

Drainage Strategy Report (DSR) For:
New Build Classrooms,
Ty Dysgu Primary School,
Market Street, CF48 2AJ

Prepared for:

Merthyr Tydfil CBC

REF: 16691 – DSR R06

Document Control

Project	New Build Classrooms, Ty Dysgu Primary School, Market Street, CF48 2AJ
Client	Merthyr Tydfil County Borough Council
Vale Consultancy Ref:	16691

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Issue	Date	Status
01	23/03/2023	First Issue
02	20/04/2023	Calculations sheet revised to show inflow details
03	10/05/2023	Planting Schedule Amended
04	14/07/2023	Landscaping Plan added, and irrelevant information and references removed
05	17/08/2023	Amended DSR to suit new drainage and site layouts
06	30/08/2023	References to planting schedule and landscaping plan omitted. Landscape Architect appointed

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Limitations

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Purpose of the Report

The purpose of the report is to describe the proposed strategies for the discharge of surface water emanating from the development proposals; initially in support of the scheme planning application and subsequently the SAB application to the SuDS Approval Body (SAB) application to be submitted to Caerphilly County Borough Council. The SAB consent legislation came into effect on 7th January 2019, when the Welsh Government introduced Schedule 3 of the Flood and Water Management Act 2010.

1.0 INTRODUCTION

1.1 Scope

Vale Consultancy has been instructed by Merthyr Tydfil County Borough Council, 'The Client' to undertake a drainage strategy report (DSR) for the proposed development at the existing Ty Dysgu primary school, Dowlais. (306915E, 207912N).

The drainage strategy report (DSR) assesses the proposals for management of the surface water discharge from the proposed development, within the context of the expectations of the planning proposals, and also within the constraints of the site layout, environmental conditions, topography and existing drainage infrastructure, and the requirements set out in the Welsh Government Statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems (SSSDS) and Ciria C753 The SuDS Manual.

In conjunction with our design and assessment as civil engineers, the SuDS scheme is based fundamentally on the site layout produced by CFW Architects Ltd, which will be submitted to Merthyr Tydfil County Borough Council for approval. The site layout drawing therefore defines the available external space within the development that can be used to incorporate SuDS features, when pedestrian and vehicle access and circulation is taken into account.

The DSR has initially been produced to form the basis of the SAB application.

1.2 Site Location and Description

Vale Consultancy has been instructed by Merthyr Tydfil County Borough Council, 'The Client' to undertake a drainage strategy report (DSR) for the proposed development at the existing Ty Dysgu primary school, Dowlais. (306915E, 207912N).

The site is an existing primary school however the site of the new build classrooms is currently unused grassland. The below satellite image from 2020 shows the site of the new build classrooms within the boundaries of the existing school.

Refer to Figure 1 below.



Figure 1 - Site Location Plan

The development site has a total site area of **2203 m² (0.22ha)** of unused land.

The site is situated within the town district of Dowlais on the North-Eastern side of Merthyr Tydfil. The site lies adjacent to Dowlais Nature garden.

Initial feedback from the site investigation trial pitting recorded low depth of topsoil followed by significant depths of made ground consisting of demolition waste. Further investigation and soil analysis revealed that contaminants of concern within the site are within the environment agency and Natural Resources Wales (NRW) guidelines. The site is considered to be **Brownfield** due to its historical use however as there is currently no surface water management, the site has been considered as **greenfield** for the hydraulic calculations.

The drainage strategy assesses the proposals for the management of the surface water discharge from the proposed development, within the context of the expectations of the planning proposals, and also within the

constraints of the site layout, environmental conditions, while conforming with current legislation and construction good practice.

1.3 Topography

A site topographic survey has been undertaken which includes site and boundary features and site levels. The site is largely flat with the topography creating a bowl-like shape with the higher ground levels around the school boundaries and levels reducing south towards the existing school building. Typical site levels at the proposed development are approximately 310.80m AOD.

There is an unnamed culverted watercourse running through the site which is believed to be partially abandoned. This is subject to further investigation. There are no other surface water bodies within the vicinity of the site with the nearest watercourse being 490m to the South-East of the site.

Refer to Site Location Plan 16691_C100: Appendix A, and Topographic Survey 16691_C101: Appendix B

1.4 Proposed Development

The proposed development consists of one new building to provide three new classrooms and their associated facilities for the school.

The development will be sited at ground level to the north of the existing school building.

The total site development area is **2203m² (0.22ha)**, building footprint **323m²**.

In conjunction with our design and assessment as civil engineers, information from CFW Architects Ltd for the site layout and building layout have been used to produce the DSR and subsequent SAB submissions. The CFW Architects Ltd information will also form the basis of the planning application.

Scheme has yet to be submitted to Merthyr Tydfil County Borough Council Planning Dept.

Refer to 2221-02F Proposed Site Plan: Appendix C

1.5 Existing Geology

A site investigation has been undertaken by Spectrum Geo Services, and included trial pits, boreholes, soil analysis and soakaway testing to BRE365, alongside standard desktop studies such as previous site use. Separate soakaway testing was conducted at the site by the client to BRE365.

A total of four trial pits were conducted and showed that at trial pit one (TP1) Topsoil was identified consisting of Very soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone to 0.25m BGL. From 0.25m to 0.70m BGL, the ground consisted of dressed sandstone blocks and some yellow bricks with a little sand, silt, mortar and gravel. Gravel is angular fine to coarse of sandstone, mortar and brick. Buried remains of the sites previous building. From 0.70m to 1.00m BGL Firm brown, orange and grey slightly gravelly sandy CLAY with low cobble content of subrounded sandstone. Gravel is subrounded fine to coarse of sandstone. Groundwater was not found in this trial pit.

Trial pit two (TP2) identified TOPSOIL: Very soft dark brown slightly sandy slightly gravelly CLAY. Gravel is

subrounded fine to coarse of sandstone to 0.25m BGL. From 0.25m to 0.78m BGL, MADE GROUND: Grey sandstone blocks with some white bricks and some sand, silt, mortar and gravel. Gravel is angular fine to coarse of sandstone, mortar and brick. Buried remains of the sites previous building. At 0.78m BGL, MADE GROUND: Bonded red brick. Possibly pushed over wall, Constructed floor or a constructed chamber/manhole. Groundwater was not found in this trial pit.

Trial pit three (TP3) identified TOPSOIL: Very soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone to 0.25m BGL. From 0.25m to 1.30m BGL, MADE GROUND: Large grey sandstone blocks with some red bricks and some sand, silt, mortar and gravel. Gravel is angular fine to coarse of sandstone, mortar and brick. Buried remains of the sites previous building. At 1.90m BGL siltstone bedrock was identified. Groundwater was not found in this trial pit.

Trial pit four (TP4) identified TOPSOIL: Very soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone to 0.25m BGL. From 0.25m BGL to 0.45m BGL, MADE GROUND: Multicoloured slightly silty sandy subangular to subrounded fine to coarse GRAVEL of sandstone, mudstone, coke, coal, slag and brick with low cobble content of subangular sandstone and slag. From 0.45m BGL to 0.90m BGL Firm to stiff brown, orange and grey slightly gravelly sandy CLAY with low cobble content of subrounded sandstone. Gravel is subrounded fine to coarse of sandstone. GLACIAL TILL. Groundwater was not encountered in this trial pit.

Chemical soils analysis deemed site contaminations concentrations to be within environment agency and NRW guidelines and does not pose a risk to groundwater.

Soakaway testing revealed a favourable infiltration rate of 0.2988m/hr or 8.30×10^{-5} m/s however, groundwater levels at the site varied between 1.23m to 2.10m BGL and without long-term groundwater monitoring data, infiltration must be ruled out to prevent an increase in flood risk at the site.

Refer to Site Investigation Report by Spectrum Geo Services: Appendix D

An initial assessment of the British Geological Survey data base identifies the bedrock geology as: South Wales Lower Coal Measures Formation – Mudstone, siltstone and sandstone. Sedimentary bedrock formed between 319 and 318 million years ago during the carboniferous period. Superficial deposits of Till, Devensian – Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period

An initial assessment of the Cranfield and Agrifood Institute Soilscales Map reveals that the site is underlain by slowly permeable seasonally wet acid loamy and clayey soils.

1.6 Flood Risk

The Welsh Government Development Advice Map (DAM) indicates that the site is located within Zone A, which is defined in Planning Policy Wales Technical Advice Note 15 (TAN 15): Development & Flood Risk as; 'Considered to be at little or no risk of fluvial or coastal/tidal flooding.' This indicates that justification test is not applicable and no need to consider flood risk further.

The Natural resources Wales (NRW) Flood Map For Planning (FMFP) shows that the site is located within flood zones 2 and 3 for surface water and small watercourse flooding. This represents a flood risk of approximately 1% due to surface water or small watercourses in a given year, including the effects of climate change. The

FMFP identifies a similar flood risk, with the site in a 'low' flood risk zone. The NRW Recorded Flood Events map does not identify any recorded floods within the vicinity of the proposed development.

The classification of the site has been identified as 'little or no' flood risk and is defined as a chance of flooding as a maximum of 1 in 1000 (0.1%). From TAN 15 Figure 2, schools are classified as 'highly vulnerable development'. Table A1.14 provides a prescriptive assessment of allowable development with general infrastructure flood threshold frequency (years) shown as 1 in 100 year (1%). As shown in TAN section 1.15, beyond the threshold frequency it would be expected (acceptable) to flood under extreme conditions, with a maximum flood depth of 600mm. From the available data from flood maps, the perceived flood risk will be to the front and rear of the proposed classrooms building, due to surface water or small watercourse flooding (flood zone 2 – 1 in 1000 year or 0.1%), which will be well within the defined 600mm maximum allowable flood risk.

As such, it has been determined from available data that the flood risk to the site is acceptable, meeting the criteria set out in Tan 15, and that the development will not increase flood risk to any adjoining or downstream areas. The proposed development is the construction of a new build classroom block. The development will include a suitable surface water management that aims to provide betterment to the currently unfettered drainage of the current site.

Refer NRW Flood Risk Maps: Appendix E.

2.0 DRAINAGE SYSTEMS ASSESSMENT

2.1 Existing Drainage Systems

There are on-site and off-site Dwr Cymru Welsh Water (DCWW) drainage assets recorded within the vicinity of the site. A DCWW 225mm diameter combined sewer is shown on DCWW asset maps however upon further investigation this sewer could not be found within the site boundaries. There is also a culverted watercourse running North to South through the site with a connection with another culvert running from West to East which seems to be partially abandoned. However, this requires further investigation. There only surface water assets currently within the site curtilage are road gullies serving the school access road and car park, with surface water runoff being unfettered for the majority of the site.

Refer DCWW Asset Map: Appendix F, and Alpine Land Surveys Culvert Tracing: Appendix G

2.2 Sustainable Drainage Systems (SuDS) Compliance

The Flood and Water Management Act 2010 (Schedule 3), requires new developments to include SuDS features that comply with national standards. The Welsh Governments published statutory standards for sustainable drainage systems – designing, constructing, operating and maintaining surface water drainage systems (2018), which became mandatory as of 7th January 2019, and determines the most effective way of embedding SuDS principles in new developments. The statutory national standards are accepted by local authorities that they have taken account of the Welsh Government planning advice on Development and Flood Risk, and the impact of surface water runoff from the development, which is based on limiting the peak runoff rate and runoff volume for extreme events for the 1 in 100-year return period *plus* climate change. In aiming to replicate ‘*greenfield*’ runoff rates for extreme events, this will help to ensure that flood risk is not increased by the development proposals.

This surface water drainage strategy will comply with the Statutory National Standards for Sustainable Drainage Systems (SuDS) for Wales including the Standard Principles and itemised *Standards 1 to 6* as outlined in Sections **3.2 – 3.7**.

3.0 PROPOSED DRAINAGE – SURFACE WATER

3.1 Sustainable Surface Water Drainage

The site has been *previously developed* and is therefore considered to be *brownfield* for development classification. However, from a SAB perspective this report will identify that following the SuDS discharge hierarchy, the point of surface water discharge will change from the existing scenario, as such the site will be assessed using greenfield criteria, and aiming to replicate the greenfield run-off rate within the constraints of the site and proposed development. Refer to Section 3.2.

3.2 S1: SuDS hierarchy of surface water discharge locations

The following receptors have been considered for surface water runoff on site, in order of SuDS preference. The aim of SuDS Standards is to ensure that the most effective drainage scheme is delivered with the most preferred levels of surface water destination, where the design can move to the next means of discharge only under exception criteria.

1. Surface Water collection for reuse.
2. Discharge by infiltration into ground.
3. Discharge into open surface water body.
4. Discharge into surface water sewer, highway drain, or other drainage system.
5. Discharge into combined sewer.

3.2.1 Priority Level 1: Surface water collected for reuse:

The demand for non-potable water for the development is anticipated to be low however surface water will be collected via waterbutt to the rear of the proposed classrooms building. It is anticipated that this collected water will be used to water the rain garden and detention basin should there be a period of prolonged dry weather.

It is noted that although rainwater harvesting systems provide environmental benefits, they do not provide mechanism to manage surface water runoff, either by means of reducing discharge rates or discharge volumes

Move To Next Priority Level

3.2.2 Priority Level 2: Discharge via infiltration:

Soakaway testing was conducted by the Spectrum Geo Services prior to the appointment of Vale Consultancy to undertake civil engineering works for the proposed development. As aforementioned, the soakaway tests showed the groundwater to be too high for infiltration to be a viable destination for surface water discharge and thus the next priority level must be assessed.

It is noted that the groundwater heights varied across the site, from 1.23m BGL to 2.10m BGL, however without long-term groundwater monitoring, soakaways would pose a flood risk to the proposed development.

Move To Next Priority Level.

Refer to Site Investigation Report by Spectrum Geo Services: Appendix D

3.2.3 Priority Level 3: Discharge Into Surface Water Body:

There is a culvert located within the site boundary as confirmed by Alpine Land Surveys via tracing. It is proposed that the proposed surface water drainage system's final point of discharge is to be the culvert via existing chamber connection utilising an abandoned lateral connection.

Priority Level 3 Achieved.

No further hierarchy assessment required.

Refer to Proposed Drainage Layout drawing Proposed Drainage Layout and Details: Appendix H.

3.3 S2: Surface Water Runoff Hydraulic Control

From the section above, it has been shown that a positive of site surface water discharge is required.

The principles of the surface water management system are to discharge into the culverted watercourse located to the south-east of the proposed school building. Surface water runoff will be collected from the rainwater pipes via raingardens, gravel filter drains and an ACO linedrain which will subsequently convey surface water into either a detention basin with attenuation crates below, or into a raingarden with attenuation crates below, with the exception of the gravel filter drain (GFD#1) to the south-east corner of the proposed building which will discharge its surface water directly into the proposed surface water sewer system. The footpaths around the proposed building will have a slight fall away from the building which will direct the runoff into a small gravel strip around the outer perimeter of the footpath, this will collect the runoff and allow the small volume of water to naturally percolate into the ground.

Catchment Areas

Site Boundary	2203 m ²
Catchment 1	122 m ²
Catchment 2	201 m ²
 Total Impermeable Area	 323 m ²

Refer to Catchment Area and Exceedance Flow Plan - 16691_C502: Appendix I.

3.3.1 Hydraulic Design Calculations

Attenuation storage for catchment 1 will be provided by a geocellular crate attenuation below a detention basin and will be configured as shown in the proposed drainage layout (drawing 16691_C500). Attenuation for catchment 2 will be provided by a geocellular crate attenuation below a raingarden and will be configured and located as shown in the drainage layout (drawing 16691_C500). Although the site is considered as brownfield from a development perspective, as the site does not currently have any surface water management, it has been considered as greenfield for the purpose of the hydraulic calculations to replicate the natural water cycle and runoff rates.

The crate attenuation has been modelled with Micro Drainage Source Control Module using site specific ICP SuDs rainfall data for all standard storm durations and return event for up to and including the 100 year plus 30 percent climate change. Storage within the pipe network, raingarden and detention basin have been omitted from the hydraulic storage calculations to provide an extra factor of safety. An 15mm dia. orifice flow

control outflow at 0.5l/s has also been applied to these calculations based on a greenfield runoff rate calculated using the QBar from ReFH2. It is noted that an urban creep allowance has not been applied as there is no practical space for further development within the site boundary and within the context of the development.

The site impermeable hard landscape area is 347m².

The micro drainage source control model identifies that a total attenuation of 20.5m³ is required. A total 20.8m³ has been provided by two attenuation crates, one below the detention basin (6.4m³) and one below the raingarden (14.4m³).

The design details are subject to confirmation of final site levels and SuDS feature coordination.

Refer Hydraulic Design Calculations: Appendix J.

3.3.2 Exceedance Flows

Exceedance flows occur during rainfall events which exceed the capacity of the drainage system, due to either rainfall events beyond standard design considerations or issues with the maintenance and performance of the surface water drainage systems. The topography of the site reduces towards the South. Exceedance flows will generally flow south and east primarily into grassed areas and will naturally infiltrate.

Refer to Catchment Area and Exceedance Flow Plan - 16691_C502: Appendix I.

3.3.3 Interception of Runoff

Surface water run-off from the classrooms building's roof will discharge via rainwater pipes to either a rain garden or a detention basin. An ACO linear channel drain has been provided across the north-east side of the proposed classrooms building to collect and channel water from the rainwater pipes and convey into the raingarden via stone rill. The raingarden and detention basin will be planted and will provide interception of contaminants to clean the water before discharging into the soakaway. Gravel filter drains will be utilised for some of the RWPs to provide pre-treatment and interception of contaminants before discharging into either the detention basin or directly into the surface water sewer system. GFD#1 will provide sufficient interception of contaminants and sediment before discharging into the flow control chamber. GFD#2 provides pre-treatment of the surface water runoff from the roof before being conveyed into the detention basin for further treatment.

Based on the above, the available opportunity for interception is maximised within the constraints of the scheme.

As per the Statutory Standard for SuDS 2018 Table G2.1, interception will be effectively delivered for areas of the site drained to systems that are designed to infiltrate runoff for events greater than a 1 month return period.

3.4 S3: Water Quality

Post development surface water runoff will be generated by hard landscaped areas comprising: roofs and footpaths. Surface water runoff final destination will be into a surface water body (culverted watercourse).

In accordance with the CIRIA C753 publication 'The SuDS Manual' (2015) definitions, residential roofs have a 'very low' pollution hazard level. Table 2 shows the pollution hazard indices for each land use. To deliver adequate water quality treatment the total SuDS mitigation index must be more than the pollution hazard index for each contaminant type. The pollution hazard and mitigation indices have been taken from tables 26.2 and 26.3 of the CIRIA SuDS Manual 2015.

The proposed design will ensure that surface water runoff from roof will discharge to either rain garden, gravel filter drain or detention basin which will provide treatment prior to final discharge into culverted watercourse via flow control.

The SuDS components will separate the smaller particles and chemicals.

Table 2 – Summary of pollution Hazard and relevant SuDS Mitigation Indices

Water quality - Simple Index Approach									
		Pollution hazard index				Mitigation Index			
Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons	SuDS Components for land use	Total Suspended Solids (TSS)	Metals	Hydrocarbons	Mitigation hazard index > Pollution hazard index (for each contaminant type)
Residential Roof	Very Low	0.2	0.2	0.05	Rain Garden	0.8	0.8	0.8	Yes
					Gravel Filter Drain	0.4	0.4	0.4	Yes
					Detention Basin	0.5	0.5	0.6	Yes

The proposed SuDS components will be sufficient in removing contaminants and pollutants for the proposed site and will have a positive impact on the receiving water quality for the runoff source.

3.5 S4: Amenity

The proposed SuDs features will enhance the environmental setting of the development. Amenity will be provided by the rain gardens and detention basin, which will be planted to improve the visual appearance of the built environment post development. The proposed SuDs features will provide further amenity outside of improving visual appearance by giving the school pupils resources and facilities to learn about nature and the water cycle. The provided water butts will create an opportunity for the school pupils to learn about the water cycle and also how to grow and care for plants, and the detention basin will also present the pupils with an opportunity to learn about biodiversity.

Refer to Drainage Layout – Proposed Drainage Layout and Details: Appendix H.

3.6 S5: Biodiversity

The proposed development is within the established town of Merthyr Tydfil, within the district of Dowlais situated to the far east of the town. As such, the inclusion of the specified suds features will provide ample space for the planting of native species that thrive in wet environments that receive direct surface water runoff from the building roof. When established, the suds features will attract insects and subsequently birds, thus contributing to biodiversity and linking with the surrounding open grass, and countryside.

Refer to landscape architect's proposals: Appendix K [TO BE INCLUDED IN SAB APP]

3.7 S6: Operation and Maintenance Requirements

To ensure SuDS components continue to operate reliably, regular inspection and maintenance should be carried out. In most cases, appropriate information should be provided by the relevant manufacturer on what has been installed, how it works, when to inspect it and whether maintenance will be required. CIRIA C753 The SuDS Manual also provides information on the operation and maintenance requirements for various SuDS components.

Conventional surface water drainage features such as channels, catchpits and manholes should be inspected as an absolute minimum annually, and where practicable after intense storm events, with silt removal.

Maintenance of the guttering, RWP's, rills, dished channels and ACO linear drainage is key to effectively managing surface water runoff, to ensure water is effectively conveyed to the raingarden and detention basin.

ACO linear drainage channel outlets to the SuDS features should be checked for blockages and the SuDS feature checked for scour and loss of medium. Litter picking should be undertaken with waste disposed of offsite. Any weak or dying plants should be replaced, and the basins weeds sprayed and removed when dead during the following inspection.

The maintenance plan and life cycle costings for the SuDS components are based on a 60-year design life.

The contractors SuDS elements construction costs will be provided, by the developer or when a project contractor has been appointed.

Likewise, the construction programme will be developed by the appointed contractor and or developer, and be coordinated with the construction of the non-SuDS feature development on site, i.e. building foundations and super structure, foul drainage and services.

Refer to SuDS Maintenance Plan – 16691_MP01: Appendix L [TO BE INCLUDED IN SAB APP]

4 CONCLUSIONS

The proposed development consists of the construction of a new classroom building at an existing school site.

The total site development area is **2203m² (0.22ha)**, with proposed building footprint of **323m²**.

A site investigation (SI) has been undertaken with a number of trial pits undertaken across the site and included infiltration testing at the site which revealed a favourable infiltration, however the groundwater was recorded at between 1.23m BGL to 2.10m BGL which poses a flood risk should infiltration be used. This is due to the requirement for infiltration systems to be a minimum 1m above the groundwater level.

Based on the above, and the SuDs hierarchy, discharging into the culverted watercourse via flow control has been chosen as the surface water discharge destination.

There are currently no active surface water management assets at the site of the proposed classrooms building with surface water runoff being unfettered with the exception of the access road and car parking to the south-west of the site. There are drainage assets within the site curtilage confirmed by an initial tracing survey however further investigation is required.

A rain garden, gravel filter drains and detention basin will be provided for interception and water quality, with the detention basin and raingarden providing amenity and biodiversity improvements to the site. Collected surface water will mainly percolate through either the raingarden or detention basin and collected in a geocellular crate attenuation situated below which will direct remaining water to the flow control via catchpit. The gravel filter drain GFD#2 will clean and convey water directly into the flow control chamber with attenuation being provided by the pipe network and attenuation crates during storm events.

Exceedance flows will flow from North to South and east towards the grassed area away from the proposed classrooms building and existing school building.

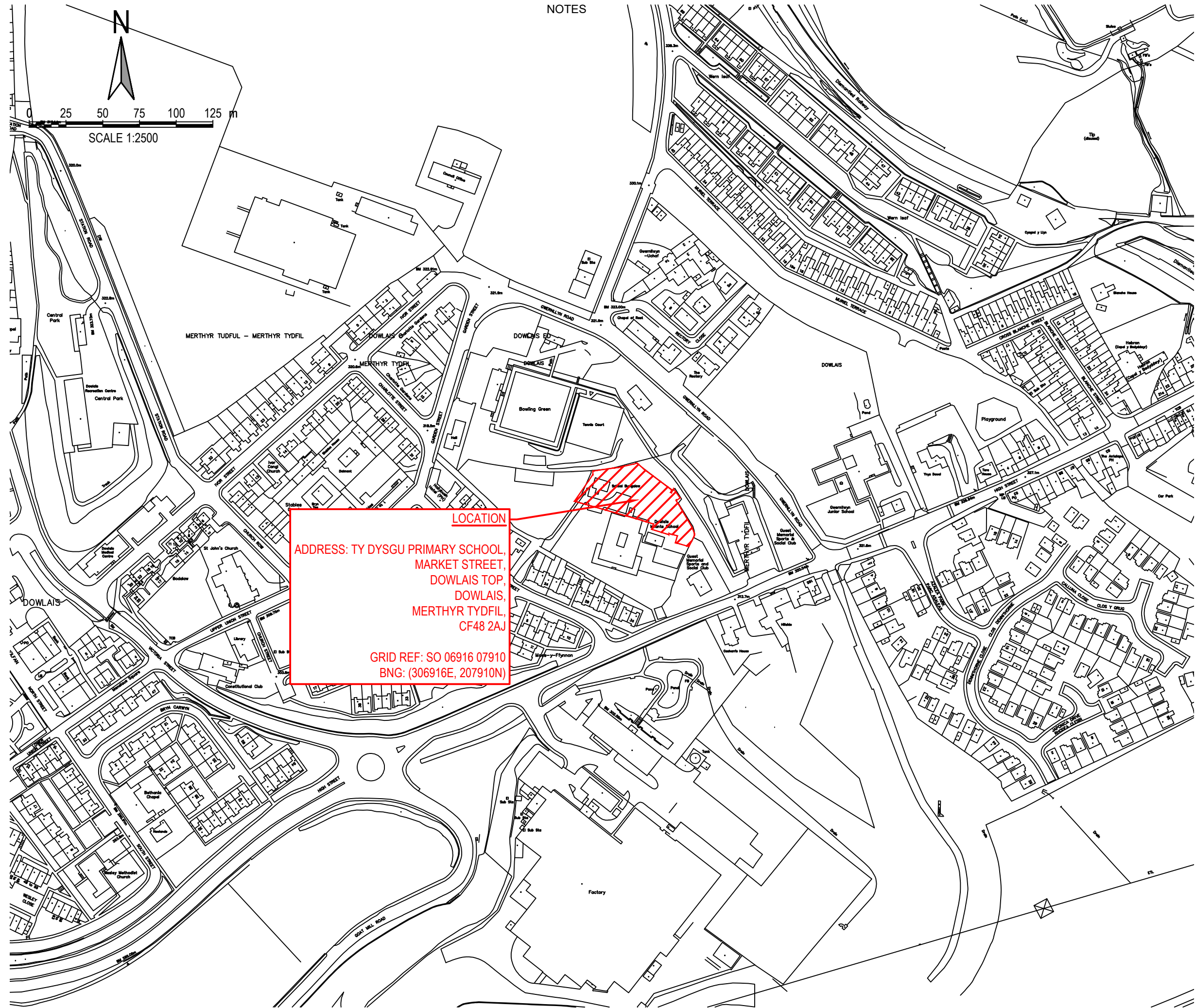
The proposed SuDS scheme will enhance the environmental setting of the development for the staff and pupils, tying in with the surrounding rural landscape and enhancing the amenity of the existing school. The raingardens will also promote biodiversity, and invite insects and subsequently birds to the area linking with the surrounding countryside.

The proposed development is within the established town of Merthyr Tydfil, within the district of Dowlais situated to the far east of the town. As such, the inclusion of the specified suds features will provide ample space for the planting of native species that thrive in wet environments that receive direct surface water runoff from the building roof. When established, the suds features will attract insects and subsequently birds, thus contributing to biodiversity and linking with the surrounding open grass, and countryside.

The scheme seeks to be cost effective, easily maintainable, improve amenity, and improve discharged surface water quality, runoff rates and volumes beyond the currently unfettered surface water discharge from the existing site.

It is concluded that this DSR and subsequent SAB application will comply with the SAB consent legislation which came into effect on 7th January 2019, when the Welsh Government introduced Schedule 3 of the Flood and Water Management Act 2010.

APPENDIX A: C100 Site Location Plan



NOTES

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
3. DO NOT SCALE FROM THE DRAWING. USE FIGURED DIMENSIONS ONLY.
4. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SUBCONTRACTORS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
6. EXISTING SERVICES HAVE NOT BEEN SHOWN BUT ARE PRESENT - THE CONTRACTOR IS TO LIAISE WITH ALL STATUTORY AUTHORITIES PRIOR TO THE COMMENCEMENT OF ANY WORKS.

01	RM	SH	SH	24.03.23	PRELIMINARY
rev.	drawn	chkd.	apprvd.	date	description

Client
MERTHYR TYDFIL COUNTY BOROUGH COUNCIL

Project
NEW BUILD CLASSROOMS
TY DYSGU PRIMARY SCHOOL,
DOWLAIS

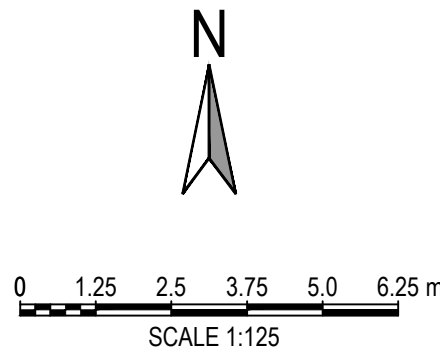
Title
LOCATION PLAN



29 Bocam Park, Old Field Road, Pencoed, Bridgend CF35 5LJ.
Phone: 01656 863794 Email: enquiries@vale-consultancy.co.uk

date	drawn	checked	approved
24.03.23	RM	SH	SH
scale @ A3	project no.		
1:2500	16691		
status	drg. no.	rev.	
P	16691/C100	01	

APPENDIX B: C101 Topographical Survey



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
3. DO NOT SCALE FROM THE DRAWING. USE FIGURED DIMENSIONS ONLY.
4. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SUBCONTRACTORS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
6. EXISTING SERVICES HAVE NOT BEEN SHOWN BUT ARE PRESENT - THE CONTRACTOR IS TO LIAISE WITH ALL STATUTORY AUTHORITIES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
7. TEMPORARY WORKS DESIGN BY OTHERS.
8. DESIGN RISK ASSESSMENTS AND METHOD STATEMENTS ARE TO BE PROVIDED TO THE PRINCIPLE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY WORKS.

PRELIMINARY

01	RM	SH	SH	24.03.23	PRELIMINARY

rev.	drawn	chekd	approved	date	description

Client
MERTHYR TYDFIL COUNTY
BOROUGH COUNCIL

Project
NEW BUILD CLASSROOMS
TY DYSGU PRIMARY SCHOOL,
DOWLAIS

Title
TOPOGRAPHICAL SURVEY



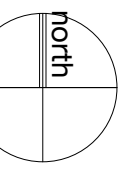
29 Bocam Park, Old Field Road, Pencoed, Bridgend CF35 5LJ.
Phone: 01656 863794 Email: enquiries@vale-consultancy.co.uk

date	drawn	checked	approved
24.03.23	RM	SH 24.03.23	SH 24.03.23

scale @ A1	project no.
1:125	16691

status	drg. no.	rev.
P	16691/C101	01

APPENDIX C: 2221-02F Proposed Site Plans



207900N

E 306850.144
N 307898.372
Z 309.336

1:100 @ A0

Construction
Ty Dysgu School Merthyr
GA proposed site plan

DRAFT

Rev	Date	Action
1		Issue for approval
2		Issue for construction
3		Issue for construction
4		Issue for construction
5		Issue for construction
6		Issue for construction
7		Issue for construction
8		Issue for construction
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100		Issue for construction



APPENDIX D: Ground Investigation by Spectrum Geo Services

Report No

22156/R1

Date

November 2022

Project

TY DYSGU NEWBUILD, DOWLAIS – GROUND INVESTIGATION REPORT

Client

Merthyr CBC

**Spectrum Geo Services
Foxglove Cottage,
Cwm Risca Lane,
Tondu,
BRIDGEND
CF32 0EH**

Report No:	Date:
22156/R1	November 2022

Project:
TY DYSGU NEWBUILD, DOWLAIS – GROUND INVESTIGATION REPORT

Issue Number	Status	Description of Amendments
1	Draft	

Report prepared by:	
Signed 	November 2022

This report is provided for the benefit only of the party to whom it is addressed. Spectrum Geo Services do not extend responsibility to any third party for the whole or any part of the contents. Spectrum Geo Services owes no duty of care in relation to this report to any third party. The investigation and reportage has been undertaken with all reasonable skill, care and due diligence. Spectrum Geo Services disclaims any responsibility to the client or others in respect of any matter(s) outside this agreed scope of the above works.

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1.0 INTRODUCTION

1.1 Introduction

Spectrum Geo Services (SGS) were requested by Merthyr CBC to undertake a Site Investigation Study, of a site at the existing Ty Dysgu, Dowlais, Merthyr, CF48 3HW.

This report includes a review of the available geological and historical information and Phase 2 Ground Investigation operations.

1.2 Scope of Work

The objectives of this assessment are:

- *Purchase historic maps, envirocheck report, CON29 coal mining and radon report.*
- *Review desktop data and advise on any issues raised.*
- *1 day of Window Sampling*
- *1 day trial pitting including hire of JCB.*
- *1 day hire of water bowser for infiltration testing.*
- *Allow provisional sum of £750 (+VAT) for geotechnical and contamination testing.*
- *Allow for supervision of the site works by a geotechnical engineer.*
- *Allow for preparing a combined desktop and interpretative report.*

1.3 Development Proposals

It is assumed that the intention is to develop the site for educational purposes.

1.4 Limitations

Subsoils are inherently variable and by their very nature are hidden from view such that no investigation can be exhaustive to the extent that all soil conditions are revealed. Conditions may therefore be present beneath the site that were not apparent from the data available for review.

Unless specifically noted to the contrary, it should be assumed that this report has not been submitted to any regulatory authorities for approval. Redevelopment sites may have planning conditions attached in respect of contaminated land assessment. Where we are made aware of such conditions in advance of scoping the works, we can tailor the report to the regulatory authority requirements. Where we are not made aware of any such requirements there can be no certainty that our investigation will meet any or all the regulatory authority requirements.

2.0 EXISTING SITE INFORMATION

2.1 Site Location

The development site is situated at [Market St, Dowlais, Merthyr Tydfil CF48 3HW](#), as shown in Figure SGS/22156/01.

The existing site comprised an area of mostly flat grassed and hard surfaces, the site of an existing educational facility.

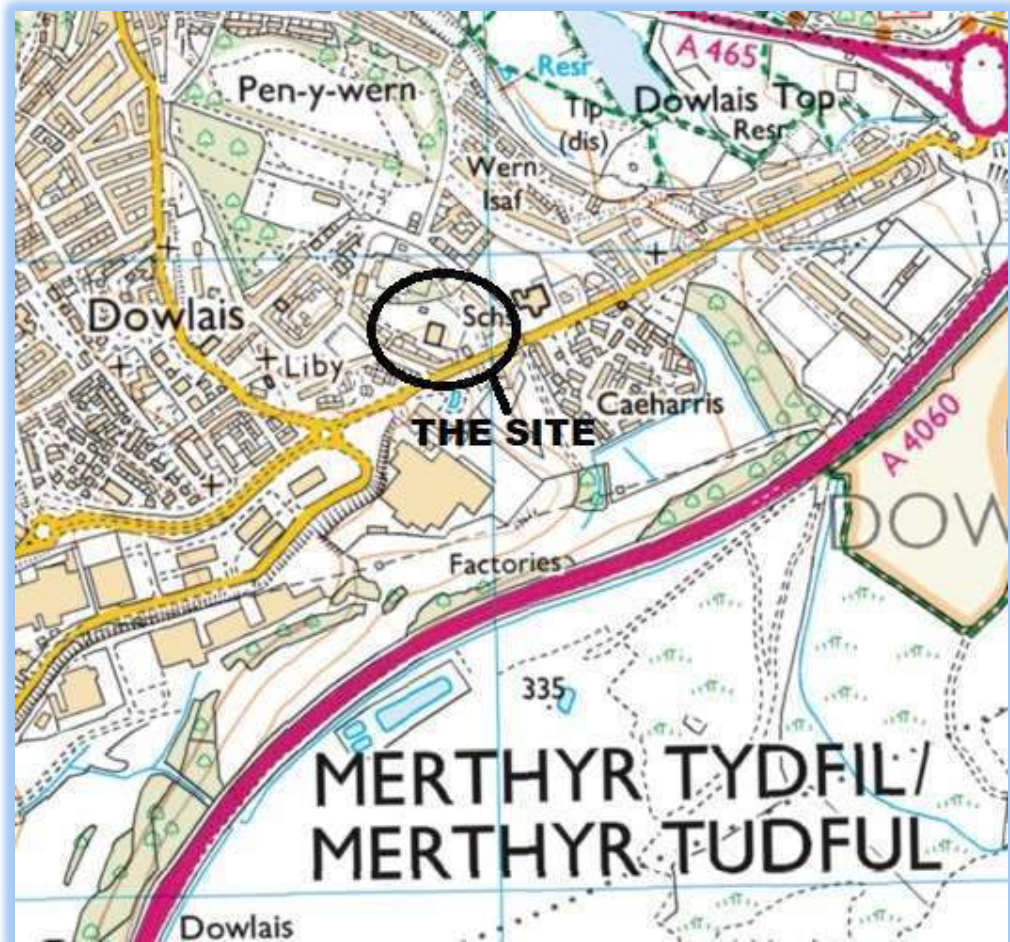


Figure SGS/22156/01: Site Location Plan

2.2 Published Geology

Based on data available from the BGS webviewer, the following geological setting is anticipated.

- **Superficial deposits**
Till, Devensian - Diamicton. Sedimentary superficial deposit formed between 116 and 11.8 thousand years ago during the Quaternary period.
- **Bedrock geology**
South Wales Lower Coal Measures Formation - Mudstone, siltstone and sandstone. Sedimentary bedrock formed between 319 and 318 million years ago during the Carboniferous period.

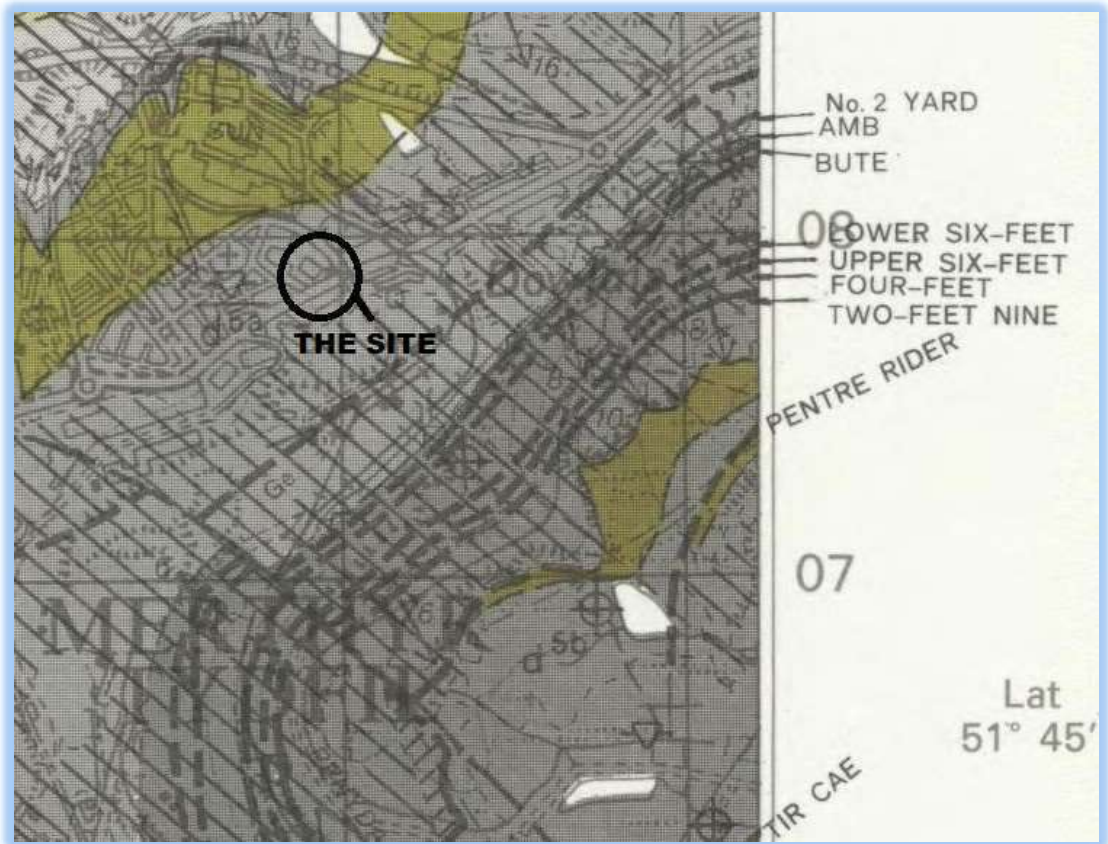


Figure SGS/22156/02: BGS Solid Map

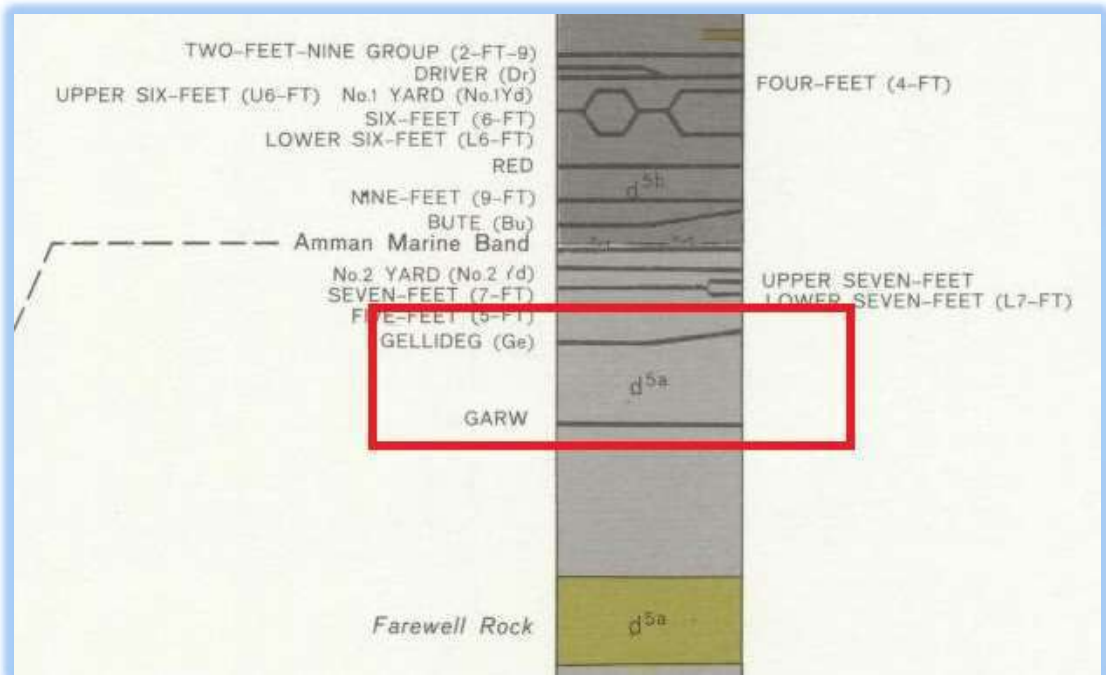


Figure SGS/22156/03: BGS Column Map

It is clear from the maps that the area is mantled in Glacial Drift, overlying the d5a Lower Coal Measures, somewhere between the Gellideg and Garw seams. The structural geology is dipping towards the south east.

A review of the Coal Authority Interactive Viewer places the site outside of any Development High Risk Area and in the area of past shallow workings.

2.3 Hydrology

The OS Map shows a pond to the south west.

3.0 DESK STUDY

3.1 Introduction

To facilitate a Desk Study, CON29 Mining Report, Enviro Insight, and historical map information were procured, and are Appended.

3.2 Site History

Information about the historical development of the site and the adjacent land has been obtained from a review of the available Ordnance Survey maps. The historical land use is summarised in below:

On site historical Land use

- The 1875 County Series map shows the site to comprise the Dowlais Iron Company School (Boys, Girls and Infants). The school was surrounded by play fields. To the north was a Chapel of Ease, and Reading Rooms to the east. Market Street was extant to the south of the site. Dowlais Ivor Iron Works was top the north west. Immediately at the development site, were the Infant Classrooms.
- By 1955, the school is now called the Dowlais Central Schools. To the north west were Bowling Greens and a Tennis Court.
- Between 1958 and 1973, the school had been demolished, and Dowlais Infants School has been built.
- By 1983, a School Bungalow has been built in the west of the site.
- The site remains the same until the 2003 OS map.

3.3 Radon Report

The appended radon report indicates that the site is within an area where less than 1% of properties may be affected. Thus, it is considered to pass.

3.4 Enviro Insight Report

The Enviro Insight report assesses the recorded likelihood of occurrence of various environmental risks at the site.

- a) Historic Landfill – not identified on site.
- b) Historic Tanks – 380m closest.
- c) Historic Industrial Land use: not identified on site, but within 50m.
- d) Environmental Permits – not identified,
- e) Landfill – not identified within 500m.

- f) Current land use – industrial
- g) Former land use – agricultural
- h) Abstraction Licences – not identified on site,
- i) Surface Water abstraction Licences – not identified on site,
- j) Flooding Groundwater – low,
- k) Flooding Surface Water – 1 in 30yr, 0.10m to 0.30m
- l) Natural Hazards – (see Coal Mining Report)
- m) Industrial Land use – none
- n) Hydrogeology – Superficial secondary A, undifferentiated. Bedrock – Secondary A.
- o) On site groundwater vulnerability Secondary A Bedrock aquifer. Low.

3.5 CON29M Mining Report

The appended CON29M report indicates that the Coal Authority have known or potential coal mining risks.

The property is not within a surface area that could be affected by any past recorded underground coal mining. However the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Attention is drawn to the Professional opinion sections of the CA report.

The property is in a surface area that could be affected by underground mining in 2 seams of ironstone at shallow depth, and last worked in 1878.

The property is not within a surface area that could be affected by present underground mining.

The property is not within a surface area that could be affected by present underground mining.

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

The property is not in an area where the Coal Authority has received an application for and is currently considering whether to grant a licence to remove or work coal by underground methods. The property is not in an

area where a licence has been granted to remove or otherwise work coal using underground methods. The property is not in an area likely to be affected from any planned future underground coal mining. However, reserves of coal exist in the local area which could be worked at some time in the future. No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property. The site is inside the Development High Risk area. The CA interactive viewer shows seam outcrops. It is suggested that a Coal Mining Risk Assessment is required for both planning and risk assessment.

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site.

4.0 PRELIMINARY CONCEPTUAL MODEL AND QUALITATIVE RISK ASSESSMENT

Source Characterisation

All potential **on-site** and **off-site** sources of contamination identified by this desk study are detailed in Table 4.1.1 below. The table also details any which have been discounted.

Table 4.1. 1: Identified Potential Sources of Contamination

Source		Distance (m)	Compass Direction	Identified by:	Comments
Possible Made Ground	On-Site	0		Possible	Suite of contamination testing required to negate source.

It is not possible to discount all of the potential sources of contamination. Potential sources of contamination which cannot be discounted are carried forward to a preliminary qualitative risk assessment. The Contaminants of Concern (CoC) for the remaining potential sources of contamination are listed in Table 4.1.2.

Table 4.1. 2: Contaminants of Concern

CONTAMINANTS OF CONCERN								
Source	Metals	Cadmium	PAH	Soil Organic Matter	SO ₄ , SO ₃	pH	Asbestos	Chromium IV
ON-SITE								
Made Ground	X	X	X	X	X	X	X	X

5.0 SITE OPERATIONS

5.1 Site Works

Site works were undertaken on .3 November 2022 and comprised trial pitting, soakaway testing and Window Sampling. Conditions during the fieldwork were predominantly overcast and dry. The positions are shown on Drawings SGS/22156/Locs

The work was undertaken in accordance with BS5930.

Samples were recovered of strata encountered, to allow laboratory testing to be undertaken.

6.0 LABORATORY TESTING

6.1 Introduction

On completion of site operations, selected soil samples were scheduled for laboratory testing. The following laboratory testing was undertaken and is Appended.

- pH,
- Sulphate by aqueous extract,
- Metals soil suite,
- PAH,
- Organic Matter,
- Asbestos ID.
- Atterberg Limits

The results are presented within Appendix C.

7.0 SITE CONDITIONS ENCOUNTERED

7.1 Ground Conditions

The ground conditions encountered are summarised below. Conditions can vary in areas which are between exploratory hole positions and thus have not been investigated.

Stratum	Depth to base (m)	Remarks
TOPSOIL	0.25	
MADE GROUND. Various lithologies including ceramics, bricks, ash, timber, slag and building rubble	0.70 – (2.00)	Much demolition waste from ex building. Deepest and not penetrated at WS03.
CLAY and SAND/GRAVEL	(0.90) – (3.30)	Glacial Till

Table 7.1. Generalised Strata

The site was mantled with TOPSOIL to 0.25m.

Made Ground was noted across the site, to a maximum depth of 2.00m at WS03 – where it was not fully penetrated. The Made Ground comprised various lithologies including slag and building rubble.

It was noted at TP02 that there was a brick lined structure, which may have been a culvert.

The findings show that the glacial CLAY and SAND/GRAVEL deposits are evident across the site, where the Made Ground was penetrated.

7.2 Groundwater Conditions

During the field operations, water was noted at WS01, 04 and 05. It was encountered at between 1.23m and 2.10m depth,.

50mm pipes were installed in case post site monitoring was required.

It should be noted that groundwater levels vary due to changes in climatic and other conditions and may at time differ from those recorded.

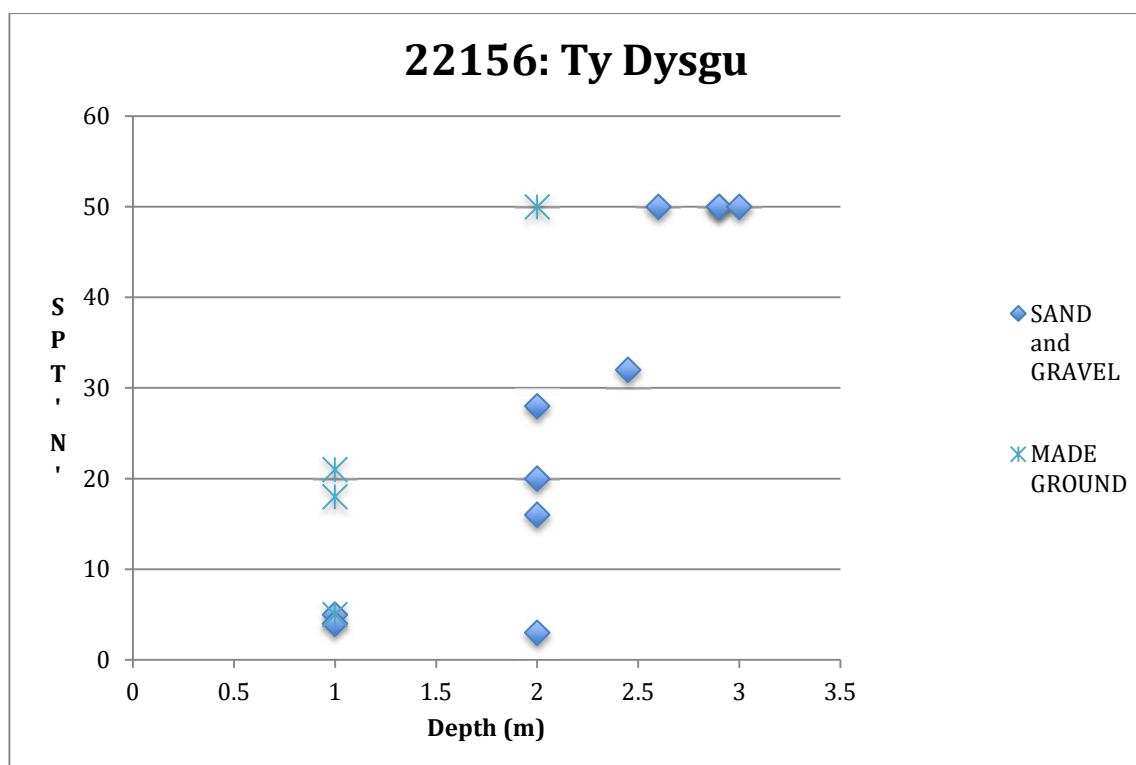
8.0 IN-SITU TESTING

In-situ soakaway infiltration tests were undertaken at 2 locations, shown on SGS/22156/Locs. If values of between 4.5×10^{-5} and $8.3 \times 10^{-5} \text{ ms}^{-1}$ were recorded at TP04, whereas the strata at TP01 would not take water at sufficient rates to allow a test to be recorded.

9.0 GEOTECHNICAL PARAMETERS

9.1 Introduction

This section presents geotechnical parameters, which will be taken forward into the foundation options appraisals, and assigns parameters to the strata encountered. We have chosen not to assess geotechnical parameters of the Made Ground, as it is variable both laterally and vertically.



9.1.1 GLACIAL TILL – SAND and GRAVEL

What has been described as SAND and GRAVEL, was encountered where Made Ground was penetrated. The above chart shows the relationship between uncorrected SPT N and depth.

At a depth of 1.50m, an average SPT N of approximately 12 is suggested.

Employing correlations developed by Peck et al, the following is recommended.

- Angle of Internal Friction (ϕ') = 32°

10.0 GEOTECHNICAL ASSESSMENT

10.1 Introduction

The following sections provide an assessment of the options relating to foundation options at site, making suggestions relating to potential options/assessment for bearing capacity and foundations and attack to buried concrete.

10.2 Foundation Options

At a depth of 1.50m the SAND and GRAVEL would provide an allowable bearing capacity (q_a) in the order of 100kN/m^2 , however care must be taken to inspect the stratum for loose or waterlogged zones.

It is noted that the SAND and GRAVEL (and CLAY proportion) was not noted at WS02 and 03 at 1.90m and (2.00m) depth. Care will need to be taken in assessing whether trench fill or piling may be required – depending upon the proposed layout.

Excavations in the Made Ground will degrade in wet conditions, and thus close support should be considered. Water was noted which would impact upon excavations, thus it would be prudent to allow for pumping from open sump.

All formations must be inspected by a professional Geotechnical Engineer to confirm that the materials will accommodate the allowable bearing capacity calculated, and so that soft spots are identified, and removed.

10.3 Attack to Buried Concrete

Laboratory testing during, noted slightly alkaline pH values, and a maximum water-soluble sulphate value of 0.05g/l , indicating Sulphate Class DS-1, AC1 in accordance with BRE Special Digest 1.

10.4 Groundwater

Groundwater was noted at depths which may affect excavations.

It is prudent to assume that there may be perched tables or standing water during periods of rainfall. Thus, pumping from open sumps should be accommodated for.

It should be noted that groundwater levels vary due to changes in climatic and other conditions and may therefore at times vary from those recorded during these operations.

11.0 CONTAMINATION TESTING

Contamination testing was undertaken on four samples, as shown in the Appendices.

Client Sample ID	Units	TP02	WS01	WS01	WS04	WS05	S4UL/ C4SL Resi With	S4UL/ C4SL Resi Without
Depth to Top		0.50	0.4	1.0	0.20	0.40		
Sample Type		Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES		
% Stones >10mm	% w/w	<0.1	<0.1	<0.1	<0.1	<0.1		
pH	pH	8.66	8.74	8.78	8.6	8.56		
Sulphate (water sol 2:1)	g/l	0.04	0.03	<0.01	<0.01	0.05		
Sulphate (acid soluble)	mg/kg	2300	1600	210	350	1100		
Organic matter	% w/w	14.6	11.5	0.9	6	35.8		
Arsenic	mg/kg	17	6	4	4	15	37	40
Cadmium	mg/kg	1.9	1.5	1.6	1.4	2.1	11	65
Copper	mg/kg	52	74	12	69	66	2400	7100
Chromium	mg/kg	22	33	43	20	20	910	910
Chromium Hex	mg/kg	<1	<1	<1	<1	<1	6	6
Lead	mg/kg	80	107	17	39	153	190	310
Mercury	mg/kg	2.64	2.38	<0.17	0.21	2.52	40	56
Nickel	mg/kg	21	18	17	20	37	180	180
Asbestos in Soil (inc. matrix)								
Asbestos in soil		NAD	NAD	NAD	NAD	NAD		
Asbestos ACM - Suitable for Water Absorption Test?		N/A	N/A	N/A	N/A	N/A	Non detected	
PAH-16MS								
Acenaphthene	mg/kg	0.04	0.28	<0.01	0.05	<0.01	1100	6000
Acenaphthylene	mg/kg	0.01	0.07	<0.01	0.01	<0.01	920	6000
Anthracene	mg/kg	0.08	0.43	<0.02	0.06	<0.02	11000	37000
Benzo(a)anthracene	mg/kg	0.4	1.7	<0.04	0.21	0.08	13	15
Benzo(a)pyrene	mg/kg	0.31	1.35	<0.04	0.13	0.07	3	3.2
Benzo(b)fluoranthene	mg/kg	0.48	1.97	<0.05	0.22	0.12	3.7	4
Benzo(ghi)perylene	mg/kg	0.2	0.68	<0.05	0.07	<0.05	350	360
Benzo(k)fluoranthene	mg/kg	0.17	0.59	<0.07	<0.07	<0.07	100	110
Chrysene	mg/kg	0.49	1.84	<0.06	0.24	0.13	27	32
Dibenzo(ah)anthracene	mg/kg	0.07	0.25	<0.04	<0.04	<0.04	0.3	0.32
Fluoranthene	mg/kg	0.76	3.18	<0.08	0.44	0.13	890	1600
Fluorene	mg/kg	0.04	0.31	<0.01	0.04	<0.01	860	4500
Indeno(123-cd)pyrene	mg/kg	0.22	0.81	<0.03	0.1	0.05	41	46
Naphthalene	mg/kg	<0.03	<0.03	<0.03	<0.03	<0.03	13	13
Phenanthrene	mg/kg	0.43	1.81	<0.03	0.27	0.08	440	1500
Pyrene	mg/kg	0.6	2.28	<0.07	0.3	0.11	2000	3800
Total PAH-16MS	mg/kg	4.3	17.6	<0.08	2.14	0.77	17761	60984

6% SOM

Table 11.1: Contamination Results

The results have been compared with current Environment Agency limits for residential uses. Table 11.1 shows the recorded values, related to current Soil Guideline Values (SGVs)/S4UL, or other published values.

Thus, it is evident that all positions were within guidelines.

12.0 CONCLUSIONS

Allowable bearing capacities have been provided for the natural strata encountered. Formations, will need to be inspected for soft/loose spots and where those are found, treated accordingly. The granular strata will require care regarding trench stability. It is noted that the natural ground was not encountered to 2.00m at WS03.

Groundwater was noted at depths which may impact on excavations.

Contamination testing has shown there to be no elevated values.

Slightly alkaline soil results were noted, and Sulphate Class DS-1, AC1, in accordance with BRE Special Digest 1 is recommended for buried concrete.

Soakaway infiltration rates were in the order of 10^{-5} ms^{-1} were noted at TP04.

The CON29M and inspection of the Coal Authority Interactive viewer suggest a requirement for a Coal Mining Risk Assessment, which may or may not result in the requirement for rotary probe hole drilling.

It was noted at TP02 that there was a brick lined structure, which may have been a culvert. This may need further assessment to determine it's use.

