

GEOTECHNICAL & GEOENVIRONMENTAL REPORT

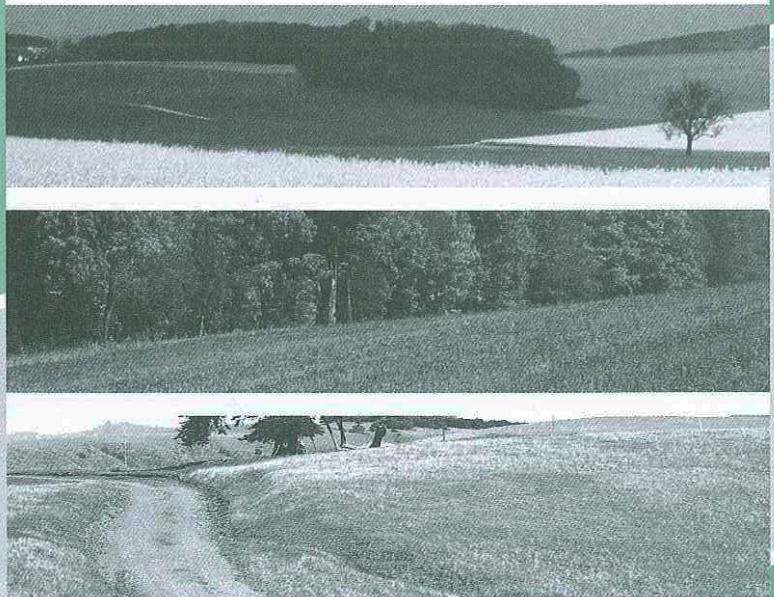
Proposed Residential Development,
Main Road, Dyffryn Cellwen, Neath

Prepared for:

DJD Builders Ltd

July 2018

Job No: 14753



**Geotechnical and Geo-Environmental
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Report: Proposed Residential
Development,
Main Road, Dyffryn Cellwen, Neath**

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Executive Summary

Site Location and Proposed Development	<i>DJD Builders Ltd are proposing the development of residential housing at land off Main Road, Dyffryn Cellwen, Neath.</i>
Site History	<i>Historically the site has had a mixed use including a surgery and residential development.</i>
Geology	<i>The site is underlain by rocks of the Lower Coal Measures strata.</i> <i>No superficial soils are shown to overly the solid geology.</i> <i>Made ground is also shown to overly the boulder clays.</i>
Mining	<i>An intrusive coal mining investigation consisting of three rotary probe holes has been undertaken on the site. No evidence of coal mining was observed where intact sequences of coal was recorded. The depths and thicknesses of the seams pose an insignificant risk to the site should they be worked in areas not covered by the investigation. The site is therefore not at risk from shallow mining.</i>
Ground Conditions	<i>The ground conditions consists of made ground overlying coal measures bedrock.</i>
Laboratory Chemical Testing	<i>All substances tested for were found at concentrations below their respective residential guidelines.</i>
Proposed Remediation	<i>Not required.</i>
Foundation Solution	<i>Given the extent and depth of made ground encountered across the site, it is recommended that reinforced strip and trench fill foundations are adopted for the proposed scheme. The reinforced should be designed to cater for differential settlements across the length of the strip.</i> <i>For the above strip foundation, an allowable bearing capacity of 100 kPa may be used for design purposes where settlements will not exceed 25mm.</i> <i>Floor slabs should be designed as ground bearing.</i>

TABLE OF CONTENTS		Page
Section 1	Introduction and Proposed Development	1
1.1	Limitations and Exceptions of Investigation	1
Section 2	Review of Existing Data	2
2.1	Physical Setting, Current Use and Site Conditions	2
2.2	Site History	2
2.2.1	Environmental Regulations Information Request	3
2.3	Environmental Setting	3
2.3.1	Geology	3
2.3.2	Radon	4
2.3.3	Mining	4
2.3.4	Hydrology & Hydrogeology	4
2.3.5	Flooding	5
2.3.6	Waste	5
Section 3	Preliminary Risk Assessment	6
3.1	General	6
3.2	Classification of Consequence	7
3.3	Classification of Probability	7
3.4	Risk Assessment Matrix	8
3.5	Preliminary Site Conceptual Model	8
3.5.1	Potential Sources of Contamination and Gas	8
3.5.2	Potential Receptors	9
3.5.3	Potential Pathways	9
3.5.4	Summary of Site Conceptual Model	9
Section 4	Field Investigation	12
4.1	Site Works	12
4.2	Ground Conditions	12
4.2.1	Groundwater	12
4.2.2	Pit Stability	12
4.3	Laboratory Soil Chemical Testing	13
4.3.1	Exploratory Strategy and Sampling Regime	13
4.3.2	Soil and Groundwater Laboratory Analysis	13
Section 5	Evaluation of Analytical Results	15
5.1	Soil Analysis Methodology	15
5.2	Soil Test Results	15
Section 6	Risk Assessment/Mitigation Measures	18
6.1	Contaminants of Concern	18
6.1.1	Contaminants of Concern in Soil	18
6.1.2	Ground Gas	18
6.2	Potential Receptors and Pathways	18
6.2.1	Human Receptors	18
6.2.2	Aquatic Environment	18
6.3	Mitigation and Remedial Measures	18

TABLE OF CONTENTS		Page
Section 7	Assessment of the Risk from Shallow Mining	19
Section 8	Engineering Recommendations	20
8.1	Preparation of Site	20
8.2	Foundation and Floor Slab Solution	20
8.3	Excavations and Formations	21
8.4	Protection of Buried Concrete	21
8.5	Sustainable Drainage	22
8.6	Retaining Walls	22

Tables

Table 2.1	Historical Development from Map Information
Table 3.1	Classification of Consequence
Table 3.2	Classification of Probability
Table 3.3	Risk Assessment Matrix
Table 3.4	Contaminants of Concern
Table 3.5	Qualitative Preliminary Human Health Risk Assessment
Table 3.6	Qualitative Preliminary Environmental Risk Assessment
Table 4.1	Summary of Ground Conditions
Table 4.2	Soil Chemical Test Sample Locations and Depths
Table 4.3	Monitoring Standpipe Installation Details
Table 5.1	Summary of Soil Chemical Test Results - Standard Suite
Table 5.2	Summary of Soil Chemical Test Results - Speciated Polycyclic Aromatic Hydrocarbons
Table 5.3	Summary of Soil Chemical Test Results - Speciated Petroleum Hydrocarbons
Table 5.4	Summary of Soil Chemical Test Results - Asbestos Screen
Table 8.1	Plasticity Test Results
Table 8.2	Shear Strength Parameters

Figures

Figure 2.1	Site Location
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Annexes

Annex A	Landmark History Plans
Annex B	Envirocheck Report
Annex C	Mining Report
Annex D	Trial Pit Logs
Annex E	Rotary Percussive Borehole Logs
Annex F	Laboratory Soil Chemical Test Results

Drawings

Drawing 01	Exploratory Hole Locations
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SECTION 1 Introduction and Proposed Development

DJD Builders Ltd are proposing the development of residential housing at land off Main Road, Dyffryn Cellwen, Neath.

Terra Firma (Wales) Limited have been commissioned by DJB Builders Ltd to undertake a geo-environmental assessment and geotechnical investigation of the site.

The main objectives of the geo-environmental assessment programme were to:

- Investigate the potential environmental liabilities at the site associated with any soil contamination
- Provide a summary of the environmental conditions at the site, together with any necessary further intrusive works and / or remediation works to render the site fit for its intended use

The main objectives of the geotechnical site investigation were to:

- Determine the type, strength and bearing characteristics of the shallow superficial and underlying solid geology
- Provide engineering foundation and floor slab recommendations for the development
- Provide recommendations with regard to any other geotechnical aspects pertaining to the development

In order to achieve the above objectives, Terra Firma (Wales) Limited carried out an assessment programme including a site walkover, a review of existing data, followed by a field investigation to collect geotechnical and environmental data from selected locations.

1.1 Limitations and Exceptions of Investigation

DJD Builders Ltd has requested that a Geo-environmental Site Assessment (GSA) and Geotechnical Investigation (GI) be performed in order to determine if contamination is present beneath the site and to determine an appropriate foundation and floor slab solution for the proposed development.

The GSA and GI were conducted, and this report has been prepared for the sole internal reliance of DJD Builders Ltd and its design and construction team. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Terra Firma (Wales) Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill. The report represents the findings and opinions of experienced geo-environmental and geotechnical consultants. Terra Firma (Wales) Limited does not provide legal advice and the advice of lawyers may be required.

The subsurface geological profiles, any contamination and other plots are generalised by necessity and have been based on the information found at the locations of the exploratory holes and depths sampled and tested.

The site investigation was limited by underground services.

SECTION 2 Review of Existing Data

2.1 Physical Setting and Current Site Use

The development site is an irregular pentagon shape and centres on an approximate National Grid Reference of 285070 210190, occupying a plan area of approximately 0.52 Hectares.

Heol Gaer road runs east to west adjacent to the northern boundary of the site and main road runs adjacent to the southern and western boundary of the site. Residential housing is situated adjacent to the eastern and south eastern boundary of the site.

Until recently a surgery and attached residential flats occupied the majority of the site. These structures have been demolished leaving a large degraded hardstanding area. The parking areas for the buildings are still visible. A public convenience is shown to be situated within the site near the entrance. Access to the site is situated off Main Road on the south western boundary of the site.

The majority of Dyffryn Cellwen is situated east of the site. The residential buildings adjacent east of the site are recently constructed. A large area where past opencast coal mining was undertaken is situated 170m North West of the site. This area is still in use and is now Onllwyn washery and distribution centre.

The site level is between 240-250m AOD and shallowly descending towards the north.

The site location can be seen in **Figure 2.1**.

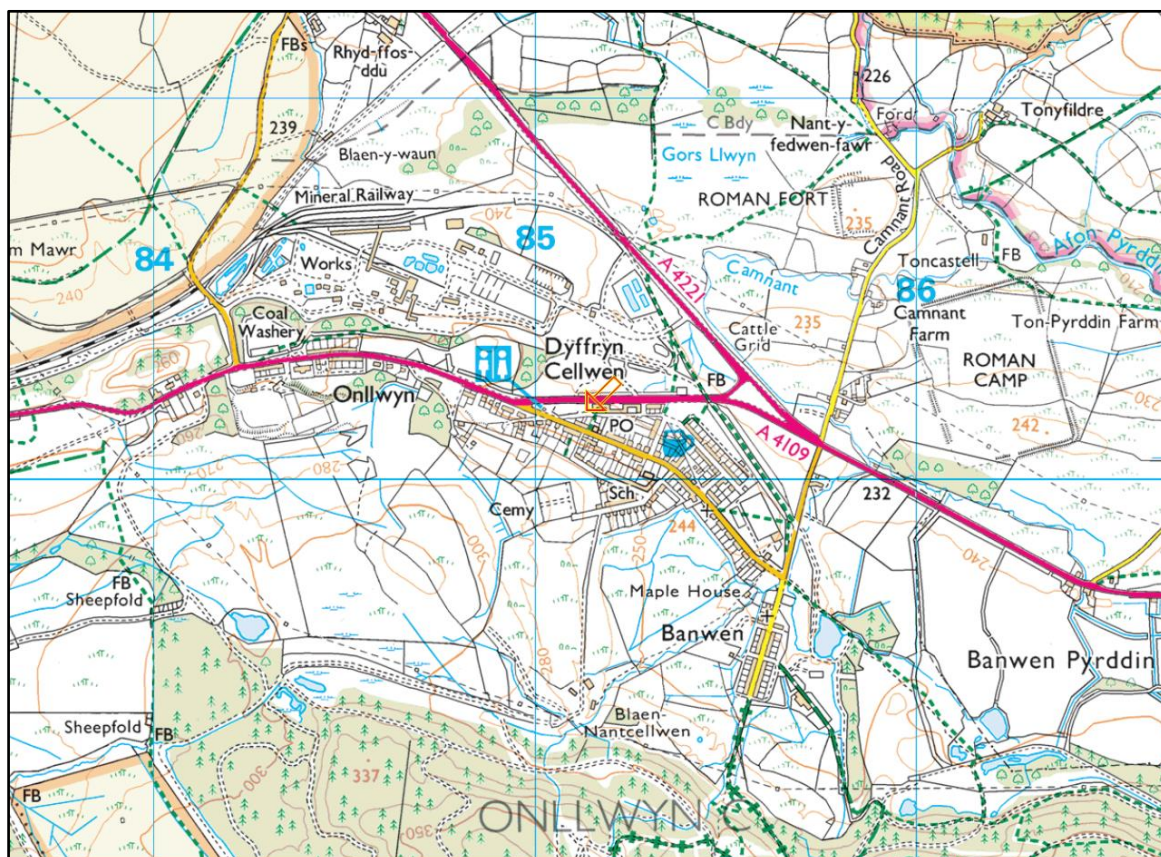


Figure 2.1 Site Location

2.2 Site History

Historical maps of the site have been obtained from the Landmark Information Group and are presented in **Annex A**. The most relevant history maps are summarised in **Table 2.1**. It should be noted that distances, where quoted are approximate.

Table 0.1 Historical Development from Map Information		
Map Edition and Scale	Key Features on Site	Key Features off Site
1876-1878 1:2500	The site is empty green field. A road runs through the centre of the site in an east to west trajectory.	The majority of the surrounding area is field land or coal mining areas. The site is surrounded by multiple old coal levels, and old coal quarries. Onllywn Colliery is situated to the east of the site which includes a very large area of old quarries. An old coal pit is situated 230m east of the site. A tramway runs in a north west – south east trajectory 310m east of the site.
1904-1905 1:2500	The site remains unchanged.	No significant changes have occurred in the surrounding area.
1918-1919 1:2500	The site remains unchanged.	The majority of Dyffryn Cellwen has been constructed south and south east of the site.
1953 1:10,560	The site remains unchanged.	Residential development has occurred to the northeast, west and southwest of the site.
1954 1:10560	The site remains unchanged.	Substantial mining infrastructure including multiple railways has been constructed 520m north west of the site including Brickworks. Further residential development has occurred to the south west edge of Dyffryn Cellwen. Residential houses have been constructed adjacent southwest of the site.
1962-1964 1:2500	The site remains unchanged	Mining activity has continued at Onllywn and further development of the infrastructure has occurred. The Mine entry is visible 860m west of the site the mining infrastructure surrounds this Mine spanning a large area. Multiple slag heaps are mapped in the surrounding area east of the site.
1978-1992 1:2500	A few small structures are now visible within the site including a lavatory. A stream is shown to run along the south eastern border of the site	Opencast workings are now labelled 320m north of the site. Slag heaps to the south west are now described as Tips(disused)
1989 1:2500	Construction has taken place within the site including a public convenience, a Surgery, parking areas and residential flats named Ty Maes Marchog.	The surrounding area remains largely unchanged

2.2 Site History (Continued)

Table 0.2 Historical Development from Map Information (Continued)		
	Key Features on Site	Key Features off Site
1993 1:2500	The site remains unchanged.	The surrounding area remains largely unchanged
2009 1:10000	The site remains unchanged.	The coal mining area to the north is now a coal washery. Workings are labelled in the wider south western area.
2018 1:10000	The structures within the site excluding the public convenience have been demolished. Satellite images show the site to be weathered hardstanding areas and carparks. A few shrub areas are also visible within the site	Residential houses have been constructed in the land adjacent east to the site. The wider surrounding area has remained relatively unchanged.

2.3 Environmental Setting

2.3.1 Geology

The 1:50,000 scale geological map of the area (Sheet 231) was consulted for geology underlying the site. The site is shown to be underlain by the South Wales Lower Coal Measures of which is Carboniferous in age. The rocks comprise coal-bearing mudstones/siltstones, with seatearths and minor sandstones.

The conjectural outcrop of the “Lower Bluers” coal seam is shown to outcrop on the central portion of the site. The conjectural outcrop of the “Rhyd” coal seam is shown along the site's north east corner with conjectural outcrops of the “Grey” and “Lower” coal seams to the north. The strata in this area are shown to dip in a southerly direction at approximately 4° to 5° in a southerly direction. The above seams will, therefore, underlie part or the whole of the site at shallow to moderate depth.

Superficial deposits are not recorded at the site.

Made ground is expected at the site.

2.3.2 Radon

The Envirocheck Report (**Annex A**) details that the site is in an intermediate probability radon area, as 1 to 3% of homes are estimated to be at or above the action level. **No** radon protective measures are required for new developments on the investigation site.

2.3.3 Mining

A Coal Authority Mining Report was ordered for the site which states. The site is not within a surface area that could be affected by past underground 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 Coal Authority does not hold records of mine entries within the site or within 20m of the site's boundary.

2.3.4 Hydrogeology and Hydrology

The Envirocheck Report records the nearest river network locates 147m to the east. This feature is an unnamed drainage ditch flowing to the north east.

