

# Caulmert Limited

Engineering, Environmental & Planning  
Consultancy Services

## Bryn Posteg Landfill Site

Sundorne Products (Llanidloes) Limited

## Environmental Permit Variation Application

## Amenity and Accidents Risk Assessment

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## **BRYN POSTEG LANDFILL SITE - ENVIRONMENTAL PERMIT VARIATION APPLICATION**

### **AMENITY AND ACCIDENTS RISK ASSESSMENT**

#### **TABLE OF CONTENTS**

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Background .....	1
<b>2.0</b>	<b>SITE BACKGROUND .....</b>	<b>2</b>
2.1	Site Setting .....	2
<b>3.0</b>	<b>SENSITIVE RECEPTORS.....</b>	<b>4</b>
3.1	Overview .....	4
3.2	Meteorological Setting .....	4
<b>4.0</b>	<b>RISK ASSESSMENTS .....</b>	<b>6</b>
4.1	Assessments for the Proposed Operations.....	6
4.2	Risk Assessments – Odour, Noise & Vibration and Accidents .....	6
<b>5.0</b>	<b>CONCLUSION .....</b>	<b>17</b>
5.1	Risk Assessment Tables – Overall Risk.....	17
5.2	Report Conclusions .....	17
<b>6.0</b>	<b>REFERENCES .....</b>	<b>18</b>

#### **DRAWINGS**

4299-CAU-XX-XX-DR-V-1800      Bryn Posteg Landfill Sensitive Receptors Plan

#### **TABLES**

Table 1	Sensitive Receptors
Table 2	Odour Risk Assessment
Table 3	Noise & Vibration Risk Assessment
Table 4	Accidents Risk Assessment

## **1.0 INTRODUCTION**

### **1.1 Background**

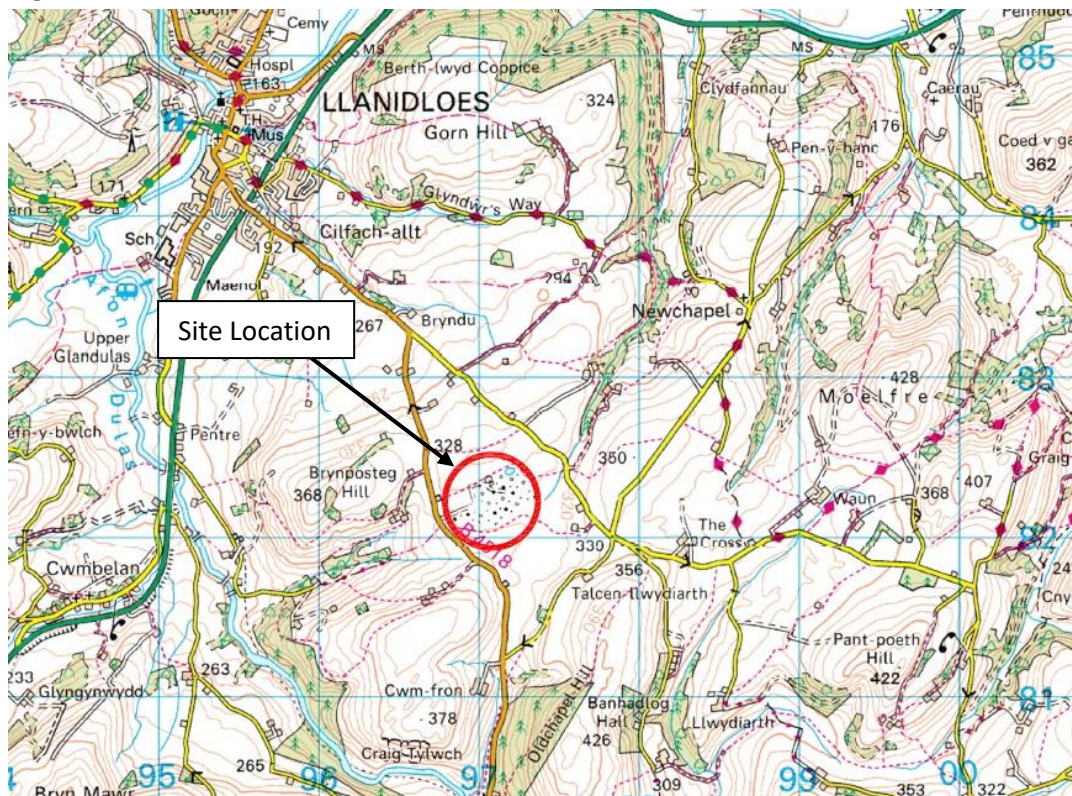
- 1.1.1 This report is an Amenity and Accident Risk Assessment of the impact of the surface water treatment process and subsequent treated surface water discharge at point P1 in the eastern portion of Bryn Posteg Landfill Site ('the Site'), as part of a normal environmental permit variation application for the Site.
- 1.1.2 This assessment will assess the risks posed by the surface water treatment activity and surface water discharge within the eastern portion of the Site and this report has been compiled in accordance with the current Gov.UK guidance on 'Risk assessments for your environmental permit' (updated 10<sup>th</sup> December 2020).
- 1.1.3 Sundorne Products (Llanidloes) Limited operates the entire Site, trading as Potters Waste Management (hereafter referred to as 'the Operator') and they have appointed Caulmert Limited to prepare a normal environmental permit variation application for the proposed upgraded surface water treatment process in the eastern part of the site and subsequent discharge to controlled waters at monitoring point P1.
- 1.1.4 The Environmental Permit for the Site which this variation application related to is permit ref. EPR/BU7766IC/V009.
- 1.1.5 This report includes the assessment of the impact the proposed upgraded surface water treatment and discharge activities on Site could have on local sensitive receptors identified in Section 3 below.