APPENDIX A

Phase 1 Data

Enviro Insight

Small Scale Historical Maps

Large Scale Historical Maps

Radon Report

CON29M

APPENDIX B

Exploratory Hole Logs

TP01 to 04, WS1 to 5

APPENDIX C

Laboratory Testing

APPENDIX D

In-Situ Testing

SA01 and 4

APPENDIX E

Photographic Plates

APPENDIX F

Drawings

Exploratory Hole Locations

SGS/22156/Locs

Site Details:

TY DYSGU PUPIL REFERRAL
UNIT, DOWLAIS PRIMARY
SCHOOL NURSERY AND
INFANTS DEPARTMENT,
MARKET STREET, DOWLAIS,
MERTHYR TYDFIL, CF48 3HW

Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1875

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1875
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Map legend available at:
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Site Details:

TY DYSGU PUPIL REFERRAL
UNIT, DOWLAIS PRIMARY
SCHOOL NURSERY AND
INFANTS DEPARTMENT,
MARKET STREET, DOWLAIS,
MERTHYR TYDFIL, CF48 3HW

Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series Town Plan

Map date: 1875

Scale: 1:500

Printed at: 1:1,000



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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1899-1900

Scale: 1:2,500

Printed at: 1:2,500



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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1955-1956

Scale: 1:1,250

Printed at: 1:2,000



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Revised 1955
Edition N/A
Copyright N/A
Levelled 1950

Surveyed 1956
Revised 1956
Edition N/A
Copyright N/A
Levelled 1950

Surveyed 1955
Revised 1955
Edition N/A
Copyright N/A
Levelled 1950

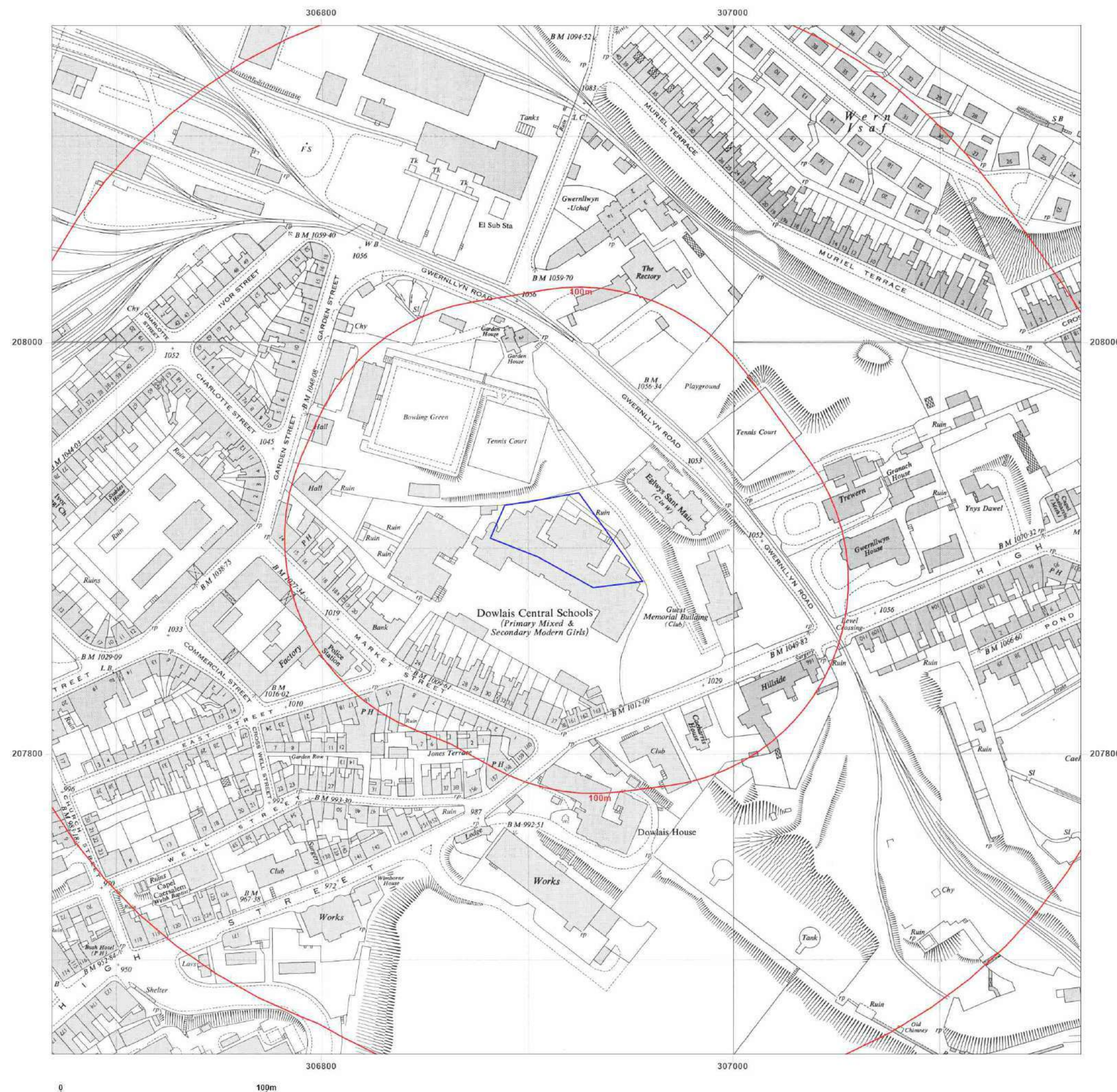


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1956-1957

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
Edition N/A
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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

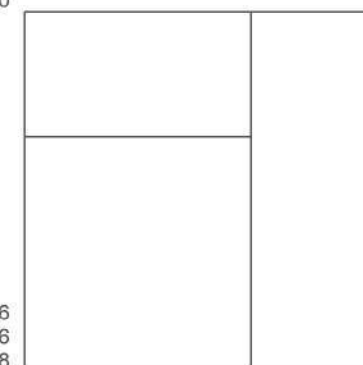
Map date: 1957-1958

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1956
Revised 1956
Edition 1957
Copyright N/A
Levelled 1950



Surveyed 1956
Revised 1956
Edition 1958
Copyright N/A
Levelled 1950

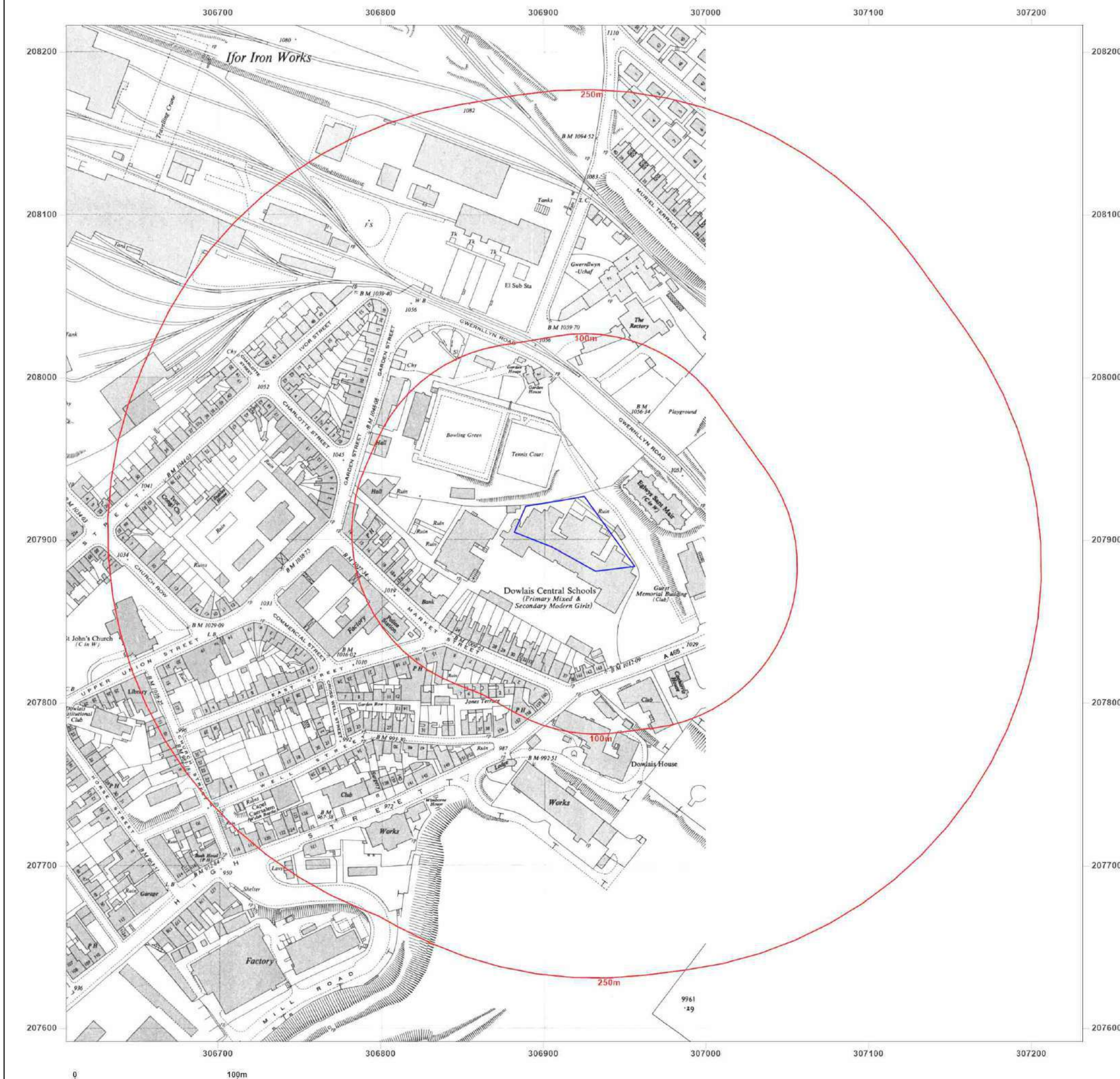


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

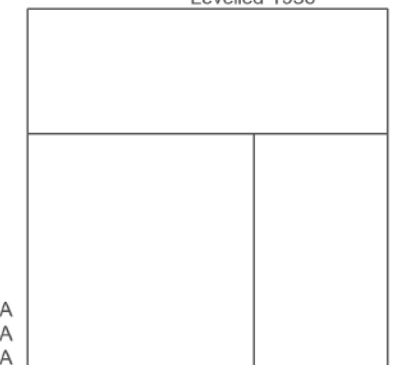
Map date: 1958-1963

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1956
Revised 1956
Edition 1963
Copyright 1963
Levelled 1950



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

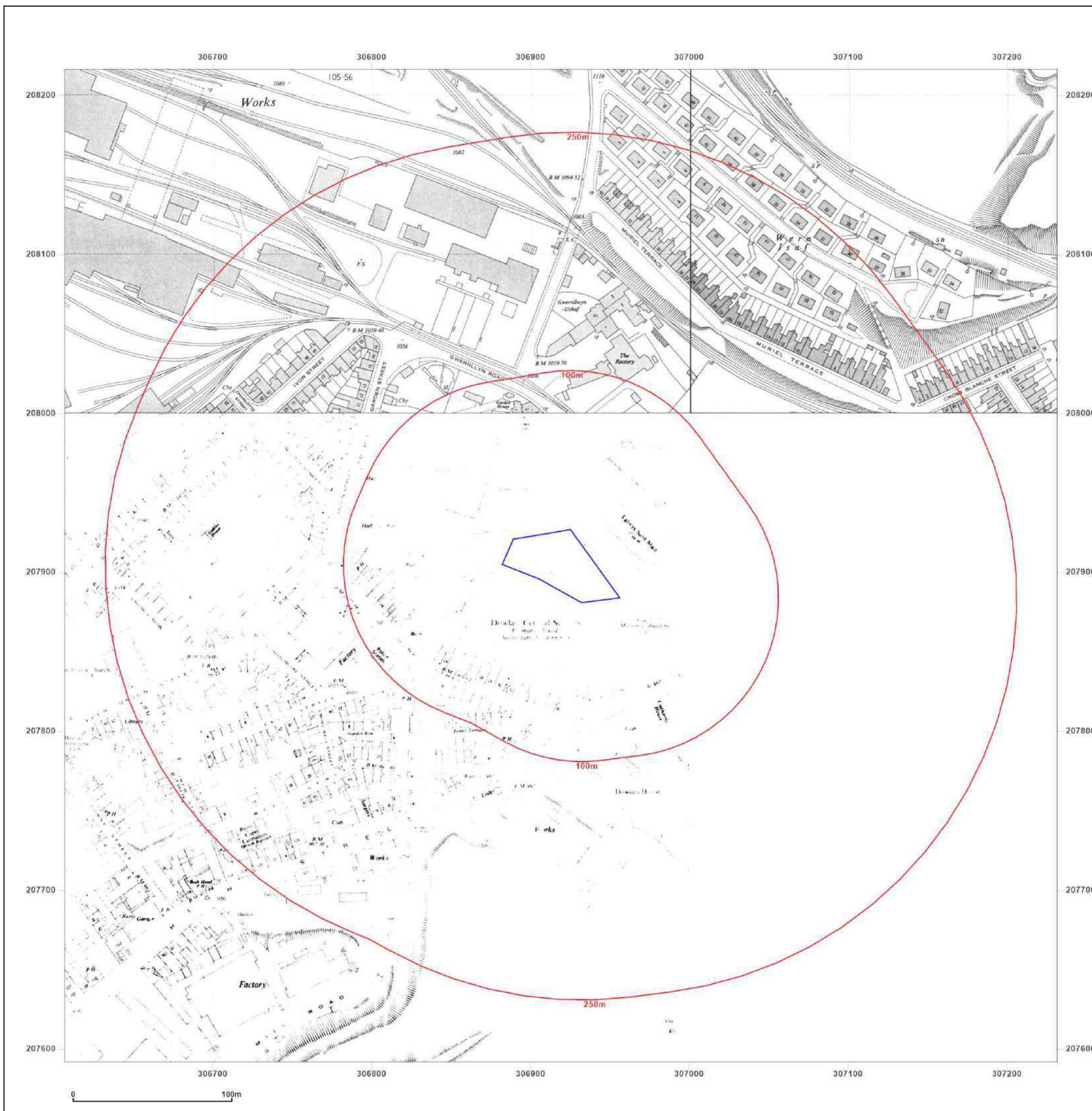


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1967

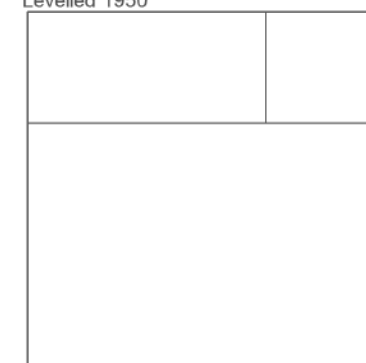
Scale: 1:1,250

Printed at: 1:2,000



Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1950

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1967
Levelled 1957

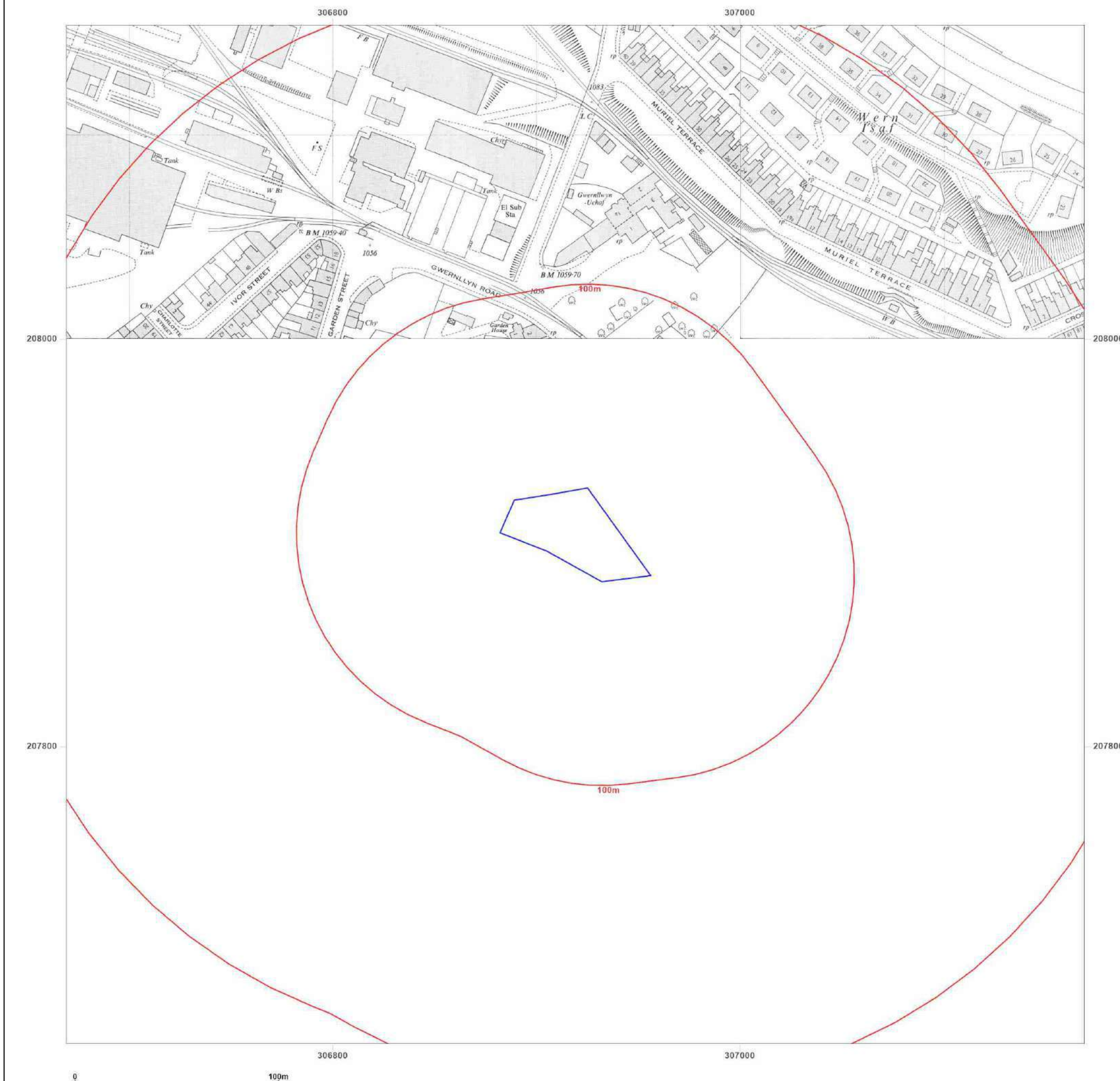


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1968

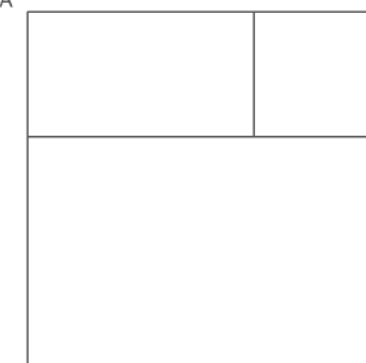
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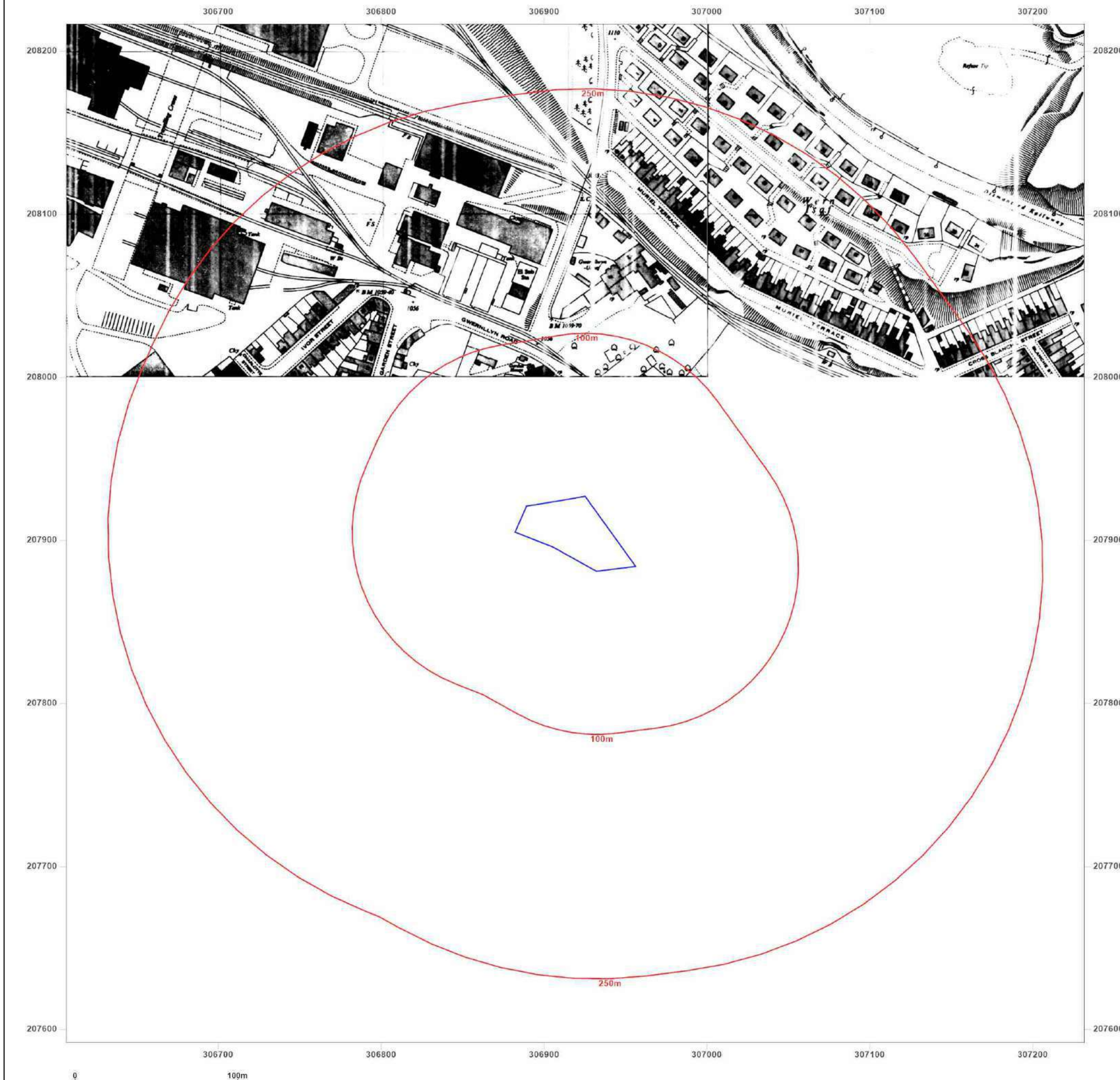


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1973-1975

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Surveyed 1956
Revised 1973
Edition N/A
Copyright 1974
Levelled 1957

Surveyed 1955
Revised 1972
Edition N/A
Copyright 1973
Levelled 1958

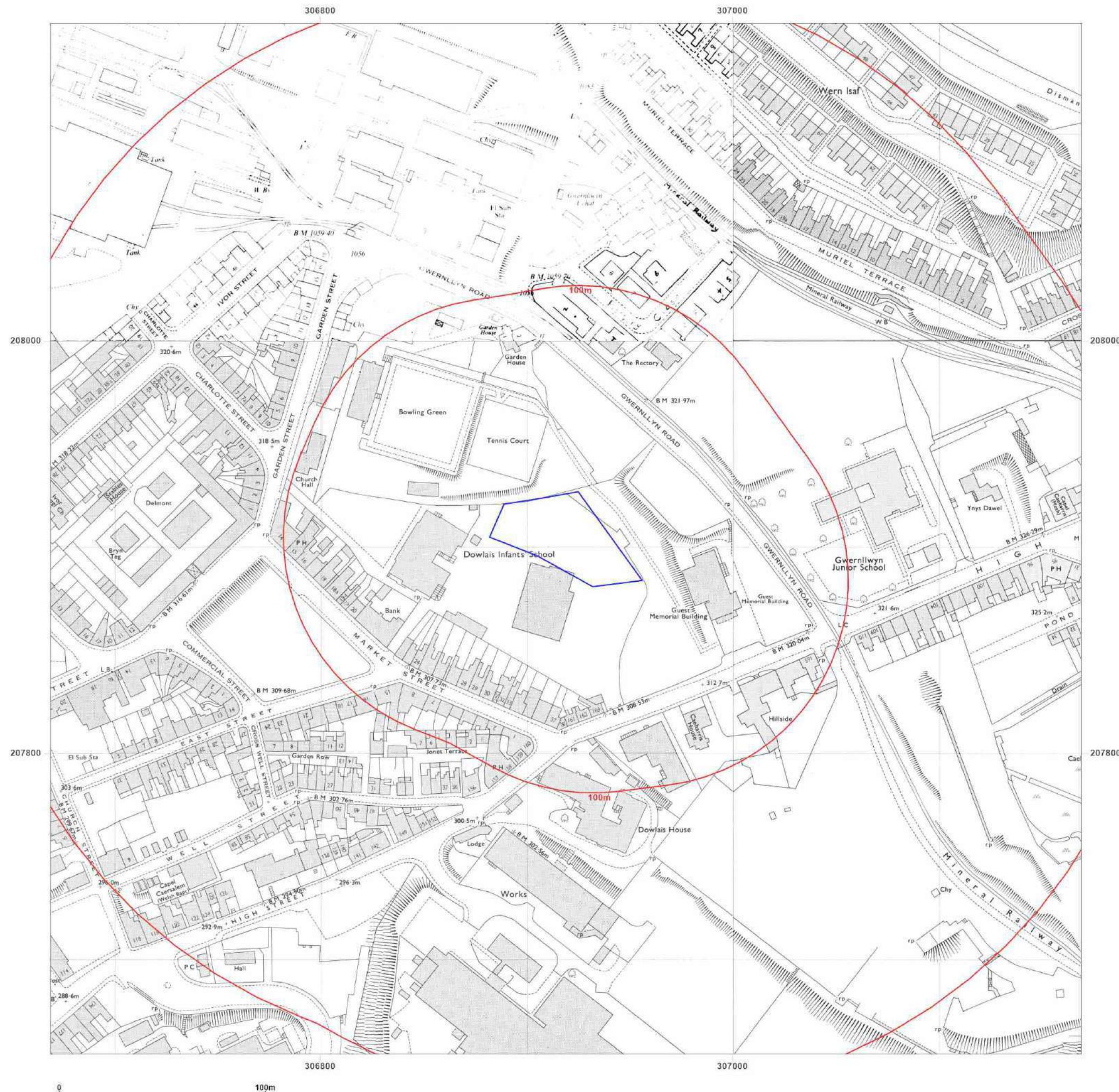


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1975

Scale: 1:2,500

Printed at: 1:2,500



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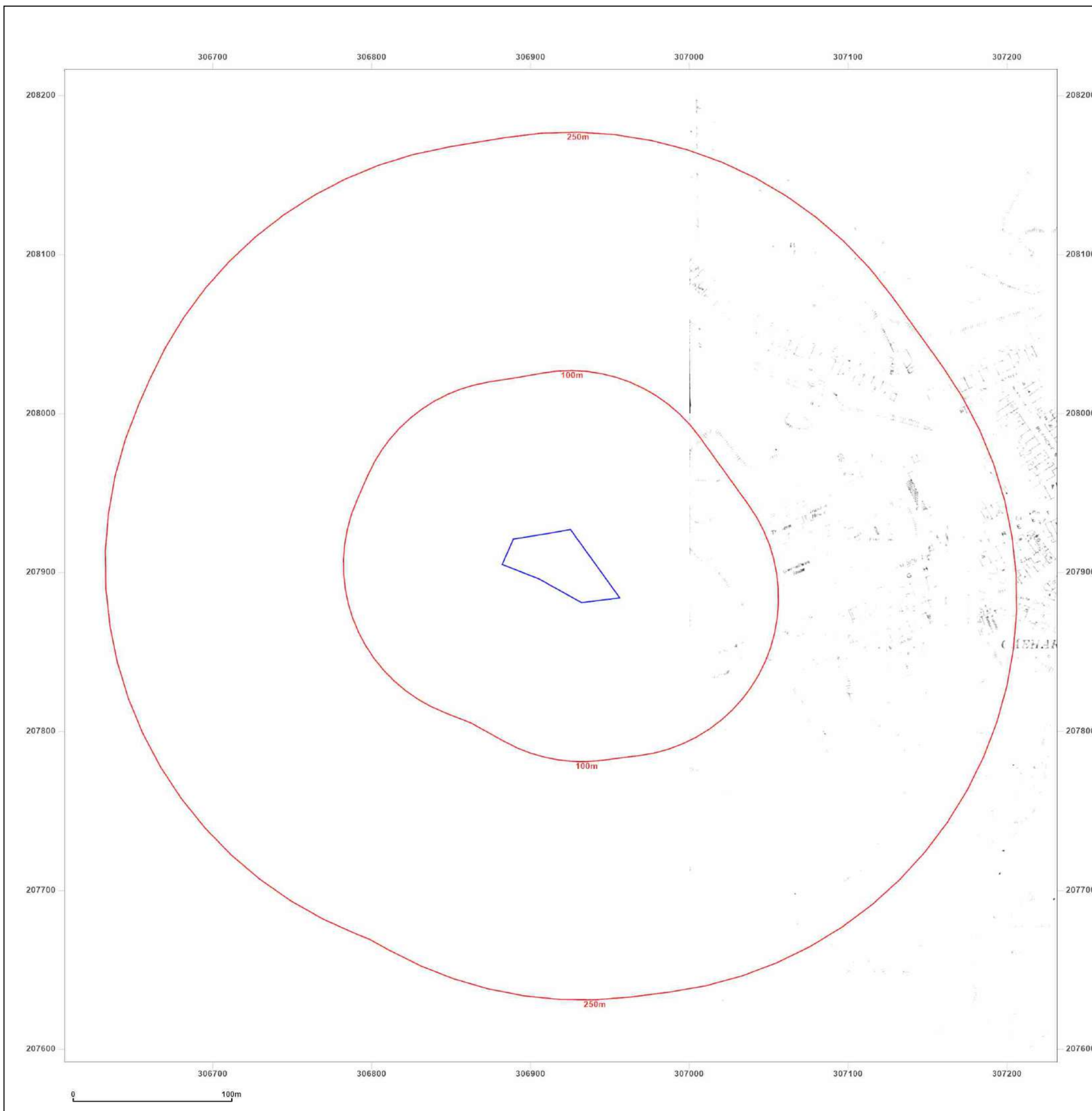


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1975-1977

Scale: 1:1,250

Printed at: 1:2,000



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Revised N/A
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Revised N/A
Edition N/A
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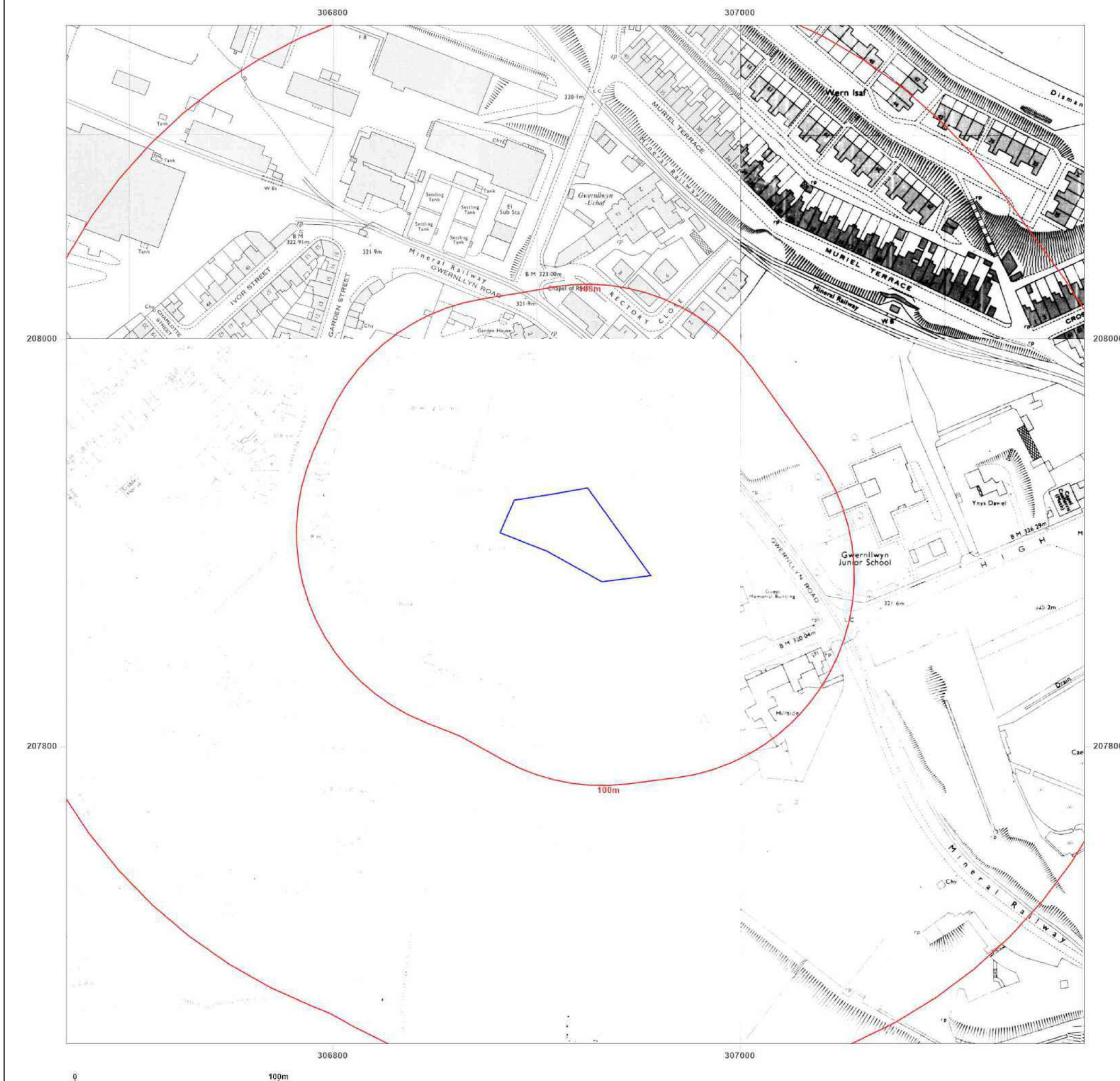


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1988

Scale: 1:2,500

Printed at: 1:2,500



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Revised 1988
Edition N/A
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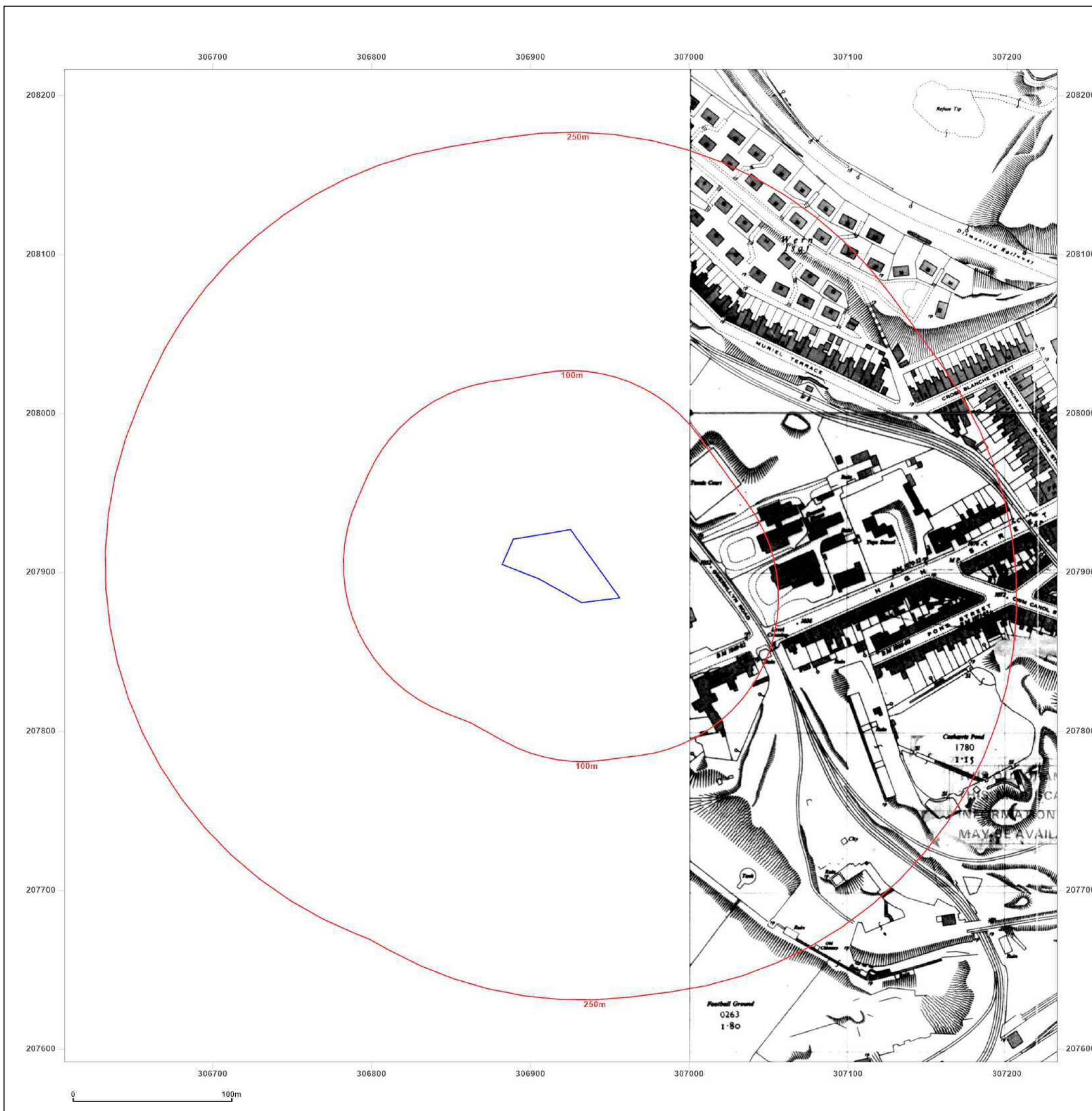


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

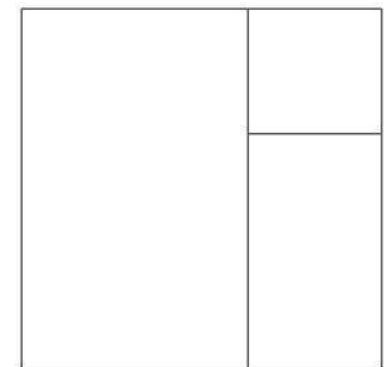
Map date: 1988

Scale: 1:2,500

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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1987-1989

Scale: 1:1,250

Printed at: 1:2,000



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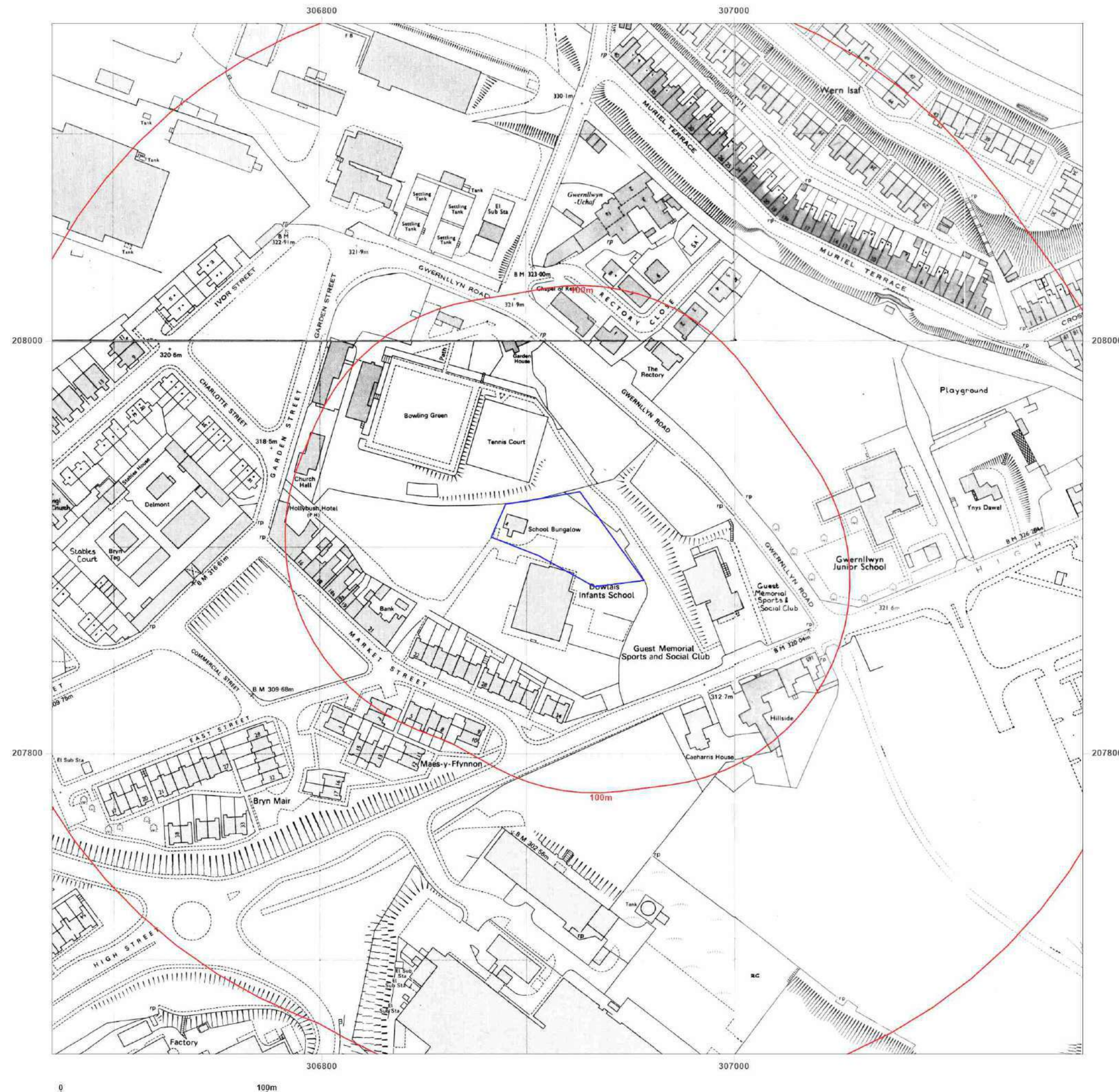


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1990-1993

Scale: 1:1,250

Printed at: 1:2,000



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Edition N/A
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Levelled N/A

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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1993
Levelled N/A

Surveyed 1958
Revised 1992
Edition N/A
Copyright 1992
Levelled 1958

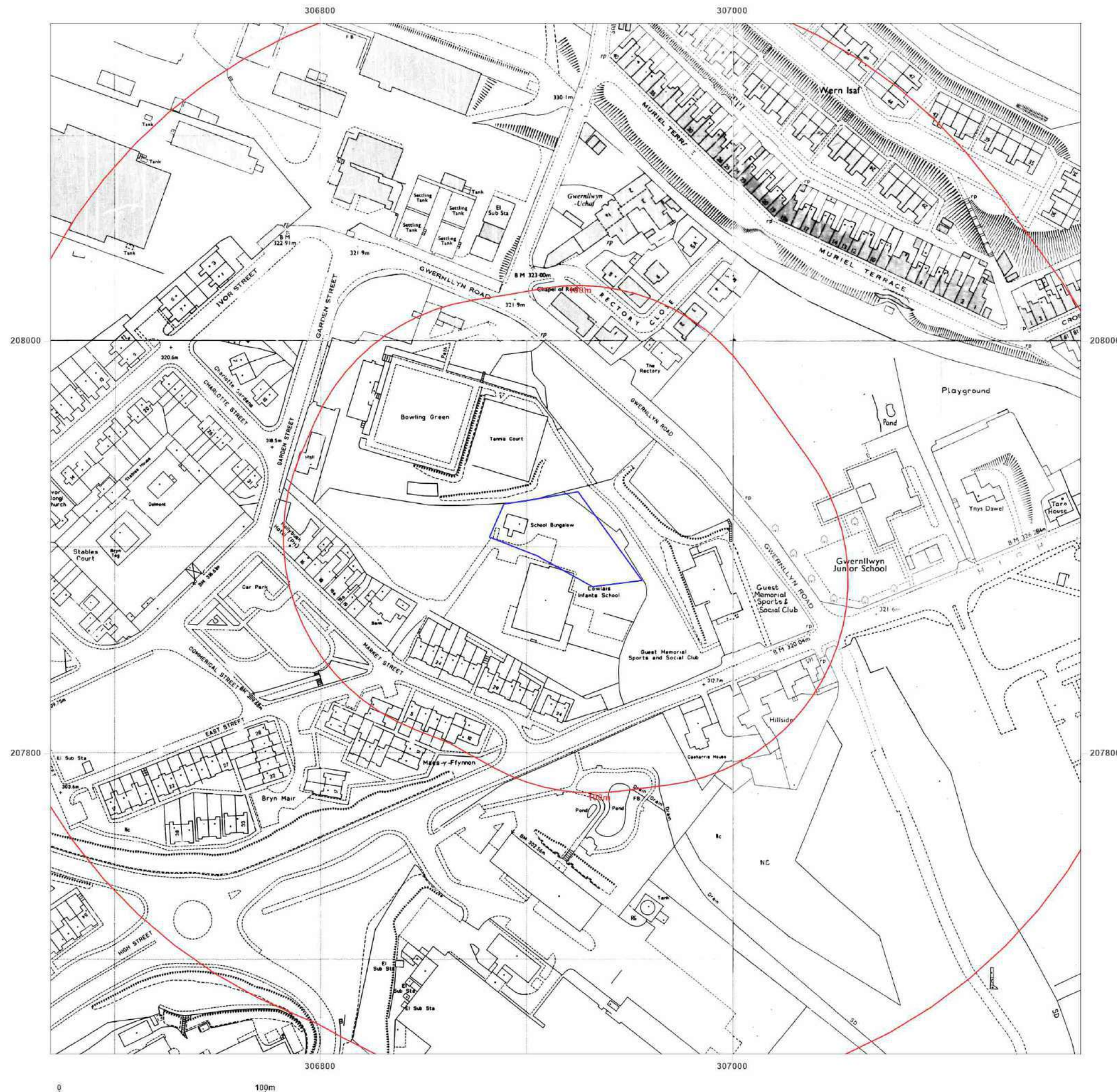


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1995

Scale: 1:1,250

Printed at: 1:2,000



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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

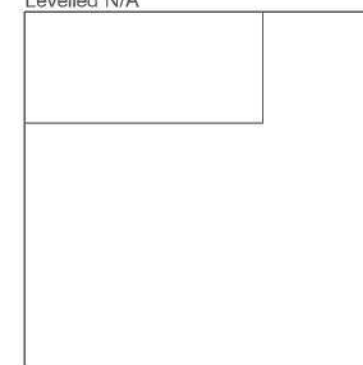
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Surveyed 1995
Revised 1995
Edition N/A
Copyright 1995
Levelled N/A

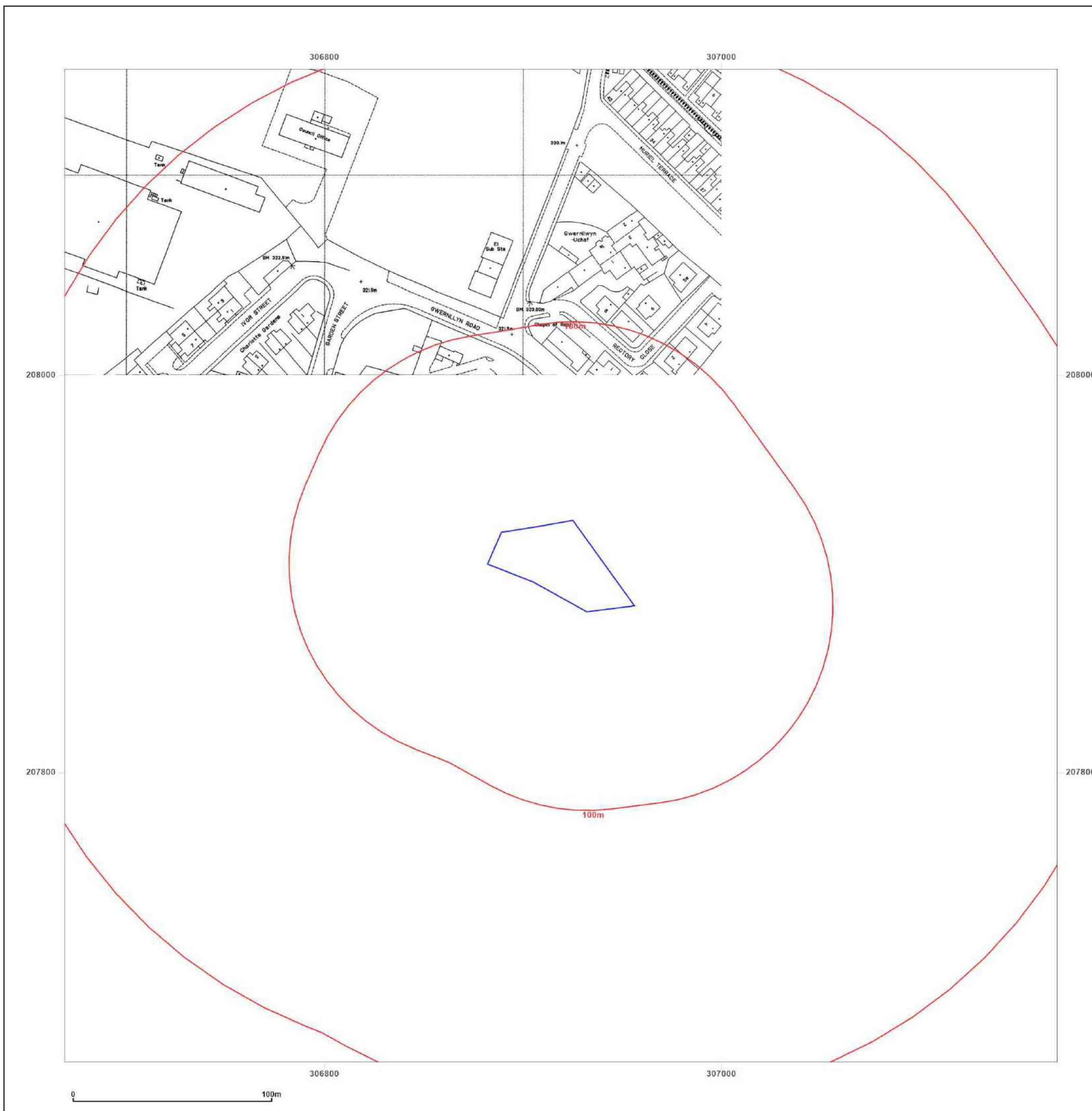


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



2003

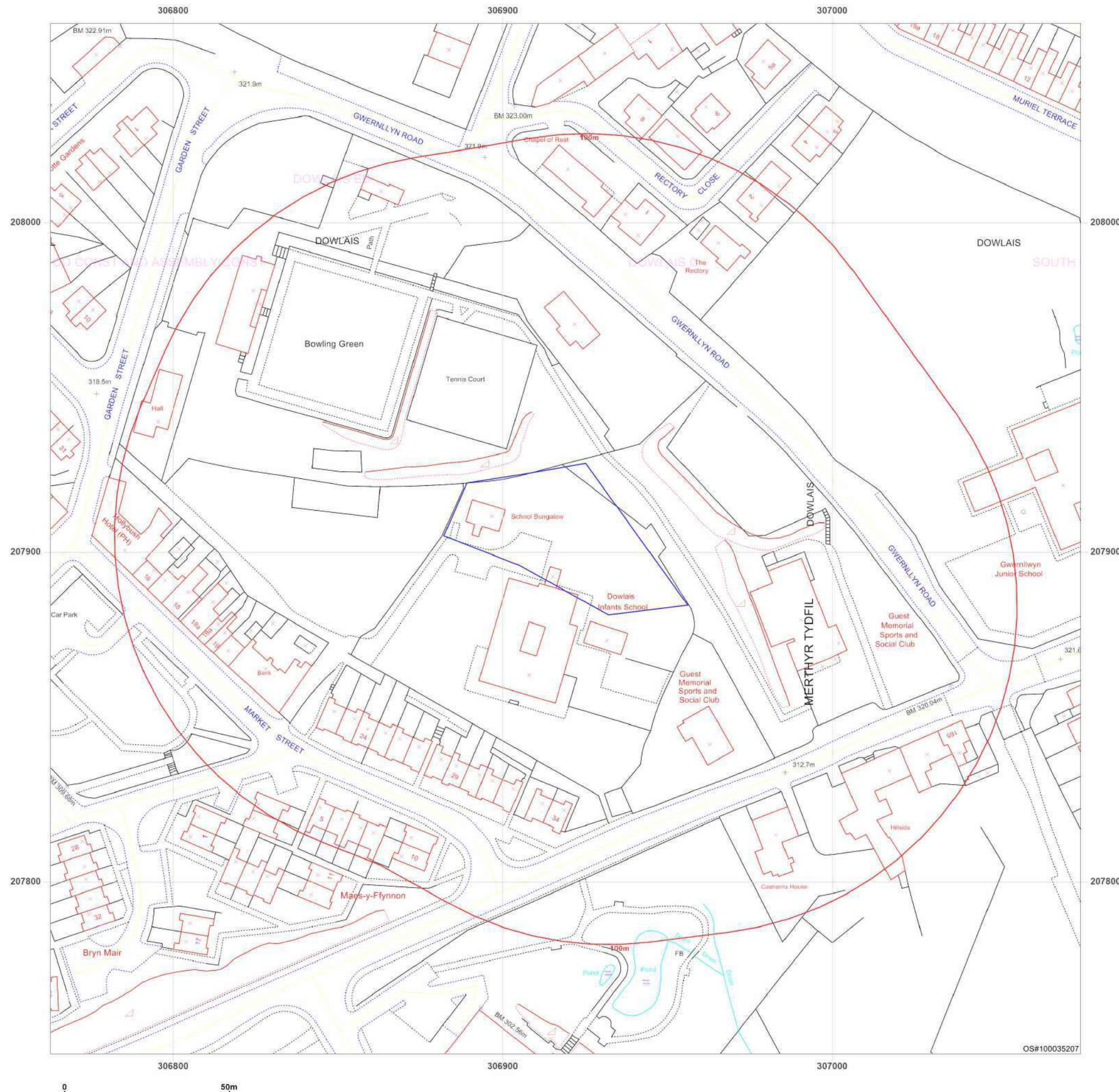


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MERTHYR TYDFIL, CF48 3HW

Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1875

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1875
Revised 1875
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1875
Revised 1875
Edition N/A
Copyright N/A
Levelled N/A

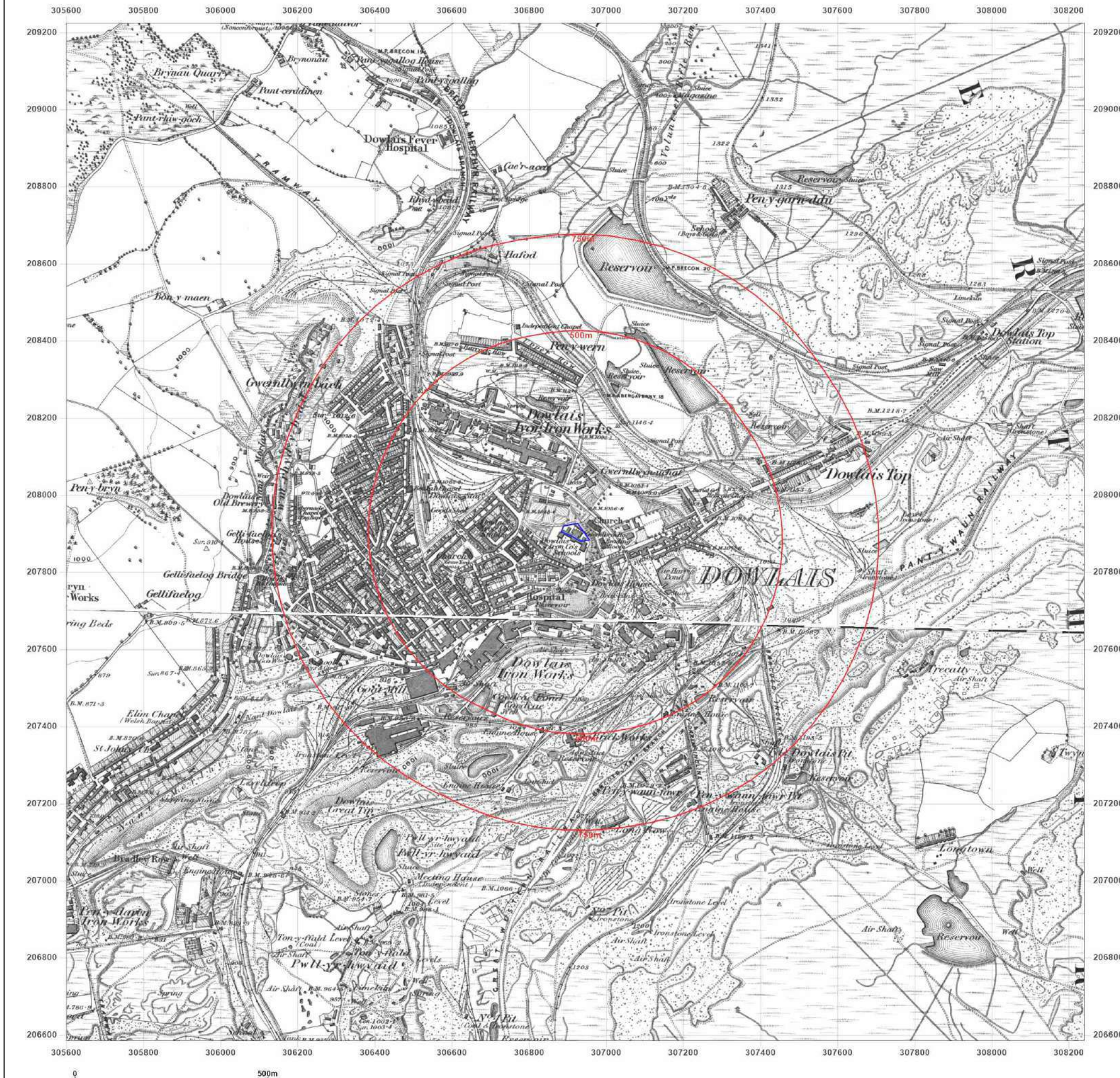


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1884-1885

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

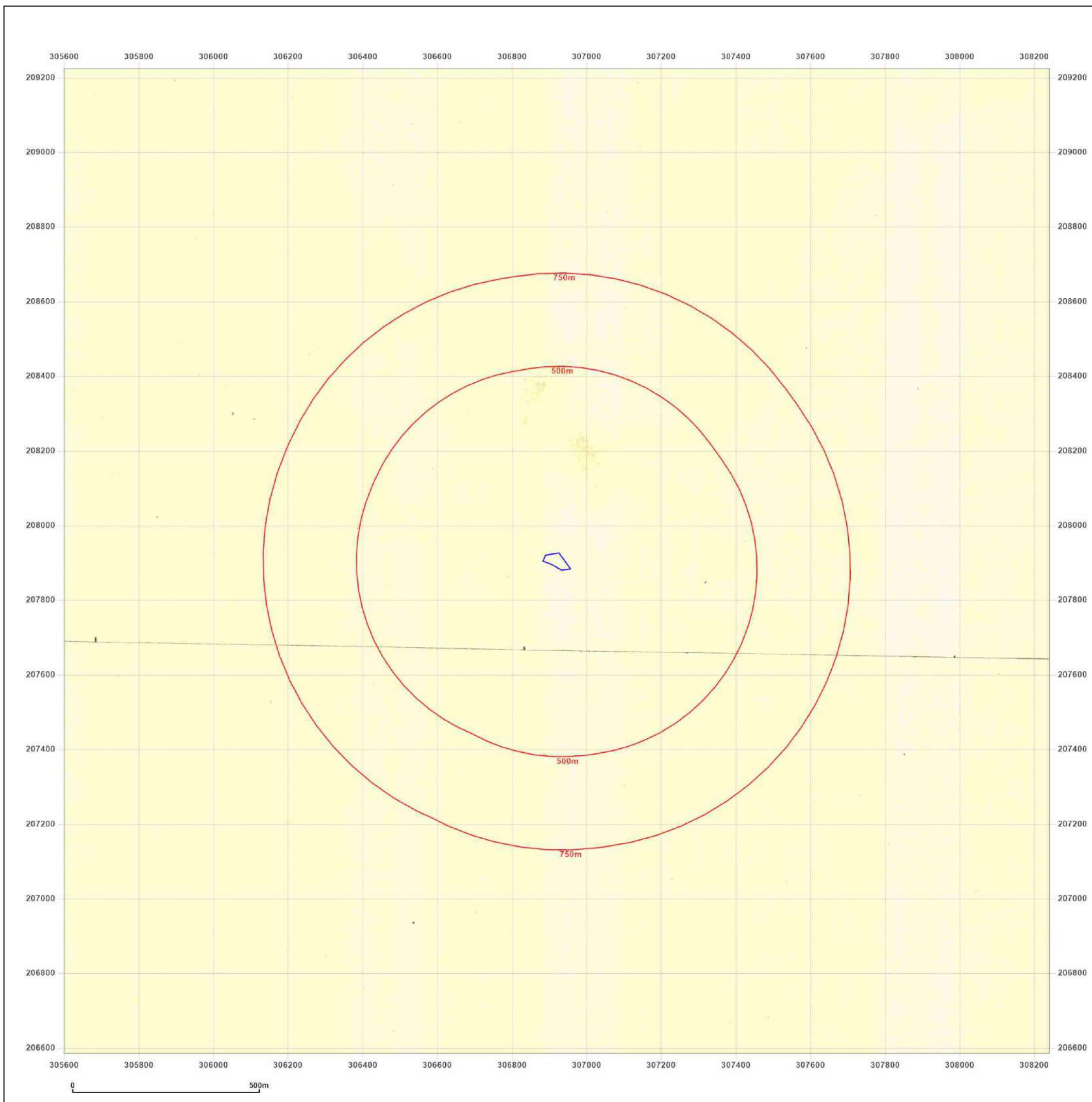


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1901

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1901
Edition N/A
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Levelled N/A

Surveyed 1884
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

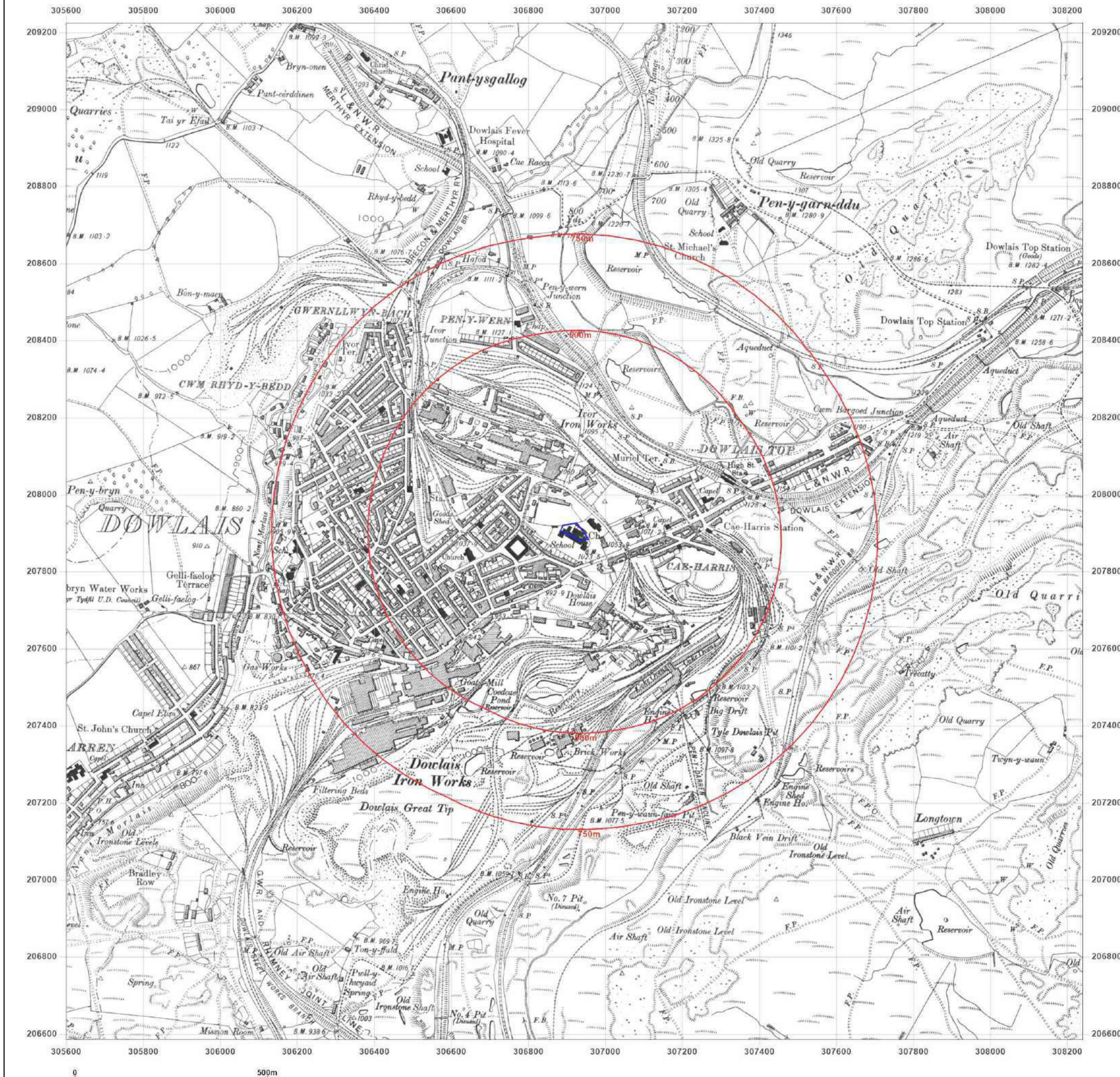


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MERTHYR TYDFIL, CF48 3HW

Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1903

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1903
Edition N/A
Copyright N/A
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Surveyed 1884
Revised 1903
Edition N/A
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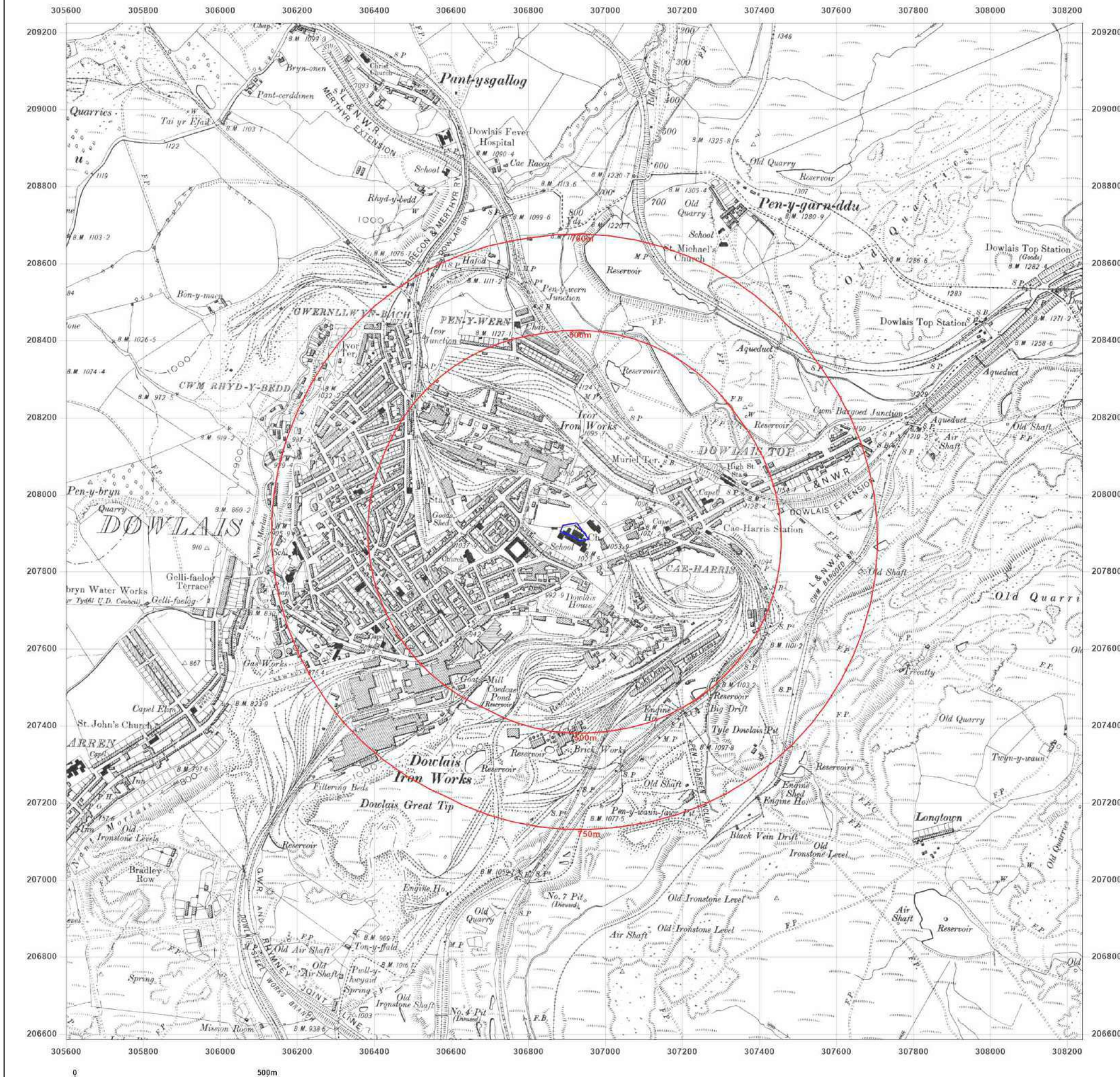