Generally the topography of the site shallowly descends towards the north Surface water runoff is likely to be in this direction

Deeper groundwater flow within the underlying bedrock will be controlled by the strata dip and any fractures or bedding planes within the rock units.

The hydraulic gradient will be at its steepest during periods of heavy rainfall and aquifer recharge.

The bedrock deposits beneath the site have an aquifer designation of 'Secondary A'. These are 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.

The site does not lie within influencing distance of a groundwater source protection zone.

2.3.5 Flooding

The NRW online flood maps were consulted to evaluate the risk from flooding. The maps show that the site is not at risk of flooding from rivers and the sea.

2.3.6 Waste

The Envirocheck report holds no records of historic or current landfills within influencing distance of the site.

SECTION 3 Preliminary Risk Assessment

The following sub-sections detail a preliminary risk assessment, based upon the desk study information.

3.1 General

The contaminated land regime is set out in Part IIA of the Environmental Protection Act (EPA) 1990 and was introduced on the 1st April 2000 in England and 1st July 2001 in Wales. A similar regime was introduced in Scotland on 14th July 2000.

Part IIA was introduced to achieve two aims:

- (1) The identification of contaminated land
- (2) The remediation of contaminated land that poses an unacceptable risk to human health and/or the environment

Under Part IIA the statutory definition of 'contaminated land' is:

"any land which appears to the local authority in whose area it is situated, to be in such a condition, by reason of substances in, on, or under the land, that:

- (a) Significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) Pollution of controlled waters is being, or is likely to be, caused."

For land to be classified as 'Contaminated Land' there must be a '**pollutant linkage**'. A pollutant linkage requires three essential elements:

- (1) A **CONTAMINANT** (hazard) – a substance that is in, on or under the land and has the potential to cause harm or to cause pollution of **controlled waters**
- (2) A **RECEPTOR** (target) – something which could be adversely affected by a contaminant
- (3) A **PATHWAY** – a route or means which either allows the contaminant to cause significant harm to that receptor, or that there is a significant possibility of such harm being caused to the receptor, or that pollution of controlled waters is being or likely to be caused.

The term 'Risk' is widely used in different contexts and situations, but a prescriptive definition is given by the Guidelines for Environmental Risk Assessment and Management (DEFRA *et al*, 2000):

'Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence'.

A 'Hazard' is defined as '*a property or situation that in particular circumstances could lead to harm*'.

The classification of consequences and probability and determining the risk category are defined in the following sections.

3.2 Classification of Consequence

Table 3.1 Classification of Consequence	
Classification	Definition
Severe	• Short term (acute) risk to human health likely to result in significant harm • Short term risk to controlled waters • Catastrophic damage to buildings/structures • Short term risk to an ecosystem or organism within the particular ecosystem
Medium	• Chronic damage to human health (long term risk) • Pollution of a sensitive water resource • A significant change in an ecosystem or organism within the ecosystem
Mild	• Pollution of non-sensitive water resources • Significant damage to buildings/structures
Negligible	• Harm (not necessarily significant) which may result in financial loss • Non-permanent health effects to humans (easily prevented by PPE for example) • Easily repairable effects of structural (building) damage

3.3 Classification of Probability

Table 3.2 Classification of Probability	
Classification	Definition
High	• There is a complete pollution linkage and an event appears very likely to occur in the short term and is inevitable in the long term. • Evidence of harm to the receptor
Medium	• There is a complete pollution linkage which means that is it probable that an event will occur • The event is not inevitable but possible in short term and likely in the long term
Low	• There is a complete pollution linkage and circumstances are possible under which an event could occur • It is not certain that an event will occur in the long term, and it is less likely to occur in the short term
Negligible	• There is a complete pollution linkage but circumstances are such that it is improbable that an event would occur even in the long term

3.4 Risk Assessment Matrix

By comparing the consequences of a risk and the probability of the risk of a pollution linkage, the likely risk category can be determined as shown in **Table 4.3** below.

Table 3.3 Risk Assessment Matrix					
Increasing acceptability ↘		Consequence			
		Severe	Medium	Mild	Negligible
Probability	High	High	High	Medium / Low	Near zero
	Medium	High	Medium	Low	Near zero
	Low	High / medium	Medium / Low	Low	Near zero
	Negligible	High / medium / Low	Medium / Low	Low	Near zero

High Risk

There is a high probability that severe harm could risk a receptor, or there is evidence that a receptor is being harmed. The risk if realised is likely to result in liability, and urgent investigation or remediation will be required.

Medium Risk

It is probable that harm will arise to a receptor. However it is relatively unlikely that such harm would be severe, or if harm does occur the harm is likely to be relatively mild. Investigation will be required to determine the liability, and some remedial works may be required in the long term.

Low Risk

It is possible that harm may arise to a receptor, but it is likely that the harm would be mild.

Near Zero Risk

There is a very low risk of harm to the receptor. In the event of harm being realised the harm is not likely to be severe.

3.5 Preliminary Site Conceptual Model

The preceding sections enable a preliminary conceptual model of the site to be drawn up, to illustrate the likely ground conditions beneath the site together with a preliminary assessment of the nature of any underlying aquifers and groundwater movement. The preliminary site conceptual model is used as a model for the design and implementation of the site investigation, whereby areas of potential contamination can be targeted as well as investigating the site as a whole.

3.5.1 Potential Sources of Contamination and Gas

The potential contamination beneath the site, whether in the matrix of soil or any groundwater will be related to sites past use and the history of the surrounding area.

The desk study has shown the site to be previously occupied by a surgery, and residential properties and parking areas which have been demolished. Demolition waste if present is a potential source of contamination.

Contaminants of concern associated with the potential contamination sources are provided in **Table 3.4**.

3.5.1 Potential Sources of Contamination and Gas (Continued)

Table 3.4 Contaminants of Concern	
Source	Contaminant
Demolition waste	Asbestos, PAH, TPH

3.5.2 Potential Receptors

There are both human and hydrological receptors to any contamination that may be present on site.

Construction workers/maintenance personnel will be excavating in soils and are considered to be a potential receptor to contamination.

A residential end use is currently in place. Current and future site users are also a potential receptor to contamination.

Neighbouring site users and passers-by are also considered to be a potential receptor to contamination, though this can be managed through good site practice and due diligence.

Controlled water receptors are considered to be the Secondary A Aquifers beneath the site.

3.5.3 Potential Pathways

A pathway is a route by which a receptor may be affected by contamination. The exposure pathways associated with the site are:

- Inhalation of vapours and dust
- Ingestion of soil and dust
- Dermal contact with soil and dust
- Consumption of home grown produce
- Leaching of contamination from soils into underlying aquifer

3.5.4 Summary of Site Conceptual Model

A qualitative preliminary Human Health and Environmental Risk Assessment summarises the previous sections and is detailed in **Tables 3.5 and 3.6** on the following pages.

3.5.2 Potential Receptors, Pathways and Risks (Continued)

Table 3.5 - Qualitative Preliminary Human Health Risk Assessment					
Potential Source	Pathway	Receptor During Construction	Level of Risk	Current Receptor / Post Construction	Level of Risk
Inorganic contaminants, metals and metalloids	Ingestion, inhalation and dermal contact with soil and soil dust	Construction / maintenance workers	Low with good site practice	Site Residents	Medium
		Neighbouring Site Users	Low with good site practice	Neighbouring site users	Medium
Inorganic contaminants, metals and metalloids	Consumption of home grown produce	N/A	N/A	Site Residents	Medium
Organic Contaminants, PAHs, hydrocarbons					
Asbestos	Inhalation of asbestos fibres	Construction / maintenance workers	Medium	Site Residents	Medium
		Neighbouring Site Users	Low	Neighbouring site users	Low
Organic Contaminants, PAHs, , hydrocarbons	Ingestion, Inhalation of vapours and dust, dermal contact with soil and soil dust	Construction / maintenance workers	Low with good site practice	Site End Users	Medium
Radon Gas	Inhalation	N/A	N/A	Site End Users	Near Zero
Ground Gas	Inhalation	N/A	N/A	Site End Users	Low
Organic Contaminants, PAHs, hydrocarbons	Ingestion of potable water <i>Absorption of contamination from made ground into potable water pipes</i>	N/A	N/A	Site End Users	Medium

3.5.2 Potential Receptors, Pathways and Risks (Continued)

Table 3.6 – Qualitative Preliminary Environmental Risk Assessment					
Potential Source	Pathway	Receptor During Construction	Level of Risk	Current Receptor / Post Construction	Level of Risk
Surface Water	Run-off	Site and Adjacent Sites Shallow/Perched Groundwater	Medium	Controlled waters	Low
Accidental spillage	Run-off, moving contaminated soil, drainage misconnections, discharges to local surface waters or the ground, construction materials and/or exposed ground, wheel washings, oil or chemical spills	Site and Adjacent Sites	Low with good site practice	N/A	N/A
Inorganic contaminants, metals and metalloids	Leaching of contamination Direct migration of spilt fuel	Shallow/Perched Groundwater	Medium	Controlled waters	Low
Organic Contaminants, PAHs, hydrocarbons,					

SECTION 4 Field Investigation

4.1 Site Works

A geotechnical and geo-environmental site investigation was carried out on the 22nd May and between the 23rd and 24th July 2018 comprising six machine excavated trial pits, three rotary boreholes and three sokaway tests.

The rotary boreholes were drilled using a Fraste PLG Multidrill rig.

The trial pits were excavated using a JCB 3CX excavator.

The trial pits were logged to the requirements of BS5930:2015.

The fieldworks were supervised by Terra Firma (Wales) Limited.

The trial pit and rotary borehole logs are presented in **Annex D and E** respectively and their positions are shown on **Drawing 01**.

4.2 Ground Conditions

The ground conditions encountered can in general be summarised as shown in **Table 4.1**.

Table 4.1 General Summary of Ground Conditions		
Depth (m)	Thickness (m)	Stratum
GL - >3.0	-	MADE GROUND: firm to stiff dark brown sandy very gravelly CLAY with inclusions of brick
3.2/3.4 - 19.5/21.0	16.3/17.6	MUDSTONE
19.5/21.0 - 20.3/21.5	0.8/0.5	COAL
20.3/21.5 - 22.5/21.0	1.0/0.7	MUDSTONE
22.5/21.0 - 23.0/22.0	0.5/1.0	COAL
23.0/22.0 - 30.0/28.2	5.9/4.2	MUDSTONE
30.0/28.2 - 30.5/28.7	0.5	COAL

4.2.1 Groundwater

No groundwater was encountered during the investigation.

4.2.2 Pit Stability

The sides of the trial pits were marginally unstable during excavation within the made ground.

4.3 Laboratory Soil Chemical Testing

4.3.1 Exploratory Strategy and Sampling Regime

During the intrusive investigation, small disturbed soil samples were collected. The sampling regime was conducted in accordance with BS10175:2011. The sample strategy consisted of targeted sampling of the former fuel station infrastructure where insufficient information was recovered during the desk study with regards to remedial measures taken during the decommissioning of the former fuel stations.

Samples were taken of both shallow made ground and deeper natural soils.

The sample locations and depths are listed in the **Table 4.2**. The sample locations are presented in **Drawing 01**.

Table 4.2 Soil Chemical Test Sample Locations and Depths		
Sample	Depth (m)	Sample Description
TP1	0.2	Dark brown gravelly, sandy CLAY
TP2	0.4	Dark brown clayey, sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP3	0.3	Dark brown gravelly, sandy CLAY
TP4	0.2	Dark brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP5	0.6	Dark brown sandy, GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP6	0.2	Dark brown clayey, sandy GRAVEL including odd rootlets (sample matrix outside MCERTS scope of accreditation)

Care was taken to ensure that sampling quality assurance occurred during site works. This included the following measures:

- The use of nitrile gloves at each sampling point
- Stainless steel shovels were used to collect soil samples. The tool was cleaned with distilled water between each sample point
- Soil samples were stored at a temperature below 4 degrees
- Soil samples were stored within sample containers according to the chemical testing required
- No head space was left in sample containers

4.3.2 Soil and Groundwater Laboratory Analysis

The soil samples taken were despatched to the UKAS and Mcerts accredited laboratories of Derwentside Environmental Testing Services Ltd (DETS) within twenty four hours of collection. The following soil and groundwater chemical tests were undertaken:

4.3.2 Soil and Groundwater Laboratory Analysis (Continued)**Metals and Metalloids**

Lead
Arsenic
Mercury
Cadmium
Chromium
Copper
Nickel
Zinc
Selenium

In-Organics

Cyanide
Sulphate

Others

pH (acidity)
Organic Matter
Asbestos

Organic Chemicals

Phenols
Polycyclic Aromatic Hydrocarbons (Speciated)
Petroleum hydrocarbons

The laboratory soil chemical test results are presented in **Annex F**.

SECTION 5 Evaluation of Soil Analytical Results

5.1 Soil Analysis Methodology

Comparison of the analytical results has been made with Soil Guideline Values for a residential scenario, sourced from the Land Quality and Management Limited and the Chartered Institute of Environmental Health Suitable 4 Use Levels (S4ULs) for Human Health Risk Assessment. Where S4ULs are not available reference has been made to the Category 4 Screening Levels (C4SLs) and in the absences of this for Cyanide, the Environment Agency Contaminated Land Exposure Assessment (CLEA).

5.2 Soil Test Results

For Tier 1, the site itself is considered to be the receptor. Therefore, attenuation of contaminants between the source and receptor is not considered. A summary of the chemical test results which include the regulatory soil guideline values used in the Tier 1 assessment are given in **Table 5.1 - 5.4**.

Table 5.1 Summary of Soil Chemical Test Results: Standard Suite						
Substance	SGV/GAC (mg/kg)	Source	Measured Concentrations (mg/kg)		95% UCL	Number of Exceedences
			Minimum	Maximum		
Arsenic	37	LQM/CIEH	3.8	9.3	*	0
Cadmium	11	LQM/CIEH	<0.1	0.1	*	0
Chromium III	910	LQM/CIEH	4.6	15	*	0
Chromium VI	6	LQM/CIEH	<1.0	<1.0	*	0
Copper	2400	LQM/CIEH	4.5	30	*	0
Lead	200	C4SL	6.7	26	*	0
Mercury	40	LQM/CIEH	<0.05	<0.05	*	0
Nickel	180	LQM/CIEH	5.4	30	*	0
Selenium	250	LQM/CIEH	<0.5	<0.5	*	0
Zinc	3700	LQM/CIEH	29	95	*	0
Cyanide	8	CLEA	<0.1	<0.1	*	0
Phenols	120	LQM/CIEH	<0.3	<0.3	*	0
Sulphate	-	-	200	2900	*	0
Organic Matter	-	-	2.8	13	*	-
pH	-	-	7.8	11.2	*	-

Notes:

- CLEA-Soil guideline values for a residential development with plant uptake
- LQM/CIEH - Generic Assessment Criteria for a residential development with plant uptake
- C4SL - Category four screening level for a residential development with plant uptake
- BRE - British Research Establishment
- A total of six samples were tested
- - no available guideline
- * - Insufficient samples for accurate statistical analysis

5.2 Soil Test Results (Continued)

Table 5.2 Summary of Soil Chemical Test Results: Speciated PAH						
Substance	GAC (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		95% UCL	Number of Exceedences
			Minimum	Maximum		
Naphthalene	2.3	LQM/CIEH	<0.03	<0.03	*	0
Acenaphthylene	170	LQM/CIEH	<0.03	<0.03	*	0
Acenaphthene	210	LQM/CIEH	<0.03	<0.03	*	0
Fluorene	170	LQM/CIEH	<0.03	<0.03	*	0
Phenanthrene	95	LQM/CIEH	<0.03	0.14	*	0
Anthracene	2400	LQM/CIEH	<0.03	0.04	*	0
Fluoranthene	280	LQM/CIEH	<0.03	0.49	*	0
Pyrene	620	LQM/CIEH	<0.03	0.38	*	0
Benzo(a)anthracene	7.2	LQM/CIEH	<0.03	0.28	*	0
Chrysene	15	LQM/CIEH	<0.03	0.42	*	0
Benzo(b)fluoranthene	2.6	LQM/CIEH	<0.03	0.57	*	0
Benzo(k)fluoranthene	77	LQM/CIEH	<0.03	0.19	*	0
Benzo(a)pyrene	2.2	LQM/CIEH	<0.03	0.37	*	0
Indeno(123cd)pyrene	27	LQM/CIEH	<0.03	0.27	*	0
Dibenzo(ah)anthracene	0.24	LQM/CIEH	<0.03	0.05	*	0
Benzo(ghi)perylene	320	LQM/CIEH	<0.03	0.29	*	0
Total PAH	-	-	<0.3	3.6	*	-

Notes:

