



**Environmental Management and Monitoring**

**Surface Water Management Plan**

**Hendy Quarry Landfill**

**Permit Reference EPR/KP3795FU**

**Plan Reference HNDY/SWMP**

**March 2019**

**Version 3.2**

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HNDY/SWMP/01      Surface Water Monitoring Location Points

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Example Site Inspection Form

## 1. INTRODUCTION AND BACKGROUND

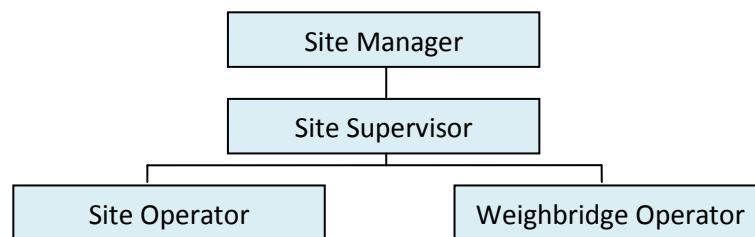
### 1.1 Report Context

1.1.1 The Surface Water Management Plan (SWMP) provides a framework for the management of surface water at the Hendy Quarry landfill Site, Miskin, Pontyclun, National Grid Reference ST 05425 80991. The SWMP forms part of the Environmental Management and Monitoring Program for the site that covers all the different monitoring regimes at the installation.

1.1.2 This SWMP complies with the requirements of the Environmental Permitting regime and regulatory guidance note LFTGN02 'Guidance on Monitoring Landfill Leachate, Groundwater and Surface Water' issued by the Environment Agency and forms part of the Environmental Permit (EP) for the site, reference EPR/KP3795FU.

### 1.2 Management Structure

1.2.1 The Site Manager, who is supported by the Site Supervisor undertakes overall management and supervision of the site. The management structure for the site is as follows:



1.2.2 Suitably qualified technicians who are experienced and trained in the use of monitoring and sampling equipment and interpretation of the data obtained will carry out all water monitoring at the installation. Standard operating procedures are in place for surface water monitoring.

### 1.3 Summary of Conceptual Hydrogeological Model.

1.3.1 The quarry is excavated into the Black Rock Limestone Subgroup which is described as skeletal and argillaceous packstones with minor oolites, shales and mudstones. The Carboniferous Limestone is defined as a principal aquifer with flow dominated by fracture flow.

1.3.2 The Avon Group (Lower Limestone Shale) is classified as Secondary A. It is noted that this strata was previously classified as a non-aquifer. Although the change in classification reflects a greater understanding of the potential for this strata to transmit groundwater, site investigation and monitoring data collected over the development of the site confirm that the original conceptual model remains valid where there is no groundwater migration towards the south. This is confirmed by the presence of two boreholes along the southern boundary (installed within the Avon Group) which have significantly higher groundwater levels in comparison to those installed within the permeable fractured limestone. Therefore notwithstanding the permeability contrast between the limestone and Avon

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group, the hydraulic gradient is such that there is no possible groundwater flow towards the south. The water levels within the Avon Group boreholes are considered to represent water in the superficial deposits and weathered zone. Therefore it is considered that these strata effectively form a barrier to flow in a southern direction at the site. The orientation and dip of this strata is considered to constrain the groundwater flow to the south and therefore the principal groundwater flow is along the strike of the beds towards the west.

- 1.3.3 To the south and west of the site the land steeply slopes to the river valley of the Ely, approximately 300m from the boundary of the site.
- 1.3.4 The site lies within the catchment of the River Ely, with the river flowing towards the south east. At its closest reach the river passes some 300m from the site. Tributaries of the River Ely drain the hilly area the quarry is located within. The River Ely is the principal watercourse in the vicinity.
- 1.3.5 An un-named stream arises 550m east of the quarry boundary (in the vicinity of Crofta Farm) and flows south westwards towards the River Ely. At its closest approach it passes some 250m south of the site. A second un-named stream passes 200m to the north east of the site. It arises at Brofiscin Farm, some 1.5km to the east of the site and flows westward towards the site then northwards to its confluence with Afon Clun, some 1.1km to the north of the site. Ultimately the stream discharges into the River Ely.
- 1.3.6 A detailed summary of the hydrogeological regime local to the site is referenced in the report entitled 'Hydrological and Hydrogeological Assessment to Support Planning Application for Restoration of Quarry by Infill with Inert Materials' produced by BCL Consultant Hydrogeologists Ltd in August 2000 and 'Hendy Landfill Site, Hydrogeological Risk Assessment Review 2017', produced by Caulmert.
- 1.3.7 Surface water within the site is collected in the sump located in the base of the quarry. The water is pumped from the quarry sump to a soakaway located at NGR ST 0538 8136. The discharge is a directly associated activity of permit reference EPR/KP3795FU.