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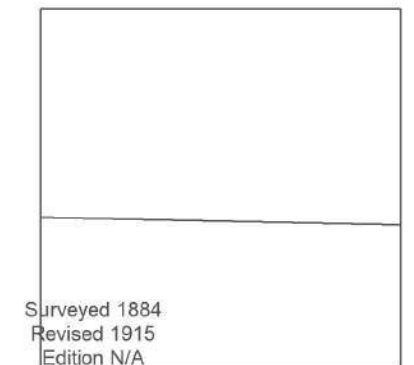
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Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1915

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1884
Revised 1915
Edition N/A
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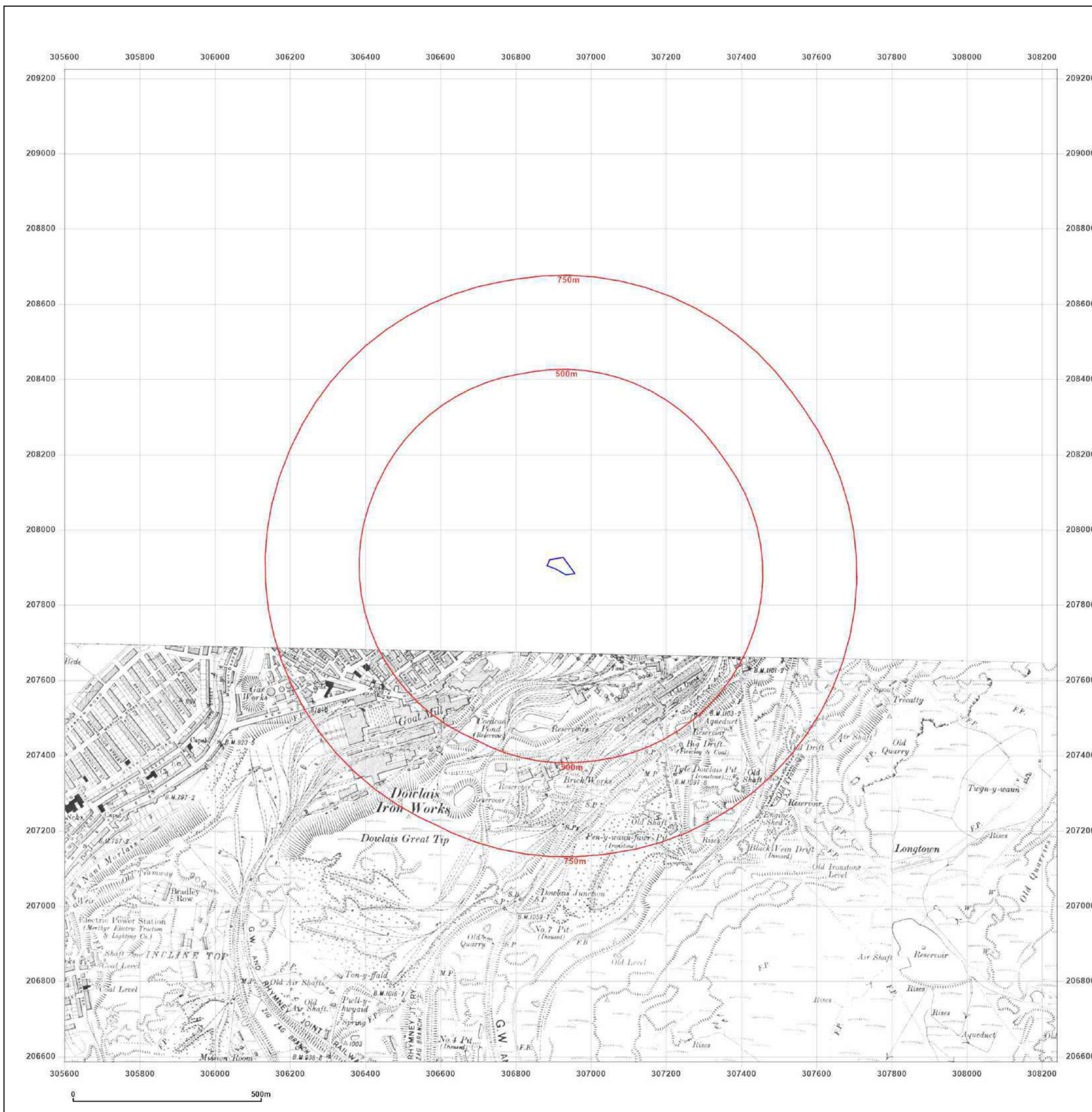


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1922

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1922
Edition 1922
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Surveyed 1922
Revised N/A
Edition N/A
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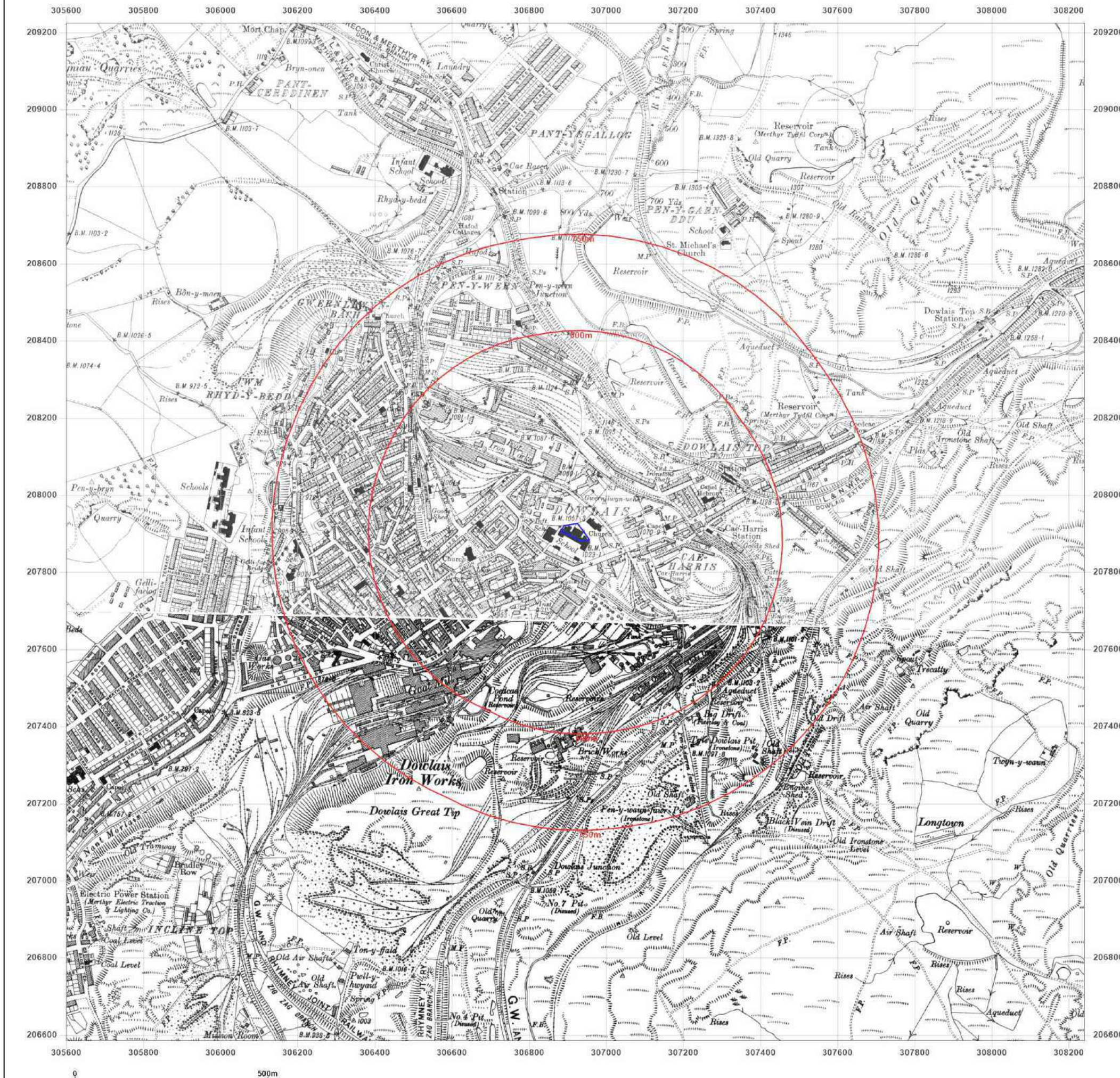


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1884
Revised 1938
Edition 1938
Copyright N/A
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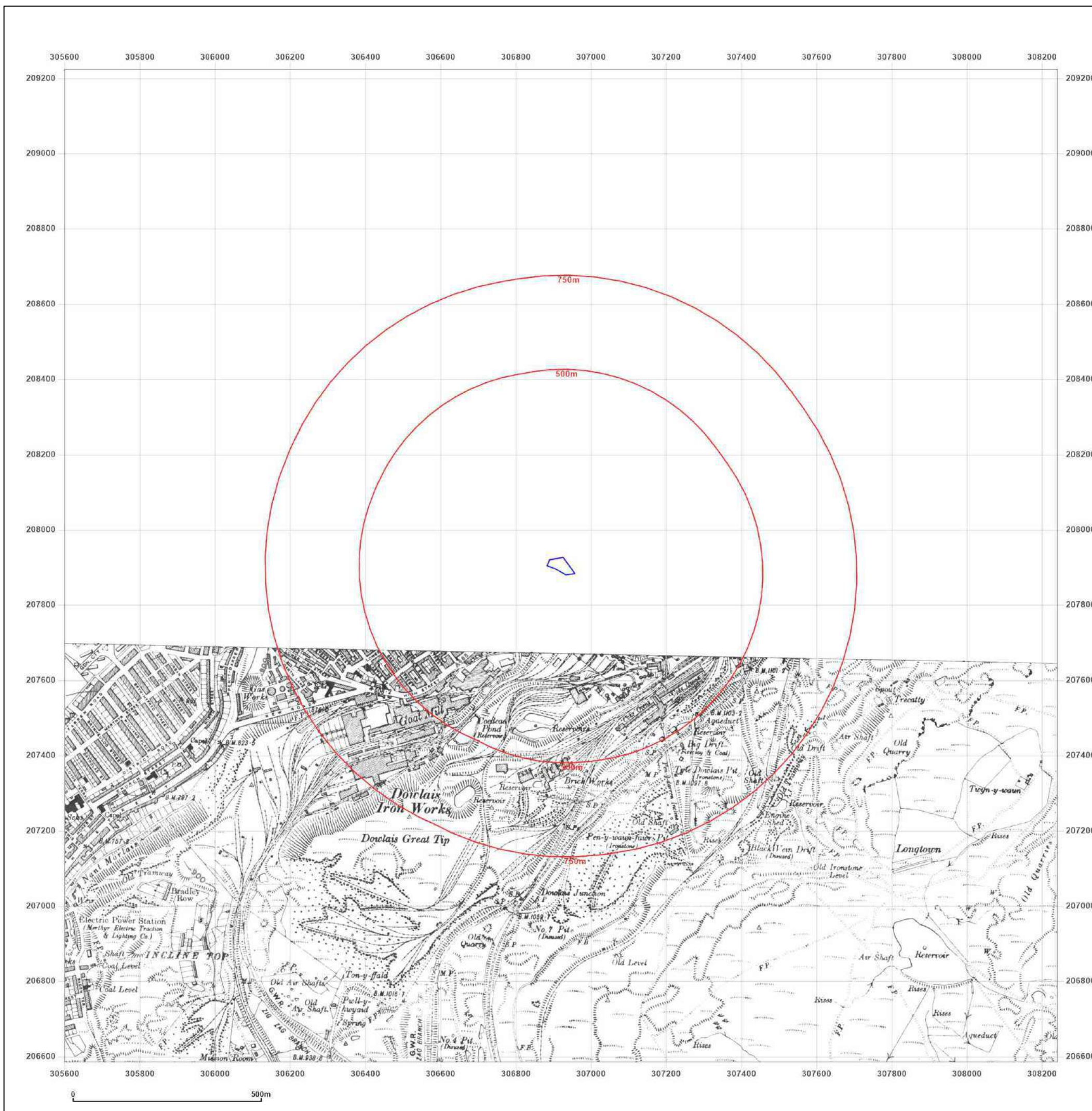


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: County Series

Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1948
Edition N/A
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Surveyed 1884
Revised 1948
Edition N/A
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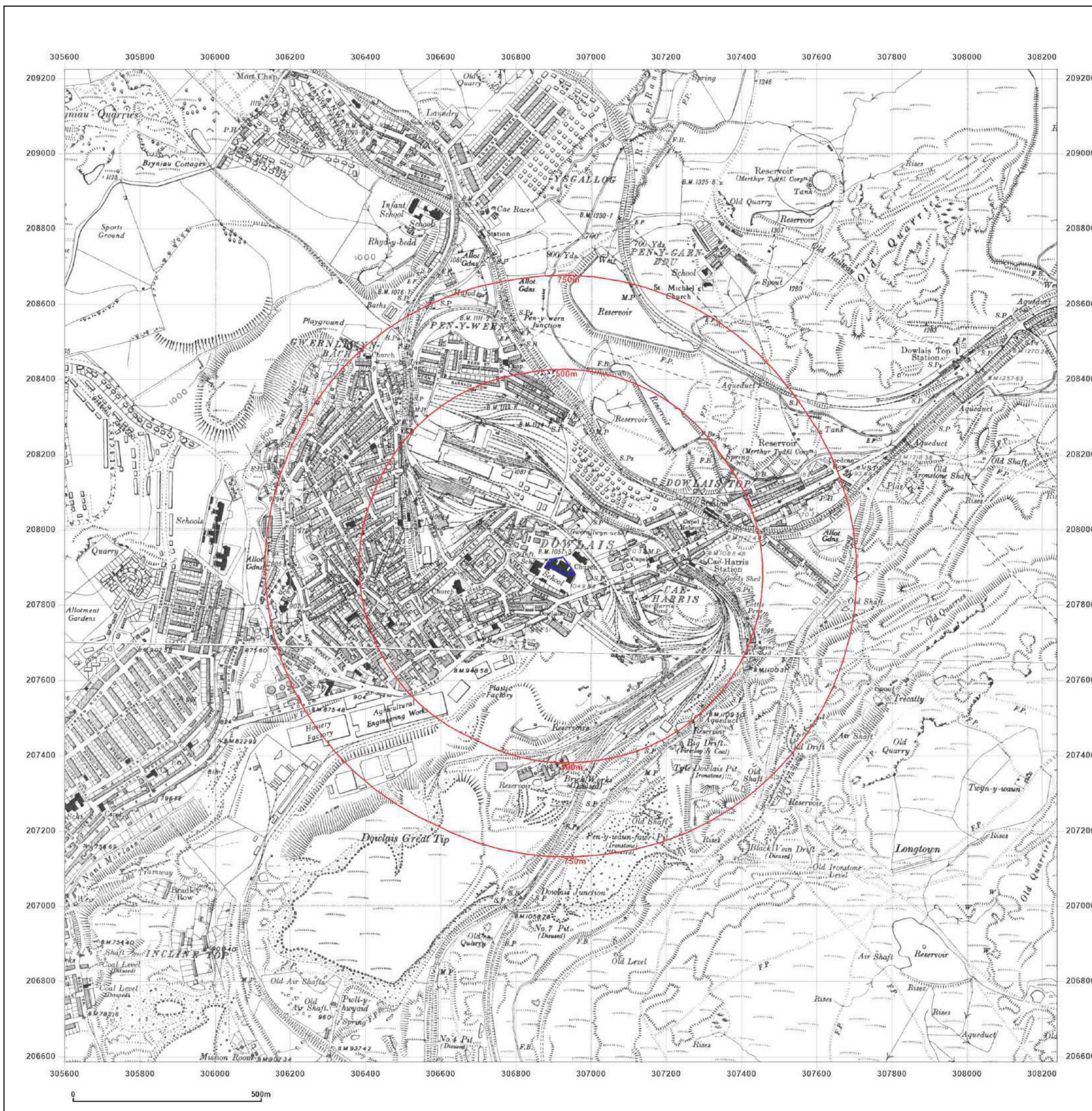


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: Provisional

Map date: 1965

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1965
Revised 1965
Edition N/A
Copyright N/A
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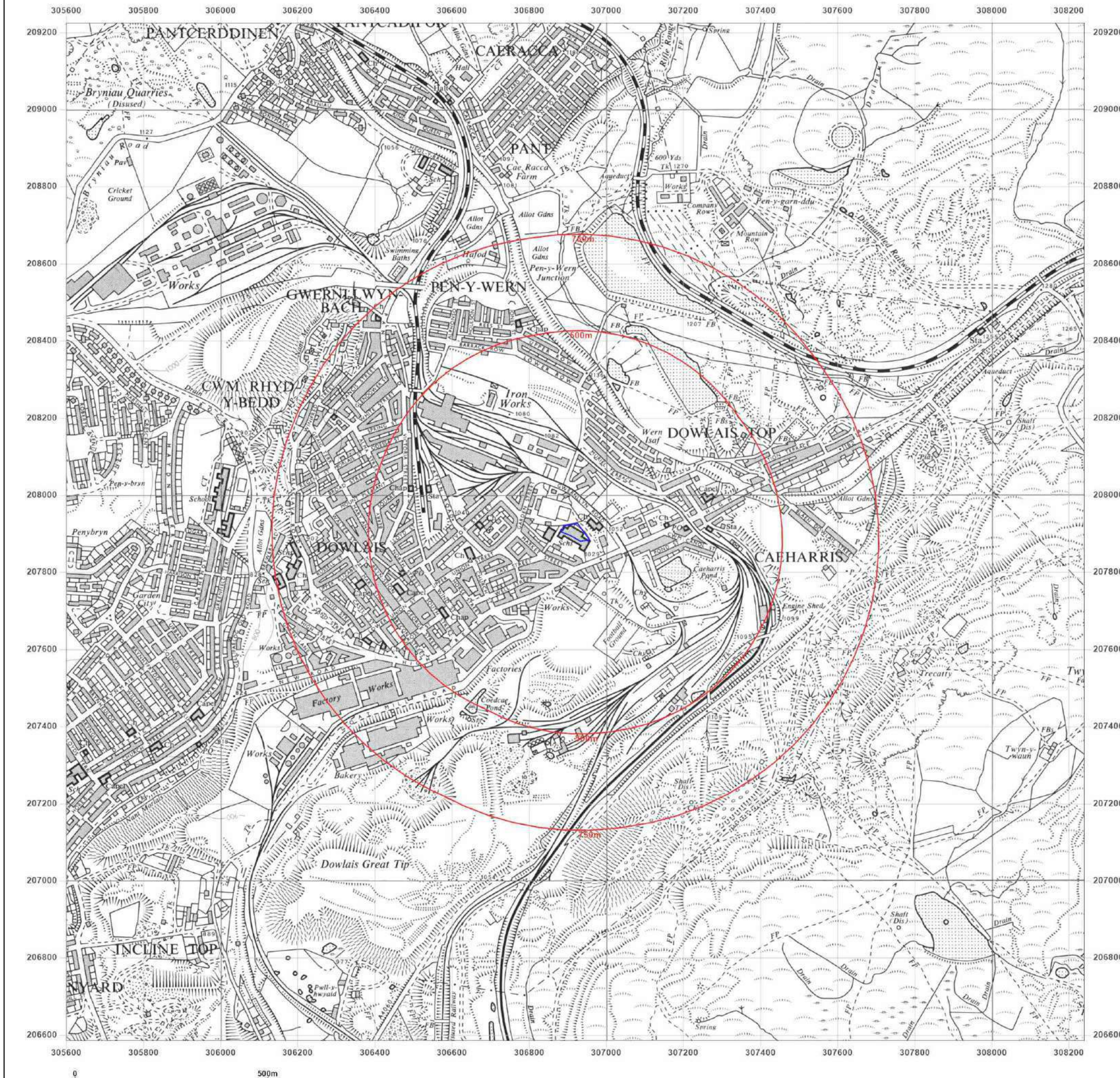


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1977

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1977
Edition N/A
Copyright 1977
Levelled 1975

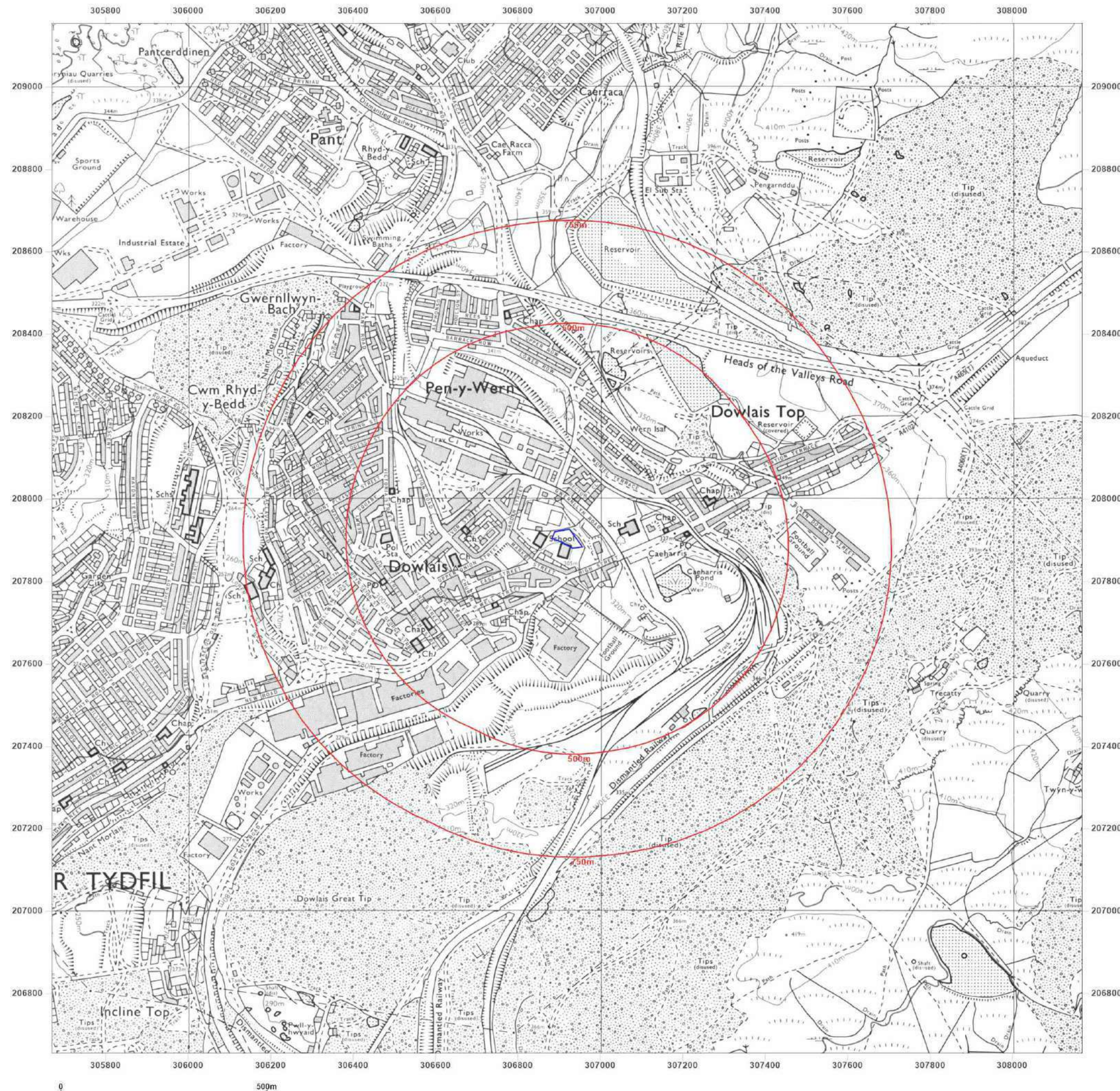


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1982

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1974
Revised 1982
Edition N/A
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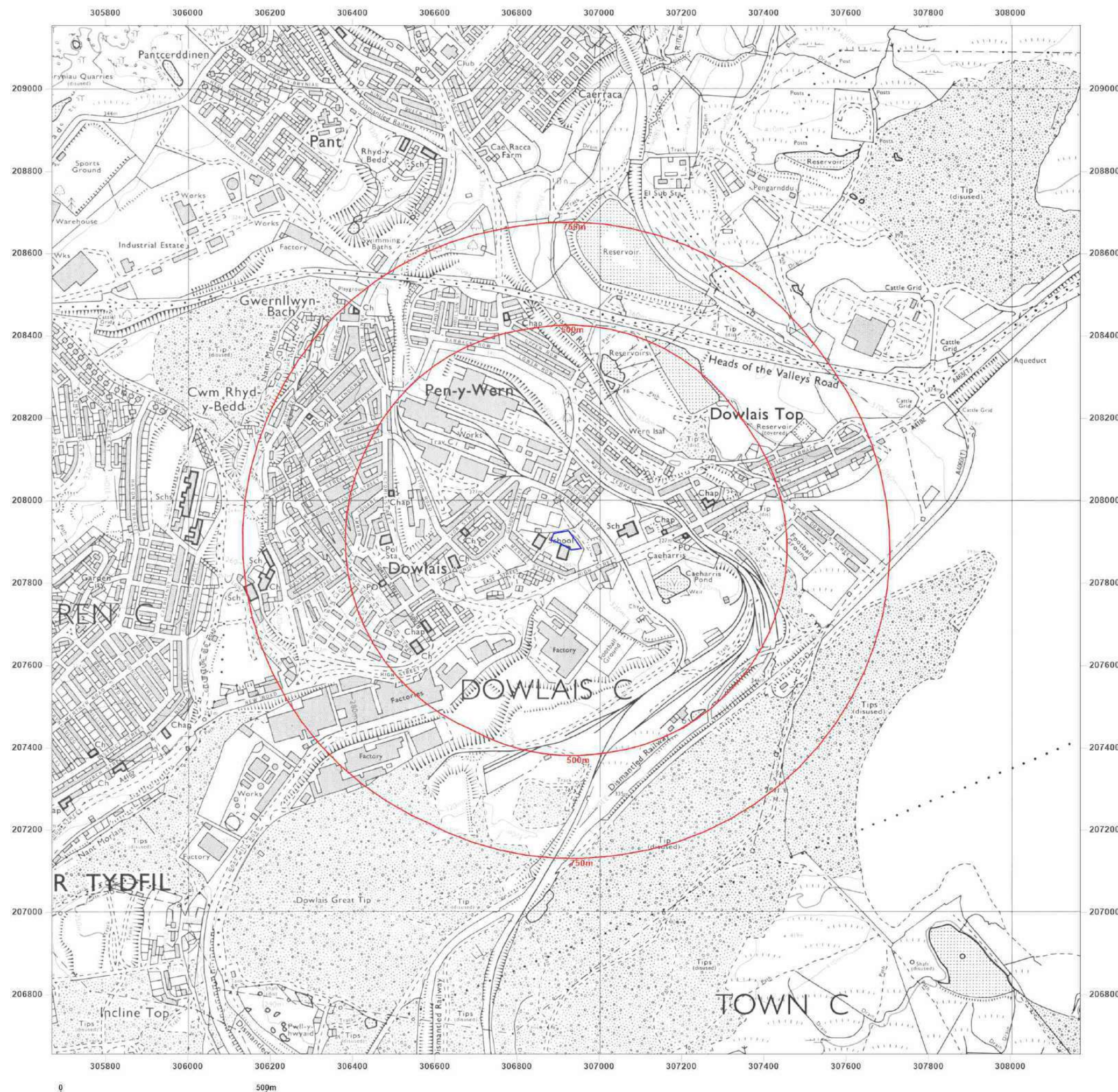


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 1992

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1989
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

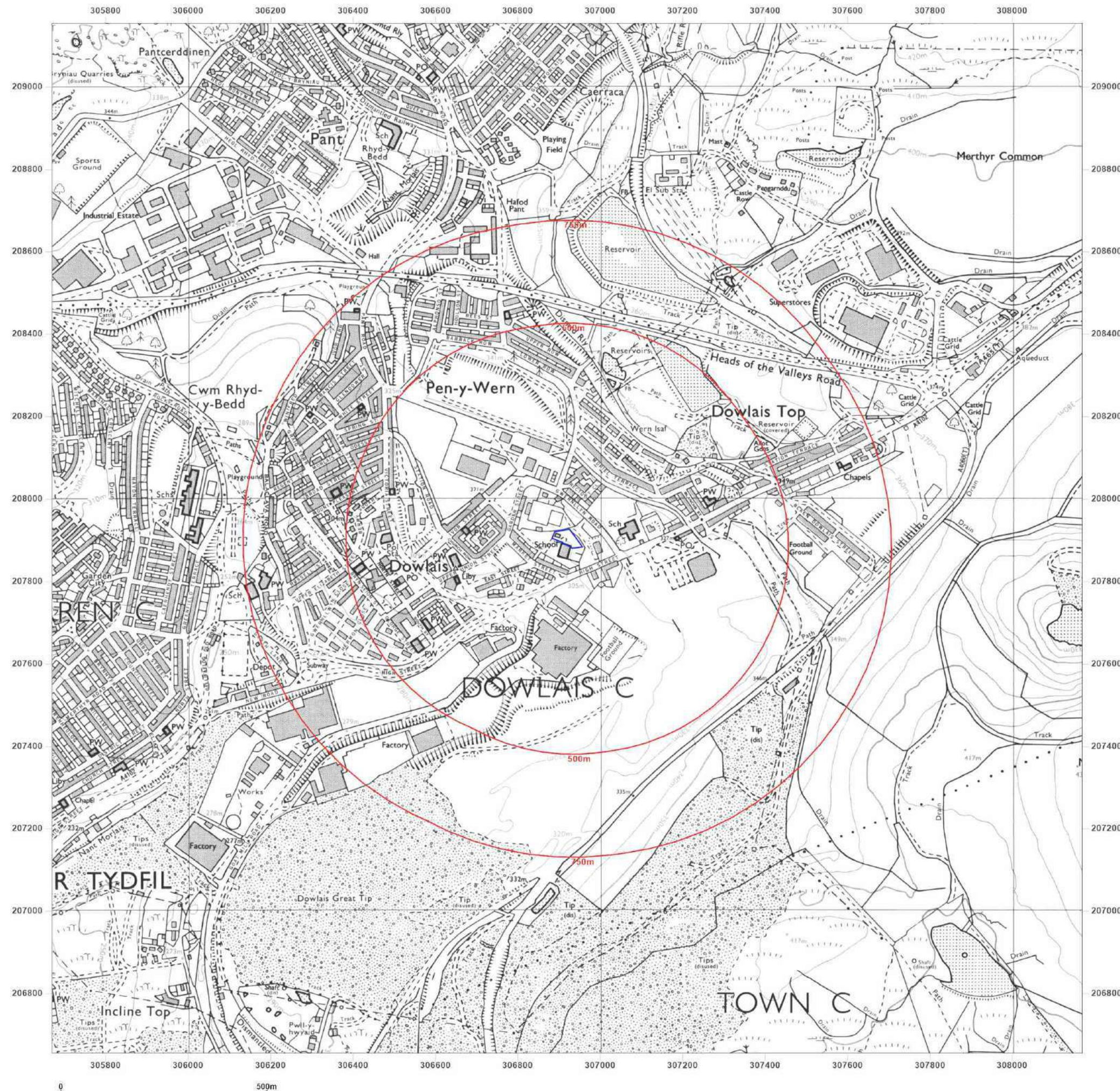


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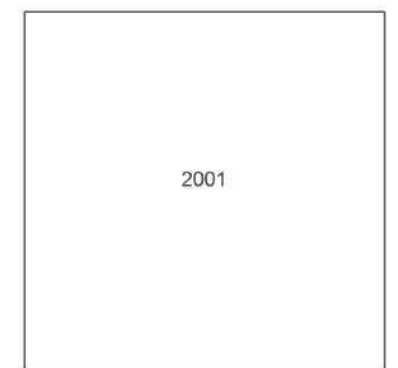
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Map Name: National Grid

Map date: 2001

Scale: 1:10,000

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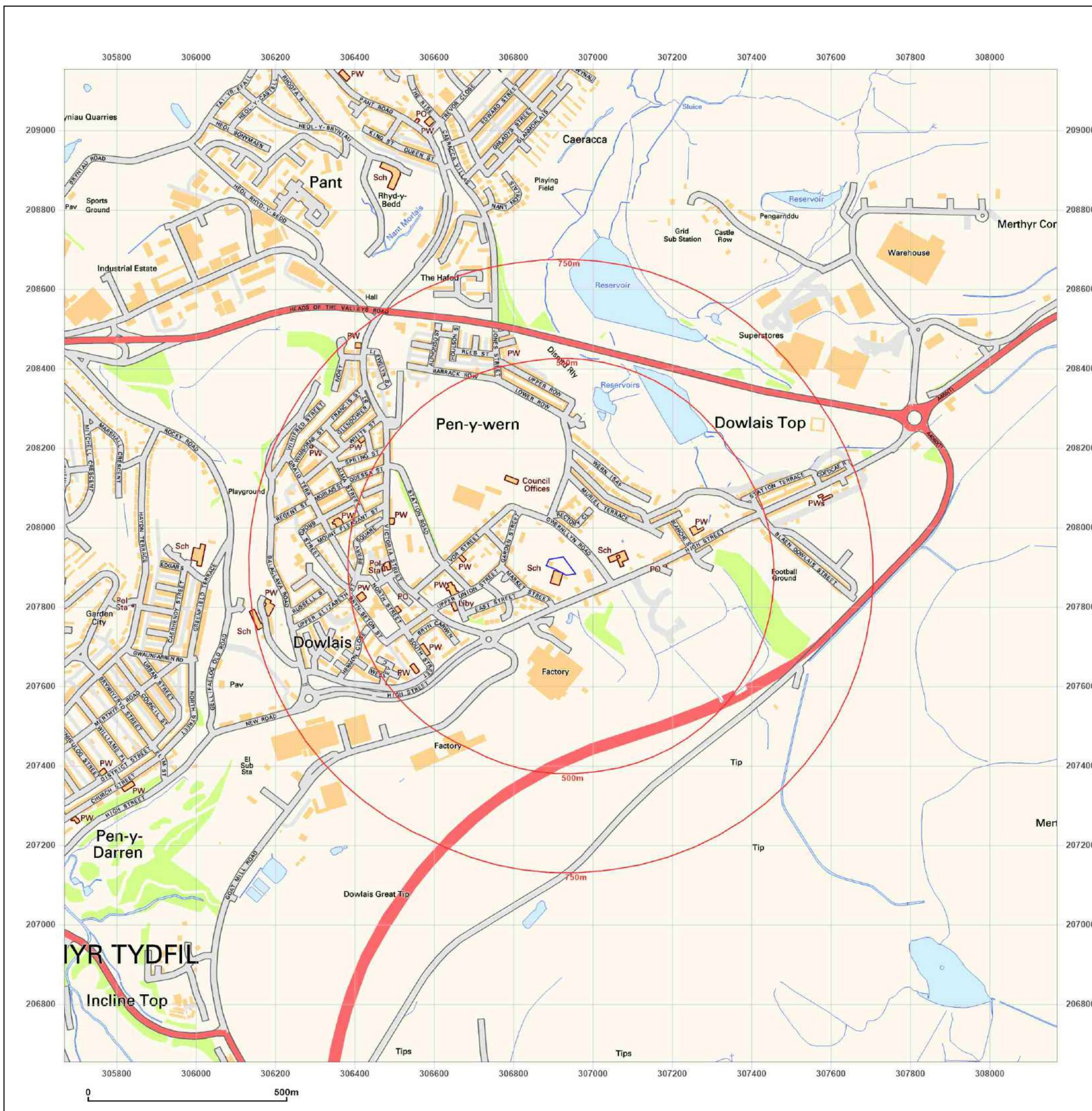


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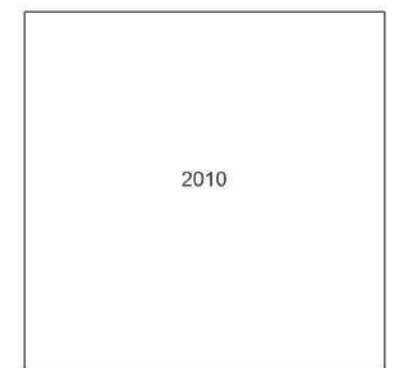
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Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

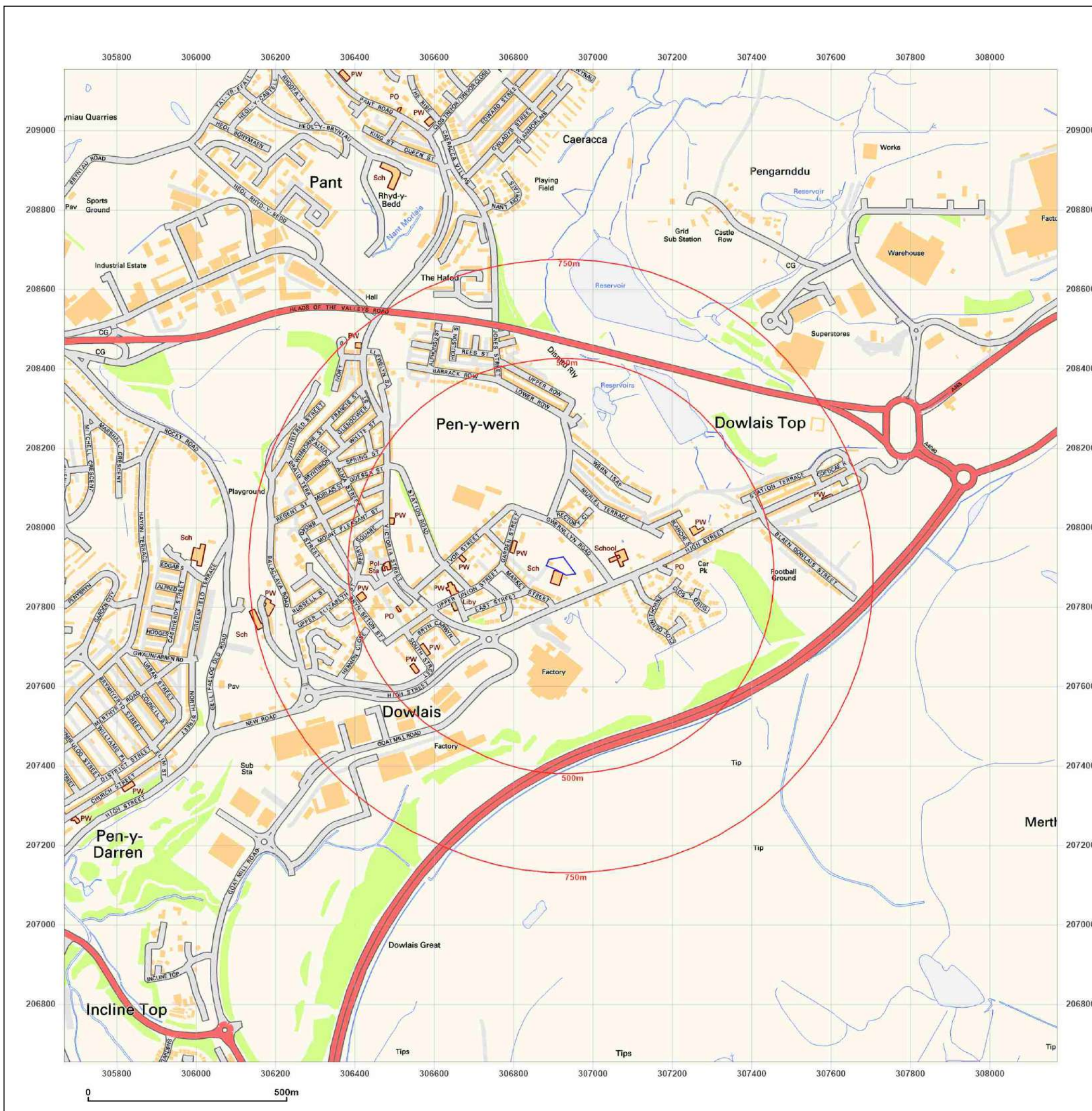


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Client Ref: 22156
Report Ref: GS-9174866
Grid Ref: 306919, 207904

Map Name: National Grid

Map date: 2022

Scale: 1:10,000

Printed at: 1:10,000



2022

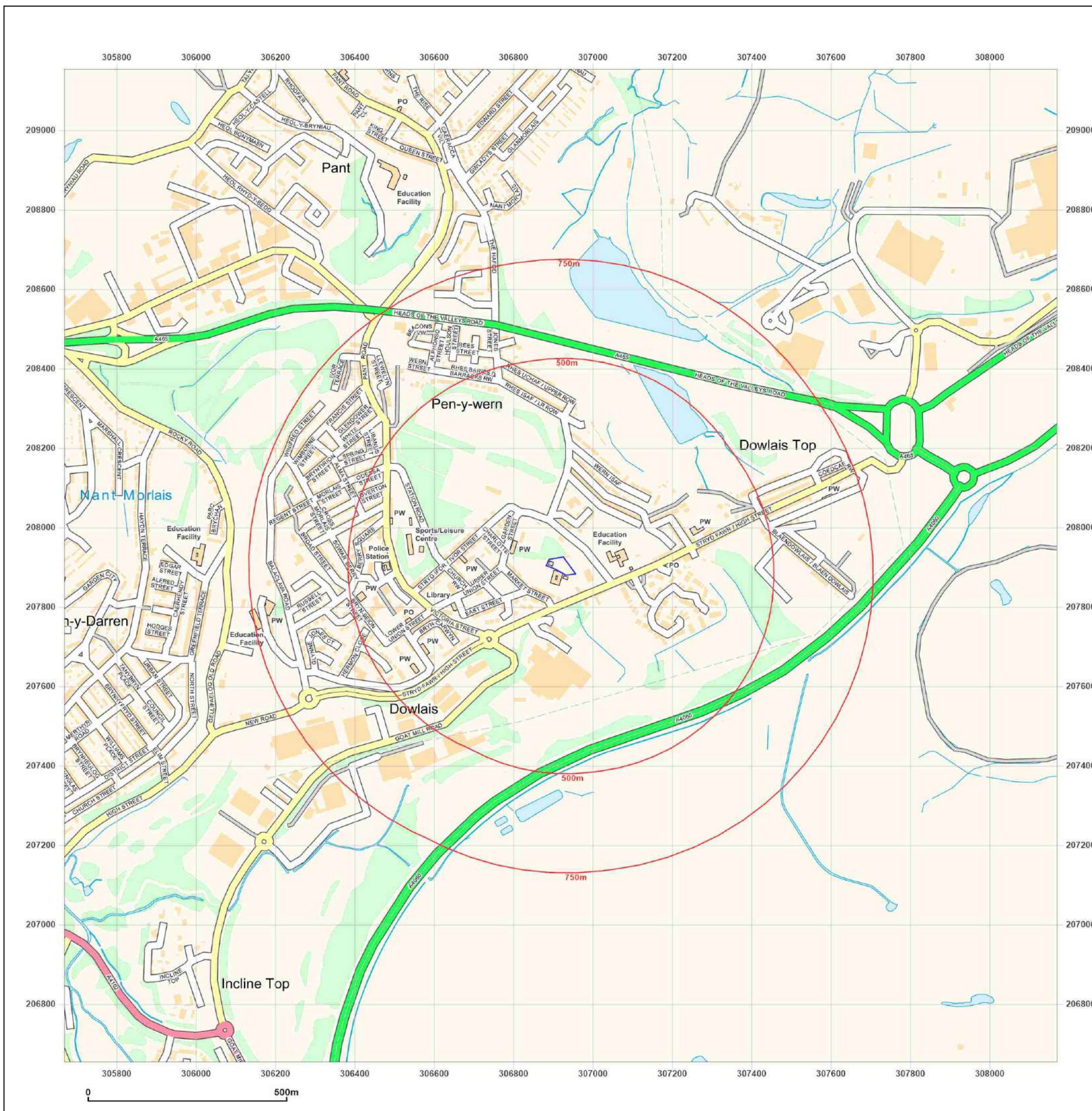


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Order Details

Date: 03/11/2022

Your ref: 22156

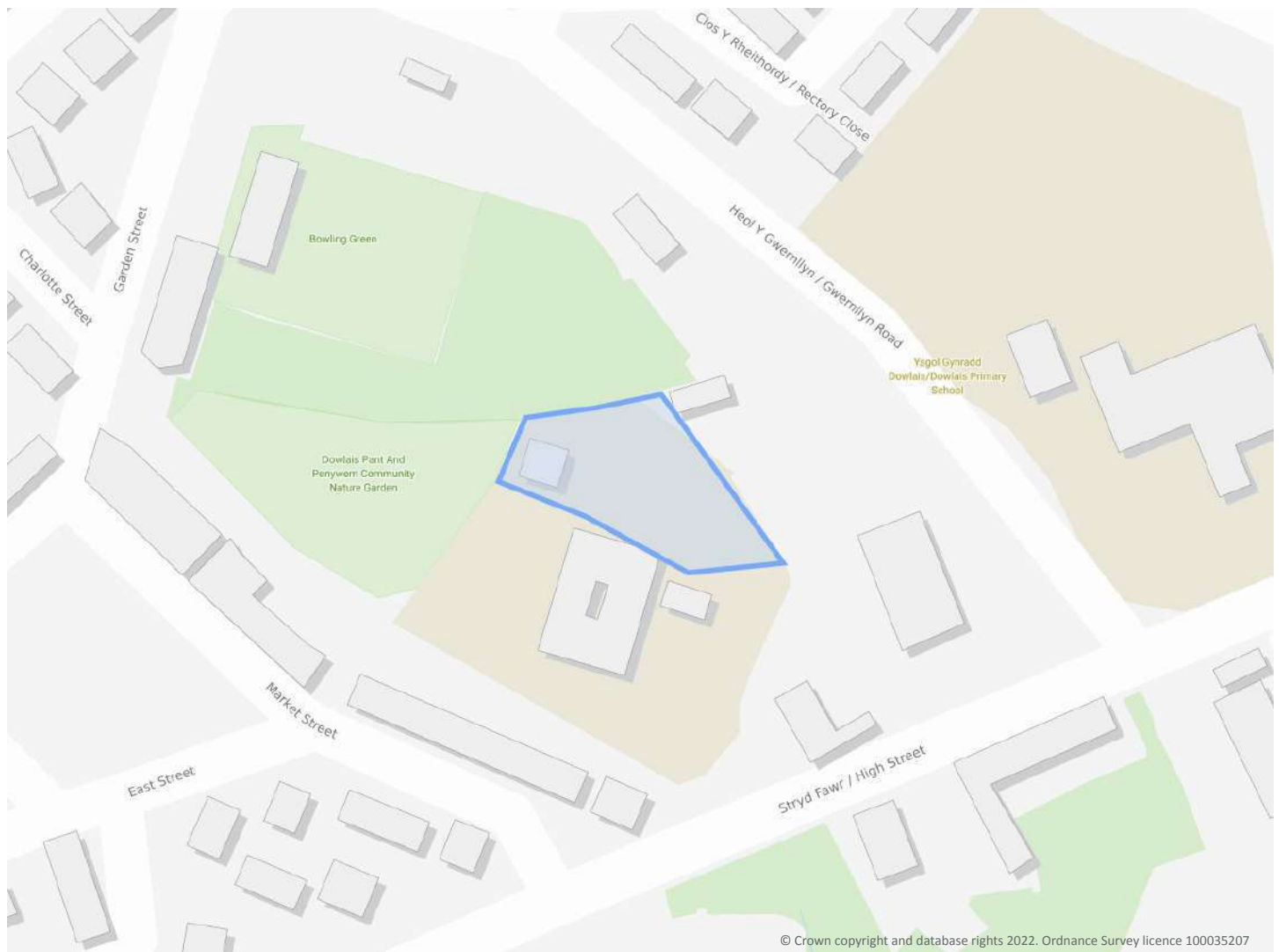
Our Ref: GS-9174867

Site Details

Location: 306928 207910

Area: 0.19 ha

Authority: [Merthyr Tudful - Merthyr Tydfil County Borough Council](#)



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Summary of findings

p. 2 **Aerial image**

p. 8

OS MasterMap site plan

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Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	<u>Historical industrial land uses</u>	0	5	73	211	-
25	1.2	<u>Historical tanks</u>	0	0	39	40	-
28	1.3	<u>Historical energy features</u>	0	0	9	6	-
29	1.4	Historical petrol stations	0	0	0	0	-
29	1.5	<u>Historical garages</u>	0	0	0	1	-
30	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
31	2.1	<u>Historical industrial land uses</u>	0	5	105	262	-
45	2.2	<u>Historical tanks</u>	0	0	61	57	-
49	2.3	<u>Historical energy features</u>	0	0	29	7	-
51	2.4	Historical petrol stations	0	0	0	0	-
51	2.5	<u>Historical garages</u>	0	0	0	4	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
52	3.1	Active or recent landfill	0	0	0	0	-
52	3.2	Historical landfill (BGS records)	0	0	0	0	-
53	3.3	<u>Historical landfill (LA/mapping records)</u>	0	0	0	2	-
53	3.4	<u>Historical landfill (EA/NRW records)</u>	0	0	0	1	-
53	3.5	Historical waste sites	0	0	0	0	-
54	3.6	Licensed waste sites	0	0	0	0	-
54	3.7	<u>Waste exemptions</u>	0	1	9	13	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
57	4.1	<u>Recent industrial land uses</u>	0	0	9	-	-
58	4.2	Current or recent petrol stations	0	0	0	0	-
58	4.3	Electricity cables	0	0	0	0	-
58	4.4	Gas pipelines	0	0	0	0	-
59	4.5	Sites determined as Contaminated Land	0	0	0	0	-



59	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
59	4.7	Regulated explosive sites	0	0	0	0	-
59	4.8	Hazardous substance storage/usage	0	0	0	0	-
59	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
60	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
60	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	0	2	-
60	4.12	Radioactive Substance Authorisations	0	0	0	0	-
60	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	1	0	-
61	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
61	4.15	Pollutant release to public sewer	0	0	0	0	-
61	4.16	List 1 Dangerous Substances	0	0	0	0	-
61	4.17	List 2 Dangerous Substances	0	0	0	0	-
62	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	17	19	-
65	4.19	Pollution inventory substances	0	0	0	0	-
66	4.20	Pollution inventory waste transfers	0	0	0	0	-
66	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
67	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
68	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
69	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
70	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
70	5.5	Groundwater vulnerability- local information	None (within 0m)				
71	5.6	<u>Groundwater abstractions</u>	0	0	0	0	3
72	5.7	<u>Surface water abstractions</u>	0	0	0	0	4
74	5.8	Potable abstractions	0	0	0	0	0
74	5.9	Source Protection Zones	0	0	0	0	-
74	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
75	6.1	<u>Water Network (OS MasterMap)</u>	0	0	7	-	-



76	6.2	<u>Surface water features</u>	0	0	3	-	-
76	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
77	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
77	6.5	<u>WFD Groundwater bodies</u>	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
78	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
78	7.2	Historical Flood Events	0	0	0	-	-
78	7.3	Flood Defences	0	0	0	-	-
79	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
79	7.5	Flood Storage Areas	0	0	0	-	-
80	7.6	Flood Zone 2	None (within 50m)				
80	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
81	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.1m - 0.3m (within 50m)				
Page	Section	Groundwater flooding					
83	9.1	<u>Groundwater flooding</u>	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
84	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
84	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
84	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
84	10.4	Special Protection Areas (SPA)	0	0	0	0	0
85	10.5	National Nature Reserves (NNR)	0	0	0	0	0
85	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
85	10.7	Designated Ancient Woodland	0	0	0	0	0
85	10.8	Biosphere Reserves	0	0	0	0	0
86	10.9	Forest Parks	0	0	0	0	0
86	10.10	Marine Conservation Zones	0	0	0	0	0
86	10.11	Green Belt	0	0	0	0	0
86	10.12	Proposed Ramsar sites	0	0	0	0	0



86	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
87	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
87	10.15	Nitrate Sensitive Areas	0	0	0	0	0
87	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
88	10.17	SSSI Impact Risk Zones	0	-	-	-	-
88	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
89	11.1	World Heritage Sites	0	0	0	-	-
90	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
90	11.3	National Parks	0	0	0	-	-
90	11.4	Listed Buildings	0	1	7	-	-
91	11.5	Conservation Areas	0	1	0	-	-
91	11.6	Scheduled Ancient Monuments	0	0	0	-	-
92	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
93	12.1	Agricultural Land Classification	Grade 4 (within 250m)				
94	12.2	Open Access Land	0	0	0	-	-
94	12.3	Tree Felling Licences	0	0	0	-	-
94	12.4	Environmental Stewardship Schemes	0	0	0	-	-
94	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
95	13.1	Priority Habitat Inventory	0	0	0	-	-
95	13.2	Habitat Networks	0	0	0	-	-
95	13.3	Open Mosaic Habitat	0	0	0	-	-
95	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
96	14.1	10k Availability	Identified (within 500m)				
97	14.2	Artificial and made ground (10k)	0	0	0	0	-
98	14.3	Superficial geology (10k)	0	0	0	0	-

98	14.4	Landslip (10k)	0	0	0	0	-
99	14.5	Bedrock geology (10k)	0	0	0	0	-
99	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
<u>100</u>	<u>15.1</u>	<u>50k Availability</u>	Identified (within 500m)				
<u>101</u>	<u>15.2</u>	<u>Artificial and made ground (50k)</u>	0	0	2	1	-
102	15.3	Artificial ground permeability (50k)	0	0	-	-	-
<u>103</u>	<u>15.4</u>	<u>Superficial geology (50k)</u>	1	0	0	0	-
<u>104</u>	<u>15.5</u>	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
104	15.6	Landslip (50k)	0	0	0	0	-
104	15.7	Landslip permeability (50k)	None (within 50m)				
<u>105</u>	<u>15.8</u>	<u>Bedrock geology (50k)</u>	1	0	1	1	-
<u>106</u>	<u>15.9</u>	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
<u>106</u>	<u>15.10</u>	<u>Bedrock faults and other linear features (50k)</u>	0	0	0	1	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
<u>107</u>	<u>16.1</u>	<u>BGS Boreholes</u>	0	0	8	-	-
Page	Section	Natural ground subsidence					
<u>109</u>	<u>17.1</u>	<u>Shrink swell clays</u>	Very low (within 50m)				
<u>110</u>	<u>17.2</u>	<u>Running sands</u>	Very low (within 50m)				
<u>111</u>	<u>17.3</u>	<u>Compressible deposits</u>	Negligible (within 50m)				
<u>112</u>	<u>17.4</u>	<u>Collapsible deposits</u>	Very low (within 50m)				
<u>113</u>	<u>17.5</u>	<u>Landslides</u>	Low (within 50m)				
<u>115</u>	<u>17.6</u>	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
117	18.1	Natural cavities	0	0	0	0	-
118	18.2	BritPits	0	0	0	0	-
<u>118</u>	<u>18.3</u>	<u>Surface ground workings</u>	0	0	27	-	-
<u>119</u>	<u>18.4</u>	<u>Underground workings</u>	0	0	0	4	25
120	18.5	Historical Mineral Planning Areas	0	0	0	0	-



<u>121</u>	<u>18.6</u>	<u>Non-coal mining</u>	1	0	0	0	1
121	18.7	Mining cavities	0	0	0	0	0
121	18.8	JPB mining areas	None (within 0m)				
<u>122</u>	<u>18.9</u>	<u>Coal mining</u>	Identified (within 0m)				
122	18.10	Brine areas	None (within 0m)				
122	18.11	Gypsum areas	None (within 0m)				
122	18.12	Tin mining	None (within 0m)				
122	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
<u>123</u>	<u>19.1</u>	<u>Radon</u>	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
<u>124</u>	<u>20.1</u>	<u>BGS Estimated Background Soil Chemistry</u>	1	1	-	-	-
124	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
124	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
125	21.1	Underground railways (London)	0	0	0	-	-
125	21.2	Underground railways (Non-London)	0	0	0	-	-
126	21.3	Railway tunnels	0	0	0	-	-
<u>126</u>	<u>21.4</u>	<u>Historical railway and tunnel features</u>	0	7	53	-	-
128	21.5	Royal Mail tunnels	0	0	0	-	-
<u>128</u>	<u>21.6</u>	<u>Historical railways</u>	0	0	4	-	-
129	21.7	Railways	0	0	0	-	-
129	21.8	Crossrail 1	0	0	0	0	-
129	21.9	Crossrail 2	0	0	0	0	-
129	21.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 14/04/2020

Site Area: 0.19ha



Recent site history - 2017 aerial photograph



Capture Date: 17/06/2017

Site Area: 0.19ha



Recent site history - 2013 aerial photograph



Capture Date: 14/07/2013

Site Area: 0.19ha



Recent site history - 2008 aerial photograph



Capture Date: 12/05/2008

Site Area: 0.19ha

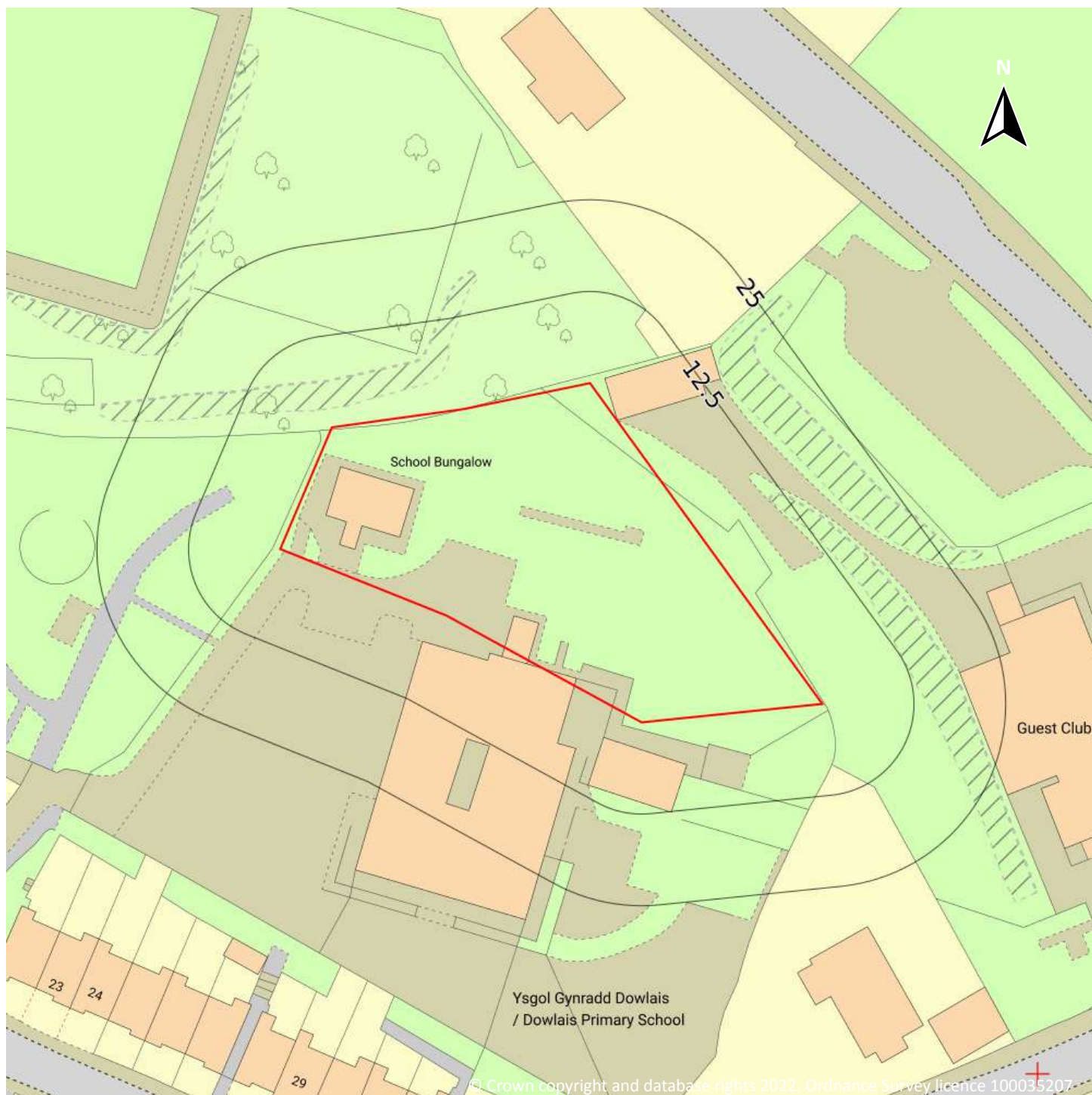
Recent site history - 2000 aerial photograph



