

## 11 GEOLOGY

### 11.1 Solid Strata

A generalised vertical section which illustrates the strata to be encountered within the excavation area is shown on FLRS/ES8/1. The strata here lie within the Lower and Middle Coal Measures and consist chiefly of mudstones with subordinate sandstones, seatearths and ironstones. The strata beneath the Overburden Storage Areas lie mainly within the Middle and Upper Coal Measures and although stratigraphically higher are similar to those found within the excavation area.

### 11.2 Coal Seams

The coal seams to be encountered within the excavation area and their position within the sequence of strata are also shown on FLRS/ES8/1. Some of these coal seams contain partings which are too thin to illustrate at this scale, and the partings between the seams themselves can vary considerably within the ranges shown. The lowest seam to be worked is the Lower Four Feet. The coal is all of bituminous quality. The strata beneath the Overburden Storage Area continue the sequence upwards from the Lower Pentre Seam, by about 150m, to approximately the level of the No. 2 Rhondda Seam. The coal seams within this upper sequence of strata are generally thin.

### 11.3 Structure

FLRS/ES8/2 provides a simplified geological map of the area. The coal seams outcrop across the site in a general northeast-southwest direction and are intersected by two major faults. The Penydarren Fault, which downthrows to the south-west at between 15 and 35 metres, just impinges on the south-west corner of the excavation area. The Dowlais Fault, which also downthrows to the south-west at between 18 and 35 metres, passes through the middle of the excavation area in a northwest-southeast direction. This fault continues south-eastwards to affect the strata below the southern Overburden Mound. The strata dip in a general south-easterly direction between 3 and 11 degrees.

### 11.4 Previous Underground Mining

The site area has been subjected to very extensive underground mining for both coal and ironstone, probably dating back to before the 18th century. The age of the majority of these workings indicates that they were associated with the establishment and expansion of large scale iron and steel manufacturing plant in Dowlais and Penydarren. The ironstone ore, which is present as nodules in bands throughout the sequence, particularly between the Garw Seam and the Lower Four Feet Seam, was worked initially by shallow opencast methods called 'patchworking'. This method was also used to extract coal for the smelting process, but when the economic limit of patchworking was reached, the ore and the coal were reached by shafts and adits, and a large number of these are known to exist within, and adjacent to, the site area. Most of the seams on site have been subjected to underground mining to varying degrees, but particularly extensive workings exist in the Lower Four Feet, Little Vein, Rhaslas, Big, Black, Upper Four Feet and Two Feet Nine Seams. Old workings also occur sporadically throughout the sequence at the ironstone horizons.

## **Permit with introductory note**

The Environmental Permitting (England & Wales) Regulations 2010

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Miller Argent (South Wales) Limited

Ffos-y-fran Land Reclamation Scheme  
Cwmbargoed Disposal Point  
Fochriw Road  
Merthyr Tydfil  
CF48 4AE

Permit number  
EPR/DB3131AF

**Table S3.1 Point Source emissions to water (other than sewer) – emission limits and monitoring requirements**

<b>Discharge source and discharge point ref. &amp; location</b>	<b>Parameter</b>	<b>Limit (including unit)</b>	<b>Reference Period</b>	<b>Limit of effective range</b>	<b>Monitoring frequency</b>	<b>Compliance Statistic</b>
A8 Trade effluent from treatment area 'WB' consisting of settled opencast site drainage via Outlet 5	Maximum daily discharge volume	Rainfall dependant	Total daily volume	N/A	N/A	Maximum
	Suspended solids (measured after drying at 105° C)	100 mg/l	Instantaneous (spot sample)	Condition 3.1.4 (i) applies.	Continuous	Maximum
	Suspended solids (measured after drying at 105° C)	100 mg/l	Instantaneous (spot sample)	Condition 3.1.4 (ii) applies.	Continuous	Maximum
	Suspended solids (measured after drying at 105° C)	50 mg/l	Instantaneous (spot sample)	Condition 3.1.4 (iii) applies.	Continuous	Maximum
	pH	5 to 9	Instantaneous (spot sample)	N/A	N/A	Minimum and maximum
	Visible oil or grease	No significant trace present	Instantaneous (spot sample)	N/A	N/A	No significant trace
A9 Trade effluent from treatment area 'WB' consisting of settled opencast site drainage under storm conditions via Outlet 6	Overflow setting	100 litres per second	Instantaneous (spot sample)	Condition 2.3.3 (a) applies	N/A	Minimum
	Storage capacity	10218 m <sup>3</sup>	N/A	Condition 2.3.3 (b) applies	N/A	Minimum
	Visible oil or grease	No significant trace present	Instantaneous (spot sample)	N/A	N/A	No significant trace
	Discharge start and end times	No limit set	N/A	N/A	Whenever a discharge occurs	N/A