## 2.0 SITE BACKGROUND

### 2.1 Site Setting

- 2.1.1 The Site is an operational landfill site which was developed in the surface void of an old lead mine and between 1982 and 1997 was operated by Montgomery County Council and later Powys County Council. Since April 1997 it has been owned and operated by Sundorne Products (Llanidloes) Limited (now trading as Potters Waste Management).
- 2.1.2 The Site is situated approximately 2.8km southeast of Llanidloes, Powys in Wales, with postcode SY18 6JJ and National Grid Reference SN 971 822. The site location is shown below in Figure 1:

**Figure 1 – Site Location**



- 2.1.3 The landfill site is permitted to accept non-hazardous and inert commercial, industrial and municipal wastes. The site also operates a waste treatment plant for physico-chemical treatment of wastes prior to disposal to landfill, a biological waste treatment plant, and a small waste incinerator plant for energy recovery from 'Grade A' wood.
- 2.1.4 The risk assessments are based on the proposed surface water treatment and discharge processes at the Site, as outlined by the Operator and has been compiled in accordance with Natural Resources Wales' guidance on risk assessments.

- 2.1.5 The Site is situated within a rural setting, with no close areas of dense human populations, the nearest settlement being the town of Llanidloes 2.8km to the northwest of the site. The closest residential property to the surface water treatment area in the eastern portion of the Site is the Rhoswen property 200m to the east.
- 2.1.6 Nany y Bradnant stream is located next to the eastern boundary of the Site and this is where surface water discharge point P1 is located. The nearest major watercourse is the River Dulas located approximately 1.5km west of the landfill site boundary.
- 2.1.7 The B4518 road runs along the southwest boundary of the landfill site, 375m southwest of the surface water treatment area, and provides the main access to the Site. To the north, northeast and southeast of the Site is predominantly agricultural land.

### 3.0 SENSITIVE RECEPTORS

#### 3.1 Overview

- 3.1.1 The Site is situated within a rural setting, surrounded by agricultural fields and scattered residential properties, with the closest densely populated settlement, Llanidloes town, located over 2.8km to the northwest. There are also no schools or hospitals within 1km.
- 3.1.2 A search on the Defra Magic Maps website indicates that there are no RAMSAR sites, Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs) or Special Areas of Conservation (SACs) or other sensitive ecological designations within 2km of the boundary. The nearest SSSI named Coed Craig-lar is located over 2.3km away. There are no groundwater source protection zones located within 1km of the Site.
- 3.1.3 A review of nearby sensitive receptors within 500m are summarised below in Table 1. All distances to receptors have been measured from where the area of the proposed surface water treatment plant will be located, in the eastern corner of Site. The locations of the sensitive receptors are shown on drawing ref. 4299-CAU-XX-XX-DR-V-1800.