Capture Date: 18/06/2000

Site Area: 0.19ha

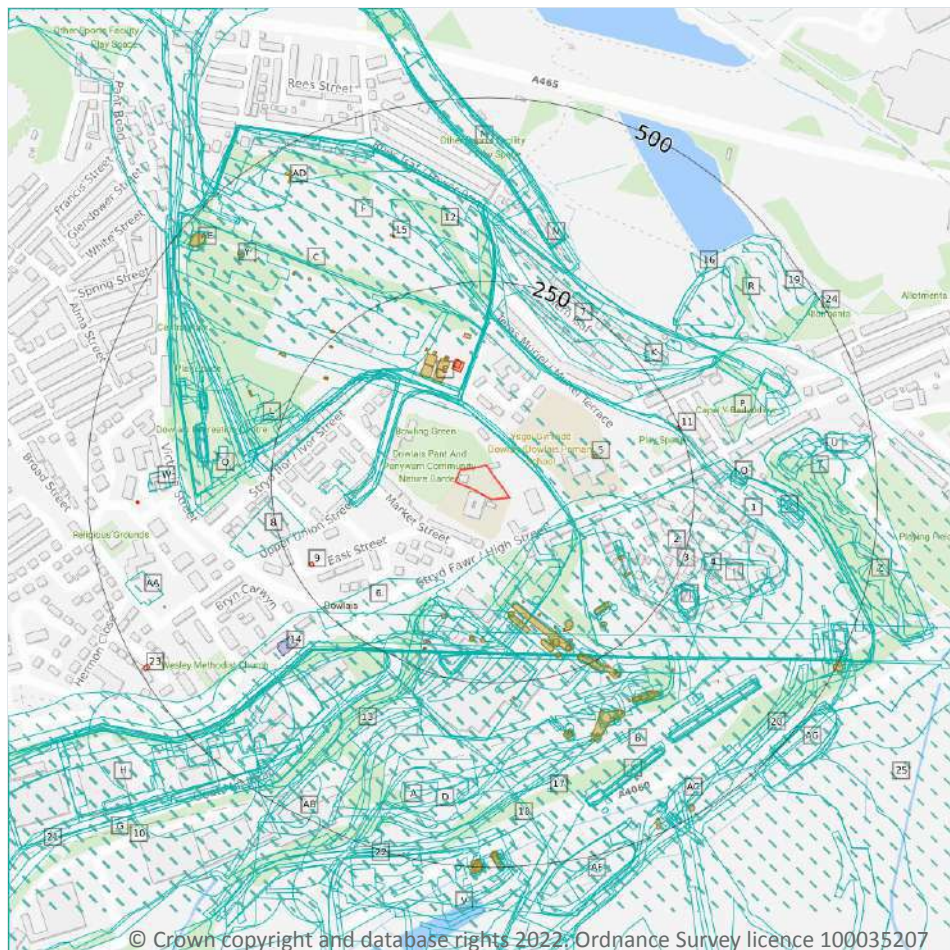
OS MasterMap site plan



Site Area: 0.19ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

1.1 Historical industrial land uses

Records within 500m

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Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
1	39m NE	Railway Sidings	1875	1034027

ID	Location	Land use	Dates present	Group ID
A	40m NE	Railway Sidings	1901 - 1903	1115994
2	42m NE	Railway Sidings	1982	1105213
A	46m NE	Railway Sidings	1921 - 1948	1060546
3	48m NE	Railway Sidings	1965	1094700
B	60m SE	Iron Works	1875	1110618
A	62m SE	Iron Works	1948	1034045
4	63m SE	Iron Works	1901 - 1903	1090698
A	74m S	Unspecified Works	1965	1020631
C	86m N	Railway Sidings	1922	1090890
D	88m SE	Iron Works	1921 - 1922	1035153
C	89m N	Iron Works	1901 - 1903	1069853
C	93m N	Railway Sidings	1901	1057428
C	93m N	Iron Works	1921	1091334
C	96m N	Unspecified Commercial/Industrial	1922 - 1948	1123033
C	99m N	Iron Works	1875	1138361
C	104m N	Iron Works	1922	1112817
C	105m N	Iron Works	1965	1070968
C	107m N	Unspecified Works	1982	1090403
C	107m N	Unspecified Works	1975	1148650
A	109m SE	Railway Sidings	1975	1057429
A	110m SE	Unspecified Commercial/Industrial	1875	1069543
6	128m S	Hospital	1875	1024580
C	139m NW	Railway Sidings	1975	1079158
A	139m SE	Unspecified Tank	1965	1016602
A	140m S	Unspecified Tank	1921 - 1922	1051830
A	143m S	Unspecified Tanks	1921 - 1922	1077165
A	149m S	Unspecified Heap	1922	1075207
A	150m S	Unspecified Ground Workings	1901	997388



ID	Location	Land use	Dates present	Group ID
A	153m SE	Smithy	1922	1109677
C	155m NW	Railway Sidings	1921	1062147
A	155m SE	Smithy	1948	1065471
A	157m SW	Unspecified Factory	1975	1080013
A	157m SW	Unspecified Factory	1982	1084562
A	158m S	Unspecified Heap	1921	1122229
A	161m SE	Smithy	1921	1046038
A	161m S	Unspecified Factory	1992	1052515
A	168m S	Unspecified Heap	1903	1116295
A	181m S	Unspecified Commercial/Industrial	1901 - 1903	1062960
F	182m N	Unspecified Commercial/Industrial	1922	1069187
A	183m SE	Unspecified Tank	1965	1016603
A	191m SE	Unspecified Tanks	1901	1155235
A	191m SE	Unspecified Tanks	1901	1045314
A	193m SE	Unspecified Tanks	1922	1040052
A	193m SE	Brick Kilns	1875	1019113
A	197m SE	Unspecified Tanks	1903	1071151
A	197m SE	Unspecified Tanks	1903	1070548
A	200m SE	Unspecified Tank	1921	1016614
A	202m SE	Unspecified Tank	1875	1116920
A	202m SE	Chimney	1982	1089457
A	202m SE	Chimney	1965 - 1975	1150262
7	207m NE	Refuse Heap	1922	1039973
D	208m S	Railway Sidings	1875	1068588
A	209m S	Unspecified Pits	1948	1007940
D	210m S	Iron Works	1915	1075767
G	210m S	Railway Sidings	1915	1059012
A	210m S	Unspecified Pit	1921	1068115

ID	Location	Land use	Dates present	Group ID
A	210m S	Unspecified Ground Workings	1922	1089146
A	211m S	Unspecified Commercial/Industrial	1938	1096705
A	212m SE	Unspecified Tank	1901	1016613
A	212m S	Unspecified Pit	1915	1056897
A	212m S	Unspecified Pit	1938	1097339
8	214m W	Grave Yard	1875	1012139
A	217m SE	Unspecified Tank	1875	1060142
A	223m SE	Unspecified Tank	1938	1152741
10	223m S	Iron Works	1938	1087393
A	223m SE	Unspecified Tank	1915	1043293
A	227m SE	Unspecified Tanks	1948	1033997
A	227m SE	Unspecified Tanks	1901 - 1903	1102664
A	233m SE	Unspecified Tanks	1921 - 1922	1101600
A	236m SE	Unspecified Tanks	1915	1067425
F	240m N	Unspecified Pit	1992	1028257
H	240m SW	Unspecified Mill	1915	1137126
I	247m E	Unspecified Ground Workings	1965	1069524
H	248m SW	Unspecified Mill	1921	1089204
G	249m SW	Unspecified Factory	1992	1014516
A	250m SE	Unspecified Tank	1938	1016604
G	250m SW	Unspecified Factories	1965	1084127
G	255m SW	Unspecified Mill	1903	1131513
J	256m SE	Unspecified Heap	1901	1067091
J	259m SE	Unspecified Heap	1922	1100131
J	260m SE	Unspecified Heap	1948	1064206
K	260m NE	Old Ironstone Shaft	1921	993616
K	262m NE	Old Ironstone Shaft	1922	993615
L	263m W	Railway Station	1875	1016073

ID	Location	Land use	Dates present	Group ID
J	264m SE	Unspecified Heap	1903	1156525
J	266m SE	Unspecified Heap	1921	1054459
A	269m SE	Unspecified Tanks	1903	1009935
D	273m SW	Unspecified Ground Workings	1982	1139322
A	275m SE	Unspecified Tank	1922	1070478
A	275m SE	Unspecified Tank	1901	1135650
A	276m SE	Unspecified Tank	1915	1103451
I	278m E	Unspecified Pit	1922	1034869
12	282m N	Unspecified Heaps	1965	1021510
M	283m NE	Cuttings	1903	1131139
N	285m N	Cuttings	1875	1128238
I	287m E	Unspecified Ground Workings	1901	1075216
N	287m N	Cuttings	1901	1097734
13	287m S	Refuse Heap	1903	1019547
I	291m E	Unspecified Heap	1903	1001035
K	292m NE	Unspecified Heap	1922	1156934
O	300m E	Railway Station	1965	1108982
O	300m E	Railway Station	1922 - 1948	1102159
O	301m E	Railway Station	1901 - 1903	1035042
P	305m E	Burial Ground	1875	1008326
D	306m S	Unspecified Ground Workings	1965	1066691
G	306m SW	Railway Sidings	1922	1041882
G	306m SW	Railway Sidings	1922	1049295
A	306m S	Railway Building	1901	1013453
M	307m N	Cuttings	1965	1154383
M	308m N	Cuttings	1921	1077438
A	308m SE	Unspecified Tanks	1903 - 1915	1118572
N	309m N	Cuttings	1948	1069276

ID	Location	Land use	Dates present	Group ID
M	309m N	Cuttings	1922	1147693
Q	312m W	Railway Building	1965	1136708
A	313m SE	Unspecified Tanks	1901 - 1903	1114709
R	314m NE	Refuse Heaps	1875	1004700
A	314m SE	Unspecified Tanks	1921	1155592
A	315m SE	Unspecified Tanks	1901	1050593
A	317m SE	Unspecified Tanks	1921	1156785
A	317m SE	Unspecified Tanks	1922	1136261
A	318m S	Unspecified Tank	1903	1079807
S	318m E	Railway Station	1921	1016074
R	318m NE	Unspecified Disused Tip	1982	1123570
R	318m NE	Unspecified Disused Tip	1975	1150666
A	319m SE	Unspecified Tanks	1938	1101971
A	320m SE	Unspecified Tanks	1922	1093323
R	320m NE	Unspecified Disused Tip	1992	1068856
A	321m SE	Unspecified Tanks	1938	1133329
A	321m SE	Unspecified Tanks	1915	1150267
A	325m S	Unspecified Tank	1921	1115967
A	325m S	Unspecified Tank	1901	1122870
Q	325m W	Railway Building	1922	1054614
A	327m SE	Unspecified Tank	1948	1016607
A	327m S	Unspecified Tank	1922	1065541
N	329m N	Unspecified Pit	1875	1028256
G	329m SW	Plastic Factory	1948	1021326
A	330m S	Unspecified Tank	1938	1094469
A	330m S	Unspecified Tank	1915	1079808
H	333m SW	Unspecified Factories	1975	1062491
H	333m SW	Unspecified Factories	1982	1074519

ID	Location	Land use	Dates present	Group ID
A	334m SE	Chimney	1965	1025467
P	334m NE	Unspecified Heap	1982	1051502
Q	336m W	Goods Shed	1903	1069333
Q	337m W	Railway Building	1965	1013469
Q	337m W	Goods Shed	1921 - 1922	1116038
R	337m NE	Refuse Heap	1901	1019560
Q	337m W	Goods Shed	1901	1149531
Q	340m W	Goods Shed	1875	1079760
B	340m S	Unspecified Ground Workings	1992	1137124
A	341m SE	Unspecified Tank	1922	1070366
A	344m SE	Unspecified Tank	1915	1078256
D	346m S	Refuse Heap	1901	1039867
Q	349m W	Railway Station	1901 - 1903	1063421
Q	350m W	Railway Station	1921	1085635
T	350m E	Unspecified Disused Tip	1975	1005197
T	350m E	Refuse Heap	1982	1019559
Q	351m W	Railway Station	1948	1044411
Q	351m W	Railway Station	1965	1094945
Q	351m W	Railway Station	1922	1078686
A	353m SE	Railway Building	1965	1013460
Q	354m W	Railway Building	1875	1013470
H	360m SW	Unspecified Mill	1875	1064245
I	360m E	Railway Building	1965 - 1975	1126165
S	362m E	Railway Building	1965	1113530
A	362m SE	Railway Building	1948 - 1965	1088985
M	364m N	Cuttings	1875	1041025
S	365m E	Goods Shed	1922 - 1948	1136229
S	366m E	Railway Building	1903	1057839

ID	Location	Land use	Dates present	Group ID
S	366m E	Goods Shed	1921	1070613
P	366m E	Unspecified Heap	1921	1089134
U	366m E	Unspecified Ground Workings	1921	1128972
U	366m E	Unspecified Heaps	1922	1093279
G	367m SW	Refuse Heap	1903	1019548
P	368m E	Unspecified Heap	1922	1149715
Q	368m W	Railway Building	1875	1013468
A	369m SE	Railway Building	1975	1142380
T	371m E	Unspecified Ground Workings	1903	1151531
U	371m E	Unspecified Heap	1901	1001036
S	371m E	Railway Building	1975	1036136
S	371m E	Railway Building	1982	1082781
M	373m N	Cuttings	1948 - 1992	1127851
P	374m E	Railway Station	1903	1046407
P	374m E	Railway Station	1922 - 1948	1154488
P	376m E	Railway Station	1901	1036308
A	382m SE	Coke Ovens	1903 - 1915	1136937
Q	382m W	Railway Building	1901	1013465
V	382m S	Brick Works	1922 - 1938	1133126
16	384m NE	Unspecified Pit	1922	1066063
A	386m SE	Coke Ovens	1921	1047473
A	387m SE	Coke Ovens	1901	1140881
W	387m W	Police Station	1975	1048271
W	387m W	Police Station	1982 - 1992	1050495
A	389m SE	Coke Ovens	1922	1047204
X	389m SE	Coke Ovens	1901 - 1903	1062904
A	391m SE	Coke Ovens	1938	1038942
D	391m S	Railway Sidings	1875	1052704

ID	Location	Land use	Dates present	Group ID
M	394m N	Cuttings	1901	1080358
X	394m SE	Coke Ovens	1921	1101589
V	396m S	Disused Brick Works	1948	1004578
X	397m SE	Coke Ovens	1922	1099473
17	398m S	Railway Building	1948	1013454
X	398m SE	Coke Ovens	1938	1044415
X	399m SE	Coke Ovens	1915	1063697
Z	401m E	Unspecified Ground Workings	1901	1051638
U	403m E	Unspecified Heap	1948 - 1965	1050884
H	408m SW	Unspecified Mill	1938	1065699
H	409m SW	Unspecified Mill	1922	1135229
Y	411m NW	Unspecified Tank	1903	1066501
Y	413m NW	Unspecified Tank	1901	1124170
Y	413m NW	Unspecified Tank	1922	1096768
U	414m E	Unspecified Ground Workings	1965	1090623
G	423m SW	Unspecified Shaft	1875	1009216
AA	425m W	Burial Ground	1875	1008325
X	429m S	Coal Shoots	1875	1024433
18	430m S	Railway Building	1948	1013452
V	431m S	Brick Works	1921	1110446
U	433m E	Unspecified Pit	1948	1126441
U	434m E	Unspecified Pit	1922	1100140
D	434m S	Refuse Heap	1903	1120260
H	435m SW	Unspecified Works	1965	1020632
H	437m SW	Agricultural Engineering Works	1948	1033485
AB	440m SW	Refuse Heap	1948	1048874
X	440m S	Railway Building	1948	1013459
V	446m S	Brick Works	1915	1049702

ID	Location	Land use	Dates present	Group ID
V	446m S	Brick Works	1901 - 1903	1037983
Z	449m SE	Railway Buildings	1922	1079045
AC	449m SE	Railway Buildings	1965	1024234
V	449m S	Unspecified Commercial/Industrial	1965	995699
Z	451m SE	Railway Building	1921	1013464
AC	452m SE	Railway Sidings	1901	1144712
19	452m NE	Refuse Heap	1901	1019570
Z	453m E	Unspecified Ground Workings	1965	1120811
Z	454m E	Cattle Pen	1921	1008812
20	455m SE	Refuse Heap	1922 - 1938	1079269
Z	458m E	Unspecified Pit	1875	1028297
AC	459m SE	Tramway Sidings	1915	1014640
AC	462m SE	Railway Building	1948	1013461
AC	462m SE	Engine House	1903	1137225
AE	462m NW	Unspecified Tanks	1901 - 1903	1138143
21	463m SW	Railway Sidings	1948	1069447
Z	463m SE	Railway Buildings	1903	1092571
AC	463m SE	Engine House	1901	1048612
Z	464m SE	Railway Building	1921	1013463
AE	464m NW	Unspecified Tanks	1875	1058983
AF	465m SE	Unspecified Ground Workings	1921	1103099
AE	465m NW	Unspecified Tanks	1922	1148228
Z	469m E	Railway Buildings	1965	1157061
AF	469m SE	Unspecified Ground Workings	1915	1059785
Z	474m E	Engine Shed	1922 - 1948	1074734
AB	475m SW	Unspecified Mill	1901	1099957
V	475m S	Brick Works	1875	1118789
AF	476m S	Unspecified Ground Workings	1922	1077618



ID	Location	Land use	Dates present	Group ID
Z	478m SE	Engine Shed	1921	1036347
Z	479m SE	Railway Sidings	1915	1060003
AC	479m SE	Railway Sidings	1948	1045632
V	481m S	Unspecified Tank	1903	1156877
V	482m S	Unspecified Tank	1922	1081508
V	482m S	Unspecified Tank	1875	1068422
V	483m S	Unspecified Tanks	1938	1154068
V	483m S	Unspecified Tanks	1915	1059007
AC	483m SE	Unspecified Tanks	1965 - 1975	1104040
AC	483m SE	Engine House	1875	1019161
22	484m S	Cuttings	1938	994320
V	489m S	Unspecified Tank	1901	1070483
V	489m S	Unspecified Tanks	1948	1084231
M	489m N	Cuttings	1948	1066052
24	490m NE	Unspecified Ground Workings	1921	997389
V	491m S	Unspecified Tanks	1922 - 1938	1045534
V	491m S	Unspecified Tanks	1915 - 1921	1141018
AB	492m SW	Refuse Heap	1903	1146873
V	492m S	Engine House	1875	1019160
AF	493m S	Unspecified Heap	1938	1128258
V	493m S	Unspecified Tank	1922	1044908
V	493m S	Unspecified Tank	1922	1067115
AG	493m SE	Cuttings	1903	1053543
AG	493m SE	Cuttings	1948	1066576
V	494m S	Unspecified Tanks	1875	1132653
Z	495m SE	Unspecified Tank	1903 - 1915	1065320
Z	495m SE	Unspecified Tank	1948	1107241
AG	496m SE	Cuttings	1901	1038913

ID	Location	Land use	Dates present	Group ID
V	497m S	Unspecified Tank	1921	1084665
Z	498m SE	Unspecified Tank	1901	1037493
V	498m S	Unspecified Tank	1903	1084568
V	498m S	Unspecified Tank	1948	1153376
AG	498m SE	Cuttings	1938	1041021
AG	498m SE	Cuttings	1922	1136860
Z	499m E	Engine Shed	1965	1012561
25	499m SE	Ironstone Pit	1875	1000023

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

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Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
E	121m N	Settling Tank	1977 - 1989	159796
5	127m E	Tank or Trough	1875	157966
E	132m NW	Settling Tank	1977 - 1989	161321
E	135m N	Settling Tank	1977 - 1989	162867
A	141m S	Unspecified Tank	1920	149787
A	145m S	Tanks	1899 - 1920	159786
E	145m NW	Settling Tank	1977 - 1989	158386
E	151m N	Unspecified Tank	1956 - 1977	163981
E	152m N	Unspecified Tank	1989	168416
A	154m S	Unspecified Tank	1983 - 1996	162348



ID	Location	Land use	Dates present	Group ID
A	159m S	Tanks	1920	156263
E	160m N	Unspecified Tank	1956	168296
A	162m SE	Unspecified Tank	1920	149786
E	167m NW	Unspecified Tank	1956	165774
A	167m S	Unspecified Tank	1920	149790
A	169m SE	Unspecified Tank	1920	149808
E	174m N	Tanks	1956	162790
A	185m SE	Unspecified Tank	1920	149785
A	186m SE	Unspecified Tank	1955 - 1988	160295
A	188m S	Unspecified Tank	1920	149788
A	188m SE	Unspecified Tank	1920	149812
A	188m S	Unspecified Tank	1920	149789
A	192m SE	Tanks	1899 - 1920	164914
A	199m S	Tanks	1920	156262
A	202m SE	Unspecified Tank	1875	149782
A	209m SE	Unspecified Tank	1920	149779
A	211m SE	Unspecified Tank	1899	149807
A	215m SE	Unspecified Tank	1875	149781
C	218m NW	Unspecified Tank	1966 - 1995	161599
C	220m NW	Unspecified Tank	1989	160015
A	221m SE	Unspecified Tank	1919	149783
A	234m SE	Tanks	1900 - 1919	162937
A	237m SE	Unspecified Tank	1875	149780
C	240m NW	Unspecified Tank	1967	160403
C	240m NW	Unspecified Tank	1977	167363
C	241m NW	Unspecified Tank	1995	165933
C	241m NW	Unspecified Tank	1966	164933
C	241m NW	Unspecified Tank	1989	162129

ID	Location	Land use	Dates present	Group ID
A	249m SE	Unspecified Tank	1875	149806
C	253m NW	Unspecified Tank	1977 - 1995	160484
C	254m NW	Unspecified Tank	1989	165869
A	263m SE	Unspecified Tank	1875	149809
A	269m S	Unspecified Tank	1875	149784
A	277m SE	Unspecified Tank	1919	149805
A	278m SE	Unspecified Tank	1875	149810
C	283m NW	Unspecified Tank	1956	161566
L	300m W	Unspecified Tank	1956	159265
A	314m SE	Tanks	1900 - 1919	161808
A	319m SE	Unspecified Tank	1875	149814
A	320m SE	Tanks	1900 - 1919	168087
A	322m SE	Unspecified Tank	1875 - 1919	161437
A	323m SE	Unspecified Tank	1875	149813
A	326m S	Unspecified Tank	1900 - 1919	167108
A	327m SE	Unspecified Tank	1875	149811
A	328m S	Unspecified Tank	1875	158478
A	328m SE	Unspecified Tank	1875	149815
C	328m NW	Unspecified Tank	1875 - 1899	161230
15	329m N	Unspecified Tank	1977	149778
A	331m SE	Unspecified Tank	1875	149804
A	343m SE	Unspecified Tank	1875	149803
A	347m SE	Unspecified Tank	1875	149802
C	347m NW	Unspecified Tank	1875	167975
C	348m NW	Unspecified Tank	1899	167960
A	378m SE	Unspecified Tank	1875	149816
Y	397m NW	Unspecified Tank	1875	149774
Y	414m NW	Unspecified Tank	1899 - 1920	158820

ID	Location	Land use	Dates present	Group ID
Y	418m NW	Unspecified Tank	1875	158103
AA	429m W	Unspecified Tank	1996	149791
AD	454m NW	Unspecified Tank	1977	149777
AD	460m NW	Tanks	1977	156250
AD	464m NW	Tanks	1977	156251
AE	466m NW	Tanks	1875 - 1920	167507
V	478m S	Unspecified Tank	1875	149795
V	480m S	Tanks	1900 - 1919	162217
AC	481m SE	Tanks	1955 - 1961	164774
AC	484m SE	Unspecified Tank	1955 - 1961	162183
V	489m S	Tanks	1875	165679
V	491m S	Tanks	1900 - 1919	162076
Z	496m SE	Unspecified Tank	1900 - 1919	163593

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

15

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
E	131m N	Electricity Substation	1966 - 1995	94074
E	137m N	Electricity Substation	1956	89094
A	203m S	Electricity Substation	1983 - 1996	91476
A	205m S	Electricity Substation	1987	93277
A	210m S	Electricity Substation	1983 - 1996	95298



ID	Location	Land use	Dates present	Group ID
A	211m S	Electricity Substation	1987	85749
A	220m S	Electricity Substation	1983 - 1996	93186
9	222m SW	Electricity Substation	1974 - 1996	89886
11	244m E	Electricity Substation	1955 - 1999	91001
W	431m W	Electricity Substation	1972	88134
W	431m W	Electricity Substation	1996	88458
W	431m W	Electricity Substation	1988	88657
W	431m W	Electricity Substation	1989	88843
23	485m SW	Electricity Substation	1956	90596
AB	488m SW	Electricity Substation	1996	85750

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0
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Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	1
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Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
14	305m SW	Garage	1956 - 1974	31792



This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

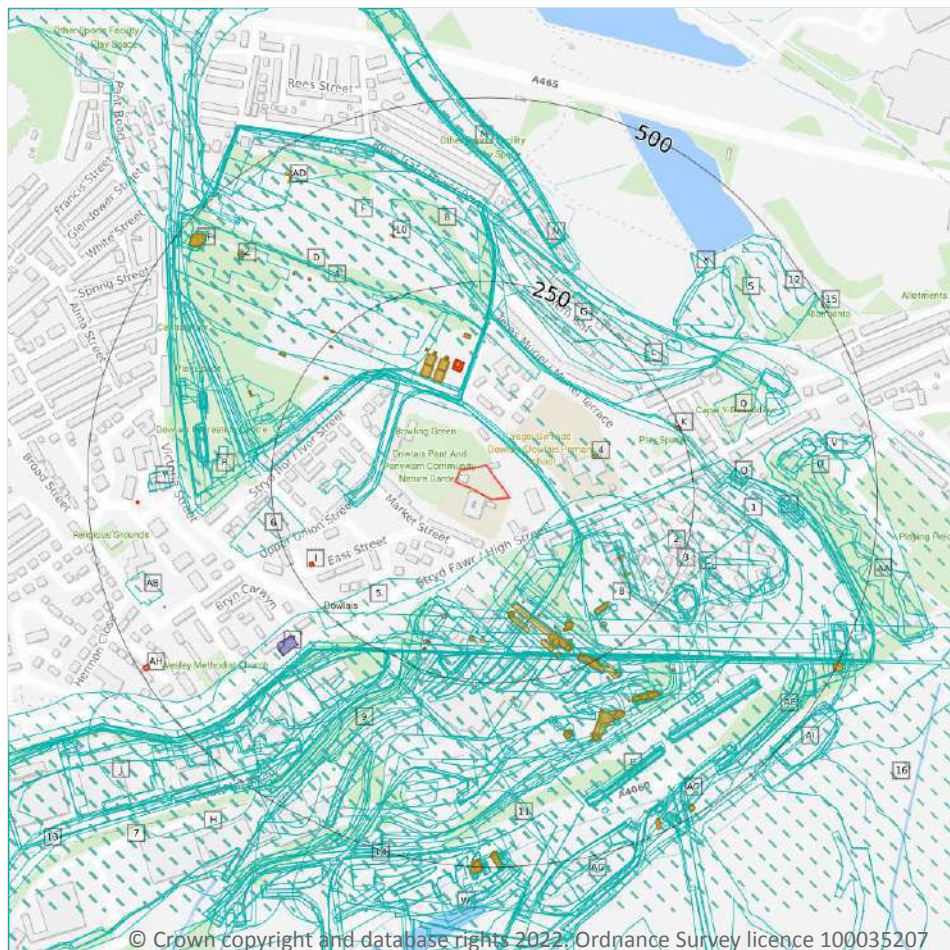
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical garages

2.1 Historical industrial land uses

Records within 500m

372

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 31**

ID	Location	Land Use	Date	Group ID
1	39m NE	Railway Sidings	1875	1034027
A	40m NE	Railway Sidings	1903	1115994
2	42m NE	Railway Sidings	1982	1105213

ID	Location	Land Use	Date	Group ID
A	46m NE	Railway Sidings	1948	1060546
3	48m NE	Railway Sidings	1965	1094700
B	60m SE	Iron Works	1875	1110618
B	62m SE	Iron Works	1948	1034045
C	63m SE	Iron Works	1901	1090698
C	63m SE	Railway Sidings	1901	1115994
B	74m S	Unspecified Works	1965	1020631
D	86m N	Railway Sidings	1922	1090890
B	88m SE	Iron Works	1922	1035153
D	89m N	Iron Works	1903	1069853
D	93m N	Iron Works	1901	1069853
D	93m N	Railway Sidings	1901	1057428
D	93m N	Iron Works	1921	1091334
C	96m SE	Railway Sidings	1922	1060546
D	96m N	Unspecified Commercial/Industrial	1948	1123033
C	99m SE	Iron Works	1921	1035153
D	99m N	Iron Works	1875	1138361
C	101m SE	Railway Sidings	1921	1060546
D	104m N	Iron Works	1922	1112817
D	105m N	Iron Works	1965	1070968
D	107m N	Unspecified Works	1975	1148650
D	107m N	Unspecified Works	1982	1090403
B	109m SE	Railway Sidings	1975	1057429
B	110m SE	Unspecified Commercial/Industrial	1875	1069543
B	110m SE	Iron Works	1903	1090698
5	128m S	Hospital	1875	1024580
D	139m NW	Railway Sidings	1975	1079158
B	139m SE	Unspecified Tank	1965	1016602

ID	Location	Land Use	Date	Group ID
B	140m S	Unspecified Tank	1921	1051830
B	143m S	Unspecified Tanks	1922	1077165
B	146m S	Railway Sidings	1922	1060546
B	149m S	Unspecified Heap	1922	1075207
B	149m S	Unspecified Heap	1922	1075207
B	150m S	Unspecified Ground Workings	1901	997388
B	152m S	Unspecified Tanks	1921	1077165
B	153m SE	Smithy	1922	1109677
D	155m NW	Railway Sidings	1921	1062147
B	155m SE	Smithy	1948	1065471
B	157m SW	Unspecified Factory	1975	1080013
B	157m SW	Unspecified Factory	1982	1084562
B	158m S	Unspecified Heap	1921	1122229
B	161m SE	Smithy	1921	1046038
B	161m S	Unspecified Factory	1992	1052515
E	161m S	Iron Works	1875	1110618
B	168m S	Unspecified Heap	1903	1116295
D	171m NW	Unspecified Commercial/Industrial	1922	1123033
B	181m S	Unspecified Commercial/Industrial	1901	1062960
F	182m N	Unspecified Commercial/Industrial	1922	1069187
B	183m SE	Unspecified Tank	1965	1016603
B	191m SE	Unspecified Tanks	1901	1155235
B	191m SE	Unspecified Tanks	1901	1045314
B	193m SE	Unspecified Tanks	1922	1040052
B	193m SE	Brick Kilns	1875	1019113
B	197m SE	Unspecified Tanks	1903	1071151
B	197m SE	Unspecified Tanks	1903	1070548
B	199m S	Unspecified Commercial/Industrial	1903	1062960

ID	Location	Land Use	Date	Group ID
E	199m S	Railway Sidings	1903	1115994
B	200m SE	Unspecified Tank	1921	1016614
B	202m SE	Unspecified Tank	1875	1116920
B	202m SE	Chimney	1975	1150262
B	202m SE	Chimney	1982	1089457
B	202m SE	Chimney	1965	1150262
G	207m NE	Refuse Heap	1922	1039973
G	207m NE	Refuse Heap	1922	1039973
E	208m S	Railway Sidings	1922	1060546
E	208m S	Railway Sidings	1922	1060546
E	208m S	Railway Sidings	1875	1068588
E	208m S	Iron Works	1921	1035153
E	208m S	Railway Sidings	1921	1060546
E	208m S	Iron Works	1922	1035153
E	208m S	Iron Works	1922	1035153
B	209m S	Unspecified Pits	1948	1007940
E	210m S	Iron Works	1915	1075767
E	210m S	Railway Sidings	1915	1059012
H	210m S	Railway Sidings	1901	1115994
H	210m S	Iron Works	1901	1090698
B	210m S	Unspecified Pit	1921	1068115
B	210m S	Unspecified Ground Workings	1922	1089146
B	210m S	Unspecified Ground Workings	1922	1089146
B	211m S	Unspecified Commercial/Industrial	1938	1096705
E	211m S	Railway Sidings	1938	1060546
B	212m SE	Unspecified Tank	1901	1016613
B	212m S	Unspecified Pit	1915	1056897
B	212m S	Unspecified Pit	1938	1097339



ID	Location	Land Use	Date	Group ID
B	212m S	Unspecified Pit	1938	1097339
6	214m W	Grave Yard	1875	1012139
B	217m SE	Unspecified Tank	1875	1060142
B	222m SE	Unspecified Tank	1921	1051830
B	222m SE	Unspecified Tank	1922	1051830
B	222m SE	Unspecified Tank	1922	1051830
B	223m SE	Unspecified Tank	1938	1152741
7	223m S	Iron Works	1938	1087393
B	223m SE	Unspecified Tank	1915	1043293
B	227m SE	Unspecified Tanks	1948	1033997
B	227m SE	Unspecified Tanks	1903	1102664
B	232m SE	Unspecified Tanks	1901	1102664
B	233m SE	Unspecified Tanks	1921	1101600
B	234m SE	Unspecified Tanks	1922	1101600
B	234m SE	Unspecified Tanks	1922	1101600
B	236m SE	Unspecified Tanks	1915	1067425
F	240m N	Unspecified Pit	1992	1028257
J	240m SW	Unspecified Mill	1915	1137126
C	247m E	Unspecified Ground Workings	1965	1069524
J	248m SW	Unspecified Mill	1921	1089204
E	249m SW	Unspecified Factory	1992	1014516
B	250m SE	Unspecified Tank	1938	1016604
E	250m SW	Unspecified Factories	1965	1084127
B	252m SE	Railway Sidings	1948	1060546
E	255m SW	Unspecified Mill	1903	1131513
C	256m SE	Unspecified Heap	1901	1067091
C	259m SE	Unspecified Heap	1922	1100131
C	259m SE	Unspecified Heap	1922	1100131



ID	Location	Land Use	Date	Group ID
C	260m SE	Unspecified Heap	1948	1064206
L	260m NE	Old Ironstone Shaft	1921	993616
L	262m NE	Old Ironstone Shaft	1922	993615
D	263m W	Railway Station	1875	1016073
C	264m SE	Unspecified Heap	1903	1156525
C	266m SE	Unspecified Heap	1921	1054459
B	269m SE	Unspecified Tanks	1903	1009935
E	273m SW	Unspecified Ground Workings	1982	1139322
B	275m SE	Unspecified Tank	1922	1070478
B	275m SE	Unspecified Tank	1922	1070478
B	275m SE	Unspecified Tank	1901	1135650
B	276m SE	Unspecified Tank	1915	1103451
C	278m E	Unspecified Pit	1922	1034869
C	278m E	Unspecified Pit	1922	1034869
8	282m N	Unspecified Heaps	1965	1021510
M	283m NE	Cuttings	1903	1131139
N	285m N	Cuttings	1875	1128238
C	287m E	Unspecified Ground Workings	1901	1075216
N	287m N	Cuttings	1901	1097734
9	287m S	Refuse Heap	1903	1019547
C	291m E	Unspecified Heap	1903	1001035
L	292m NE	Unspecified Heap	1922	1156934
L	292m NE	Unspecified Heap	1922	1156934
O	300m E	Railway Station	1965	1108982
O	300m E	Railway Station	1922	1102159
B	300m SE	Railway Sidings	1901	1115994
O	301m E	Railway Station	1903	1035042
O	301m E	Railway Station	1901	1035042

ID	Location	Land Use	Date	Group ID
O	305m E	Railway Station	1948	1102159
Q	305m E	Burial Ground	1875	1008326
E	306m S	Unspecified Ground Workings	1965	1066691
E	306m SW	Railway Sidings	1922	1049295
E	306m SW	Railway Sidings	1922	1041882
B	306m S	Railway Building	1901	1013453
M	307m N	Cuttings	1965	1154383
M	308m N	Cuttings	1921	1077438
B	308m SE	Unspecified Tanks	1903	1118572
N	309m N	Cuttings	1948	1069276
M	309m N	Cuttings	1922	1147693
R	312m W	Railway Building	1965	1136708
B	313m SE	Unspecified Tanks	1903	1114709
S	314m NE	Refuse Heaps	1875	1004700
B	314m SE	Unspecified Tanks	1921	1155592
B	315m SE	Unspecified Tanks	1901	1050593
B	317m SE	Unspecified Tanks	1921	1156785
B	317m SE	Unspecified Tanks	1922	1136261
B	317m SE	Unspecified Tanks	1922	1136261
B	318m S	Unspecified Tank	1903	1079807
T	318m E	Railway Station	1921	1016074
S	318m NE	Unspecified Disused Tip	1975	1150666
S	318m NE	Unspecified Disused Tip	1982	1123570
B	319m SE	Unspecified Tanks	1938	1101971
B	319m SE	Unspecified Tanks	1901	1114709
B	319m SE	Unspecified Tanks	1915	1118572
B	320m SE	Unspecified Tanks	1922	1093323
B	320m SE	Unspecified Tanks	1922	1093323



ID	Location	Land Use	Date	Group ID
S	320m NE	Unspecified Disused Tip	1992	1068856
B	321m SE	Unspecified Tanks	1938	1133329
B	321m SE	Unspecified Tanks	1915	1150267
B	325m S	Unspecified Tank	1921	1115967
B	325m S	Unspecified Tank	1901	1122870
R	325m W	Railway Building	1922	1054614
B	327m SE	Unspecified Tank	1948	1016607
B	327m S	Unspecified Tank	1922	1065541
B	327m S	Unspecified Tank	1922	1065541
N	329m N	Unspecified Pit	1875	1028256
E	329m SW	Plastic Factory	1948	1021326
B	330m S	Unspecified Tank	1938	1094469
B	330m S	Unspecified Tank	1915	1079808
J	333m SW	Unspecified Factories	1975	1062491
J	333m SW	Unspecified Factories	1982	1074519
B	334m SE	Chimney	1965	1025467
Q	334m NE	Unspecified Heap	1982	1051502
R	336m W	Goods Shed	1903	1069333
R	337m W	Railway Building	1965	1013469
R	337m W	Goods Shed	1922	1116038
S	337m NE	Refuse Heap	1901	1019560
R	337m W	Goods Shed	1921	1116038
R	337m W	Goods Shed	1901	1149531
R	340m W	Goods Shed	1875	1079760
E	340m S	Unspecified Ground Workings	1992	1137124
B	341m SE	Unspecified Tank	1922	1070366
B	341m SE	Unspecified Tank	1922	1070366
B	344m SE	Unspecified Tank	1915	1078256



ID	Location	Land Use	Date	Group ID
E	346m S	Refuse Heap	1901	1039867
R	349m W	Railway Station	1901	1063421
R	350m W	Railway Station	1921	1085635
U	350m E	Unspecified Disused Tip	1975	1005197
U	350m E	Refuse Heap	1982	1019559
R	350m W	Railway Station	1903	1063421
R	351m W	Railway Station	1948	1044411
R	351m W	Railway Station	1965	1094945
R	351m W	Railway Station	1922	1078686
B	353m SE	Railway Building	1965	1013460
R	354m W	Railway Building	1875	1013470
J	360m SW	Unspecified Mill	1875	1064245
C	360m E	Railway Building	1965	1126165
T	362m E	Railway Building	1965	1113530
B	362m SE	Railway Building	1965	1088985
M	364m N	Cuttings	1875	1041025
C	365m E	Railway Building	1975	1126165
T	365m E	Goods Shed	1922	1136229
T	366m E	Railway Building	1903	1057839
T	366m E	Goods Shed	1921	1070613
Q	366m E	Unspecified Heap	1921	1089134
V	366m E	Unspecified Ground Workings	1921	1128972
V	366m E	Unspecified Heaps	1922	1093279
V	366m E	Unspecified Heaps	1922	1093279
T	366m E	Goods Shed	1948	1136229
E	367m SW	Refuse Heap	1903	1019548
B	367m SE	Railway Building	1948	1088985
Q	368m E	Unspecified Heap	1922	1149715



ID	Location	Land Use	Date	Group ID
Q	368m E	Unspecified Heap	1922	1149715
R	368m W	Railway Building	1875	1013468
B	369m SE	Railway Building	1975	1142380
U	371m E	Unspecified Ground Workings	1903	1151531
V	371m E	Unspecified Heap	1901	1001036
T	371m E	Railway Building	1975	1036136
T	371m E	Railway Building	1982	1082781
M	373m N	Cuttings	1948	1127851
Q	374m E	Railway Station	1903	1046407
Q	374m E	Railway Station	1948	1154488
Q	376m E	Railway Station	1901	1036308
Q	377m E	Railway Station	1922	1154488
B	382m SE	Coke Ovens	1903	1136937
R	382m W	Railway Building	1901	1013465
W	382m S	Brick Works	1938	1133126
W	382m S	Brick Works	1938	1133126
X	384m NE	Unspecified Pit	1922	1066063
X	384m NE	Unspecified Pit	1922	1066063
B	386m SE	Coke Ovens	1921	1047473
B	387m SE	Coke Ovens	1901	1140881
Y	387m W	Police Station	1975	1048271
Y	387m W	Police Station	1982	1050495
Y	387m W	Police Station	1992	1050495
B	389m SE	Coke Ovens	1922	1047204
B	389m SE	Coke Ovens	1922	1047204
B	389m SE	Coke Ovens	1903	1062904
B	391m SE	Coke Ovens	1938	1038942
E	391m S	Railway Sidings	1875	1052704

ID	Location	Land Use	Date	Group ID
B	391m SE	Coke Ovens	1915	1136937
M	394m N	Cuttings	1901	1080358
B	394m SE	Coke Ovens	1921	1101589
B	395m SE	Coke Ovens	1901	1062904
W	396m S	Disused Brick Works	1948	1004578
B	397m SE	Coke Ovens	1922	1099473
B	397m SE	Coke Ovens	1922	1099473
B	398m S	Railway Building	1948	1013454
B	398m SE	Coke Ovens	1938	1044415
B	399m SE	Coke Ovens	1915	1063697
M	400m N	Cuttings	1975	1127851
M	400m N	Cuttings	1982	1127851
M	400m N	Cuttings	1992	1127851
AA	401m E	Unspecified Ground Workings	1901	1051638
V	403m E	Unspecified Heap	1948	1050884
V	405m E	Unspecified Heap	1965	1050884
J	408m SW	Unspecified Mill	1938	1065699
J	409m SW	Unspecified Mill	1922	1135229
J	409m SW	Unspecified Mill	1922	1135229
Z	411m NW	Unspecified Tank	1903	1066501
Z	413m NW	Unspecified Tank	1901	1124170
Z	413m NW	Unspecified Tank	1922	1096768
V	414m E	Unspecified Ground Workings	1965	1090623
E	423m SW	Unspecified Shaft	1875	1009216
AB	425m W	Burial Ground	1875	1008325
B	429m S	Coal Shoots	1875	1024433
11	430m S	Railway Building	1948	1013452
W	431m S	Brick Works	1921	1110446

ID	Location	Land Use	Date	Group ID
V	433m E	Unspecified Pit	1948	1126441
V	434m E	Unspecified Pit	1922	1100140
V	434m E	Unspecified Pit	1922	1100140
E	434m S	Refuse Heap	1903	1120260
J	435m SW	Unspecified Works	1965	1020632
J	437m SW	Agricultural Engineering Works	1948	1033485
H	440m SW	Refuse Heap	1948	1048874
B	440m S	Railway Building	1948	1013459
W	446m S	Brick Works	1915	1049702
W	446m S	Brick Works	1903	1037983
AA	449m SE	Railway Buildings	1922	1079045
AC	449m SE	Railway Buildings	1965	1024234
W	449m S	Unspecified Commercial/Industrial	1965	995699
AA	451m SE	Railway Building	1921	1013464
AC	452m SE	Railway Sidings	1901	1144712
12	452m NE	Refuse Heap	1901	1019570
AA	453m E	Unspecified Ground Workings	1965	1120811
AA	454m E	Cattle Pen	1921	1008812
AE	455m SE	Refuse Heap	1922	1079269
AE	455m SE	Refuse Heap	1922	1079269
AE	456m SE	Refuse Heap	1938	1079269
AE	456m SE	Refuse Heap	1938	1079269
AA	458m E	Unspecified Pit	1875	1028297
AC	459m SE	Tramway Sidings	1915	1014640
AC	462m SE	Railway Building	1948	1013461
AC	462m SE	Engine House	1903	1137225
AF	462m NW	Unspecified Tanks	1903	1138143
W	462m S	Brick Works	1901	1037983

ID	Location	Land Use	Date	Group ID
13	463m SW	Railway Sidings	1948	1069447
AA	463m SE	Railway Buildings	1903	1092571
AC	463m SE	Engine House	1901	1048612
AA	464m SE	Railway Building	1921	1013463
AF	464m NW	Unspecified Tanks	1875	1058983
AF	465m NW	Unspecified Tanks	1901	1138143
AG	465m SE	Unspecified Ground Workings	1921	1103099
AF	465m NW	Unspecified Tanks	1922	1148228
AA	469m E	Railway Buildings	1965	1157061
AG	469m SE	Unspecified Ground Workings	1915	1059785
AA	474m E	Engine Shed	1948	1074734
AA	474m E	Engine Shed	1922	1074734
H	475m SW	Unspecified Mill	1901	1099957
W	475m S	Brick Works	1875	1118789
AG	476m S	Unspecified Ground Workings	1922	1077618
AG	476m S	Unspecified Ground Workings	1922	1077618
AA	478m SE	Engine Shed	1921	1036347
W	478m S	Brick Works	1922	1133126
W	478m S	Brick Works	1922	1133126
AA	479m SE	Railway Sidings	1915	1060003
AC	479m SE	Railway Sidings	1948	1045632
W	481m S	Unspecified Tank	1903	1156877
W	482m S	Unspecified Tank	1922	1081508
W	482m S	Unspecified Tank	1922	1081508
W	482m S	Unspecified Tank	1875	1068422
W	483m S	Unspecified Tanks	1938	1154068
W	483m S	Unspecified Tanks	1915	1059007
AC	483m SE	Unspecified Tanks	1975	1104040

ID	Location	Land Use	Date	Group ID
AC	483m SE	Unspecified Tanks	1965	1104040
AC	483m SE	Engine House	1875	1019161
14	484m S	Cuttings	1938	994320
W	489m S	Unspecified Tank	1901	1070483
W	489m S	Unspecified Tanks	1948	1084231
M	489m N	Cuttings	1948	1066052
15	490m NE	Unspecified Ground Workings	1921	997389
W	491m S	Unspecified Tanks	1922	1045534
W	491m S	Unspecified Tanks	1922	1045534
W	491m S	Unspecified Tanks	1915	1141018
H	492m SW	Refuse Heap	1903	1146873
W	492m S	Unspecified Tanks	1938	1045534
W	492m S	Engine House	1875	1019160
AG	493m S	Unspecified Heap	1938	1128258
AG	493m S	Unspecified Heap	1938	1128258
W	493m S	Unspecified Tank	1922	1067115
W	493m S	Unspecified Tank	1922	1044908
AI	493m SE	Cuttings	1948	1066576
AI	493m SE	Cuttings	1903	1053543
W	494m S	Unspecified Tanks	1875	1132653
AA	495m SE	Unspecified Tank	1948	1107241
AA	495m SE	Unspecified Tank	1903	1065320
AI	496m SE	Cuttings	1901	1038913
W	497m S	Unspecified Tank	1921	1084665
AA	498m SE	Unspecified Tank	1901	1037493
W	498m S	Unspecified Tank	1948	1153376
W	498m S	Unspecified Tank	1903	1084568
AI	498m SE	Cuttings	1938	1041021

ID	Location	Land Use	Date	Group ID
AI	498m SE	Cuttings	1922	1136860
AI	498m SE	Cuttings	1922	1136860
AA	499m E	Engine Shed	1965	1012561
16	499m SE	Ironstone Pit	1875	1000023
AA	499m SE	Unspecified Tank	1915	1065320

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

118

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 31**

ID	Location	Land Use	Date	Group ID
A	121m N	Settling Tank	1977	159796
A	122m N	Settling Tank	1989	159796
4	127m E	Tank or Trough	1875	157966
A	132m NW	Settling Tank	1977	161321
A	133m NW	Settling Tank	1989	161321
A	135m N	Settling Tank	1977	162867
A	136m N	Settling Tank	1989	162867
B	141m S	Unspecified Tank	1920	149787
B	145m S	Tanks	1920	159786
A	145m NW	Settling Tank	1977	158386
A	146m NW	Settling Tank	1989	158386
A	151m N	Unspecified Tank	1956	163981
A	151m N	Unspecified Tank	1956	163981
A	151m N	Unspecified Tank	1977	163981
A	151m N	Unspecified Tank	1967	163981



ID	Location	Land Use	Date	Group ID
A	152m N	Unspecified Tank	1966	163981
A	152m N	Unspecified Tank	1989	168416
B	154m S	Unspecified Tank	1996	162348
B	154m S	Unspecified Tank	1995	162348
B	154m S	Unspecified Tank	1983	162348
B	154m S	Unspecified Tank	1987	162348
B	159m S	Tanks	1920	156263
A	160m N	Unspecified Tank	1956	168296
A	160m N	Unspecified Tank	1956	168296
B	162m SE	Unspecified Tank	1920	149786
A	167m NW	Unspecified Tank	1956	165774
A	167m NW	Unspecified Tank	1956	165774
B	167m S	Unspecified Tank	1920	149790
B	169m SE	Unspecified Tank	1920	149808
A	174m N	Tanks	1956	162790
A	174m N	Tanks	1956	162790
B	185m SE	Unspecified Tank	1920	149785
B	186m SE	Unspecified Tank	1955	160295
B	186m SE	Unspecified Tank	1961	160295
B	187m SE	Unspecified Tank	1988	160295
B	188m S	Unspecified Tank	1920	149788
B	188m SE	Unspecified Tank	1920	149812
B	188m S	Unspecified Tank	1920	149789
B	192m SE	Tanks	1899	159786
B	192m SE	Tanks	1920	164914
B	193m SE	Tanks	1899	164914
B	199m S	Tanks	1920	156262
B	202m SE	Unspecified Tank	1875	149782

ID	Location	Land Use	Date	Group ID
B	209m SE	Unspecified Tank	1920	149779
B	211m SE	Unspecified Tank	1899	149807
B	215m SE	Unspecified Tank	1875	149781
D	218m NW	Unspecified Tank	1966	161599
D	219m NW	Unspecified Tank	1977	161599
D	219m NW	Unspecified Tank	1967	161599
D	219m NW	Unspecified Tank	1995	161599
D	220m NW	Unspecified Tank	1989	160015
B	221m SE	Unspecified Tank	1919	149783
B	234m SE	Tanks	1919	162937
B	235m SE	Tanks	1900	162937
B	237m SE	Unspecified Tank	1875	149780
D	240m NW	Unspecified Tank	1977	167363
D	240m NW	Unspecified Tank	1967	160403
D	241m NW	Unspecified Tank	1995	165933
D	241m NW	Unspecified Tank	1966	164933
D	241m NW	Unspecified Tank	1989	162129
B	249m SE	Unspecified Tank	1875	149806
D	253m NW	Unspecified Tank	1995	160484
D	253m NW	Unspecified Tank	1977	160484
D	254m NW	Unspecified Tank	1989	165869
B	263m SE	Unspecified Tank	1875	149809
B	269m S	Unspecified Tank	1875	149784
B	277m SE	Unspecified Tank	1919	149805
B	278m SE	Unspecified Tank	1875	149810
D	283m NW	Unspecified Tank	1956	161566
D	284m NW	Unspecified Tank	1956	161566
D	300m W	Unspecified Tank	1956	159265

ID	Location	Land Use	Date	Group ID
D	301m W	Unspecified Tank	1956	159265
B	314m SE	Tanks	1919	161808
B	316m SE	Tanks	1900	161808
B	319m SE	Unspecified Tank	1875	149814
B	320m SE	Tanks	1900	168087
B	320m SE	Tanks	1919	168087
B	322m SE	Unspecified Tank	1875	161437
B	322m SE	Unspecified Tank	1900	161437
B	322m SE	Unspecified Tank	1919	161437
B	323m SE	Unspecified Tank	1875	149813
B	326m S	Unspecified Tank	1919	167108
B	326m S	Unspecified Tank	1900	167108
B	327m SE	Unspecified Tank	1875	149811
B	328m S	Unspecified Tank	1875	158478
B	328m SE	Unspecified Tank	1875	149815
D	328m NW	Unspecified Tank	1875	161230
10	329m N	Unspecified Tank	1977	149778
D	329m NW	Unspecified Tank	1899	161230
B	331m SE	Unspecified Tank	1875	149804
B	343m SE	Unspecified Tank	1875	149803
B	347m SE	Unspecified Tank	1875	149802
D	347m NW	Unspecified Tank	1875	167975
D	348m NW	Unspecified Tank	1899	167960
B	378m SE	Unspecified Tank	1875	149816
Z	397m NW	Unspecified Tank	1875	149774
Z	414m NW	Unspecified Tank	1920	158820
Z	414m NW	Unspecified Tank	1899	158820
Z	418m NW	Unspecified Tank	1875	158103

ID	Location	Land Use	Date	Group ID
AB	429m W	Unspecified Tank	1996	149791
AD	454m NW	Unspecified Tank	1977	149777
AD	460m NW	Tanks	1977	156250
AD	464m NW	Tanks	1977	156251
AF	466m NW	Tanks	1920	167507
AF	466m NW	Tanks	1875	167507
AF	466m NW	Tanks	1899	167507
W	478m S	Unspecified Tank	1875	149795
W	480m S	Tanks	1900	162217
W	480m S	Tanks	1919	162217
AC	481m SE	Tanks	1961	164774
AC	481m SE	Tanks	1955	164774
AC	484m SE	Unspecified Tank	1955	162183
AC	485m SE	Unspecified Tank	1961	162183
W	489m S	Tanks	1875	165679
W	491m S	Tanks	1900	162076
W	491m S	Tanks	1919	162076
AA	496m SE	Unspecified Tank	1900	163593
AA	496m SE	Unspecified Tank	1919	163593

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m

36

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 31**

ID	Location	Land Use	Date	Group ID
A	131m N	Electricity Substation	1977	94074



ID	Location	Land Use	Date	Group ID
A	131m N	Electricity Substation	1967	94074
A	132m N	Electricity Substation	1966	94074
A	132m N	Electricity Substation	1989	94074
A	132m N	Electricity Substation	1995	94074
A	137m N	Electricity Substation	1956	89094
A	137m N	Electricity Substation	1956	89094
B	203m S	Electricity Substation	1996	91476
B	203m S	Electricity Substation	1995	91476
B	204m S	Electricity Substation	1983	91476
B	205m S	Electricity Substation	1987	93277
B	210m S	Electricity Substation	1996	95298
B	210m S	Electricity Substation	1995	95298
B	210m S	Electricity Substation	1983	95298
B	211m S	Electricity Substation	1987	85749
B	220m S	Electricity Substation	1996	93186
B	220m S	Electricity Substation	1995	93186
B	221m S	Electricity Substation	1983	93186
B	222m S	Electricity Substation	1987	93186
I	222m SW	Electricity Substation	1974	89886
I	223m SW	Electricity Substation	1996	89886
I	223m SW	Electricity Substation	1995	89886
I	223m SW	Electricity Substation	1983	89886
K	244m E	Electricity Substation	1983	91001
K	244m E	Electricity Substation	1989	91001
K	244m E	Electricity Substation	1992	91001
K	245m E	Electricity Substation	1999	91001
K	245m E	Electricity Substation	1973	91001
K	245m E	Electricity Substation	1955	91001

ID	Location	Land Use	Date	Group ID
Y	431m W	Electricity Substation	1972	88134
Y	431m W	Electricity Substation	1996	88458
Y	431m W	Electricity Substation	1988	88657
Y	431m W	Electricity Substation	1989	88843
AH	485m SW	Electricity Substation	1956	90596
AH	485m SW	Electricity Substation	1956	90596
H	488m SW	Electricity Substation	1996	85750

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0
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Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	4
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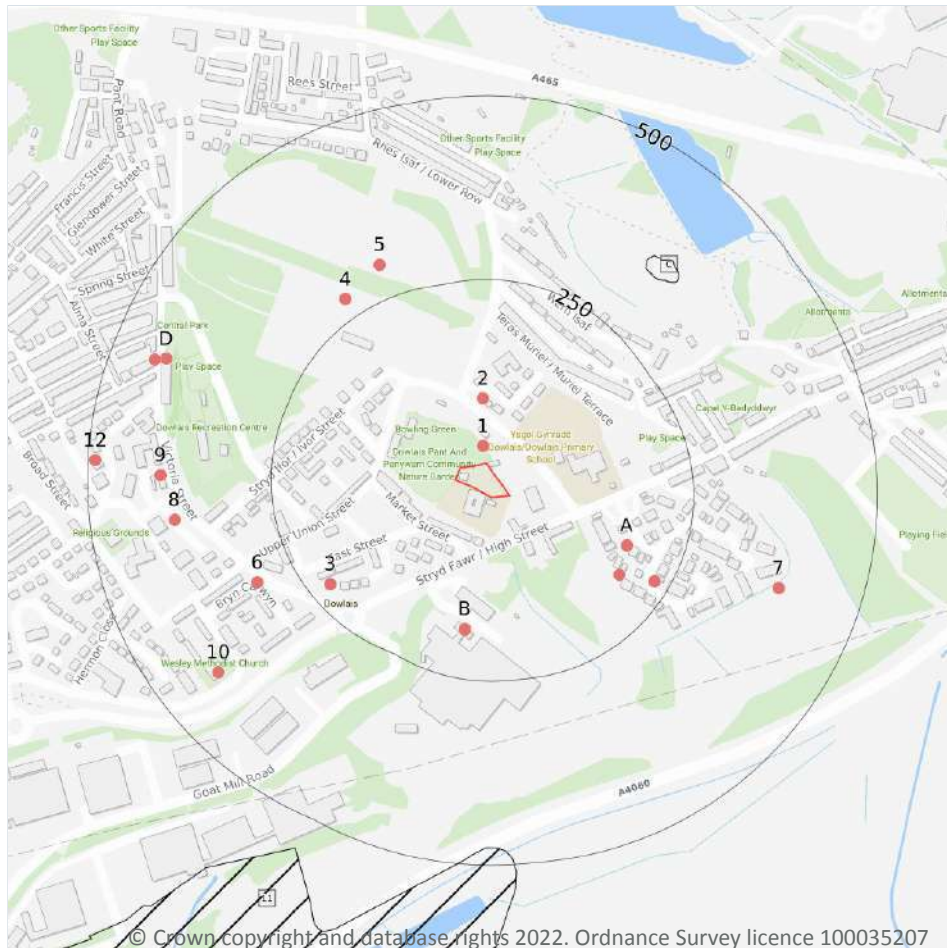
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 31**

ID	Location	Land Use	Date	Group ID
P	305m SW	Garage	1956	31792
P	305m SW	Garage	1961	31792
P	305m SW	Garage	1956	31792
P	305m SW	Garage	1974	31792

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)
- Historical landfill (LA/OS)
- Waste exemptions

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m

2

Landfill sites identified from Local Authority records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 52**

ID	Location	Site address	Source	Data type
C	341m NE	Refuse Tip	1966 mapping	Polygon
C	341m NE	Refuse Tip	1966 mapping	Polygon

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m

1

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 52**

ID	Location	Details		
11	475m S	Site Address: BSC Dowlais Tips Licence Holder Address: -	Waste Licence: Yes Site Reference: 3 Waste Type: Inert, Industrial, Commercial, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 21/07/1978 Licence Surrender: 31/12/1988	Operator: - Licence Holder: British Steel Corporation First Recorded 31/12/1978 Last Recorded: 31/12/1998

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m

0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m

0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m

23

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

Features are displayed on the Waste and landfill map on **page 52**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	23m N	UPPER BARDLEY FARM, STOTTESDON, KIDDERMINSTER, DY14 8NF	WEX085736	Storing waste exemption	On a farm	Storage of sludge
2	88m N	INGMANTHORPE HALL, FLAT 9, YORK ROAD, WETHERBY, LS22 5EH	WEX095256	Storing waste exemption	On a farm	Storage of sludge
A	173m SE	MEATON FARM, WYRE FOREST, ROCK, KIDDERMINSTER, DY14 8NT	WEX142464	Storing waste exemption	On a farm	Storage of sludge
A	173m SE	Meaton Farm, Meaton Lane, Rock, Worcestershire, DY14 8NT	WEX126471	Storing waste exemption	On a farm	Storage of sludge
A	173m SE	MEATON FARM, WYRE FOREST, ROCK, KIDDERMINSTER, DY14 8NT	WEX100409	Storing waste exemption	On a farm	Storage of sludge
B	183m S	OP Chocolate Ltd, O P Chocolate Ltd, High Street, Dowlais, Merthyr Tydfil, Merthyr Tydfil, CF48 3TB	NRW- WME053689	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)
B	184m S	OP Chocolate Limited, High Street, Dowlais, Merthyr Tudful, CF483TB	NRW- WME009944	Treating waste exemption	Not on a farm	Preparatory treatments (baling, sorting, shredding etc)



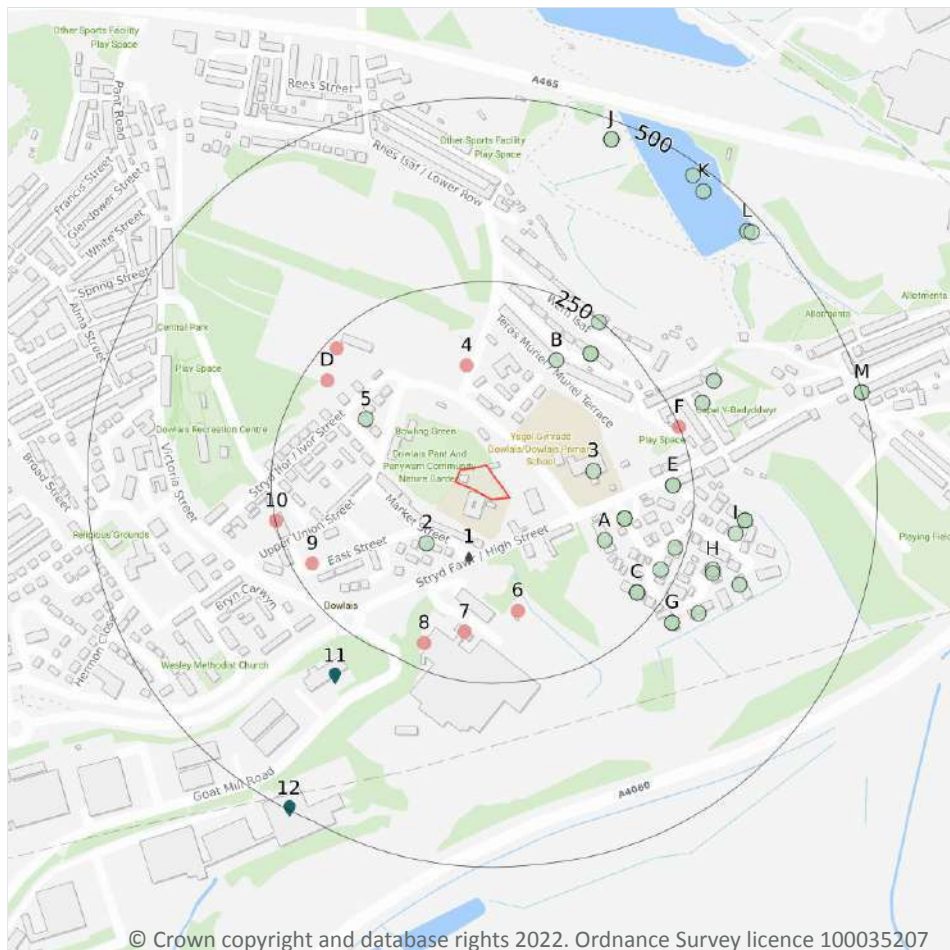
ID	Location	Site	Reference	Category	Sub-Category	Description
A	184m SE	MEATON FARM, WYRE FOREST, ROCK, KIDDERMINSTER, DY14 8NT	WEX100414	Storing waste exemption	On a farm	Storage of sludge
3	222m SW	CURDALE FARM, CLEOBURY MORTIMER, KIDDERMINSTER, DY14 0HA	WEX100408	Storing waste exemption	On a farm	Storage of sludge
A	228m SE	MEATON FARM, WYRE FOREST, ROCK, KIDDERMINSTER, DY14 8NT	WEX100419	Storing waste exemption	On a farm	Storage of sludge
4	277m NW	INGMANTHORPE HALL, FLAT 9, YORK ROAD, WETHERBY, LS22 5EH	WEX094915	Storing waste exemption	On a farm	Storage of sludge
5	297m NW	UPPER OVERTON, MIDDLETON SCRIVEN, BRIDGNORTH, WV16 6AG	WEX133048	Storing waste exemption	On a farm	Storage of sludge
6	304m SW	CURDALE FARM, CLEOBURY MORTIMER, KIDDERMINSTER, DY14 0HA	WEX141385	Storing waste exemption	On a farm	Storage of sludge
7	386m E	UPPER BARDLEY FARM, STOTTESDON, KIDDERMINSTER, DY14 8NF	WEX087947	Storing waste exemption	On a farm	Storage of sludge
8	386m W	CURDALE FARM, CLEOBURY MORTIMER, KIDDERMINSTER, DY14 0HA	WEX100407	Storing waste exemption	On a farm	Storage of sludge
9	401m W	Victoria Veterinary Practice, Victoria Veterinary Practice Ltd, Victoria Street, Dowlais, Merthyr Tydfil, Merthyr Tydfil, CF48 3RL	NRW-WME040457	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
10	415m SW	CURDALE FARM, CLEOBURY MORTIMER, KIDDERMINSTER, DY14 0HA	WEX100412	Storing waste exemption	On a farm	Storage of sludge

ID	Location	Site	Reference	Category	Sub-Category	Description
D	426m W	Dowlais Pharmacy Limited, Dowlais Pharmacy, 82-83 Victoria Street, Dowlais, Merthyr Tydfil, CF48 3RN	NRW- WME048866	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	426m W	Pearn's Pharmacies Ltd, Pearn's Pharmacy Ltd, 30 Victoria Street, Dowlais, Merthyr Tydfil, Merthyr Tydfil, CF48 3RN	NRW- WME040114	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	426m W	Peam's Pharmacies Ltd, Pearn's Pharmacy Ltd, 30 Victoria Street, Dowlais, Merthyr Tydfil, Merthyr Tydfil, CF48 3RN	NRW- WME040343	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	426m W	Dowlais Pharmacy Limited, Dowlais Pharmacy, 82-83 Victoria Street, Dowlais, Merthyr Tydfil, CF483RN	NRW- WME032288	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
D	440m W	Dowlais Pharmacy Limited, Dowlais Pharmacy, 82-83 Victoria Street, Dowlais, Merthyr Tydfil, CF483RN	NRW- WME021047	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
12	490m W	Pearn's Pharmacies LTD, Pearn's Pharmacies Ltd, Berry Square, Dowlais, Merthyr Tydfil, Merthyr Tydfil, CF48 3AL	NRW- WME065723	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

9

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 57**

ID	Location	Company	Address	Activity	Category
4	138m N	Electricity Sub Station	Mid Glamorgan, CF48	Electrical Features	Infrastructure and Facilities
6	154m S	Tank	Mid Glamorgan, CF48	Tanks (Generic)	Industrial Features
7	184m S	O P Chocolate	High Street, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TB	Baking and Confectionery	Foodstuffs



ID	Location	Company	Address	Activity	Category
8	216m SW	Electricity Sub Station	Mid Glamorgan, CF48	Electrical Features	Infrastructure and Facilities
D	218m NW	Tank	Mid Glamorgan, CF48	Tanks (Generic)	Industrial Features
9	224m SW	Electricity Sub Station	Mid Glamorgan, CF48	Electrical Features	Infrastructure and Facilities
D	236m NW	Tank	Mid Glamorgan, CF48	Tanks (Generic)	Industrial Features
10	249m W	Cancer Aid Merthyr Tydfil	Upper Union Street, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3LE	Ambulance and Medical Transportation Services	Health Support Services
F	250m NE	Electricity Sub Station	Mid Glamorgan, CF48	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0
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Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0
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High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0
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High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m**0**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m**0**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

2

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 57**

ID	Location	Address	Details	
11	310m SW	The LUC Group, Unit 6, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD	Process: Di-isocyanate Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
12	498m SW	Stephens & George Ltd, Goat Mill Road, Dowlais, Merthyr Tydfil, Mid Glamorgan, CF48 3TD	Process: Printing Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

1

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 57**

ID	Location	Address	Details	
1	83m S	Dowlais Market St & High St Junction, 34 Market St, Dowlais, Merthyr Tydfil, CF48 3HL	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: BB3396CG Permit Version: 1 Receiving Water: Unnamed tributary leading to Nant Morlais	Status: Effective Issue date: 14/08/2019 Effective Date: 14/08/2019 Revocation Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0
----------------------------	----------

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0
----------------------------	----------

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0
----------------------------	----------

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0
----------------------------	----------

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m

36

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 57**

ID	Location	Details	
2	91m SW	Incident Date: 20/05/2001 Incident Identification: 6092 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Effects on Humans	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
3	119m E	Incident Date: 21/11/2014 Incident Identification: 1296142 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
A	141m SE	Incident Date: 18/06/2007 Incident Identification: 504917 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
5	145m NW	Incident Date: 23/03/2002 Incident Identification: 66070 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
A	159m E	Incident Date: 25/04/2001 Incident Identification: 3434 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
A	159m E	Incident Date: 27/04/2001 Incident Identification: 3581 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
A	159m E	Incident Date: 28/10/2001 Incident Identification: 39978 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
B	171m NE	Incident Date: 30/05/2003 Incident Identification: 162058 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
B	208m NE	Incident Date: 29/09/2002 Incident Identification: 111321 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
B	208m NE	Incident Date: 29/09/2002 Incident Identification: 111321 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
C	215m SE	Incident Date: 19/01/2015 Incident Identification: 1307709 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	215m SE	Incident Date: 28/12/2014 Incident Identification: 1303079 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
E	222m E	Incident Date: 16/04/2002 Incident Identification: 71926 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	222m E	Incident Date: 15/11/2001 Incident Identification: 42914 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
C	227m SE	Incident Date: 20/05/2001 Incident Identification: 6091 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Effects on Humans	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
C	235m E	Incident Date: 17/12/2006 Incident Identification: 457059 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
B	247m NE	Incident Date: 19/01/2014 Incident Identification: 1195846 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
G	278m SE	Incident Date: 05/02/2003 Incident Identification: 135112 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
G	278m SE	Incident Date: 07/10/2007 Incident Identification: 536601 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
F	291m NE	Incident Date: 21/09/2001 Incident Identification: 31975 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
H	292m E	Incident Date: 20/05/2001 Incident Identification: 6093 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Fumes	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
H	294m E	Incident Date: 08/12/2001 Incident Identification: 47253 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
G	300m SE	Incident Date: 26/03/2002 Incident Identification: 66863 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
I	310m E	Incident Date: 28/03/2012 Incident Identification: 975201 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Dust	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 2 (Significant)
F	319m NE	Incident Date: 05/03/2003 Incident Identification: 141309 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
I	321m E	Incident Date: 13/11/2013 Incident Identification: 1175782 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
I	321m E	Incident Date: 16/11/2013 Incident Identification: 1176734 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: - Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	334m E	Incident Date: 28/03/2002 Incident Identification: 67235 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
J	474m N	Incident Date: 22/07/2016 Incident Identification: 1604117 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Other Air Impact: Other
J	474m N	Incident Date: 22/07/2016 Incident Identification: 1604117 Pollutant: - Pollutant Description: -	Water Impact: Category 3 (Minor) Land Impact: Other Air Impact: Other
K	475m NE	Incident Date: 13/02/2003 Incident Identification: 136781 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
L	476m NE	Incident Date: 13/02/2022 Incident Identification: 2201043 Pollutant: Inert Materials and Waste Pollutant Description: Soils and Clay	Water Impact: Category 2 (Significant) Land Impact: No Details Air Impact: No Details
L	480m NE	Incident Date: 21/10/2021 Incident Identification: 2108659 Pollutant: Inert Materials and Waste Pollutant Description: Soils and Clay	Water Impact: Category 2 (Significant) Land Impact: No Details Air Impact: No Details
K	484m NE	Incident Date: 01/11/2021 Incident Identification: 2108920 Pollutant: Inert Materials and Waste Pollutant Description: Soils and Clay	Water Impact: Category 2 (Significant) Land Impact: No Details Air Impact: No Details
M	499m E	Incident Date: 13/07/2003 Incident Identification: 173290 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Landfill Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
M	499m E	Incident Date: 24/04/2001 Incident Identification: 3239 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m

0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.



