

4.6 Ecology

4.6.1 Designated Conservation Areas

The proposed development does not lie within or adjacent to any site designated for nature conservation. The nearest designated sites are the Grand Canal pNHA which lies some 3.6km from the landfill footprint to the south and Hodgestown Bog NHA which is 4.1km to the east of the site activity boundary. No direct impacts on any site designated for conservation will arise through the development of the facility. There are numerous drainage channels on Timahoe Bog that drain into the Cushaling, Abbeylough and Slate rivers. These in turn drain into the river Barrow, a river that has been designated as a cSAC and that is known to hold populations of protected aquatic species. There is the potential for silt or sediment run-off created by the proposed development to indirectly impact on the river Barrow cSAC, although given that the river Barrow is approximately 20km away from the landfill footprint, the potential impact would be insignificant. Nonetheless, mitigation measures will prevent silt and sediment entering the surface water drains and will ensure that there are no indirect impacts on the river Barrow cSAC or any other designated site.

4.6.2 Habitats

The construction of the landfill site and the proposed extension, along with the development of the gravel and clay borrow areas, will lead to the permanent removal of the majority of the existing areas of habitat present within the landfill footprint (including the extended area) and the clay and gravel borrow areas. The exception to this is the Spoil and Bare Ground (ED2) Habitat that has been created during the ongoing construction. Table 4.6.1 below lists the habitats affected and the impact of their removal. The assessment of the impact follows the Criteria for Assessing Impact Significance (NRA 2006).

Table 4.6.1: Habitats Directly Impacted by the proposed development

Habitat Classification	Evaluation	Impact
Drainage Ditches (FW4)	Low Value, Locally Important	Neutral
Scrub (WS1)	Low to Moderate Value, Locally Important	Minor negative
Dry Meadows and Grassy Verges (GS2)	Low to Moderate Value, Locally Important	Minor negative
Cutover Bog (PB4)	Moderate Value, Locally Important	Moderate negative
Bog Woodland (WN7)	Moderate Value, Locally Important	Minor negative

The Cutover Bog (PB4) habitat will be subjected to the greatest level of impact. Cutover Bog occupies the largest area on site and also has been classified as being of moderate ecological value.

Indirect impacts may occur on areas of habitats that may be retained, such as sections of the Scrub (WS1) and undisturbed areas of Cutover Bog (PB4), through damage and disturbance arising from vehicular activities and storage of excavated material. During the construction phase of the development project, indirect impacts on adjacent habitats may also occur (again chiefly through the deposition of excavated material on Cutover Bog) but potentially through increased siltation and potential fuel/oil contamination of the Drainage Ditches. Similarly, during the operation of the facility, there is further potential for pollution of watercourses through leachate from the landfill, contaminated runoff from the hard standing areas and wheelwash areas. These issues are further addressed in Section 4.3 (Geology and Hydrogeology) and Section 4.4 (Surface Water) of this EIS. Mitigation measures proposed in these sections include the use of permanent settlement lagoons, temporary sediment control measures during construction, the use of specified storage areas for fuel with bunded tanks capable of holding 110% of the fuel stored. Run-off from the internal site roads and areas of hard standing will be diverted via sediment traps and an oil interceptor into retention lagoons before controlled discharge to the surface water streams.

4.6.3 Fauna

4.6.3.1 Mammals

Only signs of fox and Irish hare were recorded during the field visits, and these were chiefly confined to the south-western periphery of the site activity area, close to the gravel borrow area. No fox dens were located. Both foxes and Irish hares would be expected to range widely over the surrounding area and there is therefore, no impact on local populations of these animals. Temporary impacts through noise disturbance may arise during construction, although this impact will only be minor.

4.6.3.2 Birds

The removal of Scrub, Bog Woodland and Cutover Bog will reduce areas of nesting and foraging habitat for birds. Infilling of sections of Drainage Ditches and the removal of the associated ditchside vegetation will further remove nesting habitat for birds such as the mallard, water rail and reed bunting as well as reducing the area of wetland habitat for wintering and migrating wildfowl. Removal of these habitats during construction could obviously lead to a direct impact on bird populations through the direct removal of nests, eggs or even young birds, but best practice will be followed to reduce this direct impact.

Numerous Drainage Ditches occur across the Timahoe Bog and it can therefore be assumed that large areas of similar habitat occur across the remainder of the Timahoe Bog and that the loss of the Drainage Ditch habitat within the site activity boundary is not significant. Mitigation measures are proposed which, when fully implemented, will ensure that impacts on birds will be minor.

4.6.3.3 Other fauna

Removal of the Cutover Bog, Scrub and Drainage Ditch habitats will reduce the areas available for common frog, lizard and newt. Dragonflies also utilise the Drainage Ditches and flooded areas within the Cutover Bog and Scrub habitats. As mentioned in 4.6.3.2 above, larger areas of these habitats exist across the remainder of the Timahoe Bog. This, coupled with proposed mitigation measures, will lead to only minor impacts on these components of the faunal community.

4.6.4 Rare or Protected Flora

No species of rare or protected flora were found within the development site. Previous studies located alder buckthorn along the Cushaling River, just outside the site activity boundary. This species was also recorded at the same location in the current assessment. Specimens of the plant are located outside the boundary of the development site but close to the area for the gravel pit. Mitigation measures are recommended to ensure that there is no disturbance to the ground where this species occurs so that there will be no impact on this species.

4.6.5 Mitigation measures

4.6.5.1 Habitats

Scrub and vegetation that are to be retained will be clearly marked to avoid accidental damage during excavations and site preparation. No materials will be stored within 5m of retained scrub. Materials, especially soil and stones, can prevent air and water circulating to the roots of trees/shrubs. Damage to root systems can kill trees. Any removal of scrub or other areas of semi-natural habitat will be carried out in accordance with best practice in order to minimise impacts on breeding birds.

The pollution of watercourses is to be prevented by the following mitigation measures. These measures are further discussed and detailed in sections 4.3 and 4.4 of this EIS. Fuels and oils used during the construction phase are to be stored and disposed of in accordance with recognized standards. Surface run-off from roads and hardstanding within the facility is to be intercepted and disposed of appropriately. Foul drainage from all site offices and construction facilities will be contained and disposed of in an

appropriate manner to prevent pollution of watercourses. The environmental monitoring programme for the facility includes the annual monitoring of the water quality of the Cushaling River using the standard kick sampling technique and the analysis of aquatic invertebrates to produce a Q value for the sample site.

The loss of wetland habitat (Drainage Ditches) will be compensated for by the inclusion of wildlife friendly designs in the restoration plans for water bodies at the sand and gravel borrow area and the clay borrow area, when these areas have been fully excavated. These measures will include shallow sloping edges and deep areas, which retain water throughout the year. The southern side of the ponds will be kept free from tall scrub in order to prevent potential shading.

The restoration plan for the facility includes the use of native trees and shrubs with the species mix chosen appropriate for the site conditions and to reflect the existing species composition in the Scrub and Bog Woodland areas. Where feasible trees and shrubs used will be of local provenance.

4.6.5.2 Fauna

Best practice is to be followed in the removal of scrub and trees to minimise the impacts on breeding bird populations. Temporary impacts on the dragonfly and amphibian populations are likely to be incurred during construction as areas of drainage ditches are removed. However, the occurrence of large areas of similar habitat across Timahoe Bog means that this temporary impact will be minor.

4.6.5.3 Rare or Protected Flora

No mitigation measures are required as no rare or protected species occur within the site activity boundary. However, alder buckthorn occurs close to the south and western boundary of the sand and gravel borrow pit. Excavation work in this area will be undertaken in a manner, which ensures that there will be no disturbance to the area where the alder buckthorn exists. Where deep excavation is planned for this section then an adequate buffer zone to ensure that soil disturbance through soil slippage or slumping does not occur, will be maintained.

4.7 Human Beings/Socio-economic

4.7.1 Landuse

The proposed development is an extension and intensification of the previously permitted Drehid Waste Management Facility. Construction of the facility infrastructure and the initial cells of the landfill has been completed and waste acceptance commenced in February 2008. Therefore this development will not cause additional negative impact on the current land use.

4.7.2 Population

There will be no disruption to the social travel patterns of those residing adjacent to the facility. The facility is accessed via the regional road network and the purpose built private site access road, which joins the R403 at Killinagh Upper. No public roads or pedestrian routes are severed by the facility and its proposed intensification and extension. The facility operates on a daily basis from 08.00 to 18.00 Monday to Saturday (inclusive), excluding public holidays and Sundays.

4.7.2.1 Health and Safety

Impacts regarding health and safety at the waste management facility, relate primarily to concerns about individuals either straying or trespassing into the facility, alongside the health and safety of each worker or visitor to the facility.

In the case of workers and visitors to the site, the day to day operation of this development, including any activities associated with site machinery and on-site vehicles, and additionally how visitors are to present and conduct themselves when engaging with this enterprise, are undertaken in compliance with all health and safety laws and regulations pertaining to such.

Security fencing has been erected as detailed in Section 3.3.1 to prevent accidental or intentional trespass onto the facility. Warning signs have been placed along the fencing at regular intervals, informing people of the potential hazards associated with unauthorised trespass.

Access to the facility is via the private access road constructed to the southwest of the facility to join the R403 at Killinagh Upper. The site and facility entrances are secured against unauthorised access and trespass. All machinery is locked during non-working hours and parked within the confines of the site. The limited number of houses in the general vicinity of the site, and the fact that the surrounding roads are not designated walking routes, will undoubtedly reduce opportunistic trespass.

With respect to human health, a landfill health study, based on work commissioned by the Department of Health and Environment (UK) from the Small Area Health Statistics Unit (SAHSU) at Imperial College London has failed to confirm any links between birth defects and proximity to landfill facilities, as reported in the ENDS Report 319 (August 2001).

The study showed that the relative risk of birth defects for all anomalies was 1% greater for the study population living within two kilometres of a landfill site compared to a control population which did not. At a press conference, deputy chief medical officer Pat Troop explained that the results were difficult to interpret: *“We cannot say there is no risk from landfill sites, but given the small numbers of congenital abnormalities and the uncertainties we are not changing our advice to pregnant women.”*

Previous studies in 1998, suggested sizeable increases in birth defects in babies born close to landfill sites. The most important of these studies was funded by the European Commission and covered 21 hazardous waste sites across the EU, ten of which were in the UK.

It was a case controlled study looking at over 1,000 cases of birth defects within seven kilometres of landfills matched with randomly selected controls. It found a 33% increase in birth defects such as spina bifida and heart defects and circulation problems. However this study was based on hazardous waste landfills including old landfills, which were not constructed or operated in accordance with the high standards applicable for the facility at Drehid.

This view is supported by a literature review carried out by the Health Research Board in Ireland in its 2003 report entitled *“Health and Environmental Effects of Landfilling and Incineration of Waste – a Literature Review”*. This report states that *“As there is a paucity of literature relating to modern landfill and incineration sites, nearly all of the studies identified in this report relate to older technologies. It can be assumed that as emissions controls improve, risks of adverse effects diminish”*

In addition the report recognizes the imminent waste crises facing Ireland and has given no reason to delay any further the development of modern integrated waste management infrastructure in Ireland. *“Although waste management strategies are not addressed in this report, the authors acknowledge that an integrated systems approach is required if effective waste management is to be accomplished at both local and national levels. This approach should reflect the waste management hierarchy of prevention, substitution, reuse and recycling, and energy recovery, with environmentally secure disposal of any residual waste”*.

