

BORDNA MÓNA

Naturally Driven

DREHID WASTE MANAGEMENT FACILITY (EXISTING FACILITY) ENVIRONMENTAL IMPACT ASSESSMENT REPORT

VOLUME I NON-TECHNICAL SUMMARY

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December 2018

TOBIN CONSULTING ENGINEERS



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1 INTRODUCTION

Bord na Móna Plc. (hereafter referred to as Bord na Móna) operates the Drehid Waste Management Facility (WMF), situated near Carbury, County Kildare. The Drehid WMF is an integrated waste management facility which principally includes a municipal solid waste (MSW) landfill and a Composting Facility. The Drehid WMF operates subject to an Industrial Emissions Directive (IED) licence, issued by the Environmental Protection Agency (EPA), (Reg. No. W0201-03) and subject to the planning approval for the facility.

An Environmental Impact Statement (EIS) was prepared and submitted to ABP in 2008¹ for the extension and intensification of landfilling activity at the facility which, at the time, was regulated by the EPA as a Waste Licensed facility (Reg. No. W0201-01). The EIS had been prepared in accordance with the requirements of the prevailing EIA Directive (Directive 85/337/EEC). This current Environmental Impact Assessment Report (EIAR) has been prepared to update the previous EIS in accordance with the requirements of the new Environmental Impact Assessment (EIA) Directive (Directive 2014/52/EU) which came into effect on the 16th of May 2017.

Bord na Móna intends to further develop the existing Drehid WMF and submitted a planning application to An Bord Pleanála (ABP) (ABP Ref. No. 300506) for the proposed works on the 20th of December 2017. As part of the further development works at the site, Bord na Móna are required to submit an application to the EPA for a new IED Licence for the overall facility. The new IED Licence will be sought to permit and regulate the activities of the proposed development works as well as the existing landfilling and composting activities currently licensed at the facility. This EIAR addresses specifically the existing landfilling and composting activities currently licensed at the facility (herein referred to as 'Existing Facility EIAR') and will be submitted to the EPA as part of the new IED Licence Application. The EIAR for the proposed development works (herein referred to as 'Proposed Development EIAR') will also be submitted to the EPA in support of the new IED Licence application.

The existing permitted development area, to which this Existing Facility EIAR refers, is confined to an area of 179 hectares (ha) which is the same area as was the subject of the previous EIS in 2008. The development is situated in the townlands of Timahoe West, Coolcarrigan, Killinagh Upper, Killinagh Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown, as outlined in red on the Regional Site Location Map in Figure 1.1.

This Existing Facility EIAR is being submitted to the EPA as part of an IED Licence Application and is an updated impact assessment appraisal from the EIS submitted to ABP in 2008. This EIAR is required to enable the EPA to complete an EIA for the existing facility in accordance with Directive 2014/52/EU.

¹ TOBIN Consulting Engineers, *Drehid WMF Intensification and Extension EIS (2008)*

1.1 EXISTING FACILITY AND PROPOSED DEVELOPMENT WORKS

A detailed description of the existing Drehid WMF is provided in Chapter 3 of this EIAR. In summary, the existing facility includes a permitted MSW landfill, composting facility, administration area, car park, access roads, weighbridge, settlement lagoons and ancillary infrastructure.

Bord na Móna intends to further develop the existing Drehid WMF and submitted a planning application to ABP (ABP Ref. No. 300506) for the proposed works on 20 December 2017. The proposed works are summarised as:

- Changes to the volume and nature of wastes to be accepted at the landfill disposal facility;
- Development of additional non-hazardous (250,000 TPA) and new hazardous landfill (85,000 TPA) capacity to provide for sustainable landfill of these waste streams for twenty-five years;
- Pre-treatment or processing of certain waste streams prior to landfill (including recovery from waste stream of non-hazardous waste of approx. 15,000 TPA metals);
- Increasing the volume of waste to be accepted at the composting facility and the removal of the restriction on the operating life of the composting facility contained in Condition 2(2) of ABP Ref No. PL.09.212059 including the following;
 - increase in the composting processing within the existing built composting infrastructure (increase by 20,000 TPA to 45,000 TPA within current infrastructure); and
 - extension to the existing composting facility to build further infrastructural capacity for an additional 45,000 TPA composting (a combined total of 90,000 TPA where all capacity would be licensed);
- On-site treatment of leachate; and
- Development of associated buildings, plant, infrastructure and landscaping.

Ongoing activities at the existing facility consist of the landfilling of waste materials in an MSW landfill at a maximum rate of 120,000 TPA and acceptance of suitable waste for composting in a Composting Facility at a maximum rate of 25,000 TPA. The engineered MSW landfill has a footprint area of approx. 39 ha and, when complete, will consist of 15 No. fully lined phases which are sub-divided into 3-6 No. separate cells (per phase) depending on the phase footprint area. BnM have been depositing waste in the MSW landfill since 2008 and the current status of landfilling activity at the facility is summarised as:

- Phases 1 to 4: Landfilling is complete and final capping has been put in place;
- Phases 5 to 11: Initial landfilling is complete and waste is being given time to self-compact. Temporary capping is in place;
- Phase 12: Current active phase and is accepting waste on a daily basis;
- Phase 13: Construction of lined cells completed in June 2018 and CQA Report approved by the EPA;
- Phase 14: Preliminary under-cell drainage and site preparation works completed in July 2018. Construction of Phase 14 is anticipated to recommence in 2020; and

- Phase 15: Stripping of peat has taken place to permit installation of a compound area for recent construction works for Phase 13 and Phase 14.

1.2 CONSULTATION

Various parties were consulted in the preparation of the EIS for the existing facility in 2008 and are detailed in Section 1.2 of the EIAR.

Pre-application consultation meetings were also held with KCC and the EPA in January 2008.

Consultation carried out as part of the planning application for the proposed development works (submitted to ABP in December 2017) are detailed in Section 1.6 of the Proposed Development EIAR. Additional consultation with the EPA has been carried out as part of the preparation of this EIAR.

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2 PLANNING AND POLICY

This section of the EIAR provides an evaluation of Planning and Policy in relation to the existing Drehid WMF. This Chapter should be read in conjunction with Chapter 1 (Introduction) and Chapter 3 (Description of the Existing Environment, Ongoing and Future Activities).

The existing Drehid WMF was granted permission by KCC in April 2005, under KCC Reg. Ref. No. 04/371 subject to a number of conditions. In November 2005, ABP upheld that planning decision with revised conditions (ABP Ref. No. PL.09.212059), following an appeal and an Oral Hearing. The EPA issued a Waste Licence for the facility in August 2005 (EPA Ref. No. W0201-01).

Under the aforementioned planning permission, and in accordance with the aforementioned Waste Licence, 120,000 TPA of waste can be disposed of to the engineered landfill site with an additional 25,000 TPA permitted for treatment at a composting facility. The operational life of this facility is 20 years.

This planning permission also provided for all associated site development works, including the development of an internal access road from the R403 regional road to the location of the landfill and composting facility. Construction of the facility commenced in August 2006 and it commenced accepting waste in February 2008.

Subsequent planning consents and revisions to the existing IED Licence are detailed in this Chapter of the EIAR.

Most recently, in December 2017, a planning application was made to ABP for development of additional waste infrastructure at the facility as outlined in Section 1.2 of the EIAR. The application for the proposed development was made directly to ABP 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.

ABP made a Request for Further Information on the 24th April 2018 which Bord na Móna responded to on the 22nd May 2018. The planning application is currently under consideration by ABP.

Section 2.1.1 of the EIAR demonstrates that the existing facility fully complies with the detailed requirements of all relevant statutory planning and development plans and policies, including the following:

- Planning policies set out in the National Planning Framework and Planning Policy Statement;
- Planning policies set out in the Regional Planning Guidelines for the Greater Dublin Area, 2010 – 2022; and
- Local and County planning and development policies as set out in the Kildare County Development Plan 2017-2023.