- LQM/CIEH - Generic Assessment Criteria for a residential development with plant uptake.
- Guidelines for a residential land use with plant uptake.
- Thresholds based on 1.0% SOM
- Six samples were tested for Speciated PAH

5.2 Soil Test Results (Continued)

Table 5.3 Summary of Soil Chemical Test Results: Petroleum Hydrocarbons

Substance	SGV/GAC (mg/kg)	Source	Measured Concentrations (mg/kg)		95% UCL	Number of Exceedences
			Minimum	Maximum		
Aliphatic						
PH C5 – C6 Ali	42	LQM/CEIH	<0.01	<0.01	*	0
PH C6 – C8 Ali	100	LQM/CEIH	<0.01	<0.01	*	0
PH C8 – C10 Ali	27	LQM/CEIH	<0.01	<0.01	*	0
PH C10 – C12 Ali	130	LQM/CEIH	<1.5	<1.5	*	0
PH C12 – C16 Ali	1100	LQM/CEIH	<1.2	<1.2	*	0
PH C16 – C21 Ali	65000#	LQM/CEIH	<1.5	<1.5	*	0
PH C21 – C35 Ali	65000#	LQM/CEIH	<3.4	<3.4	*	0
PH C35 – C40 Ali	65000	LQM/CEIH	<3.4	<3.4	*	0
Aromatic						
PH C5 – C7 Arom	70	LQM/CEIH	<0.01	<0.01	*	0
PH C7 – C8 Arom	130	LQM/CEIH	<0.01	<0.01	*	0
PH C8 – C10 Arom	34	LQM/CEIH	<0.01	<0.01	*	0
PH C10 – C12 Arom	74	LQM/CEIH	<0.9	<0.9	*	0
PH C12 – C16 Arom	140	LQM/CEIH	<0.5	<0.5	*	0
PH C16 – C21 Arom	260	LQM/CEIH	<0.6	4.6	*	0
PH C21 – C35 Arom	1100	LQM/CEIH	<1.4	44	*	0
PH C35 – C44 Arom	1100	LQMCEIH	<1.4	<1.4	*	0

Notes:

- LQM/CEIH - Generic Assessment Criteria for a residential development with plant uptake
- CLEA - Soil guideline values for a residential development with plant uptake
- A total of six soil samples were tested for Petroleum Hydrocarbons
- Ali - Aliphatic Hydrocarbon
- Arom - Aromatic Hydrocarbon
- LQM/CEIH Based on 1.0% SOM
- # - LQM for Ali C16 - 21 and C21 - C35 based on LQM for EC >16 - 35
- * - Insufficient samples for accurate statistical analysis

Asbestos testing was undertaken all six samples taken from the site. **Table 5.4** summarises the findings:

Table 5.4 Summary of Soil Chemical Test Results: Asbestos Screen

Substance	Location	Depth (m)	Result
Asbestos	TP1	0.2	Asbestos Not Detected
	TP2	0.4	Asbestos Not Detected
	TP3	0.3	Asbestos Not Detected
	TP4	0.2	Asbestos Not Detected
	TP5	0.6	Asbestos Not Detected
	TP6	0.2	Asbestos Not Detected

SECTION 6 Risk Assessment/Mitigation Measures

6.1 Contaminants of Concern

6.1.1 Contaminants of Concern in Soil

All substances tested were found below their respective residential guidelines.

6.1.2 Leachable Contaminants of Concern

None of the substances tested for pose a risk from leaching.

6.2 Ground Gas

There is no risk from radon or ground gas.

6.3 Potential Receptors and Pathways

6.3.1 Human Receptors

Given the absence of contamination, there are no human receptors.

6.3.2 Aquatic Environment

There is not considered to be a risk to the aquatic environment.

6.4 Mitigation and Remedial Measures

No remedial measures are required for the development.

During the works the Contractor should adhere to all relevant legislation, good practise, construction workers should adhere to good site management, COSHH, good standards of hygiene and appropriate health & safety on site, with personal protection equipment (PPE) and dust suppression where appropriate.

Any soils imported on to site as part of the development should be suitably validated as suitable prior to use in accordance with 'Requirements for the Chemical Testing of Imported Materials for Various End Uses and Validation Cover Systems' published by the Welsh Land Contamination Working Group.

If during development works any other unexpected ground conditions or evidence of contamination is found inspection by a geo-environmental engineer should be made, and any required testing or investigation carried out prior to continuation of works.

SECTION 7 Assessment of the Risk from Shallow Mining

Based upon the desk study information the stratigraphical sequence within 30m of the ground surface of the site could be:

- Made ground
- Coal Measures
- **Coal (Lower Bluers coal seam)**
- Coal Measures
- **Coal (Rhyd coal seam)**
- Coal Measures
- **COAL (Grey Coal Seam)**
- Coal Measures

No coal mining was identified during the probe drilling.

There are no known mine entries within the site.

When assessing the risks from shallow mine workings, as a rule of thumb to prevent the future collapse of mine workings migrating to the surface and forming crown holes there should be a 10:1 rock head to void ratio.

No evidence of coal mining was observed during the probe drilling where intact coal was identified. Based upon the depths and thicknesses of the identified coal seams, it is considered that there is sufficient rock cover should the seams be worked under parts of the site that have not been investigated. It is therefore considered that there is a low risk to the development should potential workings beneath the site collapse in the future.

SECTION 8 Engineering Recommendations

8.1 Preparation of Site

Prior to construction, all service vegetation and hard standing areas should be excavated and removed from underneath the proposed building and car park locations.

Any reduced levels should be brought up to the required levels with well, compacted imported granular materials. Department of Transport (DoT) Type 2 sub-base or similar may be used and should be compacted in layers, in accordance with the Specification for Highway Works. Alternatively, appropriate selected inert imported fill could be used.

Allowances should be made for removing any 'soft spots/area' and their replacement with well compacted granular materials.

Contingencies should be allowed for any necessary temporary and/or permanent support works to any existing services and adjacent buildings made necessary as a result of the proposed works.

Further contingencies should be made for the removal/diversion of any existing underground/overhead services made necessary as a result of the proposed works.

All materials to be removed from site should be taken to an appropriately licensed tip.

In accordance with EC Regulation 1272/2008 and Environment Agency Guidance WM3 (v. 2.3/2011) soils and other materials destined for off-site disposal should be classified on the basis of their hazard phrases prior to disposal. Soils are classified as a mirror entry waste and should be classified on the basis of their specific chemical properties.

8.3 Foundation and Floor Slab Solution

Given the extent and depth of made ground encountered across the site, it is recommended that reinforced strip and trench fill foundations are adopted for the proposed scheme. The reinforced should be designed to cater for differential settlements across the length of the strip.

Foundations should be taken down to a minimum of 0.9m below finished ground level to protect against the effects of frost heave / thermal shrinkage.

For the above strip foundation, an allowable bearing capacity of 100 kPa may be used for design purposes where settlements will not exceed 25mm.

Allowances should be made for removing any 'soft spots/areas' and their replacement with well-compacted imported granular materials as previously described.

The foundation formations should be inspected before concreting by a suitably qualified geotechnical engineer.

During the investigation samples of the in-situ clays were taken and submitted for plasticity testing (**Annex G**). In line with the NHBC (Chapter 4.2), the modified plasticity index for the sample was calculated and are presented in **Table 8.1**.

8.3 Foundation and Floor Slab Solution (Continued)

Table 8.1 Plasticity Test Results					
Sample	Depth (m)	Plasticity Index (%)	Plasticity	Modified Plasticity Index (%)	Volume Change Potential
TP1	1.2	12	Low plasticity	11.04	Low
TP3	1.2	12	Low plasticity	10.32	Low
TP5	1.2	16	Low plasticity	14.24	Low

8.4 Excavations and Formations

All of the shallow excavations will be possible with normal soil excavating machinery.

The shallow excavations may encounter groundwater. Groundwater inflows should be dealt with using conventional pumping techniques.

The sub-formations/formations will be extremely susceptible to loosening, softening and deterioration by exposure to weather (rain, frost and drying conditions), the action of water (flood water or removal of groundwater) and site traffic.

Formations should never be left unprotected and continuously exposed to rain causing degradation, or left exposed/uncovered overnight, unless permitted by a qualified engineer.

Construction plant and other vehicular traffic should not be operated on unprotected formations.

As a minimum the formation/excavation surfaces must be protected by blinding concrete or a minimum thickness of 300mm of hard cover immediately after exposure.

Allowances should be made for the removal of soft spots/areas and their replacement with well compacted granular materials.

8.5 Protection of Buried Concrete

Allowances should be made for special precautions to prevent formation deterioration in addition to the above.

The laboratory soil chemical tests revealed total sulphate content of between 200mg/kg and 2900 mg/kg. The pH values of between 7.8 and 11.2 were recorded.

With reference to the definitions detailed in Section C3 of BRE-Digest 1:2005 groundwater conditions can be defined as 'mobile'.

Based upon the above results and with reference to Table C2 (Aggressive Chemical Environment for Concrete Classification for Brownfield Locations) all buried concrete should conform to Design Class DS-2, ACEC Class AC-1, of BRE Digest 1:2005.

8.6 Sustainable Drainage

During the investigation, three soakaway tests were undertaken within TP1, TP3 and TP6. Insufficient infiltration was recorded to calculate infiltration rates. Based upon the testing, soakaway drainage is not considered feasible for the development.

8.7 Retaining Walls

Due to the sloping nature of the site, retaining walls may be required. The existing steepness of any embankments should not be increased. Any cuts should be undertaken in small sections and in such a way so as not to induce any instability to the ground.

Effective shear parameters for retaining wall design are presented in **Table 8.2**.

Table 8.2 Effective Shear Stress Parameters			
Stratum Description	Bulk Unit Weight (γ) kN/m³	Effective Cohesion (c') kN/m²	Effective Angle of Shearing Resistance (ϕ') degrees
Made ground	18	0	26
Firm cohesive soils	19-21	0	28
Well compacted, granular materials, compacted as per Specification for Highway Works and other relevant guidance such as British Standards (BS) 6031: 1981. Code of Practice for Earthworks.	19 – 20	0	35

The parameters are based on experience in similar ground conditions.

The materials to be in-filled behind the retaining wall should be placed at or close to its optimum moisture content/maximum dry density and compacted in layers as per the requirements of the Specification for Highway Works. During the earthworks suitable in-situ testing should be carried out to ensure that the compaction process is achieving the required maximum dry density to achieve at least 95% compaction.

The acceptability of the filling works should be verified by appropriate on site testing. A certification report should also be prepared on the earthworks by a suitably qualified Geotechnical Engineer.

Appropriate drainage should be incorporated in to the design to prevent the build-up of hydrostatic pressure.

Appropriate cutting and benching of the existing slope should be conducted prior to the replacement of any imported fill to minimise the risk of any slip surfaces forming on the interface between the existing imported materials.

ANNEX A
Landmark Historical Maps



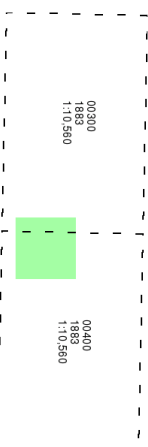
Glamorganshire

Published 1883

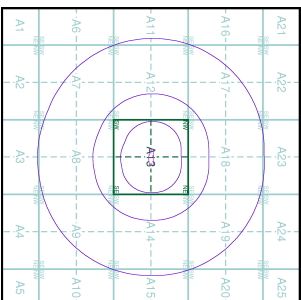
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:250 scale was adopted for mapping urban areas; these maps were often updated in the 1850's. In 1860 maps were updated to the 1:10,560 scale. In 1883, all OS maps were based on the Cassini Projection with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overlaid with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 172177631_1
Customer Ref: 14753 dyffyn celwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffyn Ceilwen, Neath Port Talbot



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Brecknockshire

Published 1888

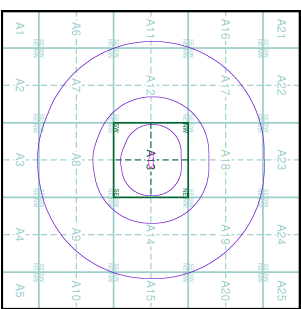
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were often so dated in later than the 1850's. Some of the 1:2,500 maps were based on the Cassini Projection with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

043NE 1888 1:10,560	044NW 1888 1:10,560
043SE 1888 1:10,560	044SW 1888 1:10,560

Historical Map - Slice A



Order Details

Order Number: 172177631_1
Customer Ref: 14753 dyffyn celwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffyn Celwyn, Neath Port Talbot



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Glamorganshire

Published 1900 - 1901

Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The 1:2,500 maps, since the 1938 OS maps were often so updated in later than the 1938 OS maps. The 1:10,560 maps were based on the Cassini Projection with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in cutting areas. In the late 1940's, a Provisional Edition was produced which updated the 1:10,560 mapping from a number of sources. The maps appear unaltered - with all military camps and other strategic sites removed. These maps were initially overlaid with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

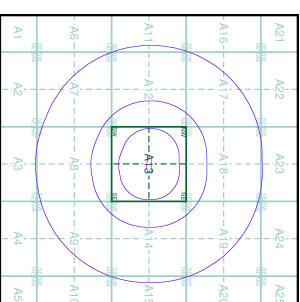
Map Name(s) and Date(s)

003SE
1901
1:10,560



003SW
1900
1:10,560

Historical Map - Slice A



Order Details

Order Number: 172177631_1
Customer Ref: 14753 dyffyn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffyn Cellwyn, Neath Port Talbot



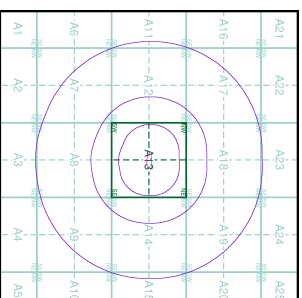
Tel: 0944 844 9952
Fax: 0944 844 9951
Web: www.environment.co.uk

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were often updated in later than the 1850's. In 1921, the 1:10,560 scale was often used to update the earlier maps. Before 1938, all OS maps were based on the Cassini Projection with independent surveys of a single county or group of counties giving rise to significant inaccuracies in cutting areas. In the late 1940's, a Provisional Edition was produced which updated the 1:10,560 mapping from a number of sources. The maps appear unaltered - with all military camps and other strategic sites removed. These maps were initially overlaid with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

043NE 1921 1:10,560	044NW 1921 1:10,560
043SE 1921 1:10,560	044SW 1921 1:10,560

Historical Map - Slice A



Order Details

Order Number: 172177631_1
Customer Ref: 14753 dyffryn celwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Celwyn, Neath Port Talbot



Published 1921

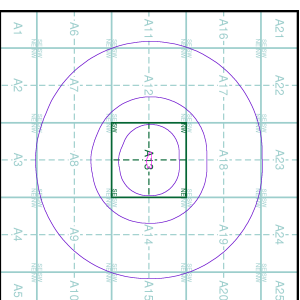
Source map scale - 1:10,560

The historic maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:250,000 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys in a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially reproduced with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revised series continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

043NE 1921 1:10,560	044NW 1921 1:10,560
043SE 1921 1:10,560	

Historical Map - Slice A



Order Details

Order Number:	172177631_1_1
Customer Ref:	14753 dyffryn cellwyn
National Grid Reference:	285070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

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Brecknockshire

Published 1953

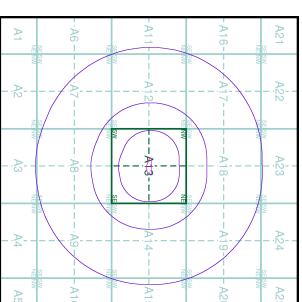
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The 1953 maps, the 1:10,560 maps were often updated in later than the 1953 maps. The 1953 maps were based on the Cassini Projection with independent surveys of a single county or group of counties giving rise to significant inaccuracies in outlying areas. In the late 1940's a Provisional Edition was produced which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overlaid with the National Grid. In 1970 the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

043NE 1953 1:10,560	044NW 1953 1:10,560
043SE 1953 1:10,560	044SW 1953 1:10,560

Historical Map - Slice A



Order Details

Order Number: 172177631_1
Customer Ref: 14753 dyffryn celwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

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Ordnance Survey Plan

Published 1964 - 1965

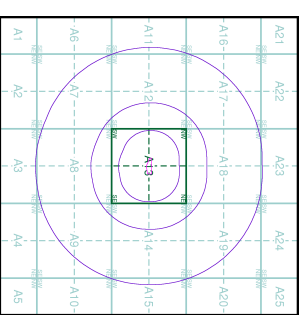
Source map scale - 1:10,000

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Map Name(s) and Date(s)

