

Bord na Móna

Drehid Waste Management Facility – Further Development
Environmental Impact Assessment Report
Volume 1 – Non-Technical Summary



Table of Contents

1.0	INTRODUCTION	3
2.0	DESCRIPTION OF THE PROPOSED DEVELOPMENT	5
3.0	REASONABLE ALTERNATIVES	1
4.0	POLICY, PLANNING AND DEVELOPMENT CONTEXT	4
5.0	POPULATION AND HUMAN HEALTH	6
5.1	POPULATION	6
5.2	HUMAN HEALTH	7
6.0	BIODIVERSITY	10
6.1	METHODOLOGY.....	10
6.2	EXISTING ENVIRONMENT.....	10
6.3	POTENTIAL IMPACTS	11
6.4	MITIGATION MEASURES.....	11
6.5	RESIDUAL IMPACTS	12
7.0	SOILS, GEOLOGY AND HYDROGEOLOGY	13
8.0	WATER.....	16
9.0	MATERIAL ASSETS	19
10.0	NOISE AND VIBRATION.....	22
10.1	INTRODUCTION	22
10.1.1	<i>Methodology.....</i>	22
10.2	RECEIVING ENVIRONMENT / BASELINE DESCRIPTION	22
10.3	POTENTIAL EFFECTS	22
10.4	MITIGATION MEASURES.....	23
10.4.1	<i>Construction Stage Mitigation.....</i>	23
10.4.2	<i>Operational Phase Mitigation Measures.....</i>	23
10.5	CONCLUSION	23
11.0	LANDSCAPE AND VISUAL IMPACT	24
11.1	INTRODUCTION	24
11.2	METHODOLOGY.....	24
11.2.1	<i>Visual Assessment Criteria.....</i>	24
11.2.2	<i>Quality and Timescale of Effects</i>	24
11.3	BASELINE ENVIRONMENT	25
11.3.1	<i>Kildare County Development Plan.....</i>	25
11.3.1.1	<i>Principal Landscape Sensitivity Factors</i>	26
11.3.2	<i>Landscape Sensitivity</i>	26



<i>11.3.3 Visual Sensitivity</i>	26
11.4 POTENTIAL IMPACTS OF THE PROPOSED PROJECT	26
<i>11.4.1 Landscape</i>	26
<i>11.4.2 Visual</i>	27
12.0 AIR QUALITY AND CLIMATE.....	28
13.0 ARCHAEOLOGY AND CULTURAL HERITAGE	31
14.0 TRAFFIC AND TRANSPORTATION.....	33
<i>14.1.1 INTRODUCTION</i>	33
<i>14.1.2 Methodology</i>	33
14.2 RECEIVING ENVIRONMENT / BASELINE DESCRIPTION	33
14.3 POTENTIAL EFFECTS	34
14.4 MITIGATION MEASURES.....	35
<i>14.4.1 Construction Phase Mitigation</i>	35
<i>14.4.2 Operational Phase Mitigation</i>	36
<i>14.4.3 Decommissioning and Reinstatement Phase Mitigation</i>	37
14.5 CONCLUSION	37
15.0 INTERACTION OF THE FOREGOING.....	38



1.0 INTRODUCTION

Bord na Móna Plc. (hereafter referred to as Bord na Móna or the Developer) operates the Drehid Waste Management Facility (which will be referred to as the Drehid WMF), situated near Carbury, County Kildare. The Drehid WMF is an integrated WMF which principally includes an existing landfill and a Composting Facility. A Mechanical Biological Treatment (MBT) facility was permitted at the facility, however that project will not be constructed. The Drehid WMF operates subject to an Industrial Emissions Directive (IED) licence, issued by the EPA, (W0201-03) and subject to the planning approval for the facility.

Bord na Móna intends to apply to An Bord Pleanála for planning permission for additional waste capacity at the Drehid WMF, with some additional infrastructure and processing capabilities. The proposed development includes the additional landfill capacity (non-hazardous) as well as allowing for additional capacity for the processing of certain waste streams for materials recycling and recovery, and composting process. It also includes other associated works, buildings and roads, etc. The overall EIAR study area (which comprises all elements of the proposed project) has an area of approximately 262 hectares (ha).

TOBIN Consulting Engineers (hereafter referred to as TOBIN) has prepared this Environmental Impact Assessment Report (EIAR) along with a number of specialist consultants (see section 1.6 of the EIAR) on behalf of Bord na Móna. Bord na Móna intends to apply to An Bord Pleanála for planning permission for additional waste capacity at the Drehid WMF, with some additional infrastructure and processing capabilities.

Bord na Móna Plc is a publicly owned company, originally established in 1934 as the Turf Development Board to develop Ireland's extensive peat resources for the purposes of economic development and to support energy security, Bord na Móna owns approximately 80,000 hectares of peatland, located mainly in the Irish Midlands. Up to 2020, this land was primarily used for peat harvesting for energy and for horticulture growing media. Bord na Móna provides employment for approximately 1,500 people and is an integral part of the economic, social, and environmental fabric of Ireland and Irish life. As a key employer in the Midlands, the company is conscious that its obligations go beyond purely commercial and environmental – there is also a social responsibility to employees and the communities served by Bord na Móna. Bord na Móna Recycling is the waste management division of Bord na Móna group and encompasses the Drehid WMF and an extensive waste collection & processing business throughout the Midlands, South East and Mid-West regions. The principal focus is on delivering exceptional customer service and maximising the re-use and recovery potential of managed waste materials, where possible.

The application for planning approval for the proposed development is being made directly to An Bord Pleanála (ABP) through the Strategic Infrastructure Development (SID) process under the provisions of Section 37 of the Planning and Development Act, 2000 as amended and the associated Planning Regulations. Section 1.5 of the EIAR provides information on the legislative context and development guidelines relating to the proposed development.

Environmental Impact Assessment Report



An Environmental Impact Assessment (EIA) is required to ensure that projects that are likely to have significant effects on the surrounding area and the environment are properly assessed. Any significant impacts discovered in the assessment must be avoided or minimized where possible. The findings and outcome of the EIA are presented as a report, known as an Environmental Impact Assessment Report (EIAR).

TOBIN Consulting Engineers has prepared the EIAR in accordance with relevant and specific environmental legislation, guidance and advice notes. The report has been compiled in consultation with statutory bodies, interested parties and the local community.

This document is Volume 1 of the EIAR. It is a Non-Technical Summary (NTS), which gives a brief description of the project and the assessment of the relevant environmental matters in non-technical language. The additional Volumes contain information as described below:

Volume 2: The Main EIAR – Contains detailed information relating to the proposed development and the findings of the Environmental Impact Assessment. Volume 2 also contains drawings, figures and maps.

Volume 3: Appendices: This Volume contains information and data that has been used in the Environmental Impact Assessment and is referred to in Volume 2.

Volume 4: Photomontages: This Volume contains imagery that has been used as part of the Landscape and Visual Impact Assessment contained in Volume 2: The Main EIAR.

The purpose of this NTS is to provide a concise overview, in non-technical terms, of the issues, impacts and mitigation measures highlighted by the EIA and presented in the main EIAR, Volume 2.

Scoping

Scoping is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. The purpose of scoping for the EIAR is to provide a framework for the approach to be taken by the individual specialists in carrying out their evaluations, identifying environmental aspects for which potential significant environmental impacts may arise. It also provides a framework for the consultation process and sets out the intended structure of the Final EIAR. An extensive scoping exercise was carried out with a range of consultees for this project, with details of this provided in Section 1.7 of the EIAR (Volume 2). Consultees included An Bord Pleanála, Kildare County Council, Inland Fisheries Ireland, NPWS, various governmental departments and the local community. The Drehid WMF has an ongoing Community Grant Scheme which provides funding to a number of local bodies and groups in the area surrounding the facility. It is proposed that this scheme would continue through the operational life of the proposed development so that those living nearest to the facility would continue to benefit from its operation.



2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

Existing Site and Infrastructure

The application boundary, outlined by the red line in the Site Layout Plan (Drawing No. 11290-2003) and which is defined as the area in which the application for development is being made and within which all activities associated with the proposed development will occur, is confined to the townlands of Timahoe West, Coolcarrigan, Killinagh Upper, Killinagh Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown. The activities associated with the proposed development will be confined to a landbank of approx. 262 hectares (ha) within the overall Bord na Móna landholding. This area incorporates both the proposed new infrastructure and the existing infrastructure, as the overall facility will have widespread overlap between new activities and existing activities.

The existing and operational waste management facility at Drehid is accessed from the R403 Regional Road via a dedicated entrance and a private 4.8 km long access road. This entrance and road will also be used to access the proposed development from the public road network. The R403 runs north-west to south-east around the overall Bord na Móna landholding. The R403 joins with the R402 at Carbury to the north-west of the site and joins to the R407 in Clane to the east of the site. The R402 links Edenderry and Enfield connecting to the M4 Dublin to Sligo Motorway on the outskirts of Enfield. The R407 links Naas to Kilcock and also links to both the M4 and the M7 (Dublin to Limerick Motorway). The M4 is located approximately 9 km to the north of the proposed development and the M7 is located approximately 17 km to the south-east.

The existing waste management facility at Drehid is located centrally in the northern portion of the Timahoe South Bog. The proposed new infrastructure will be located adjacent to the existing infrastructure, to the south-east. This existing facility is owned and operated by Bord na Móna and provides infrastructure which will support the proposed development, including, but not limited to, the existing access road, existing composting facility, surface water drainage network and administration building.

Planning permission was granted to Bord na Móna in 2013 for a Mechanical Biological Treatment (MBT) facility (ABP PI. Ref. PA09.PA0027) which was planned for an area immediately south of the proposed development planning application boundary and within the overall landholding. The MBT facility was intended as a separate distinct waste treatment facility located adjacent to the proposed development. Bord na Móna took the decision in 2022 not to develop this MBT facility.

The existing waste treatment infrastructure in place at the Drehid WMF is described in detail in Section 2.1.5 of the Main EIAR.

Detail of the Proposed Development

The development will consist of an extension of the existing Drehid WMF to provide for the acceptance of up to 440,000 tonnes per annum (TPA) of non-hazardous waste material, comprising:

- Increase in acceptance of non-hazardous household, commercial & industrial and construction and demolition (C&D) waste at the existing landfill from the currently



permitted disposal quantity of 120,000 TPA to 250,000 TPA until the permitted void space in the existing landfill is filled and no later than the currently permitted end date of 2028;

- Development of extended landfill footprint of approximately 35.75 ha to accommodate the landfilling of 250,000 TPA of non-hazardous household, commercial & industrial and C&D waste for a period of 25 years to commence once the existing landfill void space is filled. The new landfill will have a maximum height of approximately 32 m above ground level (115.75 mAOD);
- Provision, as part of the extended landfill infrastructure, for 30,000 TPA of contingency disposal capacity for non-hazardous waste, to be activated by the Planning Authority only as an emergency measure, for a period of 25 years;
- Development of a new Processing Facility, for the recovery of 70,000 TPA of inert soil & stones and C&D waste (rubble) and use of same for engineering and construction purposes within the site, including as engineering material in the landfill;
- Increase in acceptance of waste at the existing Composting Facility from 25,000 TPA to 35,000 TPA and removal of the restriction on the operating life of the Composting Facility contained in Condition 2(2) of ABP Ref. No. PL.09.212059;
- Extension to, and reconfiguration of, the existing Composting Facility to provide for a new municipal solid waste (MSW) Processing and Composting Facility with an additional capacity of 55,000 TPA (giving a combined total for the MSW Processing and Composting Facility of 90,000 TPA), allowing for the combined facility to accept both MSW and other organic wastes;
- Construction of a new odour abatement system at the existing Composting Facility including two emissions stacks to a height of 17 m above ground level;
- Construction of a new odour abatement system as part of the new MSW Processing and Composting Facility including two emissions stacks to a height of 17 m above ground level;
- Development of a new Maintenance Building with staff welfare facility, office, storage and a laboratory;
- Installation of a new bunded fuel storage area to the rear of the new Processing Facility for the recovery of soil & stones and C&D waste (rubble);
- Construction of two new permanent surface water lagoons and one new construction stage surface water lagoon;
- Construction of a new integrated constructed wetland (ICW) area comprising five ponds;
- Car-parking provision for operational staff;
- Landscaping and screening berms; and
- All associated infrastructure and utility works necessary to facilitate the proposed development and the restoration of the facility following the cessation of waste acceptance.

The total waste intake of 440,000 TPA described above includes 30,000 TPA contingency capacity provided following pre-application consultation with the Regional Waste Officers at the Regional Waste Management Planning Office (RWMPO). This contingency capacity will not be utilised by the Applicant under normal operations and will only be activated in strict circumstances by Kildare County Council (KCC) in consultation with the RWMPOs and the EPA.

Table 2-1 provides a summary of the total waste volumes proposed for acceptance at the Drehid WMF, as described above. It is noted that the quantities set out in Table 2-1 are for the entire Drehid WMF, incorporating the existing permitted infrastructure. No additional waste, above the quantities set out in Table 2-1, will be taken in at the Drehid WMF.



