Environmental Risk Assessment

Prepared by: Arthian Ltd

For: West Lay Limited

Site: Engineered Wetland

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Quality Assurance

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1. Introduction

1.1 Background

1.1.1 Aspall Cyder Ltd currently treats wastewater from its cydery in an on-site activated sludge plant before discharge to a tributary of the River Deben at The Cyder House, Stowmarket IP14 6PD (**the Cydery**).

1.1.2 To allow greater resilience within the Cydery, West Lay Ltd (**the Operator**) proposes an adjacent engineered wetland (**the Site**), located north of the Cydery, that will act as a polishing stage to the existing treatment system. Under normal conditions, wetland treated effluent will be managed through evapotranspiration, with no discharge. A discharge point (WL1) is included only for periods of prolonged rainfall or emergency situations. During normal operations the discharge will be closed.

1.1.3 This Environmental Risk Assessment (ERA) addresses the risks associated from the wetland treatment facility only, in support of a permit application to add the engineered wetlands as a polishing treatment to the existing installation.

1.1.4 This ERA assesses the risks associated with the engineered wetland.

1.2 The Guidance

1.2.1 The Environment Agency 'Risk assessment for your environmental permit' guidance (available at https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit) (the Guidance) provides an overview of when an ERA is required and how to complete an ERA.

1.2.2 The Guidance states, 'you must do a risk assessment if you want to apply for or change (vary) a bespoke permit'.

1.2.3 This ERA is completed in accordance with the Guidance and includes the following considerations:

- Considering the hazards associated with the permitted activities;
- Identifying sensitive receptors;
- Identifying possible pathways from the sources of risk to a receptor; and
- Outline control measures where risks are too high.

2. Site Setting

2.1 Geology

2.1.1 Superficial geology is noted to be the Lowestoft formation diamicton (till) (glacial) chalk till with outwash sands gravels silts and clays (ref: BGS Online Geology Viewer accessed 250326). Thickness is variable but can be up to 60m thick in places. Recent investigation (2026) by Evolve Geo-Environmental has shown that this unit is present across the site. The base of this unit was unproven in the investigation, maximum investigation depth 4 metres below ground level.

2.1.2 Bedrock geology is mapped as sandstones of the Crag Group Sandstone - Shallow marine sandstone, (BGS, accessed 250326). The unit can be up to 70m thick onshore. This unit was not encountered in the recent investigation by Evolve Geo-Environmental.

2.2 Hydrogeology

2.2.1 The bedrock geology is noted to be a Principal Aquifer based on accessing the MAGIC data website (250326). Principal aquifers provide significant quantities of drinking water, and water for business needs. They may also support rivers, lakes and wetlands.

2.2.2 Access to the MAGIC database (25/03/26) indicates that the Superficial strata are defined as a Secondary (undifferentiated) aquifer. These strata can support local water supplies and may form an important source of base flow to rivers.

2.2.3 The site is in a total catchment Source Protection Zone (MAGIC, 260326) (spz3). This is the area around a supply source within which all the groundwater is presumed to end up at the abstraction point.

2.2.4 The site is in an area mapped as being of medium groundwater vulnerability (MAGIC, 250326) i.e. at medium risk to a pollutant discharged at ground level. These are areas that offer some groundwater protection. Intermediate between high and low vulnerability.

2.2.5 The nearest watercourse is an unnamed tributary (immediately north of the Site) into which the discharge flows, leading to the River Deben that flows parallel to the northern site boundary approximately 25 m from the site.

2.2.6 The northernmost extents of the site only is located in a Flood Zone 2 or Flood Zone 3 area (Gov.UK, accessed 250326), associated with the River Deben and unnamed tributary. Flood zones 2 and 3 refer to land with a medium to high risk of flooding from rivers or the sea.

2.2.7 The site is located in an area (along the northern site boundary only) noted to be at risk from surface water flooding i.e. where rainfall overwhelms local drainage infrastructure (1:30 year risk). Flood depth in mm is reported to be between 150mm and 300mm within the footprint of the watercourses only.

3. Operations

3.1 Permitted activities

- Operation of a Cydery (operated by Aspall Cyder Ltd – EPR/GP3432QA).