Compliance with polices set out in the Eastern-Midlands Region Waste Management Plan 2015-2021 is discussed in Section 2.4.1.9.

In conclusion, it can be seen that the ongoing operations at the existing Drehid WMF are in accordance with the relevant planning permissions, strategic planning and policy considerations and the waste management principles set out in the relevant strategy and guidance documents.

Compliance with the current relevant permissions, strategic planning and policy considerations is achieved principally through:

- Having full regard to and being in full compliance with all relevant Kildare CDP policies relating to the industrial development in the Western Boglands landscape character area;
- Supporting the policies of the Eastern – Midlands Region Waste Management Plan which seeks to ensure the on-going availability of landfill disposal capacity for non-hazardous municipal residual wastes in the region;
- Helping to achieve the objectives set out in the RPGs by providing options for the treatment of waste in the region;
- Playing an important role in addressing infrastructural requirements highlighted in the NDP by ensuring the provision of more efficient, effective and cost effective waste management infrastructure in the Greater Dublin Area;
- Supporting EU, national and regional waste policy objectives through the pre-treatment of bio-waste prior to landfill in the composting facility;
- Contributing to the national effort to meet targets set out in Government waste management policy aimed at increasing sustainability within the waste disposal sector in Ireland;
- Providing key physical infrastructure to support continued population and economic growth whilst managing waste arising in the State in a sustainable and self-sufficient way, as favoured by sectoral policy; and
- Providing an appropriately sized waste management facility at a suitable location which is positioned to take advantage of the inter-regional economies of scale required to ensure the most efficient treatment and disposal of waste.

3 DESCRIPTION OF THE EXISTING ENVIRONMENT, ONGOING AND FUTURE ACTIVITIES

This section of the EIAR describes the existing facility and the licensed waste management activities which are carried out at the facility. The design and construction of the existing facility are outlined and a detailed description of the various elements of the ongoing authorised waste activities are presented. A description and schedule of the planned future waste activities at the existing facility are also outlined.

The existing facility is located centrally within the overall Bord na Móna landholding. There is a planning permission in place for an MBT Facility which lies c. 700 m to the south of the existing MSW landfill mounds. Land use adjacent to the site is primarily disused cutaway bogland which was used for production of sod peat for energy generation up to 1993. Immediately adjacent to the existing facility site, there are areas of land where turbarry, commercial forestry and agricultural usage are ongoing.

Access to the existing facility is via an existing site entrance at the R403 regional road and provides accessibility via a network of regional routes which in turn link with the National Motorway network. The R403 runs south, and southwest and west of the site. The R403 joins the R402 at Carbury to the northwest of the site. The R402 connects to the M4 while the R403 connects to central and south County Kildare. The M4 (Dublin to Sligo/Galway) motorway is located approximately 8 km to the north of the site, while the M7 (Dublin to Limerick/Cork) motorway is located approximately 18 km to the south of the site.

The existing WMF at Drehid is regulated by the EPA in accordance with IED Licence Reg. No. W0201-03. The current IED Licence permits the following waste activities at the facility:

- Landfilling of non-hazardous residual waste up to 120,000 TPA; and
- Composting facility accepting up to 25,000 TPA.

The above waste activities are authorised at the facility until 2028 under the current IED Licence. The site layout is presented in Figure 3.1 and Figure 3.2 (aerial) of the EIAR.

3.1.1 Non-Hazardous Municipal Solid Waste Landfill

The main waste infrastructure at the existing WMF is the non-hazardous MSW landfill which accepts material that has been subjected to treatment, including waste arising from the operation of recovery facilities. Planning permission was granted for the construction of the landfill in November 2005 and the landfill commenced accepting waste in February 2008. The permitted acceptance capacity of the landfill is currently 120,000 TPA and the end of life of the landfill is 2028. On the basis of the average density of material received at the landfill including cover material, this equates to capacity for c. 84,000 m³ per year of incoming MSW for the life of the facility.

3.1.1.1 Current Status of Landfilling Activity

As of November 2018, waste has been filled into 12 No. of the 15 No. phases of the landfill. Waste material is currently being deposited in Phase 12. The construction of the liner system for Phase 13 was

completed in June 2018 and the Construction Quality Assurance (CQA) Report for the works was submitted to the EPA via EDEN in June 2018. Preliminary site preparation and sub-cell groundwater drainage works were completed for Phase 14 in June 2018, but no further construction works have been carried out to date.

3.1.1.2 Future Landfilling Capacity

Landfilling of waste in the MSW landfill will continue in accordance with the Conditions of the existing IED Licence for the facility until such time as a new IED Licence is issued to Bord na Móna for the facility, subsequent to which, the new Licence Conditions will be adhered to.

3.1.2 Waste Composition

The waste types accepted at the existing facility are outlined in Table 3.1 and are in accordance with Schedule A of the IED Licence.

Table 3.1: Waste accepted at the Existing Facility

Waste Type	Description	Receptor
Non-hazardous municipal, commercial and industrial wastes	Household, commercial or industrial waste which has been subject to pre-treatment to remove biodegradable content.	Landfill
Inert waste	Inert construction and demolition waste and glass.	Landfill
Source segregated bio-waste or organic fines	Household, commercial or industrial waste of an organic or putrescible character.	Composting Facility

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4 DESCRIPTION OF REASONABLE ALTERNATIVES

Chapter 4 of this EIAR provides a description of the reasonable alternatives. In respect of this EIAR for the existing facility, the waste infrastructure technology, sizing and site location has been determined and constructed in accordance with the planning permission and EPA Licence requirements imposed. The discussion on reasonable alternatives in this Chapter is presented as the decisions made to determine the site location, layout, size and technology for the landfill as part of the original planning submission.

4.1 ALTERNATIVE LOCATIONS

Prior to submission of the planning application for the Drehid WMF in 2004, Fehily Timoney & Co. on behalf of Kildare County Council identified the site at Drehid, as the preferred site in County Kildare for the development of a landfill, satisfying the general criteria as set down (at the time) in Annex I of the EU Directive on Landfilling of Waste.

This was achieved by means of identifying a number of exclusionary areas and then ranking the remaining sites using a number of headings. This process led to the shortlisting of three sites namely, Usk, Newtowndonore and Drehid. The site selection report showed the Drehid site as the most suitable of the three sites shortlisted and the Preferred Site for the location of a residual landfill.

4.2 ALTERNATIVE LAYOUTS

There was not a requirement to consider and document alternative layouts for the facility as part of the preparation of the EIS in 2004. Nonetheless, as outlined in the EIAR, the landfill mounds layout was optimised to avoid sensitive environmental areas such as natural watercourses, areas of bogwoodland, potential archaeological site and inferred geological faults etc. The landfill mounds were also sited to ensure maximum distance from residential receptors and from the public road. The natural woodland and regenerating bog provides natural screening to the site which is complimented by specific landscape measures as set out in Chapter 8.

Additionally, the compost facility layout has been optimised to make use of common site road infrastructure and allow for the simple transfer of composted material to the landfill for use as cover material.

4.3 ALTERNATIVE TECHNOLOGIES

It is acknowledged that disposal of waste to landfill is lowest preference for waste management on the waste hierarchy. This is due to a combination of regulatory, environmental and public pressures to find other avenues for managing municipal waste. Nonetheless, waste disposal by landfill is seen as an integral part of the EU Waste Management Hierarchy and will always be required, in some capacity, for the residual portion of the municipal waste stream, which cannot be handled by the more favourable options. The proposed further development of the Drehid WMF as set out in Proposed Development EIAR, outlines the need for landfill infrastructure to manage residual ash waste from the thermal treatment of municipal waste which highlights the ongoing need for landfill capacity in some form.

Alternative technologies and processes for biological treatment of waste were considered in the original EIS in 2004. In addition to composting, anaerobic digestion, vermiculture and ethanol production were considered. Composting remains a popular form of biological treatment and the continued regulatory requirement to divert biodegradable waste from landfill means that there is a growing demand for composting facilities to treat organic waste.

