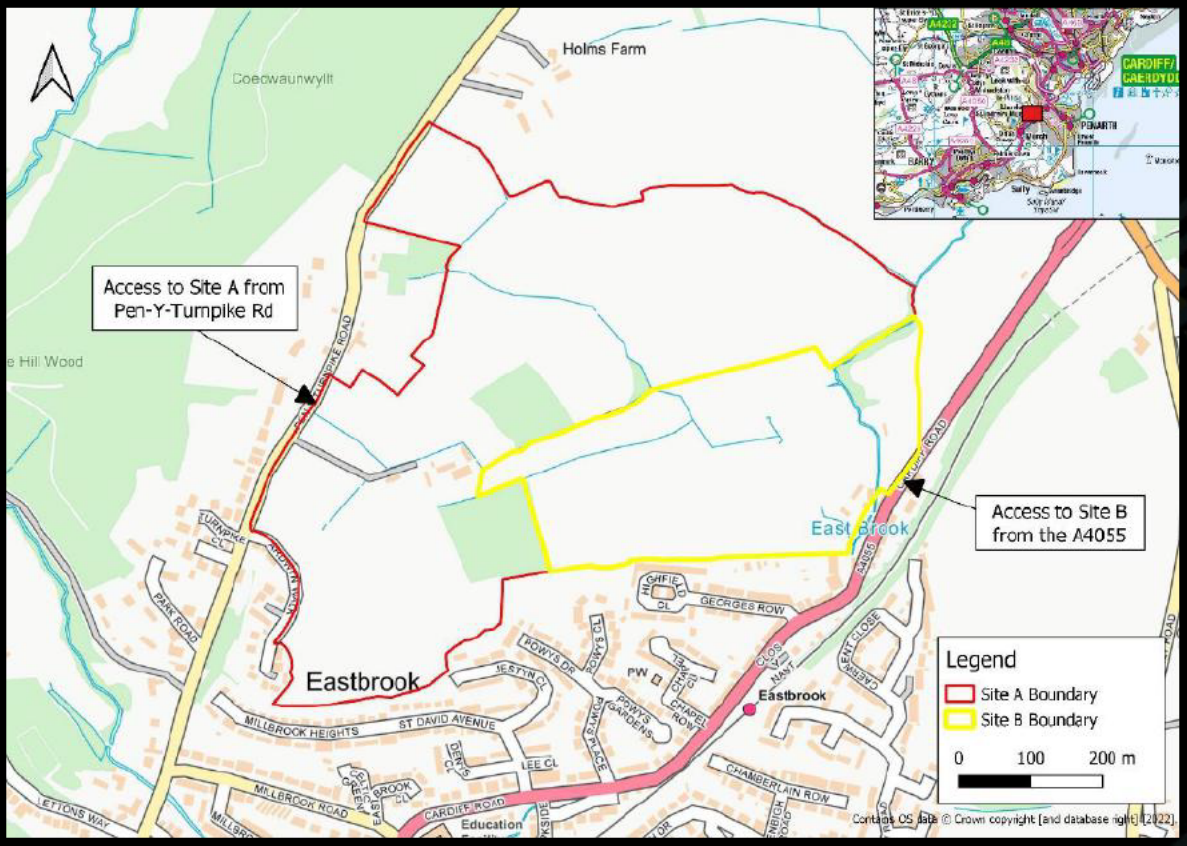

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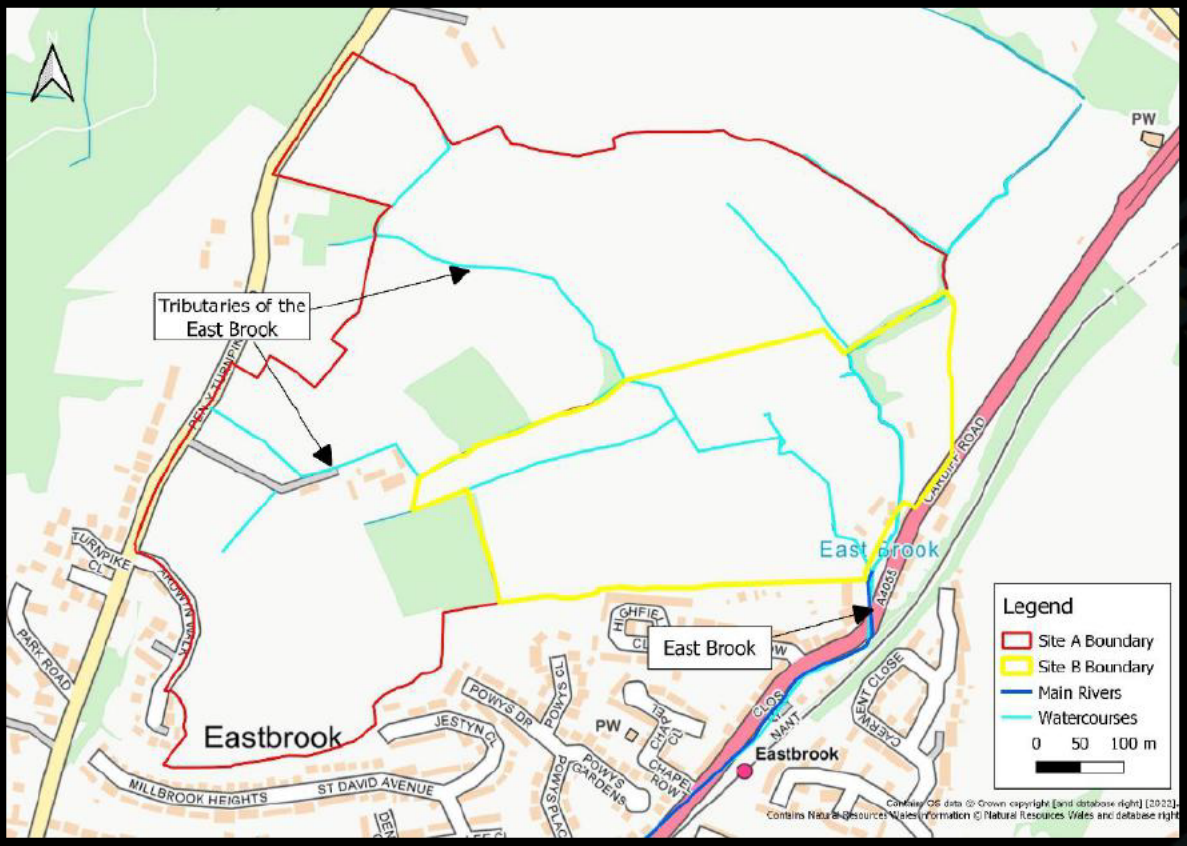