SN81SW	SN81SE
1965	1964
1:10,560	1:10,560
SN80NW	SN80NE
1964	1964
1:10,560	1:10,560

Historical Map - Slice A



Order Details

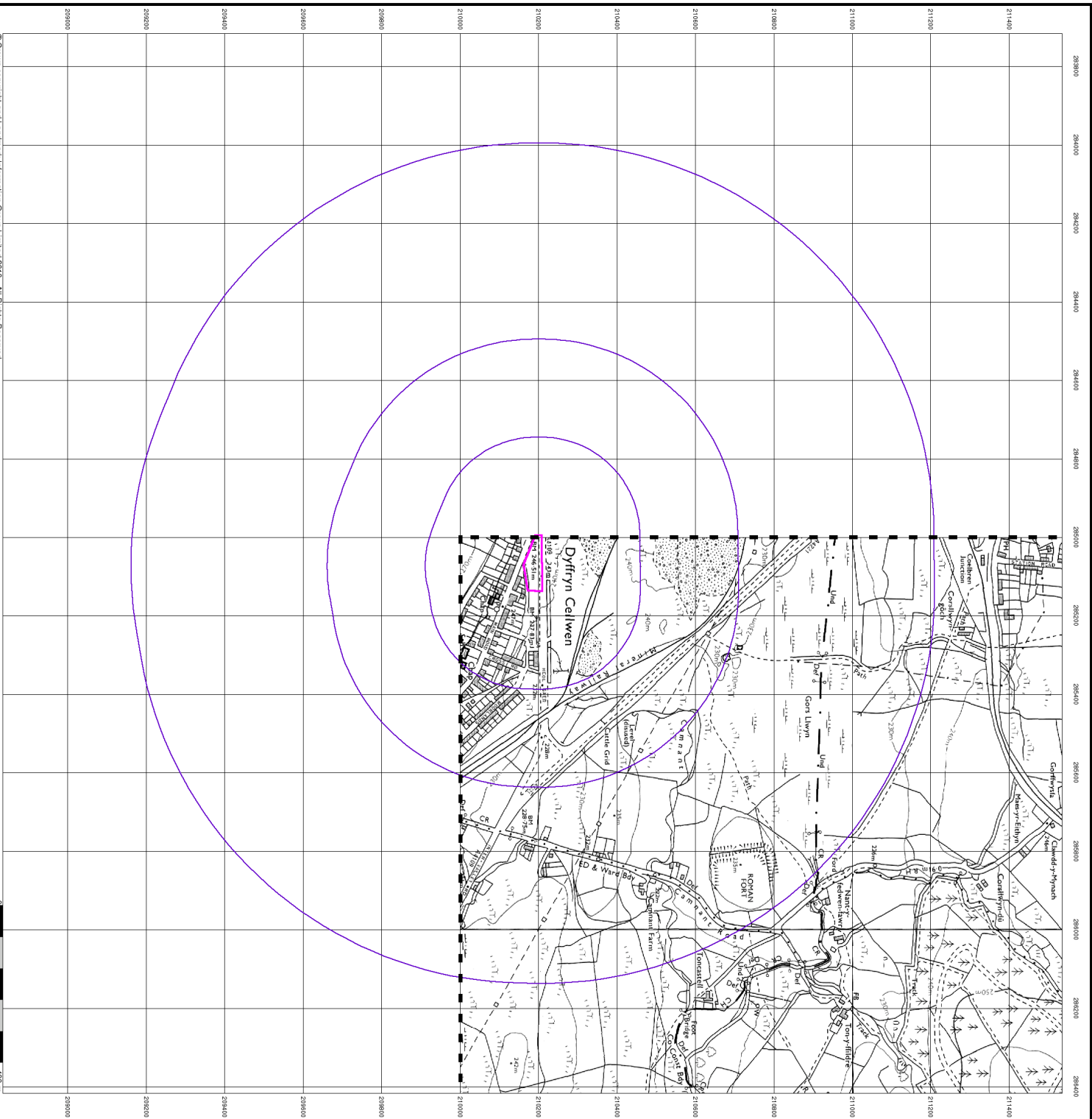
Order Number: 172177631_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwyn, Neath Port Talbot



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Fax: 0844 844 9951
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0 400m



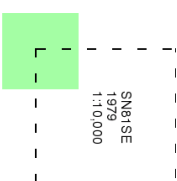
Ordnance Survey Plan

Published 1979

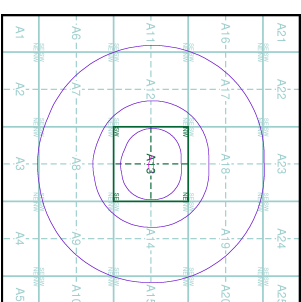
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 172177631_11
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwenn, Neath Port Talbot



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Ordnance Survey Plan

Published 1980 - 1988

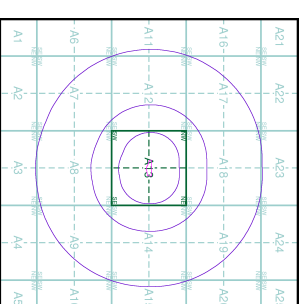
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were then updated to 1:10,000 scale. The 1:10,000 maps were produced by the Ordnance Survey in 1980. The maps were based on the Cassini Projection with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced which updated the 1:10,000 maps from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overlaid with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SN81SW	1988
1:10,000	
SN80NW	1980
1:10,000	

Historical Map - Slice A



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwyn, Neath Port Talbot



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Fax: 0944 844 9951
Web: www.envirotech.co.uk





Published 2000

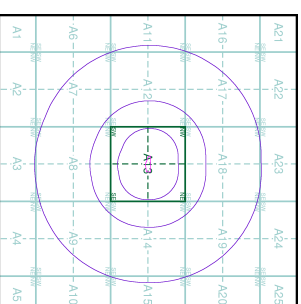
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour aerial raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information (depiction includes county, unitary authority, district, civil parishes and constituency.

Map Name(s) and Date(s)

SN8tSW	SN8tSE
2000	2000
1:1:0,000	1:1:0,000
SN80NW	SN80NE
2000	2000
1:1:0,000	1:1:0,000

Historical Map - Slice A



Order Details

Order Number:	172177631_1_1
Customer Ref:	14753 dyffryn cellwyn
National Grid Reference:	285070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



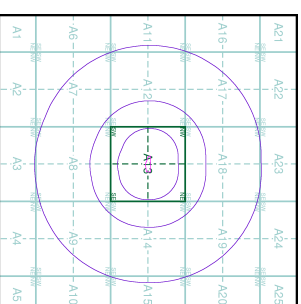
Published 2006

Source map scale - 1:10,000

Map Name(s) and Date(s)

SN81SW	2006	1:10,000	SN81SE	2006	1:10,000
SN80NW	2006	1:10,000	SN80NE	2006	1:10,000

Historical Map - Slice A



Order Details

Order Number:	172177631_1
Customer Ref:	14753 dyffryn cellwyn
National Grid Reference:	285070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot



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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



VectorMap Local

Published 2018

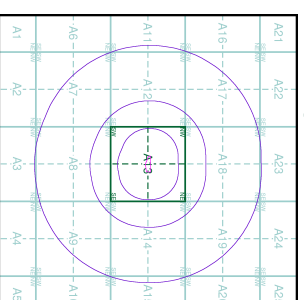
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS VectorMap Local, a simple vector dataset at a nominal scale of 1:1,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities), 1:2500 scale (smaller towns, villages and developed rural areas), and 1:10,000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SN81SW	SN81SE
2018	2018
Variable	Variable
SN80NW	SN80NE
2018	2018
Variable	Variable

Historical Map - Slice A



Order Details

Order Number:	172177631_1
Customer Ref:	14753 dyffryn cellwyn
National Grid Reference:	285070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Ordinance Survey County Series and
Ordinance Survey Plan 1:2,500

Personal Grid Data 1:2,500 and 1:1,250

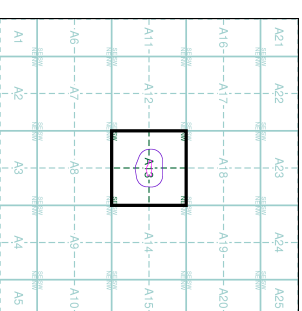
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Project
Brecknockshire	1:2,500	1878	2
Glamorganshire	1:2,500	1878	3
Brecknockshire	1:2,500	1904	4
Brecknockshire	1:2,500	1919	5
Ordnance Survey Plan	1:2,500	1962	6
Additional Sits	1:2,500	1978 - 1992	7
Large-Scale National Grid Data	1:2,500	1989	8
Large-Scale National Grid Data	1:2,500	1993	9
Historical Aerial Photography	1:2,500	1996	10
	1:2,500	2001	11

Top		Slopes		Top	
	Inactive Quarry, Chalk Pit or Clay Pit		Active Quarry, Chalk Pit or Clay Pit		Rock
	Boulders		Cliff		Roofed Building
	Glazed Roof Building		Sloping Masonry		Non-Coniferous Tree (surveyed)
	Non-Coniferous Trees (not surveyed)		Coniferous Tree (surveyed)		Orchard Tree
	Coniferous Trees (not surveyed)		Scrub		Coppice, Osier
	Bracken		Reeds		Rough Grassland
	Marsh, Saltings		Heath		Direction of water flow
	Culvert		Bench Mark		Cave Entrance
	Antiquity (site of)		Triangulation Station		Electricity Transmission Line
	Pylon		County Boundary (Geographical)		County & Civil Parish Boundary
	Civil Parish Boundary		Admin. County or County Bor. Boundary		London Borough Boundary
	Symbol marking point where boundary meeting changes		Beer House		Boundary Post or Stone
	Capetan, Crane		Cn.C.		Chy.
	Public House		Pillar, Pole or Post		Post Office
	Pump		Public Convenience		Signal Box or Bridge
	Signal Post or Light		Spring		Tank or cistern
	Telephone Call Post		Trough		Water Point, Water Tower
	Well		Wind Pump		Normal Tidal Limit

	Cliff		Slopes		Top
	Rock		Rock (scattered)		
	Boulders		Boulders (scattered)		
	Positioned Boulder		Scree		
	Non-Coniferous Tree (surveyed)		Coniferous Tree (surveyed)		
	Non-Coniferous Trees (not surveyed)		Coniferous Trees (not surveyed)		
	Orchard Tree		Scrub		Bracken
	Copice, Osier		Reeds		Marsh, Saltings
	Rough Grassland		Heath		Culvert
	Direction of water flow		Triangulation Station		Antiquity (site of)
	Electricity Transmission Line		Electricity Pylon		
	Bench Mark		Buildings with Building Seed		
	Roofed Building		Glazed Roof Building		
• • • • • Civil parish/community boundary — District boundary — County boundary					
• Boundary poststone					
• Boundary merleing symbol (note: these always appear in opposed pairs or groups of three)					
Bks	Barracks	P	Pillar, Pole or Post		
Bty	Battery	PO	Post Office		
Cemty	Cemetery	PC	Public Convenience		
Cmty	Chimney	Pp	Pump		
Cls	Cistern	Ppg Sta	Pumping Station		
Disrtd Rly	Disarmitted Railway	PW	Place of Worship		
Ei Gan Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station		
EiP	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge		
Ei Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light		
FB	Filler Bed	Spr	Spring		
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank / Track		
Gas Gov	Gas Valve Compound	Tr	Trough		
GVC	Gas Governor	Wd Pd	Wind Pump		
GP	Guide Post	Wt Pt, Wrt	Water Point, Water Tap		
MP	Mile Post or Mile Stone	Wks	Works (building or area)		
MH	Mannote	Wt	Wells		

Historical Map - Segment A13



Order Details

Order Number:	172177631_1_1
Customer Ref:	14753 dyffryn cellwyn
National Grid Reference:	285070.210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	100

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot



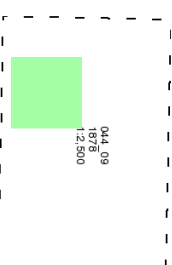
Brecknockshire

Published 1878

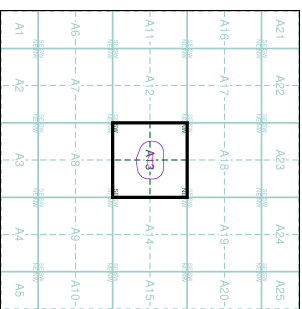
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1886 of Great Britain. The published date here is likely to be older than the actual surveyed date. Before 1889 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn celiwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 100

Site Details

Site at: Dyffryn Celiwyn, Neath Port Talbot



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Fax: 0844 844 9951
Web: www.envirotek.co.uk

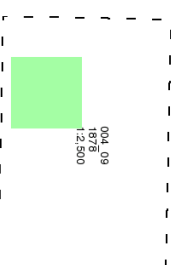


Glamorganshire
Published 1878

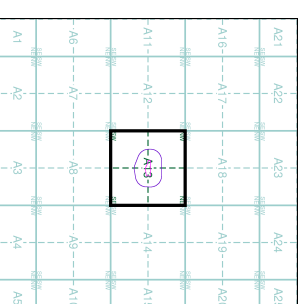
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1886 of Great Britain. The published date does not imply it is older than the same years later than the surveyed date. Before 1889 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

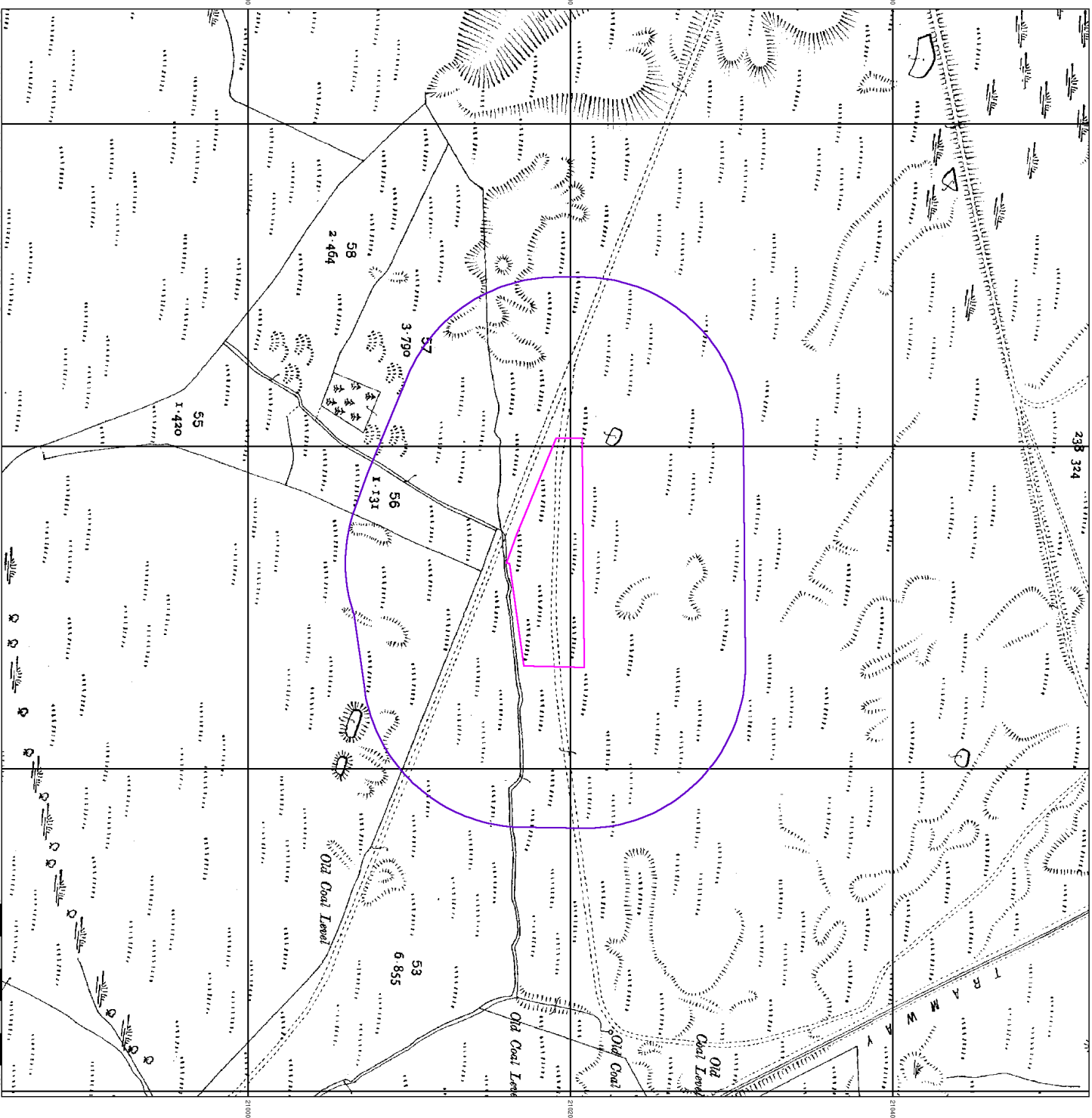
Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn celiwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 100

