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HISTORIC LANDFILL AT GORT, CO. GALWAY

NON- TECHNICAL SUMMARY

Prepared for: Galway County Council



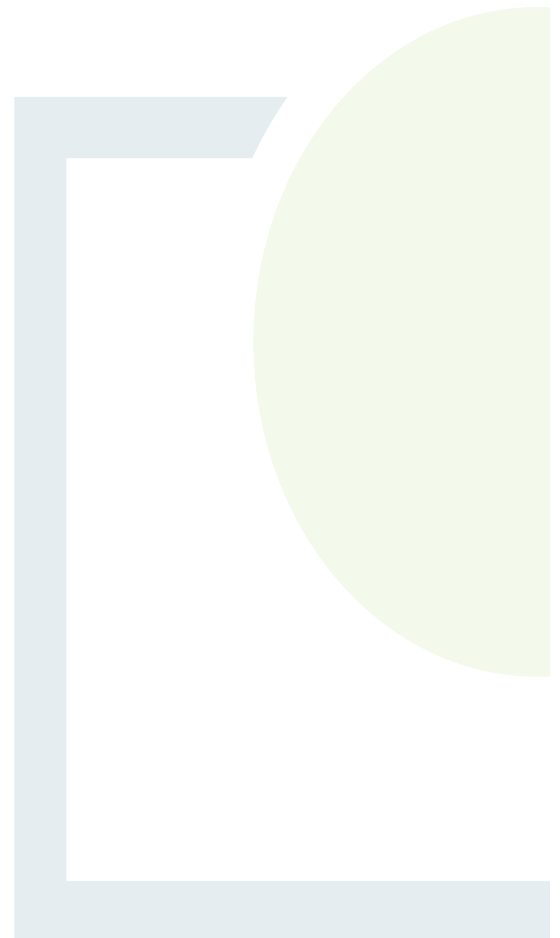
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REVISION CONTROL TABLE, CLIENT, KEYWORDS AND ABSTRACT

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Abstract: This report presents a non-technical summary of the historic landfill risk assessment of Gort Historic Landfill, Co. Galway. The non-technical summary has been prepared to accompany the certificate of authorisation application for the site.

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1. NON-TECHNICAL SUMMARY

1.1 Overview

Fehily Timoney and Company (FT) was appointed by Galway County Council (GCC) to complete a Tier 2 and Tier 3 environmental risk assessment (ERA) and Certificate of Authorisation Application (COA) for the Gort Historic Landfill. The ERA was conducted in accordance with the Environmental Protection Agency (EPA) Code of Practice (CoP) (2007): Environmental Risk Assessment for Unregulated Waste Disposal Sites.

1.2 Site Location and History

Gort historical landfill covers an area approximately 2 ha. of open land located in the immediate urban environs of Gort town, Co. Galway. The site is bound to the west and north by the River Gort with the L85075 road located along its eastern boundary. The site can be accessed via the Station Road. There are no dwellings within the site boundary, residential units are present within 200m of the site. A commercial area is located immediately south of the site on the eastern side of the L85075.

The site is in the ownership of GCC. Evidence gathered indicates the landfill was established in 1983 and landfilling had ceased in 1993. Remedial works have previously been carried out, including the installation of groundwater wells and constructed embankments at the river side. A now derelict leachate collection system (sump and pumping control system) is evident at the site. It is assumed that an associated rising main, discharging into the local sewer and out falling to the nearby Gort wastewater treatment plant (WWTP) also exists. The condition and location of the rising main is unknown. A shallow landfill cap is present at the site. It is understood a borrow pit located near the site, adjacent to the local road (L85075) was a source of capping materials.

Surface water monitoring was previously conducted at the site until 2010. Monitoring was undertaken by GCC at Gort Bridge and at locations downstream of the landfill.

A site investigation program was completed in 2020 as part of the Tier 2 study. The findings of the site investigation work show that material mainly comprising mixed municipal waste is deposited in a single infill area estimated to be 16,500 m². Based on geophysical survey profiles and applying an estimated average depth of 3.5 m, an estimated 57,750 m³ of waste is present at the site. Assuming a waste density of 1.6 t/m³, this estimated volume equates to approximately 92,500 tonnes of waste being present at the site.

1.3 Geology, Hydrogeology, Hydrology and Ecology

Geological Survey Ireland (GSI) describe the quaternary sediments at the site as a combination of tills derived from limestones (western area) and bedrock outcrop or subcrop (eastern area). Alluvium deposits are also shown to be present along River Gort. Drillers' borehole site investigation logs describe the presence of clayey gravel at GW01 and GW02 (outside of the waste body).

Bedrock geology mapping indicates that the bedrock beneath the site comprises two different formations, Waulsortian Limestones (CDWAUL) and Ballysteen Formation (CDBALL). The surrounding area to the north, west and south of the site is underlain by the Tubber Formation.



Bedrock outcrop is present within the wider area. A significant number of bedrock outcrops and karstified bedrock outcrops are also shown along the banks of the River Gort. Bedrock groundwater beneath site is classified as a 'Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones'. The GSI mapping shows that the groundwater body (GWB) is named Caherglassaun Turlough GWB and is classified as poorly productive bedrock aquifer.