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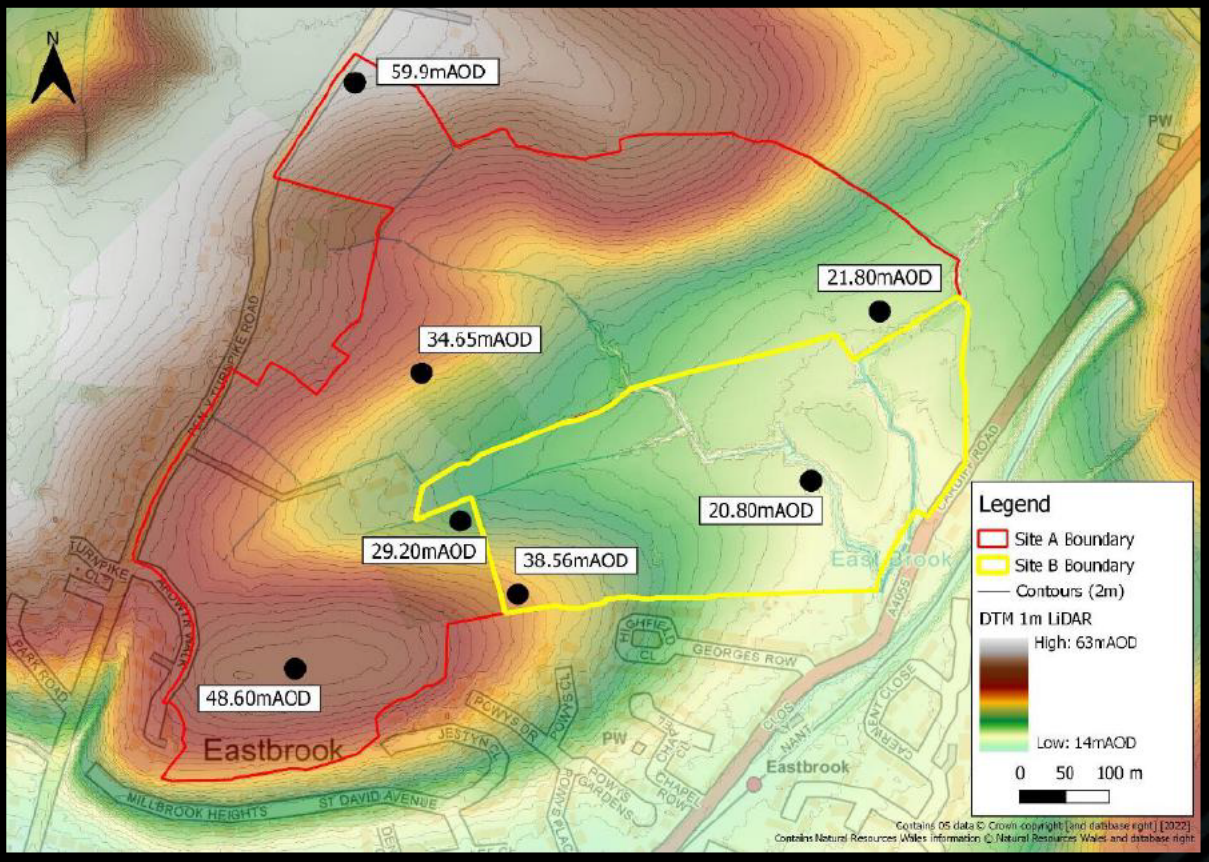

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3.3.1 Vulnerability classification

Table 3-1 Development categories defined by TAN-15

Development category	Types
Emergency services	
Highly vulnerable development	
Less vulnerable development	

3.3.2 Development Advice Map classification

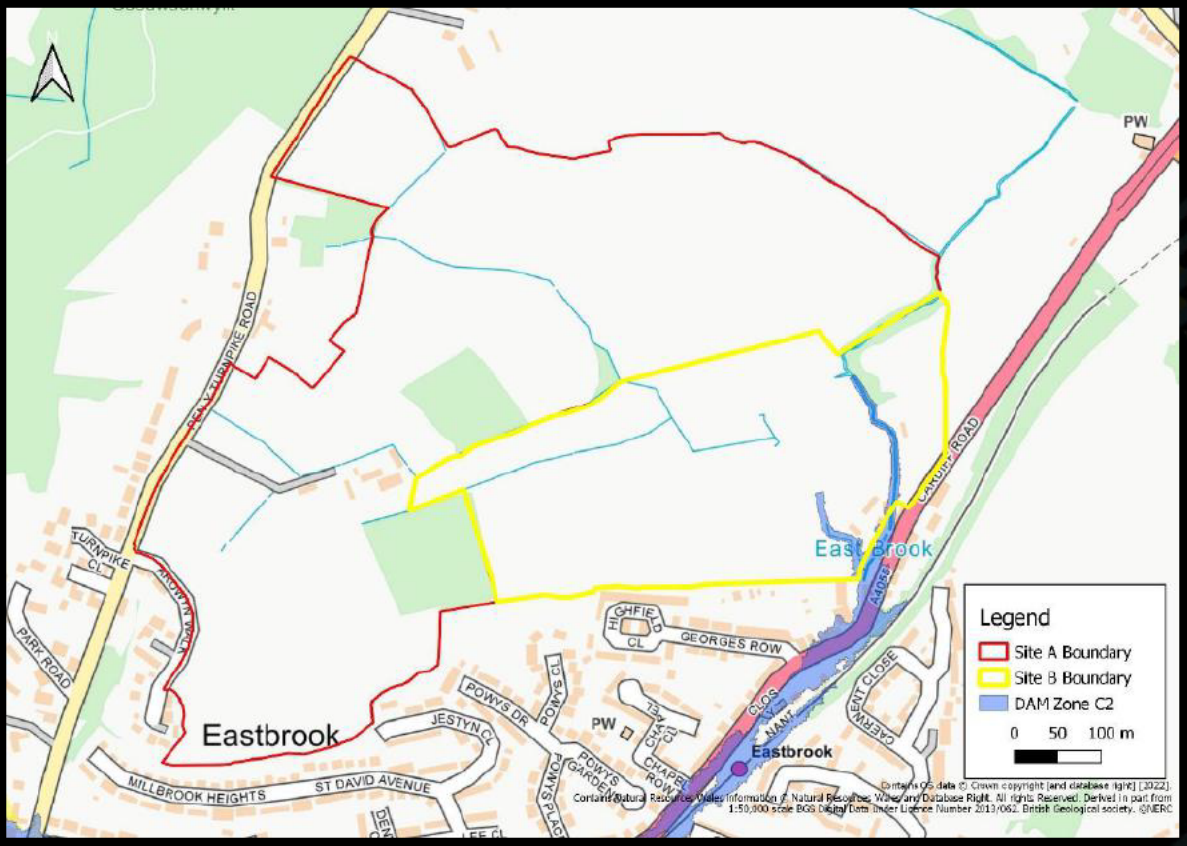


Figure 3-1 Development Advice Map

3.4 Updated TAN-15 (Expected Release June 2023)

3.4.1 Vulnerability Classification

Table 3-2 Development categories defined by the updated TAN-15

Development category	Types
Highly vulnerable development	
Less vulnerable	

development
Water compatible development

3.4.2 Flood Map for Planning Classifications

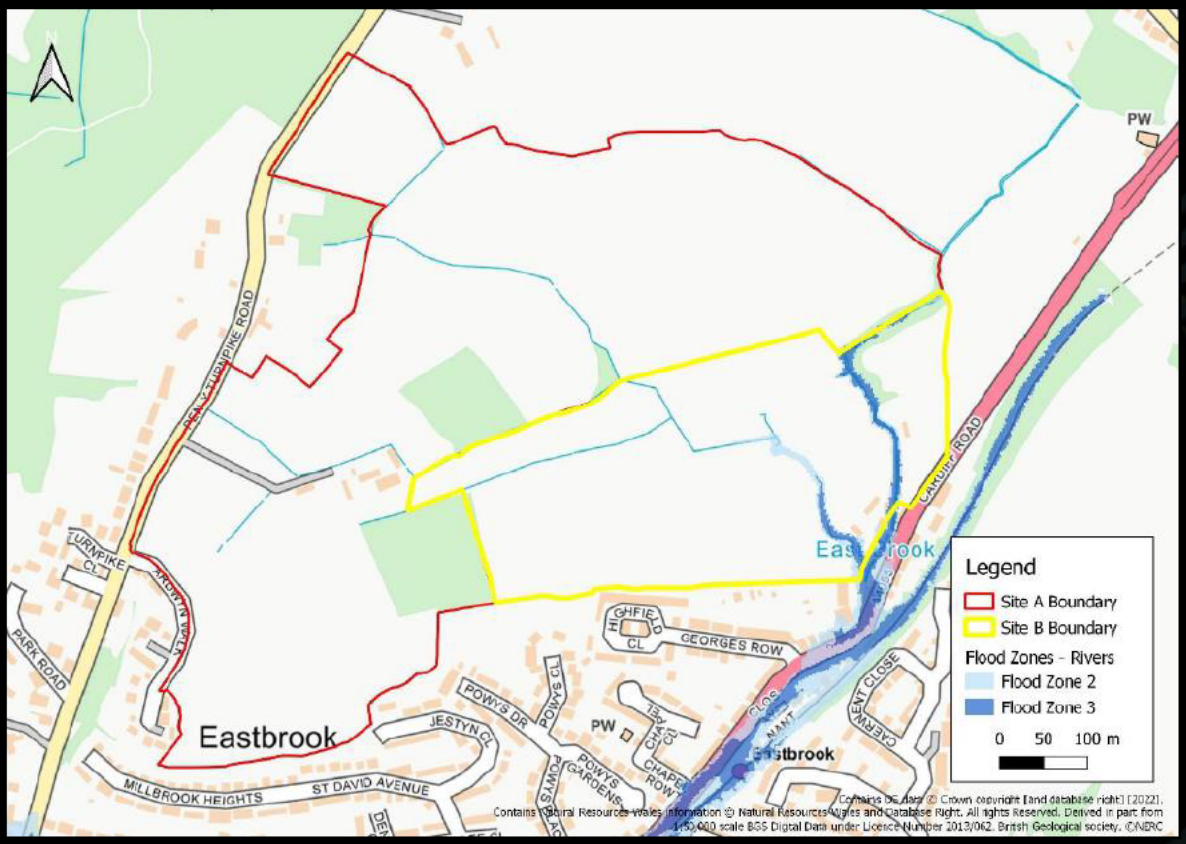


Figure 3-2 Flood Map for Planning – Rivers.