Site Details

Site at: Dyffryn Celiwyn, Neath Port Talbot



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirotek.co.uk



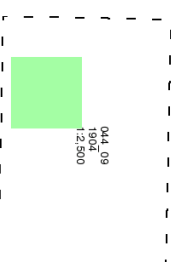
Brecknockshire

Published 1904

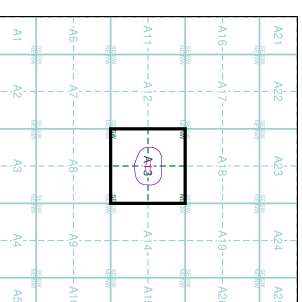
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1886 of Great Britain. The published date above the map is often some years later than the surveyed date. Before 1989 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 172177631_1
 Customer Ref: 14753 dyffryn celiwyn
 National Grid Reference: 285070, 210190
 Slice: A
 Site Area (Ha): 0.52
 Search Buffer (m): 100

Site Details

Site at: Dyffryn Celiwyn, Neath Port Talbot



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirock.co.uk

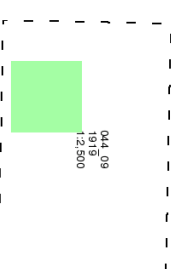


Brecknockshire
Published 1919

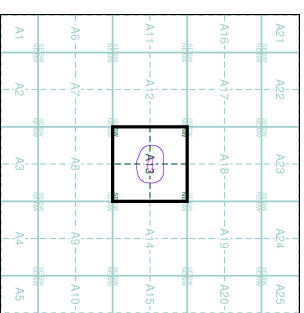
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1886 of Great Britain. The published date here, however, is often many years later than the surveyed date. Before 1888 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 100
Site Details
Site at: Dyffryn Cellwen, Neath Port Talbot



A Landmark Information Group Service V50.0 04-Jul-2018 Page 5 of 11



Ordnance Survey Plan

Published 1962

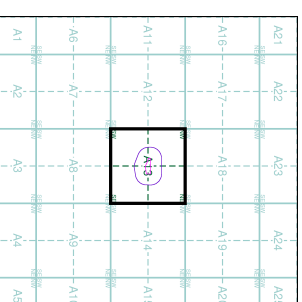
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1880 of Great Britain. The published date here is often many years later than the surveyed date. Before 1988 all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SN8410	SN8510
1982	1982
12,500	12,500
SN8409	SN8509
1982	1982
12,500	12,500

Historical Map - Segment A13



Order Details

Order Number: 172177631_1
Customer Ref: 14753 dyffryn ceilwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 100

Site Details

Site at: Dyffryn Ceilwen, Neath Port Talbot



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Fax: 0844 844 9951
Web: www.envirotek.co.uk



Additional SIMs

Published 1978 - 1992

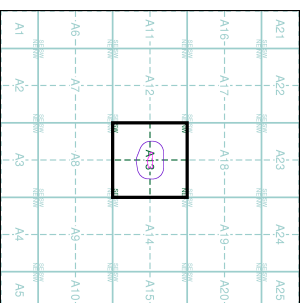
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's Survey of Information on Microfilm) are further minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed road networks, buildings, 1:2,500 and 1:1,250 scales. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SN8410	SN8510
1988	1978
1:2,500	1:2,500
SN8409	SN8509
1992	1988
1:2,500	1:2,500

Historical Map - Segment A13



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn celliwen
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 100

Site Details

Site at: Dyffryn Celliwen, Neath Port Talbot



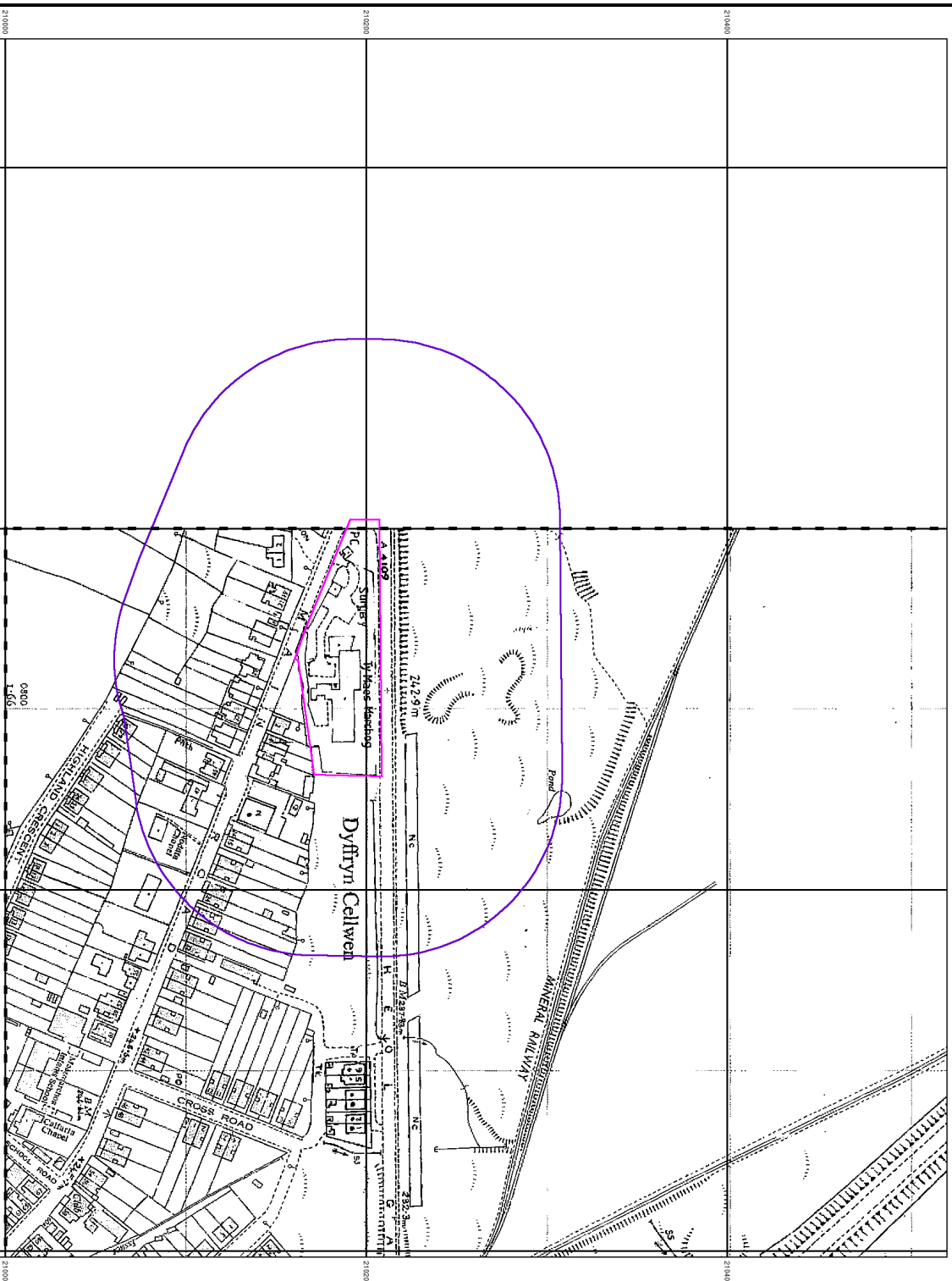
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirotek.co.uk

284800

285000

285200

285400



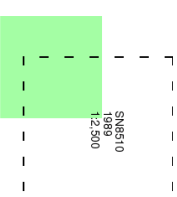
Additional SIMS

Published 1989

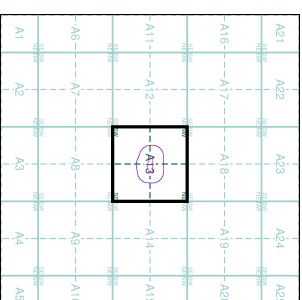
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's Survey of Information on Microfilm) are further, minor editions of mapping which were produced and published in 1989, and certain details of roadings, 1989 and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 172177631_1
 Customer Ref: 14753 dyffryn ceiwen
 National Grid Reference: 285070, 210190
 Slice: A
 Site Area (ha): 0.52
 Search Buffer (m): 100

Site Details

Site at: Dyffryn Ceiwen, Neath Port Talbot



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirotek.co.uk

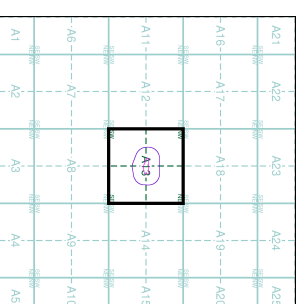
Source map scale - 1:2,500

Large Scale National Grid Data: superseded SIM cards (Ordnance Survey's Survey of Information on Microfilm) in 1992, and continued to be produced until 1993. These maps were the forerunners of digital mapping and so contain a wealth of information on features and roads, but tend to show as photographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SN8410	1993	12,500
SN8510	1993	12,500
SN8409	1993	12,500
SN8509	1993	12,500

Historical Map - Segment A13



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn celliwn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 100

Site Details

Site at: Dyffryn Celliwn, Neath Port Talbot



284600

286300

286500

286400

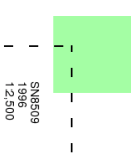


Large-Scale National Grid Data Published 1996

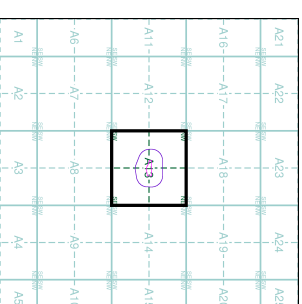
Source map scale - 1:2,500

Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Small Scale' maps) were first published in 1992, and continued to be produced until 1996. These maps were the first series of digital mapping and so provided a more accurate representation of the ground than previous maps. They included topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn celliwn
National Grid Reference: 285070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 100

Site Details

Site at: Dyffryn Celliwn, Neath Port Talbot



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Fax: 0844 844 9951
Web: www.envirotek.co.uk

284800

285000

285200

285400



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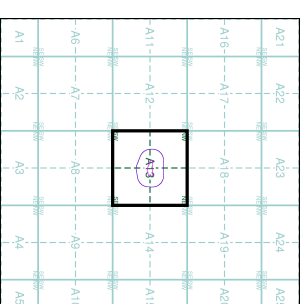
0 100 m



Historical Aerial Photography Published 2001

This aerial photography was produced by GGM Mapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



Order Details

Order Number: 172177631_1_1
 Customer Ref: 14753 dyffryn cellwyn
 National Grid Reference: 285070, 210190
 Slice: A
 Site Area (Ha): 0.52
 Search Buffer (m): 100

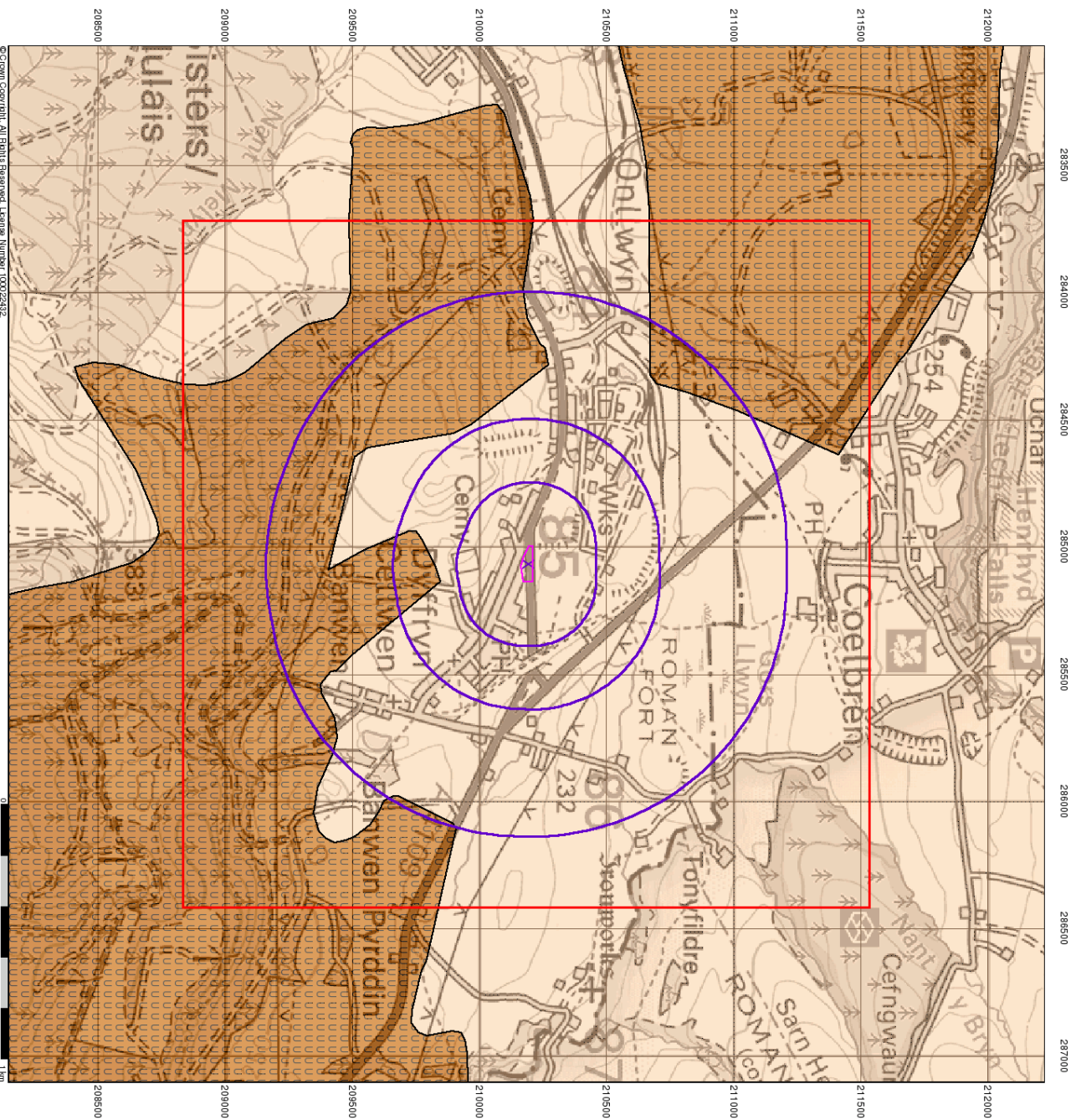
Site Details

Site at: Dyffryn Cellwyn, Neath Port Talbot



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.envirotek.co.uk

ANNEX B
Envirocheck Report



Groundwater Vulnerability

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Site
- Map ID

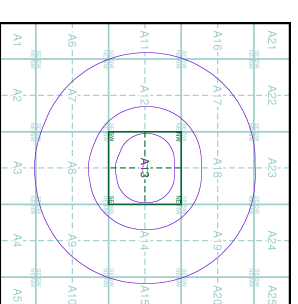
Agency and Hydrological

Geological Classes

Soil Classes

- Major Aquifer (Highly Permeable)
- Minor Aquifer (Veerably Permeable)
- Non Aquifer (Negligibly Permeable)
- Water or Sea
- Drift Deposit
- High (H) 1, 2, 3, U
- Intermediate (I) 1, 2
- Low
- High (H) 1, 2, 3, U
- Intermediate (I) 1, 2
- Low

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 17217631, 1.1
Customer Ref: 14753 dyffryn celwyn
National Grid Reference: 286070, 210190
Site Area (Ha): 0.52
Search Buffer (m): 1000