4.7.2.2 *Property*

The facility has the potential to create a reduction on the value and amenity enjoyed by the owner/occupants of all such structures adjacent, due to the operation of this previously permitted waste management facility in terms of noise, dust and vehicular movements.

A study commissioned by the Department of Environment, Food and Rural affairs in the UK in 2003 “A Study to estimate the disamenity costs of landfill in Great Britain” aims to evaluate the loss to household prices as a result of proximity to landfills. No such study has been carried out to date in Ireland. Disamenity is defined as “*those local nuisance costs experienced by households living close to landfill that are associated with it such as odour, dust, litter, noise, vermin, and visual intrusion*”.

The result demonstrated that “*While controlling for both physical and socio-economic factors there remained a statistically significant stock disamenity effect for houses that were located closer than 0.5 miles to a landfill site.* The closest occupied dwelling is approximately 980m northeast of the previously permitted landfill footprint and its proposed extension. Therefore based on the above criteria there will be no significant long-term disamenity effects due to the proposed development.

With respect to the Irish situation in relation to the disamenity of material assets, there is no evidence to show that the siting, construction and operation of a modern engineered landfill would seriously injure the amenities and depreciate the value of property in the vicinity of the proposed site. The An Bord Pleanála Inspectors Report supported this finding for the previously permitted Drehid Waste Management Facility. In this report it is noted that during the Oral Hearing Kildare County Council pointed out that “*there were a considerable number of landfills in existence in the state which were significantly closer to residential and sporting facilities than this facility was to houses or the Allenwood Celtic AFC grounds*” (ABP, Ref PL 09.212059). This view was supported by the Inspector who stated that he was satisfied that “*the proposed development would not lead to any significant devaluation in property (either residential or otherwise in the area)*” (ABP, Ref PL 09.212059).

4.7.3 *Employment*

When operational, the previously permitted facility will provide direct employment for approximately 13 people, as well as for additional service and construction workers. The proposed intensification and extension will mean that there will be further additional employment for 2 No. permanent employees as well as for service and construction workers.

4.7.4 *Tourism and Amenities*

In the Kildare County Development Plan (2005-2011) the western boglands (in which the proposed development is located) have been given a Landscape Sensitivity rating of 14, which is described as medium sensitivity. The Landscape Area Sensitivity is determined by the vulnerability and landscape factors within the identified Landscape Character Areas. In other words the capacity of the landscapes to absorb new development is determined by factors such as slope, water bodies, land uses etc (Ref; 18.9).

Within the current County Development Plan, it is also policy to protect (proposed) Natural Heritage Areas, Candidate Special Areas of Conservation, and Trees and Woodlands in Historic Landscapes (Ref; Map17.1).

With reference to the Plan, the nearest identified Natural Heritage Areas are Carbury Bog, Hodgestown Bog and the Grand Canal (Ref; Table 17.1); while there are no scenic roads and views within the 5km radius study area. All are a considerable distance from the proposed site, and (in particular) from the landfill footprint and its proposed extension, and as a consequence will not be impacted upon by the development.

Sections of the Grand Canal Way and the Barrow Way pedestrian walks coincide adjacent to the 13th Lock to the southeast of Allenwood, though both are again over five kilometres from the previously permitted landfill footprint and its proposed extension.

Within the general area of the proposed site, there are golf courses at Knockanally (near Donadea) to the east and Ballygibbon East and Kilshawanny Lower (near Carbury) to the west. Allenwood AFC's pitch is located to the south of the existing site entrance on the R403 at Killinagh Upper. A wide belt of mixed deciduous and evergreen trees and shrubs has been planted by the developer along the entire boundary of the site with the grounds of Allenwood Celtic AFC in the interest of visual amenity.

Ballynafagh Lake, near Prosperous, is available for coarse fishing as is the Grand Canal, while Ardkill Bog/Ardkill Farm offers visitors a chance to see a raised bog in a controlled setting. Heather Lodge 'B&B', one of the few in this general area, is close to Allenwood AFC's pitch. There is also a walk at Donadea Demense, which has a lake that is home to a variety of wildfowl. Again, all are a considerable distance from the previously permitted landfill footprint and its proposed extension.

The County Council's Development Plan for the area has as a goal to protect the '*Architectural Heritage and to encourage the sustainable development so as to ensure its survival and maintenance for the future*' (Ref Paragraph 20.1). These include Carbury Castle, Newbury Hall and Demense that has Trinity Well located therein, and Ardkill House. Coolcarrigan House, which is also listed, has extensive gardens and a 19th century Hiberno-Romanesque church that is also formally preserved, both of which

are open to visitors.

These tourist attractions are located a significant distance from the facility and will not be impacted by the proposed extension and intensification. In addition, traffic generated by the proposed development will not adversely impact on visitors travelling to any of these attractions.

The only buildings located within the site activity boundary are the recently constructed buildings associated with the development of the previously permitted waste management facility. There are no listed or other buildings of significant architectural or cultural heritage within the vicinity of the site. The nearest such building is Coolcarrigan House, which is located approximately 2km from the proposed landfill footprint extension and is screened from the facility by an extensive coniferous forestry plantation to the west of the house.

There will be no visual impact on any of the surrounding items or facilities of tourist potential. The amenity and tourist potential thereafter, especially of the waterways, will only be compromised if those seeking to travel to such might consider the impact of the additional traffic movements along the surrounding regional routes, as an intrusion. The Grand Canal is at such a distance from the proposed development, that along with the existing and proposed vegetation cover, views from the Grand Canal of the proposed development will be non-existent.

4.7.5 Infrastructure

Access to the facility entrance is via an already existing private access road from the R403 Regional Road at Killinagh Upper. Dwellings to the north of the facility, situated along the L5025 county road, will continue not to be adversely impacted by the traffic associated with the facility.

At maximum production, it is expected that the proposed intensification and extension will generate an additional 87 HGV movements per day (43.5 laden and 43.5 unladen).

Contractors hauling waste to the facility are required to enter into a contract with Bord na Móna which strictly controls the access routes which the relevant vehicles are permitted to travel. Haul routes are illustrated on Figure 4.91.

4.7.6 Community Gain

The facility has been designed and is constructed and operated to Best Available Techniques (BAT). All information is available to interested parties and a complaints register is maintained at the site. The EPA also undertakes regular environmental audits, which will demonstrate how the facility is performing.

Community Liaison Committee

Bord na Móna finalised arrangements with Kildare County Council to establish a community liaison committee in advance of commencement of operations at the site. The principal function of committee is to identify environmental works and community facilities to be funded by the Community Development Fund, outlined below.

This committee comprises eight members, as follows:

- two local community representatives;
- two Clane Local Area Committee elected representatives;
- two personnel from Bord na Móna; and
- two personnel from the Planning Authority (Kildare County Council).

Community Development Fund

Bord na Móna has made arrangements with Kildare County Council for the establishment of a local community development fund. This fund will be used for the provision of environmental improvement and recreational or community amenities in the locality. The identification of such projects will be decided by the planning authority in consultation with the Community Liaison Committee. This type of community fund is well established internationally and is increasingly being sought for new infrastructure developed in Ireland.

Public Education

The meeting room in the previously permitted facility administration building will be used for the provision of a public education area for environmental education needs. Poster presentations and literature on waste management and on the workings of the Drehid Waste Management Facility will be available in this meeting room. Provision will also be made for the inspection of the waste licence and Annual Environmental Report (AER) in this room.

4.7.7 Mitigation Measures

The previously permitted Drehid Waste Management Facility has been developed in such a manner so that the impact on landuse, the local population, employment, tourism and amenities is minimised. No further mitigation measures are required in addition to those previously proposed, but the mitigation measures are nonetheless repeated herein. The following measures will ensure that the proposed intensification and extension of the Drehid Waste Management Facility will have a minimum effect on the receiving environment.

- Dust, odour, noise and surface/ground water will continue to be monitored on site in compliance with the reviewed EPA waste licence.
- Mitigation measures in relation to the visual impact are discussed in Section 4.5

of this EIS and in Drawing 3369-2437(Restoration Plan).

- The Community Development fund will provide benefits for the local community through the provision of environmental improvement and recreational or community amenities in the locality.

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4.8 Archaeology and Cultural Heritage

4.8.1 Potential Significant Impacts

Timahoe and its environs have evidence of the presence of humans, possibly dating from the Bronze Age as indicated by the dendrochronological dating of the toghers from Timahoe Bog. However, the recovery of eight axeheads and a flint arrowhead suggests earlier activity dating to the Neolithic period (4000-2000 BC). Artefacts recovered from the area, which are generally found in a bog environment includes leather shoes and portion of a wooden wheel (Ref. Section 2.9.6). The area continued to be occupied throughout the medieval period as indicated by the presence of church and castle sites in the vicinity of the proposed development (Section 2.9.5).

Due to the size of the site and its location within a wetland environment, the potential for the discovery of archaeological features is quite high. However, due to the industrial peat extraction activity that has occurred within this site in the past, it is likely that a number of the archaeological features have already been removed.

The activity boundary of the waste management facility incorporates sections of the archaeological monuments KD008:029/009:019 and KD008:030/009:019, in addition to a site noted by the Irish Archaeological Wetland Unit in 1992 at the eastern limit of the activity boundary. No evidence of the recorded long toghers SMR KD 008:030/009:018 and KD 008:029/009:019 was noted during the survey and it is possible that they have been destroyed, or partially destroyed, in the course of peat production. Evidence may however exist within the lower peat levels and at the extreme western and eastern edges of the bog where ground level rises and areas of virgin bog remain intact.

Although no site was identified during the walkover, the recovery of the flint blade from the surface area in the vicinity of SMR KD 009:019 would suggest the presence of further archaeological activity in the area. As noted bogs are an important resource for the archaeological record and given the archaeologically sensitive nature of the bog there is the possibility of finding further archaeological deposits such as fulachta fiadhs and ritual deposits.

The activity boundary of the proposed waste management facility as extended incorporates sections of the archaeological monuments KD008:029/009:019 and KD008:030/009:019, in addition to a site noted by the Irish Archaeological Wetland Unit in 1992 at the eastern limit of the activity boundary. The clay borrow area is located between the toghers SMR KD 008:029 and 008:030. The previously permitted landfill footprint and its proposed extension is located to the south of the toghers SMR KD 008:030/009:018 and KD 008:029/009:019.

The area of activity does incorporate sections of the two toghers, including their point of intersection, to the north of the previously permitted landfill footprint. However, no excavation works will take place within at least 30m of the recorded monuments. The sand and gravel borrow area lies to the south of the activity area. A number of buildings are also located within the activity boundary. No recorded features are known in the vicinity of the sand and gravel borrow area and the buildings.

Avoidance of impacts was included in the design of the waste management facility, in this case to avoid the recorded monuments, and excavations will be limited to areas where there are no known archaeological features.

Given the largely overgrown nature of the site of the proposed development a full survey proved problematic. The survey undertaken concentrated in the area where the site activities will occur. Follow-up survey will be undertaken prior to construction when the vegetation is being cleared (see below).

4.8.2 Mitigation Measures

The site will require pre-development testing prior to the commencement of future phases of construction of the Drehid Waste Management Facility to determine if any archaeological deposits survive. Further mitigation measures may be required based on the results of the testing.

Given the overgrown nature of the proposed waste management facility the drains will be cleared of vegetation in advance of future phases of construction in order to create new section faces to facilitate a complete inspection. This will assist in determining if any features of archaeological significance, such as toghers, are present and will indicate the archaeological potential of the site.

As mentioned above, during the course of the archaeological assessment it proved difficult to determine the extent to which the two recorded toghers survive. The clearing of the vegetation will assist in determining the extent of their survival and their current state of preservation.

