




DRAINAGE MANAGEMENT PLAN

FINAL

Report Prepared For	 COWBRIDGE COMPOST
Cowbridge Compost Ltd	

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1.0 INTRODUCTION

Cowbridge Compost Ltd (CCL) operate an IVC and open windrow composting (OWC) system for the treatment of food and green waste. The current Permit allows composting of green and food wastes only up to 35,000 tonnes per annum.

The main change will include two systems being put in place; the first system will be for green waste only. The second system will be an IVC for food and compost oversize/woody amendments. The limit will remain as it is at 35,000 tonnes per annum to be open, and the tonnages will not be restricted by process type. The waste recovery facility will include the following:

- **Open Windrow Composting:** Composting of source segregated kerbside, civil amenity and commercial green wastes for the production of an organic soil improver certified to PAS100 and QP.
- **In-Vessel Composting:** Composting of source segregated kerbside, civil amenity and commercial food and compost oversize/woody amendments for the production of an organic soil improver certified to PAS100 and QP.

The proposed permit will keep the overall permitted tonnage through the site at 35,000tpa but allow no limit on the amount of green waste which can be processed at any one time. The current limit is set at 500 tonnes.

The second change will be an increase in the site boundary too allow a 24m diameter leachate tank to be installed above ground. The tank will be surrounded with a bund which is located 2m from the tank and will be 1m high for secondary containment. There will be a road leading up to the tank approximately 100m in length and 6m wide. A gate will be in place at 7m wide to stop access to the tank unless required by site staff. A pipe will be put in place from the tank to the second lagoon to ensure the leachate can be pumped safely if required.

Given the moisture requirement of the composting process, and the closed and open air system involved, leachate is produced from onsite activities which require management.

The site comprises of an active composting processing area and there are also several buildings on site and areas of impermeable hard standing which give rise to surface water runoff which could potentially come into contact with waste materials producing a potential pollution linkage.

A site specific drainage and leachate management plan is proposed herein to actively manage all sources of potential pollutant waters generated on site.

1.1 Site Location

Cowbridge Compost Ltd
Penllyn Estates
Cowbridge

Vale of Glamorgan
CF71 7FF

Grid Reference: 299996,175862

1.2 Description

The site is located north of Cowbridge, approximately 5km south of the M4. Bridgend is situated approximately 9km to the west of the site and Cardiff 17km to the east. Access to the site is via the A4222. The site currently comprises of a large area for the stabilisation of green wastes through open-windrow composting and a large area for in vessel composting. There are sheds utilised for product storage, formation of windrows and the reception of material and several tanks for liquid wastes and a lagoon for rainwater and run off from the windrows after stabilisation.

1.3 Site Setting

The CCL facility lies within a groundwater source protection zone (SPZ) I (see Figure 1). The site does not lie within an area at risk from flooding from rivers and seas, not benefitting from flood defences as shown in Figure 2.