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5 BIODIVERSITY

This chapter presents the Biodiversity Impact Assessment of the existing permitted development and should be read in conjunction with the site layout plans and project description section (Chapter 3) of the EIAR. Details of the existing baseline conditions on site are presented, along with an assessment of any likely effects as a result of the ongoing waste activities at the site. Mitigation measures are also recommended, where required.

Desktop and field surveys informed the assessment and consultation was conducted with relevant statutory agencies as detailed in the Chapter.

5.1 RECEIVING 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) located within the footprint of the existing facility. In addition, there are no National or proposed National Heritage areas (NHA/pNHA) close to the site. The nearest designated site is Hodgestown Bog (NHA) which is located 3.5 km from the site.

No protected or rare floras were noted during surveys. No protected mammal breeding sites, including badger and otter, were noted on the site.

In general, the habitats present within the site consist of cutover bog which has been undisturbed in recent years. A mosaic of bare peat and re-vegetated areas occur with scrub, woodland, heath and grassland communities present.

Habitats evaluated as being of Local Importance (Higher Value) with common breeding bird species, Frogs, Viviparous Lizard and Common Lizard require mitigation consideration as each are considered key ecological receptors.

5.2 POTENTIAL EFFECTS

Given that this EIAR is being submitted to the EPA as part of an IED Licence Application and is an updated impact assessment appraisal from the EIS submitted to ABP in 2008; impacts are only assessed for operational stage works. Operational stage works are likely to include minor disturbance to fauna species. Potential effects are likely to result from activities related to the maintenance and operation of the facility (i.e. increased noise, traffic and daily human presence in existing facility).

Given the requirement for lighting within the existing facility; there is a potential to effect foraging bats, as excessive lighting and “spill over” of light into surrounding habitats can alter foraging routes and areas utilised. Some bat species require dark conditions for effective foraging.

The nature of the waste materials processed at the existing facility is likely to attract wildlife including pest species (e.g. rodents) which will require pest control activities. Indirect effects from possible control procedures to predator species (e.g. birds of prey and protected mammals) will require consideration to minimise indirect effects to species in the wider local area.

The routine action of personal and machinery within the existing facility may result in disturbance for local fauna (i.e. badgers, breeding birds, common frogs and smooth newts). However, given disturbance from the existing facility is not associated with accompanying immediate danger suggests that animals should be able to habituate to the disturbance over time. It is therefore considered that any possible impacts will be temporary in nature. Furthermore, it is considered that local fauna are likely to be now habituated to the status quo at the existing facility.

During the operation of the facility, there is potential for pollution of watercourses through leachate from the landfill, contaminated run-off from the hard-standing areas and wheel wash areas. Details on the potential impacts on water quality and the potential hydrological connectivity of the existing facility area with local ecological features (post mitigation) are addressed in Chapter 7 (Water) of the EIAR.

5.3 MITIGATION MEASURES

- External lighting has been minimised in its extent and usage as much as possible, so as to minimise disturbance to foraging bats. Where feasible, external lights should be cowed and limited only to areas where lighting is strictly required (as per Health and Safety minimum requirements); and
- Vermin control measures.

5.4 RESIDUAL EFFECTS

The key issue in determining the significance of residual effects is the expected timeframe of recovery for key biodiversity receptors.

Following the implementation of the mitigation measures presented above, predicted residual effects for the key biodiversity receptors are not expected to be significant. Only minor short-term effects to fauna species on site are expected. As the existing waste facility and entrance road are operational daily, local fauna species will already be acclimatised to an extent with regards to noise, traffic and human activity in the area.

5.5 CONCLUSIONS

The existing facility occupies an area of 152 ha, within the overall 2,544 ha Bord na Móna landholding. The habitats of the existing facility are no longer representative of the those found within the wider landholdings. The existing permitted development site largely consists of artificial surfaces, disturbed ground and embankments which can be categorised into six habitat classes. These habitats are evaluated as of local importance (lower value). This evaluation limits the potential for ecological significant effects.

The existing facility will not have any effects on any sites designated for conservation or protected flora.

In general, local populations of fauna will not be significantly affected as larger areas of alternative habitat are present surrounding the existing permitted facility within the overall landholdings. Proposed mitigation

measures outlined in this Chapter will seek to reduce any effects of the waste facility during operational phases on the biodiversity within the wider landholding.

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6 SOILS, AND GEOLOGY AND HYDROGEOLOGY

The existing facility occupies approximately 179 ha and is located in the southern portion of the landbank. The site investigation baseline assessment concentrated on the characterisation of the soil and geology environment within the southern portion of the Bord na Móna property, although the literature review focused on a wider area. The entire Bord na Móna landbank in this area has been utilised for approximately 50 years for the industrial harvesting of peat and, therefore, the soil environment is characterised at its current state, which is significantly altered from its original setting.

The baseline assessment of the soils and geology is concerned with an appraisal and description of the deposits within the site. The information contained in this Section has been divided into sub-sections, so as to describe the various aspects pertaining to soil and geology. The sub-terrain environment is described from the surface down, as this is considered the easiest method to describe and conceptualise the different layers occurring under the site. The groundwater movement through the various sub-terrain media is also described.

6.1 RECEIVING ENVIRONMENT/BASELINE DESCRIPTION

The principal dominant soil within the site comprises basin peat deposits. The existing facility has been positioned to, inter alia, minimise the volume of peat that is required to be removed. The contact between the peat deposits and the underlying glacial subsoil is very pronounced, with a sharp change between the two materials. The subsoils, which underlie the site, are predominantly low permeability tills. The till is underlain by a locally important aquifer.

No abstraction of groundwater occurs down gradient of the site or within 1 km of the site. There are no public water supplies or source protection zones within 5 km of the site.

6.2 POTENTIAL EFFECTS ON GEOLOGY AND HYDROGEOLOGY

Potential effects during the construction phase of the existing facility include activities associated with the movement, excavation and disposal of soils, contaminated materials (if present) and compaction of soils. This can result in temporary and permanent impacts on the geological environment.

In order to minimise any potential impact on the environment, including the soil, geological and hydrogeological environment (natural resource), avoidance of impact was incorporated into the design of the development.

Shallow soil removal along the landfill footprint and hardstand areas is almost completed with the exception of some works at Phase 15 required. However, the natural soil and geological environment has been impacted by past industrial activity undertaken within the property. The existing facility is approximately 179 ha of land within an overall landholding of 2,544 ha. The existing facility area of approximately 179 ha has resulted and will continue to result in a permanent change from industrial cutover peatland to industrial/commercial and low intensity grassland use. The geological and

hydrogeological environment over the remaining area within the landownership boundary (2,544 ha) will therefore remain unaffected by landfill activities.

Due to the nature of the existing facility, machinery is present and operational on the facility. This may lead to occasional accidental emissions, in the form of oil, petrol or diesel leaks, which could cause contamination if the contaminants entered the soil environment. Similarly, there is the potential for leakage of process water from the existing facility which could cause contamination of the soil and groundwater environment.

However, given that the existing facility is underlain with low permeability subsoil, the potential for migration offsite is low/negligible. Potential spillages that may directly or indirectly impact on the surface water environment in the area of the development, operational impacts are considered in Chapter 7 (Water). The natural soil and geological environment has been impacted by past industrial activity undertaken within the existing facility. Since the cessation of peat harvesting, the lands have largely remained unaffected by human activity or development. Some small scale, localised peat cutting still occurs at the margins of the existing bog to meet local requirements.

The greatest potential impact associated with the operation of the facility is the potential discharge of hazardous substances to the bedrock aquifer. A hydrogeological risk assessment (HRA) prepared in support of the Proposed Development EIAR (which includes the existing MSW Landfill) is included in Appendix 6.8.

6.3 MITIGATION MEASURES

The following mitigation measures have been employed on site for initial stages of construction of the permitted Drehid WMF. These mitigation measures will also be employed for the remaining phases of the existing landfill operations.