Table 2-1 – Proposed waste quantities for acceptance at the Drehid WMF

Facility Infrastructure	Waste Type/Source	Maximum Incoming (TPA)	Of Which		Life of Facility
			Disposal to Landfill (TPA)	Recycling, Recovery or Process Losses (TPA)	
Extension to existing Landfill with intake increased from 120,000 TPA to 250,000 TPA	Non-hazardous household, commercial & industrial and C&D wastes	320,000	250,000	-	25 Years
New Processing & Recovery Facility (70,000 TPA)	Inert soil & stones and C&D Waste (Rubble)		-	70,000 Recovery – remains onsite for use as Engineering & Construction Material	25 Years
Existing Composting Facility increased from 25,000 to 35,000 TPA	Non-hazardous MSW and Other Organic Waste	90,000	40,000 Rejects and Biostabilised Compost Like Output	30,000 Process Losses	Unrestricted
New MSW Processing & Composting Facility (55,000 TPA) as an extension to existing Composting Facility				20,000 Recyclables and RDF/SRF ¹ - Outgoing	
Contingency Capacity (30,000 TPA) – Landfill Disposal as requested by RWMPO	Non-hazardous household, commercial & industrial and C&D wastes	30,000	30,000		25 Years
Total		440,000	320,000	120,000	

There will be no change in the nature of the waste types accepted at the proposed development from those which are currently authorised and accepted at the existing facility. Only non-hazardous waste types will be accepted at the facility. No hazardous waste will be accepted at the facility.



The proposed development works primarily comprise a continuation of the current operations at the existing facility with changes in the quantity and duration of waste acceptance as per Table 2-1.

The proposed new MSW processing infrastructure will allow for the acceptance of untreated MSW which will be screened to remove recyclable materials and undersize material (typically <60 mm diameter). The remaining material will comprise a refuse derived fuel (RDF) or feed material to produce solid recovered fuel (SRF) product which will then be exported from the Drehid WMF along with the recycled materials for further processing off-site. The undersize material (typically referred to as organic fines) will be subject to biological treatment in composting tunnels at the facility with the biostabilised output being disposed of to landfill.

The proposed new processing building for the screening and segregation of non-hazardous soils, stones and C&D rubble will allow for the recovery of suitable materials for use as recycled engineering materials. These incoming waste types will be directed to the new building and offloaded for processing within a covered area. The screened and sorted materials will be reclassified as non-waste materials subject to compliance with End-of-Waste criteria (explained in Section 2.2.6.1 of the Main EIAR) and can be utilised at the facility for road construction, landfill working face tipping platforms and landfill capping. The use of recycled material in this way will reduce the quantities of virgin aggregates and greenfield inert soils which are required to be imported to the site for these engineering purposes.

Figure 2-1 provides an illustration of the of the movement of waste materials into, within and out of the Drehid WMF. Including the existing and proposed infrastructure.



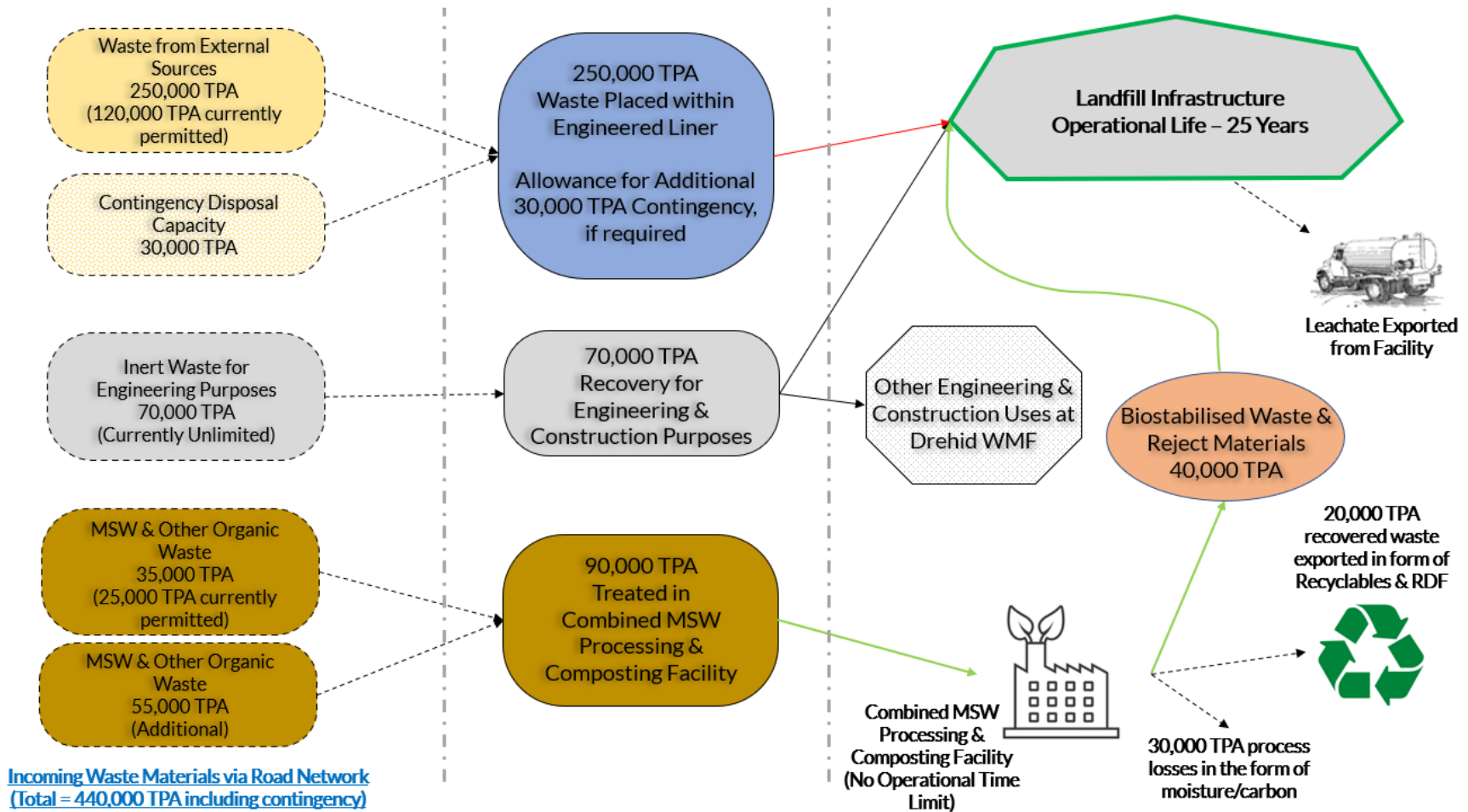


Figure 2-1 – flow diagram of waste material movements at the proposed development



The proposed new landfill will have a maximum footprint of 35.75 ha. The maximum elevation of the landfill mound will be 115.75 mAOD at the peak of the landfill capping as shown on Drawing No. 11290-2070. The capping will be graded down in all directions from this peak height at a rate of 1:30 to join with the side slopes which will be constructed at a maximum grade of 1:3. Sections through the proposed landfill are shown in Drawing No.'s 11290-2031 and 11290-2032.

The landfill will be divided into 12 no. phases of approximate equal volume. Based on an operational lifetime of 25 years, each phase will cater for approximately 2.1 years of waste placement. The development of each phase will typically be as follows:

- Site clearance and surveys – 7 months
- Construction – 12 months
- Operation/deposition of waste – 2 to 2.5 years (2.1 years used in modelling exercises)
- Temporary/Intermediate capping – 20 – 24 months
- Final capping – 18 months

Further details on the proposed development infrastructure are provided in Chapter 2 of the Main EIA.

Operational Management

The proposed development will operate six days per week (Monday to Saturday inclusive) between the hours of 07:30 and 19:00.

Waste material will only be accepted into or depart from the facility between the hours of 07:30 and 18:30 (Monday to Saturday). In exceptional circumstances, such as vehicle breakdown or similar unavoidable delay, the facility will permit the late arrival of waste after 18:30, however this will only be permitted where there is a genuine extenuating circumstance and is required in order to prevent illegal parking of haulage vehicles that may have travelled a long distance. Waste that is accepted at the facility at or near closure time, will be unloaded at the appropriate waste reception area, stored overnight and processed during the next working day.

Access to the proposed development will be via the existing permitted site entrance, located on the R403 Regional Road. The existing access comprises a T-junction from the R403 to a dedicated entrance to the Drehid WMF. The facility entrance is clearly identified with stone walls and signage. The site access is controlled using metal gates and is monitored by security from the weighbridge kiosk.

Members of the public are not permitted to access the facility without approval. Any unauthorised access via the private road will be stopped at the weighbridge where they will be prevented from entering the operational facility. The weighbridge operators will evaluate any incoming visitors and waste contractors and deny access as appropriate.

Construction Management

A planning stage Construction Environmental Management Plan (CEMP) has been prepared to set out the proposed management and administration of site activities for the Construction Phase of the proposed development, to ensure that all construction activities are undertaken in an environmentally responsible manner. The CEMP is included as Appendix 2-5 to the EIA.

On receipt of a successful Grant of Planning Permission, pre-construction works will commence at the site. This will include the commissioning of pre-construction surveys, including ecological surveys and archaeological surveys, as well as detailed design development, planning

compliance submissions and preparation of Tender documents for the construction of the Proposed Development. For the purposes of the CEMP and for establishing timelines as part of the EIAR, Q1 2024 has been taken as an indicative date for the receipt of planning approval and Q3 2024 as an indicative date for receipt of a revised Industrial Emissions (IE) Licence from the EPA.

The entire landfill infrastructure will not be constructed at the same time and will be developed on a phased basis over a period of c. 25 years. This reflects how the existing landfill has been developed at the site since 2006 and allows for the gradual construction of new void space to facilitate the demand from the waste market. The new landfill comprises 12 no. phases and it is anticipated that new landfill phases will be developed every 2 to 2.5 years. Each phase of the landfill is anticipated to take 18 months to construct allowing for pre-construction surveys, vegetation clearance, peat stripping, excavation/earthworks, drainage management and construction of the engineered liner.

The initial construction works (Construction Stage 1) will comprise Phase 16 of the landfill (including undercell drainage system), the MSW Processing and Composting Building, the Maintenance Building, the Soils and C&D Processing Facility, contractor's yard, surface water management infrastructure and associated works. Once construction of Phase 16 of the landfill is completed, deposition of waste in the void space will commence following approval of the as-built construction details by the EPA. Waste placement in Phase 16 will be ongoing for 2 to 2.5 years during which time temporary/intermediate capping will be placed over filled areas. On completion of temporary/intermediate capping of the last section of Phase 16, works will commence on final profiling and installation of the final capping.

Construction works will take place between the hours of 07:30 and 19:00 (Monday to Saturday inclusive). There will be no scheduled construction activity outside of these hours or on Sundays/Bank Holidays.

Further details on construction management are set out in the CEMP and Section 2.7 of the Main EIAR.

3.0 REASONABLE ALTERNATIVES

This chapter of the Environmental Impact Assessment Report (EIAR) contains a description of the reasonable alternatives that were studied which are relevant to the project and its specific characteristics and provides an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment. Meetings were held with the Regional Waste Management Authorities, the Environmental Protection Agency, Kildare County Council and An Bord Pleanála to discuss the project as the design progressed, to allow these bodies to suggest alternatives and to confirm that the proposal was suitable for the area and for the current situation in Ireland relating to waste. Scoping documents were also sent to wide range of consultees as discussed in Chapter 1 of this EIAR to allow these bodies to provide feedback for the project. The alternatives may include:

- Do Nothing Scenario
- Alternative locations;
- Alternative layouts;
- Alternative designs;
- Alternative processes; and,
- Alternative mitigation measures

The “Do-Nothing” scenario is not to develop the proposed project and to leave the existing environment at the location of the proposed infrastructure as it is, with no changes made to the currently permitted site activity. The existing permitted waste activities would continue to operate as they are currently permitted until the facility can no longer accept waste, followed by the associated site wind down activities (capping the landfill, etc.) In such a scenario, the prospect of most efficiently dealing with waste would be lost (i.e. continuing the landfill activity where there is an existing waste facility) as another facility would need to be built potentially from scratch elsewhere to replace it, and there would be no existing infrastructure in place to utilise on such an alternative site. The opportunity to contribute to the national need for dealing with waste would also be lost.

In order to confirm that the facility is located in an efficient location, it was decided to check that it is still located close to the centroid of recent waste production in Ireland (based on recent waste data). The ‘Centroid’ is defined as the geographical location that would minimise the distance that waste inputs would have to travel. The centroid is located between Clane and Sallins, Co. Kildare and a 25 km buffer around this point represents approximately a 30 minute journey for the waste. This shows that the site is located within approximately just 15 minutes of the waste centroid, meaning that the waste transport will be efficient. Furthermore, the location of the site between the M4 and M7 allows for similarly easy access from both main transport routes. It is noted that the existing Drehid WMF is constructed on a site which went through a site selection process including a consideration of alternative sites within the ownership of Bord na Móna as outlined in the earlier planning applications relating to the Drehid WMF (Reg No. 04.371 / PL09.212059). The site emerged as the most suitable site in those exercises, resulting in the construction of the existing facility, and this current application proposes further development of the site.

Potential locations within the landholding were assessed in an objective manner, with a view to selecting a location which would minimise the impact of the proposed development on the surrounding environment and would be the most sustainable solution. From a ‘compatibility with the existing infrastructure’ perspective, the site is located adjacent to the existing Drehid facility. Therefore, the preferred location provides the most suitable location for development as it provides for the use of all existing ancillary infrastructure and minimises transport

distances for waste. Through the site design evolution, a number of changes were made to the site infrastructure layout. These included:

- Movement of the ICW to minimise disturbance to site drainage network.
- Inclusion of a composting and MSW processing facility as an extension to the existing composting facility. This came about based on the decision to not proceed with the previously permitted MBT facility to the south of the currently proposed development.
- Removal from the site layout of internal access road and additional weighbridge to link to the previously permitted MBT facility.