These mitigation measures were previously proposed and subsequent to the granting of permission for the waste management facility archaeological monitoring of ground disturbance took place at the site over a period of five months (License 06E0746) and a report on the findings was submitted (Appendix 2.9.1). The archaeologists monitored the reduction of ground levels and the removal of all peat layers from the access road, Phase 1 and 2 of the landfill footprint and the sand and gravel borrow area. This assisted in determining if any features of archaeological significance, such as toghers, were present. No features or artefacts of archaeological significance were encountered in the course of that monitoring.

A suitably qualified archaeologist will again monitor the removal of vegetation and drain cutting in advance of the future phases of construction of the waste management facility (including the future phases of the landfill as permitted and the proposed footprint extension). The borrow areas will also be monitored as they are developed. This work for future phases will again be undertaken in advance of commencement of construction works. A report of the findings of the survey will again be submitted to The Heritage and Planning Division of the Department of Environment, Heritage and Local Government for review. Any mitigation measures proposed herein are subject to ratification by The Heritage and Planning Division of the Department of Environment, Heritage and Local Government.

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4.9 Infrastructure and Traffic

4.9.1 Introduction

TOBIN Consulting Engineers Ltd. has been appointed by Bord na Móna to prepare a Traffic Impact Assessment (TIA) for the proposed intensification and extension of the Drehid Waste Management Facility in County Kildare.

The proposed intensification of the facility will involve the accommodation of an additional 240,000 tonnes per annum of non-hazardous waste over a 7 year period, over and above the 120,000 tonnes per annum permitted over 20-years.

The proposed extension of the facility will involve the construction of additional landfill in the form of lined and contained cells to ensure that the overall life span of the facility remains at 20 years in accordance with the previously permitted proposal.

The impact of the additional operational traffic associated with the proposed intensification and the additional construction traffic associated with the proposed extension are examined herein.

In preparing this TIA, TOBIN Consulting Engineers has made reference to:

- The Kildare County Development Plan, 2005-2011
- The NRA 'Traffic and Transport Assessment Guidelines'
- The NRA 'Future Traffic Forecasts 2002 to 2040'
- NRA DMRB TD 41/95
- An Foras Forbartha RT180
- NRA Addendum DMRB TA 41/95

4.9.2 Objectives

The objective of this traffic impact assessment is to examine the potential impact that the proposed intensification and extension of the Drehid Waste Management Facility will have on the existing road network. This involved the assessment of the potential impact on a number of road junctions leading to the Facility including the existing site entrance junction on the R403 Regional Road.

This section of the EIS also looks at the effect that the proposed intensification and extension of the Facility will have on road safety including an assessment of safety aspects of the existing site entrance junction.

4.9.3 Site Location

The Drehid Waste Management Facility is located within the confines of the Timahoe Bog, which is owned by Bord na Móna. The site is accessible via a network of regional routes which in turn link with the National Primary Road / Motorway network. The R403 lies south, southwest and west of the site and joins the R402 at Carbury to the northwest of the site. The R402 connects to the N4/M4 (Dublin to Sligo/Galway) National Primary Road / Motorway, which is located some 8km to the north of the Facility. The R403 connects to the N7/M7 (Dublin to Limerick/Cork) National Primary Road / Motorway, which is located some 14km to the south of the Facility.

4.9.4 Description of the Development

Both planning permission and a waste licence have been granted for the Facility. The current permission allows for the deposition of 120,000 tonnes of residual waste and the composting of a further 25,000 tonnes of biodegradable waste per annum over a 20 year lifespan. The decision of Kildare County Council to grant planning permission (Ref No. 04/371) in April 2005 was upheld by An Bord Pleanála (Ref No. PL.09.212059) with revised conditions in November 2005.

The current proposal relates to the intensification and extension of the previously permitted Facility to accommodate an additional 240,000 tonnes per annum of non-hazardous waste over 7-years, over and above the 120,000 tonnes per annum permitted over 20-years. The permitted Facility will be constructed in 8 phases and the proposed extension will be constructed in 7 phases, giving a total of 15 phases over the lifespan of the Facility.

No other major developments have been granted permission in the area and therefore no additional traffic has been considered in the TIA presented herein.

4.9.5 Existing and Proposed Traffic Conditions

4.9.5.1 Existing Road Network

The site is accessible via a network of regional routes which in turn link with the National Primary Road / Motorway network. The R403 lies south, southwest and west of the site and joins the R402 at Carbury to the northwest of the site.

The potential haul routes to be followed are presented in Figure No. 4.9.1 and it is proposed that traffic will be spread over these routes. Each of these routes are via regional roads or a combination of regional roads and national primary roads.

Access has been provided into the previously permitted Waste Management Facility from the R403 via a new site entrance and a dedicated 5km access road. The speed limit

along the R403 in approaching this site entrance is 80km/h. The R403 has an approximate carriageway width of 6.0m in the vicinity of the site entrance, which is an adequate width for two Heavy Goods Vehicles (HGVs) to pass one another with 1.0m clearance. A ghost island right turn lane junction has been provided at the site entrance and includes road markings. Through lanes have been constructed in each direction 3.0m wide and a right turning lane 3.0m wide has also been provided. Visibility of 4.5 x 160m is available at the site entrance junction.

4.9.5.2 Existing Traffic Flows on the Adjoining Road Networks

A series of traffic counts were carried out in the area in 2007, including a number of junctions along the R403 & R402, as shown on Figure 4.9.1.

The most recent traffic count data for roads leading to the site was also sourced from Kildare County Council and the National Roads Authority. The location of these counts is also shown on Figure 4.9.1.

The traffic volumes (as recorded) show decreasing AADTs as you move away from Allenwood, heading west on the R403 towards the site entrance. The estimated AADT on the R403 was 8,498 at junction 18, 6,815 at junction 17, and 5,079 at junction 16. The traffic volumes (as recorded) also show a significant decrease in the AADT figure between junction 10 at Carbury and junction 19 at the site entrance. The estimated AADT on the R403 was 9,361 at junction 10 and 5,844 at junction 19. The HGV content along the R403 for these traffic count locations (junctions 18, 17, 16, 10 & 19) ranged from 9 to 13%. An estimated HGV content of 11% of traffic passing the site entrance to the Drehid Waste Management Facility was recorded.

Table 4.9.1 provides details of the committed operational vehicle numbers previously permitted for the existing Drehid Waste Management Facility. These figures are based on the acceptance of 120,000 tonnes per annum for landfill and 25,000 tonnes per annum for composting at the Facility over a 20-year period.

Table 4.9.1: Committed Operational Vehicle Numbers for the Permitted Drehid Waste Management Facility

Year*	TO LANDFILL			TO COMPOST FACILITY			Car & other light vehicle movements (Vehicle movements/day)	Total HGV Movements per Day (Excluding Leachate Tankers) (Vehicle movements/day)	Total HGV Movements per Hour (Waste Trucks and Leachate Tankers) (Vehicle movements/hr)	Other Movements (cars, vans etc.) per hour (Vehicle movements/hr)
	Total MSW Landfilled	Bulk Haul Vehicle Movements (BHV) (20tonne per load)	Residual RCV Movements (12tonne per load)	Total MSW To Compost Facility	Bulk Haul Vehicle Movements (20tonne per load)	Residual RCV Movements (12tonne per load)				
	(tpa)	(Vehicle movements/day)	(Vehicle movements/day)	(tpa)	(Vehicle movements/day)	(Vehicle movements/day)				
2008	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2009	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2010	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2011	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2012	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2013	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2014	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2015	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2016	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2017	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2018	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2019	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2020	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2021	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2022	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2023	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2024	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2025	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2026	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4
2027	120,000	32.7	9.6	25,000	5.6	4.0	40	51.9	5.2	4

* Assume landfill operations commence in 2008 and cease in 2027

A vehicle movement is a single movement i.e. the laden truck into the facility or the unladen truck out of the facility.

RCV - Refuse Collection Vehicle

HGV (Heavy Goods Vehicle) = (BHV's+ RCV's + Leachate Vehicles)

Waste Arrival = 52 weeks per year, 6 days per week, 10 hours per day

All leachate tankers associated with the previously Permitted Facility are included in the Projected Additional Operational Vehicle Numbers as shown in Table 4.9.2 (Worst case scenario)

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4.9.5.3 Network Improvements

Since the lodgement of the original planning application for the Drehid Waste Management Facility, a significant number of network improvements, which have had a positive impact on traffic movements to the Facility, have taken place.

To the north of the site the M4 Kilcock to Kinnegad Motorway was completed in December 2005. This is a wide-median motorway running from the N4 at Kilcock to west of Kinnegad on both the N4 (to Mullingar/Sligo) and N6 (to Galway). In particular a new interchange has been constructed at Enfield providing access from the M4 to the R402. Road improvement works have also been undertaken along the R402, which have included road strengthening and surfacing, line marking, placement of road reflectors/cats eyes and new signage. Meath County Council is currently improving the Bridge over the River Blackwater in Johnstown Bridge. In addition, the R402 Enfield to Edenderry Improvement Scheme is expected to commence in the near future with works expected to be complete in 2010. The proposed works will comprise the construction of approximately 10.2 km of a two-way single carriageway road. Affected side roads along with associated junctions will be constructed and realigned. A roundabout junction will be constructed where the proposed road crosses the existing R402 south of Carbury.

To the south of the site the N7 Naas widening was completed in August 2006. This consists of an extension of the Naas-Dublin dual carriageway to six lanes. The Design & Build contract involved the widening of 14 km of dual carriageway and the construction of four new interchanges, two pedestrian footbridges and a new local road linking Castlewarden to Kill, Johnstown and Naas. There is also a significant number of other road network improvement measures either being undertaken or completed around Naas. The Sallins road to Newbridge road link, Newbridge road to Kilcullen road link and Kilcullen road to Ballymore road link are currently open. The Ballymore road to Blessington road scheme is to be progressed to Part 8 planning on confirmation that funding is in place, it is anticipated that the Part 8 will be complete in Q1/Q2 2008 with construction commencing in Q3/Q4 2008. The Blessington road to Dublin road link is currently at planning stage, current route on Naas Development Plan is under review and feasibility of new alternative routes is under investigation. There is currently no funding in place for this scheme and its construction would be subject to available funding.