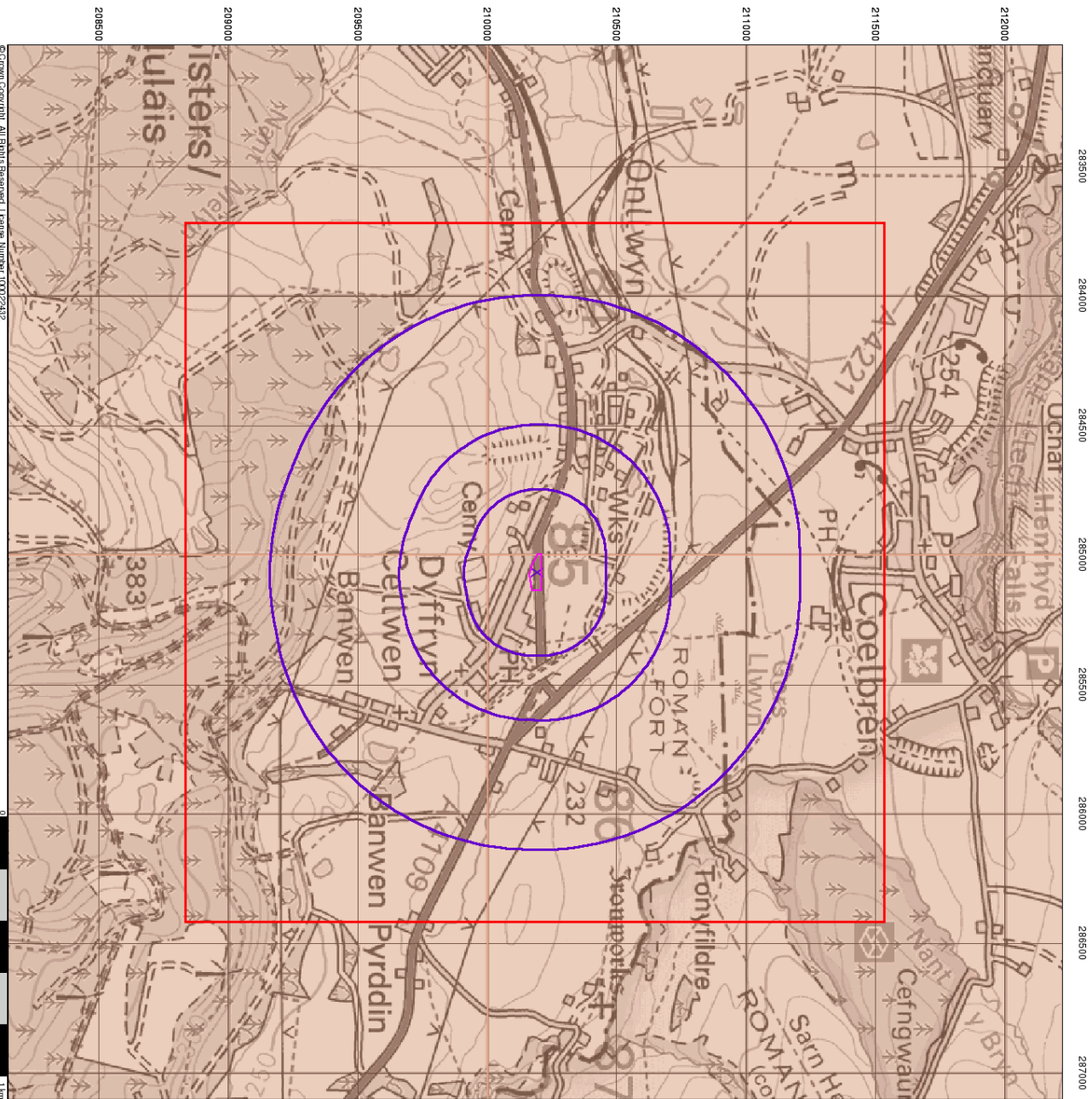
Site Details

Site at: Dyffryn Celwen, Neath Port Talbot



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.environment.co.uk

A Landmark Information Group Service v150 04-Jul-2018



Bedrock Aquifer Designation

General

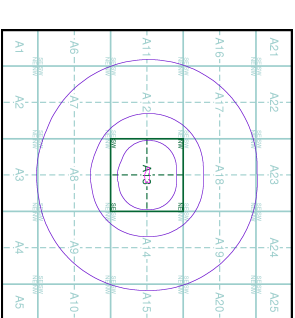
- Specified Site
- Specified Buffer(s)
- Site
- Map ID
- Bearing Reference Point

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



Order Details

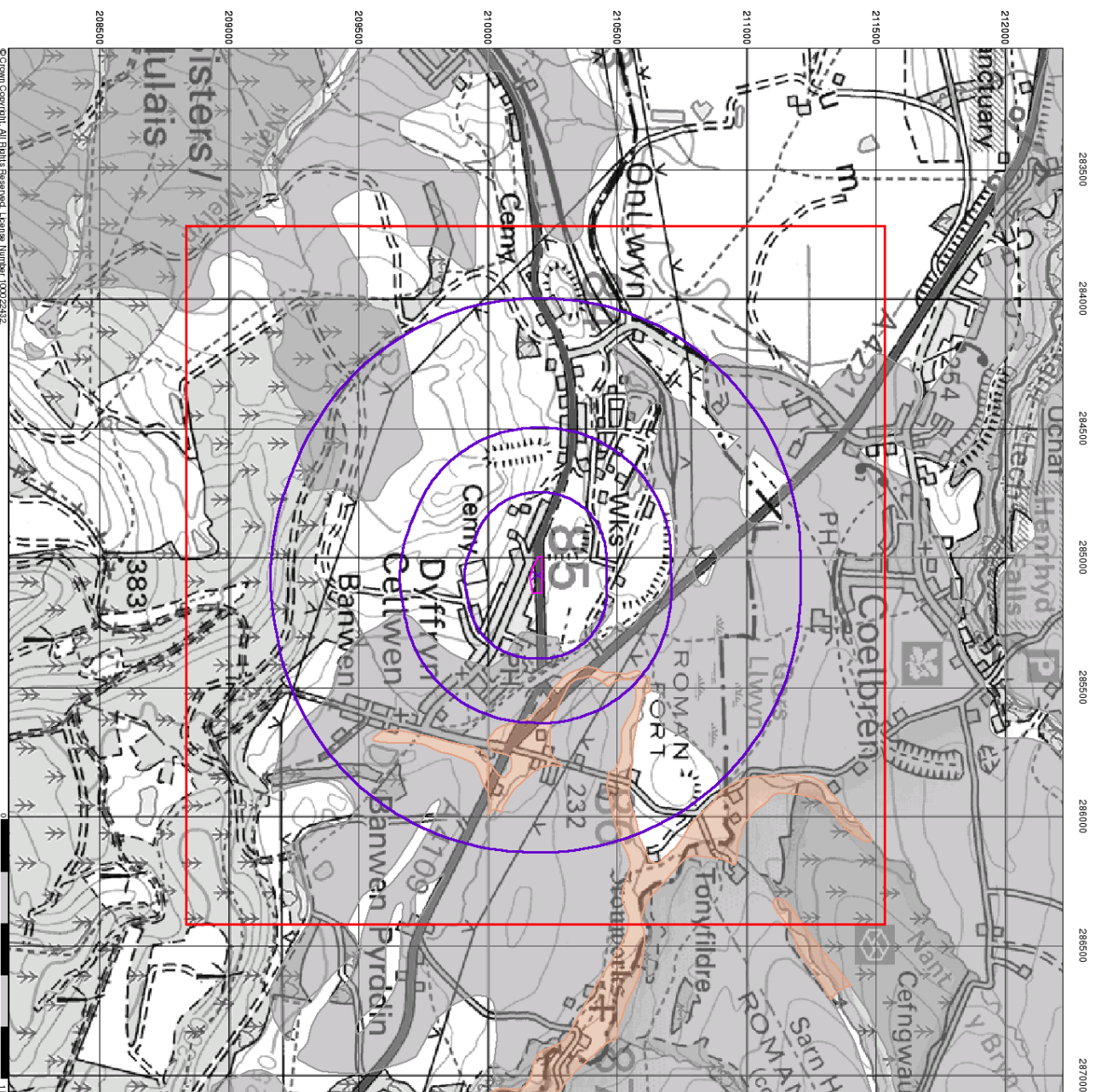
Order Number: 17217631.1.1
Customer Ref: 14753 dyffryn cellyn
National Grid Reference: 286070, 210190
Slice: A
Site Area (Ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellyn, Neath Port Talbot



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Superficial Aquifer Designation

General

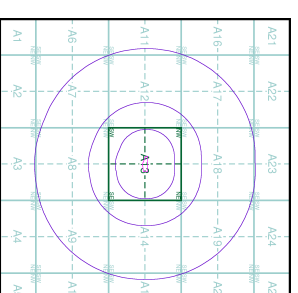
- | Specified Site | Specified Buffers | Bearing Reference Point |
|---|---|---|
|  |  |  |
| Slice | Map ID | |

Agency and Hydrological

Geological Classes

- | | |
|---|------------------------------|
|  | Principal Aquifer |
|  | Secondary A Aquifer |
|  | Secondary B Aquifer |
|  | Secondary Undifferentiated |
|  | Unproductive Strata |
|  | Unknown |
|  | Unknown (Lakes and Landfill) |

Site Sensitivity Context Map - Slice A

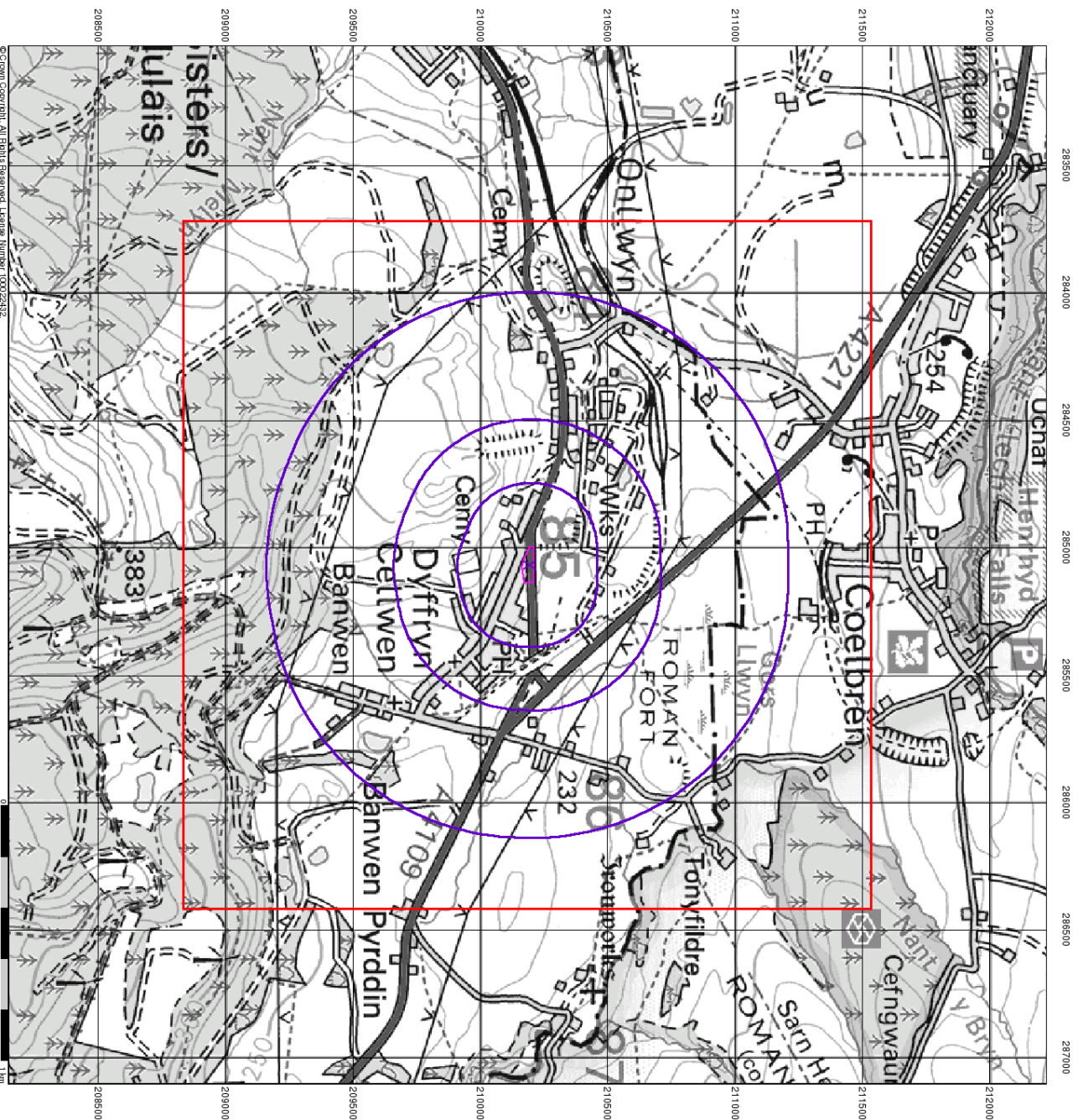


Order Details

Order Number:	172177631_1_1
Customer Ref:	14753 dyffryn ocellwyn
National Grid Reference:	286070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot



Source Protection Zones

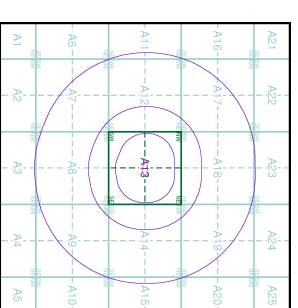
General

- Specified Site
- Specified Buffer(s)
- Site
- Map ID
- Bearing Reference Point

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special Interest (Zone 4)

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 17217631.1.1
 Customer Ref: 14753 dyffryn cellwyn
 National Grid Reference: 286070, 210190
 Slice: A
 Site Area (Ha): 0.52
 Search Buffer (m): 1000

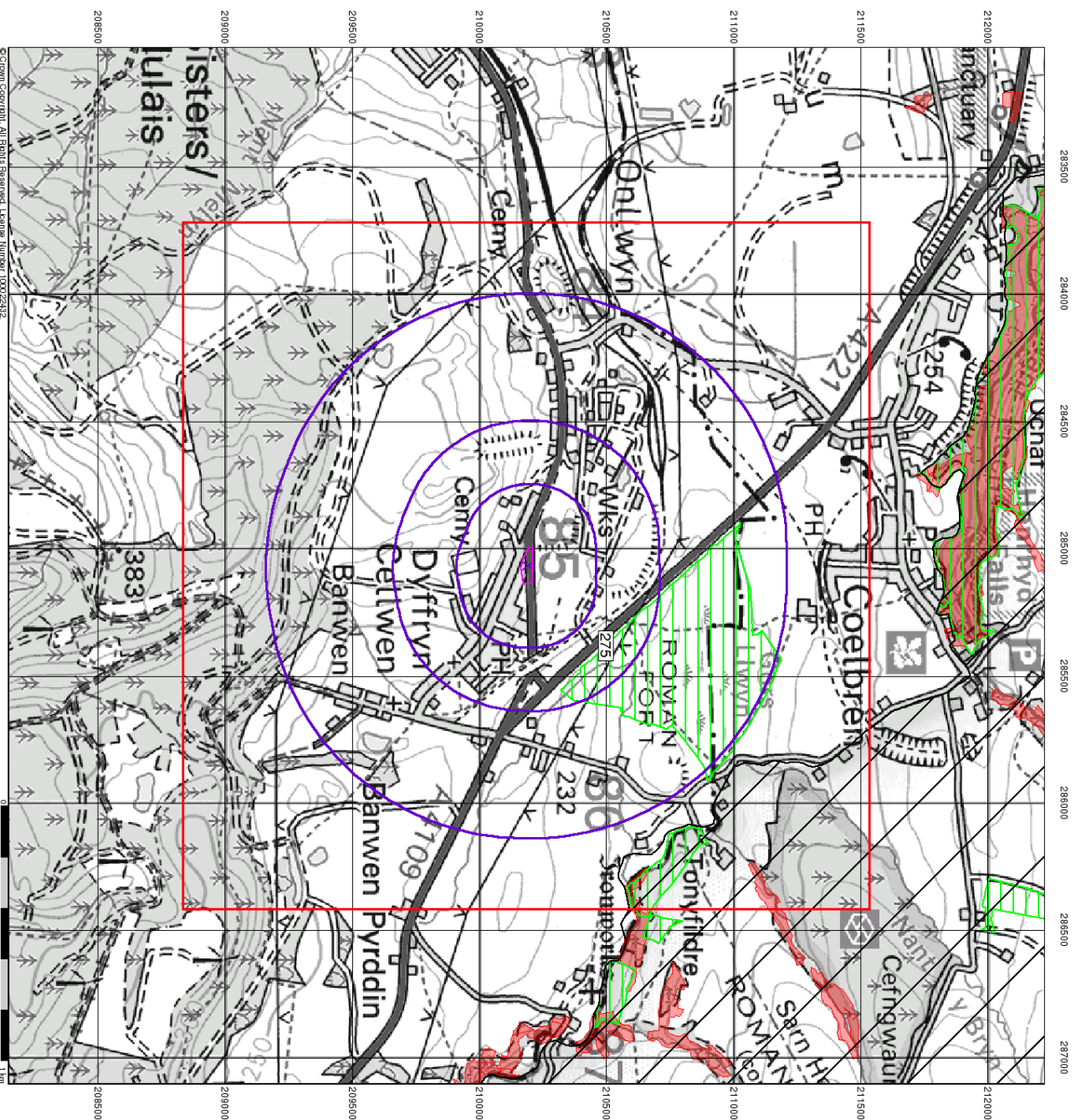
Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot



Tel: 0844 844 9952
 Fax: 0844 844 9951
 Web: www.environment.co.uk

A Landmark Information Group Service V150 04-Jul-2018



Sensitive Land Uses

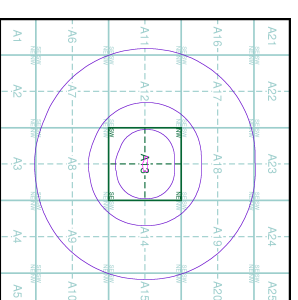
General

- | | | | | | |
|---|----------------|---|---------------------|---|-------------------------|
| | Specified Site | | Specified Buffer(s) | | Bearing Reference Point |
| | Slice | | Map ID | | |