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# FFOS-Y-FRAN LAND RECLAMATION SCHEME

NATIONAL ASSEMBLY FOR WALES PLANNING REFERENCE: A-PP 152-07-014

PLANNING APPLICATION REFERENCE: P/03/0225

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## GROUNDWATER MONITORING SCHEME

For Discharge of CONDITION 44

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Final

10<sup>th</sup> August 2005

over railway land, or within 3 metres of the nearest rail track if the boundary of the railway land is closer than 3m from the permitted scheme.

41. All cranes, machinery and construction plant used in connection with the development hereby permitted shall be so positioned and used to prevent the accidental entry onto railway land of such plant, or loads attached thereto, in the event of failure.

*Reason*

*For the protection of the safety of rail traffic.*

### **Environmental management plan**

42. Before the development hereby permitted starts an Environmental Management Plan [EMP] shall be submitted for the written approval of the Local Planning Authority for each phase of the development, as required by condition 42 of permission APP 152-07-014; and the EMP shall be implemented in accordance with the approved scheme, save as otherwise provided for by other conditions of this permission.

*Reason*

*For the protection of the environment.*

### **Groundwater monitoring and protection**

43 (Deleted)

44. Once the development hereby permitted starts the groundwater monitoring scheme approved by the Local Planning Authority in accordance with condition 44 of permission APP 152-07-014 shall continue for the duration of the development.

*Reason*

*To prevent pollution of the water environment.*

45. If during the course of the development hereby permitted any contamination of a nature not previously identified is encountered, representative samples shall be tested by the site operator to determine the nature and extent of any such contamination in order to evaluate the risk it might present to controlled waters; if the contamination could materially affect controlled waters at/below the site and cannot be dealt with by measures set out in the Method Statement, then no further operations shall be carried out in the affected area until the site operator has submitted to the Local Planning Authority for their written approval an addendum to the Method Statement or unless the Local Planning Authority give written consent for any variation; and this addendum shall specify how this contamination must be dealt with and what measures must be implemented before operations continue.

*Reason*

*To ensure that the development complies with the details approved under permission APP 152-07-014 for the protection of controlled waters.*

### **Construction phase works**

46. The development hereby permitted shall not be carried out other than wholly in accordance with the Method Statement approved by the Local Planning Authority in accordance with condition 46 of permission APP 152-07-014.

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23 NOV 2005

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Dyddiad/Date : 21<sup>st</sup> November 2005

Ein Cyf/Our Ref.: AND/030225/BC30-05  
Eich Cyf/Your Ref.: P/MTCBC/190805/FLRS/RJL

Llinell Uniongyrchol/Direct Line : (01685) 726200  
Gofynnwch am/Please Ask For : Mr A N Davies  
e-bost/e-mail:

Dear Sir

**FFOS Y FRAN (PLANNING CONDITION 44)**

As discussed at our meeting on Friday 18<sup>th</sup> November, the Environment Agency confirm that the details you submitted for the Ground Water Monitoring Scheme are acceptable. Accordingly **Condition 44** of Consent 030225 is hereby discharged.

The Agency also requested that you forward copies of the monitoring data in due course, with review of the need to develop separate baseline and trigger "Alert" values for surface water and ground water after the first year.

Yours faithfully

A N DAVIES  
HEAD OF PLANNING

A handwritten signature in black ink, appearing to read 'A N Davies', written over the printed name and title.