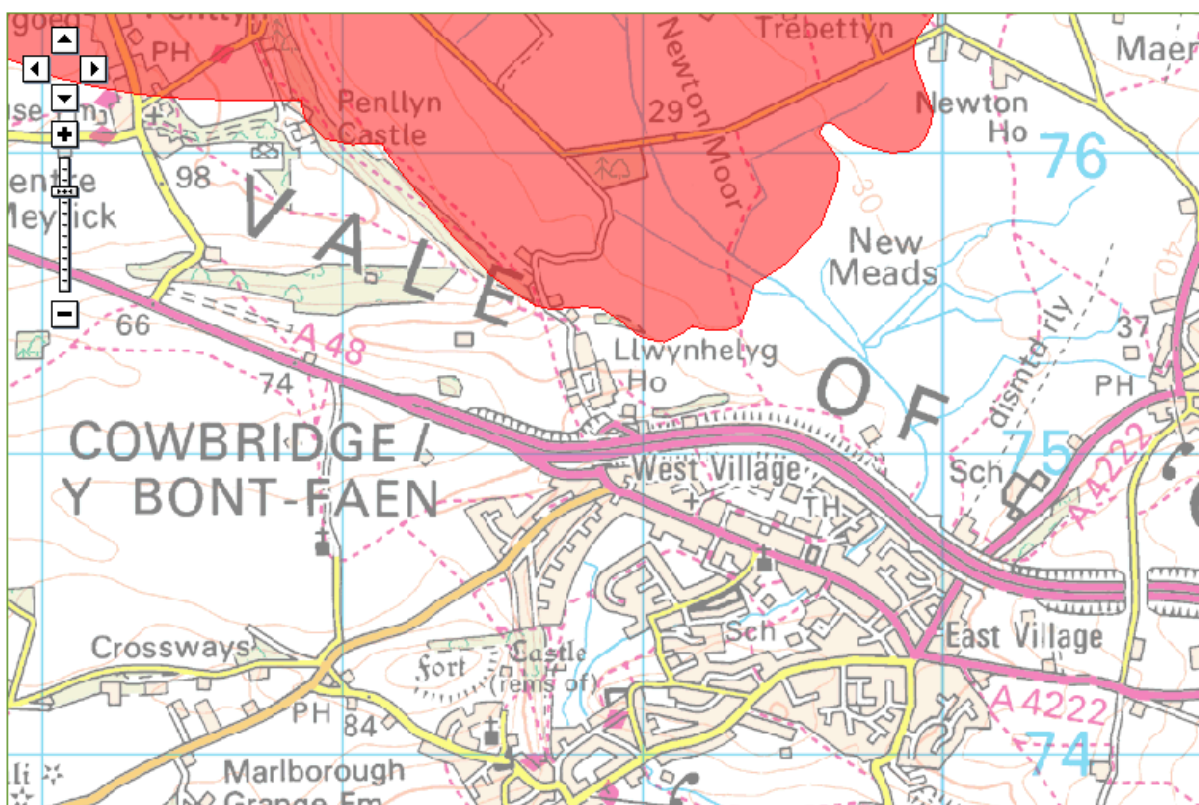


Figure 1 - Map of Groundwater Source Protection Zones

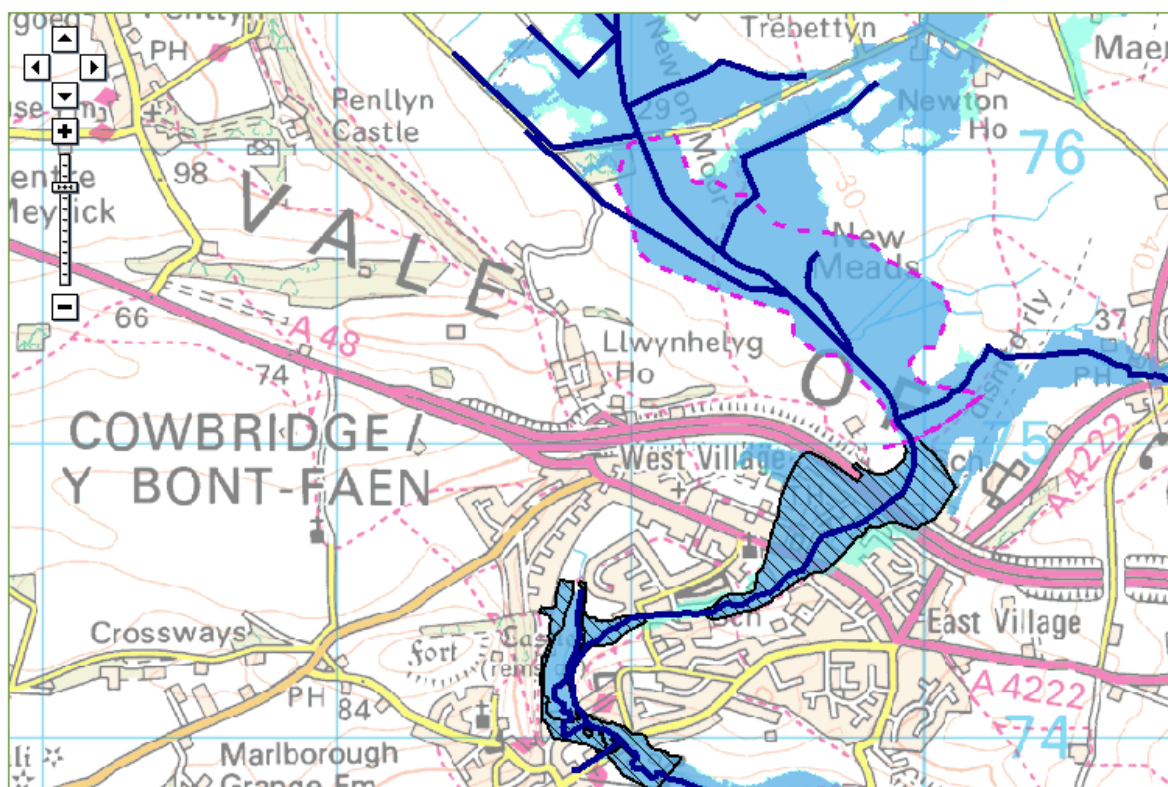


Figure 2 - Map of Flood Risk Areas

2.0 SOURCES OF LIQUID REQUIRING MANAGEMENT

The management of water at the CCL site facility incorporates several sources of water that actively fall within the control of this management plan. Sources of water that require management control include:

- Surface water runoff from impermeable hard standing areas within the site boundary as a result of direct precipitation.
- Surface water runoff from building roofs as a result of direct precipitation.
- Surface water runoff from all areas of impermeable hard standing areas within the site boundary as a result of water use for vehicle wash-down etc.
- Surface water runoff from all impermeable hard standing areas within the site boundary from leachate derived from the processing of green and food wastes. This includes all phases of production: reception, sanitisation, stabilisation, shredding, screening, maturation and storage.

3.0 DRAINAGE SYSTEM

A plan showing the drainage system for managing surface water and leachate is provided within document CCL09 – Drainage Plan.

3.1 Processing Area

All operational areas are covered by hardstanding or concrete. The concrete has been constructed with falls to a central sump for collection of all process waters and leachates are captured. Underground pumps have been installed to direct the flow to storage tanks at the IVC and at the new leachate tank for leachate from the open windrow area.