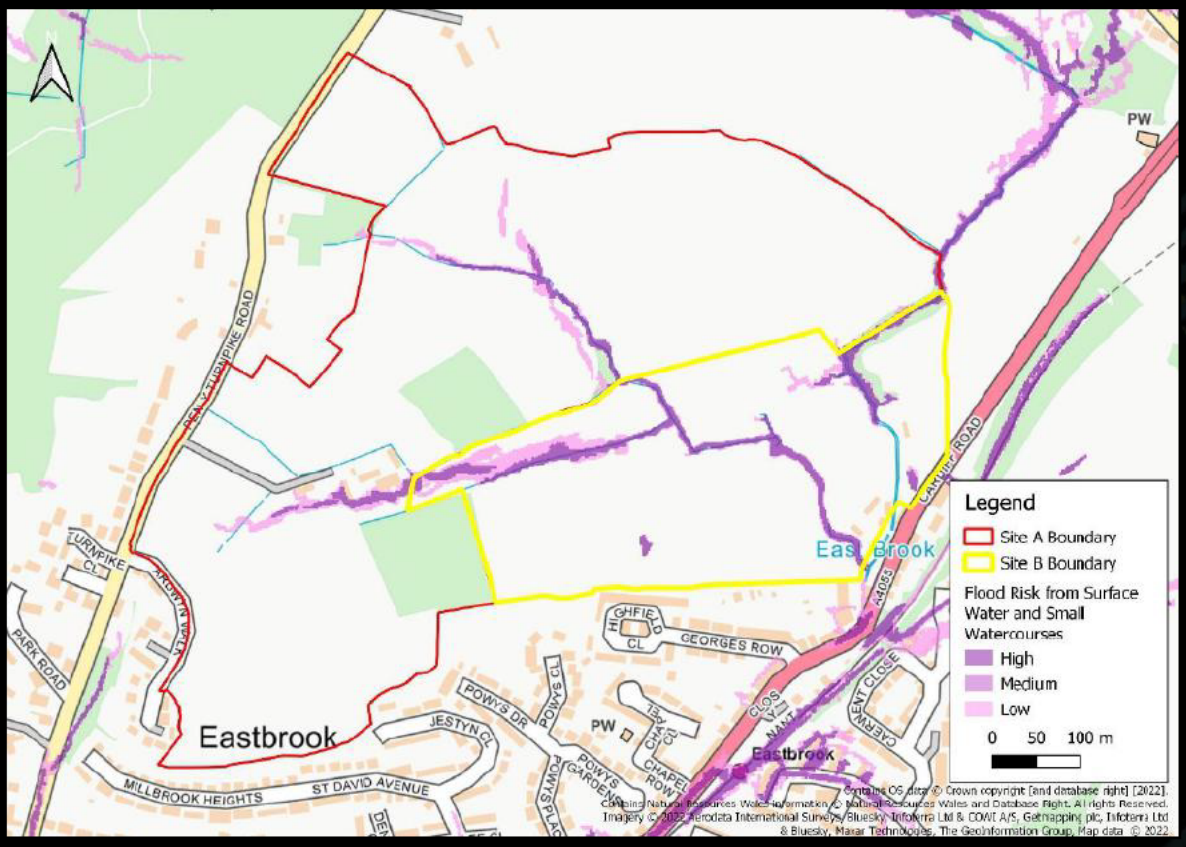


Figure 3-3 Flood Map for Planning - Surface Water and Small Watercourses

4 Assessment of Flood Risk

Table 4-1 Summary of flood risk

Source of Flooding	Onsite Presence	Description
Flood Risk from Rivers	☑	
Flood Risk from the Sea		
Flood Risk from Surface Water and Small Watercourses	☑	
Flood Risk from Groundwater		
Flood Risk from Reservoirs		
Flood Risk from Sewers		