The size and scale of the project was determined by the volume of waste that needs to be treated. The alternatives of developing a significantly larger or smaller size/scale facility were considered, but it was determined that a smaller facility would not make a worthwhile contribution to dealing with the volume of waste that is currently produced in Ireland, while a larger facility might not be required in the long term and may have greater effects relating to traffic and transportation.

There are a number of main alternatives to the provision of landfill void space in Ireland discussed in the chapter, including:

- The provision of additional incineration (energy recovery) capacity in Ireland
- Exporting waste for treatment (landfilling or incineration) outside of Ireland.
- Increasing levels of waste prevention, reduction, reuse and recycling

Recent data shows that incineration has recently become the most common method to treat waste. The non-hazardous ash remaining after the incineration process, while smaller in volume than the original waste, still needs to be dealt with however.

Ireland currently relies on the exporting of large volumes of waste for final treatment, with 40% of municipal waste being exported (totalling 1.2 million tonnes) in 2019, up from 35% in 2018. In addition, 20% of waste which was treated by composting/AD being sent to Northern Ireland. In the event that new landfill space is not made available, the waste would need to be exported. The reduction of landfill void space will simply increase the amount of waste being exported, and moving the problem elsewhere should not be considered as a viable alternative when there is a potential to treat the waste within the state.

Ideally, the volume of waste being produced would be significantly reduced so that there would be less to deal with, however achieving even the current targets for 2025 and 2030 will be very difficult to achieve without affecting significant change nationally. Waste prevention, reduction, reuse and recycling rates are affected by factors such as national policy, infrastructure, cost and education. It is considered that determining the best methodology for achieving this is out of the scope of this report, however it is nonetheless considered that improving these actions significantly is an essential part of a sustainable circular waste economy. Waste prevention, reduction, reuse and recycling should be considered as a key part of the solution rather than an alternative to provision of waste treatment infrastructure.

The technologies used for landfilling waste has evolved over a number of decades, but the proposed development will utilise all of the modern best practices to ensure there is a minimum potential for adverse environmental effects. These technologies include the use of suitable liners beneath and above the waste, capping with soil (and planting of vegetation on this), capture of leachate for appropriate treatment, capture of gas released by the landfill (with subsequent generation of electricity from this gas), capture and treatment (with an appropriately designed ICW) of site runoff and installation of fire suppression water supply systems. Omitting any or all of such design features and technologies was not considered to be

reasonable for the proposed development, given the proven benefits of using them, and their widely accepted use in the waste industry internationally.

One of the main aspects of the proposed development is the expansion of the capacity of the existing composting facility. Composting and anaerobic digestion were considered for the stabilisation of the organic fraction to satisfy EPA requirements. In considering AD, consideration was had of the fiscal incentives for the development of AD – namely the Renewable Energy Feed in Tariff (REFIT). Regrettably, the current fiscal incentives in the Republic of Ireland make it difficult to create a compelling or indeed viable, economic argument for the development of AD for the processing of mechanical and organic fines generated from the recycling of MSW waste. Therefore, coupled with the fact that the current facility is a composting facility, Bord na Móna consider that composting is the most viable option for the proposed development.

The classification of every composting system is beyond the scope of this assessment; hence for the purpose of this section, composting systems have been classified into Outdoor Systems; Indoor Windrow Systems; Tunnel Systems; and, Continuous Flow Systems. Each is discussed in the chapter. Owing to the high aeration rates and process control provided by tunnel composting systems and the resultant high rates of biological stabilisation, it was decided to use a tunnel composting system (as per the existing composting facility) for the composting process for the proposed additional capacity.

A significant proportion of waste that is produced in Ireland is comprised of clean soil and stone and rubble from construction and demolition. The proposed development will process this waste to remove suitably sized clean material that can be used as an engineering material for the proposed landfill and associated infrastructure. This would prevent the site needing to import virgin aggregates for the purpose, reducing the environmental impact.

4.0 POLICY, PLANNING AND DEVELOPMENT CONTEXT

The Policy, Planning and Development chapter of the EIAR provides and outline and evaluation of the Planning and Policy in relation to the proposed development. This application by Bord na Móna is being made directly to An Bord Pleanála as ‘Strategic Infrastructure Development’ under the provisions of Section 37 of the Planning and Development (Strategic Infrastructure) Act, 2006, the Planning and Development Act, 2000, as amended, and the associated Planning Regulations.

Strategic Infrastructure Development (SID) comprises defined categories of development which, if considered by An Bord Pleanála to be strategic infrastructure development, require direct application for permission to An Bord Pleanála, instead of the local planning authority. Specific SID project categories relating to private developers fall into three classes set out in the Seventh Schedule namely: energy, transport and environmental infrastructure.

The proposed development is of the type described in Para 3 – Environmental Infrastructure, Section 5, Part 2, of the 2006 Act (as inserted as the 7th Schedule into the Planning and Development Act, 2000), namely:

“An installation for the disposal, treatment or recovery of waste with a capacity for an annual intake greater than 100,000 tonnes”.

The proposed development comprises the provision of new treatment infrastructure for the recycling, recovery and disposal of non-hazardous waste materials and will form an extension to the existing infrastructure which has been in operation at the site since 2008. The new waste treatment infrastructure will expand upon the existing infrastructure at the facility utilising existing internal roads, weighbridge, utilities and administration facilities. The proposed new landfill will operate as a continuation of the existing landfilling practices at the site where it is estimated that the existing landfill will reach its maximum void capacity in 2026. The proposed new MSW Processing and Composting Facility will be developed as an extension to the existing Composting Facility benefitting from the existing composting infrastructure and utilities already in place. The proposed new Soils Processing Facility will assist in screening and sorting incoming waste for use in engineering applications as well as allowing for reclassification of suitable waste as non-waste materials. The proposed development will provide additional critical disposal and recovery infrastructure to manage ever-increasing volumes of waste which are being generated in the country.

The proposed development is consistent with the overarching planning framework set out under European, National, Regional and Local level plans and policies. The existing site has an established and permitted/licensed use for waste treatment and disposal and there is a clear preference under local and regional policy to develop disposal capacity at existing landfill facilities. The rationale for this conclusion is based on the following:

European

- The Waste Framework Directive 2008/98/EC (WFD)
- Landfill Directive 1999/31/EC & Amendment Directive (EU) 2018/850

National

- National Planning Objective no. 56 seeks to “Sustainably manage waste generation, invest in different types of waste treatment” with an overall priority to “support circular economy principles, prioritising prevention, reuse, recycling and recovery, to support a healthy environment, economy and society.”

- The National Development Plan sets out a requirement for additional waste treatment and disposal infrastructure by recognising that capacity will continue to be built in waste facilities.
- The Draft National Waste Management Plan for a Circular Economy (Draft WMP), covering the period from 2023 – 2029 sets out a framework for the prevention and management of waste in Ireland. Core Policy 12 of the plan refers to Nationally Important Infrastructure, under which the Drehid WMF is categorised.

Regional

- The proposed development complies with the policies and objectives of the Eastern and Midlands Region Waste Management Plan 2015-2021.
- Specifically, policy E8 supports the development of disposal capacity for the treatment of non-hazardous wastes at existing landfill facilities in the region subject to the appropriate statutory approvals being granted in line with the appropriate siting criteria.
- As well as policy E9B, which supports the need for on-going disposal capacity to be developed for on-site generated non-hazardous industrial waste over the plan period.

Local

- Policies and objective contained within the Kildare County Development Plan 2023 – 2029 (CDP) establish clear support for the proposed development.
- The CDP recognises the policies of the Eastern-Midlands Region Waste Management Plan 2015-2021 as a framework for waste management within the region (WM3).
- The CDP supports the development of waste management infrastructure that is of an appropriate scale and is related to the needs of the county and the Eastern and Midlands Waste Region, subject to the protection of the environment, landscape character, road network and the amenities of the area (WM17).
- In addition, the CDP seeks to facilitate the ongoing operation of the Drehid waste facility in so far as operations at the facility relate to the waste management needs of the county and the Eastern and Midlands Waste Region and subject to the protection of the environment, landscape character, road network and the amenities of the area (WM 18).

For the purpose of the evaluation of potential cumulative impacts the following have been considered:

- Any permitted waste developments, or proposed developments currently in the planning process
- Existing, permitted or proposed developments with the potential for significant cumulative effects with the proposed development, e.g. major infrastructure development, such as proposed road development, wind farms, solar farms, other Strategic Infrastructure Development (SID), or public utilities and services in the vicinity of the proposed development site.

For a detailed list of planning applications made in the last 10 years in the area surrounding the subject site and the Drehid WMF please refer to Appendix 4-2 of this EIAR.

5.0 POPULATION AND HUMAN HEALTH

This chapter of the EIAR assesses the existing environment in addition to the potential effects on population and human health arising from the proposed development. The Population sections focuses on population, employment, tourism and amenities, infrastructure, community gain and health and safety and the Human Health sections deals specifically with the effects on human health associated with the proposed development.

5.1 POPULATION

The extent of the Bord na Móna landholding, which comprises 2,544 hectares (ha), is located within the County Kildare townlands of Drehid, Ballynamullagh, Kilmurry, Mulgeeth, Mucklon, Timahoe East, Timahoe West, Coolcarrigan, Corduff, Coolearagh West, Allenwood North, Killinagh Upper, Killinagh Lower, Ballynakill Upper, Ballynakill Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown. The proposed development application area is 264 ha and is confined to the townlands of Timahoe West, Coolcarrigan, Killinagh Upper, Killinagh Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown. The village of Derrinturn is located approximately 2.6 km to the west of the proposed application boundary and Timahoe crossroads is located approximately 1.7 km to the east of the closest edge of the site activity boundary. Carbury is located approximately 6 km to the north-west of the proposed development and Prosperous is approximately 8.3 km to the south-east.

Housing in the immediate area of the proposed site comprises predominantly single dwellings with adjacent farmyards and new bungalows. The nearest sensitive receptor (house) will be a distance of approximately 1 km to the northeast of the proposed non-hazardous Landfill footprint, while the nearest property to the proposed development site boundary is approximately 170 m to the west, although no works are proposed in that part of the site.

Preliminary data for the 2022 census¹ shows that the population of Kildare increased by 11% (the joint third highest county growth) while nationally the population increased by 8%.

The proposed development has been designed and will be constructed and operated to Best Available Techniques (BAT) as described in Chapter 2 of the EIAR (Description of the Proposed Development). All information will be available to interested parties and a complaints register will be maintained at the facility. The EPA will also undertake regular environmental audits, which will record licence compliance.

Bord na Móna will agree the establishment of a community development fund with Kildare County Council in respect of the proposed development. This fund will contribute to the provision of environmental improvement and recreational or community amenities in the locality.

The educational room in the Administration Building will be used for the provision of a public education area for environmental education needs. Poster presentations and literature on waste management and on the workings of the proposed facility will be available in this meeting room. Provision will also be made for the inspection of the EPA waste licence and Annual Environmental Reports (AERs) in this room.

1

https://www.cso.ie/en/media/csoie/newsevents/presentations/2022/Census_Preliminary_Results_2022_-_23_June_2022_-_PDF.pdf

The proposed development is unlikely to have any significant negative effects on the local or broader population numbers. There is likely to be a slight positive effect on the local population as some of those employed at the proposed development may move into or continue to reside in the locality. This would have a long-term slight positive impact on the local population.

There will be no significant change to the existing traffic movements associated with the existing Drehid WMF, and there will therefore be no significant effect on the social travel patterns of those residing adjacent to the development site. Air emissions (dust and odour) from the proposed development will not cause a nuisance at sensitive receptors; refer to Chapter 12 (Air Quality & Climate) of the EIAR. The proposed increased composting capacity will ensure that waste is adequately treated prior to being deposited in landfill, reducing any odour emissions. There will be an appropriately designed larger odour abatement system installed in the new composting and MSW processing facility. Based on the above, the proposed development is anticipated to have a slight long term negative effect on residential amenity (including roads, noise, dust and odour).

The proposed development has the potential to retain and create several new jobs in the area with the resultant off-shoot benefits.

The large majority of the tourist attractions are located a significant distance from the proposed facility and will therefore not be impacted by the proposed development. Traffic generated by the proposed development will enter the Bord na Móna landholding directly from the R403 by way of the existing entrance and will therefore not adversely impact on visitors travelling to Coolcarrigan House. It will also be visually screened from the proposed development by mature forestry. Other tourism attractions/businesses that are located in close proximity to the proposed development site (such as B&Bs), will be at a significant distance (over 1 km) from the proposed landfill and processing facilities so no significant effects are anticipated.

Allenwood Celtic AFC's football pitch is located to the south of the existing entrance on the R403 at Killinagh Upper. As the access road does not require any additional works, the potential effects on this amenity are not considered significant. A wide belt of mixed deciduous and evergreen trees and shrubs has been planted by the developer along the entire boundary of the Bord na Móna landholding with the grounds of Allenwood Celtic AFC in the interest of visual amenity.