This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m

0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

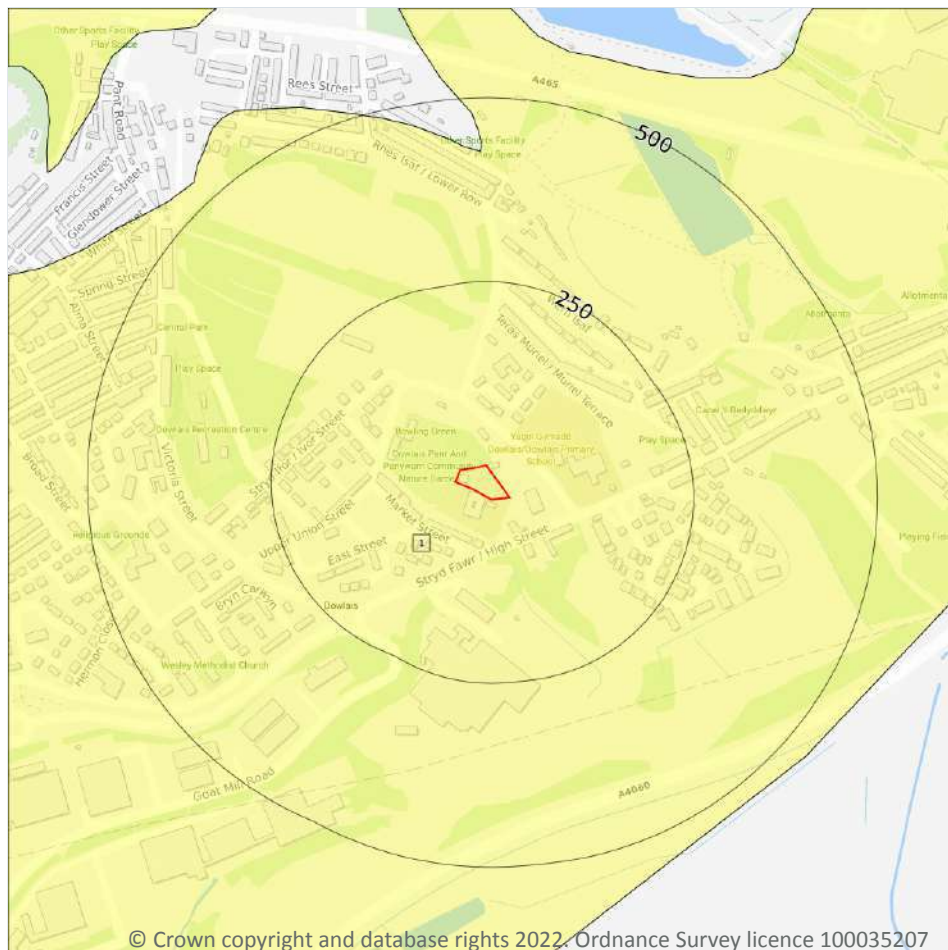
Records within 500m

0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive
 - Unknown

5.1 Superficial aquifer

Records within 500m

1

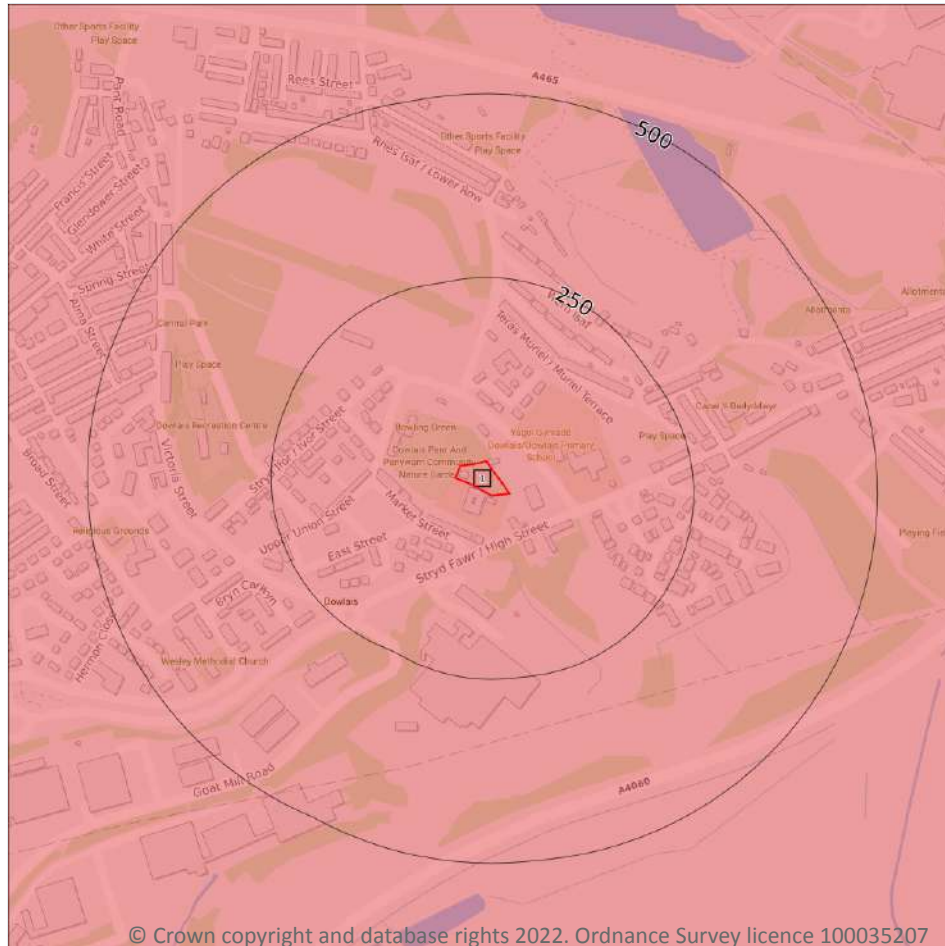
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 67**

ID	Location	Designation	Description
1	On site	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



- Site Outline
- Search buffers in metres (m)
- Principal
 - Secondary A
 - Secondary B
 - Secondary Undifferentiated
 - Unproductive

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5.2 Bedrock aquifer

Records within 500m

1

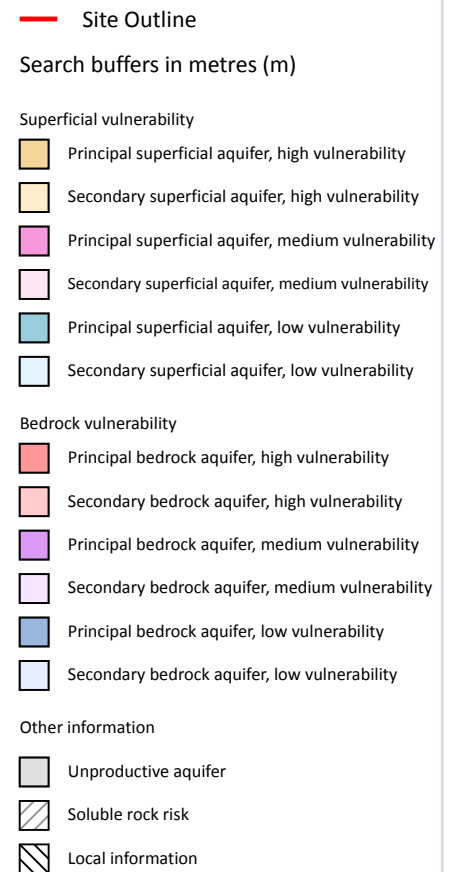
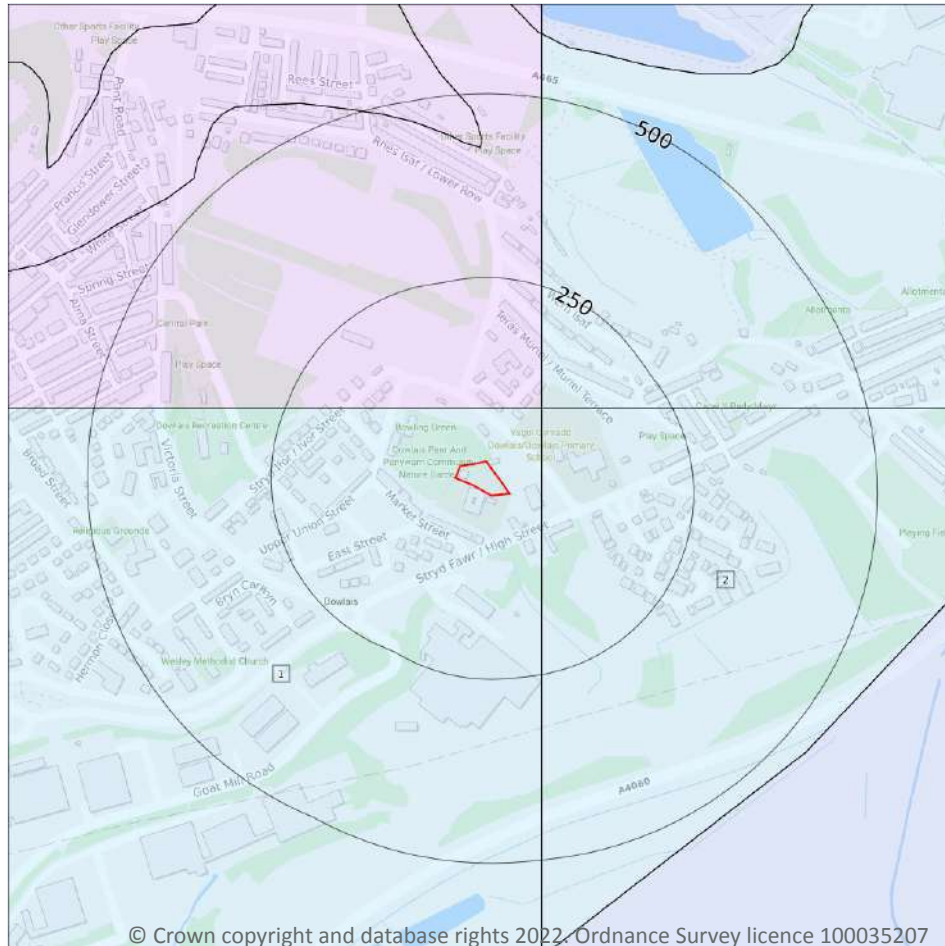
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 68**

ID	Location	Designation	Description
1	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

2

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 69**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Low	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures
2	43m E	Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Low Aquifer type: Secondary Flow mechanism: Well connected fractures

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site

0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

Records on site

0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

ID	Location	Details	
-	1349m NE	Status: Historical Licence No: 21/57/22/0040 Details: Process Water Direct Source: EAW Groundwater Point: BOREHOLE (A) AT ST MERRYN MEAT LTD, DOWLAIS Data Type: Point Name: St Merryn Meat Ltd Easting: 308100 Northing: 208600	Annual Volume (m ³): 146000 Max Daily Volume (m ³): 600 Original Application No: - Original Start Date: 07/09/1998 Expiry Date: - Issue No: 101 Version Start Date: 14/01/2000 Version End Date: -
-	1480m NE	Status: Historical Licence No: 21/57/22/0040 Details: Process Water Direct Source: EAW Groundwater Point: BOREHOLE (B) AT ST MERRYN MEAT LTD, DOWLAIS Data Type: Point Name: St Merryn Meat Ltd Easting: 308090 Northing: 208840	Annual Volume (m ³): 146000 Max Daily Volume (m ³): 600 Original Application No: - Original Start Date: 07/09/1998 Expiry Date: - Issue No: 101 Version Start Date: 14/01/2000 Version End Date: -
-	1644m NE	Status: Historical Licence No: 21/57/22/0040 Details: Process Water Direct Source: EAW Groundwater Point: BOREHOLE (C) AT ST MERRYN MEAT LTD, DOWLAIS Data Type: Point Name: St Merryn Meat Ltd Easting: 308280 Northing: 208860	Annual Volume (m ³): 146000 Max Daily Volume (m ³): 600 Original Application No: - Original Start Date: 07/09/1998 Expiry Date: - Issue No: 101 Version Start Date: 14/01/2000 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

4

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 71**



ID	Location	Details	
-	1264m SE	Status: Historical Licence No: 21/57/22/0026 Details: General Washing/Process Washing Direct Source: EAW Surface Water Point: MORRIS POND Data Type: Point Name: Miller Argent (South Wales) Ltd Easting: 307830 Northing: 206970	Annual Volume (m ³): 4546 Max Daily Volume (m ³): 681.9 Original Application No: - Original Start Date: 12/08/1977 Expiry Date: - Issue No: 103 Version Start Date: 14/12/2003 Version End Date: -
-	1412m E	Status: Historical Licence No: 21/57/22/0001 Details: General use relating to Secondary Category (Medium Loss) Direct Source: EAW Surface Water Point: ROADSIDE POND Data Type: Point Name: Corus UK Ltd Easting: 308250 Northing: 208450	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 11/02/1966 Expiry Date: - Issue No: 101 Version Start Date: 17/04/2000 Version End Date: -
-	1745m SE	Status: Active Licence No: 21/57/22/0009 Details: Transfer between Sources (Pre Water Act 2003) - Very Low Direct Source: Four Reservoirs Merthyr Tydfil Point: - Data Type: Point Name: - Easting: 307690 Northing: 206300	Annual Volume (m ³): 90,920 Max Daily Volume (m ³): - Original Application No: - Original Start Date: Sep 20 2018 12:00AM Expiry Date: - Issue No: - Version Start Date: - Version End Date: -
-	1749m SE	Status: Historical Licence No: 21/57/22/0009 Details: Transfer Between Sources (Pre Water Act 2003) Direct Source: EAW Surface Water Point: RESERVOIR A Data Type: Point Name: Miller Argent (South Wales) Ltd Easting: 307700 Northing: 206300	Annual Volume (m ³): 90920 Max Daily Volume (m ³): 272.76 Original Application No: - Original Start Date: 11/02/1966 Expiry Date: - Issue No: 103 Version Start Date: 14/12/2003 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m

0

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m

0

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

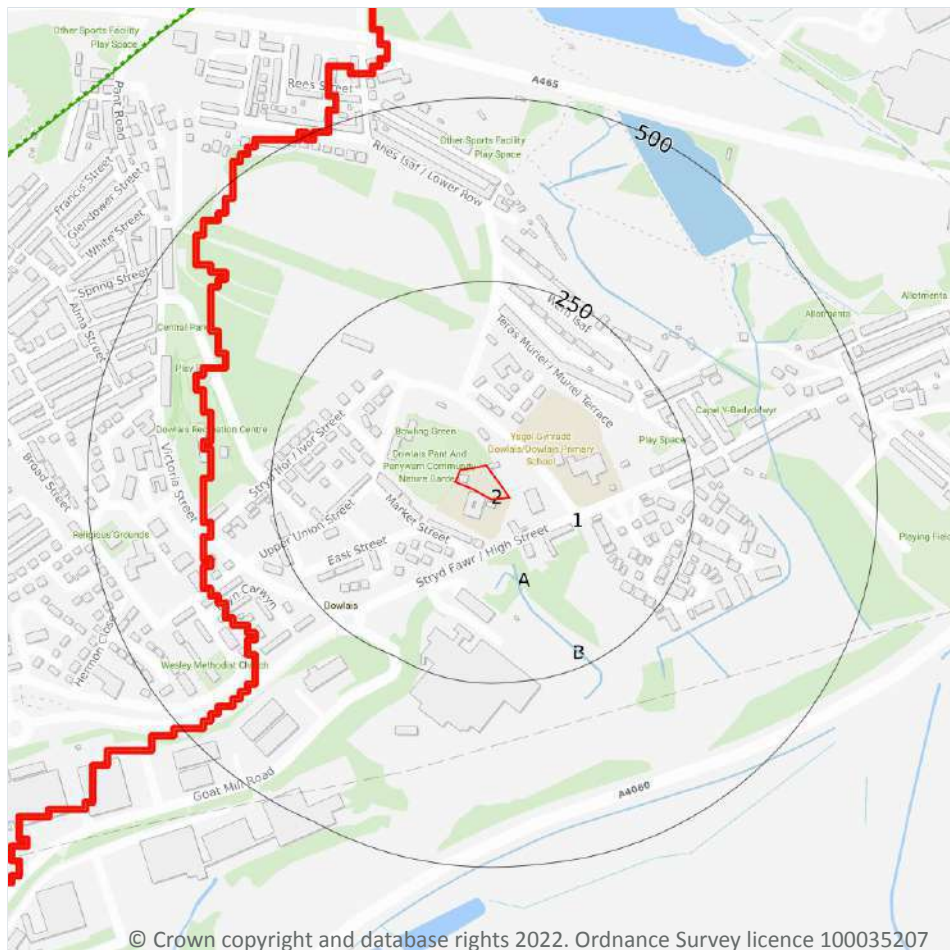
Records within 500m

0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ⋯ WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

7

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 75**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	90m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
A	100m S	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	100m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	104m S	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
A	106m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	112m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	129m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

3

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 75**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site

1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 75**



ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River WB catchment	Taff - conf Taf Fechan to conf R Cynon	GB109057033100	Taff u s Cynon	South East Valleys

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	1
---------------------------	----------

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site.

Features are displayed on the Hydrology map on **page 75**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	2684m SW	River	Taff - conf Taf Fechan to conf R Cynon	GB109057033100	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	1
------------------------	----------

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place.

Features are displayed on the Hydrology map on **page 75**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	On site	SE Valleys Carboniferous Coal Measures	GB40902G201900	Poor	Poor	Good	2017

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m**0**

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m**0**

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m**0**

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

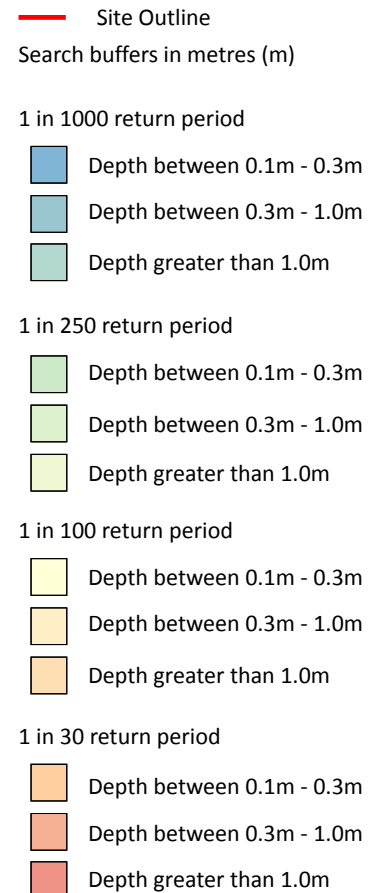
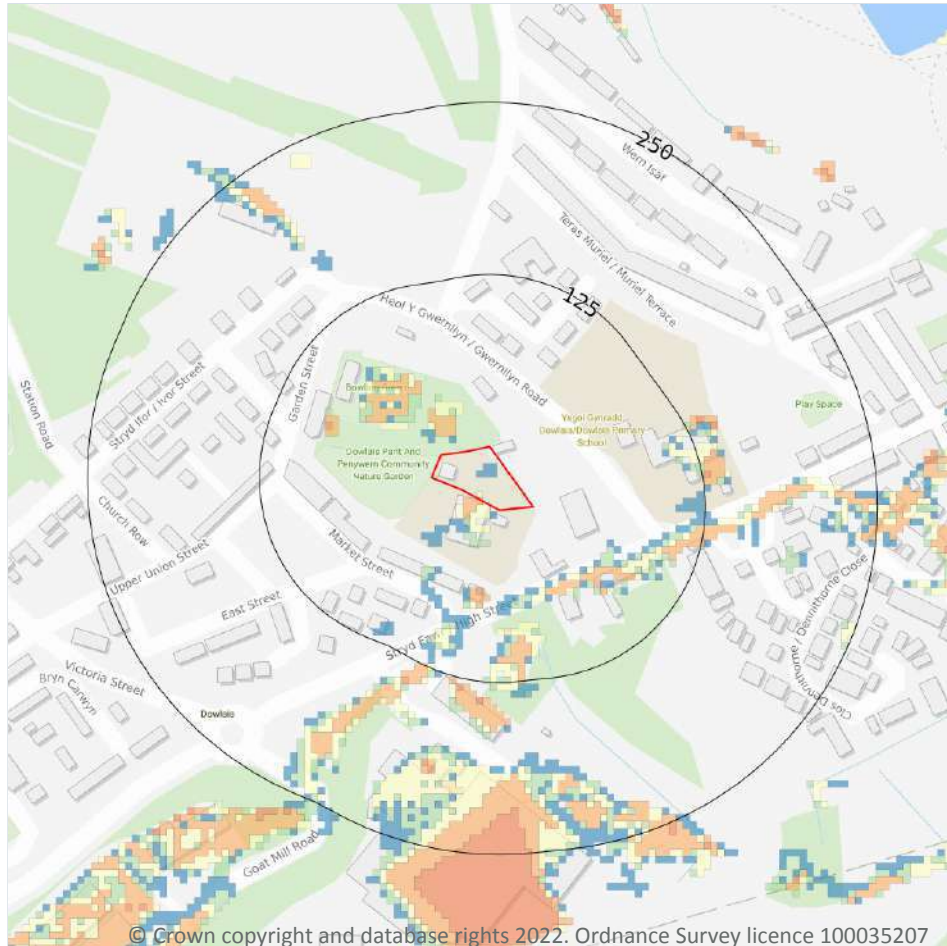
Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

1 in 30 year, 0.1m - 0.3m

Highest risk within 50m

1 in 30 year, 0.1m - 0.3m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 81**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

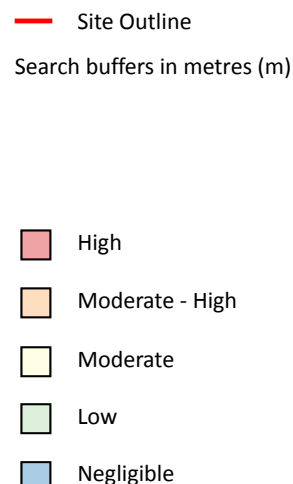
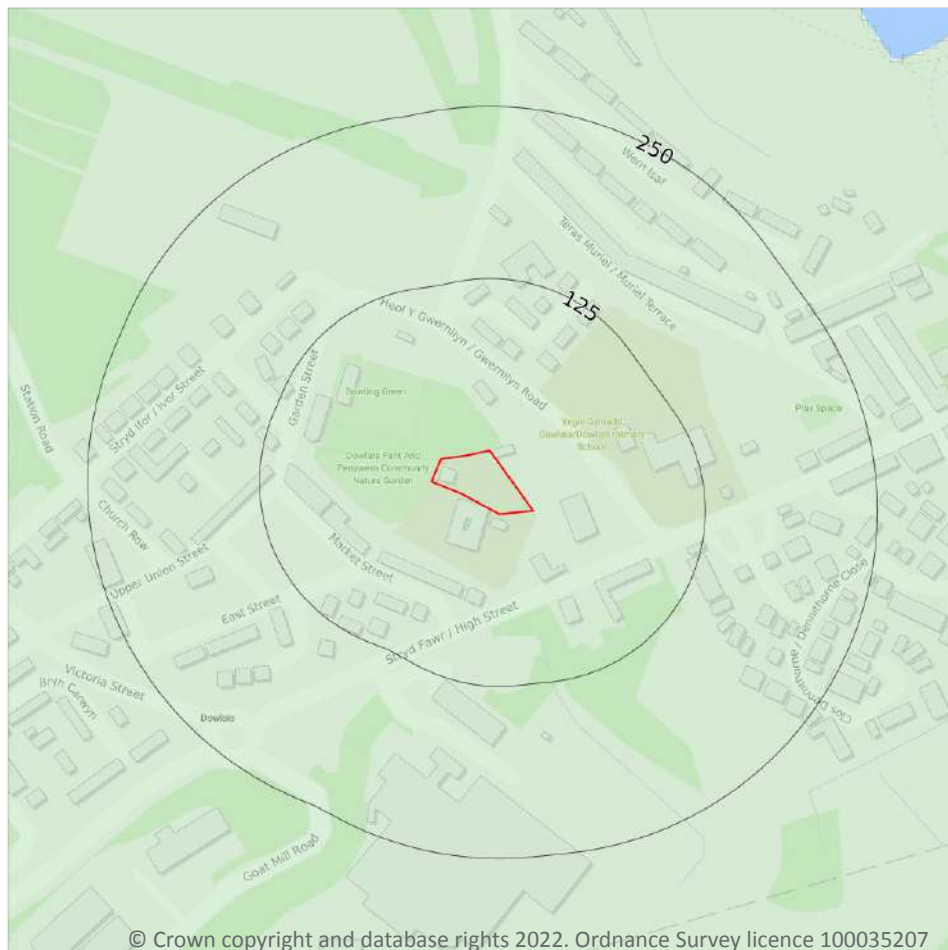
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Between 0.1m and 0.3m

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



9.1 Groundwater flooding

Highest risk on site

Low

Highest risk within 50m

Low

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 83**

This data is sourced from Ambiantal Risk Analytics.

10 Environmental designations

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m**0**

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.5 National Nature Reserves (NNR)

Records within 2000m

0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m

0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m

0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m**0**

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m**0**

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m**0**

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site

0

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

This data is sourced from Natural England.

10.18 SSSI Units

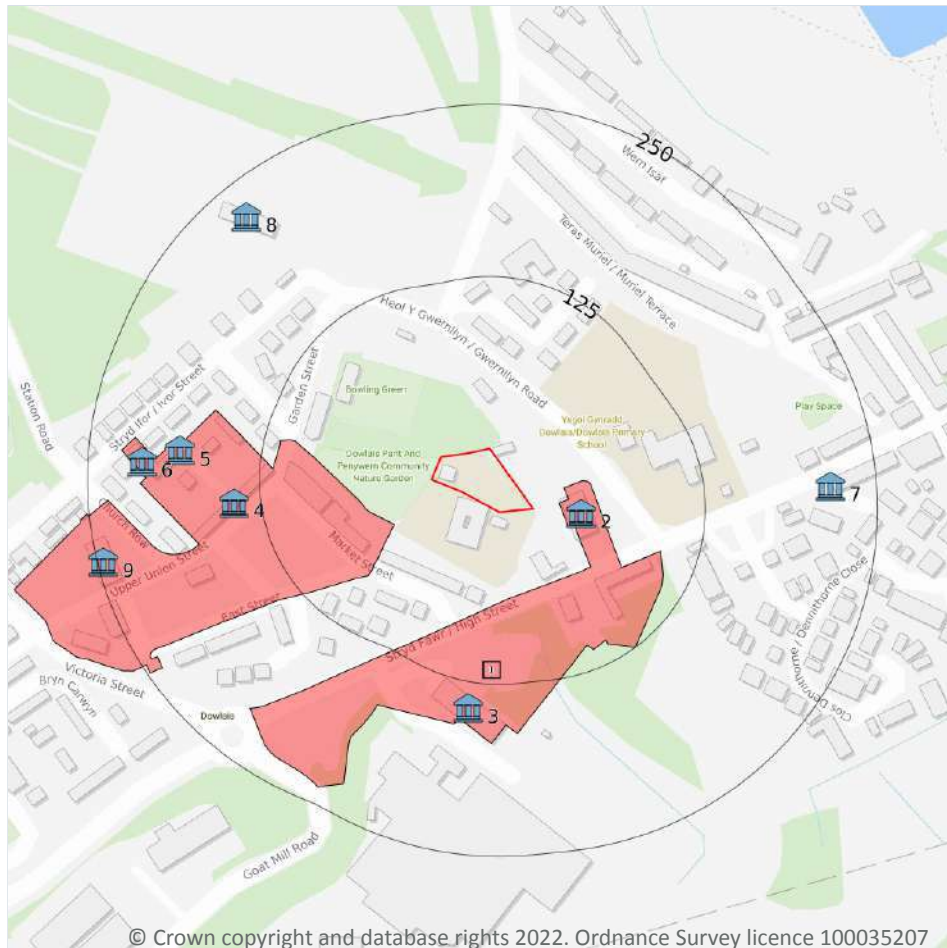
Records within 2000m

0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



- Site Outline
- Search buffers in metres (m)
- Listed buildings
- Conservation areas
- Conservation areas - no data
- National Parks
- Areas of Outstanding Natural Beauty
- Registered parks and gardens
- Scheduled Monuments
- World Heritage Sites

11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m

8

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 89**

ID	Location	Name	Grade	Reference Number	Listed date
2	35m E	Former Guest Memorial Library, On the NW side of the High Street at the SW side of its junction with Gwernllyn Road.	II*	11490	22/08/1975
3	144m S	Dowlais Works Blast Engine House, Situated on the SE side of the High Street some 150m SW of the former Guest Memorial Library.	II*	11491	22/08/1975
4	144m W	Dowlais Works Stables, On the NW side of Upper Union Street facing down the slope to the High Street and the former location of the Dowlais Iron Works.	II	11478	22/05/1974

ID	Location	Name	Grade	Reference Number	Listed date
5	184m W	Stables House, Situated just to the NW and rear of Dowlais Works Stables between Upper Union Street and Ivor Street.	II	11477	22/05/1974
6	211m W	Ivor English Congregational Church including forecourt walls, On the SE side of Ivor Street just NW of Dowlais Works Stables and some 75m NE of the Church of St John.	II	11489	22/08/1975
7	216m E	Mile Post, Situated on the SE side of the High Street attached at pavement level to the wall of Caeharris Post Office.	II	27084	12/11/2002
8	225m NW	Industrial building at former Ivor Works, Situated on the S side of the site of the former Ivor Iron Works just N of Ivor Street.	II	27086	12/11/2002
9	246m W	Church of St John, On corner of Upper Union Street and Station Road some 100m SW of Dowlais Works Stables.	II	17931	01/03/1996

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	1
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Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 89**

ID	Location	Name	District	Date of designation
1	19m E	Dowlais	MERTHYR TYDFIL	1997-11-01

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0
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A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.7 Registered Parks and Gardens

Records within 250m

0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.



12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Timber felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m

3

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 93**

ID	Location	Classification	Description
3	154m SW	Grade 4	Poor quality agricultural land
4	163m SE	Grade 5	Very poor quality agricultural land
5	233m SE	Grade 4	Poor quality agricultural land

This data is sourced from Natural Resources Wales.

12.2 Open Access Land

Records within 250m

0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m

0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m

0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m

0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.



13 Habitat designations

13.1 Priority Habitat Inventory

Records within 250m

0

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m

0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m

0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

Records within 250m

0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.



14 Geology 1:10,000 scale - Availability



— Site Outline
Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m

1

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 96**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	No coverage	No coverage	No coverage	No coverage	NoCov

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground

14.2 Artificial and made ground (10k)

Records within 500m

0

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

This data is sourced from the British Geological Survey.



Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m

0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m

0

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

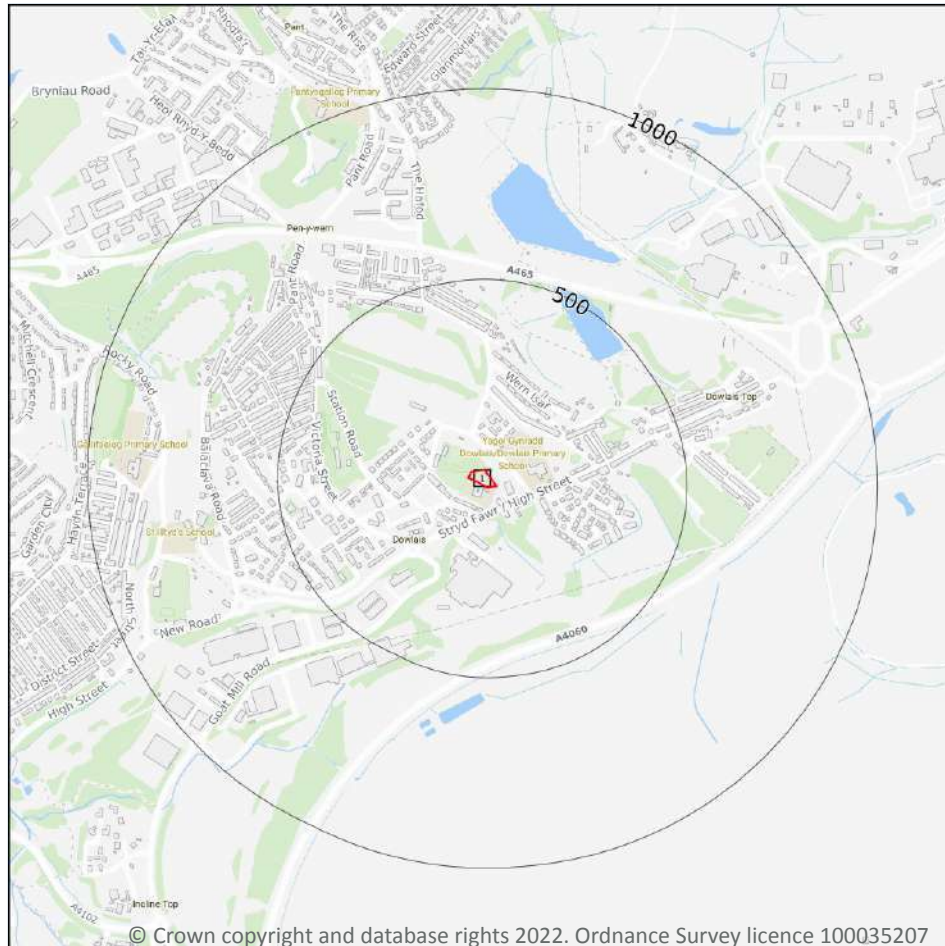
Records within 500m

0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



— Site Outline

Search buffers in metres (m)

□ Geological map tile

15.1 50k Availability

Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme. Where 50k data is not available, this area has been filled in with 625k scale data.

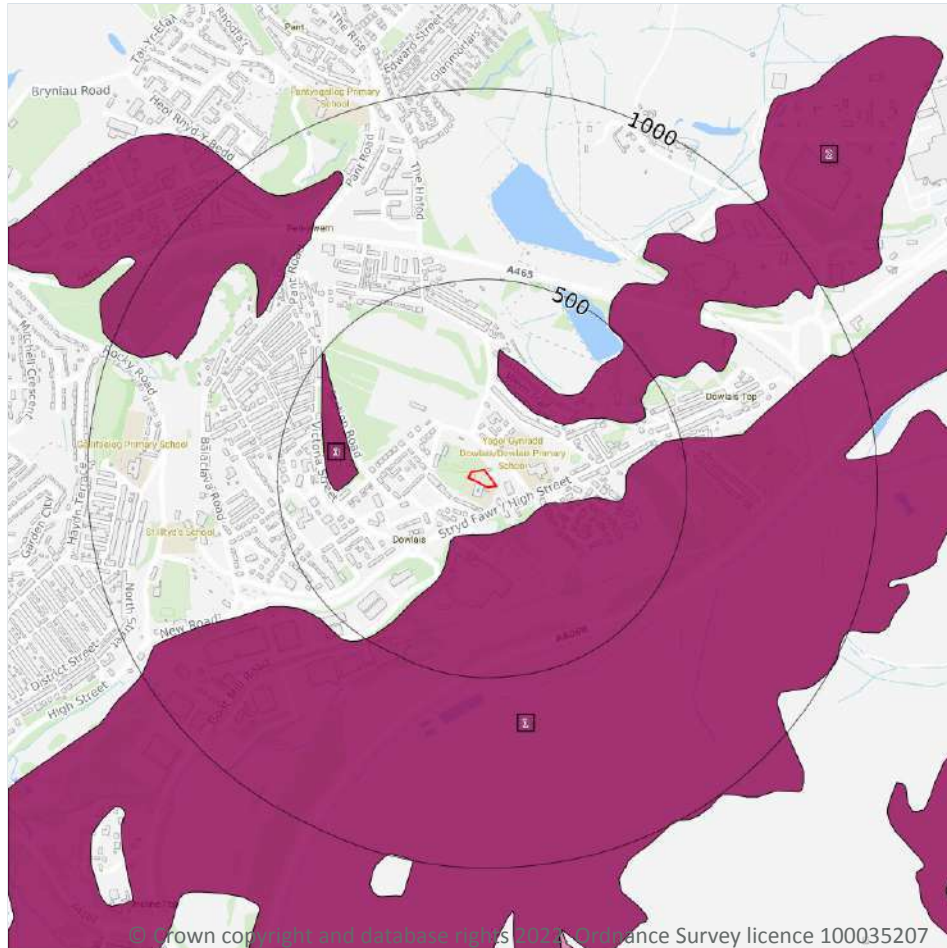
Features are displayed on the Geology 1:50,000 scale - Availability map on **page 100**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	Full	EW231_merthyr_v4

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Artificial and made ground



- Site Outline
- Search buffers in metres (m)
- Made ground
 - Worked ground
 - Infilled ground
 - Disturbed ground
 - Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m

3

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 101**

ID	Location	LEX Code	Description	Rock description
1	114m SE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	198m NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	290m W	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m

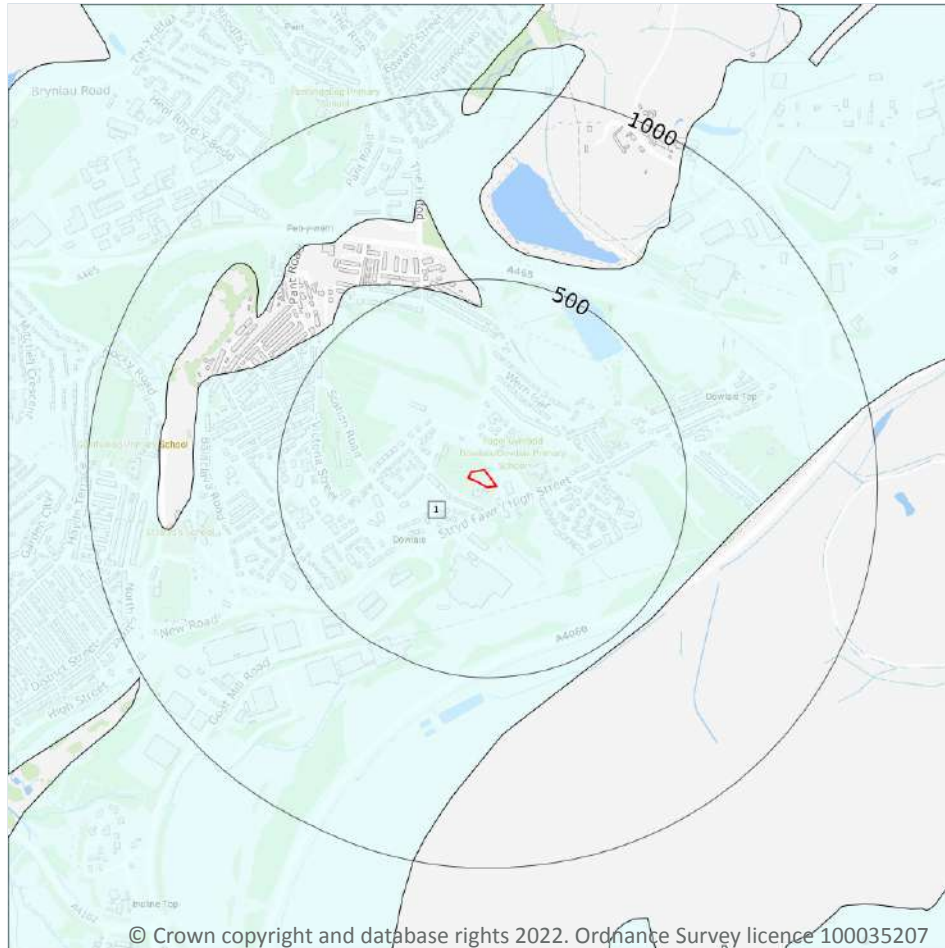
0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

Superficial geology (50k)
Please see table for more details.

15.4 Superficial geology (50k)

Records within 500m

1

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 103**

ID	Location	LEX Code	Description	Rock description
1	On site	TILLD-DMTN	TILL, DEVANSIAN	DIAMICTON

This data is sourced from the British Geological Survey.



15.5 Superficial permeability (50k)

Records within 50m**1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Mixed	High	Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m**0**

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

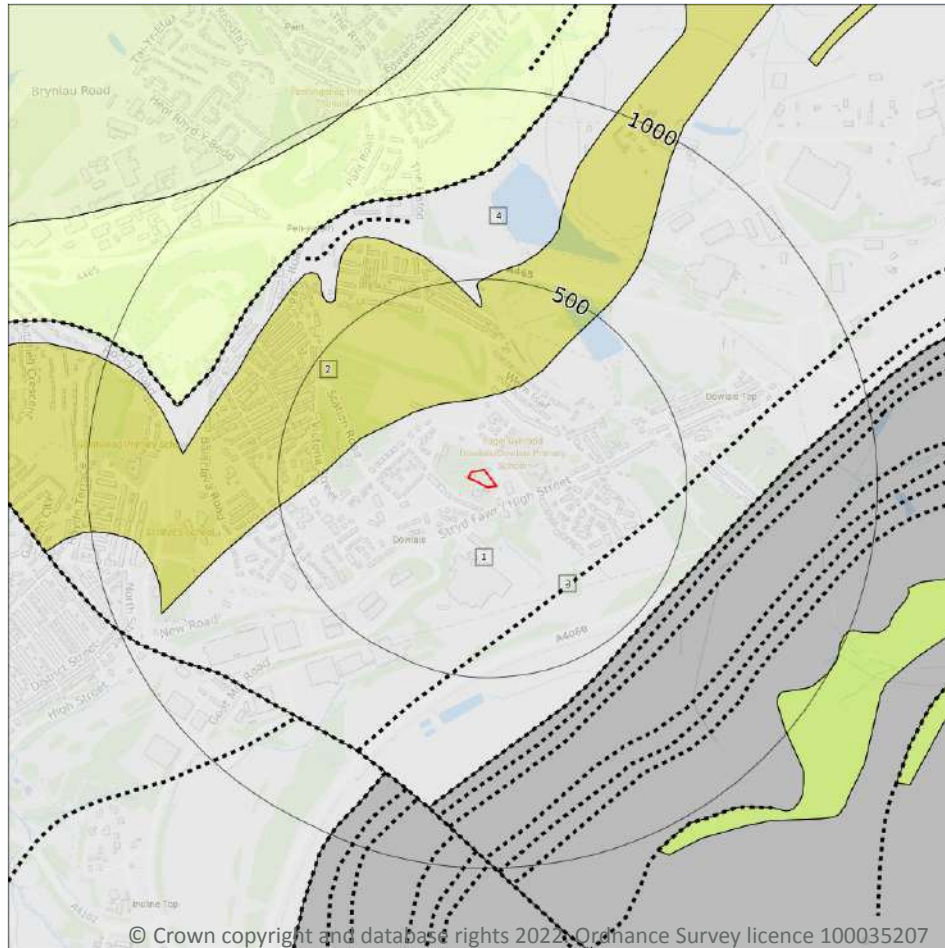
Records within 50m**0**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.



Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m

3

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 105**

ID	Location	LEX Code	Description	Rock age
1	On site	SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	186m N	SWLCM-SDST	SOUTH WALES LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
4	427m N	SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	1
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A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	1
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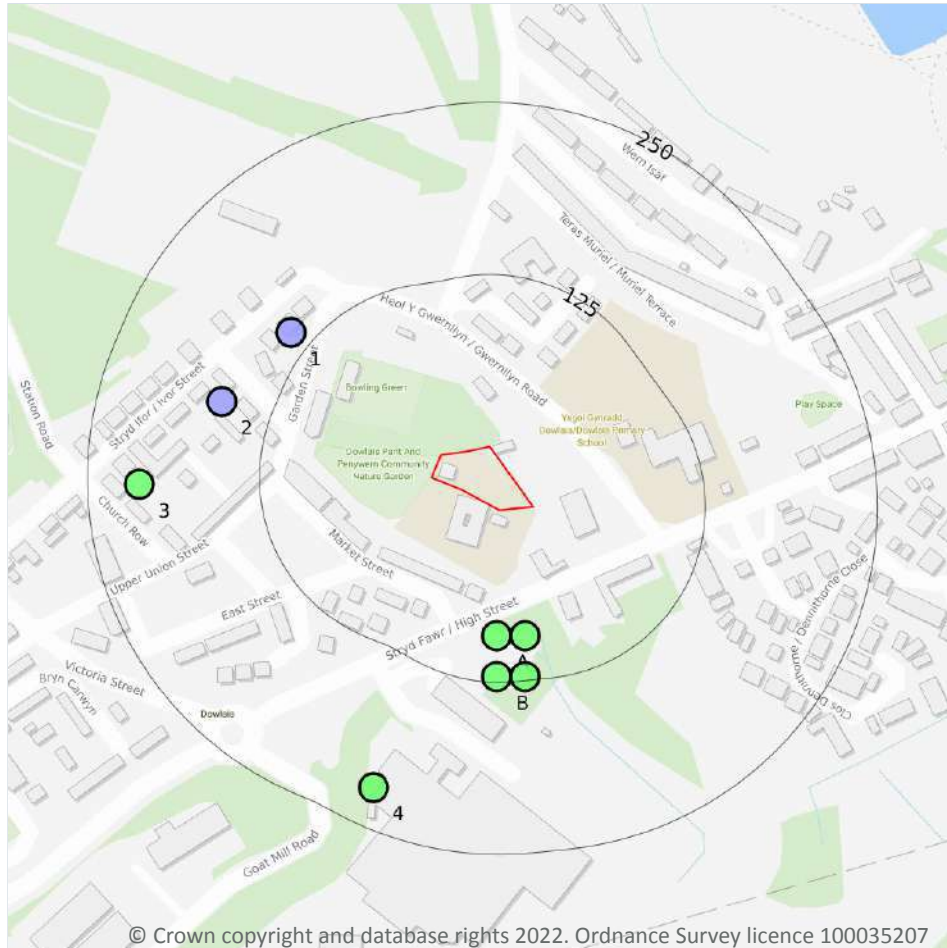
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 105**

ID	Location	Category	Description
3	321m SE	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



- Site Outline
- Search buffers in metres (m)
- Confidential
 - 0 - 10m
 - 10 - 30m
 - 30m+
 - Unknown

16.1 BGS Boreholes

Records within 250m

8

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 107**

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	91m S	306930 207790	DOWLAIS BH1	25.4	N	259633
A	93m S	306950 207790	DOWLAIS BH2	30.0	N	259634
B	121m S	306930 207760	DOWLAIS BH4	30.0	N	259636

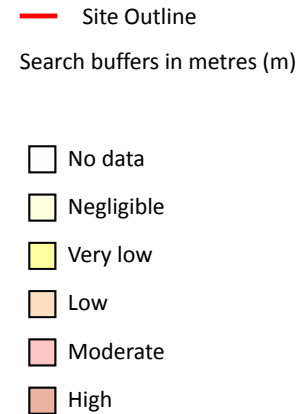
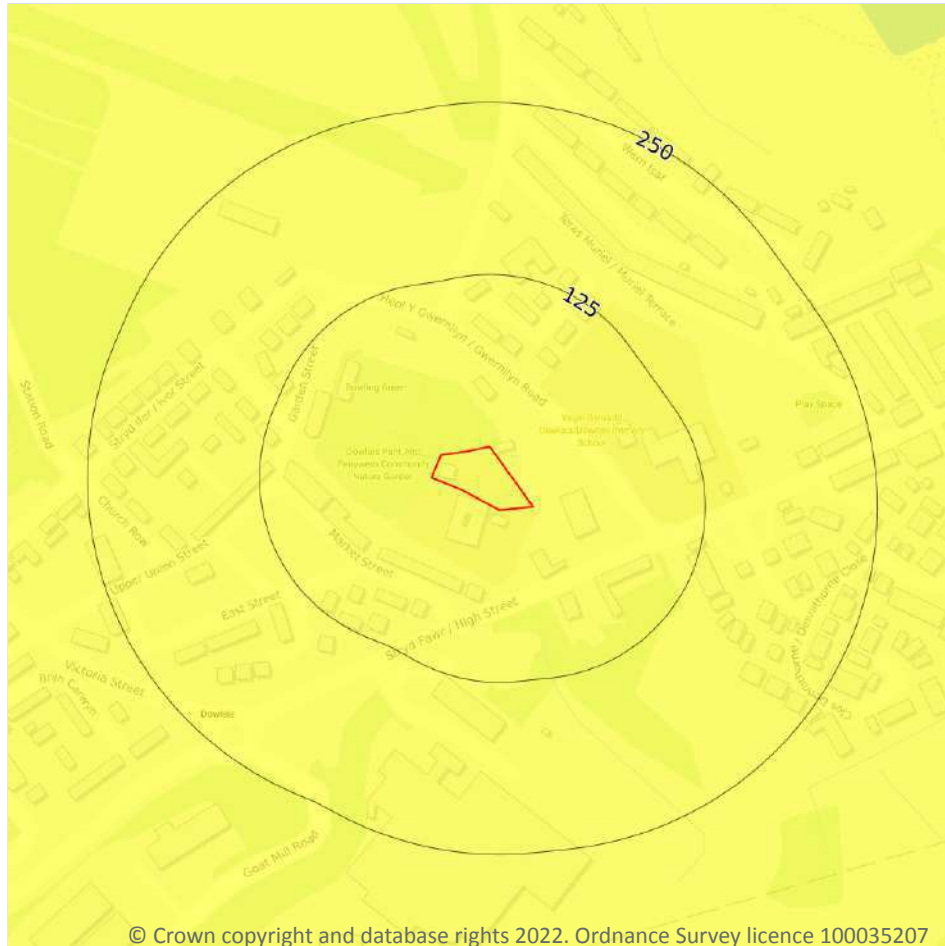


ID	Location	Grid reference	Name	Length	Confidential	Web link
B	122m S	306950 207760	DOWLAIS BH3	30.0	N	259635
1	141m NW	306780 208010	IVOR STREET MERTHYR TYDFIL BH1	2.4	N	259637
2	162m W	306730 207960	IVOR STREET MERTHYR TYDFIL BH2	5.0	N	259638
3	212m W	306670 207900	IVOR STREET MERTHYR TYDFIL BH3	15.2	N	259639
4	221m S	306840 207680	OP CHOLCS MERTHYR TYDIL 1	15.0	N	259564

This data is sourced from the British Geological Survey.