3.2 Directed associated activities

The following directly associated activities are proposed as part of the engineered wetland treatment activity

- DAA – Polishing treatment of effluent from Aspall cydery.
- DAA - Discharge of treated effluent to surface water.
- DAA – Storage and handling of raw materials (chalk)
- DAA - Storage of and treatment of waste pending re-use - Storage and chipping of harvested vegetation or desludging on site followed by desiccation, prior to re-use or recovery.
- DAA - Recovery of waste on site - Re-use of chipped vegetated material on grassed areas on site as mulch.

3.3 Permitted waste types

The Site will accept a single waste stream only – treated effluent from the Cydery. This waste code is detailed in Table 3-1.

Table 3-1 Waste types accepted by the treatment activity

Waste code	Waste description
02	**Agriculture /Hunting /Fishing /Food Processing**
02 07	Production of alcoholic and non-alcoholic beverages (except coffee tea and cocoa).
02 07 05	Sludges from on-site effluent treatment

4. Risk Magnitude Estimations

4.1.1 This ERA has adopted a risk assessment approach to each potential hazard by combining the probability and magnitude of the potential risk to give an estimation of the risk prior to any mitigation measures. The risk management measures, which are designed to reduce the likelihood of occurrence, are then detailed followed by an estimation of the actual risk post-mitigation (residual risk rating).

4.1.2 The DEFRA guide to risk assessment indicates the approach of subjectively classifying the magnitude of potential consequences into four categories depending upon the degree of the impact that the potential risk could have and the context in which the risk is being assessed. The classification is used as a guide in this ERA.

4.1.3 The four categories are as follows:

- **Severe**: Possible irreparable damage to environmental resources;
- **Moderate**: Possible damage to environmental resources which are limited within a regional context;
- **Mild**: Possible effects might be transient damage to environmental resources which are commonplace on a regional basis and alternative sources are readily available; and
- **Negligible**: The effects are negligible or might cause very slight temporary deterioration in the current environmental resource quality.

4.1.4 The risk matrix shown in Table 4-1 below considers the probability of the potential risk against the magnitude of the potential impact, thereby giving an estimation of the resulting likelihood of the risk occurring.

Table 4-1: Risk estimation matrix

Probability of potential risk	Magnitude of potential impact			
	Severe	Moderate	Mild	Negligible
High	High	High	Medium/Low	Very Low
Medium	High	Medium	Low	Very Low
Low	Medium	Medium	Low	Very Low
Negligible	Medium	Medium/Low	Low	Very Low

4.1.5 This qualitative ERA has been based on the matrix outlined above.

4.1.6 The final stage of this ERA is the judgement of the severity of the residual risk rating following implementation of the mitigation measures.

5. Sensitive Receptors

5.1.1 Sensitive receptors within 1km of the Site boundary have been identified and tabulated in Table 5-1 below. The receptors are shown geographically on the Sensitive Receptors Plan, notated by the numbers indicated below.

Table 5-1 List of Sensitive Receptors

	Receptor	Distance from site (m)	Direction
No	Residential		
4	Harborough Cottage	35	Northwest
5	Valley Cottage (Grade II Listed Building)	35	Northwest
6	Old Cyder House (Grade II Listed Building)	80	South
7	Aspall Hall (Grade II Listed Building)	120	South
8	Rose Cottage	240	North
9	Willow Cottage (Grade II Listed Building)	300	Northwest
10	Rose Cottage (Grade II Listed Building)	300	Northwest
11	Church Cottages	450	Southeast
12	Church of St Marys of Grace (Grade II Listed Building)	490	Southwest
13	The Old Rectory (Grade II Listed Building)	590	Southwest
14	Tawny's (Grade II Listed Building)	660	Northwest
15	Properties on Bellwell Lane	750	Southeast
16	Willowdene	760	Southwest
17	Redhouse Farmhouse (Grade II Listed Building)	840	Southeast
18	Shoemakers Cottage (Grade II Listed Building)	860	Southwest
	Protected habitats		
2	Aspall Wood (Ancient Woodland, Local Wildlife Site) 0m (adjacent)	0m (adjacent)	South
	Infrastructure/utilities		
1	Aspall Road	0m (adjacent)	West
	Controlled waters		
3	River Deben, surface watercourse	0m (adjacent)	North
-	Zone 3 – total catchment	0m (adjacent)	Onsite