4.1 Flood History & Flood Risk Management Proposals

4.2 Flood Risk from Rivers

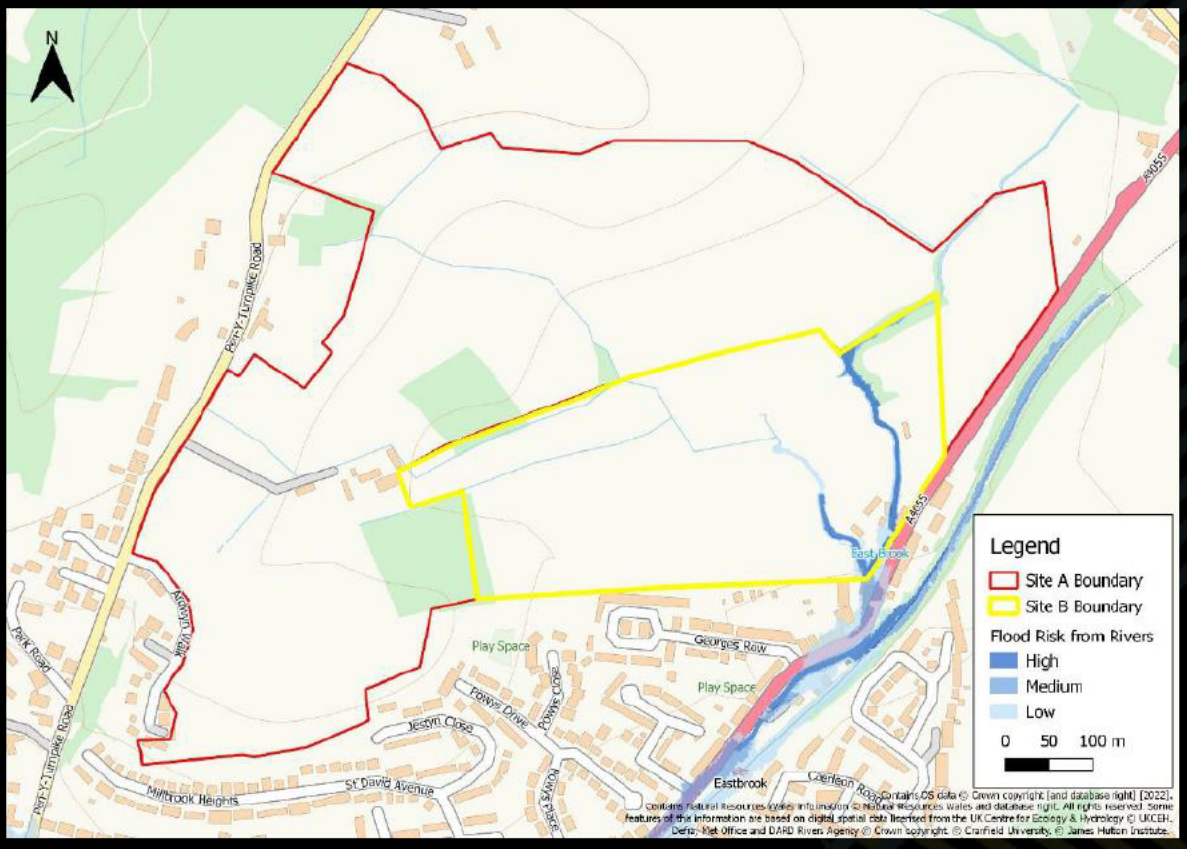


Figure 4-1 FRAW - Flood Risk from Rivers

4.3 Flood Risk from the Sea

4.4 Flood Risk from Surface Water and Small Watercourses

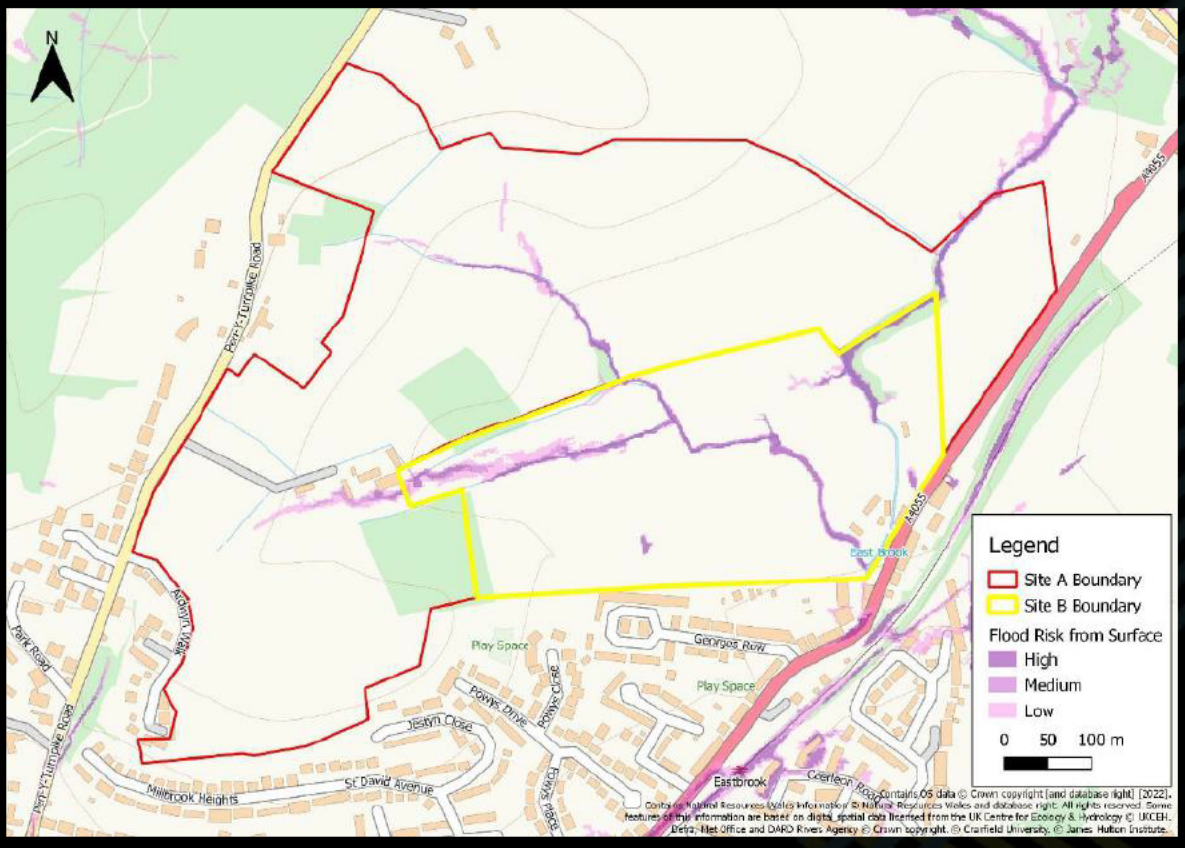


Figure 4-2 FRAW – Flood risk from surface water and small watercourses

4.5 Flood Risk from Groundwater

4.6 Flood Risk from Reservoirs

4.7 Flood Risk Management Recommendations

5 Existing Surface water drainage regime

5.1 Soils, geology and existing drainage routes

5.2 Greenfield runoff rates

Table 5-1 Calculated greenfield runoff rates

Return Period	Specific Runoff (l/s/ha)	Peak Runoff Rate (l/s)
1		
QBAR		
30		
100		

5.3 Allowance for Climate Change

5.4 Greenfield runoff volumes

Equation 1: FSSR16 method for calculating Greenfield runoff volumes

Table 5-2 Greenfield rainfall depths and runoff volumes

Return Period	6-hour rainfall runoff depth (mm)	Site runoff volume (m3)
100		
100 plus climate change (20%)		

6 Surface water management approach

6.1 Sustainable drainage systems

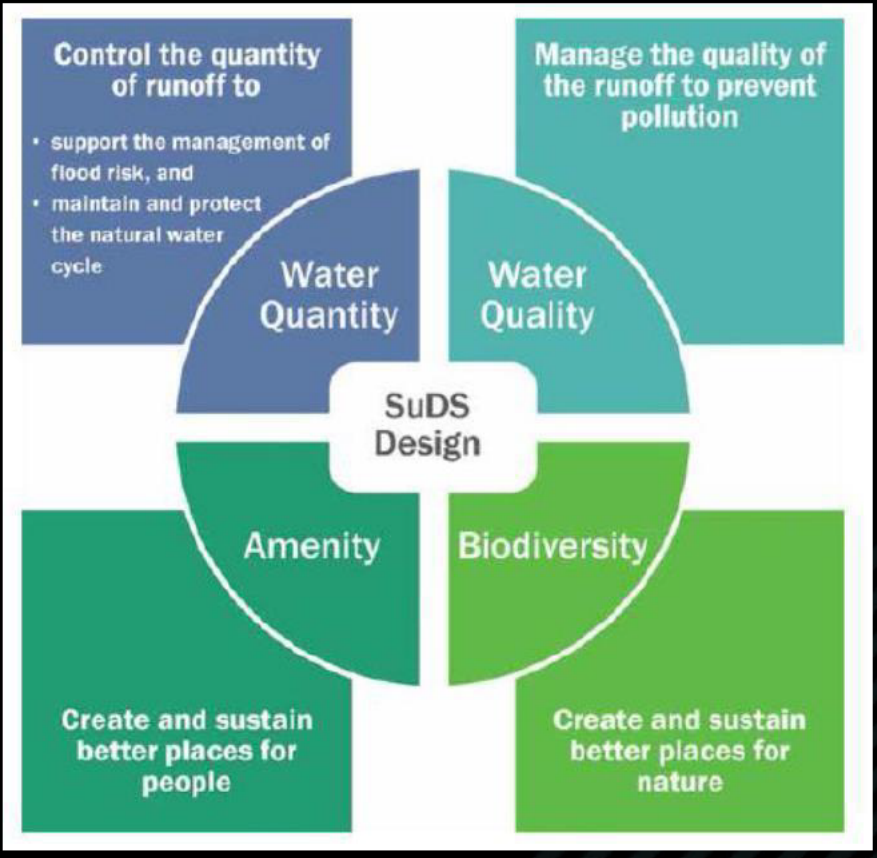


Figure 6-1 Four pillars of SUDS Design (CIRIA, 2015)

6.2 Design criteria

6.3 S1 Surface water runoff destination

Priority Level 1 - Water for re-use

Priority Level 2- Infiltration

Priority Level 3- Discharge to a surface water body

Priority Level 4- Discharge to a surface water sewer, highway drain or another drainage system