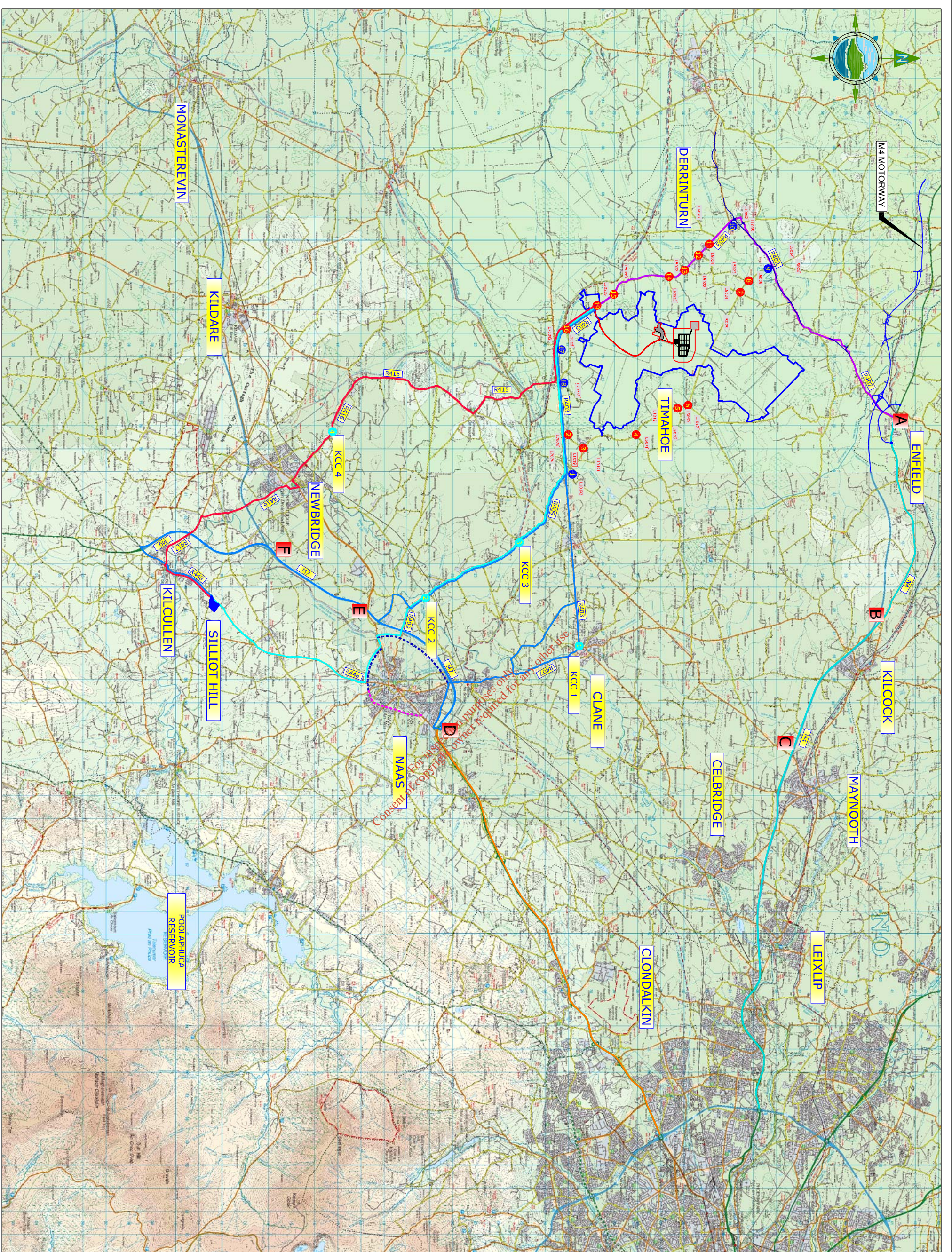
The completed road linking the Sallins road and the Newbridge road has a positive effect on traffic movements from the M7 to the regional road network (R409) leading to the Facility. While the other improvements outlined above will benefit traffic movements from locations within County Kildare, such as Naas, Ballymore Eustace, Blessington and Kilcullen, the majority of waste intended for the proposed intensification will originate in the Dublin region. Hence the traffic movements associated with the intensification will not utilise those routes and therefore, by implication, their completion is not a pre requisite to the proposed development.

Indeed the Traffic Impact Assessment herein demonstrates that the existing access routes to the site (some of which have been upgraded since the previous planning application was lodged) are clearly

capable of accommodating the additional traffic associated with the proposed intensification and extension of the Drehid Waste Management Facility.

In addition to the above, there is also a short section of the R407 at Castlesize (800m length north of Sallins at the Millicent and Bodenstown junctions) which is currently being realigned with expected completion in Q2 2008. There are also plans to install traffic calming measures in Allenwood. Such road network improvements, although not critical (as demonstrated herein) will have a positive impact on traffic movements between the Facility and the Dublin region.

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GENERAL LEGEND

BORD NA MÓNA
 OWNERSHIP BOUNDARY
 SITE ACTIVITY BOUNDARY

HAUL ROUTE No.1
 HAUL ROUTE No.2
 HAUL ROUTE No.3
 HAUL ROUTE No.4

COMPLETED MAJOR PLANNED MAJOR ROAD IMPROVEMENTS
 HAUL ROUTE FROM M50 TO REGIONAL ROAD NETWORK VIA M4/N4
 HAUL ROUTE FROM M50 TO REGIONAL ROAD NETWORK VIA M4/N4

Notes: Completed and future Maas road improvements are shown indicatively. Background mapping for these improvements is yet available.

NOTES

- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
- ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
- ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
- ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD
- 6" OS SHEET NOS: KILDARE 3, 4, 8, 9 & 13

Scale @ A3: 1:75,000

Prepared by: M. Nolan
 Checked: P. O'Neill
 Date: April 2008

Project Director: D. Grehan

Issue	Date	Drawn/Issued	By	CHKD
A	17-04-08	ISSUED FOR TENDERING	MIN	POIN

BORD NA MÓNA

Client:
 Project:
 EIS FOR EXTENSION TO DREDGED MATERIAL MANAGEMENT FACILITY

Title:
 POTENTIAL HAUL ROUTES AND TRAFFIC COUNT LOCATIONS

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Drawing No.: **Figure 4.9.1** Issue: **A**

4.9.6 Trip Generation

4.9.6.1 Trip Generation – Operational Phase

Bord na Móna proposes to landfill 240,000 tonnes per annum of waste at the Drehid Waste Management Facility for seven years over and above the 120,000 tonnes per annum previously permitted. For the remaining lifetime of the Facility, 120,000 tonnes of residual waste per annum will be landfilled. Permission is also in place for the composting of 25,000 tonnes per annum of biodegradable waste at the Facility. At maximum operation, it is expected that the proposed intensification of the Facility will generate approximately 87 HGV movements per day (43.5 laden and 43.5 unladen). This figure includes for haulage of all generated leachate to an approved wastewater treatment facility. Table 4.9.2 below gives expected traffic generation per day for the proposed intensification of the Waste Management Facility over a 20-year period. As can be seen from this table, the intensified waste acceptance is proposed to begin in 2008 and finish in 2015 with the traffic generation over the remaining years accounted for by leachate tankers. Traffic generation is based on a 6-day working week and a 10-hour day, as previously permitted.

4.9.6.2 Trip Generation– Construction Phase

As outlined in the original application, the initial construction stage, which included the site infrastructure (access road, site buildings, surface water lagoons, leachate management area, etc.) and Phase 1 of the landfill footprint, would generate the majority of construction related traffic. This phase of construction was completed in Spring 2008 and the construction traffic generated by subsequent phases will be significantly reduced. As outlined in Table 4.9.3 below, continued construction of the remaining phases of the residual landfill will generate approximately 43 vehicle movements per day, this includes 13 HGV movements.

It should be noted that the materials required for the construction of the Facility including the landfill are sourced primarily on-site. These materials are sourced from the permitted sand and gravel borrow area, the permitted clay borrow area and overburden stripped for the purpose of construction. The materials sourced on-site include the clays for final capping, subsoils for capping, sand for the production of BES, stone for road drainage etc. Based on the techniques utilised during construction of the initial stage, similar materials are available on site for the construction and capping of the proposed Facility extension.

Table 4.9.2: Projected Additional Operational Vehicle Numbers due to the Intensification and Extension of the Drehid Waste Management Facility

Year*	TO LANDFILL				Total HGV Movements per Day (Waste Trucks and Leachate Tankers) (Vehicle movements/day)	Total HGV Movements per Hour (Waste Trucks and Leachate Tankers) (Vehicle movements/hr)
	Total MSW Landfilled (tpa)	Bulk Haul Vehicle Movements (BHV) (20tonne per load) (Vehicle movements/day)	Residual RCV Movements (12tonne per load) (Vehicle movements/day)	Leachate Haulage (Vehicle movements/day)		
	2008	120,000	32.7	9.6		
2009	240,000	65.4	19.2	0.9	85.5	8.6
2010	240,000	65.4	19.2	1.7	86.3	8.6
2011	240,000	65.4	19.2	2.0	86.6	8.7
2012	240,000	65.4	19.2	2.6	87.2	8.7
2013	240,000	65.4	19.2	2.7	87.3	8.7
2014	240,000	65.4	19.2	2.2	86.8	8.7
2015	120,000	32.7	9.6	3.1	45.4	4.5
2016	0	0.0	0.0	3.0	3.0	0.3
2017	0	0.0	0.0	2.1	2.1	0.2
2018	0	0.0	0.0	2.3	2.3	0.2
2019	0	0.0	0.0	1.3	1.3	0.1
2020	0	0.0	0.0	2.4	2.4	0.2
2021	0	0.0	0.0	2.4	2.4	0.2
2022	0	0.0	0.0	2.2	2.2	0.2
2023	0	0.0	0.0	2.4	2.4	0.2
2024	0	0.0	0.0	1.5	1.5	0.2
2025	0	0.0	0.0	2.5	2.5	0.3
2026	0	0.0	0.0	2.5	2.5	0.3
2027	0	0.0	0.0	1.8	1.8	0.2

* Assume additional landfill operations (Due to Proposed Intensification) commence in 2008 and cease in 2015

A vehicle movement is a single movement i.e. the laden truck into the facility or the unladen truck out of the facility.

RCV - Refuse Collection Vehicle

HGV (Heavy Goods Vehicle) = (BHV's+ RCV's + Leachate Vehicles)

Waste Arrival = 52 weeks per year, 6 days per week, 10 hours per day

The intensification of the landfilling of waste is proposed to commence in mid 2008 and finish in mid 2015, spanning a 7-year period.

Table 4.9.3: Drehid Waste Management Facility Construction Traffic

Item	Material	Quantity	Area of material hauled per truck (m ²)	In situ density (t/m ³)	Weight (tonnes)	Vehicle Numbers
Low Permeability Basal Layer	Bentonite Enhanced Soil - BES; Bentonite (Bentonite is 5% of volume of BES)	7,920 m ³		2.2 t/m ³	17,424 t	792
Basal Geomembrane Liner	Flexible HDPE geomembrane liner (2.0mm).	316,800 m ²	11,000 m ²			29
Protection Layer	Layer of woven Geotextile (750g/m ²) or similar	316,800 m ²	5,000 m ²			63
Leachate Drainage Stone	Clause 505B or equivalent	120,915 m ³		2.2 t/m ³	266,013 t	12092
Daily Cover	Hessian rolls or similar	253,800 m ²	5,000 m ²			51
Gas Drainage Layer	Geosynthetic Gas Drainage Layer e.g. EnkaDrain or similar	363,366 m ²	6,000 m ²			61
Capping Geomembrane Liner	Flexible LLDPE geomembrane liner (2.0mm) or Geosynthetic Clay Liner (GCL) or similar.	367,200 m ²	11,000 m ²			33
Protection Layer	Layer of woven Geotextile (750g/m ²) or similar	367,200 m ²	5,000 m ²			73
Road Construction Material	Clause 804	18,177 m ³		2.2 t/m ³	39,989 t	1818
	Surfacing (base course + wearing course)	6,857 m ³		2.2 t/m ³	15,085 t	686

Total No. of Construction Trucks over lifetime of landfill **15697**
Total No. of Construction Trucks for Phase 1 of Current Permitted Facility **2882**
Total No. of Construction Trucks for each of the remaining Phases (2-15) of Current Permitted Facility **915**

Construction Complete	Phase 1 Construction Traffic (Construction is now completed)	
	Total No. of Construction Trucks for the construction of Phase 1 (construction period of 6 months - prior to commencement of operations)	2882
	No. of Truck Movements per day (144 days based on a 6 month construction period)	40.0
	Other light vehicle movements during construction of Phase 1 eg other deliveries, construction workers etc. (20 vehicles per day)	40
	Total Vehicle Movements per day during construction of Phase 1	80.0
	Over a 10 hour day (Total Vehicle Movements per hour)	8.0
	Over a 10 hour day (Truck Movements per hour)	4.00