Table 5-2 Hazard identification and risk assessment

Hazard	Receptor	Pathway	Magnitude of risk	Justification / Risk Management	Probability of potential impact	Residual risk (following mitigation)
Odour	Local human population. Residents within c. 200m of site.	Air transport	Medium	• Permitted wastes do not pose inherent risk of odour. • Wetland will be operated in accordance with an Environmental Management System (EMS) (including Operating Manual and procedures) to ensure optimal management including during changing weather and climate. • Sludge clearing activities occur annually only (short duration), dry weather favoured to desiccate sludge and reduce odour potential.	Moderate	Medium
Noise and vibration from vehicles movements on site, during pond clearance	Nuisance and loss of amenity.	Noise through the air and vibration through the ground.	Medium	• Vehicles required on site for a very limited duration during the year. • Equipment on site is maintained and serviced in accordance with manufacturers recommendations. • No idling policy implemented.	Low	Low
Scavenging animals and scavenging birds	Harm to human health - from faeces. Nuisance and loss of amenity.	Air transport and over land	Low	• Effluent does not pose inherent risk of attracting pests without other risk factors. • Site is maintained in accordance with an EMS to ensure optimal operation, preventing pest infestation.	Negligible	Very Low
Vandalism	Local human population and local environment.	Air transport and over land to controlled	Low	• The site is secured with perimeter bunds, fencing and planting. • Gates and fencing are inspected daily by site operatives to identify deterioration, damage	Negligible	Low

Hazard	Receptor	Pathway	Magnitude of risk	Justification / Risk Management	Probability of potential impact	Residual risk (following mitigation)
		waters.		and the need for repair. • Fencing and gates are maintained and repaired to ensure their continued integrity. If damage is sustained, repair will be made within the same working day. If this is not possible, suitable measures will be taken to prevent unauthorised access to the site and permanent repairs will be affected as soon as is practicable.		
Controlled waters						
Spillage of liquids, leachate from waste, contaminated rainwater run-off from waste e.g. containing suspended solids.	Surface water close to and downstream of site.	Run-off over land then surface water pathways	Medium	• Effluent is pre-treated prior to acceptance on Site. • Wetland has ample capacity for effluent treatment plus 1 in 100 year flood event. • Discharge point valve is maintained in closed position during normal operation. • Should wetland approach capacity, and quality is insufficient for discharge, water will be tankered off-site to ensure overtopping does not occur. • In the unlikely event of failure of all above, overtopping of wetland would result from very large ingress of rainfall runoff ingress, meaning large dilution will occur, reducing the risk of any incidental effluent. • Wetland is sited within clay-based geology. Infiltration to groundwater beneath is considered very unlikely due to very low permeability clay.	Low	Negligible
Run-off and infiltration from site surfaces or spillages.	Groundwater – Principal aquifer underlying the site	Infiltration through free-draining ground	Low		Low	Low

Hazard	Receptor	Pathway	Magnitude of risk	Justification / Risk Management	Probability of potential impact	Residual risk (following mitigation)
Flooding	If waste is washed off site it may contaminate surface water courses / natural habitats downstream.	Flood water	Medium	• As above, plus: • The Site is bordered to north by flood zone 2 and 3 located (medium high risk) – associated with the River Deben and unnamed tributary only. • The Site will be bordered to the north by a 1.7m high bund. • The wetland is constructed with freeboard capacity for surface water inflows in times of high rainfall.	Low	Low
Fire Plant malfunction.	Local human population and local environment.	Air transport, over land and fire fighting water.	Low	• As above, plus: • All equipment is subject to a planned preventative maintenance schedule. • Change of a fire on Site is low due to absence of combustible materials and dearth of equipment on site. • In the event of a fire, the following actions will be taken: – The fire brigade will be notified. The site will be immediately evacuated. • Records of fire incidences will be kept on site together with a summary of remedial action taken. • The Environment Agency will be advised of all incidents of fire as soon as is practicable. • Smoking is prohibited on site.	Low	Low

Drawing

321890 DW04 Sensitive Receptors Plan