Priority Level 5- Discharge to a combined sewer

6.4 S2: Surface Water Runoff Hydraulic Control: Proposed Discharge Rate

6.4.1 Interception of rainfall

6.4.2 Discharge Limits and Attenuation Volume

6.5 S3: Water Quality

Table 6-1 Pollution hazard indices for the site

Pollution hazard level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Low			

6.6 S4: Amenity Value

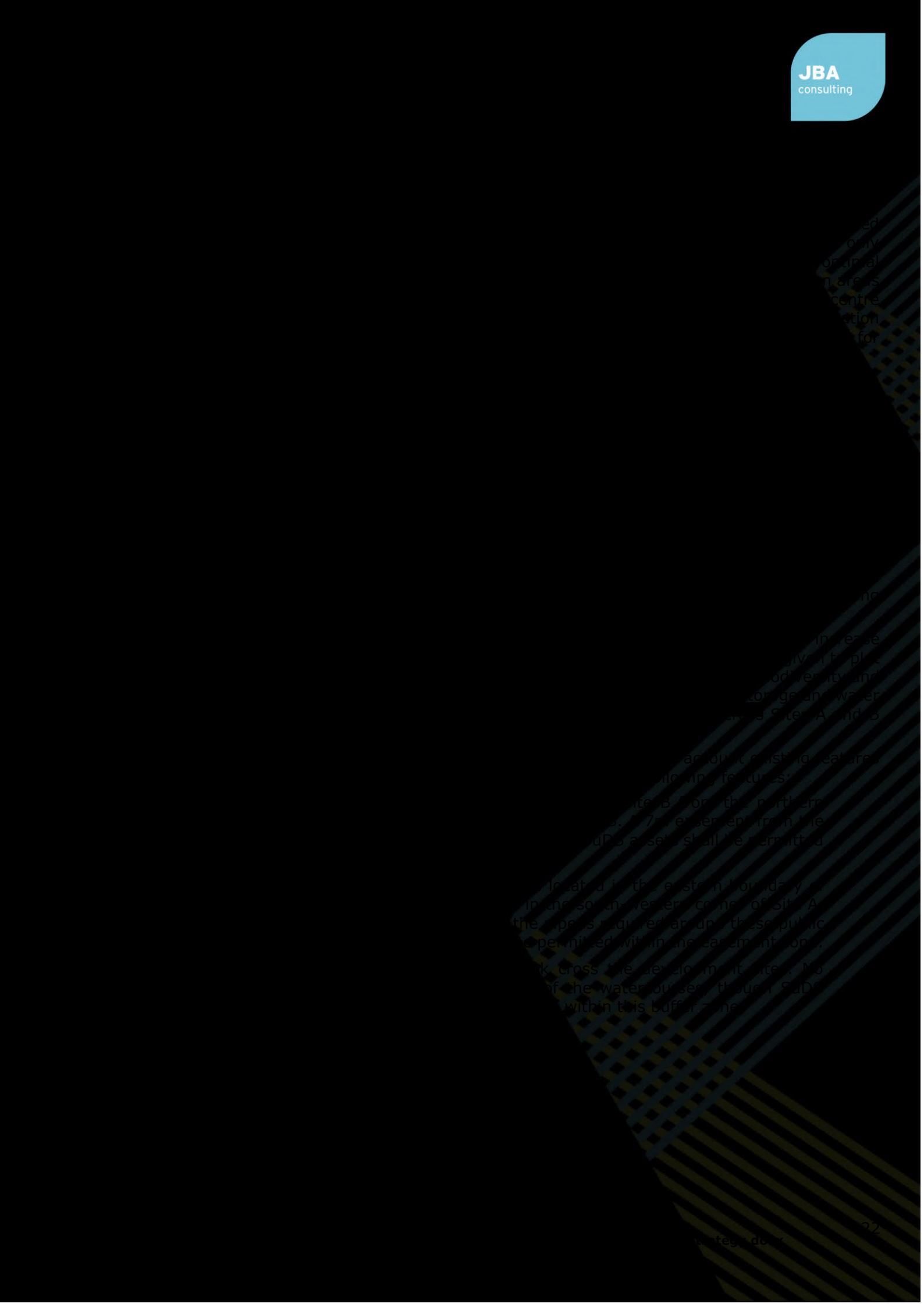
6.7 S5: Biodiversity

6.8 S6: Design for Construction, Maintenance and Structural Integrity

6.8.1 Health and Safety

6.8.2 Adoption and Maintenance

6.9 Site opportunities and constraints



6.10 Summary of SuDS viability on site

Table 6-2 Viability of SuDS Techniques on site

SuDS Component	Site Viability	Amenity Benefits	Biodiversity Benefits	Water Quality Benefits	Comments
Rainwater harvesting					
Infiltration systems and soakaways					
Filter strips					
Filter drains					
Swales					
Bioretention systems and rain gardens					
Pervious Pavements				✓	