Construction expected to take place during the following years (2008 - 2025)	Construction Traffic (per Phase) Phases 2-8 of Current Permitted Landfill Facility Phases 9-15 of Proposed Landfill Facility Extension	
	Total No. of Construction Trucks for the construction of each remaining phase (Phases 2-15) (construction period of 6 months)	915
	No. of Truck Movements per day (144 days based on a 6 month construction period)	12.7
	Other light vehicle movements during construction of phases (Phases 2-15), eg other deliveries, construction workers etc. (15 vehicles per day)	30
	Total Vehicle Movements per day during construction of each phase (Phases 2-15)	42.7
	Over a 10 hour day (Total Vehicle Movements per hour)	4.3
	Over a 10 hour day (Truck Movements per hour)	1.27

Notes

- 80% of road construction material imported during Phase 1 construction which was spread over a 6 month period. Rest of road construction material is equally spread over remaining 14 Phases
- Trucks can carry 22 tonnes per load with aluminium bodies
- Flexible HDPE geomembrane liners** come in 750 sq.m rolls
Hauled using articulated lorries each carrying 15 rolls, 11,000m² per truck
- Woven Geotextile protection layers** come in 500 sq.m rolls
Hauled using articulated lorries each carrying 10 rolls, 5,000sqm per truck
- Hessian** comes in 500 sq.m rolls
Hauled using articulated lorries each carrying 10 rolls, 5,000m² per truck
- Geosynthetic **landfill gas drainage layer** come in 500 sq.m rolls
Hauled using articulated lorries each carrying 12 rolls, 6,000sqm per truck
- Flexible LLDPE geomembrane liners** come in 750 sq.m rolls
Hauled using articulated lorries each carrying 15 rolls, 11,000m² per truck

4.9.7 Road Network Impact Assessment

4.9.7.1 Introduction and Methodology

The regional road network adjacent to the previously permitted Drehid Waste Management Facility has been examined to ascertain the percentage of additional traffic that is expected to be generated by the proposed intensification and extension of the Facility.

The junctions included in the traffic impact assessment are shown in Figure 4.9.1. The years assessed were the opening year (2008), the first year at the proposed full capacity (2009), the last year at full capacity (2014), a number of intermittent years (2015, 2016, 2020, 2024), up until the final year of operation (2027). Stress testing was also carried out for the year 2014 the last year at full capacity. Traffic growth assumptions are presented in Section 4.9.7.2 while trip distribution is outlined in Section 4.9.7.3 herein. The traffic figures calculated by way of the traffic impact assessment are presented in Table 4.9.4 to 4.9.15.

4.9.7.2 Traffic Growth

Forecast indices were used in this TIA, to calculate AADT (Annual Average Daily Traffic) for the road network in the vicinity of the Facility for the assessment years.

The background traffic growths used for the junctions on the National Primary roads, are those provided by the NRA (Future Traffic Forecasts) for the National Primary road network (Published August 2003 for years 2002 – 2040).

The background traffic growths used in this TIA for the junctions on the Regional roads, are those provided by the NRA (Future Traffic Forecasts) for the National Secondary road network (Published August 2003 for years 2002 – 2040).

4.9.7.3 Trip Distribution

In order to analyse the effect that the proposed intensification and extension will have on the surrounding road network, a number of different scenarios were tested. These were used in order to observe the expected percentage increase in traffic on the R403 and surrounding road network.

The haul routes to be followed are presented in Figure No. 4.9.1 and it is proposed that traffic will be spread over these routes. Each of these routes is via regional roads or a combination of regional roads and national primary roads.

The trip distribution scenario whereby two thirds (67%) of the traffic arrives from and departs to the south, and the remaining one third (33%) arrives from and departs to the north, is considered to be the most likely scenario. This assumption is based on the fact that waste sourced from those waste transfer stations/material recovery facilities located close to the Red Cow roundabout in Dublin will travel out along the N7 which is to the south of the site.

Using this scenario i.e. 67% from/to the south and 33% from/to the north, Tables 4.9.4 to 4.9.11 have been derived. These tables show the predicted effect that the traffic generated due to the intensification and extension of the Drehid Waste Management Facility will have on the road network. Traffic growth along the potential access routes based on generic growth rates has been taken into account. The years assessed were the opening year (2008), the first year at the proposed full capacity (2009), the last year at full capacity (2014), a number of intermittent years (2015, 2016, 2020, 2024), up until the final year of operation (2027).

Table 4.9.4: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2008)

Table 4.9.5: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2009)

Table 4.9.6: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2014)

Table 4.9.7: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2015)

Table 4.9.8: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2016)

Table 4.9.9: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2020)

Table 4.9.10: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2024)

Table 4.9.11: Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2027)

While all traffic arriving and leaving the site from one direction is unlikely, *stress tests* for these improbable worst case scenarios have nonetheless been carried out. These stress tests, which are carried out for 2014 (i.e. the last year at full capacity) are shown in the following tables.

Table 4.9.12: Traffic Stress Test - Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2014) (Assuming 100% from/to North)

Table 4.9.13: Traffic Stress Test - Percentage increase on future traffic numbers due to the intensification and extension of the Drehid Waste Management

Facility (Forecast 2014) (Assuming 100% from/to South)

In order to encompass all possible (even though unlikely) scenarios, two other stress tests have been carried out as follows:

- A 50:50 split in traffic arriving from and departing to the North and South.
- Two thirds (67%) of the traffic arriving from and departing to the North and one third (33%) of the traffic arriving from and departing to the South.

These stress tests are shown in the following tables.

Table 4.9.14: Traffic Stress Test - Percentage increase on existing traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2014) (Assuming 50% from/to both the North and South)

Table 4.9.15: Traffic Stress Test - Percentage increase on existing traffic numbers due to the intensification and extension of the Drehid Waste Management Facility (Forecast 2014) (Assuming 67% from/to the North and 33% from/to the South)

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Table 4.9.4: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2008)

Traffic from/to North = 33%

Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	% HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2008	Forecasted HGV 2008	Revised AADT 2008	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 14.2 vehicles per day 14.2 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	19041	3176	22217	0.1	0.4	0.1	0.6
		B	28392	9.60%	2726	25666	29673	3153	32826	0.0	0.5	0.1	0.6
		C	39088	7.50%	2932	36156	41784	3387	45171	0.0	0.4	0.1	0.5
		9	3949	8.56%	338	3611	3771	401	4173	0.3	3.5	0.7	4.6
		10	9361	11.24%	1052	8309	8626	1140	9765	0.1	1.2	0.3	1.6
		14	5448	11.63%	633	4814	5015	707	5722	0.2	2.0	0.5	2.6
At the Site Entrance	From the North	19	5844	11.07%	647	5197	5410	721	6131	0.2	2.0	0.5	2.6
	From the South		5844	11.07%	647	5197	5410	721	6131	0.5	3.9	0.9	5.1
From the South 28.4 vehicles per day 28.4 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	4682	659	5341	0.5	4.3	1.1	5.6
		17	6815	12.71%	866	5949	6187	948	7135	0.4	3.0	0.8	3.9
		18	8498	8.88%	755	7743	8042	832	8874	0.3	3.4	0.6	4.4
		1	8084	6.41%	518	7566	7858	588	8446	0.3	4.8	0.7	6.3
		KCC1	12923	12.90%	1667	11256	11671	1776	13447	0.2	1.6	0.4	2.1
		KCC2	6377	9.20%	587	5790	6023	659	6682	0.4	4.3	0.9	5.6
		KCC3	3526	18.70%	659	2867	3595	850	4444	0.6	3.3	1.3	4.3
		KCC4	6832	4.65%	348	6514	6554	370	6924	0.4	7.7	0.8	10.0
		D	56830	13.50%	7672	49158	56795	8780	65575	0.0	0.3	0.1	0.4
		E	49971	12.80%	6396	43575	50349	7328	57677	0.0	0.4	0.1	0.5
F	45364	12.80%	5807	39557.4	45711	6658	52368.4	0.1	0.4	0.1	0.6		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007

Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004

Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.

For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3

HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.

Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040 (August 2003).

Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.5: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2009)

Traffic from/to North = 33%
 Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2009	Forecasted HGV 2009	Revised AADT 2009	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 28.5 vehicles per day 28.5 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	19640	3277	22917	0.1	0.9	0.2	1.0
		B	28392	9.60%	2726	25666	30606	3253	33859	0.1	0.9	0.1	1.0
		C	39088	7.50%	2932	36156	43099	3495	46594	0.1	0.8	0.1	0.9
		9	3949	8.56%	338	3611	3862	410	4272	0.7	7.0	1.0	8.0
		10	9361	11.24%	1052	8309	8833	1167	10000	0.3	2.4	0.4	2.8
		14	5448	11.63%	633	4814	5135	723	5859	0.5	3.9	0.7	4.5
At the Site Entrance	From the North	15	5620	9.65%	543	5078	5414	627	6041	0.5	4.5	0.7	5.2
	From the North	19	5844	11.07%	647	5197	5540	738	6278	0.5	3.9	0.7	4.4
	From the South	19	5844	11.07%	647	5197	5540	738	6278	0.9	7.7	1.4	8.9
From the South 57.0 vehicles per day 57.0 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	4794	674	5468	1.0	8.5	1.6	9.7
		17	6815	12.71%	866	5949	6336	970	7306	0.8	5.9	1.2	6.8
		18	8498	8.88%	755	7743	8235	852	9087	0.6	6.7	0.9	7.7
		1	8084	6.41%	518	7566	8047	601	8648	0.7	9.5	1.0	10.9
		KCC1	12923	12.90%	1667	11256	11953	1819	13771	0.4	3.1	0.6	3.6
		KCC2	6377	9.20%	587	5790	6168	674	6842	0.8	8.5	1.2	9.7
		KCC3	3526	18.70%	659	2867	3681	870	4550	1.3	6.6	1.9	7.5
		KCC4	6832	4.65%	318	6514	6712	377	7089	0.8	15.1	1.2	17.3
		D	56830	13.50%	7672	49158	58583	9061	67644	0.1	0.6	0.1	0.7
		E	49971	12.80%	5396	43575	51934	7563	59497	0.1	0.8	0.1	0.9
F	45364	12.80%	5807	39557	47149	6871	54020	0.1	0.8	0.2	1.0		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007.
 Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
 Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
 For Junction location see Figure No. 4.9.1
 Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
 HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
 Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).
 Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.6: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2014)