## **2. MONITORING REQUIREMENTS**

### **2.1 Monitoring Scheme**

- 2.1.1 The proposed surface water emissions limits and monitoring frequencies are specified in Table S4.1 of the permit and are presented in Table 1 below, the table has been updated to include the new proposed volume limits and rates for the discharge.
- 2.1.2 Control limits for suspended solids and mineral oils are set at 95% of the compliance limits.

**Table 1 – Hendy Quarry Surface Water Emissions Limits and Monitoring Frequencies.**

<b>Emission Point Reference and Location</b>	<b>Parameter</b>	<b>Compliance Limit</b>	<b>Monitoring Frequency</b>
S1 – discharge to soak away.	Volume	5,000 m <sup>3</sup> /day	Daily
	Rate of discharge	58 lts / sec	Weekly
	Suspended Solids	100mg/l	Quarterly
	Mineral oil	5 mg/l	Quarterly
	pH	6 - 9	Quarterly
<b>Emission Point Reference and Location</b>	<b>Parameter</b>	<b>Control Limit</b>	<b>Monitoring Frequency</b>
S1 – discharge to soak away.	Suspended Solids	95 mg/l	Quarterly
	Mineral oil	4.75 mg/l	Quarterly

## 2.2 Measurement Techniques and Monitoring Strategy

- 2.2.1 All water monitoring at the site will be carried out by suitably qualified technicians who are knowledgeable and experienced in the use of equipment when taking field measurements and interpretation of the data obtained.
- 2.2.2 Any field measurements, if necessary, will be monitored utilising a hand held portable meter which will be regularly tested and calibrated and maintained to the manufacturer's guidance.
- 2.2.3 Laboratory analysis will be undertaken by a third party UKAS accredited laboratory.
- 2.2.4 The flow meter on site will be regularly inspected and maintained to the manufacturer's specifications.

## 2.3 Assessment Criteria and Contingency Actions

- 2.3.1 The compliance limits for the surface water monitoring point S1 are specified in Table 1. Compliance limits will be deemed to have been breached when the limits outlined in Table 1 are exceeded:

**Table 2 – Contingency Actions – Compliance Limits**

<b>Contingency Action</b>	<b>Response Time</b>
<b>Quality Parameters</b>	
For quality parameters inform Unit Manager	As soon as practicable
Advise NRW and submit Schedule 6 Notification.	As soon as practicable
If quality parameter is exceeded arrange for additional spot sample to be taken.	1 month
Investigate the source / cause of the poor water quality.	1 month
Update site improvement plan with any required actions following	3 month

the investigation.	
Update Schedule 6 Part B Notification any further monitoring management activities associated with the incident.	3 months
<b>Volume or Rate</b>	
Advise NRW and submit Schedule 6 Notification.	As soon as practicable
Investigate the cause of the breach including review of weather conditions.	1 month
Update site improvement plan with any required actions following the investigation.	3 month
Update Schedule 6 Part B Notification any further monitoring management activities associated with the incident.	3 month

2.3.2 If a control limit is breached on three occasions the following actions will be undertaken:

- Review if there have been any changes to site activities.
- Assess the variability of the dataset and whether additional sampling is required.
- Assess whether additional inspection of the surface water management system is required.
- Update site improvement plan to document any required actions.

2.3.3 If during routine visual inspection of the quarry sump by Site Management a potential issue such as cloudiness of water indicate it is likely to exceed the suspended solids limit then the following actions will be undertaken:

- Inform Unit Manager.
- If pump is operational shut down pump to prevent discharge of water.
- Undertake visual inspection to identify source of poor water quality.
- Confirm if there has been off site release of water.
- If confirmed off site releases of water submit Schedule 6 Notification.
- Arrange spot samples with the Monitoring Team if required.
- Update site action plan with any further management and monitoring requirements associated with the incident to demonstrate the issue has been addressed.

## 2.4 Emergency Actions

2.4.1 Emergency contingency measures will be employed at the site in the event of a fuel spillage from a storage tank as a result of a leak or from poor re-fuelling or filling procedures. The procedure is included as part of the Sites Environmental Management System.

## 3. MONITORING PROTOCOLS

### 3.1 Surface Water sampling

3.1.1 The type of sampling equipment used will depend on the size and type of water body to be sampled. Where surface water bodies are accessible safely the sample bottles can be filled directly from the water body. This method cannot be used if the sample bottles contain fixatives or preservatives.

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- 3.1.2 If the sampling cannot be safely accessed lower clean bailer or bucket into the surface water from safe access point. If the location is further away throw the bucket or bailer from the bank or use a long reach sampler
  - 3.1.3 Discard the first sample on to the ground not back into the water body as it will cause further disturbance.
  - 3.1.4 Allow the bottle to fill to the brim to exclude air unless otherwise specified. Clearly labelled with the company name, site, location code and date.
  - 3.1.5 Take field readings as required.
  - 3.1.6 Make a note of the colour of the sample, any odour and other relevant comments on the sample such as presence of solids.
  - 3.1.7 For discharge permits note if there is any visible oil or grease present or not and make a record if there is no discharge at the time of the visit.
  - 3.1.8 Avoid getting any disturbed debris in the sample or excess vegetation and solids.

