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14.0 AIR

Section 1 (Introduction), Section 6 (Site Setting) and Section 8 (Description of the Proposed Development) of the EIS should be referred to before reading this section.

14.1 Introduction

This section of the Environmental Impact Statement considers and assesses the air quality in the vicinity of the Application Site and the likely effects the proposed development may have. This assessment was prepared having regard to the guidelines on the information to be contained in Environmental Impact Statements (EPA 2002).

During the operation of the Facility, the most likely emissions to the air environment are dust, which arises predominantly from the processing and transport of inert materials into, around and out of the Facility. The sources are generally dispersed sources rather than specific point sources and this dictates the measures required to mitigate potential dust related impacts.

PM₁₀ may be emitted to a certain extent from the processing and transporting of inert materials but is predominantly produced by burning of fossil fuels such as coal, oil and peat and emissions from road traffic, in particular diesel engines. For this reason it is not anticipated that levels of PM₁₀ emitted would cause concern. Similarly combustion processes are the principal sources of greenhouse gases, sulphur dioxide (SO₂) and benzene, with road traffic tending to be the major contributor in Ireland.

The spatial pattern of dust deposition may be influenced by local wind direction and strength (Section 13, Climate). The prevailing wind direction is from the west, which would tend to blow dust in an easterly direction from the Application Site. Rainfall will also tend to reduce the rate of dust emissions. A baseline dust emission assessment was carried out at selected locations around the Application Site with particular attention being focused on sensitive locations such as residential areas and Punchestown racecourse adjacent to the proposed Facility. The location of DSLs are depicted in Figure 14.1. Monitoring locations were chosen to capture baseline conditions adjacent to the closest dust sensitive locations.

14.2 Methodology

There are a number of methods to measure dust deposition but only the German TA Luft Air Quality Standards (TA Luft, 1986) specify a method of measuring dust deposition – the Bergerhoff Method (German Standard VDI 2119, 1972) – with dust nuisance. On this basis, the EPA recommend a dust deposition limit value of 350 mg/m²/day (when averaged over a 30-day period). In all monitoring was carried out at six locations around the Application Site boundary. Figure 14.1 depicts the dust monitoring locations used for this assessment.

14.3 Existing Environment

The landscape around the Application Site is rural in nature with land use in the area being predominantly agriculture. An Inert Waste Facility is located to the north east of the Application Site (Behan's Land Restoration Ltd.) with Punchestown Racecourse located on the western boundary of the Application Site. The Application Site is ca. 68.0 ha. in size and comprises lands that were formerly used for extraction and processing of sand and gravel. These activities were carried out between the 1960s to present.

14.3.1 Receptors

Potential receptors within the vicinity of the development considered in this report are as follows:

- Residences placed in a ribbon fashion along the adjoining road network, in particular along the L6042;
- Punchestown Racecourse; and
- Livestock that graze in fields surrounding the Facility.

14.4 Assessment

As stated above, dust deposition sampling was undertaken by Golder in June/July 2008 at chosen locations around the boundary of the Application Site. Rainfall during the months of June and July 2008 at Casement Aerodrome were 70.2 mm and 72.4 mm respectively with the mean monthly totals between the years of 1968 and 1996 being 53.0 mm and 48.9 mm respectively. Rainfall for the monitoring period was higher than the mean monthly average which would reduce dust deposition rates to some extent.

The results are tabulated in Table 14.1 below, with monitoring locations shown on Figure 14.1. Unfortunately the jar placed at location D4 was missing on the day of collection so deposition rates for this area could not be calculated. It is not expected that deposition rates for the area around monitoring location D4 will be greater than the dust deposition limit value of 350 mg/m²/day. A mature hedgerow is established around the boundary in this area, as it is around most of the Application Site, which would reduce dust and particulates leaving the Application Site.

Table 14.1 Dust Deposition Rates

ID	Location	Results (mg/m ² /day)
D1	At the northern boundary of the Application Site	66.5
D2	At the eastern boundary of the Application Site close to Facility entrance	227.3
D3	On the eastern boundary of the Application Site	144.1
D4	On the south eastern boundary of the Application Site	Jar missing from location
D5	On the south western boundary of the Application Site	38.8
D6	On the western boundary of the Application Site	88.7

From the baseline dust deposition rates recorded, levels range in value from 38.8 to 227.3 mg/m²/day. The results are all below the EPA recommended dust deposition limit value of 350 mg/m²/day to protect against significant nuisances or significant disadvantages due to dust fall. Deposition rates at D2 located near the existing entrance were the highest with a result of 227.3 mg/m²/day. Elevated results here may be due to traffic entering and exiting both the Application Site and the adjoining restoration site to the east of the Application Site.

14.4.1 Impacts – Construction Phase

It is expected that the main construction phase will last for approximately nine months, during which landforms will be prepared for acceptance of inert materials. Earthworks being carried out in the existing quarry void, preparation of a clay liner and construction of berms will have the potential for dust and particulate emissions in the short term period. The Inert Waste Processing Area (IWPA) will also be constructed towards the north east of the Site. See Figure 8.5 for details of the location of the proposed processing area.