Occasional construction activities carried out at the facility which are deemed Specified Engineering Works are required to be notified to the EPA. Construction works carried out at the facility are and will continue to be carried out in accordance with a Construction Environmental Management Plan (CEMP) which the Contractor is required to supply to Bord na Móna. The CEMP outlines measures to ensure compliance with the IED emission limit values for the site during the construction works.

During the construction of the facility, and especially when excavation of unconsolidated material is required, standard approved working methods have been and will continue to be employed to reduce the risk to the surrounding environment. Exposed soil surfaces have the potential to flow from the site to surface water channels. Temporary and permanent water control measures, including sediment control measures and the attenuation lagoons will control the quality of any water discharged from the Drehid WMF as a whole.

The leachate storage tanks are located in a fully bunded area of the site. Surface water from this area is captured in a sump and pumped to the leachate storage tanks, where it is stored prior to being tankered from site and disposed of at a licensed facility as discussed in Chapter 3. No run-off from the leachate storage area is discharged or connected to the surface water network.

The design has also taken account of the groundwater protection response matrix and the protection of this natural resource. The design of the containment system is in accordance with the EU Landfill Directive. A composite basal lining system was developed to maximise the protection offered. This basal liner has already been installed for the existing landfill and will be utilised for the remaining phases of the landfill. The landfill is founded on stiff gravelly clay. The existing geotechnical design and slope stability assessment programme will continue to be implemented at the Drehid facility.

6.4 RESIDUAL EFFECTS

The existing facility is resulting in a permanent change from industrial cutover peatland to industrial/commercial and low intensity grassland use.

Due to the low magnitude of impact and low sensitivity of the surrounding environment, the residual impacts on the surrounding geological and hydrogeological regime at the site are considered to be minor and mainly long term in nature. Detailed mitigation measures have been provided with regard to the design, construction, and maintenance of the existing facility. It is considered that there will be no significant residual impact on the geological environment as a result of this facility.

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7 WATER

This Chapter presents an assessment of the potential impact of the existing facility on the water environment, including the use of this natural resource and should be read in conjunction with the site layout plans and project description in Chapter 3 (Description of the Existing Environment, Ongoing and Future Activities). Relevant mitigation measures are also presented in this Chapter.

The Bord na Móna landholding in this area has been utilised for the industrial harvesting of peat for approximately 50 years. Artificial drainage of the bog has resulted in an alteration of the natural hydrology and therefore this assessment details the surface water and groundwater environment in its current state.

7.1 RECEIVING ENVIRONMENT/BASELINE DESCRIPTION

The artificial drainage network heavily influences the current appearance of the bog. The entire site has been divided into a number of compartments, referred to as 'peat fields' due to the excavation of east-west trending artificial surface drains. All surface water draining from the facility drains to the west to the Cushaling River, which is a tributary of the River Figile. The River Figile is a sub-catchment of the River Barrow.

Extensive groundwater and surface water baseline sampling has been carried out on and adjacent to the site. The surface water sampling programme indicates that the background quality is generally good, however the setting of the site is naturally affecting the quality of water. The reducing environment of the bog is resulting in elevated ammonia, manganese and iron concentrations for example. The organic analysis indicates that pesticides, herbicides and organic solvents are not detected in the area.

Data on historical flooding is limited but the records do not indicate that flooding occurred at the facility or on the Cushaling River immediately downstream. No records of flooding were noted based on desk study information, preliminary flood risk assessment maps or on-site information. The Water Framework Directive (WFD) requires 'good water status' for all European waters. The Cushaling River was identified as at risk of failing to meet the objectives of the WFD by 2021.

7.2 POTENTIAL EFFECTS ON WATER

Potential effects on the surface water environment due to the existing facility are associated with water draining to the Cushaling River sub-catchment. The construction of additional landfill capacity has the potential to have a negative impact on the surface water environment if not managed properly.

All surface water draining from the operations area of the existing facility, from the sand and gravel borrow area, and from the clay borrow area, drain to the west to the Cushaling River, which is a tributary of the River Figile. The access road from the R403 to the facility entrance passes through the sub-catchment of the Abbeylough Stream, which is also a tributary of the River Figile.

The drainage channels within the permitted site area have been excavated to the base of the peat material. The drainage ditches within the existing facility both store water and transmit it to the central

drain and main discharge lagoon. The storage capacity of run-off water in the drainage network lessens the impact of sediment mobilisation to receiving water, due to the low velocity of the water and the retention time in the drains. The existing Timahoe Bog drainage infrastructure is utilised to manage surface water and to minimise the construction area footprint as described below.

The surface water drainage pattern will only be impacted in areas of the site where construction occurs. Drainage channels at the periphery of the site area are rerouted to minimise the volume of water that could potentially be impacted during the construction phase. The re-routing of the artificial drainage ditches does not significantly impact the receiving environment as the water continues to discharge to the main central drain and continues to discharge to the Cushaling River.

Water control measures and discharge management is maintained where construction occurs. The re-routing of drainage channels was already taken place during the construction of the existing MSW Landfill.

7.2.1 Operational Phase

Diesel fuel is currently stored in a 20,000 litre tank and kerosene fuel in a 5,000 litre tank, located at the Maintenance Building and Bunded Fuel Storage Area. These tanks are contained in a reinforced concrete bund and are covered with a roof. Drainage from the roof is directed to the surface water collection system.

Surface water runoff from all yard areas, buildings and impermeable hardstand areas is collected via a network of drainage pipes. This runoff passes through an oil interceptor prior to reaching the surface water attenuation lagoons and the ICWs.

Leachate generated from the landfill is collected through a leachate collection system. This system is designed in accordance with the Landfill Design Manual. The leachate is collected and pumped to the leachate storage tanks prior to export by tanker to an appropriately licensed WWTP.

The composting process generates wastewater in the form of leachate and condensate. Leachate is generated by the leaching of moisture from feedstock within the composting tunnels (particularly in the early stages of the process) to the floor of the tunnels. Condensate is generated by the cooling of high humidity process air (exhausted from the tunnels) in aeration system ductwork. This collected leachate is used in a closed loop system and does not generate surplus leachate.

The separate leachate collection systems are fully isolated from the surface water collection system. Therefore, there is no discharge of leachate into the water environment. As such, the physico-chemical assimilative capacity of the Cushaling River is not impacted by the operation of the existing facility.

At present, there is no potable water supply to the Drehid landfill facility. Potable water is delivered to the site to facilitate the welfare of the workforce. It is not proposed to use the groundwater natural resource at the landfill as background groundwater quality does not meet the drinking water standards. Groundwater is currently used as grey water for flushing toilets and dust suppression etc.

The operation of the existing facility has the potential to increase the rate of surface water runoff from this site due to the construction of new paved and hardstand areas. In order to provide the necessary attenuation, permanent surface water attenuation lagoons (4 No.) and ICW areas have been constructed. It should be noted that further attenuation is also provided by the existing attenuation lagoon located downgradient of the 4 No. attenuation lagoons constructed at the existing facility.

7.3 MITIGATION MEASURES

The purpose of the mitigation measures outlined herein is to minimise the direct and indirect impacts of the existing facility on the surrounding water environment during the construction and operational phases.

During both the construction and operational phases a high standard of environmental engineering practices has been and will continue to be implemented to minimise the impact of the facility on the surrounding surface water and groundwater environment.

Wash down and washout of concrete transporting vehicles takes place at a designated bin area to prevent cementitious material and water entering the surface water network. Waste material is removed from site to an appropriate waste facility, where required.

A number of drainage ditches have been excavated to divert existing surface water drainage away from the excavations and construction activities. Further detail on specific surface water management procedures is provided in the Specified Engineering Works submitted prior to commencement of construction activities.

7.3.1 Operational Phase

The leachate collection system is fully isolated from the surface water collection system during the lifetime of the facility. The 'Avoidance of Impact' was incorporated into the design of the landfill to have as low impact as possible on the groundwater environment.