### **3.2 Sample Storage and Transport**

- 3.2.1 On completion of sampling check that all the bottles are labelled correctly.
- 3.2.2 Samples should be kept upright to prevent spillage and wrapped in bubble wrap provided by the laboratory.
- 3.2.3 Samples should be transferred into suitable boxes for transportation to the laboratory. Storage in cool boxes with ice packs or refrigerated transport should be used.
- 3.2.4 Analysis requested should be completed and checked. (chain of custody). The request should accompany the samples to the laboratory and a copy of the request should be kept.

### **3.3 Reporting**

- 3.3.1 All data is entered into a central Environmental Monitoring database. The data is reviewed against the compliance limits and where limits are exceeded the Environmental Monitoring Manager shall be informed.

Data will be submitted to NRW on a quarterly basis in accordance with the requirements of the permit.

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## **4. INSPECTION AND MAINTENANCE**

### **4.1 Inspection and Maintenance Requirements**

- 4.1.1 Section 5.1.2 of MS-EP-CORE-06 Water Management requires that Quarry Operations have in place a Water Management Folder (MS-EP-CORE-06/01). The sets out the requirements for monitoring, measuring the discharge in accordance with the requirements of the permit and inspection to ensure that the water management system operates pro-actively. In addition it sets out the requirements for non-conformance reporting and non-conformance reporting.
- 4.1.2 Plant inspection and maintenance procedures are outlined in MS-QP-PROD-01PPM.
- 4.1.3 At Hendy Quarry the water management system comprises:
- Quarry sump
  - Electric submersible pump
  - Pipework to discharge point
  - Soak away.
- 4.1.4 Weekly inspections will be undertaken of the quarry sump, pump and associated pipework the soak away will be inspected as outlined in 4.1.8. An example inspection form is presented in Appendix 1
- 4.1.5 Pumps and flow meters will be maintained in accordance with the manufacturer's requirements.
- 4.1.6 Where faults are identified on pumps or flow meters specialist contractors will be used to service, repair or replace.
- 4.1.7 Where leaks are identified on pipework through visual inspection they will be repaired / replaced.
- 4.1.8 The soakaway will be routinely inspected every three months and kept free of debris. When the daily discharge exceeds 50% of the total permitted volume ie 2,500m<sup>3</sup> per day the inspection will be increased to weekly.
- 4.1.9 The settlement of suspended solids is provided in the quarry sump area. Surface water is settled in the sump area prior to being pumped to the discharge. The pump head is floated such that settled solids are not drawn into the pump. This prevents the build up of solids in the pipework and soak away.
- 4.1.10 The storage for storm event is provided by the quarry sump area and the surrounding quarry base. The rate of discharge is then controlled by the pump.

## **DRAWINGS**



Legend:

- Environmental Permit Boundary  
Reference BT1088ID
- Permitted Restoration Contours
- Location of Surface Water  
Monitoring Point

Final revision	Date	Description
-	-	-
-	-	-

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Site: **HENDY QUARRY LANDFILL**

Drawing Title:  
**SURFACE WATER MONITORING  
LOCATION POINTS**

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J.D.	21 August '08	1:2,000	A3
Status:	Final Revision:	Drawing No:	
FINAL	-	HNDY/SWMP/01	

## **APPENDIX 1**

## Surface Water and Lagoon Inspection Checklist

<b>Site:</b> <b>Hendy Quarry</b>	<b>Inspection Point:</b>  <b>A – Quarry Sump</b>
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<b>Frequency of Inspection Required:</b>	<b>Monthly during periods of inactivity, weekly once operational</b>	
<b>Inspection Detail</b> <b>Inspector</b> .....	<b>Day of Inspection confirm status ok Y/N</b>	<b>Initials</b>

	Date of Inspection DD/MM							
<b>Inspection detail what to look for</b>								
Question 1    Is there any visible sign of oil?								
Question 2    Is the water murky or clear?								
Question 3    Is the sump being actively pumped?								
Question 4    Is the pump functioning?								
Question 5    Is the pipework from the pump intact?								
Question 6    Is a spill kit available?								
Question 6    Is flow meter functioning?								
Question 7    Are there any leaks on the pipework that require repair?								
Question 8    Is the soakaway clear of debris (three monthly routine inspection weekly when discharge exceeds 2,500m <sup>3</sup> per day)								
<b>Weather Conditions</b>								

<b>Remedial Action Required</b>
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<b>Escalation and Action</b>
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<ul style="list-style-type: none"> <li>• If any instability is identified seek geotechnical advice for remediation.</li> <li>• If water is murky arrange for sample to determine chemical composition and compliance with permit conditions.</li> <li>• If oil is identified visually cast around for potential source and isolate.</li> <li>• If the monitoring regime identifies any permit breaches, consider additional treatment systems (dosing, etc).</li> </ul>
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Sign at the end of the week on completion of daily inspections, retain in file

Name.....

Signature.....