5.2 HUMAN HEALTH

A human health risk assessment is the process to estimate the nature and probability of adverse health effects in humans as a result of the proposed development. This assessment is focused on potential human health effects related to potential emissions, either during the construction phase or the operational phase. However, it is acknowledged that people may experience annoyance or other disturbance e.g. from temporary effects of the construction phase. Annoyance or other similar disturbance is not in itself a health effect, and it is also noted that the proposed development is not a greenfield development but is set within the context of an existing Landfill facility with long-established operations. Local residents are therefore accustomed to living in the general environment of an operational landfill and the changes proposed are unlikely to be perceptible in terms of noise or other disturbances during the operational phase.

The assessment of potential impacts resulting in health effects on the population is undertaken by way of the following assessments as detailed further below:

- Risk Assessment: to identify the potential risk to human health in response to identified hazards;
- Socioeconomic impacts on human health;
- Impacts on amenity resources and subsequent effects on human health; and
- Potential for psychological effects

In performing the actual assessment in terms of human health protection, emissions during the Construction or Operational Phase of the Proposed Project will need to be identified and compared against reliable Health Based Standards. Reliable sources of the standards may be regulatory such as the EU, such as Air Quality Standards, or based on expert opinion such as is provided by the WHO as is the case with the noise guidelines. The IEMA document notes that public health has three domains of practice:

- Health protection;
- Health improvement; and
- Improving services.

It suggests that these three domains should be considered in the assessment of health in EIA. Examples of health protection issues to be considered could include issues such as chemicals, radiation, health hazards, emergency response and infectious diseases whilst health improvement issues could include lifestyles, inequalities, housing, community and employment. Examples of improving services issues could include service planning, equity and efficiencies.

WHO defined health in its broader sense in its 1948 constitution (WHO, 1948) as:

"a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

Therefore, whilst the EPA guidance is useful in terms of health protection, for a more holistic assessment as per Institute of Environmental Management and Assessment publications, it is also worthwhile to look at broader health effects in terms of opportunities for improvement of health and for improvement of access to services. While it is important to do this, it is also important not to attribute every conceivable event as being a health effect. To further rely on the WHO definition, a health effect would be something that would have a material impact on somebody's physical mental and social well-being be that positive or negative.

The surrounding environment for Drehid is rural in nature with residential properties located around all boundaries at varying distances from the landholding boundary. The proposed development footprint is positioned within the central part of the landholding and hence is significantly set back from noise sensitive properties

The site factors affecting the likelihood or otherwise that a landfill leads to potentially harmful population exposure include: engineering and containment, hydrogeology and topography, the type and quantity of waste contained, the mixing of contents, the presence and depth of leachate and the management practices. A number of medical publications are discussed relating to the potential for the proposed development to have an effect on human health in the surrounding areas. Appropriate guidelines are also discussed in the chapter.

All emissions from the facility under the proposed development at Drehid Waste Management Facility will be in compliance with the ambient air quality standards and will not lead to a substantive risk of non-compliance or odour nuisance. There is a negligible effect predicted due to increased vehicle emissions during the operational phase. There are no significant effects anticipated for noise during the construction or operational phases either. Given that there will

be no effect on water quality standards, the effects on human health from water are assessed as Imperceptible.

While we take for granted that our waste will be safely and efficiently collected and disposed of this would and could not happen without appropriate facilities for dealing with this waste. Having adequate facilities including landfill facilities to deal with MSW is an essential part of health improvement. The alternative would be unsafe handling of waste material which could only have deleterious health effects. Therefore, we can say that for regional and even a national level, the proposed facility, by being part of the solution for municipal solid waste management, will allow for health improvement or to look at it another way would prevent health deterioration that might arise with the lack of such facilities.

An existing landfill and waste management site has been present on this site since 2008. In all likelihood, the psychological impacts of the proposed additional facilities would be relatively small. One could argue with that in a do-nothing scenario that there will be inadequate landfill facilities going forward. This would extend far beyond the site itself and could have impacts on regional and national economic growth. In such a scenario, adverse psychological impacts from increased unemployment or potential difficulties dealing with waste could have adverse effects. Having the landfill facilities and capacity to help manage some waste is a central part of the waste management cycle. The additional facility proposed here will assist in providing that needed capacity and will ensure that peoples' bins continue to be collected and handled safely and thus protect health and wellbeing.

6.0 BIODIVERSITY

An ecological impact assessment on the biodiversity associated with the proposed development, including an assessment of cumulative impacts was undertaken on the local biodiversity, including but not limited to habitats and protected fauna.

An assessment of the potential effects on the integrity of European sites and their qualifying interests/special conservation interests was undertaken and is presented within a Natura Impact Statement, submitted as part of the planning application.

6.1 METHODOLOGY

The methodologies used to determine the value of ecological receptors, to characterise impacts of the proposed development and to assess the significance of impacts and any residual effects were undertaken in accordance with the following guidelines: '*CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester*' and the '*NRA (2009) Guidelines for Assessment of Ecological Impacts of National Roach Schemes*'.

The ecological impact assessment was informed by a combination of a robust desktop assessment and targeted ecological surveys undertaken by qualified and experienced TOBIN ecologists.

6.2 EXISTING ENVIRONMENT

There are no sites designated under the EU Habitats Directive and EU Birds Directive, i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) which overlap with the footprint of the proposed development site. Hydrological connectivity however was identified between the proposed development to the following European sites; River Barrow and River Nore SAC (002162), the River Boyne and Blackwater SAC (00229), the River Boyne and River Blackwater SPA (004232 and the Boyne Coast and estuary SAC (001957).

The assessment of Nationally designated site, i.e., Natural Heritage Areas (NHA) and Proposed Natural Heritage Areas (pNHA) identified eleven sites with hydrological connectivity from the proposed development site; the Barrow Valley at Tankardstown Bridge pNHA (000858), Clohastia pNHA (000830), Barrow River Estuary pNHA, Barrow Valley at Tankardstown Bridge pNHA (000858), Clohastia pNHA (000830, Barrow River Estuary pNHA (000698), Waterford Harbour pNHA (000787), Duncannon Sandhill pNHA (001738), Trim pNHA (001357), Boyne Woods pNHA (001592), Crewbane Marsh pNHA (00553), Rossnaree Riverbank pNHA (001589), Dowth Wetland pNHA (001861), Boyne River Island pNHA (001862) and Boyne Coast and Estuary pNHA (001957).

During habitat surveys, the proposed development site was predominantly found to comprise of recolonised cutover bog and large patches of bog woodland with several heavily modified large drainage ditches across and along the perimeter of the site. In general, the habitats were degraded in nature due to recent disturbance and fire damage. The habitats present within the proposed development were all assessed as being of Local Importance. No habitats of International or National importance were identified within the proposed development site. In addition, no protected or rare flora were recorded.

During fauna surveys, evidence of badger (*Meles meles*), red deer (*Cervus elaphus*) and common frog (*Rana temporaria*) were recorded within the proposed development site. Low levels of bat activity were also recorded foraging and commuting within the site.

No bird species listed on Annex I of the EU Birds Directive were recorded within the proposed development site. The bird species recorded are common species typically found within the Irish countryside. Of note, however, are the recordings of three species of high conservation concern (Red Listed), which included snipe (*Gallinago gallinago*), woodcock (*Scolopax rusticola*) and kestrel (*Falco tinnunculus*).

6.3 POTENTIAL IMPACTS

Potential impacts assessed included those relating to the lifetime of the project which considers the construction, operational and decommissioning phases.

The construction of the proposed development will result in a direct effect on habitats in the form of habitat loss. The degradation of habitats will also arise as a result of surface water quality impacts (runoff of construction phase materials), air quality impacts (dust generation) and the potential introduction of invasive plant species.

The main potential impacts to protected fauna species included disturbance and indirect impacts via habitat loss. The main disturbance impacts were identified as noise associated with construction works and artificial lighting. Disturbance impacts will be short-term, and fauna within the zone of influence are sufficiently mobile so as to temporarily relocate from works areas. The loss of habitat has the potential to effect protected fauna species within the vicinity of the proposed development, however, similar alternative habitat is present within the surrounding environment.

There is potential for water quality impacts and the degradation of aquatic habitats in the Cushaling River and the Mulgeeth Stream which is hydrologically connected to the proposed development site.

The potential for other plans or projects to act cumulatively with the proposed development was considered, whereby no residual cumulative effects are anticipated.

6.4 MITIGATION MEASURES

A Construction Environmental Management Plan (CEMP) has been prepared and is included within this Planning Application.

A suitably qualified Ecological Clerk of works (ECoW) will be appointed by the Contractor. The ECoW will be experienced in the management of peatland habitats and will oversee all construction works and monitor any possible sources for impacts for the duration of the construction programme. The ECoW will guarantee the construction phase of the proposed development will be undertaken in strict agreement with the methods prescribed within the CEMP and will have the power to stop the works in case any activities/works are not compliant.

Additional mitigation measures include, but are not limited to:

- All surface water emissions and sedimentation will be controlled
- Stormwater monitoring of all receiving watercourses will be undertaken during all phases of the proposed development.
- All vegetation clearance will be kept to a minimum and works areas will be demarcated prior to the construction works commencing.

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- Where feasible, the clearance of vegetation will be undertaken outside the bird nesting season (1st March to 31st August).
 - Use of bog mats and wide track machinery to reduce soil erosion and impact to bog habitat.
 - Biosecurity measures will be implemented throughout the duration of the construction works.
 - The replanting of peat tolerant plant species will be undertaken in areas to mitigate the permanent loss of habitat. Further details are provided within the Habitat and Enhancement Management Plan.
 - Pre-construction surveys will be undertaken to identify any new resting sites of protected species within the Zol of the proposed development.

6.5 RESIDUAL IMPACTS

The design of the proposed development has considered the existing ecological conditions within the receiving environment. Following the implementation of the proposed mitigation and enhancement measures associated with the construction, operational and decommissioning phases, it is anticipated that there will be no significant residual effects on biodiversity, at any geographical scale. The mitigation measures are based on best available scientific evidence; therefore, confidence can be placed in their likely success resulting in the protection of biodiversity.

7.0 SOILS, GEOLOGY AND HYDROGEOLOGY

Chapter 7 presents the assessment of likely significant effects of the Proposed Development with regard to soils (mainly peat), geology and hydrogeology during Construction, Operational and Post-Closure Phases. It also presents potential cumulative effects in relation to known other projects in and near the Drehid Waste Management Facility (WMF) site.

This Chapter 7 directly addresses the refusal points that were cited by An Bord Pleanála (ABP) in November 2020 :

- Mainly that the information presented in the previous EIAR (TCE, 2017) was insufficient to demonstrate that the subsurface geology of the site is suitable for the then proposed hazardous waste cell, referring to the site's high groundwater levels and outstanding questions around the permeability of the subsurface geology.
- That the hydrological and hydrogeological investigations presented in the previous EIAR were insufficient to conclude that the Proposed Development will not give rise to significant negative effects on groundwater and surface water receptors, with particular concerns about ammonia.

In relation to the first bullet, this Chapter 7 has taken regard of the decision by BnM to abandon the hazardous waste element of the planning application. As described in Chapter 2 of the EIAR, only non-hazardous waste will be landfilled.

With regard to the second bullet, this Chapter 7 presents an assessment of likely significant effects which:

- Is based on a more detailed description of baseline conditions, supported by expanded site investigation and monitoring activity.
- Proposes mitigation measures that are informed by the updated description and understanding of baseline conditions, including the permeability characteristics of the subsurface geology.

The assessment of likely significant effects considers:

- The influence of ammonia leaching in the bog on groundwater quality.
- Groundwater-surface water interactions.
- The scale and influence of groundwater baseflow on the Cushaling River.
- The long-term monitoring of water quality that is necessary to continue to describe the existing environment, check compliance, identify effects, and judge the effectiveness of mitigation measures, during all phases of the Proposed Development.

In describing likely significant effects, this Chapter 7 has also taken regard of the Timahoe South Bog Decommissioning and Rehabilitation Plan which was prepared by Bord na Móna (BnM, 2022) in connection with the Peatlands Climate Action Scheme (PCAS) , and which is regulated by the National Parks and Wildlife Services (NPWS) on behalf of the Department of Housing, Local Government & Heritage.

The groundwater flow system immediately beneath the landfill expansion area is defined by Quaternary age sediments of glacial origins, and peat. The Quaternary age sediments for primarily a low-permeability environment, but higher permeability lenses and sand/gravel channels are also interpreted to be present based on updated site investigation data. Such lenses or channels will serve to transmit groundwater preferentially towards the Cushaling River. Monitoring data shows that groundwater flow across the WMF and the landfill expansion area is towards the Cushaling River, both in the Quaternary sediments and bedrock. Groundwater flow directions in the northern part of the landfill expansion area are also

presently influenced by the under-cell drainage system which exists beneath the WMF. Shallow groundwater flow is further locally influenced by the open drainage network in the bog, whereby relative water levels in groundwater and in the drains interact hydraulically at a local level.

The bedrock beneath the landfill expansion area is naturally protected by the Quaternary age sediments which are more than 10 m thick (a range 10 to 22 m is documented from the boreholes drilled). This confirms the 'Low' groundwater vulnerability setting which has been mapped by the Geological Survey Ireland. The bedrock comprises limestone, which is weathered and fractured, and fractures tend to be infilled with sediments, including clay. Overall, the bedrock displays low-permeability characteristics.

Nevertheless, shallow groundwater provides environmental supporting conditions for the bog and limited baseflow to the Cushaling River. The baseflow component is <20% of the mean estimated flow in the river (which is approximately 0.03 m³/s). Groundwater and surface water are hydraulically interconnected and water levels respond similarly to changing climatic conditions.