Traffic from/to North = 33%

Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	% HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2014	Forecasted HGV 2014	Revised AADT 2014	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 28.9 vehicles per day 28.9 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	22034	3730	25764	0.1	0.8	0.2	0.9
		B	28392	9.60%	2726	25666	34340	3703	38042	0.1	0.8	0.1	0.9
		C	39088	7.50%	2932	36156	48358	3979	52337	0.1	0.7	0.1	0.8
		9	3949	8.56%	338	3611	4283	453	4736	0.6	6.4	0.9	7.3
		10	9361	11.24%	1052	8309	9803	1301	11104	0.3	2.2	0.4	2.5
		14	5448	11.63%	633	4814	5697	805	6502	0.4	3.6	0.7	4.1
At the Site Entrance	From the North	19	5844	11.07%	647	5197	6147	821	6967	0.4	3.5	0.6	4.0
	From the South		5844	11.07%	647	5197	6147	821	6967	0.8	7.1	1.2	8.1
From the South 57.9 vehicles per day 57.9 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	5318	750	6068	1.0	7.7	1.4	8.8
		17	6815	12.71%	866	5949	7030	1081	8111	0.7	5.4	1.1	6.1
		18	8498	8.88%	755	7744	9139	949	10087	0.6	6.1	0.9	7.0
		1	8084	6.41%	518	7566	8930	668	9598	0.6	8.7	0.9	9.9
		KCC1	12923	12.90%	1667	11256	13266	2032	15298	0.4	2.8	0.6	3.3
		KCC2	6377	9.20%	587	5990	6844	749	7593	0.8	7.7	1.1	8.9
		KCC3	3526	18.70%	659	2867	4082	968	5050	1.1	6.0	1.7	6.9
		KCC4	6832	4.65%	318	6514	7447	417	7864	0.7	13.9	1.1	15.9
		D	56830	13.50%	7678	49158	65733	10328	76061	0.1	0.6	0.1	0.6
		E	49971	12.80%	6396	43575	58272	8619	66891	0.1	0.7	0.1	0.8
F	45364	12.80%	5802	39557	52903	7830	60733	0.1	0.7	0.1	0.8		

Notes:

- Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007
- Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
- Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
- Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
- Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
- For Junction location see Figure No. 4.9.1
- Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
- HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
- Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).
- Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.7: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2015)

Traffic from/to North = 33%

Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2015	Forecasted HGV 2015	Revised AADT 2015	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 15.1 vehicles per day 15.1 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	22482	3806	26288	0.1	0.4	0.1	0.5
		B	28392	9.60%	2726	25666	35040	3778	38817	0.0	0.4	0.1	0.5
		C	39088	7.50%	2932	36156	49344	4059	53404	0.0	0.4	0.1	0.5
		9	3949	8.56%	338	3611	4373	462	4835	0.3	3.3	0.6	4.2
		10	9361	11.24%	1052	8309	10011	1328	11339	0.1	1.1	0.3	1.5
		14	5448	11.63%	633	4814	5817	821	6638	0.2	1.8	0.4	2.4
		15	5620	9.65%	543	5078	6133	710	6844	0.2	2.1	0.4	2.7
At the Site Entrance	From the North	19	5844	11.07%	647	5197	6277	837	7114	0.2	1.8	0.4	2.3
	From the South		5844	11.07%	647	5197	6277	837	7114	0.4	3.6	0.8	4.6
From the South 30.3 vehicles per day 30.3 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	5430	765	6195	0.5	4.0	0.9	5.1
		17	6815	12.71%	866	5949	7179	1103	8282	0.4	2.7	0.7	3.5
		18	8498	8.88%	755	7743	9332	968	10300	0.3	3.1	0.6	4.0
		1	8084	6.41%	518	7566	9119	681	9800	0.3	4.4	0.6	5.7
		KCC1	12923	12.90%	1667	11256	13547	2075	15622	0.2	1.5	0.4	1.9
		KCC2	6377	9.20%	587	5790	6988	764	7752	0.4	4.0	0.8	5.1
		KCC3	3526	18.70%	659	2867	4168	988	5156	0.6	3.1	1.1	3.9
		KCC4	6832	4.65%	318	6514	7605	425	8030	0.4	7.1	0.7	9.1
		D	56830	13.50%	7672	49158	67074	10539	77613	0.0	0.3	0.1	0.4
		E	49971	12.80%	6396	43575	59460	8795	68256	0.0	0.3	0.1	0.4
F	45364	12.80%	5807	39557	53982	7989	61971	0.0	0.4	0.1	0.5		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007

Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004

Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.

For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3

HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.

Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).

Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.8: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2016)

Traffic from/to North = 33%

Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2016	Forecasted HGV 2016	Revised AADT 2016	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 1.0 vehicles per day 1.0 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	22931	3881	26813	0.0	0.0	0.1	0.1
		B	28392	9.60%	2726	25666	35740	3853	39592	0.0	0.0	0.0	0.1
		C	39088	7.50%	2932	36156	50330	4140	54470	0.0	0.0	0.0	0.1
		9	3949	8.56%	338	3611	4433	468	4901	0.0	0.2	0.3	1.1
		10	9361	11.24%	1052	8309	10149	1346	11495	0.0	0.1	0.1	0.4
		14	5448	11.63%	633	4814	5898	832	6729	0.0	0.1	0.2	0.6
At the Site Entrance	From the North	15	5620	9.65%	543	5078	6218	720	6938	0.0	0.1	0.2	0.7
	From the South	19	5844	11.07%	647	5197	6363	848	7211	0.0	0.1	0.2	0.6
From the South 2.0 vehicles per day 2.0 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	5805	775	6280	0.0	0.3	0.5	1.4
		17	6815	12.71%	866	5949	7276	1118	8396	0.0	0.2	0.4	0.9
		18	8498	8.88%	755	7744	9461	981	10442	0.0	0.2	0.3	1.1
		1	8084	6.41%	518	7566	9245	690	9935	0.0	0.3	0.3	1.5
		KCC1	12923	12.90%	1667	11256	13735	2104	15838	0.0	0.1	0.2	0.5
		KCC2	6377	9.20%	587	5790	7085	774	7859	0.0	0.3	0.4	1.4
		KCC3	3526	18.70%	659	2867	4225	1001	5227	0.0	0.2	0.6	1.0
		KCC4	6832	4.65%	318	6514	7710	430	8140	0.0	0.5	0.4	2.4
		D	56830	13.50%	7675	49158	68414	10751	79165	0.0	0.0	0.0	0.1
		E	49971	12.80%	6396	43575	60648	8972	69620	0.0	0.0	0.0	0.1
		F	45364	12.80%	5807	39557	55061	8149	63210	0.0	0.0	0.0	0.1

Notes:

- Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007
- Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
- Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
- Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
- Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
- For Junction location see Figure No. 4.9.1
- Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
- HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
- Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).
- Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.9: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2020)

Traffic from/to North = 33%
 Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2020	Forecasted HGV 2020	Revised AADT 2020	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 0.8 vehicles per day 0.8 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	24577	4184	28761	0.0	0.0	0.1	0.1
		B	28392	9.60%	2726	25666	38306	4153	42459	0.0	0.0	0.0	0.1
		C	39088	7.50%	2932	36156	53946	4463	58409	0.0	0.0	0.0	0.1
		9	3949	8.56%	338	3611	4734	500	5234	0.0	0.2	0.3	1.0
		10	9361	11.24%	1052	8309	10841	1445	12287	0.0	0.1	0.1	0.3
		14	5448	11.63%	633	4814	6299	891	7190	0.0	0.1	0.2	0.6
At the Site Entrance	From the North	19	5844	11.07%	647	5197	6796	909	7705	0.0	0.1	0.2	0.6
	From the South		5844	11.07%	647	5197	6796	909	7705	0.0	0.2	0.4	1.1
From the South 1.6 vehicles per day 1.6 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	5879	830	6710	0.0	0.2	0.4	1.2
		17	6815	12.71%	866	5949	7784	1199	8973	0.0	0.1	0.3	0.8
		18	8498	8.88%	755	7744	10107	1052	11158	0.0	0.2	0.3	1.0
		1	8084	6.41%	518	7566	9876	739	10614	0.0	0.2	0.3	1.4
		KCC1	12923	12.90%	1667	11256	14673	2260	16933	0.0	0.1	0.2	0.4
		KCC2	6377	9.20%	587	5790	7567	829	8397	0.0	0.2	0.4	1.2
		KCC3	3526	18.70%	659	2867	4512	1074	5586	0.0	0.1	0.5	0.9
		KCC4	6832	4.65%	318	6514	8235	459	8694	0.0	0.3	0.3	2.2
		D	56830	13.50%	7672	49158	73330	11595	84925	0.0	0.0	0.0	0.1
		E	49971	12.80%	6396	43575	65006	9676	74682	0.0	0.0	0.0	0.1
F	45364	12.80%	5807	39557	59016	8788	67805	0.0	0.0	0.0	0.1		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007
 Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
 Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
 For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
 HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
 Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).
 Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.10: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2024)

Traffic from/to North = 33%
 Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	% HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2024	Forecasted HGV 2024	Revised AADT 2024	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC		
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	
From the North 0.5 vehicles per day 0.5 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	25924	4486	30410	0.0	0.0	0.0	0.1	
		B	28392	9.60%	2726	25666	40406	4453	44859	0.0	0.0	0.0	0.1	
		C	39088	7.50%	2932	36156	56904	4786	61690	0.0	0.0	0.0	0.1	
		9	3949	8.56%	338	3611	4975	528	5503	0.0	0.1	0.3	0.9	
		10	9361	11.24%	1052	8309	11395	1535	12931	0.0	0.0	0.1	0.3	
		14	5448	11.63%	633	4814	6620	945	7565	0.0	0.1	0.2	0.5	
At the Site Entrance	From the North	15	5620	9.65%	543	5078	6980	817	7797	0.0	0.1	0.2	0.6	
	From the North	19	5844	11.07%	647	5197	7143	964	8107	0.0	0.1	0.2	0.5	
	From the South		5844	11.07%	647	5197	7143	964	8107	0.0	0.1	0.4	1.0	
	From the South 1.0 vehicles per day 1.0 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	6179	880	7059	0.0	0.1	0.4	1.1
			17	6815	12.71%	866	5949	8171	1273	9444	0.0	0.1	0.3	0.7
			18	8498	8.88%	755	7744	10623	1116	11739	0.0	0.1	0.3	0.8
I			8084	6.41%	518	7566	10380	783	11163	0.0	0.1	0.3	1.2	
KCC1			12923	12.90%	1667	11256	5423	2403	17826	0.0	0.0	0.2	0.4	
KCC2			6377	9.20%	587	5790	7953	879	8833	0.0	0.1	0.3	1.1	
		KCC3	3526	18.70%	659	2867	4741	1140	5881	0.0	0.1	0.5	0.8	
		KCC4	6832	4.65%	318	6514	8656	485	9141	0.0	0.2	0.3	2.0	
		D	56830	13.50%	7672	49158	77352	12440	89792	0.0	0.0	0.0	0.1	
		E	49971	12.80%	6396	43575	68571	10380	78951	0.0	0.0	0.0	0.1	
		F	45364	12.80%	5807	39557	62253	9428	71681	0.0	0.0	0.0	0.1	

Notes:

- Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007
- Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
- Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
- Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
- Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
- For Junction location see Figure No. 4.9.1
- Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
- HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
- Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).
- Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.11: Traffic Base Case - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2027)