Sensitive Land Uses

- | | |
|---|-------------------------------------|
|  | Ancient Woodland |
|  | Area of Adopted Green Belt |
|  | Area of Unadopted Green Belt |
|  | Area of Outstanding Natural Beauty |
|  | Environmentally Sensitive Area |
|  | Forest Park |
|  | Local Nature Reserve |
|  | Marine Nature Reserve |
|  | National Nature Reserve |
|  | National Park |
|  | Nitrate Sensitive Area |
|  | Nitrate Vulnerable Zone |
|  | Ramсар Site |
|  | Site of Special Scientific Interest |
|  | Special Area of Conservation |
|  | Special Protection Area |
|  | World Heritage Sites |

Site Sensitivity Context Map - Slice A

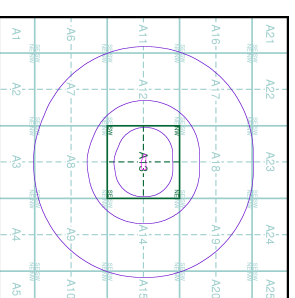
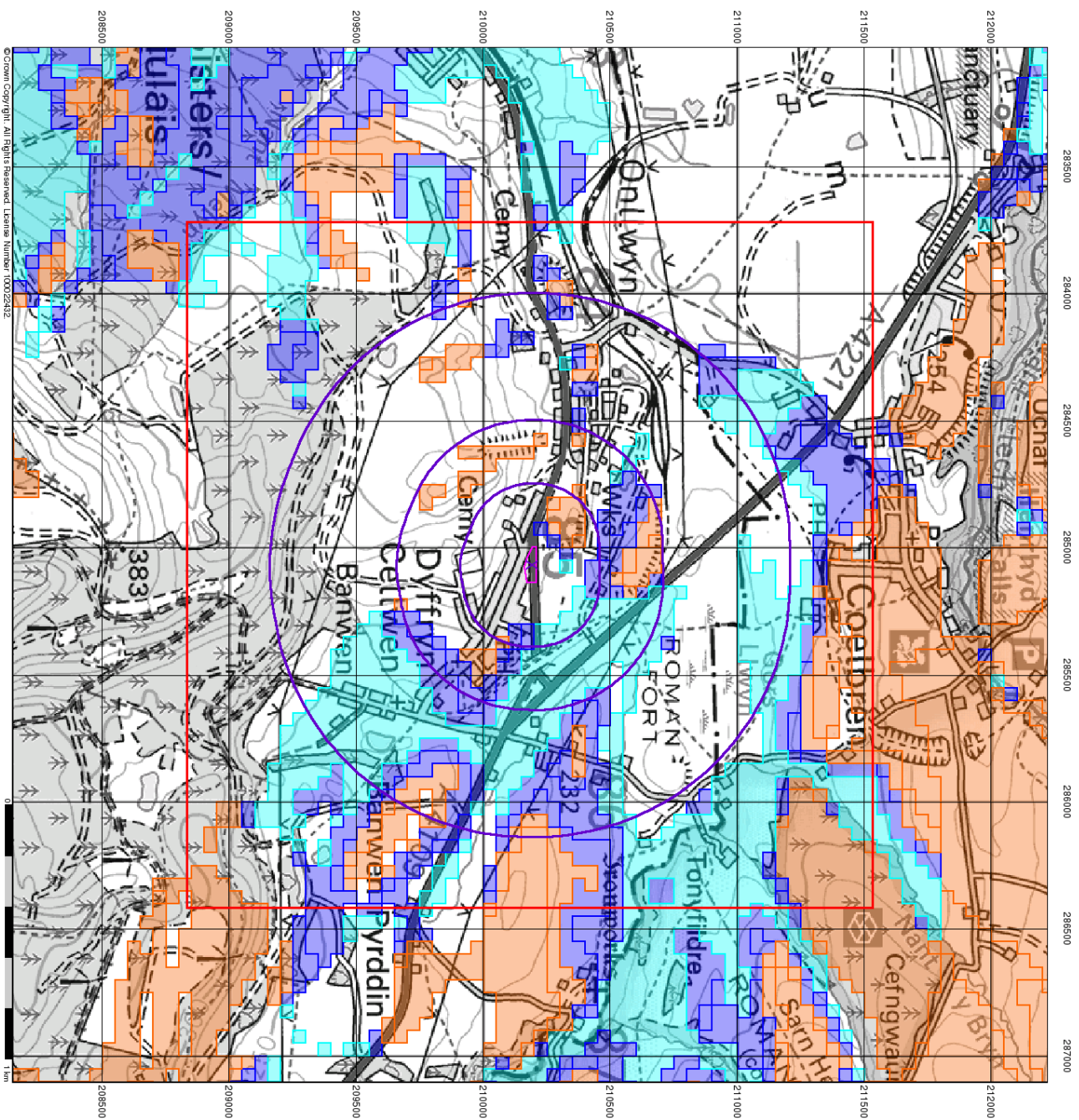


Order Details

Order Number:	172177631_1_1
Customer Ref:	14753 dyffryn oellwyn
National Grid Reference:	285070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot



Site Sensitivity Context Map - Slice A

Order Details

Order Number:	172177631_1_1
Customer Ref:	14753 dyffryn celiwyn
National Grid Reference:	286070, 210190
Slice:	A
Site Area (Ha):	0.52
Search Buffer (m):	1000

Site Details

Site at, Dyffryn Cellwen, Neath Port Talbot

General

Specified Site Specified Buffer(s)

Serial of Type at Location

Bearing Reference Point Map ID

Agency and Hydrological

Contaminated Land and Register Entry or Notice

Discharge Consent

Enforcement or Pollution Notice

Integrated Pollution Control

Local Authority Integrated Pollution Prevention and Control

Local Authority Pollution Prevention and Control

Local Authority Pollution Prevention and Control

Pollution Incident to Controlled Waters

Prosecution Relating to Authorised Processes

Prosecution Relating to Controlled Waters

Registered Radioactive Substance

River Network or Water Feature

River Quality Sampling Point

Substantiated Pollution Incident Register

Water Abstraction

Water Industry Act Referral

Hazardous Substances

Planning Hazardous Substance Consent

Planning Hazardous Substance Enforcement

Geological

BSS Recorded Mineral Site

Waste

BSS Recorded Landfill Site (Location)

BSS Recorded Landfill Site (Location)

EA Historic Landfill (Buried Part)

EA Historic Landfill (Buried Part)

Integrated Pollution Control Registered

Waste Site

Waste Management Facility (Location)

Licensed Waste Management Facility (Location)

Local Authority Recorded Landfill Site (Location)

Local Authority Recorded Landfill Site (Location)

Potentially Infiltrated Land (Non-water)

Potentially Infiltrated Land (Non-water)

Potentially Infiltrated Land (Non-water)

Potentially Infiltrated Land (Water)

Potentially Infiltrated Land (Water)

Potentially Infiltrated Land (Water)

Registered Landfill Site (Past, Buried to 100m)

Registered Landfill Site (Past, Buried to 200m)

Registered Landfill Site (Past, Buried to 200m)

Registered Waste Transfer Site (Location)

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

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Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

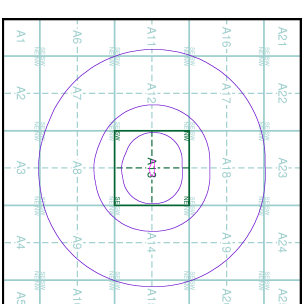
Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site

Registered Waste Treatment or Disposal Site



Order Details

Order Number: 17217631_1

Customer Ref: 14753 dyffryn cellwyn

National Grid Reference: 285070, 210190

Site: A

Site Area (ha): 0.52

Search Buffer (m): 1000

Site at: Dyffryn Cellwen, Neath Port Talbot

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot

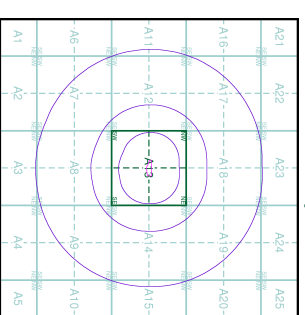
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Site
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

Order Number: 17217631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot

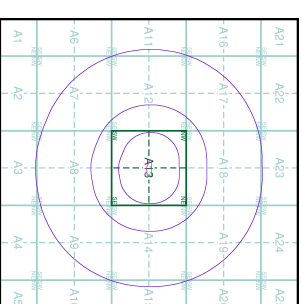
General

- Specified Site
- Specified Buffer(s)
- Beating Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

Order Number: 17217/631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot

General

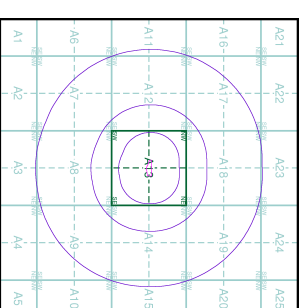
- Specified Site
- Specified Borehole(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.
A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.environmental.co.uk.

Borehole Map - Slice A



Order Details

Order Number: 17217631_1_1
Customer Ref: 14753 dyffryn celliwn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Celliwn, Neath Port Talbot

General

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point

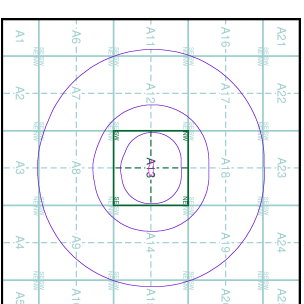
OS Water Network Data

-  Canal
-  Reservoir
-  Foreshore
-  Marsh
-  Tidal River
-  Inland River
-  Drain
-  Other
-  Lake
-  Transfer
-  Lock Or Flight Of Locks
-  Sea

Contours (height in meters)

-  Standard Contour
-  Master Contour
-  Spot Height
-  MLW Mean Low Water
-  MHW Mean High Water

OS Water Network Map - Slice A



Order Details

Order Number: 17217631_1
 Customer Ref: 14753 dyffryn cellwyn
 National Grid Reference: 285070, 210190
 Slice: A
 Site Area (ha): 0.52
 Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwyn, Neath Port Talbot



General

- Specified Site
- Specified Buffer(s)
- Beating Reference Point

Risk of Flooding from Surface Water

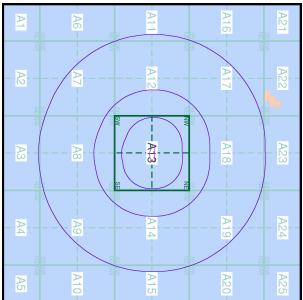
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EANRW Suitability Map - Slice A



Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot



Tel: 0944 844 9952
Fax: 0944 844 9951
Web: www.environmental.co.uk

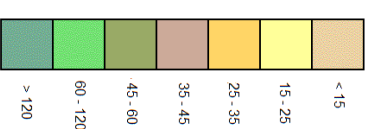


General

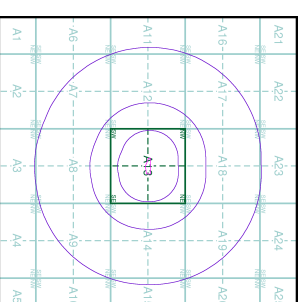
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



Estimated Soil Chemistry Arsenic - Slice A



Order Details

Order Details: 17217/631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.environmental.co.uk

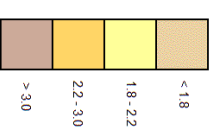


General

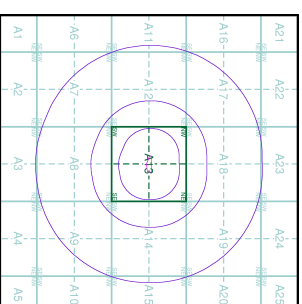
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg



Estimated Soil Chemistry Cadmium - Slice A



Order Details

Order Details: 17217/631_1_1
Customer Ref: 14753 dyffryn celwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.environment.co.uk

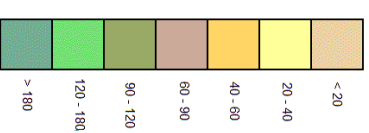


General

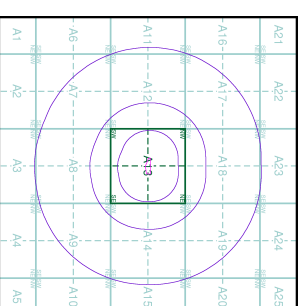
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg



Estimated Soil Chemistry Chromium - Slice A



Order Details

Order Details: 17217/631_1_1
Customer Ref: 14753 dyffryn celiwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Celiwen, Neath Port Talbot

General

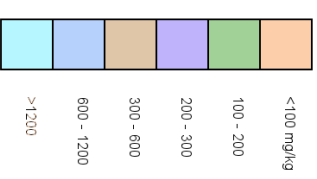
Specified Site

Specified Buffer(s)

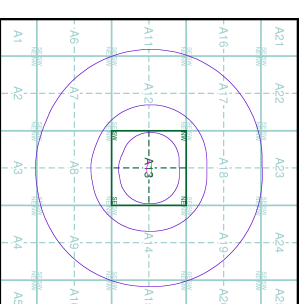
Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details: 17217/631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Site: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot

General

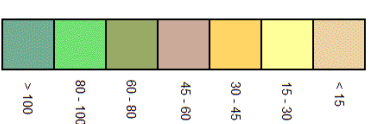
Specified Site

Specified Buffer(s)

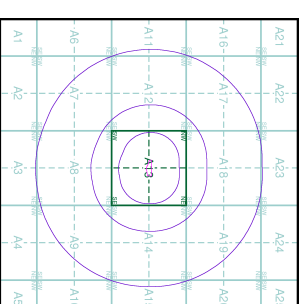
Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details: 17217/631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Slice: A
Site Area (ha): 0.52
Search Buffer (m): 1000

Site Details

Site at: Dyffryn Cellwen, Neath Port Talbot



Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice

A slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline) that are referenced by letters of the alphabet starting from the bottom left corner of the slice '000'. This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment

A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant

A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the database to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

Mr I Brookes, Terra Firma (Wales) Ltd, 5 Deryn Court,
Wharfedale Road, Penrhyw, Cardiff, CF23 7HB

Order Details

Order Number: 172177631_1_1
Customer Ref: 14753 dyffryn cellwyn
National Grid Reference: 285070, 210190
Site Area (Ha): 0.52
Search Buffer (m): 1000

Site Details

Site at, Dyffryn Celliwen, Neath Port Talbot

Full Terms and Conditions can be found on the following link:

<http://www.landmarkinfo.co.uk/Terms/Slow/515>



Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

ANNEX C
Mining Report



The Coal
Authority

Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

SITE AT, DYFFRYN CELLWEN
NEATH PORT TALBOT



Date of enquiry: 04 July 2018
Date enquiry received: 04 July 2018
Issue date: 04 July 2018

Our reference: 51001873311001
Your reference: 172177631_2|

CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority, at the time we answer the search.

Client name

LANDMARK INFORMATION GROUP LIMITED

Enquiry address

SITE AT, DYFFRYN CELLWEN, NEATH PORT TALBOT

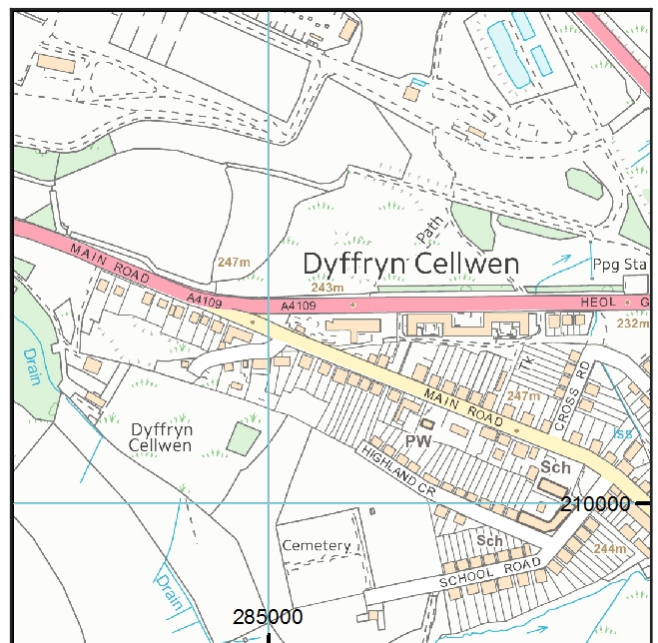
How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority
 /thecoalauthority
 /coalauthority



Approximate position of property



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Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

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

However the property is in an area where the Coal Authority believe 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 prior to any site works or future development activity. Please refer to the Comments section of this report for further information.

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 plans to grant a licence to remove coal using 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 known coal mine entries within, or within 20 metres of, the boundary of the property.

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 31st 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 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.