The landfill liner contractor, in order to maintain the thoroughness of all aspects of their quality control, testing and installation regime, is required to establish a comprehensive quality assurance plan (CQA). Quality assurance is the responsibility of an experienced and fully qualified contractor.

A temporary cap is progressively installed to limit infiltration into the waste and subsequent generation of leachate, in accordance with the EPA landfill site design manual.

The attenuation lagoons have been designed to provide an adequate retention time to allow suspended solids to fall out of suspension prior to discharge of surface water to the receiving environment. The attenuation lagoons also serve as a fire water supply and as a supply of fresh water, thereby allowing reuse and recycling of water within the existing facility. Water is recycled within the existing facility where possible.

7.4 RESIDUAL EFFECTS

Due to the low magnitude of impact and low sensitivity of the surrounding environment, the residual impacts on the surrounding hydrological and hydrogeological regime at the site are considered to be slight and mainly long term in nature. It is considered that there is no significant residual impacts on the water environment as a result of this facility.

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8 LANDSCAPE AND VISUAL

This Chapter describes the landscape and visual effects associated with the ongoing and future activities at the existing licensed Drehid WMF, Co. Kildare. The Landscape and Visual Impact Assessment (LVIA) has been prepared as an update to the previous LVIA contained within the 2008 EIS regarding the existing site and takes into account the requirements of the new EIA Directive (Directive 2014/52/EU).

8.1 RECEIVING ENVIRONMENT / BASELINE DESCRIPTION

Site surveys undertaken by landscape architects assessed the character of the landscape and the most sensitive features and views. The site is located in the townlands of Killinagh Upper, Killinagh Lower, Drummond, Kilkeaskin, Loughnacush, Kilkeaskin and Parsonstown, Carbury, County Kildare within a Bord na Móna landholding, in relatively flat low-lying cutaway bogland with areas of regenerating vegetation, adjacent to the existing landfill in operation.

The Bord na Móna landholding is surrounded by agricultural landscape of medium-sized and larger fields, an established hedgerow infrastructure as well as bands and clusters of mature trees. 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 landholding and along sections of the eastern and southern boundary.

The Bord na Móna landholding is enclosed by a network of regional and local roads. An internal access road to the existing Drehid Waste Management Facility enters the landholding directly from the R403 in the southwest. Residential and farm properties are intermittently located 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 Bord na Móna landholding.

8.2 POTENTIAL EFFECTS

The following potential direct visual effects, direct and indirect landscape effects, as well the duration and nature of effects arising from the continuation of existing, ongoing and future activities, have been identified. Viewpoints / Photomontages have been prepared which illustrate the existing situation alongside the future scenario following cessation of current permitted activities.

The existing permitted facility and licensed activities relating to this EIAR comprises existing built elements, evolving landfill mounds and the implementation of future permitted mitigation measures following cessation of current permitted activities. The combined landfill footprint measures approximately 39 ha and comprises two separate landfill mounds, subdivided into 15 No. phases for the purposes of construction, filling and capping. The maximum final height, post settlement, of the landfill mounds will be 103.25m AOD. Existing building heights range between approximately 6 m and 11 m above the surrounding ground level to the ridgeline. The landfill mounds will become the tallest features over time. Following cessation, the magnitude of visual change in existing views will be determined by the visibility

of the completed landfill mounds as well as by the effectiveness of existing intervening screening vegetation and permitted landscape mitigation measures.

Views of the existing landfill mounds are generally well screened by intervening roadside vegetation and vegetation located between the existing development and publicly accessible roads.

8.2.1 Landscape Effects

Direct or indirect landscape effects on the fabric of the landscape and its receptors are closely related to the nature and extent of visibility.

The existing landfill and ongoing future activities will see the site develop as per the planning and licenced permissions currently in place. Following completion of all 15 No. phases of landfilling activity, the landfill mounds will have reached their designed maximum height and will be grass seeded following capping. Implemented mitigation measures will introduce a grassed environmental berm along the eastern, northern and western edges of the landfill mounds, and native woodland planting strips will be established across both the grassed environmental berm and landfill mounds. Following decommissioning, site infrastructure, plant and materials will be removed from the site, as outlined in Section 3.2.8 of the EIAR.

The existing facility site is located in the Landscape Character Area 'Western Boglands'. The sensitivity of this LCA has been described as 'High' in Kildare CDP. However, the existing development site is entirely located within cutaway bogland, which represents a degraded landscape as recognised by the Kildare CDP. The sensitivity of the development site itself as well as its susceptibility is therefore considered Low.

8.2.2 Visual Effects

The existing permitted development and ongoing future activities are located in a mainly flat landscape and therefore even relatively low vegetation can provide screening for sensitive receptors. As this EIAR updates the previous Landscape and Visual Impact Assessment contained within the 2008 EIS, the increased growth of existing and regenerating vegetation over the last ten years within and around the site has been taken into account within this assessment, resulting in an overall lowering of the significance of effects experienced. The highest visual effects tend to occur where there is no intervening vegetation between the viewer and the development, or where the viewer is at an elevated position. Where existing views are possible, they contain site activity and features including movement of large vehicles, surface material on the growing mounds, and heaped piles of stored landfill material. The situation following cessation will see the removal of this activity, with the greening of the site to include grass seeding and woodland planting on the two landfill mounds. The quality of effects are therefore considered Beneficial or Neutral as it is considered that following cessation of landfill works and the removal of building facilities, the site will be restored to a natural appearance, with a resulting visual improvement when compared with the existing situation.

8.3 MITIGATION MEASURES

The ongoing and proposed mitigation measures are summarised as follows:

- Native woodland mix planting on the northern perimeter of the site;
- Native woodland planting on landfill capping, in order to integrate the landfill into the existing landscape, and facilitate the potential development of the site into an amenity area;
- The formation of two lakes following decommissioning of borrow pits;
- Provision of hedgerow planting along the public road directly to the north of the site in order to limit the currently open views;
- The construction of a 5 metre high environmental berm, to enclose the development from the north, east and west of the landfill, will be planted with bands of native woodland mix. Remaining areas of the landfill mounds and the environmental berm will naturally revegetate over time.

8.4 RESIDUAL IMPACTS

Effective implementation and establishment of the permitted mitigation measures will have a beneficial impact and help to 'soften' landscape and visual effects associated with the existing development, particularly for areas located within 2 km of the existing facility site and elevated areas within 5 km and beyond. Previously identified adverse landscape and visual effects will reduce, in tandem with the maturing of the existing and retained vegetation as well as the previously permitted mitigation planting within the Bord na Móna landholding. The staged greening and future planting of the landfill mounds will be beneficial and helps integrating the development into the surrounding environment.

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9 LAND

This Chapter describes the effects on Land (with a focus on land use) of the existing infrastructure at the Drehid WMF.

9.1 RECEIVING ENVIRONMENT/BASELINE DESCRIPTION

The existing permitted development area, to which this Existing Facility EIAR refers, is confined to an area of 179 hectares (ha). The development is situated in the townlands of Timahoe West, Coolcarrigan, Killinagh Upper, Killinagh Lower, Drummond, Kilkeaskin, Loughnacush, and Parsonstown, as outlined in red on the Regional Site Location Map in Figure 1.1.

The existing Drehid WMF is situated approximately 3 km to the south-east of the village of Derrinturn and approximately 2 km west of Timahoe Crossroads.

9.1.1 Land Use

The existing facility is located centrally within the overall Bord na Móna landholding. There is a planning permission in place for an MBT Facility which lies c. 700 m to the south of the existing MSW landfill mounds. Land use adjacent to the site is primarily disused cutaway bogland which was used for production of sod peat for energy generation up to 1993. The land around the site boundary consists of the flat lying and gently undulating topography typical of cutaway peatland. Immediately adjacent to the existing facility site, there are areas of land where turbarry, commercial forestry and agricultural usage are ongoing. An aerial image of the existing landfill infrastructure within the Timahoe bog is shown in Figure 3.2.