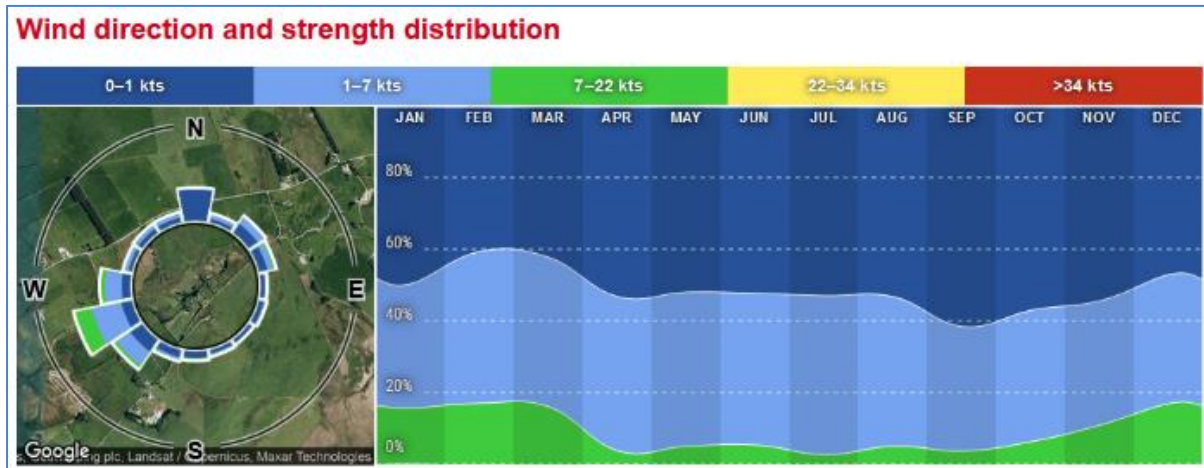
**Table 1. Sensitive Receptors**

Receptor	Receptor Type	Distance and Direction
Nant-y-Bradnant	Surface Watercourse	0m NE
Agricultural Fields	Agricultural	120m N, 10m E, 10m S
Rhoswen	Residential	220m SE
Un-named road	Public Road	200m NE
Pant	Residential	230m E
B4518 Road	Public Road	360m SW
Un-named road	Public Road	430m SE
Talcen-Llwydiarth	Residential	480m SE

#### 3.2 Meteorological Setting

- 3.2.1 Potential emissions, such as noise from the surface water treatment and discharge activities at the Site, are likely to be affected by local weather conditions, in particular by wind direction.
- 3.2.2 Wind statistics observed from the closest weather station, Pant-y-dwr/Powys, located approximately 7.5 km southeast of the Site is considered to be representative of the typical wind conditions at the Site (Figure 1. below). A review of the data recorded daily between 2013 and 2020 on the Windfinder.com website indicates that the most dominant annual wind direction is from the west southwest towards the east northeast.

**Figure 1 - Pant-y-dwr/Powys wind statistics – average annual wind direction & strength between 2013 and 2020**



- 3.2.3 A review of the sensitive receptors in Table 1 indicates that prevailing wind conditions for most of the year are likely to be towards agricultural fields and sparsely distributed rural properties to the east northeast.



## **4.0 RISK ASSESSMENTS**

### **4.1 Assessments for the Proposed Operations**

- 4.1.1 Risk assessment tables have been completed for potential odour, noise and vibration and accidents in line with the GOV.UK guidance on 'Risk assessments for your environmental permit' (updated 10<sup>th</sup> December 2020).

### **4.2 Risk Assessments – Odour, Noise & Vibration and Accidents**

- 4.2.1 Possible hazards as a result of operations at the Site that require risk assessment include:

- Sources of Odour (Table 2);
- Noise and Vibration (Table 3);
- Accidents inc. surface water overflow and contamination (Table 4).