Comments on the Coal Authority information

The Coal Authority own the copyright in this report and the information used is protected by our database right.

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore 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 good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Additional remarks

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. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.

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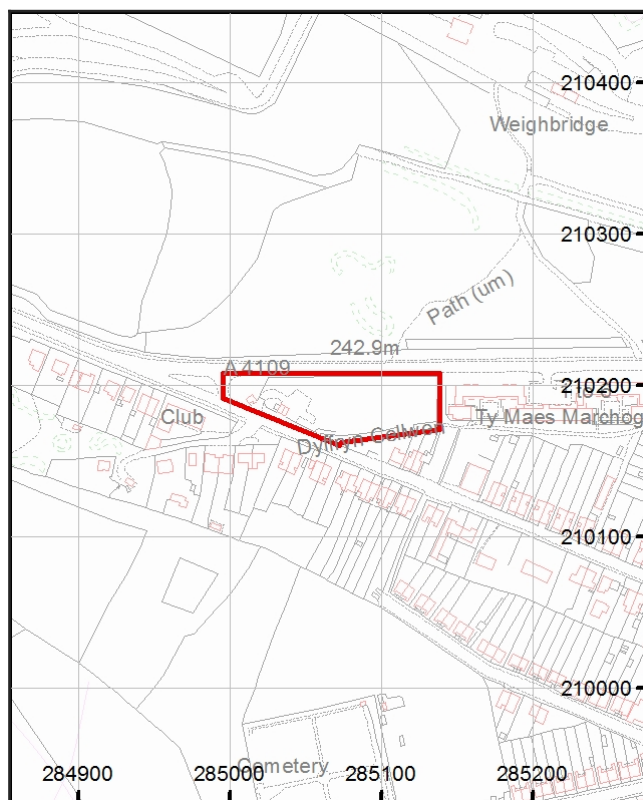
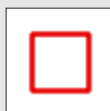
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



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ANNEX D
Trial Pit Logs



Tel: 02920 735354
info@terrafirmawales.co.uk
www.terrafirmawales.co.uk

Terra Firma (Wales) Limited
5 Deryn Court, Wharfedale Road
Pentwyn, Cardiff
CF23 7HA

Trial Pit No:

TP1

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions: 1.80

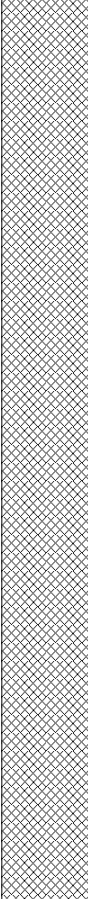
Depth
3.00

0.80

Scale:
1:25

Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m

Stability: Trial pit stable

Remarks:



Tel: 02920 735354
info@terrafirmawales.co.uk
www.terrafirmawales.co.uk

Terra Firma (Wales) Limited
5 Deryn Court, Wharfedale Road
Pentwyn, Cardiff
CF23 7HA

Trial Pit No:

TP2

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

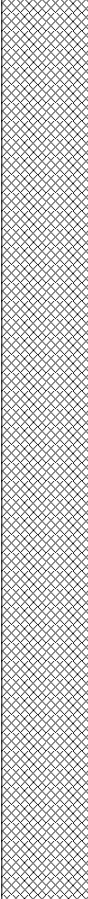
Dimensions: 1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown sandy gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m

Stability: Trial pit stable

Remarks:



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5 Deryn Court, Wharfedale Road
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CF23 7HA

Trial Pit No:

TP3

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions:

1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				1.20			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass	1
							MADE GROUND: firm brown very gravelly CLAY with inclusions of brick and glass	2
				3.00			End of Pit at 3.000m	3
								4
								5

Stability: Trial pit stable

Remarks:



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Trial Pit No:

TP4

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions:

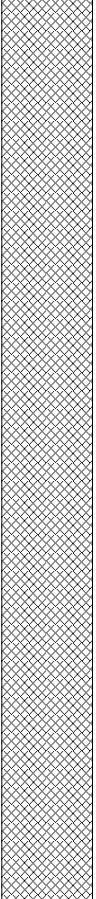
1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass	1 2 3 4 5
							End of Pit at 3.000m	

Stability: Trial pit stable

Remarks:



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CF23 7HA

Trial Pit No:

TP5

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions:

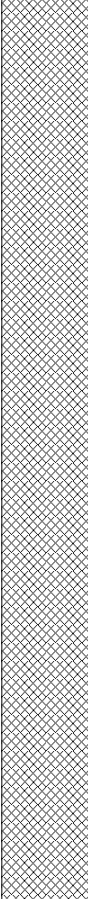
1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m

Stability: Trial pit stable

Remarks:



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CF23 7HA

Trial Pit No:

TP6

Sheet 1 of 1

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords: -
Level:

Date:
24/05/2018

Location: Dyffryn Cellwen

Dimensions:

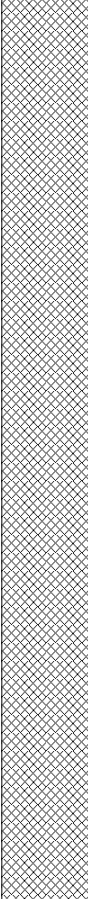
1.80

Depth
3.00

0.80

Scale:
1:25
Logged:

Client:

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				3.00			MADE GROUND: firm brown gravelly CLAY with inclusions of brick and glass
							End of Pit at 3.000m

Stability: Trial pit stable

Remarks:

ANNEX E
Rotary Percussive Borehole
Logs



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Borehole No.

BH01

Sheet 1 of 3

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				2.50				Backfill broken ground (DRILLERS DESCRIPTION)	1
								Weathered mudstone TILL. (DRILLERS DESCRIPTION)	2
									3
									4
									5
									6
									7
				7.30				MUDSTONE. (DRILLERS DESCRIPTION)	8
									9
									10

Remarks:



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Borehole No.

BH01

Sheet 2 of 3

Project Name: Dyffryn Cellwen Project No: 14753 Co-ords: Hole Type BH

Location: Dyffryn Cellwen Level: Scale 1:50

Client: Dates: 26/07/2018 - 26/07/2018 Logged By ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								MUDSTONE. (DRILLERS DESCRIPTION)	
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20

Remarks:



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Borehole No.

BH01

Sheet 3 of 3

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								MUDSTONE. (DRILLERS DESCRIPTION)	
				21.50					21
				22.20					22
				22.20				COAL. (DRILLERS DESCRIPTION)	
								MUDSTONE. (DRILLERS DESCRIPTION)	
								COAL dark MUDSTONE. (DRILLERS DESCRIPTION)	23
				23.60					
								MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	24
									25
									26
									27
									28
									29
				30.00					30
								End of Borehole at 30.000m	

Remarks:



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Borehole No.

BH02

Sheet 1 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				2.20				Backfill BROCKEN GROUND. (DRILLERS DESCRIPTION)	1
								Weathered mudstone TILL. (DRILLERS DESCRIPTION)	2
									3
									4
									5
				5.70				MUDSTONE. (DRILLERS DESCRIPTION)	6
									7
									8
									9
									10

Remarks:



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Borehole No.

BH02

Sheet 2 of 4

Project Name: Dyffryn Cellwen	Project No: 14753	Co-ords:	Hole Type BH
Location: Dyffryn Cellwen		Level:	Scale 1:50
Client:		Dates: 26/07/2018 - 26/07/2018	Logged By ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
▼				10.50				MUDSTONE. (DRILLERS DESCRIPTION)	
								MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	11
									20

Remarks:



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Borehole No.

BH02

Sheet 3 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 26/07/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				21.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	
								COAL. (DRILLERS DESCRIPTION)	21
				23.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	23
				24.10				SANDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	24
									25
									26
									27
									28
									29
				30.00					30

Remarks:



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Borehole No.

BH02

Sheet 4 of 4

Project Name:	Dyffryn Cellwen	Project No:	14753	Co-ords:		Hole Type	BH
Location:	Dyffryn Cellwen	Level:				Scale	1:50
Client:		Dates:	26/07/2018 - 26/07/2018			Logged By	ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				30.50				COAL. (DRILLERS DESCRIPTION)	
				31.00				MUDSTONE. (DRILLERS DESCRIPTION)	
								End of Borehole at 31.000m	31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks:



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Borehole No.

BH03

Sheet 1 of 4

Project Name: Dyffryn Cellwen

Project No:
14753

Co-ords:

Hole Type
BH

Location: Dyffryn Cellwen

Level:

Scale
1:50

Client:

Dates: 25/06/2018 - 26/07/2018

Logged By
ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
								Backfill BROCKEN GROUND. (DRILLERS DESCRIPTION)	1
				2.50				Weathered mudstone TILL. (DRILLERS DESCRIPTION)	3
				4.00				MUDSTONE. (DRILLERS DESCRIPTION)	4
									5
									6
									7
									8
									9
				9.50				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	10

Remarks:



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Borehole No.

BH03

Sheet 2 of 4

Project Name:	Dyffryn Cellwen	Project No:	14753	Co-ords:		Hole Type	BH
Location:	Dyffryn Cellwen	Level:				Scale	1:50
Client:		Dates:	25/06/2018 - 26/07/2018			Logged By	ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
▼								MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	11
				19.50					
								COAL. (DRILLERS DESCRIPTION)	20

Remarks:



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Borehole No.

BH03

Sheet 3 of 4

Project Name: Dyffryn Cellwen	Project No: 14753	Co-ords:	Hole Type BH
Location: Dyffryn Cellwen		Level:	Scale 1:50
Client:		Dates: 25/06/2018 - 26/07/2018	Logged By ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				20.30				COAL. (DRILLERS DESCRIPTION)	
								MUDSTONE. (DRILLERS DESCRIPTION)	
				21.00				COAL. (DRILLERS DESCRIPTION)	21
				22.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	22
									23
				23.50				SANDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	24
									25
									26
									27
				28.20				COAL. (DRILLERS DESCRIPTION)	28
				28.70				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	29
								End of Borehole at 24.000m	
									30

Remarks:



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Borehole No.

BH03

Sheet 4 of 4

Project Name: Dyffryn Cellwen	Project No: 14753	Co-ords:	Hole Type BH
Location: Dyffryn Cellwen		Level:	Scale 1:50
Client:		Dates: 25/06/2018 - 26/07/2018	Logged By ML

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Well	Legend	Stratum Description	
	Depth (m)	Type	Results						
				31.00				MUDSTONE and SILTSTONE. (DRILLERS DESCRIPTION)	31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Remarks:

ANNEX F
Laboratory Soil Chemical Test Results



Certificate of Analysis

Certificate Number 18-12841

05-Jun-18

Client Terra Firma (Wales) Ltd
5 Deryn Court
Wharfdale Road
Pentwyn
Cardiff
CF23 7HB

Our Reference 18-12841

Client Reference (not supplied)

Order No ML

Contract Title Dyffryn Cellwen

Description 6 Soil samples.

Date Received 30-May-18

Date Started 30-May-18

Date Completed 05-Jun-18

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Adam Fenwick
Contracts Manager



Summary of Chemical Analysis

Matrix Descriptions

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Sample ID	Depth	Lab No	Completed	Matrix Description
TP1	0.2	1345192	05/06/2018	Dark brown gravelly, sandy CLAY
TP2	0.4	1345193	05/06/2018	Dark brown clayey, sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP3	0.3	1345194	05/06/2018	Dark brown gravelly, sandy CLAY
TP4	0.2	1345195	05/06/2018	Dark brown sandy GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP5	0.6	1345196	05/06/2018	Dark brown sandy, GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP6	0.2	1345197	05/06/2018	Dark brown clayey, sandy GRAVEL including odd rootlets (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis

Soil Samples

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Lab No	1345192	1345193	1345194	1345195	1345196	1345197
Sample ID	TP1	TP2	TP3	TP4	TP5	TP6
Depth	0.20	0.40	0.30	0.20	0.60	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Moisture Content	DETSC 1004	0.1	%	14	5.1	14	6.0	14	3.1
Metals									
Antimony	DETSC 2301*	1	mg/kg	1.9	< 1.0	< 1.0	< 1.0	4.4	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	8.9	3.8	5.9	4.5	9.3	9.2
Beryllium	DETSC 2301#	0.2	mg/kg	1.1	< 0.2	0.7	0.2	0.2	0.4
Boron, Water Soluble	DETSC 2123#	0.2	mg/kg	0.8	1.1	0.7	0.9	1.7	0.9
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	0.2	< 0.1	0.1	0.3	0.2
Chromium	DETSC 2301#	0.15	mg/kg	15	4.6	15	5.9	12	11
Chromium III	DETSC 2301*	0.15	mg/kg	15	4.6	15	5.9	12	11
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	30	4.5	24	12	13	21
Lead	DETSC 2301#	0.3	mg/kg	26	6.7	15	8.1	20	18
Manganese	DETSC 2301#	20	mg/kg	1400	310	220	240	290	400
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	0.6	1.7	0.4	0.9	0.6	0.9
Nickel	DETSC 2301#	1	mg/kg	30	5.4	22	7.0	7.3	15
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	84	29	56	43	60	95
Inorganics									
pH	DETSC 2008#			8.0	9.3	7.8	10.8	11.2	8.4
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Cyanide, Complex	DETSC 2130*	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Organic matter	DETSC 2002#	0.1	%	1.6	0.4	1.1	0.7	1.6	1.7
Sulphate as SO ₄ , Total	DETSC 2321#	0.01	%	0.02	0.07	0.02	0.11	0.29	0.04
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C35-C44	DETSC 3072*	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	4.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	44	< 1.4

Summary of Chemical Analysis

Soil Samples

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Lab No	1345192	1345193	1345194	1345195	1345196	1345197
Sample ID	TP1	TP2	TP3	TP4	TP5	TP6
Depth	0.20	0.40	0.30	0.20	0.60	0.20
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18	24/05/18
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Aromatic C35-C44	DETSC 3072*	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	48	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	48	< 10
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.04	0.14	0.19
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.03	0.04
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.12	0.44	0.49
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.09	0.35	0.38
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.06	0.24	0.28
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.12	0.32	0.42
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.11	0.32	0.57
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.04	0.13	0.19
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.16	0.37
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.10	0.27
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.05	0.09
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	0.05	0.10	0.29
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	< 0.10	0.74	2.4	3.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Asbestos Analysis Soil Samples

Our Ref 18-12841

Client Ref

Contract Title Dyffryn Cellwen

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1345192	TP1 0.20	SOIL	NAD	none	Michael Rutherford
1345193	TP2 0.40	SOIL	NAD	none	Michael Rutherford
1345194	TP3 0.30	SOIL	NAD	none	Michael Rutherford
1345195	TP4 0.20	SOIL	NAD	none	Michael Rutherford
1345196	TP5 0.60	SOIL	NAD	none	Michael Rutherford
1345197	TP6 0.20	SOIL	NAD	none	Michael Rutherford

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 18-12841
 Client Ref
 Contract Dyffryn Cellwen

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1345192	TP1 0.20 SOIL	24/05/18	GJ 250ml, PT 1L		
1345193	TP2 0.40 SOIL	24/05/18	GJ 250ml, PT 1L		
1345194	TP3 0.30 SOIL	24/05/18	GJ 250ml, PT 1L		
1345195	TP4 0.20 SOIL	24/05/18	GJ 250ml, PT 1L		
1345196	TP5 0.60 SOIL	24/05/18	GJ 250ml, PT 1L		
1345197	TP6 0.20 SOIL	24/05/18	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO ₄	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO ₄	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

ANNEX G
Plasticity Test Results



Laboratory Report



Contract Number: 39518

Client Ref: **14753**

Report Date: **19-06-2018**

Client PO:

Client **Terrafirma Wales Ltd**
5 Deryn Court
Wharfedale Road
Pentwyn
Cardiff
CF23 7HB

Contract Title: **Dyffryn Cellwen**
For the attention of: **Matthew Lake**

Date Received: **04-06-2018**
Date Commenced: **04-06-2018**
Date Completed: **19-06-2018**

Test Description	Qty
Moisture Content BS 1377 : Part 2 : 3.2 - * UKAS	3
4 Point Liquid & Plastic Limit (LL/PL) BS 1377 Part 2 : 4.3 & 5.3 - * UKAS	3
Disposal of Samples on Project	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)

Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Accounts Assistant)

Wayne Honey (Administrative/Quality Assistant)

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377 : Part 2 : 1990 Method 5)

DESCRIPTIONS

Contract Number	39518	
Site Name	Dyffryn Cellwen	

[illegible]

Operators	Checked	18-06-18	Emma Sharp	
RO/MH	Approved	19-06-18	Paul Evans	

DRAWINGS



Job Number:
14753

Job Title:
Dyffryn Cellwyn

Drawing Title:
Site Location

Drawing Number:
02

Scale:
Not To Scale

- Legend:
-  Borehole Location
 -  Trial Pit Location