The existing facility is situated in relatively flat low-lying cutaway bogland with pre-development levels ranging from 84 m to 86 mOD. Whilst the topography throughout the overall landholding is also relatively flat at 80 to 90 mOD, screening of the site operations from the adjoining roads are provided by existing hedgerows and tree lines. The remote nature of the location of the facility footprint, lying approximately 0.8 km south of county road L5025, 2.7 km from county road L1910 and 3.3 km from regional road R403, provides considerable separation distances between the facility and adjacent roads.

9.2 POTENTIAL EFFECTS ON LAND

As described in detail in Chapter 3, the existing facility includes an MSW landfill, composting facility and associated infrastructure and has a site redline boundary area of 179 ha. The main infrastructure at the existing facility comprises the landfill footprint, which has an area of 39 ha. The landfill has been gradually developed since the commencement of construction in August 2006, with additional phases created for waste deposition as required and then progressively capped and grassed, creating a new rising land form within the bog. As of July 2018, 13 No. of the 15 No. landfill phases have been constructed and waste has been placed in Phases 1 – 12. Preliminary groundworks have commenced for construction of Phase 14 and peat stripping has been completed for Phase 15.

The activities at the existing facility continue the emerging trend within the Bord na Móna land holding of land changing in use from regenerating cutaway bog to large scale waste management with light industrial buildings. There are no agricultural, horticultural or commercial forestry activities taking place on the subject lands. The change in land use resulting from the existing facility is in accordance with relevant planning and environmental authorisation. While the overall land holding has a history of large-scale peat extraction, the pre-development site consisted of re-vegetating cutover bog with a mosaic of bare peat and revegetated areas with scrub, woodland, heath and grassland communities present. The development of the existing facility to date, therefore, has not resulted in the removal of productive land from potential agricultural or other beneficial uses.

As outlined above and described in detail in Chapter 3, the stripping of peat and preparation of the existing land for construction of additional landfill capacity is almost completed. The magnitude of change within the existing facility site is minimal as the vast majority of development of the site has already occurred to date. The existing facility will continue to operate in accordance with the current IED Licence and in full compliance with the emission limits set out in the Licence Schedules.

The entire site area is currently in use as an active waste facility and is not in use for any agricultural, horticultural, commercial forestry or beneficial amenity purposes. The significance of current and future activities on the land use is therefore considered to be not significant.

9.3 MITIGATION MEASURES

Given that the facility has already been constructed on the land in accordance with the relevant planning and environmental permissions, the potential for implementing mitigation measures going forward is somewhat limited. However, the following mitigation measures have been and will continue to be implemented across the facility site:

- The existing facility was designed to optimise the sizing of the landfill footprints;
- Minimising areas for earthworks thereby reducing land take requirements;
- Restricting areas for construction works and keeping temporary storage to a minimum;
- Retention of all existing perimeter planting and re-generating vegetation, where possible, and sufficiently protecting areas close to construction works as described in BS 5837:2012;
- Disturbance of existing vegetation kept to a minimum; and
- The main long-term mitigation measure is the staged grassing of the mounds as each section is completed.

9.4 RESIDUAL IMPACTS

As the required land take for the facility has already taken place, it is considered that there are no residual impacts from the existing facility. The continued maturing of the existing and retained vegetation as well as future capping and planting as set out in Chapter 8 (Landscape and Visual) will minimise the imposition of the waste facility on the surrounding environment.

10 MATERIAL ASSETS (ROADS & TRAFFIC)

This Chapter assesses the potential impact of the existing Drehid WMF on the surrounding public road network. This assessment outlines the volume of traffic that is generated by the existing facility during operations and during construction works, the permitted haul routes that vehicles associated with the existing facility are allowed to follow and assess the potential impact that the current and ongoing traffic flows have on the road network.

In preparation of the original planning application for the facility (Reg. No. 04/371) in 2005, consultation was carried out with KCC (Roads and Infrastructure) as set out in the EIS submitted with the planning application. Furthermore, in preparation of the planning application for intensification and extension of the facility in 2008, pre-application consultation meetings were held with KCC and the EPA in January 2008.

10.1 RECEIVING ENVIRONMENT/BASELINE DESCRIPTION

Traffic surveys were carried out on the surrounding road network in order to determine background traffic flows on the haul routes for the Drehid WMF. In addition to these traffic surveys, further traffic data has been sourced from Kildare County Council and Transport Infrastructure Ireland.

The site is accessible via a network of regional routes which in turn link with the National Primary Road / Motorway network. Access to the development will be provided by an existing entrance on the R403. The R403 lies south, southwest and west of the site and joins the R402 at Carbury to the northwest of the site.

The significant majority of the roads making up the haul routes are sufficiently wide to accommodate two-way Heavy Goods Vehicle (HGV) movement along them. Where there are narrow sections along a haul route, these sections are short in nature with ample opportunities for vehicles to pass.

10.2 POTENTIAL EFFECTS ON TRAFFIC

All construction contractors, and all contractors delivering waste to the facility issued with a map of permitted haul routes such that all materials imported into the facility or exported from the facility are transported via one of the identified haul routes.

The current distribution of traffic from the facility entrance is variable as waste comes to the site from a variety of sources. Assessments have been carried out on the main junctions on the approaches to the facility.

Adequate visibility splays of 3.0 x 160 m have been provided at the existing entrance junction at the R403. A ghost island junction has been provided at the existing entrance with a right turning lane.

10.3 MITIGATION MEASURES

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

- Continuous monitoring of haul roads;
- All contractors, delivering waste to the facility and removing outputs from the facility, and all construction contractors are 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 one of the identified haul routes. A penalty system is operated by Bord na Móna to ensure haulage operators comply with these requirements;
- There are existing wheel wash facilities at the facility which are utilised during both the construction and operational phase;
- Maintenance of warning signage on the approach to the entrance;
- Maintenance of site entrance ensuring visibility splays remain intact; and
- Monitoring of haul routes for problems such as congestion and refining the traffic routing on the permitted haul routes, if required.

10.4 RESIDUAL EFFECTS

- Adequate visibility splays of 3.0 x 160 m are provided at the existing site entrance junction;
- A ghost island junction with a right turning lane is provided at the existing site entrance which is capable of accommodating the current traffic movements;
- Overall the pavement condition is primarily ranked as 'very good' for the permitted haul routes to the facility;
- A review of the collision data on the haul routes shows that the majority occur within built up areas at junctions. However, of the collisions reviewed between the years 2005 and 2013, only 17 No. involved HGV's occurring during the operating hours of the facility. It is noted that these collisions are over an eight-year period and along 85 km of road network. There does not seem to be a significant issue with HGVs causing collisions on the permitted haul routes;
- There are some sections of road along the haul routes that are narrow, which means that in specific locations vehicles need to slow down so that they can pass each other. This would occur typically for HGV's meeting on these sections of road. In these areas, a combination of signage and road markings would be beneficial to warn drivers of restrictions ahead; and
- All contractors, delivering waste to the facility and removing outputs from the facility, and all construction contractors, are 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 one of the identified haul routes. A penalty system is currently operated by Bord na Móna to ensure haulage operators comply with these requirements.

11 AIR QUALITY

AWN Consulting Ltd. was commissioned to carry out an air quality impact assessment including an air dispersion modelling study of air and odour emissions from the existing facility and the licensed waste management activities at Drehid Waste Management Facility (WMF). The purpose of this assessment is to determine whether the air and odour emissions from the facility will lead to ambient concentrations which are in compliance with the relevant ambient air quality standards and guidelines.

11.1 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 also less than 2.5 microns and benzene are well below the National and European Union (EU) ambient air quality standards.

11.2 POTENTIAL EFFECTS

Air quality and odour dispersion modelling was carried out using the United States Environmental Protection Agency's regulatory model AERMOD to assess the potential effects of the existing facility. The aim of the study was to assess the contribution of operational emissions of NO₂, PM₁₀ / PM_{2.5} and odour from the facility to off-site levels of these pollutants.