Attenuation Storage Tanks
Detention Basins
Pond and Wetlands

7 Foul Drainage

7.1 Building Regulations 2010: Part H: Drainage and Waste Disposal

7.2 DCWW Developer Enquiry Response

Foul Water

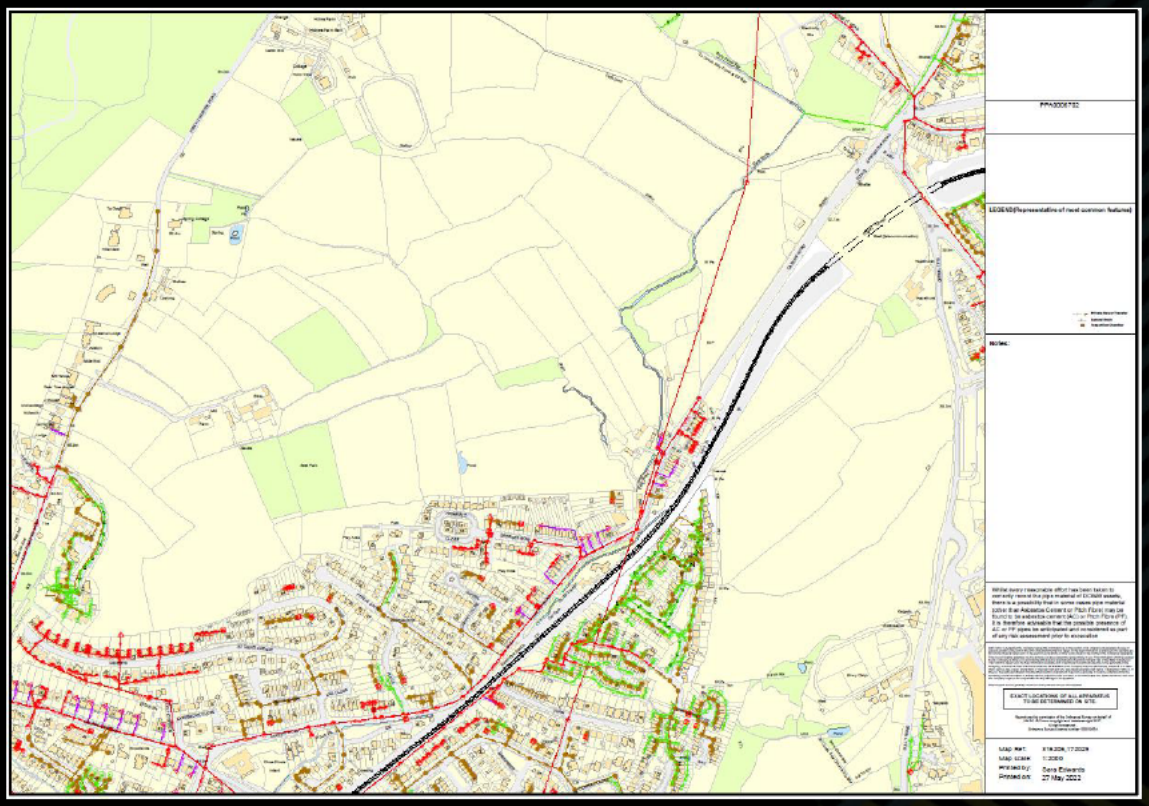


Figure 7-1 DCWW Sewer Map

Potable Water Supply

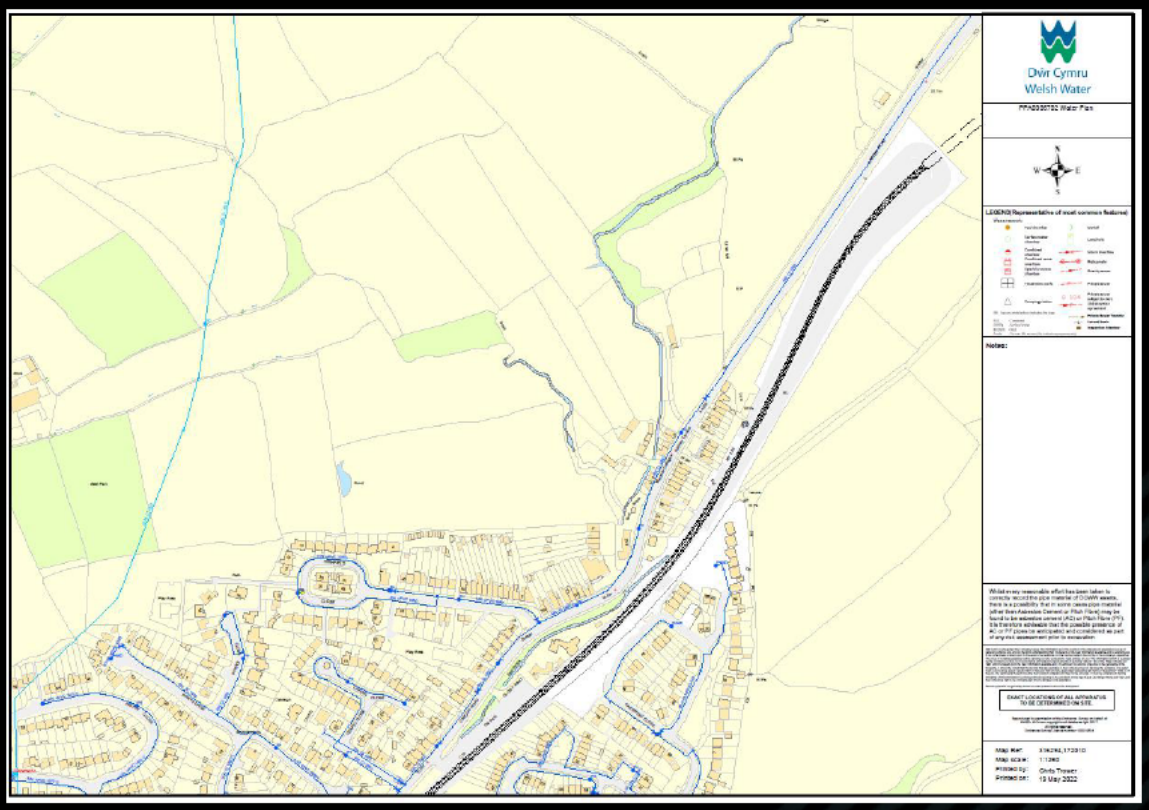


Figure 7-2 DCWW Water Supply Map

8 Conclusions and Recommendations

8.1 Flood Risk

8.2 Drainage

Appendices

A Greenfield Runoff Calculations

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	[redacted]
Site name:	Dinas Powys- Site B
Site location:	Dinas Powys

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.

Site Details

Latitude:	51.44040° N
Longitude:	3.20585° W
Reference:	3158935895
Date:	May 27 2022 13:38

Runoff estimation approach FEH Statistical

Site characteristics

Total site area (ha): 44.07

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.323
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.08

Hydrological characteristics	Default	Edited
SAAR (mm):	959	1018
Hydrological region:	9	9
Growth curve factor 1 year:	0.88	0.88
Growth curve factor 30 years:	1.78	1.78
Growth curve factor 100 years:	2.18	2.18
Growth curve factor 200 years:	2.46	2.46

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):		502.43
1 in 1 year (l/s):		442.13
1 in 30 years (l/s):		894.32
1 in 100 year (l/s):		1095.29
1 in 200 years (l/s):		1235.97

B Opportunities and Constraints

N

The steep topography and potential for sheeting overland flow to enter the development site will need to be managed through the use of SuDS.

7 meter easement required from the centreline of the water main crossing the site.

Space should be made within the proposed development layout for SuDS features. These features should include plot scale SuDS such as rain gardens, and conveyance features such as swales.

No development should be placed within 8m of a watercourse to ensure maintenance can still take place.

The connectivity of these watercourses should be ascertained to determine suitability for development in this location.

The pond feature in the south of the site should be retained and could be used to attenuate flow and enhance biodiversity.

14 meter easement from the centre line of the combined sewer.

14 meter easement from the centre line of the combined sewer.

The proposed masterplan suggests this area to be utilised for SuDS. This is unlikely to be a suitable option as a consequence of site constraints

PARK LAND

PARK LAND

PARK LAND

WOODS

WOODS

PLAYING FIELDS

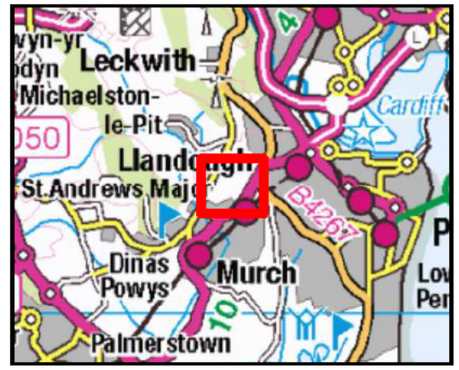
PRIMARY SCHOOL

Seel Park

0 100 200 400 Metres

Original @ A3

KEYPLAN



KEY

- Site boundary-A
- Site boundary-B

DCWW Assets

- Combined
- Foul
- Surface Water
- WW Water main
- DCWW14m easement for sewer infrastructure
- DCWW 7m easement for water main infrastructure

Watercourses

- Watercourses
- 8m watercourse buffer

JBA consulting

LAND NORTH OF DINAS POWYS

FLOOD RISK AND DRAINAGE CONSTRAINTS

N

The existing watercourses on the site will be retained with SuDS features conveying water into these watercourses at QBar rate of 11.40 l/s/ha

Check dams should be utilised where appropriate to slow and retain flow as a result of steep topography

Green corridors located along the boundaries of development will intercept sheeting overland flows from higher ground

Playing fields could be multifunctional with low flow channels to create usable spaces which are designed to flood in larger rainfall events

Ponds located along the tributaries of the East Brook can be enhanced to store surface water runoff from the proposed development. These ponds provide a method of retaining surface water as well as a natural method of flood management which could help reduce flood risk to Dinas Powys.

PARK LAND

PARK LAND

WOODS

WOODS

Existing woodland will be retained and could be enhanced to provide a wet woodland habitat subject to ecological requriements and engagement with design team ecologists.

Basins and elongated swales used across the site to store and treat surface water prior to discharging into the East Brook. Opportunities to provide amenity and biodiversity benefits through these assets.

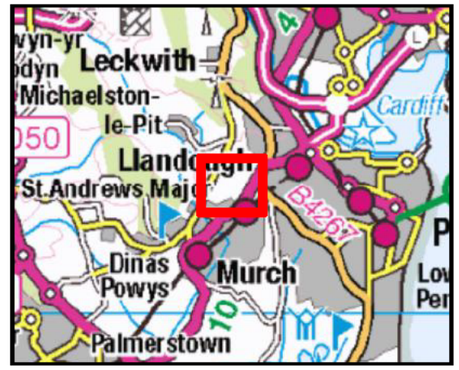
Green corridors located along the boundaries of the development will intercept sheeting overland flows from flowing into the existing, neighbouring properties.

Consideration should be given to plot scale SuDS features as source control assets such as rain gardens. SuDS for conveyance could also be used to enhance the street scene of the site.

Catchment to discharge into DCWW combined sewer at rate of 11.40 l/s/ha due to the topography of this area. No SuDS to be placed within the sewer easement area.

0 50 100 200 Metres
Original @ A3

KEYPLAN



KEY

- Site boundary-A
- Site boundary-B
- Flow Direction Arrows
- Watercourses
- Site sub-catchments
- DCWW Sewer 14m buffer

SuDS Features

- Green Corridor
- Pipe
- SuDS Footprint
- Wet Woodland Potential
- Pond
- Basin

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LAND NORTH OF DINAS POWYS

SURFACE WATER DRAINAGE OPPORTUNITIES

C Flow routes and development drainage sub catchments

N

No Development

10

6

5

9

7

No Development

12

4

8

13

14

11

15

2

3

1

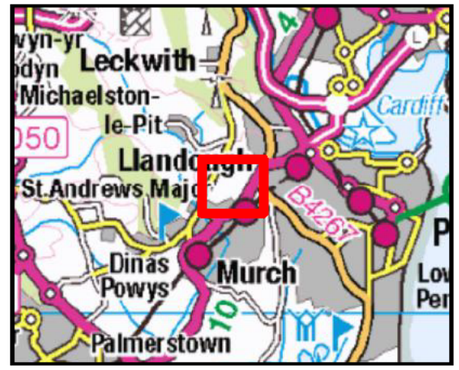
Eastbrook

0 100 200 400 Metres

Original @ A3

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

KEYPLAN



KEY

- Site boundary-A
- Site boundary-B
- Flow Direction Arrows
- 2m Contours

2m LiDAR

High : 63

Low : 14

- Site sub-catchments

JBA consulting

Land north of Dinas Powys
Preliminary Flood Consequence Assessment & Drainage Strategy

Flow direction and development site sub-catchments

D Welsh Water Developer Enquiry

Dŵr Cymru
Welsh Water

Developer Services
PO Box 3146
Cardiff
CF30 0EH

Tel: +44 (0)800 917 2652
Fax: +44 (0)2920 740472
E.mail: developer.services@dwrcymru.com

Gwasanaethau Datblygu
Blwch Post 3146
Caerdydd
CF30 0EH

Ffôn: +44 (0)800 917 2652
Ffacs: +44 (0)2920 740472
E.bost: developer.services@dwrcymru.com

[redacted]
JBA Consulting
8 Kings Court
High Street
Newport
NP20 1FQ

Date: 19/05/2022
Our Ref: PPA0006702

Dear [redacted]

Grid Ref: 316236 172029
Site Address: Cardiff Road, Dinas Powys
Development: Residential

Firstly, we note that the proposal relates to a residential development of 2180 units on Cardiff Road, Dinas Powys and acknowledge that the site comprises of a potential windfall development with no allocated status in the Local Development Plan (LDP). Accordingly, whilst it does not appear an assessment has been previously undertaken of the public sewerage system, we offer the following comments as part of our appraisal of this development.