Traffic from/to North = 33%
 Traffic from/to South = 67%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	% HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2027	Forecasted HGV 2027	Revised AADT 2027	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 0.0 vehicles per day 0.6 HGV per day	14.2 vehicles per day 4.2 HGV per day	A	19204	14.30%	2746	16458	26821	4713	31534	0.0	0.0	0.0	0.1
		B	28392	9.60%	2726	25666	41806	4678	46484	0.0	0.0	0.0	0.1
		C	39088	7.50%	2932	36156	58876	5028	63904	0.0	0.0	0.0	0.1
		9	3949	8.56%	338	3611	5125	551	5677	0.0	0.1	0.3	0.9
		10	9361	11.24%	1052	8309	11742	1607	13349	0.0	0.0	0.1	0.3
		14	5448	11.63%	633	4814	6820	989	7809	0.0	0.1	0.2	0.5
At the Site Entrance	From the North	19	5844	11.07%	647	5197	7359	1009	8368	0.0	0.1	0.2	0.5
	From the South		5844	11.07%	647	5197	7359	1009	8368	0.0	0.1	0.4	1.0
From the South 1.2 vehicles per day 1.2 HGV per day	28.5 vehicles per day 8.5 HGV per day	16	5079	11.56%	587	4492	6366	920	7287	0.0	0.1	0.4	1.1
		17	6815	12.71%	866	5949	8418	1332	9751	0.0	0.1	0.3	0.7
		18	8498	8.88%	755	7744	10946	1168	12114	0.0	0.1	0.2	0.8
		1	8084	6.41%	518	7566	10695	818	11514	0.0	0.1	0.3	1.2
		KCC1	12923	12.90%	1667	11256	15892	2517	18409	0.0	0.0	0.2	0.4
		KCC2	6377	9.20%	587	5790	8195	919	9114	0.0	0.1	0.3	1.1
		KCC3	3526	18.70%	659	2867	4885	1193	6077	0.0	0.1	0.5	0.8
		KCC4	6832	4.65%	318	6514	8918	506	9425	0.0	0.2	0.3	1.9
		D	56830	13.50%	7672	49158	80033	13073	93107	0.0	0.0	0.0	0.1
		E	49971	12.80%	6996	43575	70948	10908	81856	0.0	0.0	0.0	0.1
F	45364	12.80%	5807	39557	64411	9907	74318	0.0	0.0	0.0	0.1		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007
 Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
 Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
 For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
 HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
 Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040 (August 2003).
 Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.12: Traffic Stress Test - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2014)

Traffic from/to North = 100%

Traffic from/to South = 0%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2014	Forecasted HGV 2014	Revised AADT 2014	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC		
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	
From the North 86.8 vehicles per day 86.8 HGV per day	42.7 vehicles per day 12.7 HGV per day	A	19204	14.30%	2746	16458	22034	3730	25764	0.3	2.3	0.5	2.7	
		B	28392	9.60%	2726	25666	34340	3703	38042	0.2	2.3	0.3	2.7	
		C	39088	7.50%	2932	36156	48358	3979	52337	0.2	2.2	0.2	2.5	
		9	3949	8.56%	338	3611	4283	453	4736	1.8	19.2	2.7	22.0	
		10	9361	11.24%	1052	8309	9803	1301	11104	0.8	6.7	1.2	7.6	
		14	5448	11.63%	633	4814	5697	805	6502	1.3	10.8	2.0	12.4	
At the Site Entrance	From the North	15	5620	9.65%	543	5078	6006	696	6703	1.3	12.5	1.9	14.3	
	From the North	19	5844	11.07%	647	5197	6147	821	6967	1.2	10.6	1.9	12.1	
	From the South		5844	11.07%	647	5197	6147	821	6967	0.0	0.0	0.0	0.0	
	From the South 0.0 vehicles per day 0.0 HGV per day	0.0 vehicles per day 0.0 HGV per day	16	5079	11.56%	587	4492	5338	750	6068	0.0	0.0	0.0	0.0
			17	6815	12.71%	866	5949	7036	1081	8111	0.0	0.0	0.0	0.0
			18	8498	8.88%	755	7744	9439	949	10087	0.0	0.0	0.0	0.0
			1	8084	6.41%	518	7566	8930	668	9598	0.0	0.0	0.0	0.0
			KCC1	12923	12.90%	1667	11256	13266	2032	15298	0.0	0.0	0.0	0.0
			KCC2	6377	9.20%	587	5790	6844	749	7593	0.0	0.0	0.0	0.0
			KCC3	3526	18.70%	659	2867	4082	968	5050	0.0	0.0	0.0	0.0
KCC4			6832	4.65%	318	6514	7447	417	7864	0.0	0.0	0.0	0.0	
D	56830	13.50%	7632	49158	65733	10328	76061	0.0	0.0	0.0	0.0			
E	49971	12.80%	6396	43575	58272	8619	66891	0.0	0.0	0.0	0.0			
F	45364	12.80%	5807	39557.4	52903	7830	60733	0.0	0.0	0.0	0.0			

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007

Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004

Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.

For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3

HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.

Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).

Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.13: Traffic Stress Test - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2014)

Traffic from/to North = 0%
 Traffic from/to South = 100%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	% HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2014	Forecasted HGV 2014	Revised AADT 2014	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 0.0 vehicles per day 0.0 HGV per day	0.0 vehicles per day 0.0 HGV per day	A	19204	14.30%	2746	16458	22034	3730	25764	0.0	0.0	0.0	0.0
		B	28392	9.60%	2726	25666	34340	3703	38042	0.0	0.0	0.0	0.0
		C	39088	7.50%	2932	36156	48358	3979	52337	0.0	0.0	0.0	0.0
		9	3949	8.56%	338	3611	4283	453	4736	0.0	0.0	0.0	0.0
		10	9361	11.24%	1052	8309	9803	1301	11104	0.0	0.0	0.0	0.0
		14	5448	11.63%	633	4814	5697	805	6502	0.0	0.0	0.0	0.0
		15	5620	9.65%	543	5078	6006	696	6703	0.0	0.0	0.0	0.0
At the Site Entrance	From the North		5844	11.07%	647	5197	6147	821	6967	0.0	0.0	0.0	0.0
	From the South	19	5844	11.07%	647	5197	6147	821	6967	1.2	10.6	1.9	12.1
From the South 86.8 vehicles per day 86.8 HGV per day	42.7 vehicles per day 12.7 HGV per day	16	5079	11.56%	587	4492	5318	780	6068	1.4	11.6	2.1	13.3
		17	6815	12.71%	866	5949	7030	1081	8111	1.1	8.0	1.6	9.2
		18	8498	8.88%	755	7744	9139	949	10087	0.9	9.2	1.3	10.5
		1	8084	6.41%	518	7566	8084	668	9598	0.9	13.0	1.3	14.9
		KCC1	12923	12.90%	1667	11256	13266	2032	15298	0.6	4.3	0.8	4.9
		KCC2	6377	9.20%	587	5790	6344	749	7593	1.1	11.6	1.7	13.3
		KCC3	3526	18.70%	659	2867	4082	968	5050	1.7	9.0	2.6	10.3
		KCC4	6832	4.65%	318	6514	7447	417	7864	1.1	20.8	1.6	23.9
		D	56830	13.50%	7672	49158	65733	10328	76061	0.1	0.8	0.2	1.0
		E	49971	12.80%	6396	43575	58272	8619	66891	0.1	1.0	0.2	1.2
F	45364	12.80%	5807	39557.4	52903	7830	60733	0.1	1.1	0.2	1.3		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007
 Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004
 Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.
 Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.
 For Junction location see Figure No. 4.9.1
 Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3
 HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.
 Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).
 Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.14: Traffic Stress Test - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2014)

Traffic from/to North = 50%

Traffic from/to South = 50%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGV	Counted HGV	Counted AADT less HGV	Forecasted AADT less HGV 2014	Forecasted HGV 2014	Revised AADT 2014	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGV Traffic(%)
From the North 43.4 vehicles per day 43.4 HGV per day	21.4 vehicles per day 6.4 HGV per day	A	19204	14.30%	2746	16458	22034	3730	25764	0.2	1.2	0.3	1.3
		B	28392	9.60%	2726	25666	34340	3703	38042	0.1	1.2	0.2	1.3
		C	39088	7.50%	2932	36156	48358	3979	52337	0.1	1.1	0.1	1.3
		9	3949	8.56%	338	3611	4283	453	4736	0.9	9.6	1.4	11.0
		10	9361	11.24%	1052	8309	9803	1301	11104	0.4	3.3	0.6	3.8
		14	5448	11.63%	633	4814	5697	805	6502	0.7	5.4	1.0	6.2
		15	5620	9.65%	543	5078	6006	696	6703	0.6	6.2	1.0	7.1
At the Site Entrance	From the North	19	5844	11.07%	647	5197	6147	821	6967	0.6	5.3	0.9	6.1
	From the South		5844	11.07%	647	5197	6147	821	6967	0.6	5.3	0.9	6.1
From the South 43.4 vehicles per day 43.4 HGV per day	21.4 vehicles per day 6.4 HGV per day	16	5079	11.56%	587	4492	5318	750	6068	0.7	5.8	1.1	6.6
		17	6815	12.71%	866	5949	7030	1081	8111	0.5	4.0	0.8	4.6
		18	8498	8.88%	755	7744	9139	949	10087	0.4	4.6	0.6	5.2
		1	8084	6.41%	518	7566	8930	668	9598	0.5	6.5	0.7	7.5
		KCC1	12923	12.90%	1667	11256	13266	2032	15298	0.3	2.1	0.4	2.4
		KCC2	6377	9.20%	587	5790	6844	749	7593	0.6	5.8	0.9	6.6
		KCC3	3526	18.70%	659	2867	4082	968	5050	0.9	4.5	1.3	5.1
		KCC4	6832	4.65%	318	6514	7447	417	7864	0.6	10.4	0.8	11.9
		D	56830	13.50%	7672	49158	65733	10328	76061	0.1	0.4	0.1	0.5
		E	49971	12.80%	6306	43575	58272	8619	66891	0.1	0.5	0.1	0.6
F	45364	12.80%	5807	39557.4	52903	7830	60733	0.1	0.6	0.1	0.6		

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007

Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004

Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.

For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3

HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.

Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).

Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

Table 4.9.15: Traffic Stress Test - Percentage increase on future traffic numbers due to the Intensification and Extension of the Drehid Waste Management Facility (Forecast 2014)

Traffic from/to North = 67%

Traffic from/to South = 33%

Projected Additional Operational Traffic	Projected Construction Traffic	Junction	Counted AADT	%HGVT	Counted HGVT	Counted AADT less HGVT	Forecasted AADT less HGVT 2014	Forecasted HGVT 2014	Revised AADT 2014	OPERATIONAL TRAFFIC		OPERATIONAL & CONSTRUCTION TRAFFIC	
										Percentage Increase on Overall Traffic(%)	Percentage Increase on HGVT Traffic(%)	Percentage Increase on Overall Traffic(%)	Percentage Increase on HGVT Traffic(%)
From the North 57.9 vehicles per day 57.9 HGVT per day	28.5 vehicles per day 8.5 HGVT per day	A	19204	14.30%	2746	16458	22034	3730	25764	0.2	1.6	0.3	1.8
		B	28392	9.60%	2726	25666	34340	3703	38042	0.2	1.6	0.2	1.8
		C	39088	7.50%	2932	36156	48358	3979	52337	0.1	1.5	0.2	1.7
		9	3949	8.56%	338	3611	4283	453	4736	1.2	12.8	1.8	14.6
		10	9361	11.24%	1052	8309	9803	1301	11104	0.5	4.4	0.8	5.1
		14	5448	11.63%	633	4814	5697	805	6502	0.9	7.2	1.3	8.2
At the Site Entrance	From the North	15	5620	9.65%	543	5078	6006	696	6703	0.9	8.3	1.3	9.5
	From the North	19	5844	11.07%	647	5197	6147	821	6967	0.8	7.1	1.2	8.1
From the South 28.9 vehicles per day 28.9 HGVT per day	From the South	16	5079	11.56%	587	4492	5318	750	6068	0.5	3.9	0.7	4.4
	17	6815	12.71%	866	5949	7030	1081	8111	0.4	2.7	0.5	3.1	
	18	8498	8.88%	755	7744	9139	949	10087	0.3	3.1	0.4	3.5	
	I	8084	6.41%	518	7566	8930	668	9598	0.3	4.3	0.4	5.0	
	KCC1	12923	12.90%	1667	11256	13266	2032	15298	0.2	1.4	0.3	1.6	
	KCC2	6377	9.20%	587	5790	6844	749	7593	0.4	3.9	0.6	4.4	
	KCC3	3526	18.70%	659	2867	4082	968	5050	0.6	3.0	0.9	3.4	
	KCC4	6832	4.65%	318	6514	7447	417	7864	0.4	6.9	0.5	8.0	
	D	56830	13.50%	7672	49158	65733	10328	76061	0.0	0.3	0.1	0.3	
	E	49971	12.80%	6396	43575	58272	8619	66891	0.0	0.3	0.1	0.4	
	F	45364	12.80%	5807	39557.4	52903	7830	60733	0.0	0.4	0.1	0.4	

Notes:

Traffic counts for junctions 1, 9, 10, 14, 15, 16, 17, 18, and 19 were carried out in October 2007

Traffic counts for junctions A,B,C,D,E & F are taken from the NRA National Roads and Traffic Flows, 2004

Traffic counts for junctions KCC1 and KCC2 (undertaken in 2007) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC3 (undertaken in 2001) were sourced from Kildare Co. Co.