11.3 MITIGATION MEASURES

The greatest potential impact on air quality during the construction phase of new landfill capacity is from dust emissions, PM₁₀/PM_{2.5} emissions and the potential for nuisance dust.

In order to minimise dust emissions during construction of new phases, a series of mitigation measures have been prepared in the form of a dust minimisation plan. In summary the measures which will be implemented will include the following;

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic;
- Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions;
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph, and on hard surfaced roads as site management dictates;
- Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary;

- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods; and
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.

The Drehid facility (W203-01) operates an odour mitigation and management plan which includes a range of practical odour abatement measures for the composting facility. All processes associated with the composting facility are internal within buildings under negative pressure so air does not escape from the buildings.

An odour management plan has been developed for the existing landfill facility. This plan includes management strategies for the prevention of emissions and a strict preventative maintenance and management program for ensuring that all odour mitigation techniques remain operational at optimal capacity throughout all operational scenarios. Good housekeeping practices (internally and externally) and a closed-door management strategy will also be maintained at all times.

There is no significant predicted operational phase impact with respect to air quality from traffic. However, some site-specific mitigation measures are required for the existing development, in particular the prevention of vehicles from having engines idling while waiting to be processed, even over short time periods.

11.4 CONCLUSION

In summary all emissions from the activities related to the existing Drehid WMF will be in compliance with the ambient air quality standards and will lead to a direct, not significant and long-term impact of non-compliance or odour nuisance. There is a direct, local, not significant and long-term impact predicted due to vehicles emissions during the operational phase.

12 NOISE AND VIBRATION

12.1 INTRODUCTION

This section of the EIAR assesses the noise and vibration impacts associated with the existing licensed waste management activities at the Drehid WMF.

12.2 RECEIVING ENVIRONMENT

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 closest noise sensitive locations are some 850 m from its western boundary with additional noise sensitive locations set back at distances in excess of 950 m around the remaining boundaries.

The current noise environment is surveyed on an annual basis to comply with the existing EPA IED Licence. The results of the most recent annual surveys 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.

12.3 POTENTIAL IMPACTS OF THE EXISTING FACILITY

There is potential for noise and vibration effects during both the construction and operational phases of the facility. The predicted construction noise levels are in compliance with the recommended noise levels for construction projects due to the nature of the works and the significant distances between construction activities and the nearest noise sensitive locations. Vibration effects during the construction phase will be negligible given the absence of any significant intrusive ground works, the distances to the nearest properties and the fact that the majority of construction works have already been completed.

Operational noise levels associated with the existing Drehid WMF are all below the licence noise limits during all periods assessed.

12.4 MITIGATION MEASURES

The layout and design of the site incorporates inherent noise mitigation measures through the position of the landfill and composting activities away from noise sensitive boundaries, the location of operational sources on-site and the hours of operation. The results of noise monitoring compliance surveys and specific noise calculations have indicated that operational noise levels associated with on-site noise sources are all below the facilities noise ELV's for day and night-time periods as set within the current EPA IED Licence.

In order to ensure noise levels associated with the operational phase continue to remain well below the noise ELV's, the following best practice measures are incorporated into the site design as best practice:

- The best means practicable, including proper maintenance of plant, are employed to minimise the noise produced by on site operations;

- Compressors are attenuated models fitted with properly lined and sealed acoustic covers which are kept closed whenever the machines are in use;
- Machinery that is used intermittently is shut down or throttled back to a minimum during periods when not in use;
- All roller shutter doors and building access points are maintained closed at all times and opened only to permit vehicle and personnel entrance/egress;
- All operational plant is switched off during night-time periods when the facility is not in operation, with the exception of the compost building fans and the gas utilisation plant; and
- Where necessary, contractors will be required to erect suitable noise barriers, localised screens or other suitable control measures to minimise noise disturbance in the event that maintenance or other scheduled activities are operated between 19:00 and 07:00.

12.5 RESIDUAL IMPACTS

The results of ongoing compliance noise monitoring undertaken as part of the facilities existing IED Licence in addition to specific noise calculations associated with the facilities key sources have confirmed that noise levels associated with the operation of the Drehid WMF at the nearest sensitive locations are well below the licensed operational noise criteria in all instances.

Overall, the existing facility has been designed to ensure the operational phase of all sources on the site will not significantly add to the noise environment resulting which results in a slight overall effect. The operational facility impacts on a small number of properties in the immediate boundary to the existing facility. The impacts are continuous, long term and not significant. There are no vibration impacts associated with the operational phase of the existing facility.

13 CULTURAL HERITAGE

Through Time Ltd. (Archaeological Consultants) was commissioned to assess the potential impacts of the existing facility on the archaeological, architectural and cultural heritage environment. For the purpose of this report, the impacts of the existing facility on the recorded monuments, architectural and cultural heritage features within the site and in the wider archaeological, architectural and cultural heritage landscape were assessed.

13.1 BASELINE DESCRIPTION

Timahoe Bog is part of Bord na Móna's Allen group of bogs which were first brought into industrial peat production in the 1950's. Peak production at Timahoe Bog was achieved during the 1960's when the bog was in sod peat production. The peat was removed from the bog via a railway system, with some of the tracks, or sections of them still in place. Industrial production at the site was gradually phased out over the last twenty/thirty years as most of the bog was cut away and the poor quality of the remaining peat made further peat harvesting uneconomical. Small scale production for domestic purposes continues at the margins of the commercially cut away bog.

To reduce the moisture content of the peat material during the years of peak industrial activity it was necessary to drain the entire bog. This was achieved by the excavation of a network of east to west running drains that discharged into a central underground culvert that ran from north to south. The drainage network facilitated heavy plant and machinery to safely traverse the bog. As a result of the drainage channels the entire site is divided into plots referred to as 'peat fields'. These peat fields span the length of the bog. In some areas they have been exploited to a depth of 0.5 m or less above the natural mineral soil.

13.2 POTENTIAL EFFECTS TO CULTURAL HERITAGE

The existing facility has involved the mechanical excavation of all peat layers down to and through geologically deposited strata to enable ground engineering works such as access roads, cell development and drainage.

The uncovering of sub-surface archaeological features during peat removal associated with the construction has the potential to impact on the archaeological resource. To date no archaeological features or artefacts have been identified in the course of archaeological monitoring of construction.

Machinery tracking over the facility site during construction has the potential to disturb the sub-surface archaeological features, particularly those that have no above ground expression.

The operation of the existing facility has had no direct impacts on the archaeological and cultural heritage resource during the operational phase.

13.3 MITIGATION MEASURES AND RESIDUAL EFFECTS

The following mitigation measures were implemented during the construction phase of the existing facility to date and will continue to be implemented in future construction works at the existing facility:

- All ground disturbance associated with the construction of the development were monitored by a suitably qualified archaeologist working under license from National Monuments, Department of Culture, Heritage and the Gaeltacht.

No direct impacts were predicted during the operational phase of the existing facility on the archaeological, architectural and cultural heritage environment, therefore no mitigation was required.

13.4 CONCLUSIONS

The assessment included desk-based research, on-site field walking and archaeological monitoring to identify areas of archaeological /cultural heritage potential.

There are no Protected Structures in the area of the existing facility or wider landscape. There are no National Monuments in State Care in the area of the existing facility or the wider area. No features of archaeological significance were noted above ground in the walk over survey.

No artefacts or features of archaeological significance were encountered in the survey of section faces of the existing drains. Archaeological monitoring of all ground disturbance associated with the existing facility revealed no finds or features of archaeological significance.

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14 CLIMATE

This Chapter assesses the effect on climate arising from the existing waste management facility located at Carbury, County Kildare.

14.1 RECEIVING ENVIRONMENT/BASELINE DESCRIPTION

Meteorological data has been received from Met Éireann and from the Lullymore rainfall station (Bord na Móna). All calculations detailed in the EIAR report are carried out using methods advised by Met Éireann. There are 25 national synoptic stations and, where required, data have been referenced in this chapter from relevant synoptic stations, including Casement Aerodrome in south County Dublin and Mullingar synoptic station in County Westmeath.