- 4.2.2 The hazards identified above which could be caused by surface water treatment and discharge activities at the Site have the potential to escape beyond the Permit boundary. These hazards could cause an amenity nuisance to sensitive receptors, or harm the environment and human health, if not mitigated with suitable control measures. For each possible hazard, an assessment of the risk that it poses to potential sensitive receptors has been carried out, taking into account the control measures that will be in place and the distance and location of each receptor.

- 4.2.3 It is considered that the risks of the surface water treatment and discharge activities producing fugitive emissions such as dust or litter, attracting pests, causing fire or producing visible plumes is negligible and therefore are not assessed further in this report.

- 4.2.4 The following Tables 2 to 4 give further detail on each hazard source, pathway and sensitive receptor, the risk management measures to be implemented, probability of exposure, consequences of exposure and an overall risk rating from Low (little or no risk) to High, once all risk management measures have been taken into account.

**Table 2. Odour Risk Assessment**

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management techniques	Probability of exposure	Consequence	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
<b>Odour from surface water treatment chemicals – dosing of additives such as flocculants</b>	Residents of local properties.  Users of local public roads.	Through air.	<p>Dosing chemicals/additives used will be of low Volatile Organic Content (VOC) and not be inherently odorous.</p> <p>The dosing of additives will be measured precisely, and overdosing will be avoided by careful supervision by trained staff.</p> <p>All dosing chemicals/additives will be stored securely in sealed containers, within bunded areas with 110% containment to prevent leakages and spills and any subsequent release of odours.</p> <p>Suitably trained site staff will conduct daily site inspections to check integrity of additive storage containers.</p> <p>Site staff will monitor the activity for odour emissions and conduct regular olfactory monitoring, particularly when actively treating the surface waters.</p>	<p><b>Unlikely</b> as dosing additives not inherently odorous and dosing concentrations will be closely supervised to prevent overdosing or spillages.</p> <p>Odour is transient in nature which means any potential odour released will quickly dissipate with distance and wind movement outside.</p> <p>No nearby receptors within 100m.</p>	Amenity nuisance / disturbance to local people – users of public roads and local residents.	<b>Low Risk - if using the management techniques</b>

<p><b>Odour released from stagnant waters or anaerobic muds exposed by low water levels or by desludging of surface water treatment tank</b></p>	<p>Residents of local properties.</p> <p>Users of local public roads.</p>	<p>Through air</p>	<p>Suspended solids from the surface water will be typically low in organic content and high in clay and silt particles, and therefore unlikely to biodegrade and become a source of odour.</p> <p>Water levels will be maintained as much as is practicable, with tank and lagoons regularly dredged to remove accumulations of sediment and to prevent anaerobic conditions and stagnant waters.</p> <p>Site staff will monitor the activity for odour emissions and conduct regular olfactory monitoring, particularly when actively treating the surface waters.</p>	<p><b>Unlikely</b> as rainfall typically high in this location, so droughts less likely.</p> <p>Sediment likely to be low in organic content.</p> <p>Odour is transient in nature which means any potential odour released will quickly dissipate with distance and wind movement outside.</p> <p>No nearby receptors within 100m.</p>	<p>Amenity nuisance / disturbance to local people – users of public roads and local residents.</p>	<p><b>Low Risk - if using the management techniques</b></p>
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**Table 3. Noise & Vibration Risk Assessment**

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management techniques	Probability of exposure	Consequence	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
<b>Noise and vibration from water pumps</b>	Residents of local properties.  Users of local public roads.	Through air and ground.	The water pumps and pipework will be maintained in accordance with manufacturers instructions to minimise noise and vibrations due to malfunctioning equipment.  Daily site inspections by trained site staff will include a walkover of surface water management system to ensure there are no excessive noises or vibrations being emitted.	<b>Unlikely</b> due to distance to any sensitive receptors	Amenity nuisance / disturbance to local people – users of public roads and footpaths	<b>Low - if using the management techniques</b>