17 Natural ground subsidence - Shrink swell clays



17.1 Shrink swell clays

Records within 50m

1

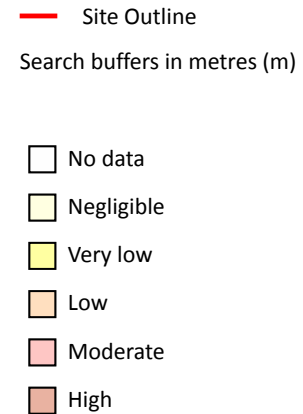
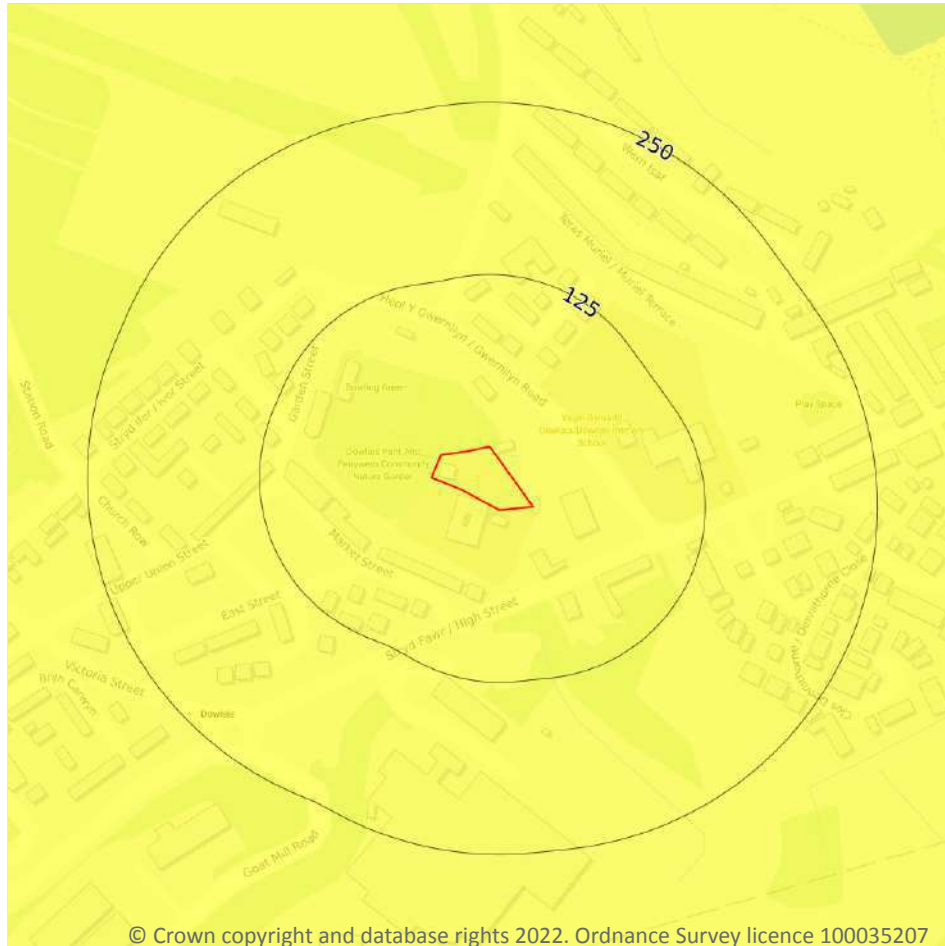
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 109**

Location	Hazard rating	Details
On site	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



17.2 Running sands

Records within 50m

1

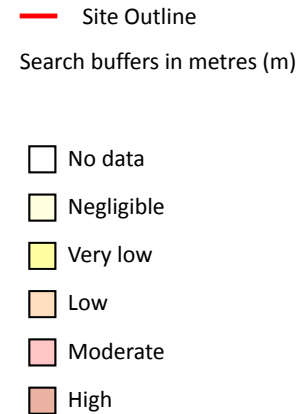
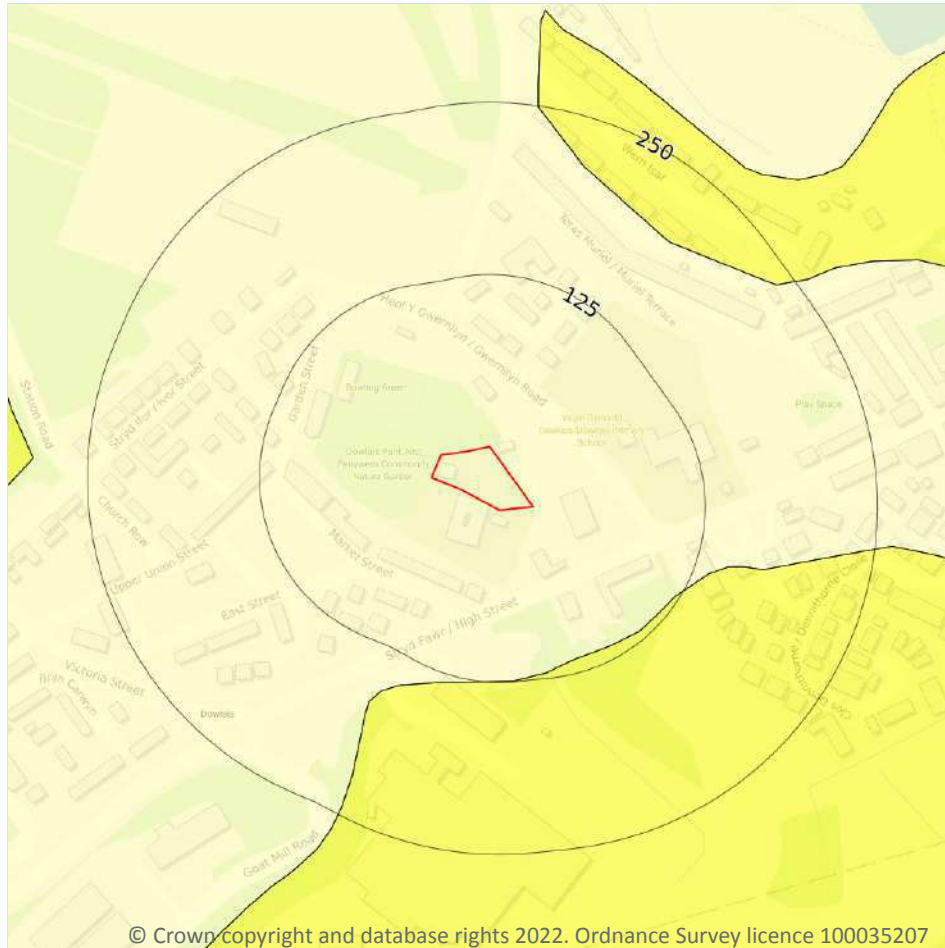
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 110**

Location	Hazard rating	Details
On site	Very low	Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



17.3 Compressible deposits

Records within 50m

1

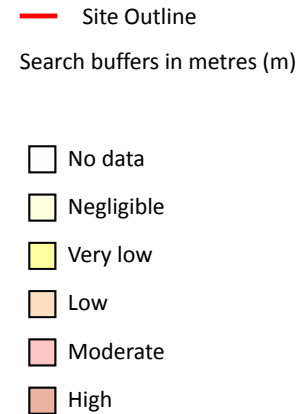
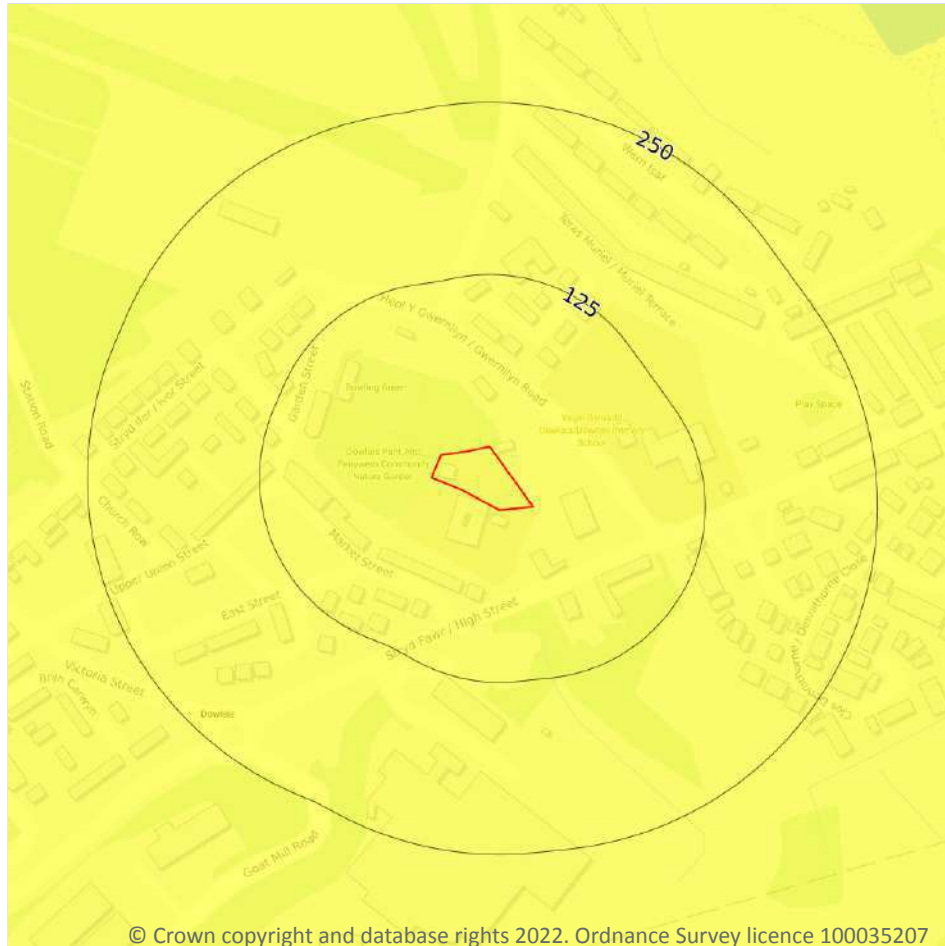
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 111**

Location	Hazard rating	Details
On site	Negligible	Compressible strata are not thought to occur.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



17.4 Collapsible deposits

Records within 50m

1

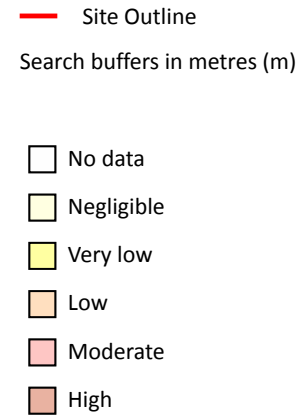
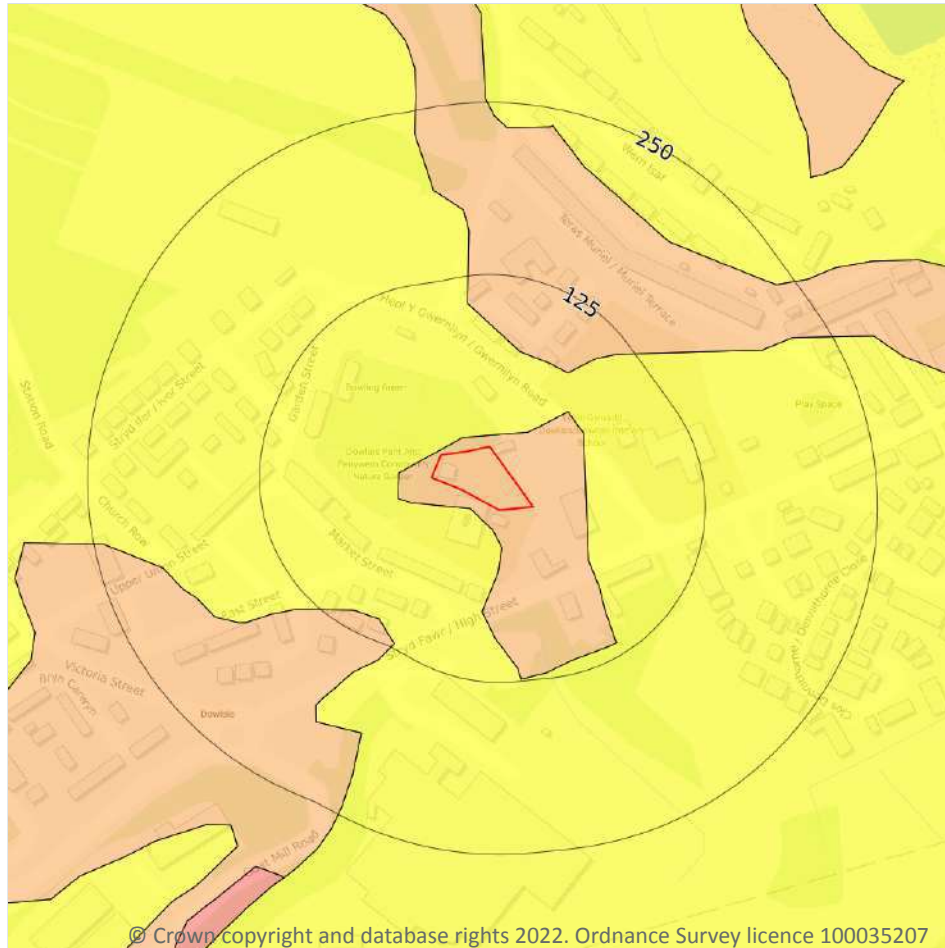
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 112**

Location	Hazard rating	Details
On site	Very low	Deposits with potential to collapse when loaded and saturated are unlikely to be present.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



17.5 Landslides

Records within 50m

2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 113**

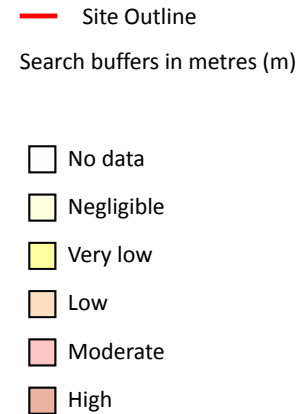
Location	Hazard rating	Details
On site	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

Location	Hazard rating	Details
4m NW	Very low	Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.

This data is sourced from the British Geological Survey.



Natural ground subsidence - Ground dissolution of soluble rocks



17.6 Ground dissolution of soluble rocks

Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 115**

Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.

This data is sourced from the British Geological Survey.



18 Mining, ground workings and natural cavities



- Site Outline
- Search buffers in metres (m)
- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities
- Non Coal Mining
- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m

0

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m

27

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 117**

ID	Location	Land Use	Year of mapping	Mapping scale
A	149m S	Unspecified Heap	1922	1:10560
A	149m S	Unspecified Heap	1922	1:10560
A	150m S	Unspecified Ground Workings	1901	1:10560
A	158m S	Unspecified Heap	1921	1:10560
A	168m S	Unspecified Heap	1903	1:10560
B	185m SE	Pond	1922	1:10560
A	187m SW	Reservoir	1875	1:10560
B	189m SE	Pond	1875	1:10560
B	189m SE	Pond	1965	1:10560
B	189m SE	Pond	1975	1:10000
B	189m SE	Pond	1982	1:10000
B	190m SE	Pond	1948	1:10560
B	190m SE	Ponds	1903	1:10560
B	191m SE	Pond	1921	1:10560
2	193m SE	Brick Kilns	1875	1:10560
C	207m NE	Refuse Heap	1922	1:10560
C	207m NE	Refuse Heap	1922	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
A	209m S	Unspecified Pits	1948	1:10560
A	210m S	Unspecified Pit	1921	1:10560
A	210m S	Unspecified Ground Workings	1922	1:10560
A	210m S	Unspecified Ground Workings	1922	1:10560
A	212m S	Unspecified Pit	1915	1:10560
A	212m S	Unspecified Pit	1938	1:10560
A	212m S	Unspecified Pit	1938	1:10560
3	214m W	Grave Yard	1875	1:10560
4	240m N	Unspecified Pit	1992	1:10000
D	247m E	Unspecified Ground Workings	1965	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m

29

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 117**

ID	Location	Land Use	Year of mapping	Mapping scale
5	280m S	Air Shaft	1875	1:10560
7	318m S	Air Shaft	1875	1:10560
N	423m SW	Unspecified Shaft	1875	1:10560
12	469m SW	Air Shaft	1875	1:10560
V	521m SE	Fire Clay and Coal Drift	1948	1:10560
V	531m SE	Unspecified Drift	1901	1:10560
V	554m SE	Unspecified Drift	1903	1:10560
AH	632m SE	Ironstone Pits	1948	1:10560
AH	682m SE	Unspecified Old Shaft	1948	1:10560
-	684m SE	Unspecified Old Shaft	1948	1:10560



ID	Location	Land Use	Year of mapping	Mapping scale
-	684m SE	Unspecified Old Shaft	1903	1:10560
-	688m SE	Unspecified Old Shaft	1901	1:10560
-	693m SE	Unspecified Disused Shaft	1965	1:10560
-	697m E	Ironstone Shaft	1875	1:10560
-	702m E	Unspecified Old Shaft	1903	1:10560
-	704m E	Unspecified Old Shaft	1901	1:10560
-	713m E	Unspecified Old Shaft	1948	1:10560
-	726m SW	Old Ironstone Levels	1901	1:10560
-	757m SE	Unspecified Old Drift	1948	1:10560
-	820m SE	Air Shaft	1948	1:10560
-	853m SE	Unspecified Drift	1903	1:10560
-	855m SE	Unspecified Drift	1901	1:10560
-	855m SE	Ironstone Level	1875	1:10560
-	921m SE	Old Ironstone Levels	1901	1:10560
-	926m E	Old Ironstone Shaft	1948	1:10560
-	936m E	Air Shaft	1875	1:10560
-	936m E	Air Shaft	1903	1:10560
-	937m E	Air Shaft	1901	1:10560
-	975m S	Old Ironstone Level	1903	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m

0

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.



18.6 Non-coal mining

Records within 1000m

2

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining, ground workings and natural cavities map on **page 117**

ID	Location	Name	Commodity	Class	Likelihood
1	On site	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
16	723m NW	Not available	Vein Mineral	A	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site

0

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	1
-----------------	---

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0
-----------------	---

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0
-----------------	---

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0
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Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

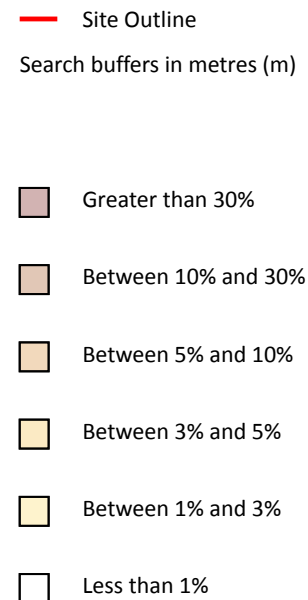
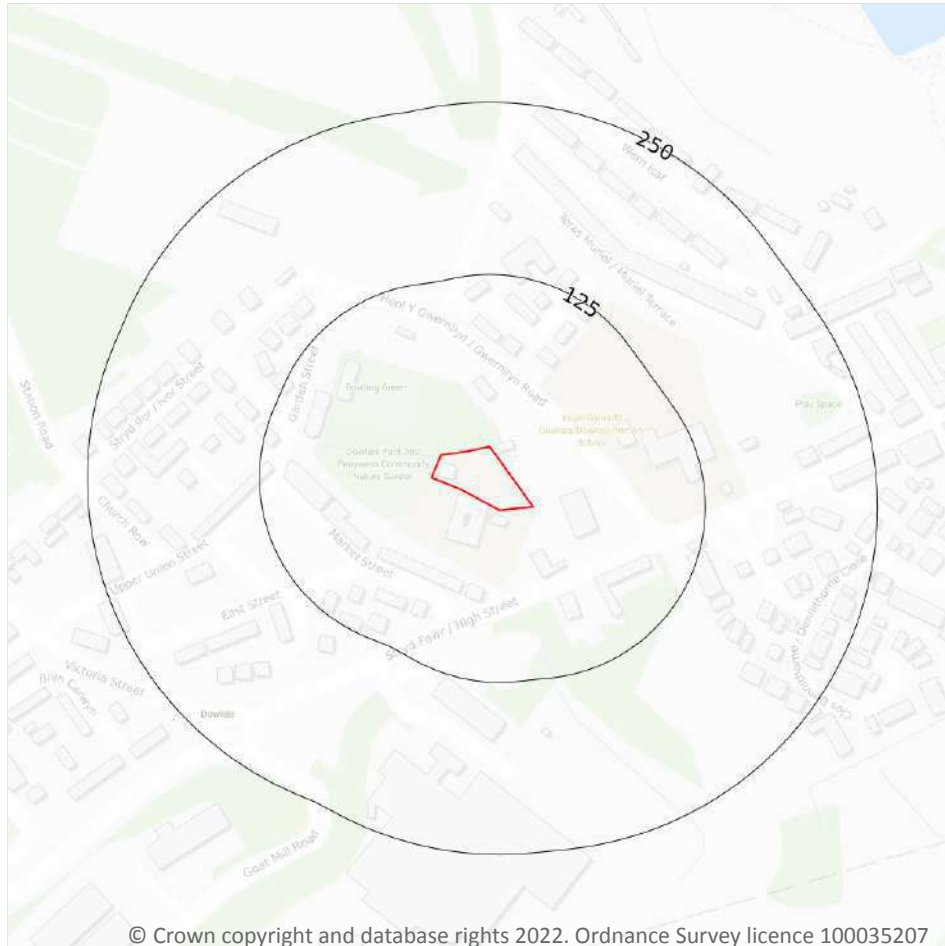
18.13 Clay mining

Records on site	0
-----------------	---

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



19.1 Radon

Records on site

1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 123**

Location	Estimated properties affected	Radon Protection Measures required
On site	Less than 1%	None**

This data is sourced from the British Geological Survey and Public Health England.



20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m

2

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km². In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km²; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
44m E	15 - 25 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km²).

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m

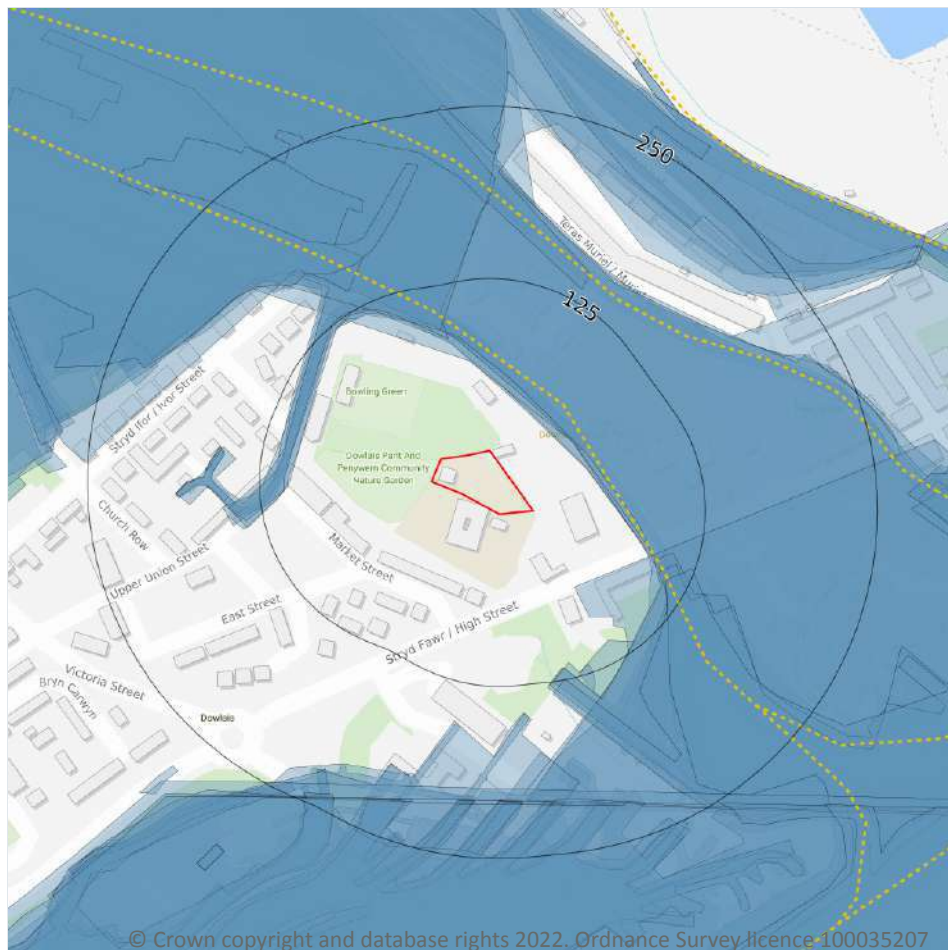
0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km².

This data is sourced from the British Geological Survey.



21 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m

60

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 125**

Location	Land Use	Year of mapping	Mapping scale
39m NE	Railway Sidings	1875	10560
40m NE	Railway Sidings	1903	10560
42m NE	Railway Sidings	1982	10000
46m NE	Railway Sidings	1948	10560
48m NE	Railway Sidings	1965	10560
48m NE	Railway Sidings	1920	2500
48m NE	Railway Sidings	1899	2500
59m NE	Railway Sidings	1988	2500
63m SE	Railway Sidings	1901	10560
72m N	Railway Sidings	1956	1250
72m N	Railway Sidings	1956	2500
73m N	Railway Sidings	1967	1250
73m N	Railway Sidings	1966	2500
86m N	Railway Sidings	1922	10560
93m N	Railway Sidings	1901	10560
96m SE	Railway Sidings	1922	10560
98m E	Railway Sidings	1920	2500



Location	Land Use	Year of mapping	Mapping scale
98m E	Railway Sidings	1899	2500
101m SE	Railway Sidings	1921	10560
102m N	Railway Sidings	1875	2500
109m SE	Railway Sidings	1961	2500
109m SE	Railway Sidings	1975	10000
109m SE	Railway Sidings	1875	2500
110m SE	Railway Sidings	1955	1250
139m NW	Railway Sidings	1975	10000
145m S	Railway Sidings	1920	2500
146m S	Railway Sidings	1922	10560
147m W	Railway Sidings	1875	2500
147m NW	Mineral Railway Sidings	1977	1250
155m NW	Railway Sidings	1921	10560
156m S	Railway Sidings	1920	2500
175m S	Railway Sidings	1920	2500
181m S	Railway Sidings	1875	2500
183m S	Railway Sidings	1899	2500
197m S	Railway Sidings	1920	2500
197m SW	Railway Sidings	1920	2500
199m S	Railway Sidings	1875	2500
199m S	Railway Sidings	1903	10560
206m S	Railway Sidings	1875	2500
207m S	Railway Sidings	1919	2500
208m S	Railway Sidings	1922	10560
208m S	Railway Sidings	1875	10560
208m S	Railway Sidings	1921	10560
210m S	Railway Sidings	1899	2500
210m S	Railway Sidings	1915	10560

Location	Land Use	Year of mapping	Mapping scale
210m S	Railway Sidings	1901	10560
211m S	Railway Sidings	1938	10560
214m S	Railway Sidings	1900	2500
215m NW	Railway Sidings	1956	1250
215m NW	Railway Sidings	1956	2500
215m NW	Railway Sidings	1961	2500
215m S	Railway Sidings	1920	2500
216m S	Railway Sidings	1875	2500
222m S	Railway Sidings	1920	2500
222m S	Railway Sidings	1899	2500
239m S	Railway Sidings	1920	2500
239m S	Railway Sidings	1899	2500
241m SW	Railway Sidings	1920	2500
241m SW	Railway Sidings	1899	2500
247m N	Mineral Railway Sidings	1977	1250

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m

0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m

4

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

Features are displayed on the Railway infrastructure and projects map on **page 125**



Location	Description
59m NE	Dismantled
144m NE	Dismantled
215m SE	Dismantled
241m E	Dismantled

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m 0

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m 0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m 0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m 0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 Ltd.



Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference>.

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TY DYSGU PUPIL REFERRAL UNIT, DOWLAIS PRIMARY SCHOOL NURSERY AND INFANTS DEPARTMENT, MARKET STREET, DOWLAIS, MERTHYR TYDFIL, CF48 3HW

Professional opinion



Site plan



Search results

Not in a radon affected area

Local levels of radon are considered normal.

The percentage of homes estimated to be affected by radon in your local area is less than 1%.

Radon Check

TY DYSGU PUPIL REFERRAL UNIT,
DOWLAIS PRIMARY SCHOOL NURSERY
AND INFANTS DEPARTMENT, MARKET
STREET, DOWLAIS, MERTHYR TYDFIL,

Ref: GS-9174865
Your ref: 22156
Grid ref: 306928 207910

Useful contacts

Public Health England / UKRadon

Public information access office, Public Health
England, Wellington House, 133-155 Waterloo
Road, London, SE1 8UG

<https://www.ukradon.org/>

UK Radon Association

<http://www.radonassociation.co.uk/>

Overview of findings and recommendations

Radon

No further action is recommended based on the identified local levels of radon.

It should be noted that although this report uses the best available data this assessment is an estimation and is not based upon measurements. It is possible to find high radon levels in properties anywhere in the country, even in lower risk areas, as radon is everywhere in varying concentrations.

Conveyancing Information Executive and our terms & conditions

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If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Standards.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs.

COMPLAINTS PROCEDURE: If you want to make a complaint, we will:

- acknowledge it within 5 working days of receipt
- normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:

Operations Director, Groundsure Ltd, Sovereign House, Church Street, Brighton, BN1 1UJ. Tel: 08444 159 000. Email: info@groundsure.com If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk We will co-operate fully with the Ombudsman during an investigation and comply with their final decision.

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The Coal
Authority

CON29M

coal mining report

TY DYSGU PUPIL REFERRAL UNIT, DOWLAIS PRIMARY SCHOOL NURSERY AND
INFANTS DEPARTMENT, MARKET STREET, DOWLAIS, MERTHYR TYDFIL
CF48 3HW



Known or potential coal mining risks

Past underground coal mining	Page 4
Future underground coal mining	Page 4
Mine entries	Page 5



Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit
www.groundstability.com



Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on **Future development**.

Your reference: **22156**
Our reference: **51003322723001**
Date: **3 November 2022**

Client name:
Spectrum Geo Services

If you require any further assistance please
contact our experts on:
0345 762 6848
groundstability@coal.gov.uk



The Law
Society

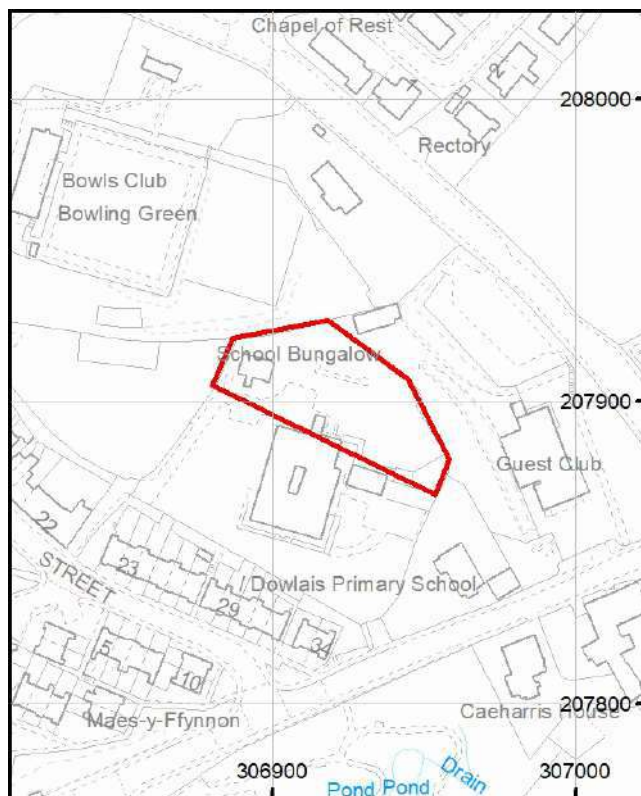
Enquiry boundary

Key

Approximate position of enquiry boundary shown



We can confirm that the location is
on the coalfield



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



Accessibility

If you would like this information in an alternative format, please contact our communications team on 0345 762 6848 or email communications@coal.gov.uk.

Professional opinion



Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email **cmra@coal.gov.uk**.

Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

The Coal Authority owns the copyright in this report and the information used to produce this report is protected by our database rights. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

1 Past underground coal mining

The property is not within a surface area that could be affected by any past recorded underground coal mining.

However the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Your attention is drawn to the Professional opinion sections of the report.

The property is in a surface area that could be affected by underground mining in 2 seams of ironstone at shallow depth, and last worked in 1878.

2 Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4 Mine entries

There are no recorded coal mine entries known to the Coal Authority within, or within 20 metres, of the boundary of the property.

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

5 Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6 Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7 Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8 Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9 Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10 Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11 Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Coal Authority, under its Emergency Surface Hazard Call Out procedures.

12 Withdrawal of support

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13 Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14 Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Statutory cover



Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form



Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **0800 288 4242**. Further information can be found on our website: www.gov.uk/coalauthority.

Glossary



Key terms

adit - horizontal or sloped entrance to a mine

coal mining subsidence - ground movement caused by the removal of coal by underground mining

Coal Mining Subsidence Act 1991 - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

coal mining subsidence damage - damage to land, buildings or structures caused by the removal of coal by underground mining

coal seams - bed of coal of varying thickness

future opencast coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

future underground coal mining - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

mine entries - collective name for shafts and adits

payments to owners of former copyhold land - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

shaft - vertical entry into a mine

site investigation - investigations of coal mining risks carried out with the Coal Authority's permission

stop notice - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

subsidence claim - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

withdrawal of support - a historic notice informing landowners that the coal beneath their property was going to be worked

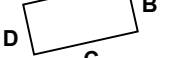
working facilities orders - a court order which gave permission, restricted or prevented coal mine workings

Project	Ty Dysgu, Dowlais	Project No	22156
Described by	PL	Trial Pit No	TP01 - SA01
Date	03.11.2022	Sheet No	1 of 1

Face Sketch (Indicate stratum boundaries, codes and Face(s) sketched, use additional sheets as required)

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[illegible]

Groundwater Observations None Observed	Strike of Face A		deg	
	Length of Face A	1.2	m	
	Width of Face B	0.4	m	
	Remarks			
Method/plant	2.5 ton tracked excavator		Soakaway test at this location	
Stability	Stable			
Shoring	None			
Weather	Heavy showers			
Sample Type:				
U Undisturbed, P Piston, D Disturbed, B Bulk, W Water		Logger's Signature		
ES Environmental Soil Sample		PL		
EW Environmental Water Sample				

Project	Ty Dysgu, Dowlais	Project No	22156
Described by	PL	Trial Pit No	TP02
Date	03.11.2022	Sheet No	1 of 1

Face Sketch (Indicate stratum boundaries, codes and Face(s) sketched, use additional sheets as required)

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[illegible]

Groundwater Observations None Observed	Strike of Face A		deg	
	Length of Face A	1.3	m	
	Width of Face B	0.4	m	
	Remarks			
Method/plant	2.5 ton tracked excavator			
Stability	Stable			
Shoring	None			
Weather	Heavy showers			
Sample Type: U Undisturbed, P Piston, D Disturbed, B Bulk, W Water ES Environmental Soil Sample EW Environmental Water Sample				
			Logger's Signature	
			PL	

Face Sketch (Indicate stratum boundaries, codes and Face(s) sketched, use additional sheets as required)

The sketch area is a large rectangle divided into four vertical columns. The left and right edges of the entire rectangle are marked with small horizontal tick marks, likely for scale or measurement. The columns are of varying widths, with the second and third columns being the widest.

Groundwater Observations None Observed	Strike of Face A		deg	
	Length of Face A	1.1	m	
	Width of Face B	0.4	m	
Remarks				Pit terminated at 1.30mbgl due to collapsing in all faces.
Method/plant 2.5 ton tracked excavator				
Stability Un-stable				
Shoring None				
Weather Heavy showers				
Sample Type: U Undisturbed, P Piston, D Disturbed, B Bulk, W Water ES Environmental Soil Sample EW Environmental Water Sample				Logger's Signature PL

Window Sampling Hole Journal

Inspection Pit Dimensions						Hand Vane: Raw Data									
Equipment or Rig Type Dart						Type	Geonor			Pilcon			Impact		
							16			19			19		
						Size (mm)	20			33			33		
							25			Tick one box					
Window Sampling: Tube Driving Data															
Tube dia (mm)	Depth		Recovery (m)	Time (min:sec)	Casing depth (windowless)	Depth	Peak			Remoulded					
	From	To					1	2	3	1	2	3			
101	GL	1.00	0.80												
80	1.00	2.00	0.50												
70	2.00	2.90	0.60												
						Pocket Penetrometer: Raw Data									
						Depth	1	2	3	4	5	6			
All depths are m below ground level						Use GDMS data entry to input raw data to HoleBASE									
Samples			Strata						Installation Details						
Type	No.	Depth	Depth	Description											
ES	1	0.40	0.80	GL - 0.25: Soft dark brown slightly sandy slightly gravelly CLAY . Gravel is subrounded fine to coarse of sandstone. TOPSOIL. 0.25 - 0.80: MADE GROUND: Brown and black silty angular to subangular fine to coarse GRAVEL of sandstone, slag, coal, coke and brick with low cobble content of vesicular slag. FILL											
ES	2	1.00	1.30												
		1.00	N = 5	0.80 - 2.90: Loose becoming very dense brown and grey slightly sandy clayey subangular to subrounded fine to coarse GRAVEL of sandstone and quartzite. GLACIAL TILL.											
		2.00	N = 28												
		2.90	N = 50/180												
									Backfill Details (if no installation)						
Key to soil samples: B = bulk D = tub L = liner ES = environmental soil															
Groundwater Strike		If Yes			Project Ty Dysgu Dowlais						Project No 22156				
		Depth of strike	After 20 mins	Depth sealed											
		1.4													
Remarks 50mm Installation					Operator SWGT			Date 03.11.2022			Hole No. WS01				
					Logger PL			Date							

Inspection Pit Dimensions						Hand Vane: Raw Data						
Equipment or Rig Type Dart						Type Geonor Pilcon Impact		16 19 19		Size (mm) 20 33 33		
Window Sampling: Tube Driving Data						25		Tick one box				
Tube dia (mm)	Depth		Recovery (m)	Time (min:sec)	Casing depth (windowless)	Depth	Peak			Remoulded		
	From	To					1	2	3	1	2	3
101	GL	1.00	0.80									
80	1.00	2.00	0.40									
						Pocket Penetrometer: Raw Data						
						Depth	1	2	3	4	5	6
All depths are m below ground level						Use GDMS data entry to input raw data to HoleBASE						
Samples			Strata					Installation Details				
Type	No.	Depth	Depth	Description								
ES	1	0.25	0.50	GL - 0.25: Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone. TOPSOIL.								
ES	2	0.90	1.00									
ES	3	1.50	1.90	0.25 - 0.50: MADE GROUND: Brown and black clayey sandy subangular to subrounded fine to coarse GRAVEL of sandstone and coal.								
			0.50 - 0.70: MADE GROUND: Orange brick.									
			0.70 - 0.88: MADE GROUND: Grey, black and white angular fine to coarse GRAVEL of sandstone and mortar.									
			0.88 - 1.00: MADE GROUND: Soft dark brown silty CLAY with some rootlets.									
			1.00	N = 18	1.00 - 1.90: MADE GROUND: Medium dense grey and orange angular fine to coarse GRAVEL of brick and mortar.							
			2.00	N = 16	1.90 - 2.00: Stiff to very stiff grey, orange and brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone. GLACIAL TILL.							
			2.45	N = 32								
			2.90	N = 50/160								
								Backfill Details (if no installation)				
Key to soil samples: B = bulk D = tub L = liner ES = environmental soil												
Groundwater Strike			If Yes			Project			Project No			
			Depth of strike	After 20 mins	Depth sealed	Ty Dysgu Dowlais			22156			
Remarks						Operator		Date		Hole No.		
						SWGT		03.11.2022		WS02		
						Logger PL		Date				

Window Sampling Hole Journal

[illegible]

Inspection Pit Dimensions						Hand Vane: Raw Data							
Equipment or Rig Type Dart						Type Geonor Pilcon Impact Size (mm) 16 19 19 20 33 33 25 Tick one box							
Window Sampling: Tube Driving Data													
Tube dia (mm)	Depth		Recovery (m)	Time (min:sec)	Casing depth (windowless)	Depth	Peak			Remoulded			
	From	To					1	2	3	1	2	3	
101	GL	1.00	0.70										
80	1.00	2.00	0.70										
70	2.00	2.60	0.60										
						Pocket Penetrometer: Raw Data							
						Depth	1	2	3	4	5	6	
All depths are m below ground level						Use GDMS data entry to input raw data to HoleBASE							
Samples			Strata							Installation Details			
Type	No.	Depth	Depth	Description									
ES	1	0.25	0.45	GL - 0.25: Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone. TOPSOIL.									
ES	2	1.00	1.50	0.25 - 0.45: MADE GROUND: Black and brown slightly sandy clayey angular fine to coarse GRAVEL of sandstone, slag and brick. FILL.									
		1.00	N = 21	0.45 - 1.50: Multicoloured slightly sandy gravelly CLAY. Gravel is subangular fine to coarse of sandstone. Some mortar present. Possible Made Ground.									
				1.50 - 2.00: Firm brown, orange and grey slightly sandy slightly gravelly CLAY. Gravel is subrounded fineto coarse of sandstone and dark grey mudstone. GLACIAL TILL.									
		2.00	N = 20	2.00 - 2.60: Very dense orangish brown clayey SAND AND GRAVEL.									
		2.60	N = 50/95	Sand is fine to medium. Gravel is subrounded fine to coarse of sandstone. GLACIAL TILL.									
										Backfill Details (if no installation)			
Key to soil samples: B = bulk D = tub L = liner ES = environmental soil													
Groundwater Strike			If Yes				Project				Project No		
			Depth of strike	After 20 mins	Depth sealed		Ty Dysgu Dowlais				22156		
			1.23										
Remarks						Operator		Date		Hole No.			
50mm Installation						SWGT		03.11.2022		WS04			
						Logger PL		Date					

Window Sampling Hole Journal

Inspection Pit Dimensions						Hand Vane: Raw Data						
Equipment or Rig Type Dart						Type	Geonor	Pilcon	Impact			
						16	19	19				
						Size (mm)	20	33	33			
Window Sampling: Tube Driving Data						25 Tick one box						
Tube dia (mm)	Depth		Recovery (m)	Time (min:sec)	Casing depth (windowless)	Depth	Peak			Remoulded		
	From	To					1	2	3	1	2	3
101	GL	1.00	0.65									
80	1.00	2.00	0.50									
70	2.00	3.00	0.40									
60	3.00	3.30	0.30									
						Pocket Penetrometer: Raw Data						
						Depth	1	2	3	4	5	6
All depths are m below ground level						Use GDMS data entry to input raw data to HoleBASE						
Samples			Strata				Installation Details					
Type	No.	Depth	Depth	Description								
ES	1	0.40	0.80	GL - 0.25: Soft dark brown slightly sandy slightly gravelly CLAY. Gravel is subrounded fine to coarse of sandstone. TOPSOIL.								
ES	2	1.50	2.00	0.25 - 0.80: MADE GROUND: Multicoloured slightly clayey sandy angular fine to coarse GRAVEL of sandstone, slag, coke and coal. FILL.								
		1.00	N = 4	0.80 - 3.30: Loose becoming very dense with depth, grey and brown clayey sandy subangular to subrounded fine to coarse GRAVEL of sandstone and quartzite. GLACIAL TILL.								
		2.00	N = 3									
		3.00	N = 50/245									
							Backfill Details (if no installation)					
Key to soil samples: B = bulk D = tub L = liner ES = environmental soil												
Groundwater Strike			If Yes			Project			Project No			
			Depth of strike	After 20 mins	Depth sealed	Ty Dysgu Dowlais			22156			
			2.1									
Remarks						Operator		Date	Hole No.			
50mm Installation						SWGT		03.11.2022	WS05			
						Logger PL		Date				

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/11286
Issue Number: 1

Date: 29 November, 2022

Client: Spectrum Geo Services
Foxglove Cottage
Cwm Risca Lane
Tondu
Wales
CF32 0EH

Project Manager: Rob Griffiths
Project Name: Tu Dysgu
Project Ref: 22156
Order No: 22156/01
Date Samples Received: 16/11/22
Date Instructions Received: 16/11/22
Date Analysis Completed: 29/11/22

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 22/11286

Client Project Name: Tu Dysgu

Client Project Ref: 22156

Lab Sample ID	22/11286/1	22/11286/2	22/11286/3	22/11286/4	22/11286/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP02	WS01	WS01	WS04	WS05					
Depth to Top	0.50	0.4	1.0	0.20	0.40					
Depth To Bottom		0.80	1.30	0.45	0.80					
Date Sampled	11-Nov-22	11-Nov-22	11-Nov-22	11-Nov-22	11-Nov-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4A	5A	5A	5A	4A					
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	<0.1			% w/w	0.1	A-T-044
pH _D ^{M#}	8.66	8.74	8.78	8.60	8.56			pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.04	0.03	<0.01	<0.01	0.05			g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	2300	1600	210	350	1100			mg/kg	200	A-T-028s
Organic Matter _D ^{M#}	14.6	11.5	0.9	6.0	35.8			% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	17	6	4	4	15			mg/kg	1	A-T-024s
Cadmium _D ^{M#}	1.9	1.5	1.6	1.4	2.1			mg/kg	0.5	A-T-024s
Copper _D ^{M#}	52	74	12	69	66			mg/kg	1	A-T-024s
Chromium _D ^{M#}	22	33	43	20	20			mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1			mg/kg	1	A-T-040s
Lead _D ^{M#}	80	107	17	39	153			mg/kg	1	A-T-024s
Mercury _D	2.64	2.38	<0.17	0.21	2.52			mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	21	18	17	20	37			mg/kg	1	A-T-024s

Envirolab Job Number: 22/11286

Client Project Name: Tu Dysgu

Client Project Ref: 22156

Lab Sample ID	22/11286/1	22/11286/2	22/11286/3	22/11286/4	22/11286/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP02	WS01	WS01	WS04	WS05					
Depth to Top	0.50	0.4	1.0	0.20	0.40					
Depth To Bottom		0.80	1.30	0.45	0.80					
Date Sampled	11-Nov-22	11-Nov-22	11-Nov-22	11-Nov-22	11-Nov-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4A	5A	5A	5A	4A					
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	NAD	NAD	NAD	NAD	NAD					A-T-045
Asbestos Matrix (visual) _D	-	-	-	-	-					A-T-045
Asbestos Matrix (microscope) _D	-	-	-	-	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A	N/A	N/A					A-T-045

Envirolab Job Number: 22/11286

Client Project Name: Tu Dysgu

Client Project Ref: 22156

Lab Sample ID	22/11286/1	22/11286/2	22/11286/3	22/11286/4	22/11286/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	TP02	WS01	WS01	WS04	WS05					
Depth to Top	0.50	0.4	1.0	0.20	0.40					
Depth To Bottom		0.80	1.30	0.45	0.80					
Date Sampled	11-Nov-22	11-Nov-22	11-Nov-22	11-Nov-22	11-Nov-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES					
Sample Matrix Code	4A	5A	5A	5A	4A					
PAH-16MS										
Acenaphthene _A ^{M#}	0.04	0.28	<0.01	0.05	<0.01			mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	0.01	0.07	<0.01	0.01	<0.01			mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	0.08	0.43	<0.02	0.06	<0.02			mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.40	1.70	<0.04	0.21	0.08			mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.31	1.35	<0.04	0.13	0.07			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.48	1.97	<0.05	0.22	0.12			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.20	0.68	<0.05	0.07	<0.05			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.17	0.59	<0.07	<0.07	<0.07			mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.49	1.84	<0.06	0.24	0.13			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	0.07	0.25	<0.04	<0.04	<0.04			mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	0.76	3.18	<0.08	0.44	0.13			mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	0.04	0.31	<0.01	0.04	<0.01			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.22	0.81	<0.03	0.10	0.05			mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03	<0.03	<0.03			mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.43	1.81	<0.03	0.27	0.08			mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.60	2.28	<0.07	0.30	0.11			mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	4.30	17.6	<0.08	2.14	0.77			mg/kg	0.01	A-T-019s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Spectrum Geo Services, Foxglove Cottage, Cwm Risca Lane, Tondy, Wales,
CF32 0EH

Project: Tu Dysgu

Clients Project No: 22156

Project No: 22/11286

Date Received: 16/11/2022 (am)

Cool Box Temperatures (°C): 9.0

NO DEVIATIONS IDENTIFIED with respect to sampling dates or containers received.

Note: If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3 (for water samples $5 \pm 3^{\circ}\text{C}$), ISO 18400-105:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/11286/1	22/11286/2	22/11286/3	22/11286/4	22/11286/5
Client Sample No					
Client Sample ID/Depth	TP02 0.50m	WS01 0.4-0.80m	WS01 1.0-1.30m	WS04 0.20-0.45m	WS05 0.40-0.80m
Date Sampled	11/11/22	11/11/22	11/11/22	11/11/22	11/11/22
A-T-019s	21/11/2022	21/11/2022	21/11/2022	21/11/2022	21/11/2022
A-T-024s	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022
A-T-026s	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022
A-T-028s	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022
A-T-031s	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022
A-T-032 OM	28/11/2022	28/11/2022	28/11/2022	28/11/2022	29/11/2022
A-T-040s	24/11/2022	24/11/2022	24/11/2022	24/11/2022	24/11/2022
A-T-044	21/11/2022	21/11/2022	21/11/2022	21/11/2022	21/11/2022
A-T-045	17/11/2022	17/11/2022	17/11/2022	17/11/2022	17/11/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report



Results Summary

Apex Testing Solutions Limited

Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Telephone: 01656 746762

E-mail: andrew.grogan@apex-drilling.com

laura.davis@apex-drilling.com

<u>Reporting Details</u>		<u>Key Information</u>	
Company Name:	Spectrum Geo	Site Name:	Ty Dysgu
Address:	Foxglove Cottage Cwm Risca Lane Bridgend CF32 0EH	Job Number:	D22537
Contact Name:	Rob	Date Received:	18/11/2022
Contact Number:		Job Coordinator:	K. Lester

Item No.	Tests Undertaken	Number of Tests
1	Atterburg Limits (4 point) - BS1377-2: 1990	3

Results Issued: 23/11/2022

Comments

Results herein relate only to samples received in the laboratory and where not sampled by Apex Testing Solutions personnel relate to the samples as received.

Where tests are UKAS accredited any Opinion and/or Interpretation expressed herein are outside the scope of the UKAS Accreditation. The reports shall not be reproduced in full without the written approval of the laboratory.

Please contact the job coordinator should any further information be required.

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No: D22537
Project Name: TY Dysgu

Client: Spectrum Geo
Address: Foxglove Cottage
Cwm Risca Lane
Bridgend
CF32 0EH

ATS Sample No: 30422

Site Ref / Hole ID: WS05

Depth (m): 1.50 - 2.00

Sample No:

Sample Type: Bulk

**Sampling Certificate
Received:** No

Material Description: Greyish brown sandy
gravelly CLAY

Location in Works: N/A

Material Source: Site Generated

Date Sampled: 18 November 2022

Material Supplier: Site Generated

Sampled By: Client

Specification: BS1377

Date Received: 18 November 2022

Date Tested: 23 November 2022

Test Results

Moisture Content (%)	17.8
----------------------	------

Remarks:

QA Ref.		Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096		Approver	Date	Fig MC
EN ISO 17892-1:2014 E				<i>A Grogan</i> A Grogan, Laboratory Manager	23/11/2022	

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

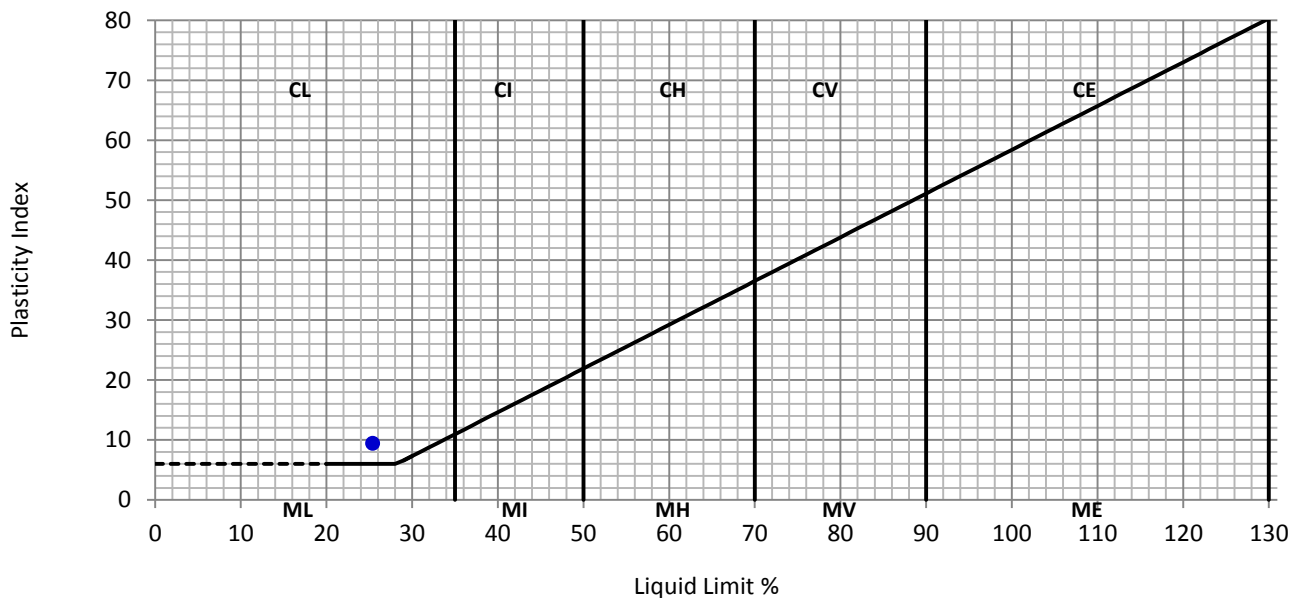
Project No:	D22537	Client:	Spectrum Geo
Project Name:	TY Dysgu	Address:	Foxglove Cottage Cwm Risca Lane Bridgend CF32 0EH
ATS Sample No:	30422		

Site Ref / Hole ID:	WS05	Depth (m):	1.50 - 2.00
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Greyish brown sandy gravelly CLAY
Location in Works:	N/A	Material Source:	Site Generated
Date Sampled:	18 November 2022	Material Supplier:	Site Generated
Sampled By:	Client	Specification:	BS1377
Date Received:	18 November 2022	Date Tested:	22 November 2022

Test Results

Liquid Limit	25	%
Plastic Limit	16	%
Plasticity Index	9	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	28 %



Remarks:

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No: D22537
Project Name: TY Dysgu

Client: Spectrum Geo
Address: Foxglove Cottage
Cwm Risca Lane
Bridgend
CF32 0EH

ATS Sample No: 30420

Site Ref / Hole ID: WS02

Depth (m): 1.50 - 1.90

Sample No:

Sample Type: Bulk

**Sampling Certificate
Received:** No

Material Description: Brownish grey silty
gravely SAND

Location in Works: N/A

Material Source: Site Generated

Date Sampled: 18 November 2022

Material Supplier: Site Generated

Sampled By: Client

Specification: BS1377

Date Received: 18 November 2022

Date Tested: 23 November 2022

Test Results

Moisture Content (%)	32.4
----------------------	------

Remarks:

QA Ref.		Apex Testing Solutions Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	 7771	Approver <i>A Grogan</i>	Date 23/11/2022	Fig MC
EN ISO 17892-1:2014 E				A Grogan, Laboratory Manager		

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

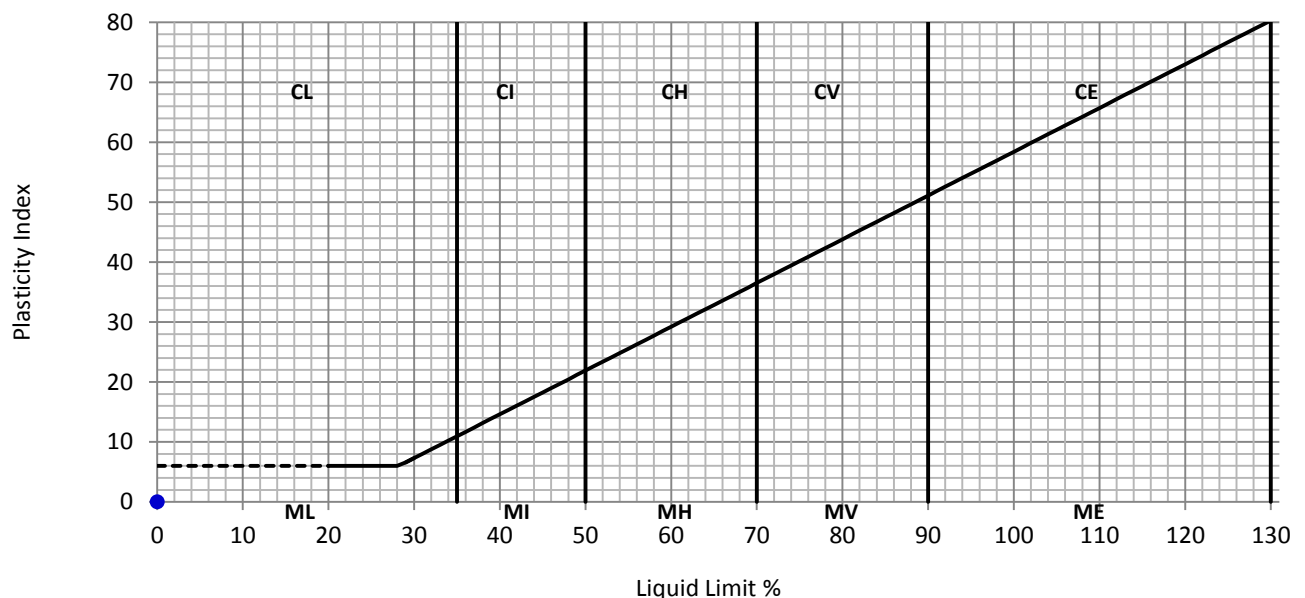
Project No:	D22537	Client:	Spectrum Geo
Project Name:	TY Dysgu	Address:	Foxglove Cottage Cwm Risca Lane Bridgend CF32 0EH
ATS Sample No:	30420		

Site Ref / Hole ID:	WS02	Depth (m):	1.50 - 1.90
Sample No:		Sample Type:	Bulk
Sampling Certificate Received:	No	Material Description:	Brownish grey silty gravelly SAND
Location in Works:	N/A	Material Source:	Site Generated
Date Sampled:	18 November 2022	Material Supplier:	Site Generated
Sampled By:	Client	Specification:	BS1377
Date Received:	18 November 2022	Date Tested:	22 November 2022

Test Results

Liquid Limit	0	%
Plastic Limit	0	%
Plasticity Index	0	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	72 %



Remarks: Sample is non-plastic

TEST REPORT
Determination Of Water Content
ISO 17892-1: 2014

Project No: D22537
Project Name: TY Dysgu

Client: Spectrum Geo
Address: Foxglove Cottage
Cwm Risca Lane
Bridgend
CF32 0EH

ATS Sample No: 30421

Site Ref / Hole ID: WS04

Depth (m): 1.00 - 1.50

Sample No:

Sample Type: Bulk

**Sampling Certificate
Received:** No

Material Description: Brownish grey slightly
sandy gravelly CLAY

Location in Works: N/A

Material Source: Site Generated

Date Sampled: 18 November 2022

Material Supplier: Site Generated

Sampled By: Client

Specification: BS1377

Date Received: 18 November 2022

Date Tested: 23 November 2022

Test Results

Moisture Content (%)

26.6

Remarks:

QA Ref.

EN ISO 17892-
1:2014 E



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est,
Pyle, Bridgend, CF33 6BZ

Tel: 01656 746762 Fax: 01656 749096



7771

Approver

A Grogan

A Grogan, Laboratory Manager

Date

23/11/2022

Fig

MC

TEST REPORT
LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX
BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

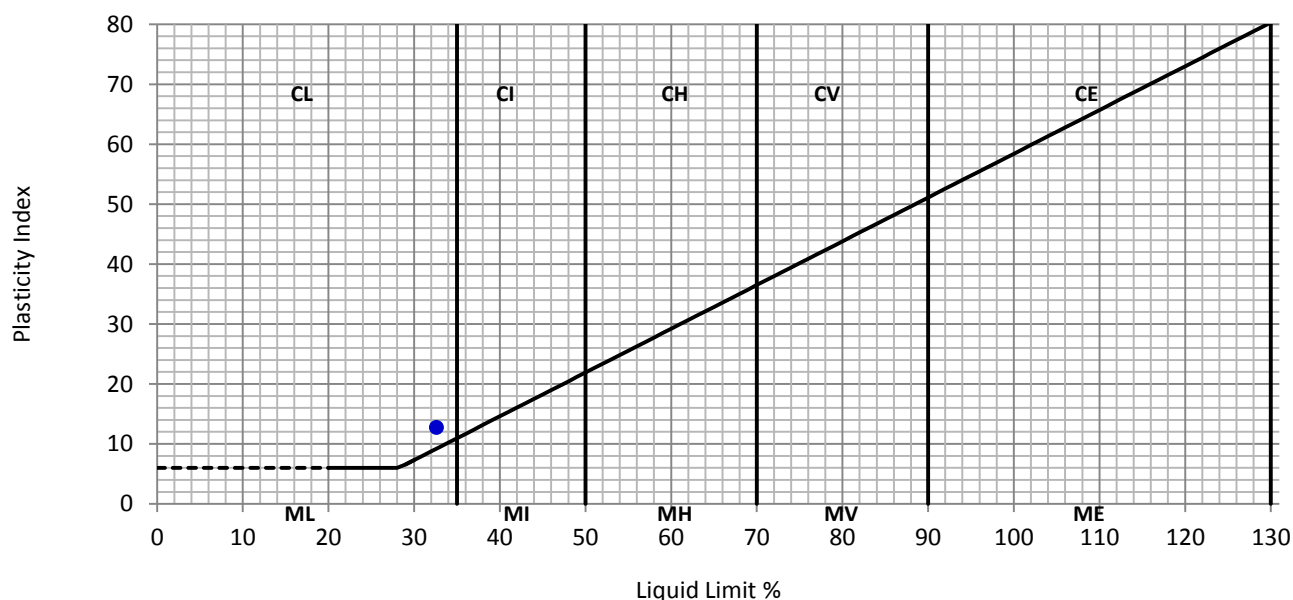
Project No: D22537 **Client:** Spectrum Geo
Project Name: TY Dysgu **Address:** Foxglove Cottage
 Cwm Risca Lane
 Bridgend
ATS Sample No: 30421 **CF32 0EH**

Site Ref / Hole ID: WS04 **Depth (m):** 1.00 - 1.50
Sample No: **Sample Type:** Bulk
Sampling Certificate Received: No **Material Description:** Brownish grey slightly sandy gravelly CLAY
Location in Works: N/A **Material Source:** Site Generated
Date Sampled: 18 November 2022 **Material Supplier:** Site Generated
Sampled By: Client **Specification:** BS1377
Date Received: 18 November 2022 **Date Tested:** 22 November 2022

Test Results

Liquid Limit	33	%
Plastic Limit	20	%
Plasticity Index	13	%

Preparation:	4.2.4 Sieved Specimen
Proportion retained on 425µm sieve:	53 %



Remarks:

QA Ref.

BS1377 - 2
Rev. 3.0



Apex Testing Solutions

Sturmi Way, Village Farm Industrial Est, Pyle,
Bridgend, CF33 6BZ
Tel: 01656 746762 Fax: 01656 749096



7771

Approver

G Llewellyn

G Llewellyn, Senior Technician

Date

23/11/2022

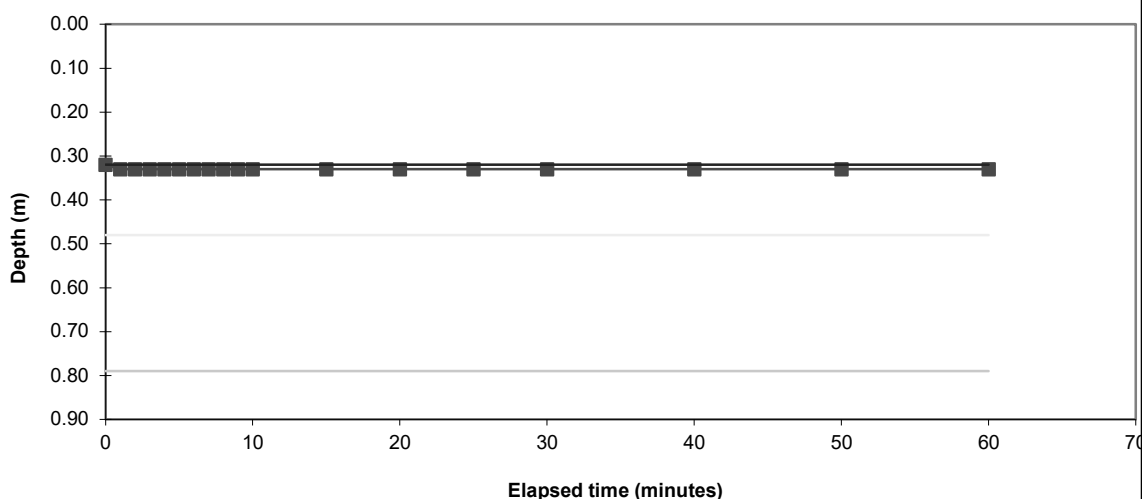
Fig.