Groundwater quality in TSB, including the WMF and planned landfill expansion areas, is characterised by:

- Consistently elevated concentrations of ammonia, above groundwater screening values.
- Generally low concentrations of other leachate indicators, including chloride, which are below groundwater screening values and within normal ranges.
- Periodically elevated concentrations of certain metals (notably As, Ba, Fe, Mn, Ni), above groundwater screening values.
- Absence (non-detects) of organic compounds, which are below laboratory limits of detection.

There are no clear spatial patterns in the available groundwater quality data, noting that:

- Elevated concentrations of ammonia and certain metals also occur in wells that are located side gradient of, and distant from, the WMF.
- Elevated concentrations of ammonia and certain metals were also recorded in wells that were sampled at the WMF location in the period 2003-2007, before the WMF was constructed and became operational in 2008.

Based on the significant environmental database and chemical loading estimates that are presented in this Chapter 7, it is considered that:

- The consistently elevated ammonia in groundwater is linked to leaching of ammonia from the extensively drained bog. Total ammonia concentrations are elevated across TSB, including remote areas of the bog (see also Chapter 8).
- The recorded metals are naturally occurring in the Quaternary sediments and bedrock, and are leaching as a function of the prevailing geochemical conditions in both.

With regard to the metals, both pH and the oxidation-reduction state of water exerts an important control on hydrochemistry, influencing the preservation (or degradation) of ammonia, mobilization or sequestration of naturally occurring metals, and the generation of by-products such as dissolved iron. The natural geological and hydrogeological conditions which have been documented across TSB in this EIAR can account for the variability that is observed in the trace metals data.

Monthly compliance monitoring of groundwater quality conducted by BnM as part of BnM's environmental and compliance reporting to EPA shows that groundwater quality in wells that are sampled under the existing WMF license are within compliance limits.

With regard to potential effects arising from the Proposed Development, the Proposed Development will result in the permanent loss of 49.4 hectares (ha) of residual peat in the Proposed Development area. This represents 3% of the total area of Timahoe South (1,707 ha). The permanent loss of 49.4 ha of residual peat is an inevitable consequence of the landfill expansion.

Earthworks will also result in the removal of subsoil material beneath the peat, across an area of approximately 35.75 ha. This is also an inevitable effect, to accommodate the expanded landfill cells. The subsoils that will be removed are not economically or otherwise important/sensitive, hence, potential effects are not significant.

During construction and operations of the expanded landfill, there also exists a potential for the Proposed Development to negatively affect the groundwater environment within the subcatchment of TSB that drains to the Cushaling River (see Chapter 8 of this EIAR). However, in context of the planned design (including the landfill liner and leachate collection system), and with implementation of proposed mitigation measures, risks of impact are significantly reduced and are manageable, as evidenced by the past construction and operations of the existing WMF. The main residual environmental concern at the Drehid site is elevated ammonia concentrations in groundwater and surface water, but this is linked with drainage of the TSB as a whole. The latter is addressed further in Chapter 8 of the EIAR.

As such, the Proposed Development will, by itself, not have any likely significant effects on the receiving groundwater environment. As a result, there are no identified risks of impact to any offsite designated sites or protected areas which have groundwater as their source or environmental supporting conditions.

In the future, existing groundwater conditions to the north of the existing WMF and east of the Proposed Development will be locally influenced by the implementation of other projects that are planned in TSB, notably the passing of the Shannon Pipeline across the northern part of TSB and the implementation of the TSB Decommissioning and Rehabilitation Plan. However, no likely significant cumulative effects will arise from the interaction between the Proposed Development and these other projects.

8.0 WATER

Chapter 8 presents the assessment of likely significant effects of the Proposed Development on the surface water receiving environment during Construction, Operational and Post-Closure Phases, and considers potential cumulative effects with other projects near the Drehid site.

Chapter 8 is structured around the technical points that were cited by An Bord Pleanála (ABP) in their previous refusal of planning permission in November 2020, by clarifying and considering:

- The causes of ammonia loading to surface water courses in Timahoe South Bog (TSB).
- The relative chemical loads of ammonia to the Cushaling River from the existing Waste Management Facility (WMF) and wider Bord na Mona landholding in TSB.
- The form of ammonia that is present in Cushaling River, which is relevant to the potential toxicity to fish in context of Quality of Salmonid Water Regulations of 1988.
- The compliance of existing discharges with BnM's industrial emission discharge license conditions.
- The expected ammonia loads from the planned landfill expansion and expected effect(s) of combined discharges on ammonia concentrations in Cushaling River.
- The mitigation measures that are proposed to limit the emissions of ammonia, suspended solids and other constituents as a basis for protecting and/or improving the water quality and aquatic habitat of the Cushaling River.
- The recommended monitoring of discharges to Cushaling River, to continue to document environmental conditions, check for compliance, and judge the effectiveness of mitigation measures during all phases of the Proposed Development.

The focus of the assessment is firmly on the Cushaling River as the principal surface water receptor of concern. In the ABP refusal cited above, ammonia was highlighted as the principal pollutant of concern for aquatic life in the Cushaling River. The refusal considered that the EIA for the previous planning application (TCE, 2017) had not adequately determined the principal and relative magnitude of sources of ammonia currently experienced in the river. For this reason, Chapter 8 provides a re-examination of ammonia to determine relative contributions from different sources as a way to identify and justify the most suitable mitigation measures and expected effects on the river.

Importantly, Chapter 8 has taken regard of the existing Timahoe South Bog Decommissioning and Rehabilitation Plan (BnM, 2022) which has been prepared by BnM as part of the broader Peatlands Climate Action Scheme (PCAS) and to comply with Condition 10 of the Industrial Pollution Control Licence Ref. P0503-01.

In Chapter 8, the assessment of likely significant effects is rooted in a detailed description of baseline environmental conditions within TSB, which is summarised herein. In effect, TSB is an extensively drained bog in a flat topographic setting. The existing drainage network within TSB lowers water levels and changes the structure of the peat. Water levels in drains rise and fall seasonally and with individual storm events. The fluctuating water levels in the peat contribute to decomposition and mineralisation of organic nitrogen by microbial activity which results in the leaching of nutrients to ammonia. The leaching is a complex process which is regulated by a range of environmental factors, such as water levels, temperature, pH, oxidation-reduction ('redox') potential, organic matter content and quality, nutrient content, and stage of decomposition.

Leaching occurs because the peat is ammonia saturated. Ammonia-rich surface water in the bog is then directed to the Cushaling River via flowing water courses within the drainage network.

Along the way, in-stream nitrification (as a result of increased aeration) transforms the ammonia to nitrate in the downstream direction.

Leaching also raises ammonia concentrations in shallow groundwater, which flows under prevailing hydraulic gradients and interacts with drains.

The ammonia in surface water, including Cushaling River, is present in two forms: as unionized ammonia (NH₃, or 'free ammonia') and as ionized ammonia (NH₄⁺, or ammonium). This is an important distinction because the unionized form of ammonia (NH₃) can be toxic to fish. The relative fractions of NH₃ and NH₄⁺ in water depend on both the pH and temperature of the water. As pH and temperature increases, so do concentrations of NH₃ relative to NH₄⁺.

Based on all available data from surface water samples collected to date, NH₄⁺ is the dominant form of ammonia that is present in TSB drains and the Cushaling River. This is demonstrated in Chapter 8 by calculations which factor in the maximum recorded concentrations of total ammonia, pH and temperature in the available water quality records. In all cases, concentrations of NH₃ are significantly lower than the 0.02 mg/L threshold for "non-ionized ammonia" (i.e., NH₃) that is stipulated in S.I. No. 293/1988 - European Communities (Quality of Salmonid Waters) Regulations, 1988.

The main contribution of ammonia to surface water courses, including the Cushaling River, is both historically and currently from the bog, and not the WMF. Based on the combined consideration of flows and concentrations in discharges from the WMF and streams, calculations in Chapter 8 demonstrate that the chemical load of ammonia from the bog are one to two orders of magnitude higher than loads from the WMF. The existing integrated constructed wetland (ICW) that is associated with the WMF is especially effective in attenuating ammonia from the WMF discharge waters, whereby ammonia concentrations attenuate by up to one order of one order of magnitude across the ICW.

The new attenuation lagoons and ICW system that will serve the planned, expanded landfill are designed to achieve greater attenuation rates still. As explained in Chapter 2 of the EIAR, the expected discharge concentration of total ammonia from the new ICW will be 0.14 mg/L (as N).

The data analyses presented in Chapter 8 also demonstrate that the current discharges from the existing WMF comply with emission limit values that are stipulated in BnM's operational discharge license. All of the available data demonstrate that historical emission values from the WMF are lower than license-stipulated emission limits. The same is expected of the new attenuation lagoons and ICW system that will serve the planned landfill expansion. Thus, past operational experience from the WMF serve to guide the planning, design and implementation of the Proposed Development, including the types and locations of mitigation measures that are necessary to protect local water courses.

Under the future construction stages and operational phases of the Proposed Development, proposed water management measures will reduce the inherent risks of affecting the water quality and aquatic habitat of Cushaling River. The risks are mainly represented by phases of earthworks and accidental spills and leaks. Earthworks especially involve excavation, movement and staging of peat and subsoils. Risks of effects to water courses are managed by implementing best practice approaches and methods which follow existing guidance by institutions like Inland Fisheries Ireland and are further guided by practical experiences from the existing WMF. Means and methods of construction and operations are written into contracts which will be supervised at all stages of development. Extensive visual checks and monitoring of water courses, including sampling, will be undertaken at regular intervals, also

during all stages of development, as a way to identify potential effects such that corrective action can be taken immediately upon discovery.

Proposed mitigation measures fall into three basic categories:

- Source controls, involving the use of swales, silt fences, straw bales, flume pipes, sand bags, oyster bags (e.g. filled with gravel), and filter fabrics. Flexibility to adapt methods will be required based on location-specific conditions, as judged by supervising engineers.
- In-Line controls, involving the use of silt fences, straw bales, check/silt dams and flume pipes.
- Treatment systems, involve the use sediment traps and attenuation lagoons.

A drainage management scheme is proposed which will assure that chemical and suspended matter loads from the WMF and the landfill expansion area will always pass through an attenuation lagoon and ICW system before being discharged to surface water courses, including Cushaling River. Until the stormwater management and attenuation lagoons/ICW system for the expanded landfill are established under Stage 1 of construction of the Proposed Development, any water that is collected/contained during construction activity will be directed/pumped to the existing perimeter swale and attenuation lagoons/ICW system that is associated with the WMF. Once the new stormwater management and attenuation lagoons/ICW system are constructed for the expanded landfill, all subsequent water collected in the expanded landfill area will be directed to the new attenuation lagoons for licensed discharge via the new ICW.

An EPA license to discharge from the new ICW will be in place before construction of the Proposed Development commences. The planned discharge from the new attenuation lagoons and ICW system will, therefore, be subject to both extensive monitoring and compliance checking of license conditions.

The main anticipated change to the current baseline state of the surface water environment in TSB will be related to the implementation of the TSB Decommissioning and Rehabilitation Plan. This is a separate initiative by BnM, and is separate from the Proposed Development. The Proposed Development will, however, interact with the plan, and this interaction has been considered as part of the cumulative assessment of likely significant effects. Specifically, the TSB Decommissioning and Rehabilitation Plan will serve to raise water levels within the bog, thereby reducing the leaching potential of ammonia and other constituents, and reducing the potential for sediment mobilisation and transport. Planned efforts to re-wet the peat will be augmented by efforts to create wetlands, and the expected, combined environmental effect of the plan that is relevant to Cushaling River is reduced chemical and sediment loading to the river.

It is not possible to quantify the anticipated effects precisely or with certainty, but it is possible to judge the concepts as technically sound. With lower expected total loads, ammonia concentrations in the river will be lowered. This is expected to result in an improvement of water quality and aquatic habitat in the river. In this manner, BnM is addressing the leaching and concerns about ammonia from the wider landholding in an integrated manner.

There are no designated sites or protected areas immediately downgradient of the Proposed Development. The nearest designated sites or protected areas which are hydrologically linked to the Proposed Development, either directly via the Cushaling River or indirectly via the Blackwater (Longwood) River, are the River Barrow and River Nore Special Area of Conservation (SAC) to the south and the River Boyne SAC to the north, respectively. Both are more than 30 km from the Proposed Development and the potential for being affected by the Proposed Development is considered remote in both cases.

9.0 MATERIAL ASSETS

This chapter of the EIAR deals primarily with land use, waste, and utilities. Material Assets can relate to both finite and renewable resources, which can be of a natural or anthropogenic origin and may arise for either economic or cultural reason. Some of these resources, such as minerals, stone, soil, water, air, traffic & transportation, human health and amenity resources are discussed in other chapters of the EIAR.

The proposed development site is located within a segment of land within the Bord na Móna landholding (known as the Timahoe South site). While the site of the proposed development includes the existing access road and the existing Waste Management Facility (WMF) infrastructure, the works footprint of the proposed development is located to the east of the existing access road and directly south of the existing Drehid Waste Management Facility.

Land use on and adjacent to the proposed development site is primarily disused cutaway bogland which was used for production of sod peat for energy generation up to the late 1980's. Sod turf production / peat extraction ceased within the proposed development site in 1987. 1989 was the last year of sod turf production (known as bagger turf) for the rest of Timahoe South site. There are no public amenities on the proposed development site such as walking routes. There are no agricultural, horticultural, or commercial forestry activities taking place on the site of the proposed development.