GSI mapping does not record any wells to be located within the site area and no private drinking supply wells were identified at the site. There are no Groundwater Drinking Water Protection Areas within the site, however the River Gort is part of the Coole Zone of Contribution (ZOC) Group Scheme Preliminary Source Protection Area, however the abstraction point is located upstream of Gort Bridge and the site. The primary zone of contribution (ZOC) relating to groundwater is located approximately 1.12 km north of the site at its closest point. Other groundwater protection zones (Ballyaneen Rankerin, Lydacan Area 2, Tierneevin and Peterswell Castledaly) are located from 2 to 6km of the site.

The GSI Online mapping data set identifies the vulnerability of groundwater to contamination is classified as 'Extreme (E), rock at or near the surface (X)'. This rating is consistent with site investigation results as bedrock was encountered at 2.80m (19.38 mAOD) and 1.0m (22.55 mAOD) BGL during the installation of boreholes GW01 and GW02 respectively. Trial pitting confirms that waste material is generally close to the surface, underlying topsoil with little subsoil cover present (minimum: 0.20m, maximum: 4.0m thickness). There is no engineered cap present at the site.

The site is located within the Galway Bay Southeast catchment, Cannahowna_SC_010 sub-catchment and Cannahowna_010 sub-basin. The River Gort (EPA River Section Name: Cannahowna_010), which forms the northern and western boundary of the site, is the most significant water feature near the site. There is therefore a direct connection to the River Gort. Surface water discharge from the site is primarily from overland surface run-off. The River Gort flows in a northerly direction discharging in the Castletown River (Kilchreest_010) before eventually discharging to the Atlantic, at Kinvarra Bay, north-west of Gort Town.

The site is not located within any Natural Heritage Area (NHA), proposed NHA (pNHA), Special Area of Conservation (SAC) or Special Protection Area (SPA). The nearest protected site is the Coole-Garryland Complex SAC and pNHA (Site Code: 000252) which is located c.1.1 km north-west of the site at its closest point and the Coole-Garryland SPA (Site Code:004107) located c. 1.5 km at its closest point.

1.4 Risk Assessment and Environmental Impacts

GCC first prepared a Tier 1 risk assessment, which determined that the site was a High (Class A) risk to the receiving environment. Applying the EPA risk assessment tool as per the EPA CoP for Unregulated Waste Disposal Sites, yielded a risk score of 70% for source-pathway-receptor (SPR) linkage SPR9.

The Tier 2 site investigation risk assessment concluded that the risk rating of the site was High (Class A). The highest risk ratings of for the site were calculated to be 70% for source-pathway-receptor (SPR) Linkage SPR8, which referred to leachate migration through a surface water pathway to surface water receptor (River Gort).

The Tier 3 assessment further examined and quantified those risks/impacts through generation of quantitative models allowing a prediction of both the current and future impacts on groundwater quality, surface water quality and the current and future extent landfill gas being generated by the waste present on site.

The potential impact of leachate emissions to the Gort River along the western and northern boundary of the site was identified as being a primary risk associated with the site.



Although surface water monitoring at Tier 2 stage did not indicate that the site was causing a marked deterioration in water quality, the proximity and potential sensitivity of the river to the emission from the site required a further quantitative risk assessment. Monitoring at leachate well LH01 as part of the Tier 2 site investigation showed elevated concentrations of ammoniacal nitrogen indicating that a source of pollutants remains at the site thereby presenting a potential risk to the Gort River. Furthermore, the EPA CoP requires a conservative approach to be adopted when conducting a QRA.

Assimilative capacity i.e., mass balance calculations were used to determine the potential change in ammoniacal nitrogen concentration within the receiving water downstream of the site. It is modelled that estimated leachate discharges have the potential to consume 50% of the existing assimilative capacity in the river Gort. It is estimated however that ammoniacal nitrogen concentrations would remain below the 95%-ile threshold value of ≤ 0.140 mg/l¹.

The detailed quantitative risk assessment deemed that the environmental impacts to receiving surface waters presented a low risk and low impact owing to the existing assimilative capacity of the Gort River to accept modelled discharges. This information was used to inform appropriate remedial and mitigation measures to be implemented on site to either eliminate or reduce these risks.

1.5 Proposed Remediation

The Tier 3 assessment concluded a fully engineered landfill cap will be required above waste body to reduce rainfall inputs and so reduce the generation of leachate via percolation of rainwater and subsequently the potential migration of leachate to surface water.

The capping design shall be in accordance with the EPA Landfill Design Manual and will be consistent with the future uses of the site. The engineered cap will include a landfill gas drainage layer, barrier layer and surface water drainage layer. The gas drainage layer will be directly connected to collection network and a series of vertical standpipes venting to atmosphere at 2-3m above the final ground level. A landfill gas interception trench is proposed along the south-eastern site boundary, parallel to Station Road. The interception trench will comprise a deep vertical cut of barrier installed to prevent gas migration laterally to the adjoining building.

To monitor the efficacy of the proposed remediation measures a comprehensive schedule of groundwater, leachate and surface water monitoring is proposed at existing monitoring locations. Additional monitoring locations are also proposed.

¹ S.I. No. 77 of 2019 - European Union Environmental Objectives (Surface Waters) (Amendment) Regulations 2019



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