14.2 POTENTIAL EFFECTS ON CLIMATE

According to the Irish Peatlands Preservation Council, in their natural state, peatlands act as long-term sinks for atmospheric carbon dioxide. Drainage of a peatland upsets the accumulation process and leads to a vast increase in the amount of carbon dioxide released to the atmosphere from the peatland². The existing Drehid facility was not, however, developed on intact bog. It is considered therefore, that the existing facility does not significantly effect the environment by draining the peatland.

During the operational phase of existing facility, the potential negative effects are environmental risks associated with emissions to the atmosphere and to water (namely dust, odours and gas, such as CO₂ and CH₄, and water contamination by leachate, if not controlled). There is the potential for a number of greenhouse gas emissions to atmosphere during the operational phase of the development.

The effect of the current and ongoing activities at the existing facility on national greenhouse gas emissions is insignificant in terms of Ireland's obligations under the EU 2020 Target and Ireland's obligations under the Targets set out by 'Proposal for a Directive on the reduction of national emissions of certain atmospheric pollutants and amending Directive 2003/35/EC'. The effects are determined to be imperceptible and long-term.

14.3 MITIGATION MEASURES

As the facility is currently operational, ongoing monitoring is carried out in accordance with the existing IED Licence to ensure no contamination or emissions occur that could affect the wider environment.

As discussed in Chapter 11 (Air Quality), an odour abatement system, including building ventilation, is installed in the composting facility and has been designed in accordance with Best Available Techniques (BAT) to mitigate potential air quality effects.

Gas emissions from the existing landfill are captured and treated in the landfill gas utilisation plant where it is used as a fuel to generate electricity. This process is managed on a continuous basis by Bord na

² <http://www.ipcc.ie/a-to-z-peatlands/peatland-action-plan/climate-change-and-irish-peatlands/>

Móna and is optimised in accordance with variances in the landfill gas composition, as required. Similarly, leachate generated in the landfill is collected and directed to the leachate collection tanks where a portion is treated using RO technology and the remainder is removed from site to an appropriate WWTP.

14.4 CONCLUSION

The potential for negative effects to occur, in relation to climate, as a result of the current and ongoing activities at the existing facility, has been evaluated as being insignificant. The existing facility is located in an area of previously degraded and harvested bog that has become a built environment and has lost its potential as a carbon sink.

The existing facility is designed and operated to meet all relevant standards and minimise any potential risks of contamination or emissions from the site. The operations of the existing facility are carried out in full compliance with the requirements of the IED Licence issued by the EPA.

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15 POPULATION AND HUMAN HEALTH

This Chapter assesses the existing environment in addition to the potential effects on population and human health arising from the ongoing and future operations of the existing facility.

15.1 POPULATION

15.1.1 Receiving Environment/Baseline Description

The village of Derrinturn is located approximately 3 km to the north-west and Timahoe crossroads is located approximately 2 km to the east. The land within the red line boundary consists of a MSW landfill, composting facility, administration area, car park, access roads, weighbridge, settlement lagoons and ancillary infrastructure. The remaining areas around the existing facility within the Bord na Móna land holding consist of the flat lying and gently undulating topography typical of cut away peatland.

Figure 1.1 of the EIAR shows the site location relative to a number of adjacent villages including Derrinturn, Timahoe, Coill Dubh and Allenwood. The location of the site boundary relative to the regional roads R402 and R403 is also shown.

The facility is located within a mixed rural/urban setting at the north-western extent of County Kildare. Within the extended area, farming enterprises intermingle with a multiplicity of industrial and commercial establishments as well as a number of settlements that have developed primarily along a section of the existing national road system.

The Bord na Móna landholding is located in the Electoral Divisions (EDs) of Timahoe North, Timahoe South, Drehid, Dunfieth, Kilpatrick, Windmill Cross and Kilmeage North. The existing facility is located within the ED of Timahoe North, Timahoe South, Kilpatrick and Windmill Cross. According to S.I. No. 52/2014 - County of Kildare Local Electoral Areas and Municipal Districts Order 2014, these EDs are located within the Electoral Areas of Kildare-Newbridge and Maynooth.

15.1.2 Potential Effects

The operation of the existing facility has resulted in an alteration to that part of the historical land use within the overall Bord na Móna landholding. The current land use comprises mainly the landfilling of waste materials in an engineered landfill and the composting of suitable organic waste. The continued operation of the existing facility will be within the site boundary lands which have already been developed. The ongoing and current waste activities will not require the change of use of any further areas of land within the overall Bord na Móna landholding.

The existing facility is not considered to have any significant negative effects on the local or broader population numbers. There is a positive effect on the local population as some of those employed at the existing facility reside locally.

There is not considered to be any disruption to the social travel patterns of those residing adjacent to the existing permitted facility.

Tourist amenities and activities are located at such a distance from the existing facility that they are not impacted. In addition, traffic generated by the facility does not adversely affect visitors travelling to any of these attractions.

Bord na Móna has established a Community Development Fund with Kildare County Council in respect of the existing facility in accordance with Condition No. 17 of PL09.212059. This fund contributes to the provision of environmental improvement and recreational or community amenities in the locality. The identification of such projects is decided by the Planning Authority in consultation with the Community Liaison Committee. A contribution of €380,570 has been made to the community fund for 2017.

15.1.3 Mitigation Measures

The existing facility was developed in a manner such that the effect on human beings was minimised. The existing facility generates employment in the locality. This effect is positive effect and therefore no mitigation measures are proposed in relation to employment. Employment at the existing facility has the potential to encourage persons to move to the locality or to continue to reside in the local area rather than moving to urban areas or emigrating. Again, this is a positive effect for which no mitigation measures are required. There are no potential negative effects on tourism and amenities in the area and therefore no mitigation measures are required.

The following measures ensure that the existing permitted facility's effect on the receiving environment is minimised:

- Dust, air, odour, noise and surface/ground water are monitored on site in compliance with the requirements of the facility IED Licence;
- Mitigation measures in relation to the visual effects are discussed in Chapter 8 (Landscape and Visual); and
- The Community Development Fund that has been put in place provides benefits for the local community through the provision of environmental improvement and recreational or community amenities in the locality.

15.2 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 existing facility. This assessment is focused on potential human health effects related to emissions, during the operational phase as well as during ongoing construction activities associated with the operational activities (i.e. construction of landfill capacity).

15.2.1 Receiving Environment

The surrounding environment is rural in nature with residential properties located around all boundaries at varying distances from the landholding boundary. The red line boundary of the existing facility as shown in Figure 1.1 is positioned within the central part of the landholding and, hence, is significantly set back from sensitive properties.

The nearest sensitive receptor is c. 970 m to the north-east from the nearest element of the existing landfill infrastructure and c. 1,280 m to the south-west from the existing composting facility.

A detailed literature review specifically in relation to the existing landfill accepting MSW material and the composting facility accepting organic waste was carried out and is presented in this chapter.

15.2.2 Potential Effects

Based on the assessment carried out, the impacts on human health are assessed as Imperceptible.

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16 INTERACTIONS OF THE FOREGOING

The significant effects of the existing facility and the measures proposed to mitigate these effects have been outlined in this EIAR. However, in any development with the potential for environmental impacts, 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.

It is noted that the cumulative impact assessment of the existing facility with the proposed further development of the Drehid WMF, the permitted (but not yet built) MBT facility and other relevant surrounding developments has been presented in the Proposed Development EIAR.

It is also noted that as the Drehid WMF is currently operational and the facility is operated in accordance with Best Available Techniques (BAT) and in accordance with the requirements of the IED Licence issued by the EPA, many of the interactions between environmental aspects do not have a significant effect as control measures are already in place to protect the environment.

While there is potential for the environmental aspects to interact and result in a cumulative effect, these assessments (as carried out herein and in the Proposed Development EIAR) have noted that potential cumulative effects do not result in significant environmental effects.

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