Please note, notwithstanding the following assessment, we would advise there is also a mandatory requirement to undertake pre-application consultation with all 'Specialist Consultees', including Dwr Cymru Welsh Water as the statutory water and sewerage undertaker, in accordance with Schedule 4 of Town & Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016. As a major development, amounting to more than 10 units, you will be statutorily required to consult Welsh Water and a substantive response will be issued within 28 days from the date of the notice as per the requirements of Article 2E.

Public Sewerage Network

The proposed development site is located in the immediate vicinity of a combined public sewerage system which drains to Cog Moors Wastewater Treatment Works (WwTW).

This site is crossed by a public sewer with the approximate position being marked on the attached Statutory Public Sewer Record. In accordance with the Water Industry Act 1991, Dwr Cymru Welsh Water requires access to its apparatus at all times in order to carry out maintenance and repairs. No part of any building will be permitted within the protection zone of the public sewer measured 14 metres either side of the centreline. Our strong recommendation is that your site layout takes into account the location of the assets crossing the site and should be referred to in any master-planning exercises or site layout plans submitted as part of any subsequent planning application. Further information regarding Asset Protection is provided in the attached Advice & Guidance note.

You are also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist you may contact Dwr Cymru Welsh Water on 0800 085 3968 to establish the location and status of the apparatus in and around your site. Please be mindful that under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

Surface Water Drainage

As of 7th January 2019, this proposed development is subject to Schedule 3 of the Flood and Water Management Act 2010. The development therefore requires approval of Sustainable Drainage Systems (SuDS) features, in accordance with the 'Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems'. As highlighted in these standards, the developer is required to explore and fully exhaust all surface water drainage options in accordance with a hierarchy which states that discharge to a combined sewer shall only be made as a last resort. Disposal should be made through the hierarchical approach, preferring infiltration and, where infiltration is not possible, disposal to a surface water drainage body in liaison with the Land Drainage Authority and/or Natural Resources Wales.

It is therefore recommended that the developer consult with Vale of Glamorgan Council, as the determining SuDS Approval Body (SAB), in relation to their proposals for SuDS features. Please note, DCWW is a statutory consultee to the SAB application process and will provide comments to any SuDS proposals by response to SAB consultation. Please refer to further detailed advice relating to surface water management included in our attached Advice & Guidance note. In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

Foul Water Drainage – Sewerage Network

We have considered the impact of foul flows generated by the proposed development and concluded it is unlikely that sufficient capacity exists to accommodate your development without causing detriment to the existing services we provide to our customers, or in regard to the protection of the environment. There are no planned reinforcement works within Dwr Cymru Welsh Water's Capital Investment Programme and therefore, at this stage, we are unable to provide you with a point of adequacy on the network.

In light of the above our recommendation is that you instruct us to undertake a Hydraulic Modelling Assessment (HMA) which is at the developer's expense and will examine the impact of the introduction of flows from your development upon the performance of the existing network and consider. Where required and appropriate, the HMA will then identify solutions and points of communication to ensure that your site can be accommodated within the system. For the developer to obtain a quotation for the HMA, we will require a fee of £250 + VAT. Please note that we will seek to control the outcomes of the HMA via appropriate planning conditions.

However, in the absence of known solutions to accommodate your site we will not be able to support your development through the planning process. We therefore recommend that the HMA is undertaken in advance of a planning application being submitted, in order to avoid any subsequent delays. Further information on Hydraulic Modelling Assessments as well as any implications on the planning process is provided in the attached Advice & Guidance note.

Alternatively, given that the site is located in the vicinity of a combined sewer, the developer may wish to investigate and explore any opportunities to remove surface water flows from the existing public sewerage system which may provide sufficient compensation for the foul flows generated by the proposed development. Should the developer wish to explore this option, we recommend that any scheme/strategy is provided, preferably in advance of a planning application being submitted, in order for us to assess whether suitable as a solution to accommodate foul flows from the proposed development into the public sewerage system.

You may need to apply to Dwr Cymru Welsh Water for any connection to the public sewer under Section 106 of the Water industry Act 1991. However, if the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104 Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com.

Foul Water Drainage – Sewage Treatment

No problems are envisaged with the Wastewater Treatment Works for the treatment of domestic discharges from this site.

Potable Water Supply

The proposed development is in an area where there are water supply problems for which there are no improvements planned within our current Capital Investment Programme AMP7 (years 2020 to 2025). In order to establish what would be required to serve the site with an adequate water supply, it will be necessary for the developer to fund the undertaking of a hydraulic modelling assessment on the water supply network. For the developer to obtain a quotation for the hydraulic modelling assessment, we will require a fee of £250 + VAT.

The proposed development is crossed by a trunk watermain, the approximate position being shown on the attached plan. Dwr Cymru Welsh Water as Statutory Undertaker has statutory powers to access our apparatus at all times. I enclose our Conditions for Development near Watermain(s). It may be possible for this watermain to be diverted under Section 185 of the Water Industry Act 1991, the cost of which will be re-charged to the developer. The developer must consult Dwr Cymru Welsh Water before any development commences on site.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at **developer.services@dwrcymru.com**

Please quote our reference number in all communications and correspondence.

[redacted]

[redacted]
Planning Liaison Manager
Developer Services

***Please Note** that demands upon the water and sewerage systems change continually; consequently, the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter*

PPA0006702

CONDITIONS FOR DEVELOPMENT NEAR WATER MAINS

Location: Dinas Powys
Date: 19.05.22

The development of the site with our water main located as shown on the attached plan will involve certain conditions which must be strictly adhered to. These are:-

1. No structure is to be sited within a minimum distance of **7m** from the centre line of the mains. The pipeline must therefore be located and marked up accurately at an early stage so that the Developer or others understand clearly the limits to which they are confined with respect to the Company's apparatus. Arrangements can be made for Company staff to trace and peg out such water mains on request of the Developer.

2. Adequate precautions are to be taken to ensure the protection of the water main during the course of site development.

3. If heavy earthmoving machinery is to be employed, then the routes to be used in moving plant around the site should be clearly indicated. Suitable ramps or other protection will need to be provided to protect the water main from heavy plant.

4. The water main is to be kept free from all temporary buildings, building material and spoil heaps etc.

5. The existing ground cover on the water main should not be increased or decreased.

6. All chambers, covers, marker posts etc. are to be preserved in their present position.

7. Access to the Company's apparatus must be maintained at all times for inspection and maintenance purposes and must not be restricted in any way as a result of the development.

8. No work is to be carried out before this Company has approved the final plans and sections.

These are general conditions only and where appropriate, will be applied in conjunction with specific terms and conditions provided with our quotation and other associated documentation relating to this development.

Dŵr Cymru
Welsh Water

PPA0006702

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.