3.2 Roof Drainage

Direct precipitation that lands on the sheds is managed separately to that which lands on processing areas to segregate clean and dirty waters. Rainfall that lands on the main hall buildings are collected through the roof drainage system and directed to the natural drains in the area. The total roof size for rainfall diversion is 4,867m².

3.3 Collection

The site has tanks in place on site for the collection, separation and storage of leachate and runoff water. The leachate tanks are fully lined to prevent leakage into the groundwater below. The capacities of the tanks are as outlined below:

The following section outlines the current leachate storage capacity on site and calculates the required storage based on the M5 rainfall event rule. Management practices are also discussed for leachate handling and re-application to the composting process.

3.3.1 Required Storage

The following areas of concrete hard standing require leachate drainage and capture to prevent contamination of ground or surface waters:

• Green Waste Reception:	310m ²
• In-Vessel Processing Area:	1,263m ²
• Stabilisation Pad:	2,795m ²
• <u>Maturation & Product Storage:</u>	<u>2,578m²</u>
• TOTAL:	6,946m²

Leachate from within the IVC is captured separately in a 6,000l containment tank which is emptied on a regular basis. The leachate from the stabilisation pad runs into a catchment tank and is diverted to the lagoon. The worst case storm scenario for the site based on applying the 48hr M5 rule would be 40mm.