14.4.2 Impacts – Operation Phase

Processing and placement of inert materials will commence once the Facility is ready to receive inert waste materials. This will involve the transport of waste into, around and out of

the Facility. This will increase the potential for dust and particulate emissions. Plant and machinery operating at the Facility will also contribute combustion emissions to the air environment.

The process will involve the acceptance of inert waste material being placed directly in the areas for restoration (ca. 85% to 90%) and at designated stockpiles at the inert waste processing area (ca. 10% to 15%). These stockpiles will be passed through crushers and a screener to reduce material to specific grades depending on requirements. Oversized material which cannot fit into the crushers will be reduced in size using a rock breaker. It is not anticipated that a rock breaker will be in use on a daily basis as the majority of material received will be of sufficient size to pass through processing equipment.

The processed material will be stored in stockpiles on or near the processing area. From here material will be loaded onto dump trucks using wheel loaders and transported to:

1. Fill areas and used for the restoration process; and
2. Off-Site locations for the construction of roads and/or manufacturing of concrete products (Section 8.4.15).

Excavators and compactors will place the material in layers to an eventual final restoration level (Section 8.6.3). The most likely sources of dust emission would be from the tipping, storing, processing and transport of material during dry windy conditions with the processing area being the most likely source.

14.4.3 Cumulative Impacts

Dust deposition rates in the past have been reported by the Applicant to have been maintained below the EPA guideline values of 350 mg/m²/day when it operated under previous planning and waste permissions/permits. Most relevant were Planning Ref No. 96/100 for sand and gravel extraction activities and more recently Waste Permit Ref. No. 71/2002. This track record will be maintained over the life of the restoration project.

Potential cumulative impacts of the proposed development are considered with the presence of an adjacent Inert Waste Facility (Behan's Land Restoration Ltd). It is noted that this facility was in operation during the monitoring period, thus reflecting cumulative conditions, and all dust locations remained below the EPA Guideline Value.

14.5 Mitigation

14.5.1 Proposed Dust Mitigation Measures - Construction

Site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Exposed surfaces will be dampened using bowsers or hoses as required to prevent airborne dusts. Berms will be constructed in all sensitive areas around the Application Site and vegetated to act as visual and aural screens and to prevent wind blown dust and particulates from leaving the Application Site. The materials for constructing the temporary screens will be sourced primarily from the overburden on the Site, as will material to be used in the final capping prior to closure. Mitigation measures proposed during the operation phase will be adhered to during the construction phase.

14.5.2 Proposed Mitigation Measures - Operation

Berms developed during the construction phase will go some distance to reducing emissions from the Site, however the key to reducing emissions is to reduce as close as possible to the source. This will involve the following measures:

- Vehicles using Site roads will have their speed restricted, and this speed restriction will be enforced rigidly. On any un-surfaced Site road, and on hard surfaced roads that Site management dictates, speed will be restricted to 15 km per hour;
- All vehicles exiting the Site will make use of a wheel wash facility, prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads;
- Spraying of water on haul roads and areas around the Site where dust blow is evident;
- Sweeping of haul roads to remove any spilled material from transport;
- Public roads outside the Site will be regularly inspected for cleanliness, and cleaned as necessary;
- A dust suppression system will be installed in areas which are likely to give rise to elevated dust and particulate emissions e.g. haul roads and processing areas;
- Public roads outside the Site will be regularly inspected for cleanliness, and cleaned as necessary;
- All vehicles will be serviced regularly and kept in good working order to reduce levels of combustion gases; and

- Work will cease if mitigation measures fail during dry, very windy conditions which would increase dust blow.

If these preventative measures are used effectively, the potential impact of the scheme is not considered significant. Dust deposition rates at the nearest sensitive receptors are expected to be maintained at less than the 350 mg/m²/day value at which level there would be little noticeable effect.

14.6 Residual / Likely Significant Effects

Baseline studies carried out indicate that air quality in the immediate environs of the Application Site currently meet EPA Guideline Values for waste activities at the Site. The main potential impact during the construction and operational phases will be due to airborne dust and potential dust deposition outside the Application Site boundaries. However, any such activities will be transient in nature and will be dealt with by implementing mitigation measures. The release of fine particulates during short periods of ground disturbance will also be minimised through good on-Site practices and mitigation measures. It is not anticipated that the proposed development will have a major impact on air quality in the area. The mitigation measures outlined for both the construction and operation phases of the development will ensure that impacts are kept to a minimum.

It is anticipated that once restoration is complete that deposition levels will all be relatively lower than the existing rates as all bare un-vegetated areas will be capped and vegetated.

14.7 References

EPA (2002) EPA Guidelines on the Information to be contained in Environmental Impact Statements. *Environmental Protection Agency, Wexford.*

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