Immediately adjacent to the proposed development site are peatlands which are being managed by Bord na Móna to promote regeneration. Outside the larger Bord na Móna landholding there are areas of land where turbary peat extraction is evident (this is also found occasionally within the landholding), while commercial forestry and agricultural usage are also present.

While there are some overhead electricity lines within the study area it is also possible that there might be some underground electricity cables discovered during the proposed works, particularly near existing buildings and infrastructure.

There are a number of waste facilities within the landholding. The existing landfill and composting facility are located to the north of the proposed infrastructure. Monaghan Mushrooms Ltd. have a facility to the west of the site on the R403 Regional Road. No illegal waste activities or chemical monitoring points were identified within a 2 km radius of the proposed development site.

Construction of the proposed development will see a continuation of recent activity within the Bord na Móna land holding where land use is changing from regenerating cutaway bog to built ground with large scale waste management infrastructure and light industrial buildings. These land uses are already established in the wider site.

Direct and permanent change to the land will occur locally where the proposed development will be physically located resulting in a land take for the proposed development and change in land use at the proposed site. The magnitude of change within the proposed development site is considered high given the stark change in land use and the permanent nature of the proposed works within the site footprint.

However, the subject site is not currently being utilised for any agricultural, horticultural, commercial forestry or amenity use and the proposed development does not therefore result in for example the removal of productive land from potential agricultural or other beneficial uses. The proposed development is therefore considered to have potential for a permanent moderate negative effect without mitigation.

Several mitigation measures have been taken to reduce the physical imposition of the proposed development on the land. 3-D modelling was used during the design process to optimise the sizing of the facility and minimise the proposed land take and potential effects on Material Assets. The areas required for earthworks have been minimised. An Autotrack model was ran to ensure truck movements would not use inappropriately excessive space. This minimised the areas that required topsoil stripping and surfacing with gravel and/or bitumen. The proposed contractor's yard for the construction works was designed to be big enough to fulfil its requirements without being so large that it would cover too much space. The minimisation of the footprint that works will take place in through modelling and calculations has minimised the potential effects on land use.

Retention of all existing vegetation and regenerating peatland where possible and sufficiently protect the areas close to construction works. The main long-term mitigation measure will be the staged grassing of the mounds as each section is completed. Small shrubs will also be planted on the capped landfill to mitigate long term impacts relating to the proposed development. The proposed mitigation such as vegetation retention and planting will minimise the effects where they are unavoidable. Identified adverse effects will reduce, in tandem with the maturing of the existing and retained vegetation as well as the proposed planting within the Bord na Móna land holding. There will be a permanent slight negative effect on land use in the area after mitigation is applied.

It is not anticipated that there would be any significant underground utilities encountered during the construction of the proposed project, with the exception of the onsite underground electricity and water services. In the unlikely event that any unknown services are discovered, there is the potential to briefly impact on supplies to the existing facilities, causing a potential brief slight negative effect.

The proposed development will have the potential to produce municipal solid waste (from the site office, canteen), wastewater (from the site welfare facility) and construction waste (wood, packaging, metal, etc.) which will need to be processed at the appropriate proposed processing facility. Segregation of waste will be carried on site to maximise the potential for waste recycling and minimise any potential for effects on waste services.

Wastewater from the staff welfare facilities will be collected and routed to a new primary treatment tank. This sanitary wastewater will be blended with landfill leachate, as per current sanitary wastewater management, and removed off-site on a regular basis to Uisce Éireann WWTP's or other approved waste facilities. It is proposed to use low volume flush toilets to reduce the volume of wastewater produced.

The proposed development will be a nationally important piece of waste infrastructure, and as such will have a long term significant positive impact on waste services. The proposed development will divert waste from being exported to other countries for treatment/disposal there.

As per the current licensed facility, a Closure, Restoration and Aftercare Management Plan (CRAMP) will be required to be agreed with the EPA setting out the criteria for successful and safe decommissioning of the site including the putting in place of a financial provision to cover the cost of same. As the proposed landfill will be left in situ after it has reached capacity (i.e. at the end of its life), the lands within the footprint of the landfill development will remain as waste

infrastructure, albeit with a grassed over cap. The proposed Soil & Stones and C&D Waste (rubble) processing facility will be removed, with the metal shed and plant being readily recyclable. The proposed composting and MSW processing facility is not proposed to cease operation when the landfill reaches capacity. It is anticipated to continue operating into the future for as long as it is seen as viable or required. The office and infrastructure such as the weighbridge will remain in use for this facility. There will be relatively minor works required upon decommissioning to remove other infrastructure required for operation of the landfill (signage, etc.) if they are not being used for other purposes on the site. Potential impacts to land use for decommissioning will be imperceptible. There are no anticipated impacts to utilities and services in the area.

10.0 NOISE AND VIBRATION

10.1 INTRODUCTION

The noise and vibration assessment addresses the potential noise and vibration effects associated with the proposed extension to the Waste Management Facility (WMF), to be located within the overall Bord Na Mona Landholding at Timahoe, County Kildare.

10.1.1 Methodology

The study has been undertaken using the following methodology:

- A review of annual noise monitoring surveys conducted as part of the existing licensed WMF has been undertaken in order to characterise the prevailing noise environment at the nearest noise sensitive locations (NSLs);
- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction and operational phases of the proposed development;
- Noise calculations have been performed to determine the range of construction noise levels at the nearest sensitive locations to the development site;
- Noise calculations have been performed to assess the potential impacts associated with the operational and decommissioning phase of the development at the nearest sensitive locations surrounding the development site, where relevant;
- A schedule of control measures are included to reduce, where necessary, the identified potential impacts relating to noise and vibration from the proposed development, and;
- An assessment of the potential cumulative impacts of the proposed development with surrounding planned or permitted developments has been undertaken.

10.2 RECEIVING ENVIRONMENT / BASELINE DESCRIPTION

The existing environment within the Bord na Móna landholding is a remote location, containing an operational landfill with associated infrastructure and a Composting Facility. The current noise environment is surveyed on an annual basis to comply with the existing EPA IE Licence. The results of the most recent annual surveys (2020, 2021 and 2022) have been reviewed and confirm that the operation of the existing facility contributes very low noise levels to the surrounding environment over day and night-time periods and complies with the facilities IE noise licence conditions.

10.3 POTENTIAL EFFECTS

The predicted construction noise levels are all below the recommended noise thresholds which have been set to avoid significant effects at the closest noise sensitive locations. This is due to the nature of the proposed works and the significant distances between construction activities and the nearest noise sensitive locations. Vibration effects during the construction phase will be imperceptible at the nearest sensitive properties given the absence of any significant vibration generating activities during this phase and the significant distances between site works and the nearest sensitive buildings.

Operational noise levels associated with the existing Drehid WMF the proposed development are below the licence noise limits during all periods assessed at the closest NSLs. There is no perceptible increase in noise level associated with the proposed development compared to the existing scenario. This is due to activities associated with the proposed development being similar to those associated with the existing scenario.

The assessment has concluded that there is no perceptible change in traffic along the surrounding road network operational and construction traffic is to the existing road network will be of minor to moderate effect.

10.4 MITIGATION MEASURES

10.4.1 Construction Stage Mitigation

During the construction phase involving the construction of new buildings and internal access roads, all plant items will be required to comply with the best practice standards from BS5228: 2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise and Part 2 Vibration, which offers detailed guidance on the control of noise and vibration from construction activities.

10.4.2 Operational Phase Mitigation Measures

During the operational phase of the proposed development, the site will be constructed and operated to ensure the main noise generating activities are contained within the on-site buildings and external activities are operated with as minimum noise effect as possible. This will include restricted hours of operation and ensuring all plant and equipment is regularly serviced. The predicted noise levels at the closest noise sensitive locations during this phase are deemed to be not significant and long term.

10.5 CONCLUSION

The proposed development is predicted to be in full compliance with all applicable noise and vibration limit values during both the construction and the operational phases of the development during both the day and night scenarios. As such no significant noise and vibration effect is predicted from the proposed scheme.

11.0 LANDSCAPE AND VISUAL IMPACT

11.1 INTRODUCTION

The Landscape and Visual Assessment described the landscape context of the proposed development and assessed the likely landscape and visual impacts of the proposed development on the receiving environment.

Production of the Landscape and Visual Impact Assessment involved a desktop study to establish an appropriate study area, relevant landscape and visual designations in the County Development Plan as well as other sensitive visual receptors. A 2 km radius study area was deemed appropriate for type of development in the area in which it is being proposed. This stage culminated in the selection of a set of potential viewpoints from which to study the effects of the proposed development. subsequently fieldwork was undertaken to establish the landscape character of the receiving environment and it helped to confirm and refine the set of viewpoints to be used for the visual assessment stage.

11.2 METHODOLOGY

When assessing the potential impacts on the landscape resulting from the proposed development, the following criteria were considered:

- Landscape character, value and sensitivity;
- Magnitude of likely impacts; and
- Significance of landscape effects.

Where the sensitivity of the landscape to change is the degree to which a particular landscape receptor can accommodate changes or new elements without unacceptable detrimental effects to its essential characteristics. And where the magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed development. And where the significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact.

11.2.1 Visual Assessment Criteria

The visual impact of the proposed development was also assessed as a function of the sensitivity of a visual receptor weighed against the magnitude of the visual effect. The assessment of the sensitivity of visual receptors considered factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. The magnitude of visual effects was determined on the basis of two factors; the visual presence (relative visual dominance) of the proposed development and its effect on visual amenity. The significance of visual impacts were determined as a function of visual receptor sensitivity and visual impact magnitude.

11.2.2 Quality and Timescale of Effects

In addition to assessing the significance of landscape effects and visual effects, EPA Guidance for EIAs requires that the quality of the effects is also determined. This could be negative/adverse, neutral, or positive/beneficial. Landscape and Visual effects are also categorised according to their duration:

- Temporary – Lasting for one year or less;
- Short Term – Lasting one to seven years;

- Medium Term – Lasting seven to fifteen years;
- Long Term – Lasting fifteen years to sixty years; and
- Permanent – Lasting over sixty years.

11.3 BASELINE ENVIRONMENT

The location of the proposed development is situated within a Bord na Móna land holding, in relatively flat low-lying cutaway bogland, adjacent to an existing landfill in operation. The Bord na Móna land holding and the lands surrounding it are generally averaging between 80-90 mOD. The maximum height of land within the area surveyed is 142 mOD (Carbury Hill, approximately 6.5-7 km to the northwest). The existing landfill, as it has been gradually capped and grassed, has created a new rising land form within the bog. The introduction of this land use has also included the construction of access roads, car parks, buildings, attenuation and storage areas within the cutaway bog.

The cutaway bogland consists of areas of open peat, low vegetation, regenerating woodland and scrub vegetation of varying heights. The existing landfill is serviced by a 4.8 km long internal, private haul road, used only by HGVs and trucks bringing material to and from the site, and by staff vehicles. Regenerating vegetation is increasingly enclosing the views within the bog. There is significant existing screening vegetation located within the western sections of the Bord na Móna land holding and along sections of the eastern and southern boundary.

While the bog includes areas of tall vegetation, its primarily open nature contrasts with the surrounding landscape. The Bord na Móna land holding is generally surrounded by agricultural pastureland with a well-developed pattern of medium-sized and larger fields and an established hedgerow infrastructure. An area of forestry is located on the eastern side of the site.

There is a relatively dispersed low-density population located within a 2 km radius of the existing landfill site. The population density increases beyond the 2 km, in particular to the west, south and east of the site.

The local road L5025 (Derrymahon Road) traverses the Bord na Móna land holding approximately 0.8 km north of the existing landfill. The R403 regional road runs to the west and south of the lands, via Derrinturn and Allenwood. The R402 regional road runs to the northwest, and the remainder of the study area is served by a local road network. There are residential and farm properties along all of the surrounding roads, with a higher density of settlement around Derrinturn and Allenwood.

The Grand Canal runs 3-4 km to the south and southwest of the application site, via Allenwood and Robertstown.

11.3.1 Kildare County Development Plan

A landscape character assessment was produced in 2004 for the Kildare County Council and has influenced the current Kildare County Development Plan 2023-2029 (KCDP). Map 13.1 in the KCDP outlines the indicative Landscape Character Areas (LCAs) in the County. County Kildare is divided into 14 geographically specific LCAs, of which, the Site is shown to be in an area of 'The Western Boglands LCA'.

The Western Boglands LCA is located in the western central part of the County. The landscape character assessment (2004) describes the 'Western Boglands' LCA as being '*characterised by flat topography and smooth terrain... This area of the county is highly distinctive due to the existing large areas of bogland vegetation. The commonly large sized open lands are often*

bordered by unmaintained hedgerows, which contain scattered trees, and have the potential to partially screen adjacent lands. Nevertheless, the generally low vegetation and the even ground provide extensive long-distance visibility).

LCA 'The Western Boglands' has been designated a 'Class 3 – High Sensitivity' and states that the landscapes classed as having high sensitivity have a "reduced capacity to accommodate uses without significant adverse effects on the appearance or character of the landscape having regard to prevalent sensitivity factors."

11.3.1.1 Principal Landscape Sensitivity Factors

Map 13.2 of the KCDP indicates the location of the Principal Landscape Sensitivity Factors across the county. The site is located within the 'Peat Bog' Principal Landscape Sensitivity Factor.