ATT

Soakaway Test Results

Trial Pit No: TP01/SA01 Test No: 1 Date: 03/11/2022
 Length (m): 1.20
 Width (m): 0.40 Granular infill: NA
 Depth (m): 1.00 Porosity of infill: 1 (assumed)

Elapsed time (minutes)	Water Depth (metres)	Elapsed time (minutes)	Water Depth (metres)
0	0.32	30	0.33
1	0.33	40	0.33
2	0.33	50	0.33
3	0.33	60	0.33
4	0.33		
5	0.33		
6	0.33		
7	0.33		
8	0.33		
9	0.33		
10	0.33		
15	0.33		
20	0.33		
25	0.33		



V
7
 50% effective depth (m): 0.64
 25% effective depth (m): 0.79 Elapsed time (mins): #N/A
 Empty depth (m): 0.95

Volume outflow between 75% and 25% effective depth (m³):
 Mean surface area of outflow (m²): 1.63
 (side area at 50% effective depth + base area)
 Time for outflow between 75% and 25% effective depth (mins):

Soil infiltration rate (m/s): Test incomplete as 25% effective depth not achieved. Unable to reliably determine soil infiltration rate

Remarks

Notes:
 Results processed following BRE 365 (1991)
 Water depths measured below ground level

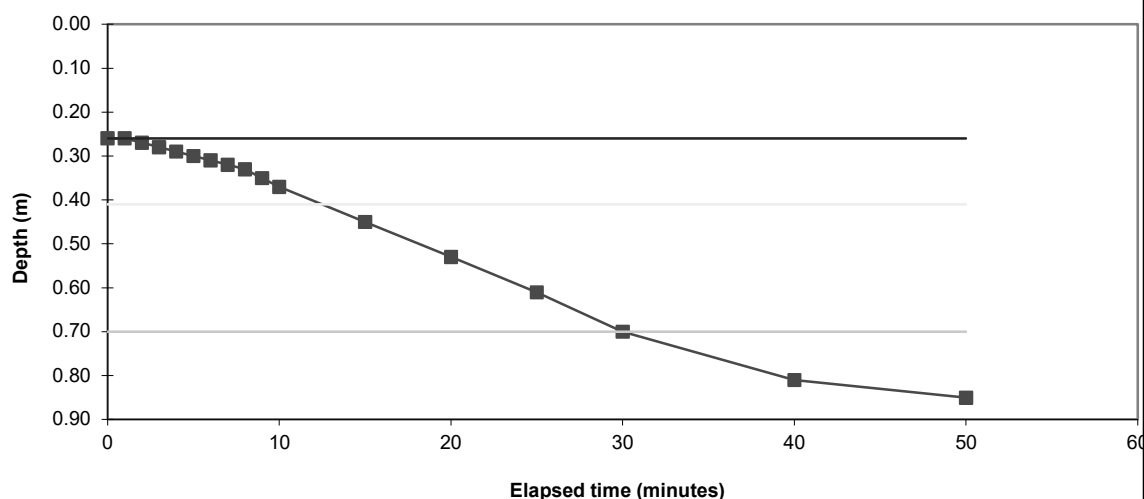
Project Ty Dysgu, Dowlais
 Project No. 22156
 Carried out for Merthyr CBC

Figure
SA01_1

Soakaway Test Results

Trial Pit No: TP04/SA04 Test No: 1 Date: 03/11/2022
 Length (m): 1.10
 Width (m): 0.40 Granular infill: NA
 Depth (m): 0.90 Porosity of infill: 1 (assumed)

Elapsed time (minutes)	Water Depth (metres)	Elapsed time (minutes)	Water Depth (metres)
0	0.26	30	0.70
1	0.26	40	0.81
2	0.27	50	0.85
3	0.28		
4	0.29		
5	0.30		
6	0.31		
7	0.32		
8	0.33		
9	0.35		
10	0.37		
15	0.45		
20	0.53		
25	0.61		



V

7

50% effective depth (m): 0.56
 25% effective depth (m): 0.70 Elapsed time (mins): 30.0
 Empty depth (m): 0.85

Volume outflow between 75% and 25% effective depth (m³): 0.128
 Mean surface area of outflow (m²): 1.46
 (side area at 50% effective depth + base area)
 Time for outflow between 75% and 25% effective depth (mins): 17.5
Soil infiltration rate (m/s): 8.3E-5

Remarks

Notes:
 Results processed following BRE 365 (1991)
 Water depths measured below ground level

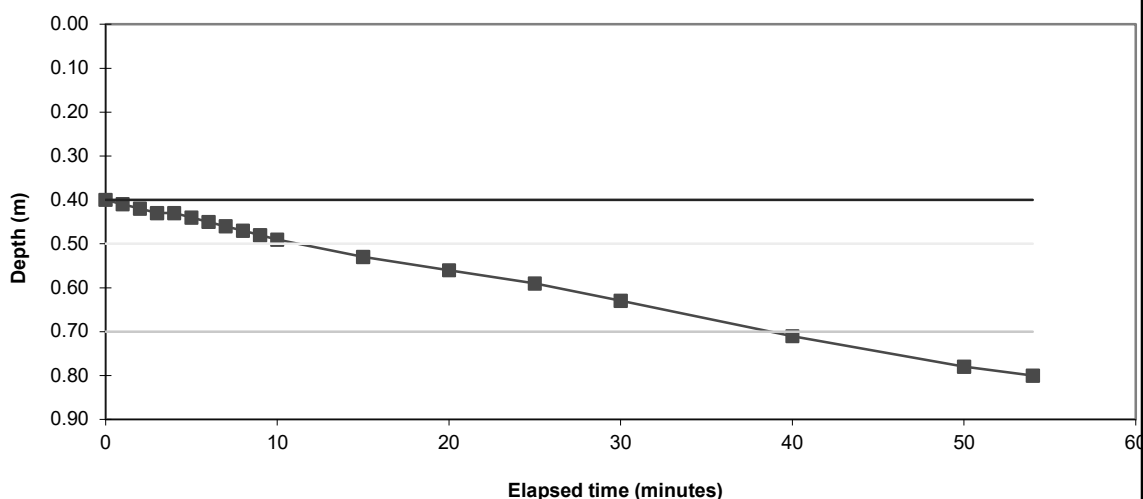
Project Ty Dysgu, Dowlais
 Project No. 22156
 Carried out for Merthyr CBC

Figure
SA04_1

Soakaway Test Results

Trial Pit No: TP04/SA04 Test No: 2 Date: 03/11/2022
 Length (m): 1.10
 Width (m): 0.40 Granular infill: NA
 Depth (m): 0.85 Porosity of infill: 1 (assumed)

Elapsed time (minutes)	Water Depth (metres)	Elapsed time (minutes)	Water Depth (metres)
0	0.40	30	0.63
1	0.41	40	0.71
2	0.42	50	0.78
3	0.43	54	0.80
4	0.43		
5	0.44		
6	0.45		
7	0.46		
8	0.47		
9	0.48		
10	0.49		
15	0.53		
20	0.56		
25	0.59		



V
7
 50% effective depth (m): 0.60
 25% effective depth (m): 0.70 Elapsed time (mins): 38.8
 Empty depth (m): 0.80

Volume outflow between 75% and 25% effective depth (m³): 0.088
 Mean surface area of outflow (m²): 1.19
 (side area at 50% effective depth + base area)
 Time for outflow between 75% and 25% effective depth (mins): 27.5
Soil infiltration rate (m/s): 4.5E-5

Remarks

Notes:
 Results processed following BRE 365 (1991)
 Water depths measured below ground level

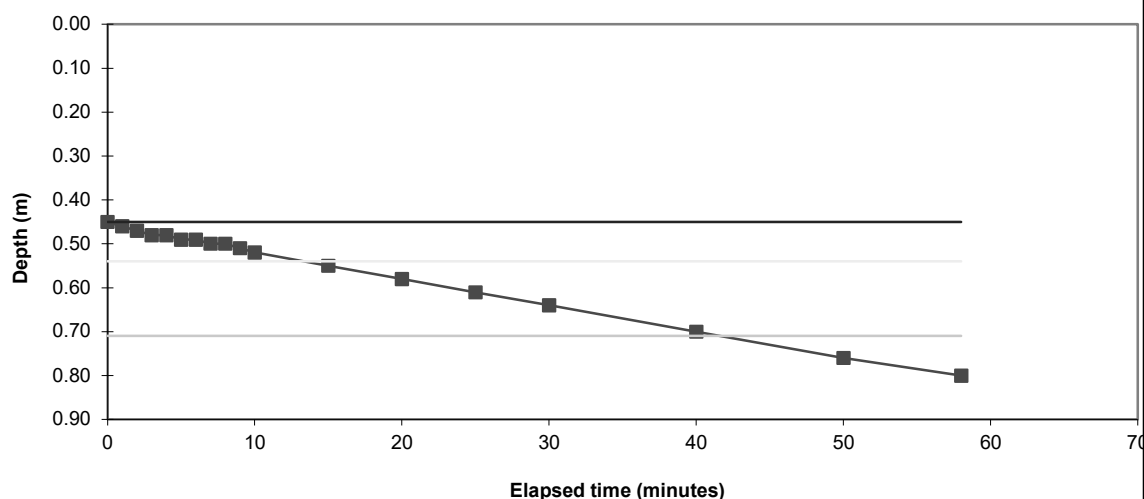
Project Ty Dysgu, Dowlais
 Project No. 22156
 Carried out for Merthyr CBC

Figure
SA04_2

Soakaway Test Results

Trial Pit No: TP04/SA04 Test No: 3 Date: 03/11/2022
 Length (m): 1.10
 Width (m): 0.40 Granular infill: NA
 Depth (m): 0.80 Porosity of infill: 1 (assumed)

Elapsed time (minutes)	Water Depth (metres)	Elapsed time (minutes)	Water Depth (metres)
0	0.45	30	0.64
1	0.46	40	0.70
2	0.47	50	0.76
3	0.48	58	0.80
4	0.48		
5	0.49		
6	0.49		
7	0.50		
8	0.50		
9	0.51		
10	0.52		
15	0.55		
20	0.58		
25	0.61		



V
 7
 50% effective depth (m): 0.63
 25% effective depth (m): 0.71 Elapsed time (mins): 41.7
 Empty depth (m): 0.80

Volume outflow between 75% and 25% effective depth (m^3): 0.075
 Mean surface area of outflow (m^2): 0.95
 (side area at 50% effective depth + base area)
 Time for outflow between 75% and 25% effective depth (mins): 28.4
Soil infiltration rate (m/s): 4.6E-5

Remarks

Notes:
 Results processed following BRE 365 (1991)
 Water depths measured below ground level

Project Ty Dysgu, Dowlais
 Project No. 22156
 Carried out for Merthyr CBC

Figure
SA04_3

03/11/22

PROJECT

TY DYSGU

PROJECT NO

22156

TP

TP01

DEPTH (M)

GL 1.00

FACE









03/11/22

PROJECT

PROJECT NO

TP

DEPTH (M)

FACE

TY DYSGU

22156

WS01

GL 2.90



03/11/22

PROJECT
PROJECT NO
TP
DEPTH (M)
FACE

TY DYSGU
22156
WS 02
GL 2.00



03/11/22

PROJECT
PROJECT NO
TP
DEPTH (M)
FACE

TY DYSGU

22156

WS03

GL 2.00



03/11/22

PROJECT
PROJECT NO
TP
DEPTH (M)
FACE

TY DYSGV

22156

WS 0.4

GL 2.60



03/11/22

PROJECT

PROJECT NO

TP

DEPTH (M)

FACE

TY DYSGU

22156

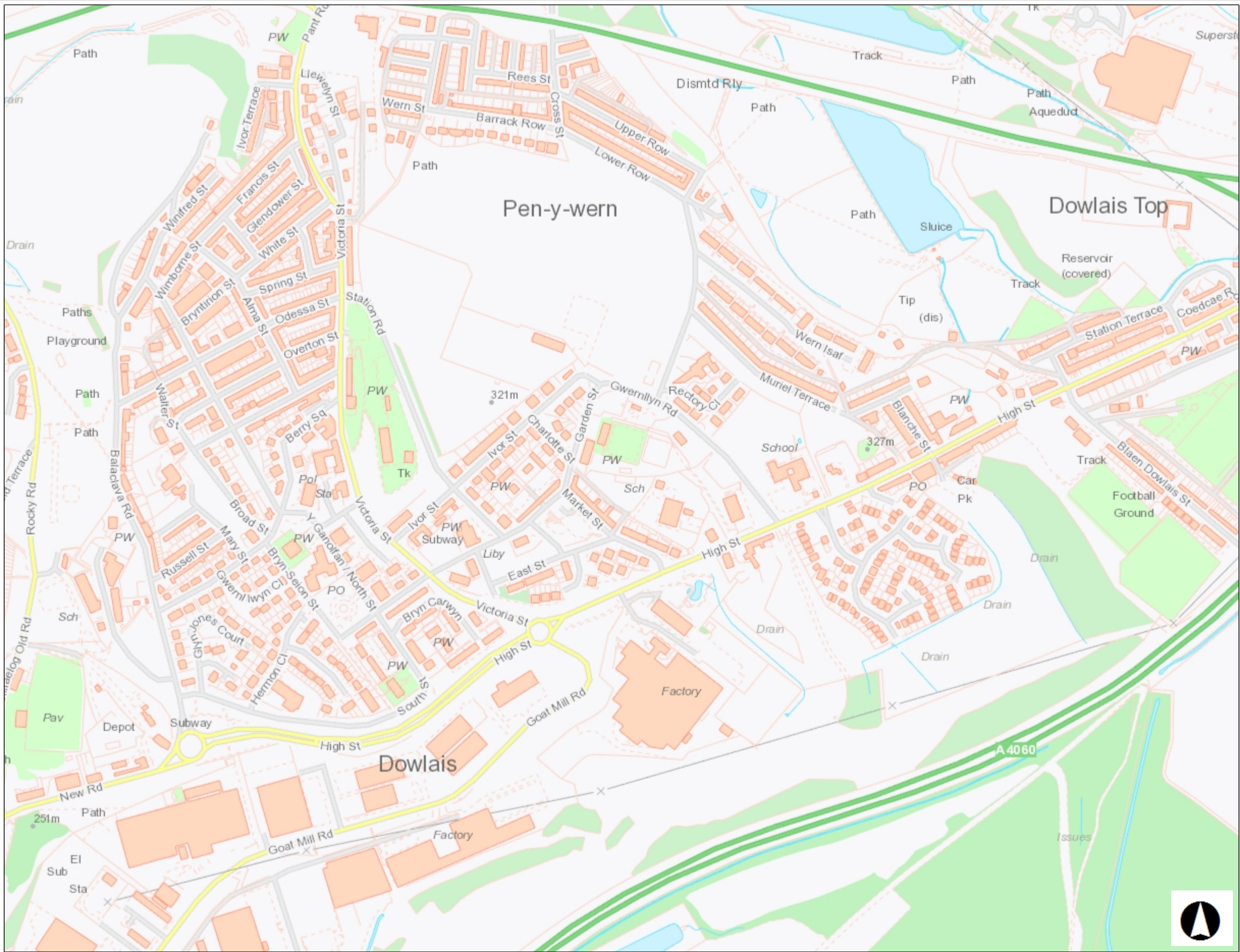
WS 05

GL 3.30





APPENDIX E: NRW Flood Risk Maps



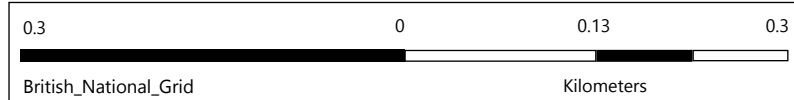
16691_NRW DAM

Allwedd / Map Key

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

Graddfa / Scale at A3 1: 5,000

Dyddiad / Date
24/03/2023



Flood Map for Planning 16691_NRW FMFP

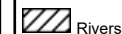
Legend

Flood Defence Location



TAN15 Defended Zones

TAN15 Defended Zones



Rivers

Rivers



Sea

Sea



Surface Water and Small Watercourses

Surface Water and Small Watercourses



Recorded Flood Extents



Flood Risk from Reservoirs



Coastal Erosion



Scale: 1:2,500

Date: 23/03/2023



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0.1 0.05 0 0.1
km

British National Grid

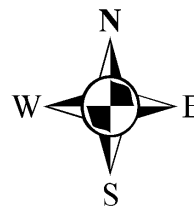
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APPENDIX F: DCWW Asset map



Dŵr Cymru
Welsh Water

Ty Dysgu Market Street Dowlais Merthyr
Tydfil



LEGEND(Representative of most common features)

Waste network:			
Foul chamber	Surface water chamber	Outfall	LH
Combined chamber	Combined sewer overflow	Storm Overflow	Rising main
Special purpose chamber	Private sewer	Private sewer subject to Sect. 104 adoption agreement	Private Sewer Transfer
Treatment works	Pumping station	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.

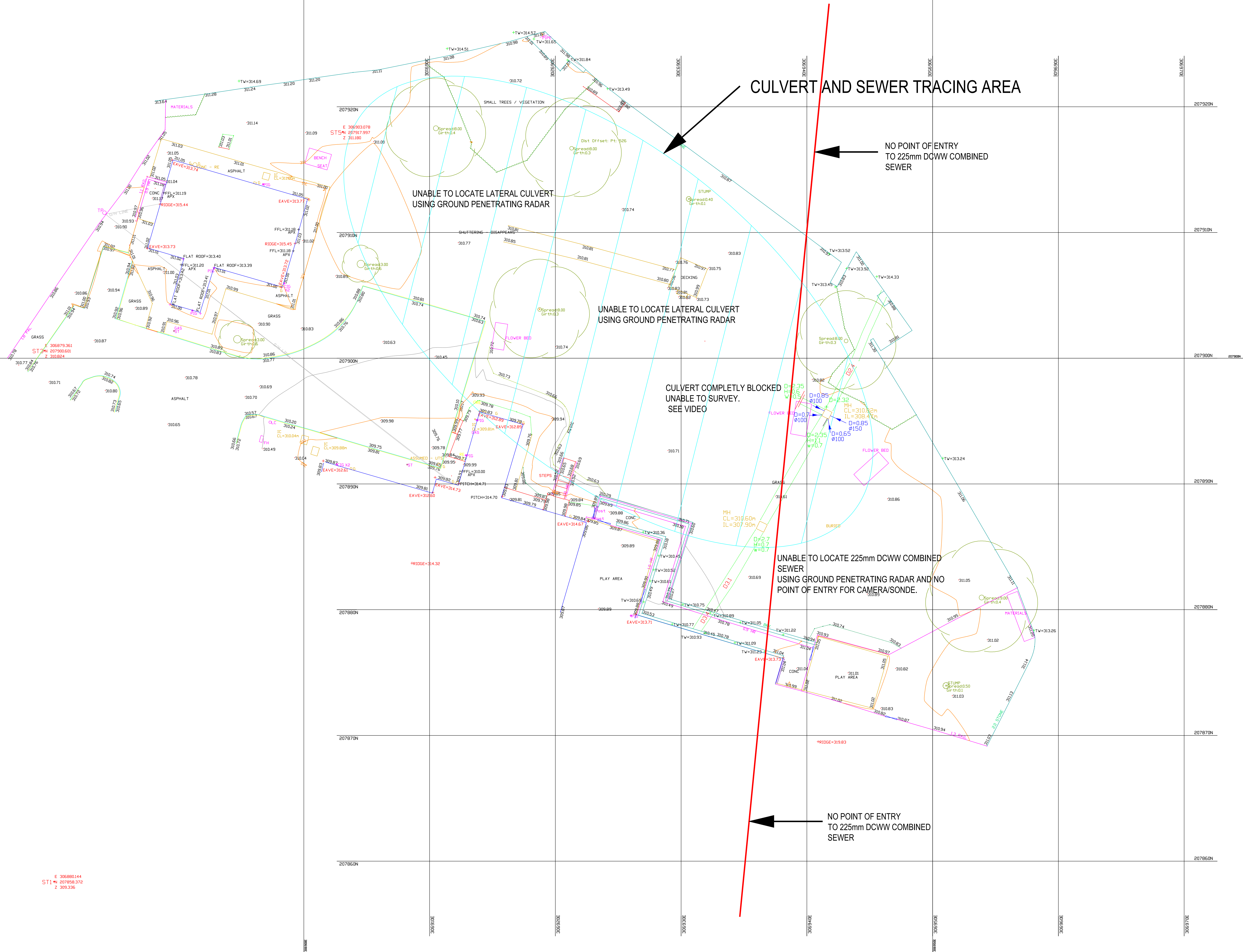
Service pipes are not generally shown but their presence should be anticipated.

EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.

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Map Ref: 306912,207900
Map scale: 1:1250
Printed by: Zara Howells
Printed on: 30 Jan 2023

APPENDIX G: Alpine Land Surveys Culvert Tracing

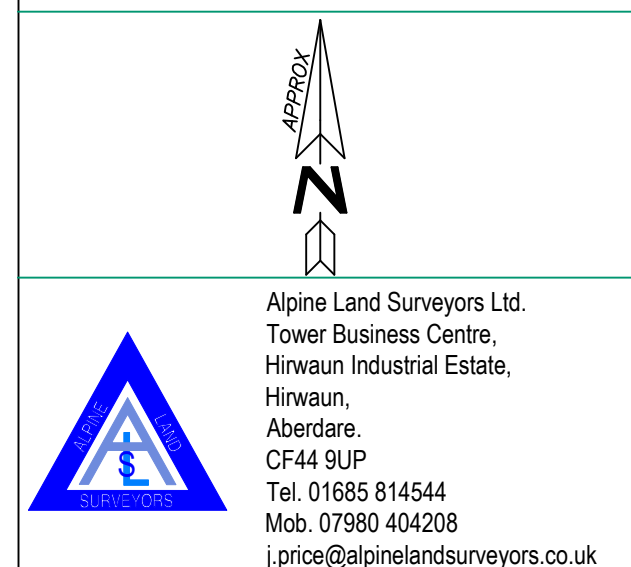


Rev	Amendments	Date	By

Do not scale this drawing
This drawing is copyright.

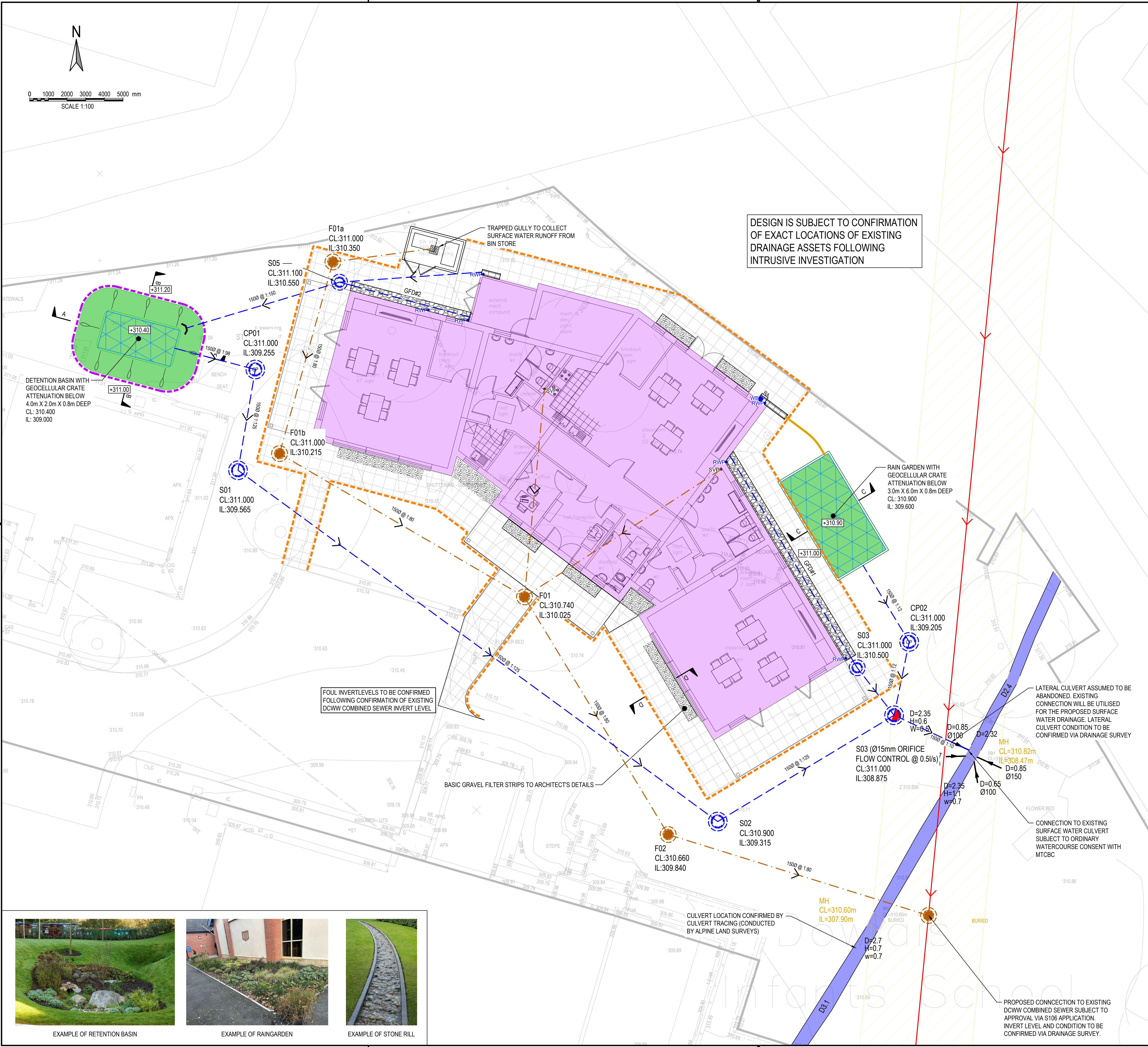
NOTES:

1. SITE GRID AND LEVELS ARE BASED UPON
ORDNANCE SURVEY VIA THE ACTIVE GPS
NETWORK.

[illegible]

CLIENT	
VALE CONSULTING	
PROJECT	
CULVERT TRACING TY DYSGU SCHOOL, DOWLAIS, MERTHYR TYDFIL.	
Surveyed by	HB & TC
Date	21/02/2023
Drawn	HB
Date	21/02/2023
Scales	1:100/A0
Checked:	TC
Project Reference No. ALS/5385	
Drawing Number	TDS/CT/01

APPENDIX H: C500 Proposed Drainage Layout and C503 Details



LEGEND

- 1500 @ 1:150 PROPOSED SURFACE WATER DRAINAGE
- 1000 @ 1:40 PROPOSED FOUL WATER DRAINAGE
- RWP PROPOSED RAINWATER PIPE
- WB PROPOSED WATER BUTT
- SVP PROPOSED SOIL & VENT PIPE
- PROPOSED TRAPPED GULLY
- CP DENOTES CATCH PIT
- FC DENOTES FLOW CONTROL CHAMBER
- PROPOSED ACO DRAINAGE CHANNEL
- DENOTES OVEREDGE DRAINAGE. REFER TO SECTION D-D DETAIL ON DRAWING 16691/C504
- GEO-CELLULAR TANK 1 IN 100 YEAR EVENT WITH ACCESS POINTS
- STONE RILL
- RAIN GARDEN WITH OVERFLOW/RODDING PIPE AND PERFORATED COLLECTOR PIPE
- GRAVEL FILTER DRAIN WITH PERFORATED COLLECTOR PIPE
- DETENTION BASIN
- FENCE AROUND DETENTION BASIN
- EXISTING DCWW COMBINED SEWER WITH EXISTING EASEMENT
- EXISTING CULVERT, LOCATION CONFIRMED ON SITE BY ALPINE LAND SURVEYORS VIA TRACING

GENERAL NOTES:

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
- DO NOT SCALE FROM THE DRAWING. USE FIGURED DIMENSIONS ONLY.
- ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SUBCONTRACTORS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
- EXISTING SERVICES HAVE NOT BEEN SHOWN BUT ARE PRESENT - THE CONTRACTOR IS TO LIAISE WITH ALL STATUTORY AUTHORITIES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
- TEMPORARY WORKS DESIGN BY OTHERS.
- DESIGN RISK ASSESSMENTS AND METHOD STATEMENTS ARE TO BE PROVIDED TO THE PRINCIPLE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY WORKS.

DRAINAGE STRATEGY NOTES:

- PROPOSALS SUBJECT TO FULL SAB APPLICATION.
- DESIGN IS BASED ON DISCHARGE RATE OF 0.5/s.
- ATTENUATION DESIGNED FOR Q100 + 30% EVENT.
- TOTAL CATCHMENT AREA = 323m².
- DISCHARGE OF WATER FROM PROPOSED SURFACE WATER SEWER INTO CULVERTED WATERCOURSE TO BE APPROVED VIA ORDINARY WATERCOURSE CONSENT.
- NO ALLOWANCE FOR URBAN CREEP AS DEVELOPMENT TO MAXIMISE SPACE AVAILABLE.

APPROVAL

rev.	drawn	chd.	appd.	date	description
06	RM	RM	PG	SH	NEW SITE LAYOUT. RAINGARDEN MOVED TO ACCOMMODATE GRAVEL STRIP. RETENTION BASIN MOVED.
05	RM	RM	PG	SH	REVISED SURFACE WATER STRATEGY FOLLOWING SAB COMMENTS
04	RM	SH	SH	SH	CROSS-SECTION ANNOTATIONS ADDED. INFILTRATION BASIN BATTERS AMENDED TO SUIT LEVEL DIFFERENCES
03	RM	SH	SH	SH	NEW SITE LAYOUT. RWP POSITIONS CONFIRMED AND DRAINAGE AMENDED TO SUIT. ISSUE FOR SAB APPROVAL
02	RM	SH	SH	SH	CULVERT TRACING INFORMATION ADDED (FROM ALPINE LAND SURVEYS) AND AMENDMENT TO INFILTRATION BASIN DIMENSIONS.
01	RM	SH	SH	SH	PRELIMINARY

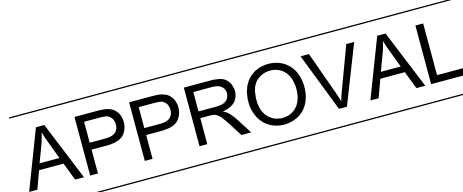
Client
MERTHYR TYDFIL COUNTY BOROUGH COUNCIL

Project
NEW BUILD CLASSROOMS
TY DYSGU PRIMARY SCHOOL,
DOWLAIS

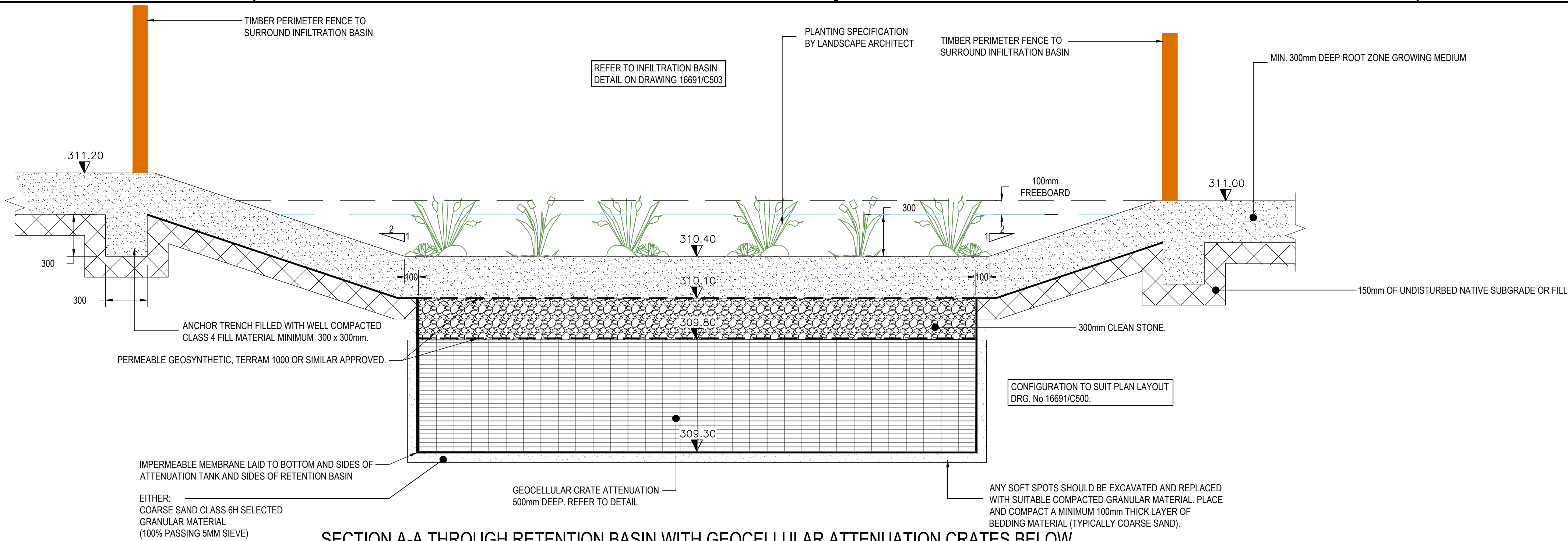
Title
DRAINAGE LAYOUT

ValeConsultancy
CONSULTING CIVIL & STRUCTURAL ENGINEERS
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Phone: 01656 863794 Email: enquiries@vale-consultancy.co.uk

date	drawn	checked	approved
03.02.23	RM	SH	SH
scale @ A1	1:100	project no.	16691
status	drg. no.	rev.	
A	16691/C500	06	

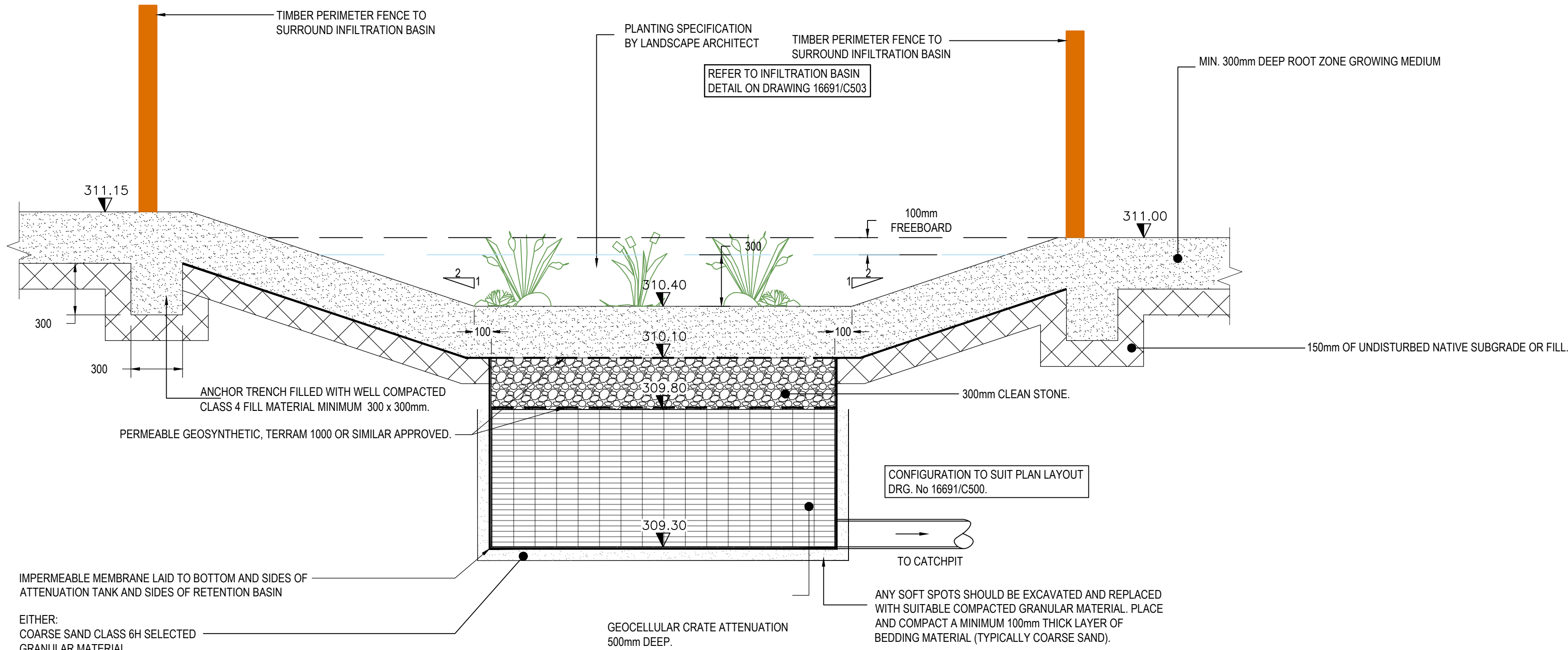


status	drg. no.	rev.
A	16691/C503	05



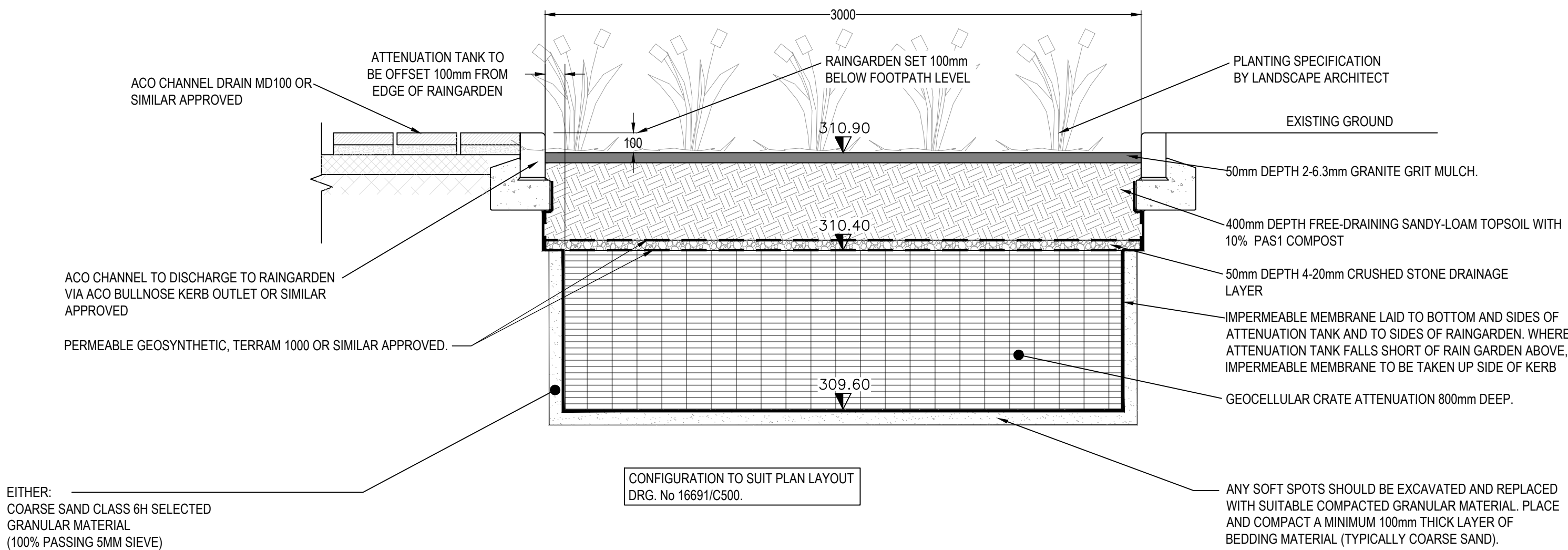
SECTION A-A THROUGH RETENTION BASIN WITH GEOCELLULAR ATTENUATION CRATES BELOW

SCALE 1:20



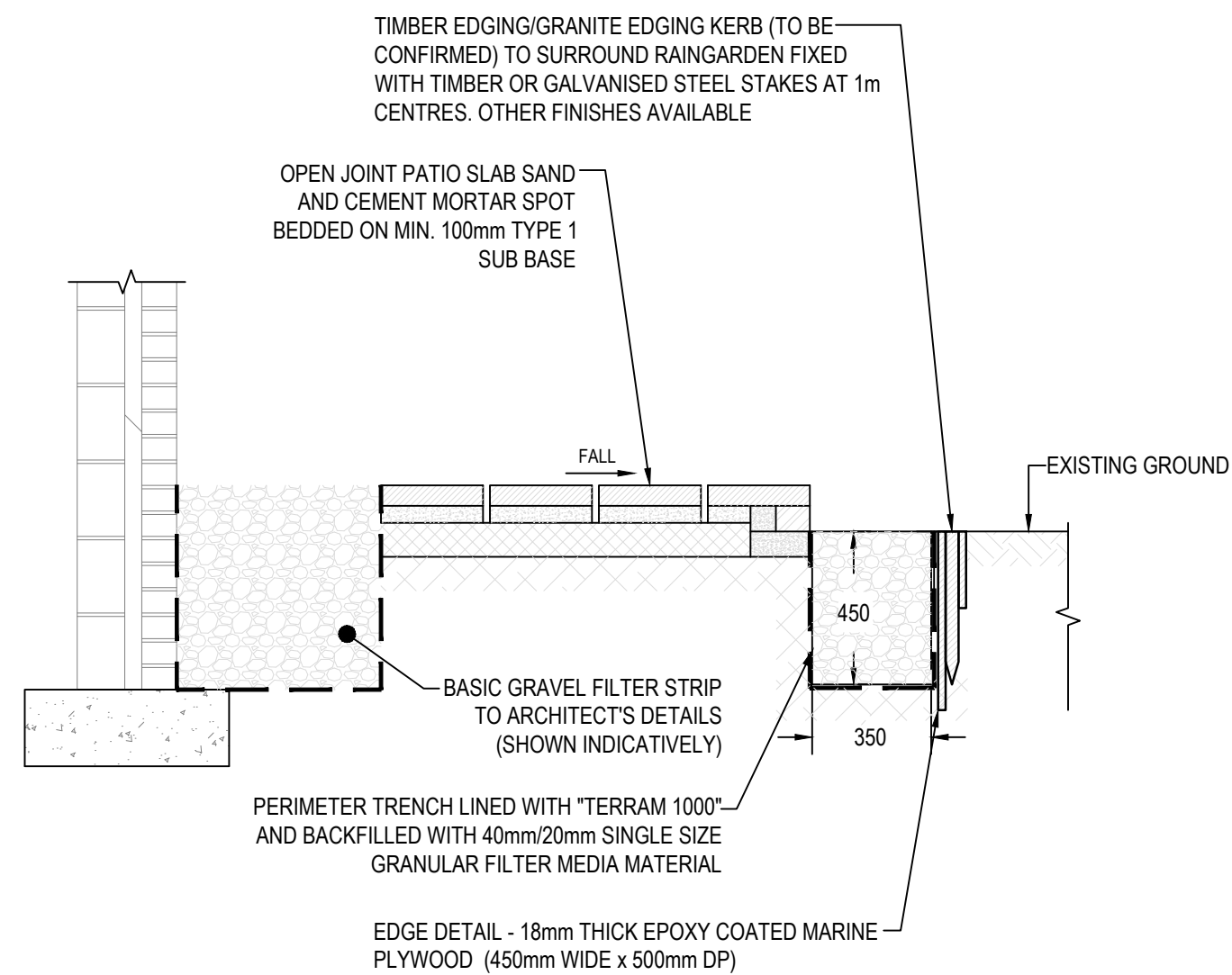
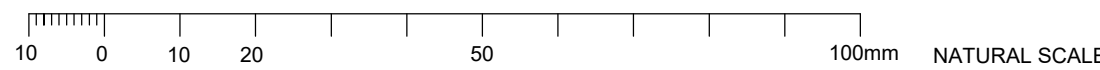
SECTION B-B THROUGH RETENTION BASIN WITH GEOCELLULAR ATTENUATION CRATES BELOW

SCALE 1:20



SECTION C-C THROUGH RAINGARDEN WITH GEOCELLULAR CRATE ATTENUATION BELOW

SCALE 1:20



SECTION D-D THROUGH PAVED FOOTPATH AND OVEREDGE DRAIN

SCALE 1:20

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
3. DO NOT SCALE FROM THE DRAWING. USE FIGURED DIMENSIONS ONLY.
4. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SUBCONTRACTORS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
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7. TEMPORARY WORKS DESIGN BY OTHERS.
8. DESIGN RISK ASSESSMENTS AND METHOD STATEMENTS ARE TO BE PROVIDED TO THE PRINCIPLE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY WORKS.

APPROVAL

rev.	drawn	chkd	approved	date	description
04	RM	SH	SH	30.08.23	REFERENCES TO PLANTING SCHEDULE 16691-PS01 OMITTED (SUPERSEDED). LANDSCAPE ARCHITECT APPOINTED
03	RM	SH	SH	16.08.23	SECTION DETAILS AMENDED TO SUIT REVISED DRAINAGE LAYOUT
02	RM	SH	SH	16.08.23	REVISED SURFACE WATER DRAINAGE STRATEGY. CROSS SECTIONS AMENDED TO REFLECT NEW FEATURES
01	RM	SH	SH	20.04.23	ISSUE FOR SAB APPROVAL

Client
MERTHYR TYDFIL COUNTY BOROUGH COUNCIL

Project
NEW BUILD CLASSROOMS
TY DYSGU PRIMARY SCHOOL,
DOWLAIS

Title
DRAINAGE DETAILS
SHEET 2 OF 2

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date	drawn	checked	approved
20.04.23	RM	SH 20.04.23	SH 20.04.23

scale @ A1
AS SHOWN

status	dr. no.	rev.
A	16691/C504	04

DRAWING STATUS
A - Approval, AB - As-Built, C - Construction, D - Draft, P - Preliminary, T - Tender

APPENDIX I: C502 Catchments and Exceedance Flows Plan



0 1000 2000 3000 4000 5000 mm
SCALE 1:100

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
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6. EXISTING SERVICES HAVE NOT BEEN SHOWN BUT ARE PRESENT - THE CONTRACTOR IS TO LIAISE WITH ALL STATUTORY AUTHORITIES PRIOR TO THE COMMENCEMENT OF ANY WORKS.
7. TEMPORARY WORKS DESIGN BY OTHERS.
8. DESIGN RISK ASSESSMENTS AND METHOD STATEMENTS ARE TO BE PROVIDED TO THE PRINCIPLE CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY WORKS.

LEGEND

CATCHMENT 1
= 122m²

CATCHMENT 2
= 201m²

TOTAL IMPERMEABLE AREA
= 323m²

TOTAL SITE AREA
= 2203m²

EXCEEDANCE FLOWS

APPROVAL

rev.	drawn	chd.	appd.	date	description
02	RM	SH	SH	08.02.23	CATCHMENTS AMENDED TO SUIT CONFIRMED RWP POSITIONS. ISSUE FOR SAB APPROVAL
01	RM	SH	SH	06.02.23	PRELIMINARY

rev.	drawn	chd.	appd.	date	description
02	RM	SH	SH	08.02.23	CATCHMENTS AMENDED TO SUIT CONFIRMED RWP POSITIONS. ISSUE FOR SAB APPROVAL
01	RM	SH	SH	06.02.23	PRELIMINARY

Client
MERTHYR TYDFIL COUNTY
BOROUGH COUNCIL

Project
NEW BUILD CLASSROOMS
TY DYSGU PRIMARY SCHOOL,
DOWLAIS

Title
CATCHMENTS AND EXCEEDANCE
FLOWS PLAN



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date	drawn	checked	approved
06.02.23	RM	SH 08.02.23	SH 08.02.23

scale @ A1	project no.
1:100	16691

status	drg. no.	rev.
A	16691/C502	02

APPENDIX J: Hydraulic Calculations

Job No: 16691 - Ty Dysgu

Description	Return period (yrs)	Urbanised peak flow (m ³ /s) [2500m ² Imp]	Urbanised direct runoff (ML)	As-rural peak flow (m ³ /s) [3650m ² Total]	As-rural direct runoff (ML)
1 year	1	0.00261	0.01823	0.00261	0.01823
2 year	2	0.00299	0.02105	0.00299	0.02105
2.3 year	2.3	0.00317		0.00317	
3 year	3	0.00357	0.02535	0.00357	0.02535
5 year	5	0.00423	0.03032	0.00423	0.03032
10 year	10	0.00510	0.03682	0.00510	0.03682
30 year	30	0.00649	0.04728	0.00649	0.04728
50 year	50	0.00718	0.05247	0.00718	0.05247
75 year	75	0.00776	0.05685	0.00776	0.05685
100 year	100	0.00820	0.06017	0.00820	0.06017
200 year	200	0.00941	0.06927	0.00941	0.06927
1000 year	1000	0.01420	0.10547	0.01420	0.10547

From ReFH2 model for:		2203 m ²
QBAR	3.2 l/s	
<u>Discharge Rate</u>		
Imp Area	323 m ²	0.5 l/s

Vale Consultancy

Page 1

29 Bocam Park

Old Field Road, Pencoed

Bridgend, Glamorgan, CF35 5LJ

Date 02/06/2023 11:29

File 16691_CATCHMENT 1.SRCX

Designed by rhys.melvin

Checked by

Innovyze

Source Control 2020.1

Micro Drainage

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 55 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	310.123	0.223	0.0	0.5	0.5	1.7	O K
30 min Summer	310.210	0.310	0.0	0.6	0.6	2.4	O K
60 min Summer	310.281	0.381	0.0	0.6	0.6	2.9	O K
120 min Summer	310.320	0.420	0.0	0.6	0.6	3.2	O K
180 min Summer	310.321	0.421	0.0	0.6	0.6	3.2	O K
240 min Summer	310.313	0.413	0.0	0.6	0.6	3.1	O K
360 min Summer	310.284	0.384	0.0	0.6	0.6	2.9	O K
480 min Summer	310.248	0.348	0.0	0.6	0.6	2.6	O K
600 min Summer	310.211	0.311	0.0	0.6	0.6	2.4	O K
720 min Summer	310.174	0.274	0.0	0.6	0.6	2.1	O K
960 min Summer	310.109	0.209	0.0	0.5	0.5	1.6	O K
1440 min Summer	310.009	0.109	0.0	0.5	0.5	0.8	O K
2160 min Summer	309.924	0.024	0.0	0.5	0.5	0.2	O K
2880 min Summer	309.900	0.000	0.0	0.4	0.4	0.0	O K
4320 min Summer	309.900	0.000	0.0	0.3	0.3	0.0	O K
5760 min Summer	309.900	0.000	0.0	0.3	0.3	0.0	O K
7200 min Summer	309.900	0.000	0.0	0.2	0.2	0.0	O K
8640 min Summer	309.900	0.000	0.0	0.2	0.2	0.0	O K
10080 min Summer	309.900	0.000	0.0	0.2	0.2	0.0	O K
15 min Winter	310.158	0.258	0.0	0.6	0.6	2.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	100.646	0.0	2.2	19
30 min Summer	74.363	0.0	3.4	31
60 min Summer	52.662	0.0	4.7	52
120 min Summer	35.497	0.0	6.4	88
180 min Summer	27.508	0.0	7.4	122
240 min Summer	22.929	0.0	8.3	158
360 min Summer	17.658	0.0	9.5	226
480 min Summer	14.625	0.0	10.5	292
600 min Summer	12.613	0.0	11.3	356
720 min Summer	11.163	0.0	12.1	420
960 min Summer	9.187	0.0	13.2	542
1440 min Summer	6.965	0.0	15.0	780
2160 min Summer	5.294	0.0	17.2	1124
2880 min Summer	4.365	0.0	18.9	0
4320 min Summer	3.346	0.0	21.7	0
5760 min Summer	2.792	0.0	24.1	0
7200 min Summer	2.438	0.0	26.3	0
8640 min Summer	2.180	0.0	28.3	0
10080 min Summer	1.984	0.0	30.0	0
15 min Winter	100.646	0.0	2.5	19

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29 Bocam Park Old Field Road, Pencoed Bridgend, Glamorgan, CF35 5LJ							
Date 02/06/2023 11:29		Designed by rhys.melvin					
File 16691_CATCHMENT 1.SRCX		Checked by					
Innovyze			Source Control 2020.1				
<u>Summary of Results for 100 year Return Period (+30%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	310.261	0.361	0.0	0.6	0.6	2.7	O K
60 min Winter	310.349	0.449	0.0	0.6	0.6	3.4	O K
120 min Winter	310.389	0.489	0.0	0.6	0.6	3.7	O K
180 min Winter	310.380	0.480	0.0	0.6	0.6	3.6	O K
240 min Winter	310.360	0.460	0.0	0.6	0.6	3.5	O K
360 min Winter	310.303	0.403	0.0	0.6	0.6	3.1	O K
480 min Winter	310.242	0.342	0.0	0.6	0.6	2.6	O K
600 min Winter	310.184	0.284	0.0	0.6	0.6	2.2	O K
720 min Winter	310.130	0.230	0.0	0.6	0.6	1.7	O K
960 min Winter	310.039	0.139	0.0	0.5	0.5	1.1	O K
1440 min Winter	309.919	0.019	0.0	0.5	0.5	0.1	O K
2160 min Winter	309.900	0.000	0.0	0.4	0.4	0.0	O K
2880 min Winter	309.900	0.000	0.0	0.3	0.3	0.0	O K
4320 min Winter	309.900	0.000	0.0	0.2	0.2	0.0	O K
5760 min Winter	309.900	0.000	0.0	0.2	0.2	0.0	O K
7200 min Winter	309.900	0.000	0.0	0.2	0.2	0.0	O K
8640 min Winter	309.900	0.000	0.0	0.2	0.2	0.0	O K
10080 min Winter	309.900	0.000	0.0	0.1	0.1	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	74.363	0.0	3.8	32			
60 min Winter	52.662	0.0	5.3	58			
120 min Winter	35.497	0.0	7.1	94			
180 min Winter	27.508	0.0	8.3	132			
240 min Winter	22.929	0.0	9.3	170			
360 min Winter	17.658	0.0	10.7	242			
480 min Winter	14.625	0.0	11.8	310			
600 min Winter	12.613	0.0	12.7	376			
720 min Winter	11.163	0.0	13.5	440			
960 min Winter	9.187	0.0	14.8	562			
1440 min Winter	6.965	0.0	16.8	778			
2160 min Winter	5.294	0.0	19.2	0			
2880 min Winter	4.365	0.0	21.1	0			
4320 min Winter	3.346	0.0	24.3	0			
5760 min Winter	2.792	0.0	27.0	0			
7200 min Winter	2.438	0.0	29.5	0			
8640 min Winter	2.180	0.0	31.6	0			
10080 min Winter	1.984	0.0	33.6	0			
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29 Bocam Park Old Field Road, Pencoed Bridgend, Glamorgan, CF35 5LJ																																																																																																											
Date 02/06/2023 11:29 File 16691_CATCHMENT 1.SRCX	Designed by rhys.melvin Checked by																																																																																																										
Innovyze Source Control 2020.1																																																																																																											
Model Details Storage is Online Cover Level (m) 311.000 Cellular Storage Structure Invert Level (m) 309.900 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>8.0</td><td>0.0</td><td>0.501</td><td>0.0</td><td>0.0</td></tr><tr><td>0.500</td><td>8.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> Hydro-Brake® Optimum Outflow Control Unit Reference MD-SHE-0038-5000-0500-5000 Design Head (m) 0.500 Design Flow (l/s) 0.5 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 38 Invert Level (m) 309.500 Minimum Outlet Pipe Diameter (mm) 75 Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>0.500</td><td>0.5</td></tr><tr><td>Flush-Flo™</td><td>0.164</td><td>0.5</td></tr><tr><td>Kick-Flo®</td><td>0.331</td><td>0.4</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>0.4</td></tr></table> The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>0.5</td><td>1.200</td><td>0.7</td><td>3.000</td><td>1.1</td><td>7.000</td><td>1.6</td></tr><tr><td>0.200</td><td>0.5</td><td>1.400</td><td>0.8</td><td>3.500</td><td>1.2</td><td>7.500</td><td>1.7</td></tr><tr><td>0.300</td><td>0.5</td><td>1.600</td><td>0.8</td><td>4.000</td><td>1.3</td><td>8.000</td><td>1.8</td></tr><tr><td>0.400</td><td>0.5</td><td>1.800</td><td>0.9</td><td>4.500</td><td>1.3</td><td>8.500</td><td>1.8</td></tr><tr><td>0.500</td><td>0.5</td><td>2.000</td><td>0.9</td><td>5.000</td><td>1.4</td><td>9.000</td><td>1.9</td></tr><tr><td>0.600</td><td>0.5</td><td>2.200</td><td>1.0</td><td>5.500</td><td>1.5</td><td>9.500</td><td>1.9</td></tr><tr><td>0.800</td><td>0.6</td><td>2.400</td><td>1.0</td><td>6.000</td><td>1.5</td><td></td><td></td></tr><tr><td>1.000</td><td>0.7</td><td>2.600</td><td>1.0</td><td>6.500</td><td>1.6</td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	8.0	0.0	0.501	0.0	0.0	0.500	8.0	0.0				Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.500	0.5	Flush-Flo™	0.164	0.5	Kick-Flo®	0.331	0.4	Mean Flow over Head Range	-	0.4	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	0.5	1.200	0.7	3.000	1.1	7.000	1.6	0.200	0.5	1.400	0.8	3.500	1.2	7.500	1.7	0.300	0.5	1.600	0.8	4.000	1.3	8.000	1.8	0.400	0.5	1.800	0.9	4.500	1.3	8.500	1.8	0.500	0.5	2.000	0.9	5.000	1.4	9.000	1.9	0.600	0.5	2.200	1.0	5.500	1.5	9.500	1.9	0.800	0.6	2.400	1.0	6.000	1.5			1.000	0.7	2.600	1.0	6.500	1.6		
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<u>Summary of Results for 100 year Return Period (+30%)</u> Half Drain Time : 146 minutes. <table><tr><th>Storm Event</th><th>Max Level (m)</th><th>Max Depth (m)</th><th>Max Infiltration (l/s)</th><th>Max Control (l/s)</th><th>Max Outflow (l/s)</th><th>Max Volume (m³)</th><th>Status</th></tr><tr><td>15 min Summer</td><td>309.786</td><td>0.186</td><td>0.0</td><td>0.5</td><td>0.5</td><td>3.2</td><td>O K</td></tr><tr><td>30 min Summer</td><td>309.870</td><td>0.270</td><td>0.0</td><td>0.5</td><td>0.5</td><td>4.6</td><td>O K</td></tr><tr><td>60 min Summer</td><td>309.957</td><td>0.357</td><td>0.0</td><td>0.5</td><td>0.5</td><td>6.1</td><td>O K</td></tr><tr><td>120 min Summer</td><td>310.017</td><td>0.417</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.1</td><td>O K</td></tr><tr><td>180 min Summer</td><td>310.030</td><td>0.430</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.4</td><td>O K</td></tr><tr><td>240 min Summer</td><td>310.038</td><td>0.438</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.5</td><td>O K</td></tr><tr><td>360 min Summer</td><td>310.042</td><td>0.442</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.6</td><td>O K</td></tr><tr><td>480 min Summer</td><td>310.037</td><td>0.437</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.5</td><td>O K</td></tr><tr><td>600 min Summer</td><td>310.027</td><td>0.427</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.3</td><td>O K</td></tr><tr><td>720 min Summer</td><td>310.014</td><td>0.414</td><td>0.0</td><td>0.5</td><td>0.5</td><td>7.1</td><td>O K</td></tr><tr><td>960 min Summer</td><td>309.983</td><td>0.383</td><td>0.0</td><td>0.5</td><td>0.5</td><td>6.5</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>309.915</td><td>0.315</td><td>0.0</td><td>0.5</td><td>0.5</td><td>5.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>309.801</td><td>0.201</td><td>0.0</td><td>0.5</td><td>0.5</td><td>3.4</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>309.711</td><td>0.111</td><td>0.0</td><td>0.5</td><td>0.5</td><td>1.9</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>309.622</td><td>0.022</td><td>0.0</td><td>0.5</td><td>0.5</td><td>0.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>309.600</td><td>0.000</td><td>0.0</td><td>0.5</td><td>0.5</td><td>0.0</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>309.600</td><td>0.000</td><td>0.0</td><td>0.4</td><td>0.4</td><td>0.0</td><td>O K</td></tr><tr><td>8640 min Summer</td><td>309.600</td><td>0.000</td><td>0.0</td><td>0.4</td><td>0.4</td><td>0.0</td><td>O K</td></tr><tr><td>10080 min Summer</td><td>309.600</td><td>0.000</td><td>0.0</td><td>0.3</td><td>0.3</td><td>0.0</td><td>O K</td></tr><tr><td>15 min Winter</td><td>309.813</td><td>0.213</td><td>0.0</td><td>0.5</td><td>0.5</td><td>3.6</td><td>O K</td></tr></table> <table><tr><th>Storm Event</th><th>Rain (mm/hr)</th><th>Flooded Volume (m³)</th><th>Discharge Volume (m³)</th><th>Time-Peak (mins)</th></tr><tr><td>15 min Summer</td><td>100.646</td><td>0.0</td><td>3.8</td><td>21</td></tr><tr><td>30 min Summer</td><td>74.363</td><td>0.0</td><td>5.6</td><td>35</td></tr><tr><td>60 min Summer</td><td>52.662</td><td>0.0</td><td>7.9</td><td>62</td></tr><tr><td>120 min Summer</td><td>35.497</td><td>0.0</td><td>10.6</td><td>118</td></tr><tr><td>180 min Summer</td><td>27.508</td><td>0.0</td><td>12.4</td><td>150</td></tr><tr><td>240 min Summer</td><td>22.929</td><td>0.0</td><td>13.7</td><td>182</td></tr><tr><td>360 min Summer</td><td>17.658</td><td>0.0</td><td>15.9</td><td>252</td></tr><tr><td>480 min Summer</td><td>14.625</td><td>0.0</td><td>17.5</td><td>322</td></tr><tr><td>600 min Summer</td><td>12.613</td><td>0.0</td><td>18.9</td><td>392</td></tr><tr><td>720 min Summer</td><td>11.163</td><td>0.0</td><td>20.1</td><td>462</td></tr><tr><td>960 min Summer</td><td>9.187</td><td>0.0</td><td>22.0</td><td>600</td></tr><tr><td>1440 min Summer</td><td>6.965</td><td>0.0</td><td>25.0</td><td>868</td></tr><tr><td>2160 min Summer</td><td>5.294</td><td>0.0</td><td>28.6</td><td>1252</td></tr><tr><td>2880 min Summer</td><td>4.365</td><td>0.0</td><td>31.4</td><td>1584</td></tr><tr><td>4320 min Summer</td><td>3.346</td><td>0.0</td><td>36.1</td><td>2248</td></tr><tr><td>5760 min Summer</td><td>2.792</td><td>0.0</td><td>40.2</td><td>0</td></tr><tr><td>7200 min Summer</td><td>2.438</td><td>0.0</td><td>43.9</td><td>0</td></tr><tr><td>8640 min Summer</td><td>2.180</td><td>0.0</td><td>47.1</td><td>0</td></tr><tr><td>10080 min Summer</td><td>1.984</td><td>0.0</td><td>50.0</td><td>0</td></tr><tr><td>15 min Winter</td><td>100.646</td><td>0.0</td><td>4.2</td><td>21</td></tr></table>								Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status	15 min Summer	309.786	0.186	0.0	0.5	0.5	3.2	O K	30 min Summer	309.870	0.270	0.0	0.5	0.5	4.6	O K	60 min Summer	309.957	0.357	0.0	0.5	0.5	6.1	O K	120 min Summer	310.017	0.417	0.0	0.5	0.5	7.1	O K	180 min Summer	310.030	0.430	0.0	0.5	0.5	7.4	O K	240 min Summer	310.038	0.438	0.0	0.5	0.5	7.5	O K	360 min Summer	310.042	0.442	0.0	0.5	0.5	7.6	O K	480 min Summer	310.037	0.437	0.0	0.5	0.5	7.5	O K	600 min Summer	310.027	0.427	0.0	0.5	0.5	7.3	O K	720 min Summer	310.014	0.414	0.0	0.5	0.5	7.1	O K	960 min Summer	309.983	0.383	0.0	0.5	0.5	6.5	O K	1440 min Summer	309.915	0.315	0.0	0.5	0.5	5.4	O K	2160 min Summer	309.801	0.201	0.0	0.5	0.5	3.4	O K	2880 min Summer	309.711	0.111	0.0	0.5	0.5	1.9	O K	4320 min Summer	309.622	0.022	0.0	0.5	0.5	0.4	O K	5760 min Summer	309.600	0.000	0.0	0.5	0.5	0.0	O K	7200 min Summer	309.600	0.000	0.0	0.4	0.4	0.0	O K	8640 min Summer	309.600	0.000	0.0	0.4	0.4	0.0	O K	10080 min Summer	309.600	0.000	0.0	0.3	0.3	0.0	O K	15 min Winter	309.813	0.213	0.0	0.5	0.5	3.6	O K	Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	15 min Summer	100.646	0.0	3.8	21	30 min Summer	74.363	0.0	5.6	35	60 min Summer	52.662	0.0	7.9	62	120 min Summer	35.497	0.0	10.6	118	180 min Summer	27.508	0.0	12.4	150	240 min Summer	22.929	0.0	13.7	182	360 min Summer	17.658	0.0	15.9	252	480 min Summer	14.625	0.0	17.5	322	600 min Summer	12.613	0.0	18.9	392	720 min Summer	11.163	0.0	20.1	462	960 min Summer	9.187	0.0	22.0	600	1440 min Summer	6.965	0.0	25.0	868	2160 min Summer	5.294	0.0	28.6	1252	2880 min Summer	4.365	0.0	31.4	1584	4320 min Summer	3.346	0.0	36.1	2248	5760 min Summer	2.792	0.0	40.2	0	7200 min Summer	2.438	0.0	43.9	0	8640 min Summer	2.180	0.0	47.1	0	10080 min Summer	1.984	0.0	50.0	0	15 min Winter	100.646	0.0	4.2	21
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1440 min Summer	6.965	0.0	25.0	868																																																																																																																																																																																																																																																																																				
2160 min Summer	5.294	0.0	28.6	1252																																																																																																																																																																																																																																																																																				
2880 min Summer	4.365	0.0	31.4	1584																																																																																																																																																																																																																																																																																				
4320 min Summer	3.346	0.0	36.1	2248																																																																																																																																																																																																																																																																																				
5760 min Summer	2.792	0.0	40.2	0																																																																																																																																																																																																																																																																																				
7200 min Summer	2.438	0.0	43.9	0																																																																																																																																																																																																																																																																																				
8640 min Summer	2.180	0.0	47.1	0																																																																																																																																																																																																																																																																																				
10080 min Summer	1.984	0.0	50.0	0																																																																																																																																																																																																																																																																																				
15 min Winter	100.646	0.0	4.2	21																																																																																																																																																																																																																																																																																				
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Vale Consultancy							Page 2
29 Bocam Park Old Field Road, Pencoed Bridgend, Glamorgan, CF35 5LJ							
Date 02/06/2023 11:30		Designed by rhys.melvin					
File 16691_CATCHMENT 2.SRCX		Checked by					
Innovyze			Source Control 2020.1				
<u>Summary of Results for 100 year Return Period (+30%)</u>							
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E (l/s)	Max Outflow Volume (m³)	Status
30 min Winter	309.910	0.310	0.0	0.5	0.5	5.3	O K
60 min Winter	310.013	0.413	0.0	0.5	0.5	7.1	O K
120 min Winter	310.094	0.494	0.0	0.5	0.5	8.4	O K
180 min Winter	310.216	0.616	0.0	0.6	0.6	8.7	O K
240 min Winter	310.288	0.688	0.0	0.6	0.6	8.7	O K
360 min Winter	310.283	0.683	0.0	0.6	0.6	8.7	O K
480 min Winter	310.103	0.503	0.0	0.5	0.5	8.6	O K
600 min Winter	310.080	0.480	0.0	0.5	0.5	8.2	O K
720 min Winter	310.055	0.455	0.0	0.5	0.5	7.8	O K
960 min Winter	310.001	0.401	0.0	0.5	0.5	6.9	O K
1440 min Winter	309.889	0.289	0.0	0.5	0.5	4.9	O K
2160 min Winter	309.702	0.102	0.0	0.5	0.5	1.7	O K
2880 min Winter	309.615	0.015	0.0	0.5	0.5	0.3	O K
4320 min Winter	309.600	0.000	0.0	0.4	0.4	0.0	O K
5760 min Winter	309.600	0.000	0.0	0.3	0.3	0.0	O K
7200 min Winter	309.600	0.000	0.0	0.3	0.3	0.0	O K
8640 min Winter	309.600	0.000	0.0	0.3	0.3	0.0	O K
10080 min Winter	309.600	0.000	0.0	0.2	0.2	0.0	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)			
30 min Winter	74.363	0.0	6.2	35			
60 min Winter	52.662	0.0	8.8	62			
120 min Winter	35.497	0.0	11.9	118			
180 min Winter	27.508	0.0	13.8	152			
240 min Winter	22.929	0.0	15.4	188			
360 min Winter	17.658	0.0	17.8	266			
480 min Winter	14.625	0.0	19.7	348			
600 min Winter	12.613	0.0	21.2	426			
720 min Winter	11.163	0.0	22.5	500			
960 min Winter	9.187	0.0	24.7	646			
1440 min Winter	6.965	0.0	28.1	936			
2160 min Winter	5.294	0.0	32.0	1260			
2880 min Winter	4.365	0.0	35.2	1536			
4320 min Winter	3.346	0.0	40.5	0			
5760 min Winter	2.792	0.0	45.0	0			
7200 min Winter	2.438	0.0	49.1	0			
8640 min Winter	2.180	0.0	52.7	0			
10080 min Winter	1.984	0.0	56.0	0			
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Vale Consultancy		Page 4																																																																																																									
29 Bocam Park Old Field Road, Pencoed Bridgend, Glamorgan, CF35 5LJ																																																																																																											
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Model Details Storage is Online Cover Level (m) 310.860 Cellular Storage Structure Invert Level (m) 309.600 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>18.0</td><td>0.0</td><td>0.501</td><td>0.0</td><td>0.0</td></tr><tr><td>0.500</td><td>18.0</td><td>0.0</td><td></td><td></td><td></td></tr></table> Hydro-Brake® Optimum Outflow Control Unit Reference MD-SHE-0038-5000-0500-5000 Design Head (m) 0.500 Design Flow (l/s) 0.5 Flush-Flo™ Calculated Objective Minimise upstream storage Application Surface Sump Available Yes Diameter (mm) 38 Invert Level (m) 309.500 Minimum Outlet Pipe Diameter (mm) 75 Suggested Manhole Diameter (mm) 1200 <table><tr><th>Control Points</th><th>Head (m)</th><th>Flow (l/s)</th></tr><tr><td>Design Point (Calculated)</td><td>0.500</td><td>0.5</td></tr><tr><td>Flush-Flo™</td><td>0.164</td><td>0.5</td></tr><tr><td>Kick-Flo®</td><td>0.331</td><td>0.4</td></tr><tr><td>Mean Flow over Head Range</td><td>-</td><td>0.4</td></tr></table> The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated <table><tr><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th><th>Depth (m)</th><th>Flow (l/s)</th></tr><tr><td>0.100</td><td>0.5</td><td>1.200</td><td>0.7</td><td>3.000</td><td>1.1</td><td>7.000</td><td>1.6</td></tr><tr><td>0.200</td><td>0.5</td><td>1.400</td><td>0.8</td><td>3.500</td><td>1.2</td><td>7.500</td><td>1.7</td></tr><tr><td>0.300</td><td>0.5</td><td>1.600</td><td>0.8</td><td>4.000</td><td>1.3</td><td>8.000</td><td>1.8</td></tr><tr><td>0.400</td><td>0.5</td><td>1.800</td><td>0.9</td><td>4.500</td><td>1.3</td><td>8.500</td><td>1.8</td></tr><tr><td>0.500</td><td>0.5</td><td>2.000</td><td>0.9</td><td>5.000</td><td>1.4</td><td>9.000</td><td>1.9</td></tr><tr><td>0.600</td><td>0.5</td><td>2.200</td><td>1.0</td><td>5.500</td><td>1.5</td><td>9.500</td><td>1.9</td></tr><tr><td>0.800</td><td>0.6</td><td>2.400</td><td>1.0</td><td>6.000</td><td>1.5</td><td></td><td></td></tr><tr><td>1.000</td><td>0.7</td><td>2.600</td><td>1.0</td><td>6.500</td><td>1.6</td><td></td><td></td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	18.0	0.0	0.501	0.0	0.0	0.500	18.0	0.0				Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	0.500	0.5	Flush-Flo™	0.164	0.5	Kick-Flo®	0.331	0.4	Mean Flow over Head Range	-	0.4	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	0.5	1.200	0.7	3.000	1.1	7.000	1.6	0.200	0.5	1.400	0.8	3.500	1.2	7.500	1.7	0.300	0.5	1.600	0.8	4.000	1.3	8.000	1.8	0.400	0.5	1.800	0.9	4.500	1.3	8.500	1.8	0.500	0.5	2.000	0.9	5.000	1.4	9.000	1.9	0.600	0.5	2.200	1.0	5.500	1.5	9.500	1.9	0.800	0.6	2.400	1.0	6.000	1.5			1.000	0.7	2.600	1.0	6.500	1.6		
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APPENDIX K: Landscape Architect's Proposals

[To be included in SAB application]



- Notes**
- For sheet scaling refer to scale bar in titleblock
 - All information outside red line boundary shown for contextual purpose only.
 - All hatch patterns are indicative only unless stated otherwise.
 - This drawing is to be read in conjunction with all relevant documentation from the project team.
 - Any discrepancies in the design information are to be brought to the attention of Laird Bailey Landscape Architects, in writing.
 - Plant quantities are to suit site areas in accordance with labels and plant schedule.
 - Any proposed plant substitution shall be agreed with the Landscape Architect prior to ordering.
 - This drawing to be read in conjunction with the latest revisions of the following drawings:
 - LB398_D01 - Soft Landscape Proposals (Sheet 1 - 2).
 - Drawings are for planning purposes only.