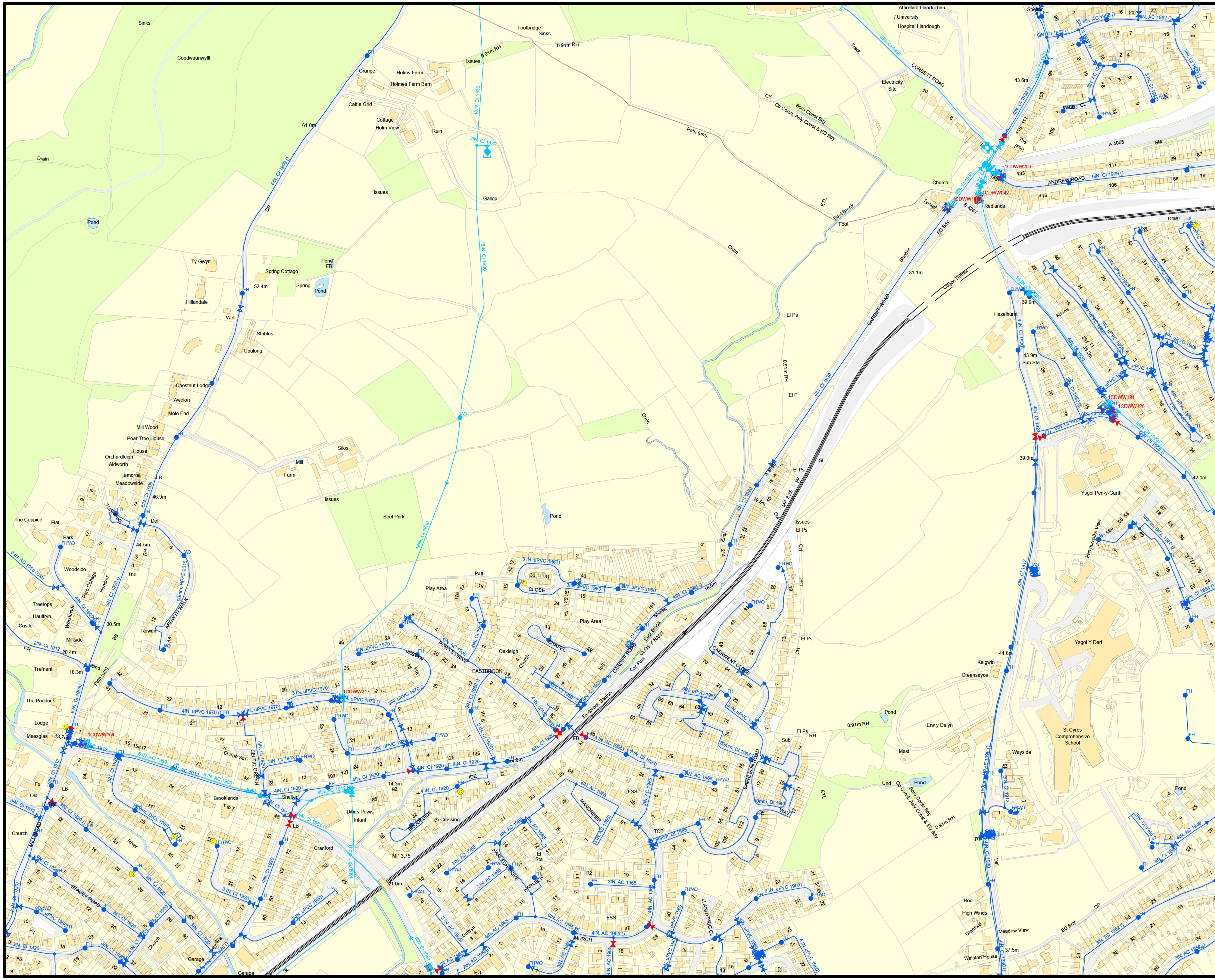
RED - Combined
GREEN - Surface Water
BROWN - Foul
Purple - Former S24 sewers (for indicative purposes only)

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

EXACT LOCATIONS OF ALL APPARATUS TO BE DETERMINED ON SITE.

Map Ref:	316206,172029
Map scale:	1:2000
Printed by:	Sara Edwards
Printed on:	27 May 2022



Dŵr Cymru Welsh Water

PPA0006702

N W E S

LEGEND

Clean network:

Sluice valve	Stop tap
Pressure reducing valve	Water Treatment Works
Meter	Water Pumping Station
Bulk meter	Existing main
Hydrant	Non-operational main
Cap end	Raw Water
Air valve	NB: Water main symbol colour indicates the type.

LIGHT BLUE - Trunk
DARK BLUE - Distribution
YELLOW - Raw Water

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.

Map Ref:	316249,171977
Map scale:	1:2500
Printed by:	Sara Edwards
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N

The steep topography and potential for sheeting overland flow to enter the development site will need to be managed through the use of SuDS.

7 meter easement required from the centreline of the water main crossing the site.

Space should be made within the proposed development layout for SuDS features. These features should include plot scale SuDS such as rain gardens, and conveyance features such as swales.

No development should be placed within 8m of a watercourse to ensure maintenance can still take place.

The connectivity of these watercourses should be ascertained to determine suitability for development in this location.

The pond feature in the south of the site should be retained and could be used to attenuate flow and enhance biodiversity.

14 meter easement from the centre line of the combined sewer.

14 meter easement from the centre line of the combined sewer.

The proposed masterplan suggests this area to be utilised for SuDS. This is unlikely to be a suitable option as a consequence of site constraints

PARK LAND

PARK LAND

PARK LAND

PRIMARY SCHOOL

WOODS

WOODS

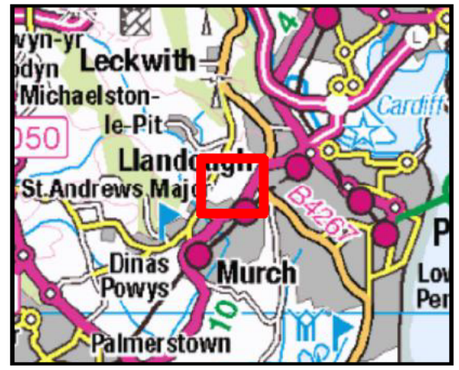
PLAYING FIELDS

Seel Park

0 100 200 400 Metres

Original @ A3

KEYPLAN



KEY

- Site boundary-A
- Site boundary-B

DCWW Assets

- Combined
- Foul
- Surface Water
- WW Water main
- DCWW14m easement for sewer infrastructure
- DCWW 7m easement for water main infrastructure

Watercourses

- Watercourses
- 8m watercourse buffer

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LAND NORTH OF DINAS POWYS

FLOOD RISK AND DRAINAGE CONSTRAINTS

N

The existing watercourses on the site will be retained with SuDS features conveying water into these watercourses at QBar rate of 11.40 l/s/ha

Check dams should be utilised where appropriate to slow and retain flow as a result of steep topography

Green corridors located along the boundaries of development will intercept sheeting overland flows from higher ground

Playing fields could be multifunctional with low flow channels to create usable spaces which are designed to flood in larger rainfall events

Ponds located along the tributaries of the East Brook can be enhanced to store surface water runoff from the proposed development. These ponds provide a method of retaining surface water as well as a natural method of flood management which could help reduce flood risk to Dinas Powys.

Existing woodland will be retained and could be enhanced to provide a wet woodland habitat subject to ecological requriements and engagement with design team ecologists.

Basins and elongated swales used across the site to store and treat surface water prior to discharging into the East Brook. Opportunities to provide amenity and biodiversity benefits through these assets.

Green corridors located along the boundaries of the development will intercept sheeting overland flows from flowing into the existing, neighbouring properties.

Consideration should be given to plot scale SuDS features as source control assets such as rain gardens. SuDS for conveyance could also be used to enhance the street scene of the site.

Catchment to discharge into DCWW combined sewer at rate of 11.40 l/s/ha due to the topography of this area. No SuDS to be placed within the sewer easement area.

PARK LAND

PARK LAND

WOODS

WOODS

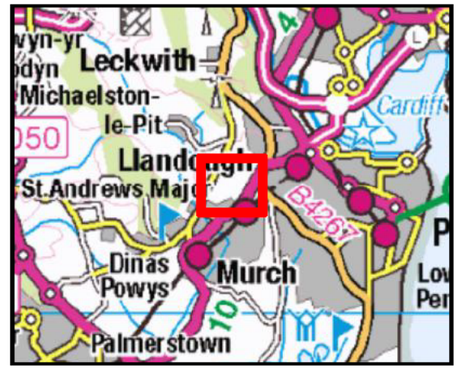
CAR PARK

SCHOOL FIELDS

Seel Park

0 50 100 200 Metres
Original @ A3

KEYPLAN



KEY

- Site boundary-A
- Site boundary-B
- Flow Direction Arrows
- Watercourses
- Site sub-catchments

WW Sewer Network

- Combined
- Foul
- Surface Water
- DCWW Sewer 14m buffer

SuDS Features

- Green Corridor
- Pipe
- Wet Woodland Potential
- Pond
- Basin

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LAND NORTH OF DINAS POWYS

SURFACE WATER DRAINAGE OPPORTUNITIES