<p><b>Noise and vibration from machinery / equipment used to de-sludge</b></p>	<p>Residents of local properties.</p> <p>Users of local public roads.</p>	<p>Through air and ground.</p>	<p>Desludging activities will be undertaken periodically depending on suspended solid load within surface water and the season (during winter rainfall will be higher and suspended solids more likely to become entrained, generating more sludge, whereas in summer rainfall will be lower).</p> <p>Machinery and equipment used will be maintained to manufacturers recommendations, to ensure noise levels kept to a minimum.</p> <p>Desludging activities will be planned to ensure minimal noise and vibration generation i.e. reducing drop heights of sludge from bucket loader, reducing travelling distances of machinery between point of collection and deposition of sludge loads or pumping sludge out using pipework.</p> <p>Excessive revving of machinery or leaving the engine on when not in use will be avoided.</p>	<p><b>Unlikely</b> due to infrequency of activity and distance to any sensitive receptors.</p>	<p>Amenity nuisance / disturbance to local people – users of public roads and footpaths</p>	<p><b>Low - if using the management techniques</b></p>
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<b>Noise and vibration from site traffic attending surface water treatment plant</b>	<p>Residents of local properties.</p> <p>Users of local public roads.</p>	<p>Through air and ground.</p>	<p>Daily inspections of the surface water treatment facility will require staff to use site vehicles to access the area via existing haul roads.</p> <p>Site vehicles will be maintained to manufacturers specifications and be regularly serviced and checked.</p> <p>Excessive revving or leaving the engine on when not in use will be avoided.</p>	<p><b>Unlikely</b> due to small vehicles attending and distance to any sensitive receptors.</p> <p>Background noise and vibration already generated by vehicles using existing haul roads on site daily for site traffic associated with the landfill.</p>	<p>Amenity nuisance / disturbance to local people – users of public roads and footpaths</p>	<p><b>Low - if using the management techniques</b></p>
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**Table 4. Accidents Risk Assessment**

What do you do that can harm and what could be harmed			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Risk management techniques	Probability of exposure	Consequence	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
<b>Overdosing of surface water with additives / chemicals</b>	Surface water course – Nant-y-Bradnant	Surface water discharge point P1	<p>Trained site staff will ensure the dosing system and multi-parameter monitoring station is inspected daily and working correctly and that alarm systems are functioning. Any indication that overdosing is occurring, the dosing plant will be stopped immediately and reported to site management.</p> <p>It will be unlikely treated surface waters will contain elevated levels of additives due to the nature of the treatment process, where Ferric Chloride and Polymer will drop out of the treated water into the sludge during flocculation and settlement. The pH and suspended solid load of treated water will be continuously monitored by the multi-parameter monitoring station and the facility shut down and water flows ceased if set limits breached, until situation is rectified and levels restored to acceptable levels to meet the Environmental Permit compliance limits prior to discharge off-site.</p> <p>Site staff will endeavour to prevent future overdosing incidents by identifying preventative procedures in the management system and ensuring dosing equipment is regularly serviced and maintained in accordance with manufacturers specifications.</p>	<b>Unlikely</b> due to careful supervision of dosing system and regular servicing of monitoring and dosing equipment and alarms.	Pollution risk of suspended solids and additives / contaminants leaving site lagoons and entering natural watercourses	<b>Low - if using the management techniques</b>