GENERAL PLANTING SPECIFICATIONS:

Proposals to be read in conjunction with Architect's and Engineers Drawings;

- All landscape operations to be in accordance with BS4428: 1989 & BS 3936: 1992 and all amendments to date;
- Plant material to conform to the National Plant Specification;
- Any plant material planted outside the recognised planting season (Nov-Feb), to be containerised stock and supplied at the sizes specified;
- Plant handling and planting operations to be in accordance with HTA "Handling and Establishing Landscape Plants parts I - III;
- All planting to be maintained and guaranteed for 12 months under the defects and liability period and 5 years thereafter by the client to include watering, weeding, pest & disease control;
- The landscape sub-contractor is to take all safety precautions to prevent any injury to any persons. The landscape sub-contractor shall comply with the requirements of the Health and Safety at Work Act 1974 and current Construction, Design and Management Regulations; and
- The landscape sub-contractor shall confirm the location of all underground services before commencement of planting and report where trees/hedges are suggested within 3m of underground services and 5m of buildings.

SOIL AND MULCH

Soils should be certified to BS 3882:2015 (topsoil) and BS 8601:2013 (subsoil), but most importantly found via a soil scientists interpretive report and soil resource plan to be fit for the specific landscape function. Topsoil and subsoil will be of similar textural range and 'keyed in' at interface.

- Existing topsoil (if present and suitable) to be stripped and stored on site in heaps not exceeding 2m in height and kept weed free;
- Any compacted subsoil to be broken up to allow free drainage and to enable topsoil to key into surface;
- Any imported topsoil to be to BS3882, medium texture, neutral PH value, reasonably stone free with no stones over 20mm in size;
- Soil for meadow grassland to be composed of prepared sub-soil (nutrient poor);
- Topsoil depths to be 450mm for shrubs, hedges, climbers and groundcover planting;
- Finished topsoil levels to be 25mm above adjacent paved surfaces, and 300mm wide hard surfaced mowing margin to be provided where lawn adjoins buildings; and
- All planting areas to be covered with a 75mm depth of medium grade bark mulch.

PLANT MATERIAL TREATMENT

- All to be British grown stock and fully hardened off;
- Root Dip – Proprietary Root Dip applied to all bare root stock at time of lifting at nursery and prior to planting;
- Anti-Desiccant – Proprietary anti-desiccant to be applied to foliage of all containerised/rootballed material in leaf, specimen confiders and evergreens etc. prior to transportation and during any delay in planting;
- Pruning - Allow for pruning of all deciduous trees and shrubs by 1/3rd /following planting at Landscape Architect's direction or as indicated in the planting schedule;
- Tree Stakes and Ties – Stakes to be pressure treated, round, smooth and peeled Larch or Chestnut, not less than 100mm in diameter. Advanced nursery stock – double staked with cross bar.

SEEDING

- Grass seeding cultivation to be brought to a fine tilth and all stones over 25mm in all directions removed. Areas to be uniformly firmed.
- Apply approved herbicide to control perennial weeds and allow period of time to elapse as recommended by manufacturer before final cultivation.
- Grass seed to be sown at rates shown below and as per Emorsgate recommendations.
- Amenity Grass areas to be seeded with Emorsgate EG22 Wear Tolerant Turfgrass Mixture (or similar approved), sown at 25g/m;
- Seasonally wet areas to be seeded with Emorsgate EM8 Meadow Mixture for Wetlands (or similar approved), sown at 4g/m;
- Roll the seeded area with a ribbed crinkle or Cambridge roller upon completion;
- When grass is between 40-75mm high remove any remaining stones and debris exceeding 50mm in any dimension. Cut grass to approximately 50mm high for the first cut and 35mm thereafter; Wetland Meadow grass to be cut twice a year in March and October.
- Remove and dispose of all arisings.

EXISTING TREES AND SHRUBS

- Avoid damage to branches, trunks and roots of trees. All existing trees and hedges to be retained are subject to BS5837 (2005 and all amendments to date) 'Trees in relation to Construction – Recommendations', and should be fully fenced off, prior to the commencement of any works.
- Where existing trees and shrubs are to be retained they should be subject to a full Arboricultural inspection for safety;
- Any surgery required shall be in accordance with BS3998 (2010 and all amendments to date) 'Tree Work – Recommendations', shall comply with any existing T.P.O requirements and shall require the prior approval of the Landscape Architect;
- No storage of materials, disposal of rubbish, site fires, spillage of oil and chemicals, ground compaction, excavation or changes in level shall be carried out within existing tree/hedge canopies.

TREES

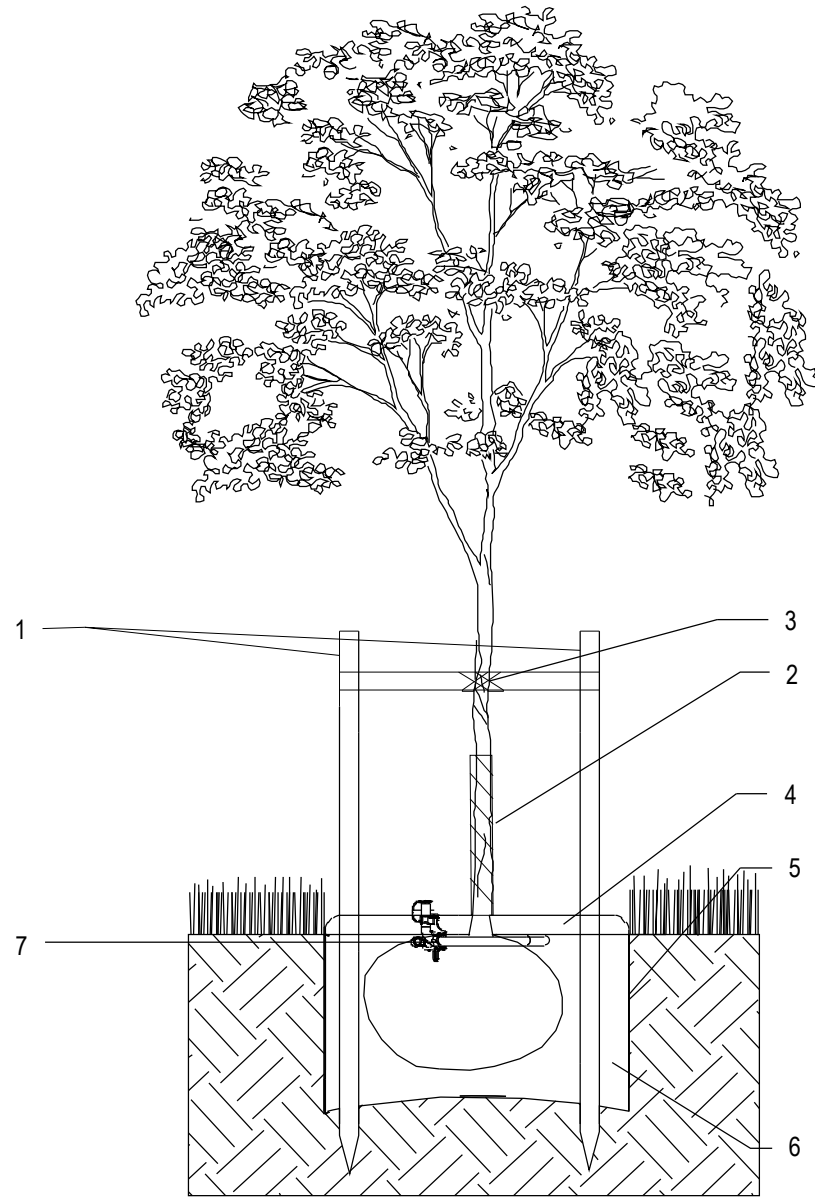
- No trees to be planted within 3 metres of sewers or services or other easement recommended by the relevant statutory undertaker without the use of tree root barriers e.g Greenleaf Reroot 600/100 placed between the tree and services;
- All trees shown to be planted ensuring that they are at least 5 metres away from buildings or distances conform with NHBC guidelines;
- Contractor to ascertain the location of all sewers and services prior to tree planting;
- Root barrier to be installed in planting pits in near proximity to underground services;
- Allow for the use of container grown stock during the periods 1 April to 31 October, and field grown stock from 1 November to 31 March unless otherwise specified in the planting schedule;
- Trees planted within grassed areas to be provided with appropriate conical strimmer guards;
- Heavy standard trees (12-14cm girth) to be planted in pits 1200 diameter x 900mm deep, supported by double stakes;
- All tree pits should be comprise of 300mm of topsoil over 600mm free draining subsoil to replicate normal ground conditions;
- Detailing of tree pit to include tree pit irrigation "Root rain precinct" or similar approved; "Green leaf root director; Where necessary increase tree pit dimensions to ensure that tree pits are at least 75mm deeper and 150mm wider than rootball. Break up bottom of pits to a depth of 150mm. Compacted glazed sides of pits should be roughened.

SHRUBS (ORNAMENTAL AND SPECIMEN)

- All shrubs to be planted in pits twice the size of the pot in depth and width and backfilled with a 50-50 topsoil and shrub planting mix.
- Shrubs in planting mixes are to be planted in same species groups between 3-5 plants per group.

PLUG PLANTING

- All plug plants to be planted with the aid of plug/bulb planter tool and evenly distributed according to planting densities specified. Plug holes should be carefully backfilled with a 50/50 aquatic loam soil mix and gently firmed around the base of the plant. Plants should be planted in same species groups between 3-5 species in each group.



TREE PIT DETAIL

1. 2x tanalised timber tree stakes 2400mm, 100mm Ø and crossbar (75x38x900mm) driven (minimum 300mm) into backfilled pit to provide support to the tree.

2. Spiral guard to be fitted to trunk to protect against animal browsing.

3. Use 2x Tree Ties GLB25A with GLPFA spacer sleeves or similar to secure tree to support post.

4. 75mm deep bark mulch layer to be spread evenly over a circular area 1000mm Ø around the tree to prevent weed growth and retain moisture.

5. Excavate tree pit to 1200mm diameter x 900mm deep. Break up base to a depth of 150mm (minimum), scarify edges. The tree should be planted at a depth where the root flare is still visible, just breaching the soil surface, following backfilling.

6. Backfill tree pit with subsoil (600mm) and topsoil (300mm) excavated from pit if this is regarded as of sufficient quality to promote the healthy establishment of the tree. If either the top soil or sub soil excavated from the pit is of poor quality, then soil ameliorants may be used sparingly or imported topsoil compliant with BS3882 should be used.

7. Watering/aeration tubes - 50mm Ø, black perforated land flex drainage pipe with suitable rubber/plastic bung. Place around top of root ball and nail to supporting stake, ensuring filler cap finishes slightly above mulch level.

Immediately after planting, water the tree, saturating the tree pit to field capacity. Between 50-200 litres of water should be applied per tree, as often as daily if required, to all semi mature tree stock. The quantity of water required is dependant on tree species, size, location and weather conditions, and should be judged in accordance with the core samples taken.

Planting Schedule

Trees	Number	Species	Specification	Girth	Density
3	Betula pendula	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted
1	Prunus avium	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted
1	Sorbus aria	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted
1	Sorbus aucuparia	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted

Shrubs	Number	Species	Specification	Density
2	Cornus sanguinea	Bushy	:5 brks	:C Counted
2	Corylus avellana	Bushy	:4/6 brks	:RB Counted

Attenuation Basin Margin Mix	Number	Species	Specification	Density	Percentage	Contribution
5	Geum rivale	Plug	:Well Rooted	4/m²	6%	
7	Iris pseudacorus	Plug	:Well Rooted	4/m²	10%	
7	Lobelia cardinalis	Plug	:Well Rooted	4/m²	10%	
7	Lychnis flos-cuculi	Plug	:Well Rooted	4/m²	10%	
7	Lysimachia punctata	Full Pot		4/m²	10%	
7	Lythrum salicaria	Plug	:Well Rooted	4/m²	8%	
6	Mimulus ringens	Plug	:Well Rooted	4/m²	7%	
7	Persicaria bistorta	Full Pot		4/m²	8%	
7	Primula bulleyana	Full Pot		4/m²	8%	
6	Rodgersia pinnata	Full Pot		4/m²	7%	
5	Rudbeckia fulgida sullivantii 'Goldsturm'	Full Pot		4/m²	6%	
7	Rudbeckia laciniata	Full Pot		4/m²	10%	
Total :78						

Rain Garden (Low plants) Mix	Number	Species	Specification	Density	Percentage	Contribution
11	Aster azureus	Full Pot		5/m²	30%	
11	Erigeron karvinskianus	Full Pot		5/m²	30%	
15	Hebe rakaiensis	Bushy	:C	5/m²	40%	
Total :37						

Rain Garden (Medium plants) Mix	Number	Species	Specification	Density	Percentage	Contribution
10	Aster novae-angliae	Full Pot		3/m²	30%	
10	Echinacea pallida	Full Pot		3/m²	30%	
7	Panicum virgatum	Full Pot		3/m²	20%	
7	Rudbeckia fulgida sullivantii 'Goldsturm'	Full Pot		3/m²	20%	
Total :34						



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Costwolds | Somerset | South Wales

Client:

cfw Architects

Project Title:

Ty Dysgu School, Merthyr

Drawing Title:

Soft Landscape Proposals
(Sheet 2 of 2)

Date: 23 August 2023
Drawing Number: LB398_D01
Scale:
Status: Draft

Drawn By: DB
Checked by: AL
Revision: -
Use: Planning

Landscape Management Plan

Ty Dysgu School, Merthyr

21st August 2023

Report Number. LB398/R01



Report No:	Date	Revision	Author	Checked
LB398_R01 (Draft)	21.08.23		Andrew Laird (CMLI)	David Bailey (CMLI)

Disclosure:

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Section 1: Introduction

Section 2: Technical and Environmental Considerations

Section 3: Site Overview of Existing Landscape Condition

Section 4: Proposed Soft Landscaping

Section 5: Proposed Hard Landscaping

Section 6: Long-term Design Objectives

Section 7: Management Regimes and Responsibilities

Section 8: soft Landscape Maintenance Work Schedule

Section 9: Hard Landscape Maintenance Work Schedule

Plans:

LB398_D01: Soft Landscape Proposals



Section 1: Introduction

Purpose

- 1.1. This Landscape Management Plan (LMP) has been prepared by Laird Bailey Landscape Architects (LBLA) on behalf of cwf Architects for Ty Dysgu Primary School, Merthyr (hereafter referred to as the 'site'). The site is centred on OS grid reference SO069079.
- 1.2. The purpose of the LMP is to provide details of measures to ensure the successful establishment and ongoing maintenance of the soft and hard landscape elements of the development proposals for a period of up to 25 years.
- 1.3. This LMP should be read in conjunction with drawings LB398_D01 Soft Landscape Proposals (Sheets 1-2).

Scope of the Landscape Management Plan

- 1.4. This Landscape Management Plan is set out as follows:
 - Section 2 sets out relevant standards and legislation;
 - Section 3 describes the site, and provides an overview of the existing landscape and its condition;
 - Section 4 describes the proposed soft landscaping typologies;
 - Section 5 describes the proposed hard landscaping typologies;
 - Section 6 sets out the long-term design objectives;
 - Section 7 sets out the management regimes and responsibilities;
 - Section 8 sets out the maintenance operations for all the soft landscape areas; and
 - Section 9 sets out the maintenance operations for all the hard landscape areas.



Section 2: Technical and Environmental Considerations

- 2.1. The contractor shall familiarise themselves and their operatives with all British Standards and regulations, as referred to in this document, and any subsequent revisions thereof. All chemical weed control must be carried out by suitably trained staff in accordance with the manufacturers recommendations and the legislation set out below. It should also be noted that the use of pesticides should not be permitted during school hours/ when children and staff are present or unless adequate precautions have been taken to restrict areas for use until safe to do so.
- 2.2. The Contractor must only use chemicals specifically approved for the purpose for which it is intended as dictated by the Control of Pesticides Regulations 1986 and the conditions of approval for the chemicals and any relevant code of practice issued by DEFRA. The Contractor will consider in every instance whether the use of chemicals is strictly necessary before application.

Relevant Standards and Legislation	
ISO 7851	Classification scheme for fertilizers and soil conditioners
BS4428	Code of practice for general landscape operations
BS 8545: 2014	Trees: from nursery to independence in the landscape - Recommendations
BS 5837	Trees in relation to design, demolition and construction - Recommendations
3882:2015	Topsoil
The Food and Environment Protection Act (1985)	
The Control of Pesticides Regulations 1986 (COPR) (as amended 1997)	
The Control of Substances Hazardous to Health Regulations (2002)	
The Environment Protection Act (1990)	



Section 3: Site Overview of Existing Landscape and its Condition

Site Context

- 3.1. The site is located off Market Street, Dowlais in Merthyr Tydfil. The site is proposed for a single storey classroom building with associated landscaping and sustainable drainage features.
- 3.2. The site currently comprises of amenity grassland, scrub, scattered trees, predominantly deciduous (Prunus, Sorbus and Birch) with two conifers. There is a single external classroom at the western end of the site with two picnic benches. There are three raised planting beds scattered throughout the amenity space with groups of bulbs located along the boundary. The northern boundary wraps round the site to the east and west and comprises a tall stone wall, this in part features dense climbers Hedera helix (ivy) and Rubus (Blackberry) sprawling down the face of the wall from neighbouring land. The southern boundary is partially open to the car parking area and also features the main school building (existing).
- 3.3. The character of the site is urban with built development visible from within the site and beyond the sites boundaries.



Section 4: Proposed Soft Landscaping

- 4.1. This LMP is to read in conjunction with details of proposed soft landscaping (see LBLA Drawing No. LB398_D01 - Soft Landscape Proposals (Sheets 1-2).
- 4.2. Soft landscaping within the site is designed to:
- Create an attractive and appropriate setting for the new classroom building, providing all year-round interest and colour;
 - Create a strong soft landscape framework with planting to the perimeter of the site including trees, selected to maximise biodiversity and interest;
 - Create a safe and open play space for children; and
 - Ensure all planting is managed appropriately to promote the growth of flowers, berries and general 'form' offering the maximum benefit of amenity/habitat for birds, small mammals, and insects.
- 4.3. Proposed soft landscaping elements and planting consists of the following.

Trees

- 4.4. A selection of native trees, planted at appropriate sizes will feature across the scheme.

Shrubs

- 4.5. Native specimen shrubs have been proposed around the infiltration basin and are to be retained where considered to be of good health and pose no H&S risk to children along the boundary wall.

Sustainable Urban Drainage Planting (SUDS)

- 4.6. An infiltration basin is to be implemented within the western area of the site. This area is to consist of a shallow depression with gently sloping sides, which will be dry throughout the year but for periods of heavy rainfall. The proposed drainage basin will feature a range of wildflowers, herbaceous plants, shrubs and grasses.
- 4.7. Additionally, a rain garden is proposed to the north-east of the new classroom building, these planted features will help reduce the infiltration rate of water permeating into the ground. Planting within the proposed SUDS features will be tolerant of a range of moisture levels within the soil and standing water.

Amenity Grass Mix

- 4.8. Grass areas will be retained and proposed around the existing and new buildings.



Section 5: Proposed Hard Landscaping

5.1. This LMP is to read in conjunction with details of proposed hard landscaping (see relevant cwf Architects drawings).

5.1 Hard landscaping within the site is designed to:

- Create an attractive and appropriate setting for the new classroom building providing hard landscape, which is fit for purpose, durable and robust;
- Indicate change in use, identifiable from other hard surfaced areas; and
- To provide a pallet of materials which are aesthetically and visually appropriate for the setting and use of the development; and
- To minimise risk of injury and incorporate adequate safety measures such as post and rail fence with gate around infiltration feature.

Concrete Block Paving to Circulation and Footpaths

5.2 Footpaths are to be laid to concrete blocks differentiating these spaces from the parking area to the south-west within the site. All concrete block surfaces will be edged accordingly to maintain crisp lines and ensure the structural integrity of the surface build-up.



Section 6: Long-term Design Objectives

- 6.1 The landscape management plan has been produced to ensure that the new and existing planting on site will be managed effectively, ensuring landscape features establish and thrive in perpetuity whilst maintaining a safe environment for children.

Existing Trees and Shrubs

- 6.2 Management and select thinning/shaping of existing trees and shrubs seeks to secure the current retained landscape elements without compromising other important aims of the development.
- 6.3 Specific objectives include:
- Maintaining long-term health of existing trees and shrubs that contribute to on-site amenity;
 - To extend the life of mature trees through sound arboricultural management;
 - Creating a healthy tree and shrub understorey to knit into the proposed soft landscaping proposals, offering a series of mature/interconnected habitats; and
 - Create a safe space for children to play.
- 6.4 Any tree works such as the removal of hazardous branches or the felling of mature trees will be completed outside of the active period for breeding birds (generally understood as March to August inclusive but some bird species may nest all year round). Should any management be required within the bird breeding period, checks for nesting birds by a suitably trained ecologist will take place prior to any works commencing to ensure that no breeding birds are present. Should a nest be present then a suitable buffer would be installed until the nest is confirmed as being inactive.

Proposed Tree Planting

- 6.5 The long-term design and management objectives of proposed tree planting is to ensure that on-site trees thrive and contribute to an attractive and habitable environment. Trees shall be managed to develop a healthy and even form. Stems should only be removed to retain the natural appearance of the individual plant species or to remove broken or badly damaged branches and dead wood. Tree surgery such as crown lifting should be carried out as required by a suitably qualified individual to prevent restriction to site users.
- 6.6 Watering operations will be carried out as specified in this management plan and in conjunction with drawing LB398_D01 (Sheet 2).
- 6.7 Irrigation timing and frequency will take into account the prevailing weather conditions, soil moisture release, response of the tree species to water deficits or prolonged soil saturation. The holding capacity of the soil and amount of water available to the tree to be assessed at



each visit. Frequency of watering is more important than the volume and should be undertaken as required. Monitoring is recommended when 5 consecutive days at 25 degrees is recorded during the growing season. Water should only be added if the probe / tensiometer values indicate that it would be appropriate to do so.

- 6.8 All trees to be in compliance with BS8545: 2014 Trees: from Nursery to independence in the landscape – Recommendations. Staked trees will be inspected at each maintenance visit, and any trees which have died or are excessively damaged will be removed from site, complete with the stake, and replaced according to the original planting specification.
- 6.9 Mulched areas around trees will be maintained to an acceptable standard (75mm in 1m circumference around stem).

Existing and Proposed Amenity Planting

- 6.10 The long-term design objective of the amenity planting is to ensure the plants thrive to create foliage for amenity value, contribution to drainage features and habitat for wildlife. Planting will be managed to achieve a maximum height commensurate with their location and surrounding features. Pruning should be undertaken to promote flowering and fruiting in accordance with the species and age of the plant. Species and cultivars are to be pruned particularly to maximise flowering and berrying for amenity and wildlife.
- 6.11 As such, any management will take place at the end of the winter months to avoid the active period for most wildlife, providing the plants with time to produce flowers, seeds and berries. Should any management be required within the breeding bird season (March to August inclusive), checks for nesting birds will take place prior to any works commencing by a suitably qualified ecologist. Should a nest be present then a suitable buffer would be installed until the nest is confirmed as being inactive. Any vegetation management will have consideration for the potential presence of breeding birds as per the management considerations stated above.

Infiltration Basin

- 6.12 Once the infiltration basin is created, it is important to maintain some open margins and access to the outlet headwall. If the margins become overgrown with plants, access to the central area of the basin will be limited and a range of habitat shall not be created.
- 6.13 It is intended that planting will be regularly managed annually by mowing/strimming and thinning by hand. Small proportions of longer marginal vegetation and specimen shrub planting will also be provided for additional habitat variety, which will benefit invertebrates.
- 6.14 The infiltration basin on site will aim to provide a unique habitat for hundreds of species of aquatic and terrestrial plants and animals. Equally, the infiltration basin will assist with water quality improvement as well as providing valuable aesthetically pleasing resource. This would be cut back once a year in late August or early September, left for a minimum of 3 days before the removal of arisings, thus allowing the majority of the grassland plants to bloom and set seed and any aquatic life to re-enter the water body.



Existing and Proposed Amenity Grass Mix

- 6.15 Management aims to provide a safe and open playing space for children meeting their amenity requirements. The management objectives are as follows:
- 6.16 Provide a change in structure varying from regularly mown amenity grassland and grass edges cut on less frequent mowing rotations along the walled boundary; and
- 6.17 Amenity grass will be cut to a height of 35mm monthly during the growing season with arisings removed.

Vegetation for Removal

- 6.18 Along with trees proposed for removal, areas of scrub which include nettles, blackberry, ivy and various defunct shrubs are to be removed to create a safe environment for children to play.
- 6.19 All climbers found along the boundary wall should be removed. Ivy is toxic to humans and can be used to climb up. All Rubus species (blackberry) shall also be cleared from within the boundary and cut back in perpetuity. Rubus are thorny and pose a threat to children.



Section 7: Management Regimes and Responsibilities

- 7.1. The landscaping works will receive post installation maintenance for a one-year Defects Liability Period (DLP). All defects resulting from plant loss, disease, or failure will be replaced on a like for like basis. A visit every month, or more frequently should watering be required, is recommended during the DLP. Subsequently a minimum of 12 maintenance visits per annum is recommended with this LMP covering a period of 25 years. Following the Defects and Liability Period all plants shall be replaced by the site owner up to a period of 5 years post DLP.
- 7.2. Maintenance and management activities are set out below (which covers a minimum period of 25 years) to ensure the soft landscaping is managed effectively beyond the time limits of the implementation and establishment works. The responsibility for this management and maintenance is to be agreed. LBLA's recommendation is for the landscape contractor that undertakes the planting works to be engaged to carry out the one-year establishment maintenance.
- 7.3. Management and maintenance operations will be monitored and reviewed annually on an on-going basis and modified where required; if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.
- 7.4. As a minimum, maintenance visits should be undertaken to inspect and monitor as well as to carry out routine operations, including weeding and litter picking, with other specific operations being undertaken as scheduled below.
- 7.5. The appointed Contractor must provide details of all necessary insurances and certification to carry-out the works specified in this management plan. It is the responsibility of the appointing authority to ensure that all submitted insurances and certificates are up to date and provide the appropriate level of cover for the specified works.
- 7.6. Defects in the landscape are to be identified early and addressed promptly.



Section 8: Soft Landscape Maintenance Work Schedule

Component	Task	Time of Year	Frequency
<i>Visits every month throughout the one-year defects and liability period, more frequently if required due to prologued dry weather conditions and the need for watering.</i> <i>Subsequently management and maintenance operations will be monitored and reviewed annually for the first five years and then every five years by the appointed management company. If operations and frequencies set out do not deliver the required results or meet the specific aims and objectives, these should be modified accordingly.</i>			
Existing and Proposed Tree Planting	Inspect, prune and repair wounds in accordance with good horticultural and arboricultural practice.	Oct-Feb	As required (annually).
	Check tree ties regularly for rubbing and adjust if necessary. Constriction of the stem by ties happens very quickly, so fast-growing trees need frequent checking. After bad weather, check for abrasion and snapped stakes or ties. Re-firm tree by adjusting tree ties and ensuring soil is re-firmed around the base.	All year round and especially after strong winds, frost heave and other disturbances.	As required (annually).
	Hand weed mulched areas around trees.	Mar-Sep	Every visit.
	Apply suitable non-selective herbicide to control weeds.	Mar/Oct	Only if required.
	Replace any failed specimens.	Oct-Mar	As required during the one-year DLP and 5 years post DLP (next available planting season).
	Remove debris/litter	Throughout	Every visit.
	Top up bark mulch around bases of trees to full depth of 75mm.	Mar/Apr	As required during the DLP.
	Newly planted trees will be watered throughout May-August months after any period of four	Throughout	As required – or at least once after a period of four weeks without



Component	Task	Time of Year	Frequency
	weeks without significant rain to thoroughly wet the top 150mm of soil around the tree roots.		significant rainfall (see monitoring in proposed tree section).
	Trimming and selective thinning of the canopy. Trim back growth overhanging adjacent footpaths when required.	Oct-Mar	Annually if required.
	In year 2, remove staking if tree has established well.	Any	As required.
Amenity Planting	Trimming, pruning and reshaping to encourage healthy bushy growth, flowering and fruiting. Trim back growth overhanging adjacent footpaths when required.	Oct-Mar	Annually if required.
	Hand weed.	Throughout	Every visit.
	Apply suitable non-selective herbicide to control weeds.	Apr-Sep	Only if required.
	Remove debris/litter.	Throughout	Every visit.
	Replace any failed specimens.	Oct to March	Within the DLP, as required (next available planting season).
	Top up bark mulch around bases of shrubs to full depth of 75mm.	Throughout	As required.
	Watering of newly established shrubs.	Throughout	As required to ensure successful establishment and longevity.
Infiltration Basin Meadow Grass	During the first year allow annual weeds to establish to protect seed stock. Cut, compost, and remove in August. In subsequent years mow basin margins to 50mm.	August	Once per year. Leave hay cuttings to drop seed for minimum of 3 days (up to 7) before removing.



Component	Task	Time of Year	Frequency
	Plant management/thinning	August to October	Plant thinning should be carried out on a 2-year cycle to halt the natural succession process and ensure an open body for water is maintained. Cuttings should be left for a minimum of 3 days to allow any aquatic life displaced during operations to re-enter the water body.
	Clearance of debris/ rubbish	Throughout	The basin is to be regularly checked for rubbish or other detritus material. Any rubbish to be cleared by hand and removed from site.
	Mowing/strimming	October to March	Mow/strim wet meadow grassland. Cuttings must be left for a minimum period of 3 days before being raked up and removed, to allow wildflowers to bloom and disperse seeds.
	Weed control.	Mar-Sep	Invasive weeds to be spot treated with a glyphosate herbicide applicator. Herbicide must not be applied within 2m of the basin if permanent standing water is present. Any weeds within this 2m zone or on sloping banks should be removed by hand or mechanically. Herbicides of any kind should not be used during windy conditions.



Component	Task	Time of Year	Frequency
	Re-seeding (if required).	Sep	Any bare patches of ground where seed has failed to germinate should be re-seeded as per the original specification.
Amenity Grass Mix	Mowing and removal of arisings. Allow 4 weeks for establishment. Before the first cut lightly roll or tread newly seeded areas, after a few days once the grass has picked up again the lawn shall be ready for its first cut (Do not roll however if the ground is saturated with water).	Mar-Oct	Monthly/every visit. Grass should be mown regularly to aid with establishment to a height of 50mm after a full, thick sward has established. Roll the grass area
	Clearance of debris/rubbish	Throughout	Area to be regularly checked for rubbish or other detritus material. Any rubbish to be cleared by hand and removed from site.
Vegetation Encroachment	Clear all climbing plants from boundary wall and remove all Rubus (Blackberry) and nettles encroaching into site	Throughout	As required (Monthly).



Section 9: Hard Landscaping Maintenance Works Schedule

Component	Task	Time of Year	Frequency
<i>Visits every month throughout the one-year defects and liability period. Management and maintenance operations will be monitored and reviewed annually on an on-going basis and where required modified if the operations and frequencies set out do not deliver the required results or meet the specific aims and objectives.</i>			
Hard landscape surfaces	Weeding/litter picking/sweeping.	Throughout	Hard surfaces within external areas should be maintained in a clean and tidy appearance free from weeds and litter. This will include general sweeping, weeding and occasional spray of surfaces as required.
	Repairs to cracked or worn surfaces.	Throughout/weather permitting	Hard landscape footways should be checked quarterly; any areas of wear that may become a safety concern should be assessed and repaired immediately.
	Cleaning/pressure washing	As required	Hard surfaces should be pressure washed periodically to prevent the build-up of surface algae/moss. Special care should be given to the replenishment of kiln dried



Component	Task	Time of Year	Frequency
			sand which may have washed out in block paved areas.
Street Furniture	Check/assessment of street furniture.	Throughout	Undertake regular checks, maintenance, and repairs as necessary to ensure furniture and boundary treatment remains safe, in a usable condition and in a good state of repair. Empty litter bins at intervals appropriate to level of use.
	Litter collection.	Throughout	Empty litter and dog bins at intervals appropriate to level of use.



Plans:

LB398_D01: Soft Landscape Proposals (Sheets 1-2)





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Client:
cfw Architects

Project Title:
Ty Dysgu School, Merthyr

Drawing Title:
**Soft Landscape Proposals
(Sheet 1 of 2)**

Date: 23 August 2023
Drawing Number: LB398_D01
Scale: 1:100 at A1
Status: Draft

Drawn By: DB
Checked by: AL
Revision: -
Use: Planning

GENERAL PLANTING SPECIFICATIONS:

Proposals to be read in conjunction with Architect's and Engineers Drawings;

- All landscape operations to be in accordance with BS4428: 1989 & BS 3936: 1992 and all amendments to date;
- Plant material to conform to the National Plant Specification;
- Any plant material planted outside the recognised planting season (Nov-Feb), to be containerised stock and supplied at the sizes specified;
- Plant handling and planting operations to be in accordance with HTA "Handling and Establishing Landscape Plants parts I - III;
- All planting to be maintained and guaranteed for 12 months under the defects and liability period and 5 years thereafter by the client to include watering, weeding, pest & disease control;
- The landscape sub-contractor is to take all safety precautions to prevent any injury to any persons. The landscape sub-contractor shall comply with the requirements of the Health and Safety at Work Act 1974 and current Construction, Design and Management Regulations; and
- The landscape sub-contractor shall confirm the location of all underground services before commencement of planting and report where trees/hedges are suggested within 3m of underground services and 5m of buildings.

SOIL AND MULCH

Soils should be certified to BS 3882:2015 (topsoil) and BS 8601:2013 (subsoil), but most importantly found via a soil scientists interpretive report and soil resource plan to be fit for the specific landscape function. Topsoil and subsoil will be of similar textural range and 'keyed in' at interface.

- Existing topsoil (if present and suitable) to be stripped and stored on site in heaps not exceeding 2m in height and kept weed free;
- Any compacted subsoil to be broken up to allow free drainage and to enable topsoil to key into surface;
- Any imported topsoil to be to BS3882, medium texture, neutral PH value, reasonably stone free with no stones over 20mm in size;
- Soil for meadow grassland to be composed of prepared sub-soil (nutrient poor);
- Topsoil depths to be 450mm for shrubs, hedges, climbers and groundcover planting;
- Finished topsoil levels to be 25mm above adjacent paved surfaces, and 300mm wide hard surfaced mowing margin to be provided where lawn adjoins buildings; and
- All planting areas to be covered with a 75mm depth of medium grade bark mulch.

PLANT MATERIAL TREATMENT

- All to be British grown stock and fully hardened off;
- Root Dip – Proprietary Root Dip applied to all bare root stock at time of lifting at nursery and prior to planting;
- Anti-Desiccant – Proprietary anti-desiccant to be applied to foliage of all containerised/rootballed material in leaf, specimen confiders and evergreens etc. prior to transportation and during any delay in planting;
- Pruning - Allow for pruning of all deciduous trees and shrubs by 1/3rd /following planting at Landscape Architect's direction or as indicated in the planting schedule;
- Tree Stakes and Ties – Stakes to be pressure treated, round, smooth and peeled Larch or Chestnut, not less than 100mm in diameter. Advanced nursery stock – double staked with cross bar.

SEEDING

- Grass seeding cultivation to be brought to a fine tilth and all stones over 25mm in all directions removed. Areas to be uniformly firmed.
- Apply approved herbicide to control perennial weeds and allow period of time to elapse as recommended by manufacturer before final cultivation.
- Grass seed to be sown at rates shown below and as per Emorsgate recommendations.
- Amenity Grass areas to be seeded with Emorsgate EG22 Wear Tolerant Turfgrass Mixture (or similar approved), sown at 25g/m;
- Seasonally wet areas to be seeded with Emorsgate EM8 Meadow Mixture for Wetlands (or similar approved), sown at 4g/m;
- Roll the seeded area with a ribbed crinkle or Cambridge roller upon completion;
- When grass is between 40-75mm high remove any remaining stones and debris exceeding 50mm in any dimension. Cut grass to approximately 50mm high for the first cut and 35mm thereafter; Wetland Meadow grass to be cut twice a year in March and October.
- Remove and dispose of all arisings.

EXISTING TREES AND SHRUBS

- Avoid damage to branches, trunks and roots of trees. All existing trees and hedges to be retained are subject to BS5837 (2005 and all amendments to date) 'Trees in relation to Construction – Recommendations', and should be fully fenced off, prior to the commencement of any works.
- Where existing trees and shrubs are to be retained they should be subject to a full Arboricultural inspection for safety;
- Any surgery required shall be in accordance with BS3998 (2010 and all amendments to date) 'Tree Work – Recommendations', shall comply with any existing T.P.O requirements and shall require the prior approval of the Landscape Architect;
- No storage of materials, disposal of rubbish, site fires, spillage of oil and chemicals, ground compaction, excavation or changes in level shall be carried out within existing tree/hedge canopies.

TREES

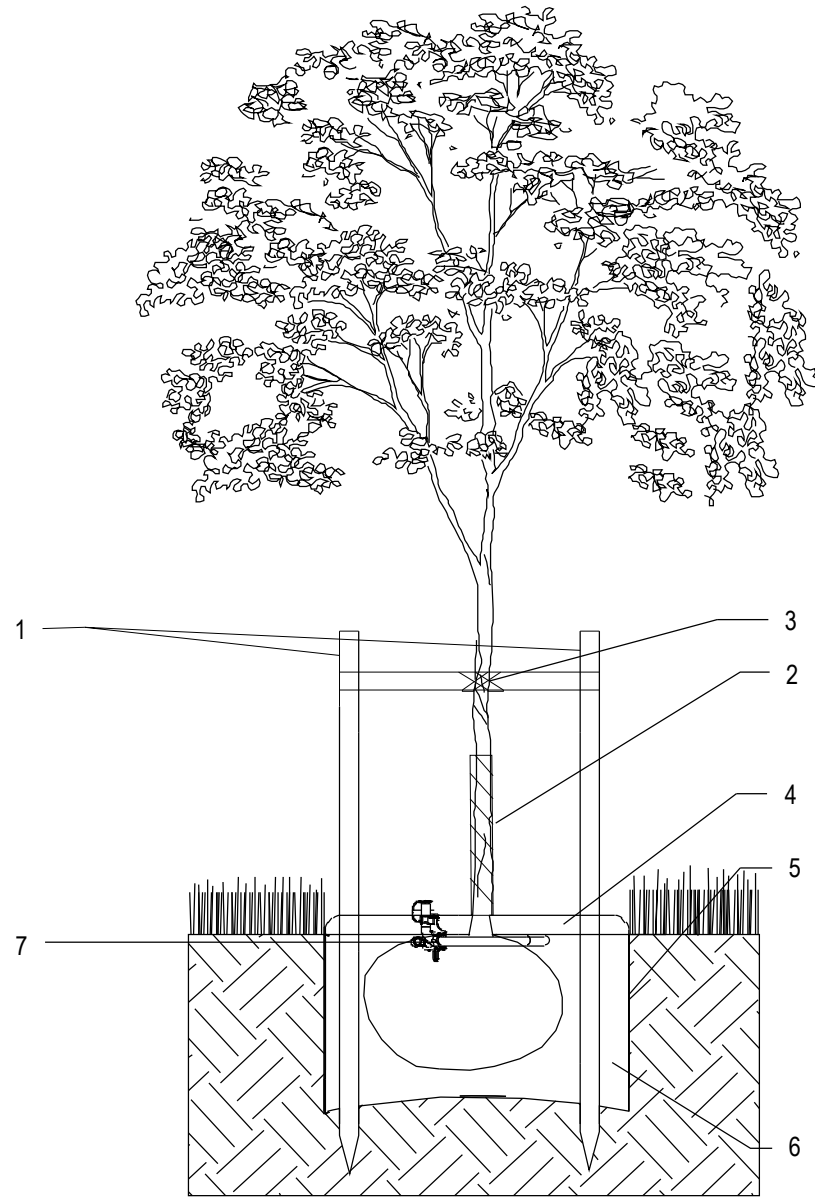
- No trees to be planted within 3 metres of sewers or services or other easement recommended by the relevant statutory undertaker without the use of tree root barriers e.g Greenleaf Reroot 600/100 placed between the tree and services;
- All trees shown to be planted ensuring that they are at least 5 metres away from buildings or distances conform with NHBC guidelines;
- Contractor to ascertain the location of all sewers and services prior to tree planting;
- Root barrier to be installed in planting pits in near proximity to underground services;
- Allow for the use of container grown stock during the periods 1 April to 31 October, and field grown stock from 1 November to 31 March unless otherwise specified in the planting schedule;
- Trees planted within grassed areas to be provided with appropriate conical strimmer guards;
- Heavy standard trees (12-14cm girth) to be planted in pits 1200 diameter x 900mm deep, supported by double stakes;
- All tree pits should be comprise of 300mm of topsoil over 600mm free draining subsoil to replicate normal ground conditions;
- Detailing of tree pit to include tree pit irrigation "Root rain precinct" or similar approved; "Green leaf root director; Where necessary increase tree pit dimensions to ensure that tree pits are at least 75mm deeper and 150mm wider than rootball. Break up bottom of pits to a depth of 150mm. Compacted glazed sides of pits should be roughened.

SHRUBS (ORNAMENTAL AND SPECIMEN)

- All shrubs to be planted in pits twice the size of the pot in depth and width and backfilled with a 50-50 topsoil and shrub planting mix.
- Shrubs in planting mixes are to be planted in same species groups between 3-5 plants per group.

PLUG PLANTING

- All plug plants to be planted with the aid of plug/bulb planter tool and evenly distributed according to planting densities specified. Plug holes should be carefully backfilled with a 50/50 aquatic loam soil mix and gently firmed around the base of the plant. Plants should be planted in same species groups between 3-5 species in each group.



TREE PIT DETAIL

1. 2x tanalised timber tree stakes 2400mm, 100mm Ø and crossbar (75x38x900mm) driven (minimum 300mm) into backfilled pit to provide support to the tree.

2. Spiral guard to be fitted to trunk to protect against animal browsing.

3. Use 2x Tree Ties GLB25A with GLPFA spacer sleeves or similar to secure tree to support post.

4. 75mm deep bark mulch layer to be spread evenly over a circular area 1000mm Ø around the tree to prevent weed growth and retain moisture.

5. Excavate tree pit to 1200mm diameter x 900mm deep. Break up base to a depth of 150mm (minimum), scarify edges. The tree should be planted at a depth where the root flare is still visible, just breaching the soil surface, following backfilling.

6. Backfill tree pit with subsoil (600mm) and topsoil (300mm) excavated from pit if this is regarded as of sufficient quality to promote the healthy establishment of the tree. If either the top soil or sub soil excavated from the pit is of poor quality, then soil ameliorants may be used sparingly or imported topsoil compliant with BS3882 should be used.

7. Watering/aeration tubes - 50mm Ø, black perforated land flex drainage pipe with suitable rubber/plastic bung. Place around top of root ball and nail to supporting stake, ensuring filler cap finishes slightly above mulch level.

Immediately after planting, water the tree, saturating the tree pit to field capacity. Between 50-200 litres of water should be applied per tree, as often as daily if required, to all semi mature tree stock. The quantity of water required is dependant on tree species, size, location and weather conditions, and should be judged in accordance with the core samples taken.

Planting Schedule

Trees	Number	Species	Specification	Girth	Density
3	Betula pendula	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted
1	Prunus avium	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted
1	Sorbus aria	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted
1	Sorbus aucuparia	Heavy Standard	:Clear Stem min. 200	:7 brks	:RB 12-14cm Counted

Shrubs	Number	Species	Specification	Density
2	Cornus sanguinea	Bushy	:5 brks	:C Counted
2	Corylus avellana	Bushy	:4/6 brks	:RB Counted

Attenuation Basin Margin Mix	Number	Species	Specification	Density	Percentage	Contribution
5	Geum rivale	Plug	:Well Rooted	4/m²	6%	
7	Iris pseudacorus	Plug	:Well Rooted	4/m²	10%	
7	Lobelia cardinalis	Plug	:Well Rooted	4/m²	10%	
7	Lychnis flos-cuculi	Plug	:Well Rooted	4/m²	10%	
7	Lysimachia punctata	Full Pot		4/m²	10%	
7	Lythrum salicaria	Plug	:Well Rooted	4/m²	8%	
6	Mimulus ringens	Plug	:Well Rooted	4/m²	7%	
7	Persicaria bistorta	Full Pot		4/m²	8%	
7	Primula bulleyana	Full Pot		4/m²	8%	
6	Rodgersia pinnata	Full Pot		4/m²	7%	
5	Rudbeckia fulgida sullivantii 'Goldsturm'	Full Pot		4/m²	6%	
7	Rudbeckia laciniata	Full Pot		4/m²	10%	
Total :78						

Rain Garden (Low plants) Mix	Number	Species	Specification	Density	Percentage	Contribution
11	Aster azureus	Full Pot		5/m²	30%	
11	Erigeron karvinskianus	Full Pot		5/m²	30%	
15	Hebe rakaiensis	Bushy	:C	5/m²	40%	
Total :37						

Rain Garden (Medium plants) Mix	Number	Species	Specification	Density	Percentage	Contribution
10	Aster novae-angliae	Full Pot		3/m²	30%	
10	Echinacea pallida	Full Pot		3/m²	30%	
7	Panicum virgatum	Full Pot		3/m²	20%	
7	Rudbeckia fulgida sullivantii 'Goldsturm'	Full Pot		3/m²	20%	
Total :34						



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Client:

cfw Architects

Project Title:

Ty Dysgu School, Merthyr

Drawing Title:

Soft Landscape Proposals
(Sheet 2 of 2)

Date: 23 August 2023
Drawing Number: LB398_D01
Scale:
Status: Draft

Drawn By: DB
Checked by: AL
Revision:
Use: Planning

APPENDIX L: Maintenance Plan

[To be included in SAB application]

Management and Maintenance Plan for Sustainable Drainage (SuDS):

New Build Classrooms,
Ty Dysgu Primary School,
Market Street, CF48 2AJ

Prepared for:

Merthyr Tydfil CBC

REF: 16691 – MP01 R02



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CONSULTING CIVIL & STRUCTURAL ENGINEERS

Document Control

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Client	Merthyr Tydfil County Borough Council
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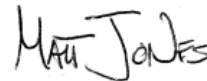
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Issue	Date	Status
1	24/03/2023	First issue
2	07/06/2023	Revised Surface water strategy – infiltration basin replaced by detention basin
3	17/08/2023	Revised drainage and site layouts

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1. INTRODUCTION

- 1.1. This SuDS Management and Maintenance Plan has been prepared by Vale Consultancy on behalf of the client; Merthyr Tydfil County Borough Council.
- 1.2. The proposed development consists of the construction of a new classrooms building at an existing school site in Dowlais.
- 1.3. The scheme incorporates a sustainable drainage system for surface water runoff, which consists of a rain garden, a detention basin, gravel filter drains and a water butt.
- 1.4. The purpose of this document is to set out the overall management and maintenance objectives for the proposed SuDS components and to describe the long-term maintenance required to allow the system to continue operating as is intended.
- 1.5. All references to SuDS components are based on the SAB submission drawings:

- ***16691_C500: Drainage Layout***
- ***16691_C502: Catchment Area and Exceedance Flow Plan***
- ***16691_C503: Drainage Details Sheet 1 of 2***
- ***16691_C504: Drainage Details Sheet 2 of 2***
- ***16691_C3000: Landscaping Plan***

2. MANAGEMENT RESPONSIBILITIES

- 2.1. The site owner and appointed contractor shall be responsible for the implementation of the Management and Maintenance Plan, as part of the overall maintenance of the existing wider site. If deemed necessary, all maintenance operations shall be undertaken by suitable and qualified contractor appointed by the site owner, for the design life of the development.
- 2.2. All inspections and maintenance work must be recorded. This allows for future assessment of the maintenance activities and their response to the system. It can also provide protection against legal claims should the system be exceeded in a storm event leading to flooding elsewhere.

3. MANAGEMENT OBJECTIVES

- 3.1 The site shall be managed and maintained as an attractive, tidy, and safe finish to all landscape elements.
- 3.2 The site owner shall ensure establishment and long-term health of all landscape elements for the benefit of the tenants and visual amenity of the area.
- 3.3 Best Health & Safety practices shall always be understood and followed.
- 3.4 To monitor standards and make amendments where required, it is expected that the site owner will review the management work (with reference to this document) at least quarterly for the first year and annually thereafter.

4 INSPECTION AND MAINTENANCE ACCESS

- 4.1 Access for inspection and maintenance can be gained from the car park and garden accesses, with all SuDS features maintainable from within the site boundary. Maintenance vehicles will be able to park on the proposed car park with direct access to the SuDS features within the car park. Drainage features within the proposed dwelling's rear gardens will be accessible via garden access to the sides of the properties.

5 MAINTENANCE VISITS OR INSPECTIONS

- 5.1 Site owner appointed maintenance contractor shall carry out a minimum of 2 maintenance visits (Spring and Autumn) or inspections per year to check drainage SuDS components. Additional visits may be needed to deal with extreme weather conditions or specific horticultural requirements.

6 GENERAL

- 6.1 All materials and workmanship are to be to the highest possible standards and shall be in accordance with relevant British Standards, good horticultural and arboricultural practices, and the landscape specification.
- 6.2 Site owner shall employ suitably qualified staff for all work and when using sprays and mechanical equipment.
- 6.3 Site owner and their appointed contractors shall comply with all relevant Health and Safety regulations and good working practices.
- 6.4 Site owner shall take care when work is beside any structure or paved area and will, at their own cost, be responsible for making good any damage caused.
- 6.5 Weeds, pruning's, leaves, rubbish and other arisings shall be removed from site for composting, where possible. No material shall be left on site, and the area shall be left in a neat and tidy condition after each visit.

7 ORNAMENTAL PLANTING

7.1 Specific objectives:

- To ensure early establishment and healthy growth
- To maintain a dense canopy cover
- To maintain year-round appearance and visual interest

7.2 Maintenance Operations:

- 7.2.1 All planting in the raingarden areas shall be maintained substantially free of weeds. Work shall be done either manually or with appropriate selective weed killer in accordance with manufacturer's recommendations. If weed killer is used, the dead weeds shall be removed at the next maintenance visit. Care must be taken to avoid damage to adjacent planting and grass and replaced immediately if affected by weed killer.
- 7.1.2 Once established, shrubs shall be selectively thinned or reduced in height as appropriate by removal or pruning to allow room for growth and avoid overcrowding/overshadowing and create a natural form rather than cube or cloud shapes. Care shall be taken to avoid over pruning and so creating obvious gaps in the shrub beds.
- 7.1.3 Ground cover plants shall be clipped or pruned, if necessary, to give a neat and tidy finish and contained within the planting bed. Work to remove dead vegetation shall be carried out during the winter months.
- 7.1.4 Pruning of herbaceous planting:

In spring cut stems close to the 'crown' or 'dormant' top of the plant, avoiding the removal of new shoots.

- Tidy up the base of the plant, removing dead foliage and debris
- Remove all material from site
- Apply a 50mm layer of fine horticultural mulch. This will help moisture detention in the soil, contribute to weed suppression and allow delicate stems to grow
- Leave dried flower head over winter for relevant species e.g., ornamental grasses

7.1.5 Fertilising:

- One application, just before or at the time of spring growth
- A balanced fertiliser is required, one high in Phosphorus (which encourages blooming as well as strong roots and disease resistance). Fertilisers high in nitrogen should not be used as nitrogen promotes excess foliage at the expense of flowers and roots which can result in weak stems

8 LITTER COLLECTION

- 8.1 All hard surfacing shall be swept as necessary, and all rubbish removed from site.
- 8.2 Litter picking/clearance shall take place during each maintenance visit and all waste shall be removed from site.
- 8.3 During autumn maintenance visits all fallen leaves shall be collected and removed from site.

9 FENCING/WALLS/RAILING

- 9.1 All fencing, walls and railings shall be checked for damage/wear and when necessary, shall be replaced/repainted/ re-stained or painted as appropriate.

10 TRADITIONAL DRAINAGE

- 10.1 A monthly site inspection should be carried out, checking for any areas that are not operating correctly and collecting/removing litter and debris
- 10.2 All rainwater pipes, linear drains, catch pits and inspection chambers should be inspected biannually, typically spring and autumn
- 10.3 Any excessive sediment build-up in rainwater pipes, linear drains, gullies or inspection chambers causing blockage or poor performance shall be cleared and cleaned as required

11 SUMMARY OF INSPECTION AND MAINTENANCE

- 11.1 The following briefly summarises the type of inspections and maintenance required for the SuDS components and drainage system used in this scheme:

11.2 General

- General inspections of SuDS areas (Rain gardens, conveyance pipes, and, inlets and outlets) and shall include litter collection
- Biannual check of traditional drainage including rainwater pipes, linear drains, kerb outlets, and inspection chambers

11.3 Raingardens

The CIRIA SuDs Manual considers rain gardens to be a bio retention system and as such its recommended operation and maintenance schedule is shown in the extract below:

TABLE 18.3 Operation and maintenance requirements for bioretention systems		
Maintenance schedule	Required action	Typical frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

11.4 Detention Basin

The below extract from the CIRIA SuDs Manual shows the recommended operation and maintenance schedule for detention basins, which are denoted as detention basins within the guide:

TABLE 22.1	Operation and maintenance requirements for detention basins		
	Maintenance schedule	Required action	Typical frequency
Regular maintenance		Remove litter and debris	Monthly
		Cut grass – for spillways and access routes	Monthly (during growing season), or as required
		Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
		Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
		Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
		Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
		Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
		Check any penstocks and other mechanical devices	Annually
		Tidy all dead growth before start of growing season	Annually
		Remove sediment from inlets, outlet and forebay	Annually (or as required)
		Manage wetland plants in outlet pool – where provided	Annually (as set out in Chapter 23)
Occasional maintenance		Reseed areas of poor vegetation growth	As required
		Prune and trim any trees and remove cuttings	Every 2 years, or as required
		Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions		Repair erosion or other damage by reseedling or re-turfing	As required
		Realignment of rip-rap	As required
		Repair/rehabilitation of inlets, outlets and overflows	As required
		Relevel uneven surfaces and reinstate design levels	As required

11.5 Gravel Filter Drains

The below extract from the CIRIA SuDS Manual shows the recommended operation and maintenance schedule for gravel filter drain:

TABLE 16.1 Operation and maintenance requirements for filter drains			
Maintenance schedule		Required action	Typical frequency
Regular maintenance		Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
		Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
		Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
		Remove sediment from pre-treatment devices	Six monthly, or as required
Occasional maintenance		Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
		At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
		Clear perforated pipework of blockages	As required

12 LIFETIME MANAGEMENT AND MAINTENANCE COSTS

12.1 The costs associated with the management and maintenance of the SuDS system over the 60-year design life of the scheme has been estimated based on the inspection and maintenance activities in Section 12, as follows:

12.2 General

- General monthly inspection (incl. litter removal) – included in general maintenance undertaken
- Biannual check of traditional drainage including rainwater pipes, linear drains, gullies and inspection chambers
- Maintenance costs are based on a 60-year design life of the development and SuDS features

12.3 Rain Gardens

- Annual Weeding = £100 x 60 yr = £6,000
- Replacement planting annually £100 x 60 yr = £6,000
- Annual Fertiliser /feeding £75 x 60 yr = £4,500
- Litter picking 2/year £35 x 60 yr = £2,100

12.4 Detention Basin

- Annual Weeding = £100 x 60 yr = £6,000
- Replacement planting annually £100 x 60 yr = £6,000

- Litter picking 2/year $\text{£}35 \times 60 \text{ yr} = \text{£}2,100$

12.5 Gravel Filter Drain

- Litter picking monthly $\text{£}20 \times 60 \text{ yr} = \text{£}1,200$

12.6 The total sum of management and maintenance costs for the proposed SuDS over a 60-year design life: **£33,900.00** and **£565.00 a year (average)**.