11.3.2 Landscape Sensitivity

The proposed development site is located in the Landscape Character Area 'Western Boglands'. The sensitivity of this LCA has been described as 'High' in Kildare County Development Plan. However, the development will adjoin a similar existing facility and will be entirely located within cutaway bogland, which represents a degraded landscape as recognised by landscape policy LL5 the Kildare CDP. On balance of these reasons, and in accordance with the criteria outlined in the assessment methodology, the overall landscape sensitivity is deemed to be **Medium-low**.

11.3.3 Visual Sensitivity

Eight Viewshed Reference Points were selected and used as a basis to study the visual impacts of the proposed development in detail which reflect a range of different visual receptor types, distances and angles. From a visual perspective the Construction Phase impacts of the proposed development are considered to be equivalent or less than the Operational Phase impacts; thus, the assessment of visual impacts focused on the Operational Phase effects.

11.4 POTENTIAL IMPACTS OF THE PROPOSED PROJECT

11.4.1 Landscape

The proposed development will continue the emerging trend within the Bord na Móna land holding – a landscape changing in character from regenerating cutaway bog to large scale waste management with light industrial buildings. The existing Drehid Waste Management Facility is located immediately adjacent to either side of the proposed development and the proposal will appear as a contiguous development. However, the proposed landfill mounds will ultimately be higher than the existing mound resulting in an increase in the overall height of landfill mounds in this location.

In general, the greatest landscape effects will arise from changes to landform and existing vegetation within the land holding. Outside the Bord na Móna land holding, recognisable changes to the landscape character will be limited due to the flat nature of the overall study area and significant intervening vegetation, which will prevent the full recognition of the scale of the landform changes within the land holding. Effects will be limited and localised and concentrate in parts of the wider landscape outside the Bord na Móna land holding to the east, north, northeast and west. These areas will experience adverse landscape effects related to partial visibility of the proposed development components. There will be no significant change to the

landscape character in low lying areas to the southwest, south and southeast beyond 2 km of the site.

The significance of residual landscape effect is considered to be **Moderate-Slight**. This is less than 'significant' in EIA terms.

11.4.2 Visual

The proposed development is located in a mainly flat, basin-like landscape and therefore even relatively low vegetation can provide screening within the wider landscape. The highest visual effects tend to occur where there is no intervening vegetation between the viewer and the proposed development, or where the viewer is at an elevated viewing position. While the development will be openly visible at close range within its immediate vicinity within the Bord na Móna land holding, all views of the proposed development outside of the Bord na Móna land holding will be partially screened by topography or vegetation.

Open and extensive cross-country views are rarely possible due to the mainly flat nature of the majority of the study area. The most open views of the proposals will be from locations identified along the L5025 (Derrymahon Road) to the north of the site as well as to the west near the end of an access lane leading into the bog from the R403 just south of Derrinturn. Photomontages have been prepared for eight viewshed reference points to illustrate the nature of these views. The visual impacts were appraised at these eight viewshed reference point locations which cover a wide variety of viewing distances and angles as well as a range of receptor types. A summary of the sensitivity, magnitude of visual effects and the significance of impacts for each of the viewpoints is summarised in Table 11-8 below:

Table 11-8 Summary of Visual Impacts at Viewpoints

Viewpoint	Visual Receptor Sensitivity	Visual impact Magnitude	Significance of Impact	Significance of Residual Impact
VP1	Medium	Negligible	Imperceptible	Imperceptible
VP2	Medium-low	Negligible	Imperceptible	Imperceptible
VP3	Medium-low	Negligible	Slight	Imperceptible
VP4	Medium-low	Medium	Moderate-slight	Slight
VP5	Medium-low	Medium-low	Slight	Slight-imperceptible
VP6	Medium-low	Negligible	Imperceptible	Imperceptible
VP7	Medium-low	Negligible	Imperceptible	Imperceptible
VP8	High-medium	Negligible	Imperceptible	Imperceptible

The significance of visual impact is deemed to be 'Imperceptible,' at most of the selected viewpoints because the visual change will be difficult to discern. Impacts will be marginally greater at VP4 and VP5 as the landfill mound will be identifiable; however, there will be no material reduction to the visual amenity at these locations.

The proposed development will not be visible from any of the scenic viewpoints as recognised by KCDP.

12.0 AIR QUALITY AND CLIMATE

AWN Consulting Ltd. has been commissioned to carry out an air quality, odour and climate impact assessment including an air dispersion modelling study of odour and air emissions from the existing facility, and the licensed waste management activities and proposed development at Drehid Waste Management Facility (WMF) at the townlands of Timahoe West, Coolcarrigan, Killinagh Upper, Killinagh Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown, County Kildare. The proposed development provides for additional landfill infrastructure, a new Municipal Solid Waste (MSW) processing facility, additional composting infrastructure, a new soil & stones and construction and demolition (C&D) rubble processing facility and increased throughput of waste to the existing compost facility. The chapter is prepared in line with the Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022).

Receiving Environment

In terms of the existing air quality environment, baseline data and data available from similar environments indicates that levels of nitrogen dioxide, carbon monoxide, particulate matter less than 10 microns and less than 2.5 microns and benzene are well below the National and European Union (EU) ambient air quality standards.

Ireland declared a climate and biodiversity emergency in May 2019 and in November 2019 there was European Parliament approval of a resolution declaring a climate and environment emergency in Europe. This, in addition to Ireland's current failure to meet its EU binding targets under Regulation 2018/842 results in changes in GHG emissions either beneficial or adverse being of more significance than previously considered prior to these declarations.

Data published in 2022 (EPA 2022) predicts that Ireland exceeded (without the use of flexibilities) its 2021 annual limit set under EU's Effort Sharing Decision (ESD) (EU 2018/842) by 2.71 million tonnes CO₂ equivalent (Mt CO₂eq). Waste accounted for 1.4% of Ireland's 2021 emissions, with 707 kt CO₂eq of the total 937 kt CO₂eq generated from landfills. Biological treatment of solid waste accounted for 50 kt CO₂eq.

Air Quality and Odour Dispersion Modelling

Air quality and odour dispersion modelling was carried out using the United States Environmental Protection Agency's regulatory model AERMOD to assess the additional impact of the proposed development. The proposed developments that were included in the model are:

- Development of new landfill infrastructure with increased capacity to accept suitable non-hazardous wastes for a period of 25 years ;
- Increasing the volume of biowaste accepted at the compost/MSW facility;
- Removing the restriction on the operational lifetime of the compost facility, as contained in Condition 2(2) of An Bord Pleanála Decision Ref. PL.09.212059;
- Development of new maintenance building and conversion of the existing maintenance building into a new staff welfare facility; and
- All associated infrastructure and landscaping works required.

The aim of the study was to assess the contribution of operational emissions of NO₂, PM₁₀ / PM_{2.5} and Odour from the proposed development to off-site levels of these pollutants. There is no set rating for significance with respect to odour however as the worst-case odour impact remains significantly below (71%) of the guidance value the impact is describes as at worst, slight. In accordance with EPA Guidance can be classed as a slight, long term, reversible and localised impact at the worst-case location. At the worst-case receptor this ambient NO₂

concentration (including background) which is 20% of the maximum ambient 1-hour limit value (measured as a 99.8th%ile) and 23% of the annual limit value.

Traffic Modelling

The potential impact due to operational traffic is assessed with respect to the impact on nearby (within 200 m) sensitive receptors (i.e. residential properties, schools, hospitals, sensitive ecology) by an 'affected' road link as per TII Guidance (TII 2022). Traffic impacts due to the further development have been scoped out from any further assessment as there is no potential for significant impacts to air quality.

GHG Emissions

GHG emissions associated with the construction phase have been calculated using GE-ENV-01106: TII Carbon Assessment Tool for Road and Light Rail Projects and User Guidance Document (TII 2022). As calculated using the TII Online Carbon Tool (TII 2022) the proposed Project will result in total Construction Phase GHG emissions of 77,569 tonnes CO₂ eq over a 25-year period or 3,103 tonnes annually.

The operations phase breakdown of organic material that occurs in landfills releases a combination of methane and carbon dioxide, a process that occurs on a timescale of 100 or more years. The proposed development has some beneficial potential with respect to climate by diverting waste from direct landfill and directing suitable waste to the Composting Facility. There is an increase from the currently permitted scenario of 9,947 tonnes CO₂eq annually or 0.03% in terms of Ireland's obligations under the EU 2030 Target or 1.26% of Ireland's 2030 "Other" Sectorial Emission Limit ("other" includes waste emissions). If the contingency capacity of an additional 30,000 TPA MSW is not utilised the increase reduces to 356 Tonnes CO₂eq.

In addition to operations phase emissions from the breakdown of waste, embodied emissions associated with operational energy are estimated to be 20,391 tonnes CO₂eq over a 25-year period or 815 tonnes CO₂eq annual.

In accordance with the significance criteria noted in Table 6.7 of PE-ENV-01104 with consideration for compliance with the extent to which the trajectory of GHG emissions from the project aligns with Ireland's GHG trajectory to net zero by 2050 and the level of mitigation taking place is considered moderate adverse, national and long-term. The increase of the composting capacity does comply with Action: CE/23/6 from CAP23 to enhance food waste segregation, collection and treatment (anaerobic digestion and composting) and the requirements to divert biodegradable municipal waste from landfill under the Landfill Directive target by the use of waste segregation and composting. The development of the new MSW Processing and Composting Facility provides further infrastructure to screen out recyclable materials which can be diverted from the less preferred waste treatment options of energy recovery and disposal to landfill. The infrastructure will support the move away from landfilling of MSW by maximizing the recovery of materials from the MSW stream. The reduced reliance on landfilling in Ireland is a welcome progression and the commitment to reduce MSW disposal to landfill to 10% by 2035 will support the reduction of carbon emissions as set out on the CAP23.

Climate Change Risk Assessment

A risk assessment has been conducted for potentially significant impacts on the Proposed Project associated with climate change during the Operational Phase. Design mitigation

measures have been put in place in order to mitigate the risk of future climate change vulnerabilities.

13.0 ARCHAEOLOGY AND CULTURAL HERITAGE

Chapter 13 of the EIA presents a baseline study of and impact assessment on the cultural heritage of the Site and the surrounding area. Site visits and desk studies were undertaken to identify and record any archaeological, architectural, and cultural heritage assets which may be affected by the Proposed Development. The significance of effect on an asset is considered by establishing the asset's value/sensitivity, and how that may be impacted based on the proposed design of the Development.

One recorded monument (KD008:038 – A road - Unclassified Togh) is located in the area of the proposed development infrastructure. No trace of this monument survives above ground and the monument is not scheduled for inclusion in the next revision of the Record of Monuments and Places. Archaeological monitoring of the cleaning of existing drains (License 16E0467) in the area of this monument revealed nothing of archaeological significance (Rooney & Fitzpatrick 2016). The walk over survey conducted as part of this Cultural Heritage assessment identified no trace of this archaeological monument.

Three recorded archaeological monuments are located within the proposed development site boundary but are not directly impacted by the proposed development infrastructure. Immediately north of the existing facility, two trackways or toghers, (KD008-029001 & KD008-030) are recorded. KD008-029001- was a wooden trackway that crossed Timahoe Bog on an ESE-WNW orientation and intersected a second, oak, trackway (KD008-030----) mid-way across the bog, The monuments were partially excavated by E. Rynne in the 1960's and by Monroe in 1986, (O'Carroll, 2002). A walkover survey conducted in 2002 in preparation for the existing facility found no extant trace of either trackway. Subsequent monitoring of all excavations works associated with the existing facility (License 06E0746) revealed no features of archaeological significance.

The third monument located with the proposed development site boundary is an unclassified togher (KD009-029) located 40 m east of the Proposed Development infrastructure. It is recorded as a road-unclassified togher (L 178.4 m; Wth 3 m; D 0.12 m) that consisted of a number of transverse roundwoods lying on occasional longitudinal, with scatters of brushwood (diam. 0.02-0.06 m) nearby. Several of the timbers were burnt. No trace of this feature survives above ground or was evident in an examination of the existing drainage ditches and the monument is not scheduled for inclusion in the next revision of the RMP.

The monuments recorded within the proposed development site boundary have no significant surface element remaining therefore there is no significant visual impact on the setting. The proposed development infrastructure may be visible from surrounding monuments; however the visual impact of the development is negated by dense vegetation surrounding the site particularly to the east and south and the existing residual facility in the north.

No Protected Structures are located within the proposed development site. Coolcarrigan House and Church (Reg. B09-10, B09-11) are both Recorded Protected Structures located 1.2 km and 1.5 km to the south-east of the proposed development site. A mixed coniferous and deciduous tree belt along the eastern edge of the existing bog ensures that these structures are not visually impacted by the proposed development.

No features recorded in the National Inventory of Architectural Heritage are located within the proposed development site or surrounding area.

The proposed haul routes travel on existing national and regional roads and there are no proposed changes requiring ground disturbance.

Mitigation Measures prior to construction

An experienced and competent licence-eligible archaeologist will be employed to undertake archaeological probing and testing at the site of the unclassified togher (KD008:038----).

An experienced and competent licence-eligible archaeologist will be employed to undertake archaeological probing and testing in the area of the proposed development infrastructure adjacent to the unclassified togher (KD009-029), located 40 m east of the proposed development infrastructure.