The required storage capacity for the site is calculated as follows:

$$\text{Required Capacity (m}^3\text{)} = \text{Concrete Area (m}^2\text{)} \times \text{48hr M5 Rule Rainfall Depth (m)}$$

Based upon the above calculation the required capacity for leachate storage would be 277m³.

3.3.2 Storage Capacity

The site has several leachate storage tanks which are connected via a series of pipes and pumps to transfer runoff waters to the tanks as required. All IVC leachate is held in separate tank which is adjacent to the IVC and the external leachate from the stabilisation and green waste area will be held in a new tank to the eastern side of the site. This tank is designed with secondary containment consisting of a bund and further to this there is the lagoon for back up.

3.3.3 New Tank Details

The tank will have an access road 6m wide and approximately 100m in length leading from a gate which will be located north of the lagoon. The tank will be 18m in diameter with a bund around this extending 1m in height and 2m from the tank – the total concreted area will be 24m in diameter. There will be a pipe leading from the tank to the lagoon for secondary containment if both the tank and the bund were to fail. The leachate will be pumped using a submersible pump which will be located south of shed 6 on the location plan. The pipe for the submersible pump will be directed below the access road. A company called Storth will provide the tank. The tank will have a base area of 277m² and a gross capacity of 1,160m³.

See CCL09 – Drainage Plan for further details.

The storage capacity is outlined below:

• Adjacent to IVC:	1x 6m ³ or 6000l
• Tank:	1x 1,160m ³
• Lagoon:	1x 480m ³ (back up not included in total below)
• TOTAL:	1,166m³

Based on the calculation as above the site has 889m³ of spare capacity for leachate storage on site therefore during any potential flood events or excessive rainfall the tank and lagoon will provide sufficient storage to protect naturally occurring drains and fields in the surrounding area.

3.4 Monitoring

The processing area will be inspected on a daily basis to ensure no cracking, pooling or prevention of free flowing runoff to the sump. The results of the inspections will be recorded in the Site Diary together with any remedial actions that are taken. The frequency of inspection will be increased at times of higher risk under the direction of the Site Manager.

The leachate holding tanks shall be inspected no less frequently than weekly and after rainfall events and emptied when the collected liquids reach 90% of its capacity.

3.5 Disposal

Leachate stored within the tanks will be re-circulated through the composting process only where the addition of moisture is identified through the operating procedures and critical limits of compost monitoring. Where this is carried out the leachate is added on a little and often basis across the profile of the windrow at a maximum of 10m³ at a time. After each addition the moisture level of the windrow is re-assessed prior to any further liquid addition.

It is likely that during winter months there will be a reduced requirement for moisture addition which could lead to the tanks reaching full capacity (90% of maximum volume). When this occurs the tanks are pumped out and disposed of at a fully permitted waste water treatment facility. A contractor is notified as soon as capacity is reached and the tanks emptied within a maximum 48hrs of capacity being reached.

3.6 Maintenance

Routine maintenance of the drainage system within the site will include the following;

- Clearance of growing or fallen vegetation
- Repairing any damage caused by operational activities or burrowing animals
- Removal of any excess accumulations of sediment
- Temporary repairs will be carried out as appropriate, with permanent repair works to commence within 28 days of the defect being recognised, unless it is causing an immediate problem.

All maintenance activities will be recorded within the Site Diary.

4.0 SYSTEM MANAGEMENT

The following section outlines the site requirements for managing surface waters and keeping management procedures up to date and in line with current site activities.

4.1 Routine Maintenance

All drainage systems will be regularly inspected and maintained by the site manager and recorded on the site diary, at least on a weekly basis. The site manager will initiate regular inspection and cleaning of building gutters, gullies, drains and storage tanks at regular intervals.

4.2 Management Review

This Drainage Management Plan is to be kept up to date and in line with the Management System for the overall operational activities carried out on site. The plan will be reviewed at least annually, or as required by changes in operational procedures or incidents that require review.

4.3 Emergencies

Emergency response to drainage and leachate system failures is provided within the Accident Management Plan.

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