<p><b>Contaminated surface water run-off percolating down through ground.</b></p> <p><b>Leaking pipework</b></p>	<p>Groundwater and local surface waters</p>	<p>Through ground</p>	<p>Regular inspections of lagoons and pipework. Any damage detected that could impair the integrity of the system should be recorded and repairs carried out as soon as possible.</p> <p>Lagoons will have been constructed with an impermeable clay liner to act as a barrier to infiltration of water down through ground.</p>	<p><b>Unlikely</b> due to all surface waters diverted by site drainage system and relatively uncontaminated . Lagoons will have been constructed with an impermeable clay liner to act as a barrier to infiltration of water through ground.</p>	<p>Pollution risk of contaminants leaving site surfaces and entering groundwater</p>	<p><b>Low - if using the management techniques</b></p>
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<p><b>Leaks and Spillages of dosing additives / chemicals</b></p> <p><b>Leaks / spillages of oils/lubricant used on equipment</b></p>	<p>Underlying ground, groundwater, surface water</p>	<p>Through site surface / ground</p>	<p>Dosing additives / liquid products used in the dosing process and also oils and lubricants used on equipment may have hazardous properties and may leak or be spilled accidentally.</p> <p>All staff handling dosing additives / hazardous liquids will be fully trained and wear appropriate Personal Protective Equipment and be inducted in the emergency procedures regarding the safe and efficient handling of spills.</p> <p>All dosing chemicals which are in liquid form and oils/lubricants will be appropriately stored in lockable and bunded tanks / containers, with 110% containment. Spill kits will be available for emergency spills.</p> <p>Regular inspections will be undertaken by site staff to check for integrity of storage containers.</p>	<p><b>Unlikely</b> as all liquids will be stored securely and only used by trained staff.</p>	<p>Pollution to ground below site, groundwaters and potentially other surface waters</p>	<p><b>Low - if using the management techniques</b></p>
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<b>Flooding / Overflow of Lagoons</b>	Surface waters	Via site drainage and Over ground	<p>In periods of high rainfall there is a risk the surface water management system may be overwhelmed.</p> <p>The Site has numerous ditches and lagoons, where overflow can be redirected if one lagoon is over-full i.e. Lagoon 2 is used as a back up lagoon should too much water be stored in Lagoon 1.</p> <p>The Site's surface water management system is designed to be capable of handling a 1-in-10-year storm even.</p> <p>The treatment facility will be sized to accommodate a throughput of up to 30l/s.</p> <p>During a high-rainfall event, a two-stage system will be used where water is transferred between Lagoons 1 and 2 and by-pass valves. Normal rainfall conditions will only require the use of Lagoon 1.</p>	<b>Unlikely</b> due to rediverting surface waters to other lagoons and by-pass options.	Pollution to surface waters	<b>Low - if using the management techniques</b>
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<b>Site Plant Failure / Break Down – surface water pumping system</b>	Surface waters	Over ground	<p>Pump breakdown may cause flooding or overflow of surface water storage areas in western portion of site if not pumped away.</p> <p>Daily site inspection walkovers will identify any problems with pumps and equipment, accumulation of sediment or blockages.</p> <p>Pump and associated equipment will be maintained to manufacturers recommendations preventing likelihood of breakdown.</p> <p>Any problems identified likely to affect operations will be reported quickly to site management.</p>	<b>Unlikely</b> as pumps and equipment will be regularly checked and maintained to manufacturers recommendations preventing likelihood of breakdown.	Pollution to surface waters with high suspended solids or potential contaminants	<b>Low - if using the management techniques</b>
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## **5.0 CONCLUSION**

### **5.1 Risk Assessment Tables – Overall Risk**

- 5.1.1 The risk assessments above enable identification of appropriate mitigation measures to control the amenity and accident risks from the proposed surface water treatment activities. All identified risk mitigation measures will be incorporated into the Site's Environmental Management System.

### **5.2 Report Conclusions**

- 5.2.1 This Amenity and Accident Risk Assessment report indicates that provided the identified risk mitigation measures (as identified above in Tables 2 to 4) are implemented, the risk of nuisance or pollution from odour, noise and vibration, and accidents is low.
- 5.2.2 Overall, the Site is set within a rural setting, with very few residential receptors within 1km of the Site and a very low likelihood that emissions of odour, noise & vibrations and accidents will occur, which means potentially sensitive receptors are unlikely to be affected by potential emissions from the Site.

## 6.0 REFERENCES

- Environment Agency and DEFRA (1<sup>st</sup> February 2016) – ‘Risk assessments for your environmental permit’, from Gov.UK website: <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit> (updated 10<sup>th</sup> December 2020).



## **DRAWINGS**

**4299-CAU-XX-XX-DR-V-1800**

**Bryn Posteg Landfill Sensitive Receptors Plan**









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