Fencing will be erected, under archaeological supervision, at the boundary of the proposed development site in the vicinity of two trackways or toghers, (KD008-029001 & KD008-030) located to the north of the existing landfill facility. The fencing will be erected to ensure that no construction traffic extends beyond the limit of the proposed development infrastructure in this area.

Mitigation Measures during construction

All ground disturbance associated with the construction of the proposed development will be monitored by a suitably qualified archaeologist working under licence as issued by the minister (DHLGH) under section 26 of the National Monuments Acts (1994-2014).

In the event of archaeological features, finds and/or deposits been encountered during the monitoring, all relevant authorities should be notified immediately. Preservation in-situ or preservation by record (excavation) may be required.

The cultural heritage assessment does not predict any significant effects on the cultural heritage resources identified in the EIA.

14.0 TRAFFIC AND TRANSPORTATION

14.1.1 INTRODUCTION

This chapter of the EIAR has been prepared to assess the potential impacts of the proposed development in terms of traffic and transport. The chapter has detailed the local receiving environment and traffic characteristics of the proposed development. The Chapter reports upon detailed and robust assessments of the potential impact of the proposed development on the operation of the local receiving road network.

14.1.2 Methodology

In order to model future Drehid WMF traffic characteristics the traffic at the existing Drehid WMF was studied by the examination of 5 no. years of weighbridge data and other site records for the period 2018-2022. The records aided in determining the existing Drehid WMF volume of operational traffic and the average tonnage per vehicle categorised by waste/material type. Existing weighbridge records include waste origins and so facilitated the construction of an assignment and distribution model for HGV traffic generated on the receiving road network.

Each line item on the weighbridge data recorded the waste types generally corresponding to the codes used in the European Waste Code. Therefore each line item was separated into the following categories;

- Construction & Demolition (C&D) fines and C&D rubble;
- Non-hazardous soils and stones;
- Municipal Solid Waste (MSW);
- Incinerator Bottom Ash (IBA);
- Bio-stabilised waste;
- Inert waste (soil & stone) for engineering purposes; and
- Waste to Compost Plant

The average load per vehicle was calculated for each type of waste and type of material transported. The volume of daily HGV movements has been calculated using the average tonnage for each waste category and average number of full days of operation counted from the weighbridge data over the period of 5 no. years.

The origins of materials transported are identified and these were separated by county to establish the distribution of regional HGV traffic. The haul route for each material was determined at both regional and local level by reviewing waste origin and journey time against the existing haul routes.

14.2 RECEIVING ENVIRONMENT / BASELINE DESCRIPTION

A baseline network traffic model for the traffic assessments was determined. The existing Drehid WMF is permitted to operate under licence to 2028 so, save for the year of opening in 2024 the baseline is the surveyed network traffic flows from which current landfill traffic has been removed. The existing volume of Drehid WMF traffic on the network was determined from the detailed weighbridge assessments for the two week period of the traffic counts. The baseline is derived from the 2022 traffic survey data from which the existing Drehid WMF HGV traffic has been subtracted. A series of future year baseline scenarios were calculated for the opening year and various future assessment years including 2024, 2029, 2039 and 2049.

14.3 POTENTIAL EFFECTS

The traffic generated during the construction phase was determined from a combination of 'first principles' method and 'Comparison' method where the construction of proposed buildings is based upon comparison with the construction of similar buildings. The traffic generated during the periodic construction of landfill cells has been based upon records of the applicants experience of previous comparable constructions associated with the development of the existing Drehid WMF facility.

A review of committed developments within the vicinity of the site that may have an effect on the same parts of the receiving road network was undertaken. This includes sites which have previously been granted planning permission but which are yet to be constructed or to become operational. On the basis of the review no specific cumulative assessment was considered necessary, but inherent in the calculations is consideration of economic development of the surrounding area which is accounted for in the application of national traffic growth rates.

The proportional difference in traffic flows on the receiving roads network was determined against the Baseline for the various assessment years and assessment scenarios which include the Operational Phase and Construction Phase.

The peak year for traffic impact arising from construction is 2024 when the assessments consider the construction of proposed buildings and the construction of new landfill cells. Since the existing Drehid WMF is permitted to operate under licence to 2028 and since the proposed and existing developments generate similar volumes of traffic it follows that the true impact of the proposed development in 2024 is only the traffic arising from the construction. In the absence of construction, up to 2028 the impact of the proposed development will be the same as that of the permitted development. Operational traffic only starts to have an impact on the baseline in 2029 after the current permission expires. Each of the assessments years considers operational traffic and separately traffic during periodic construction of landfill cells. Review of the traffic generation figures for the 2029 in both the operational and construction phases confirms that the traffic generation of the proposed development might best be characterised as a continuance of the existing Drehid WMF operations. The impact of development traffic in the 2029 and other future year scenarios is measured against the baseline network traffic model where the existing Drehid Landfill is assumed to cease operating in 2028.

In total 9 no. separate traffic scenarios are considered in this chapter as follows

- Scenario 1a: 2024 Operational Traffic
- Scenario 1b: 2024 Operational Traffic + Construction of Infrastructure + Landfill Cells
- Scenario 1c: 2024 Operational Traffic + Construction of Landfill Cells
- Scenario 2a: 2029 Operational Traffic
- Scenario 2b: 2029 Operational Traffic + Construction of Landfill Cells
- Scenario 3a: 2039 Operational Traffic
- Scenario 3b: 2039 Operational Traffic + Construction of Landfill Cells
- Scenario 4a: 2049 Operational Traffic
- Scenario 4b: 2049 Operational Traffic + Construction of Landfill Cells

The assessments show that the greatest impact arises in the 2029 scenarios. In the further future year analyses the traffic generated by Drehid WMF remains at a constant level whilst network traffic grows in line with general economic development so it follows that the proportional impact of the development traffic diminishes over time.

The results of the 2029 operational phase assessment shows the highest concentration in development traffic is on the R403 close to the development entrance. The greatest increase in total traffic is at the site access on R403 and is in the order of 1.0% AADT with the proportional HGV content increasing from 6.1% to 7.4%. The increase in light traffic numbers is less than 1% whilst the increase in HGV is 24-27.3%. The level of impact dilutes with distance from the site entrance. The R402 and L2002 connecting to R403 show increases in the order of 0.1 for LV traffic and an increase in HGV traffic of 15.4-17.5%. The increase in the total volume of traffic or AADT is 1.0% with an elevation in HGV content of less than 1%.

The direct impact on all roads is of lower order and close to 1.0% of total traffic flow.

The results of the 2029 construction phase assessment shows the forecast increase in LV traffic on R403 at the site entrance is 0.2-0.5%, the forecast increase in HGV traffic is 30-35% and the increase in the AADT is 1.8-2.4% with an elevation in HGV content from 6.1% to 7.8%. The R402 and L2002 show increases in the order of 0.1 for LV traffic and an increase in HGV traffic of 19-22.4%. The increase in the total volume of traffic or AADT is 1.2-1.4% with an elevation in HGV content from 5.8% to 6.9%.

In all cases, both operational and construction phases the forecast increase in traffic on the haul routes is significantly less than 5% which by reference to the evaluation criteria is of a magnitude that is negligible with respect to road network capacity including links and junctions. By the assessment criteria the likely impact can be categorised as imperceptible or slight where the section of the road link in the assessment is considered to be a sensitive location. The results of the detailed assessments show that development traffic will not have a significant impact on the operation of junctions on the haul routes. Given the order of magnitude of traffic generation no detailed capacity modelling of junctions is required. The traffic arising from the proposed development is similar in volume and has similar characteristics to existing Drehid WMF traffic and is likely to have a similar effect on road network capacity.

The forecast impact of development traffic during the operational phase of the proposed development when landfill cells are being constructed are comparable to that of the existing Drehid WMF and confirm that the forecast effect of the proposed development might for the application of practical judgement be considered akin to continuance of the existing operation beyond 2028.

It is self-evident that Kildare County Council has previously determined that the existing receiving road network is suitable to cater for the volume of traffic generated by the existing Drehid WMF and have in fact considered it suitable to accommodate not only that volume of traffic but also the additional traffic that would have been conjunctively generated by the MBT facility. It follows as reasonable that the existing haul routes are suitable to accommodate the current proposed development.

14.4 MITIGATION MEASURES

14.4.1 Construction Phase Mitigation

The following are measures that will be implemented to mitigate the traffic and transportation effects of the proposed development:

- Photographic survey of haul roads again, immediately prior to commencement of construction;
- Continuous monitoring of haul roads throughout the construction phase;

The Kildare County Council Roads, Transportation and Public Safety Department reviewed a scoping letter in relation to the proposed development submitted by Tobin Consulting Engineers dated 10th June 2016 (see Appendix 1-2 of the EIAR). The Roads Department responded to Kildare County Council Planning Section on the 11th July 2016. Within the Conclusion and Recommendation of this response was a request that a full structural assessment of the haul routes, to show pavement depths and subgrade, be undertaken. In compliance with this request, Pavement Management Systems were commissioned to undertake the following surveys (Appendix 14.2) on existing and proposed haul routes:

- 1) Falling Weight Deflectometer (FWD) testing.
- 2) Ground Penetrating Radar (GPR) and cores where required.
- 3) Road Condition Data (RCD) using Road Surface Profiler (RSP) including:
 - Digital Video (chainage and GPS referenced).
 - Visual condition survey from video survey using pavement condition index (PCI).
 - Ride quality survey using International Roughness Index (IRI).
 - Transverse profile for rut depth.

Surveys were carried out in June 2022. The surveys were undertaken in line with TII 'Guidelines for the use of the Falling Weight Deflectometer in Ireland'. As per the guidelines for two lane roads, the surveys were carried out in both traffic directions and at 50 m intervals with the tests being staggered in adjacent lanes.

The assessment did not include sections of the haul routes which were on motorway or national roads as these roads have been designed to cater for larger traffic volumes. The Reports for all of the testing mentioned above are shown in Appendix 14.2 and include drawings showing the haul routes and associated chainages.

The FWD level 1 survey covers the testing undertaken to assess the condition of the existing pavement layers and subgrade. The output from these are; D1 - overall pavement structural condition, surface curvature index (SCI) - the upper surface pavement condition, and D7 - the subgrade strength.

These detailed pavement condition surveys will underpin the determination of maintenance costs of the life of the scheme and will facilitate and assessment of pavement defects that may arise during the construction period. It is proposed that any direct impact of construction on road structure during construction works will be identified to Kildare County Council and a schedule of maintenance agreed and carried out under the appropriate licences.

14.4.2 Operational Phase Mitigation

The following are measures that will be implemented to mitigate the impact associated with the facility:

- Continuous monitoring of haul roads throughout operational phase;
- All contractors, delivering waste to the facility and removing outputs from the facility, and all construction contractors will undergo and induction progress and will ultimately be issued with a map of the permitted haul routes such that all materials imported into the site and exported out of the site are transported via the identified and agreed haul routes. A penalty system will be operated by Bord na Móna to ensure haulage operators comply with these requirements;

- Use existing wheel wash facilities at the Waste Facility during both the construction and operational phase to reduce the potential for deposition of dirt or detritus on the public road. The existing 4.8 km private access road also aids in this regard;
- Maintenance of warning signage on the approach to the entrance;
- Monitoring of parking requirements during the operational phase with additional spaces to be provided if required;
- Maintenance of site entrance ensuring visibility splays remain unobstructed; and;
- Monitoring of haul routes performance and continuing and ongoing review of haul routes with Kildare County Council.

14.4.3 Decommissioning and Reinstatement Phase Mitigation

As outlined in section 3.7 of Chapter 2 Description, decommissioning for the facility would relate to long-term aftercare, i.e., leachate and landfill gas management and the removal of all plant and equipment.

The potential effects of decommissioning the site on the capacity and operation of the receiving road network are not considered to be potentially significant effects. No specific mitigation is considered necessary.

14.5 CONCLUSION

In all cases, both operational and construction phases the forecast increase in traffic on the haul routes is significantly less than 5% which by reference to the evaluation criteria is of a magnitude that is negligible with respect to road network capacity including links and junctions. In accordance with the assessment criteria the likely impact can be categorised as imperceptible or slight where the section of the road link in the assessment is considered to be a sensitive location. The results of the detailed assessments show that development traffic will not have a significant impact on the operation of junctions on the haul routes. Given the order of magnitude of traffic generation no detailed capacity modelling of junctions is required. The traffic arising from the proposed development is similar in volume and has similar characteristics to existing Drehid WMF traffic and is likely to have a similar effect on road network capacity.

15.0 INTERACTION OF THE FOREGOING

In any development with the potential for environmental effect there is also the potential for interaction between effects of the different environmental aspects. The result of these interactions may either exacerbate the magnitude of the effect or may in fact ameliorate it. Table 15 1 overleaf outlines the different environmental aspects which have potential to interact as a result of the proposed development. These have been considered by the specialists when preparing this EIAR.

Table 15-1 Interaction between Environmental Aspects

Interaction Matrix	Biodiversity	Soils, and Geology and Hydrogeology	Water	Landscape and Visual	Land Use	Traffic	Air Quality & Climate	Noise and Vibration	Cultural Heritage	Population and Human Health
Biodiversity		√	√	√		√	√	√		
Soils, and Geology and Hydrogeology			√		√				√	√
Water										√
Landscape and Visual						√		√	√	√
Land										
Traffic							√	√		√
Air Quality										√
Noise and Vibration										√
Cultural Heritage										
Population and Human Health										

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