Traffic counts for junctions KCC4 (undertaken in 2008) were sourced from Kildare Co. Co.

For Junction location see Figure No. 4.9.1

Projected vehicle numbers for facility operation and facility construction are as shown on Table 4.9.2 and Table 4.9.3

HGV numbers for the operational traffic include BHVs and RCVs to the landfill site and leachate tankers.

Projected traffic numbers obtained from NRA - Future Traffic Forecasts 2002-2040- (August 2003).

Forecasted figures and Revised AADT's include Committed Operational Vehicle numbers shown on Table 4.9.1

4.9.7.4 The Effects of Using the R403 as the Access Road

It can be seen, from the various tables presented above, that the maximum potential traffic impact of the proposed intensification and extension of the Drehid Waste Management Facility is along the R403 approaching the existing site entrance. The results of the traffic impact assessment as carried out for the various trip distribution scenarios outlined in Section 4.9.7.3 are discussed in the following sections. The junctions examined are shown on Figure 4.9.1.

Two-Thirds South (67% One-Third North (33%)

Tables 4.9.4 to 4.9.11 show the expected potential traffic impact due to traffic generated by the development assuming that two thirds (67%) of the traffic arrives from and departs to the south and one third (33%) arrives from and departs to the north. As outlined previously Tables 4.9.4 to 4.9.11 have taken into account generic traffic growth rates for the years assessed as derived from NRA guidelines.

As shown on Table 4.9.5 the percentage increase on overall traffic from the North of the site due to the proposed intensification of facility operations in 2009 varies from 0.1% to 0.7%. The percentage increase due to facility operations in 2009 on overall traffic numbers from the South of the site varies from 0.1% to 1.3%.

Table 4.9.5 also shows the projected increases on HGV traffic due to the proposed intensification of facility operations. As shown, HGV traffic increases on the R403 leading to the site entrance vary from 2.4% to 9.5% in 2009.

Table 4.9.5 also shows the percentage increase on traffic due to the proposed intensification of facility operations traffic combined with revised construction traffic for Phases 2-15 of the landfill. As shown, the percentage increase due to the proposed intensification of facility operations and revised construction traffic on the overall traffic numbers from the north of the site varies from 0.1% to 1.0%. The percentage increases due to proposed additional facility operations/construction traffic on overall traffic numbers from the south of the site in 2009 varies from 0.1% to 1.9%.

As can be seen from above, the impact of the proposed intensification and extension of the development in terms of overall traffic on the routes to the site from the South is small, a theoretical maximum of 1.9% in 2009, including construction traffic. In reality the actual impact will be significantly less as facility related traffic spreads over the various access routes which converge on the site entrance from the South.

NRA Traffic and Transport Assessment Guidelines outline the threshold for traffic impact of developments. A development that is expected to generate traffic flows that will lead to an increase of more than 5% in congested areas and 10% in uncongested areas is considered to have a traffic impact. Tables 4.9.4 to 4.9.11 show that the

maximum potential increase on overall traffic on any of the potential haul routes and at the site entrance in any of the assessment years will be 1.3% for operational traffic and 1.9% for operational and construction traffic combined. Based on these guidelines, it is concluded that there will be no significant short or long-term impact due to operational and/or construction traffic associated with the proposed intensification and extension of the Drehid Waste Management Facility.

The following Table 4.9.16 clearly shows the effect of the proposed traffic on the R403 due to the proposed intensification and extension of the Drehid Waste Management Facility. The junctions with the highest increase in traffic have been taken from the forecasted traffic in 2014 (extracted from Table 4.9.6) and from the forecasted traffic in 2009 (extracted from Table 4.9.5). The year 2009 represents the first year at peak operational traffic and 2014 represents the last year at peak operational traffic as a result of the proposed intensification and extension of the Facility.

Table 4.9.16: The effect of the proposed traffic on the R403

Period	Location	Operational Traffic		Operational & Construction Traffic	
		% Increase in Overall Traffic	% Increase on HGV Traffic	% Increase in Overall Traffic	% Increase on HGV Traffic
2009	Junction 16	1.0	8.3	1.6	9.7
	Junction 1	0.7	9.5	1.0	10.9
2014	Junction 16	1.0	7.7	1.4	8.8
	Junction 1	0.6	8.7	0.9	9.9

Worst Case Scenarios

An analysis of the percentage traffic growth due to potential traffic generated by the proposed intensification and extension was carried out for the two worst-case scenarios.

The first worst case scenario involves the distribution of all traffic to and from the north of the site as shown in Table 4.9.12. As shown the percentage increase due to facility operations and construction traffic on the overall traffic numbers from the north of the site varies from 0.2% to 2.7%.

The second worst case scenario involves the distribution of all traffic to and from the south of the site as shown in Table 4.9.13. As shown the percentage increase due to facility operations and construction traffic on the overall traffic numbers from the south of the site varies from 0.2% to 2.6%.

For traffic coming from the south to the Facility it is conservatively assumed that there is no split in the traffic i.e. *each junction* is assessed as if all traffic coming from the south actually passes the junction. As outlined herein, this is not a likely scenario, as indeed all traffic coming from the South itself is not likely, as the traffic will be

dispersed along the approach roads to the site. Nonetheless this allows a worst case scenario to be assessed.

NRA Traffic and Transport Assessment Guidelines outline the threshold for traffic impact of developments. A development that is expected to generate traffic flows that will lead to an increase of more than 5% in congested areas and 10% in uncongested areas is considered to have a traffic impact. Table 4.9.12 shows that the maximum potential increase on overall traffic on any of the potential haul routes and at the site entrance with all the traffic coming from the north will be 2.7%. Table 4.9.13 shows that the maximum potential increase on overall traffic on any of the potential haul routes and at the site entrance with all the traffic coming from the south will be 2.6%.

Based on these guidelines, it is concluded that there will be no significant short or long-term impact due to operational and/or construction traffic associated with the intensification and extension of the development even in the unlikely worst-case scenarios of all traffic coming from the north or south.

The spreading of the traffic generated as a result of the proposed intensification and extension of the Drehid Waste Management Facility between the route options will also proportionally reduce the traffic loading on any one route.

Other Scenarios Considered

An assessment of two other scenarios was also carried out to stress test the adjoining road network. These results are presented in Table 4.9.14 and 4.9.15.

Table 4.9.14 shows a 50:50 split of traffic to and from the north and south of the site for the year 2014 when the site is expected to be at full capacity. Table 4.9.15 shows a two-thirds (67%) split of traffic to and from the north and one third (33%) to and from the south of the site, again for the year 2014.

Maximum percentage increases on overall traffic for the scenarios presented in Tables 4.9.14 and 4.9.15 are less than 2%. Based on the NRA guidelines, it is concluded that there will be no significant short or long-term impact due to operational and/or construction traffic associated with the proposed intensification and extension for either of the above two scenarios.

Conclusion

The stress testing outlined above, shows that the full loading of the potential traffic, due to the proposed intensification and extension of the Drehid Waste Management Facility, on any one of the potential haul routes will not exceed a 2.7% increase on overall traffic on any of the individual routes, even in the unlikely event that all the traffic comes from either the south or north. Based on NRA guidelines, it is concluded that there will be no significant short or long-term impact due to operational and/or construction traffic

associated with the intensification and extension of the development. The spreading of the traffic generated as a result of the Facility between the route options will also proportionally reduce the traffic loading on any one route.

There will be some adverse impact on the pavements of the regional road to the extent that weak sections of the existing pavement will be subject to increased loading and may require strengthening. This will arise from the increase in HGVs, as pavement deterioration is linked to axle loading. It must be stressed that the impact from the facility traffic will be moderate, as it will only represent a 10.9% increase (at maximum) of HGV movements on the R403/R402 based on the likely scenario of two thirds of the traffic coming from and departing to the south. It can be reasonably concluded that while there will be a moderate impact on the pavement, mitigation measures can be taken if necessary.

While these are regional roads and the additional traffic loading along the route, due to the proposed intensification and extension of the Drehid Waste Management Facility, will be insignificant as shown by the *stress tests* presented herein. In this regard Bord na Móna has already made a contribution to Kildare County Council in respect of the existing permission.

4.9.7.5 Link Capacity

A link capacity assessment was undertaken with reference to the 'An Foras Forbartha' RT180 geometric design guidelines. Using this document, the two way hourly capacity of the R403 was estimated.

In order to undertake an investigation into link capacity of the R403, it was necessary first to convert the raw traffic survey data, which consisted of cars and heavy vehicles, into a common index known as passenger car units (PCU's). This was undertaken by applying a factor to all surveyed traffic movements to take account of the composition of the different types of vehicle. This factoring calculation assumes 1 car / light vehicle = 1 PCU, 1 heavy vehicle = 2.3 PCU's and 1 bus = 2 PCU's.

RT180 estimates the two-way hourly capacity of the R403 to be 1,125 vehicles per hour, based on a carriageway width of 6.0 metres and a level of service D. The table below Table 4.9.17 illustrates the forecasted maximum two-way hourly PCU flow on the R403 in 2014 (last year of maximum operational traffic due to the proposed intensification of the Facility). As can be seen from the table below, the R403 has a forecasted spare capacity of 36% in 2014 to accommodate additional traffic such as that generated by the proposed intensification of the Drehid Waste Management Facility. Indeed, when the proposed Facility traffic is included, the R403 nonetheless has a forecasted spare capacity of 34%. Clearly, the R403 has adequate capacity to facilitate the proposed development.

Table 4.9.17: Forecasted maximum two-way hourly PCU flow on the R403 in 2014

Year	R403 Two-way Hourly Capacity As per RT180 (PCU'S)	Forecasted R403 Maximum Hourly Flow (Including Committed Facility Traffic) (PCU'S)	Forecasted R403 Maximum Hourly Flow (Including Committed & Proposed Facility Traffic) (PCU'S)
2014	1,125	718	744
% Spare Capacity		36%	34%

It is expected that the proposed Facility traffic will divide/merge via various regional road junctions on the R403. This will lead to a relatively small increase in two-way hourly PCU flow on other regional roads, highlighted in Figure 4.9.1, which will not significantly affect the level of service on these roads.

4.9.8 Road Safety, Public Transport, Pedestrians, Cyclists

4.9.8.1 Road Safety/Site Entrance

The speed limit on the R403 at the site entrance junction is 80 km/h. NRA DMRB TD 41/95 'Vehicular Access to All-Purpose National Roads' requirements were used as the standards against which sight distance was assessed. Visibility splays of 4.5 x 160 metres are provided to the right and left of the existing site entrance junction on the R403.

A ghost island junction has been provided at the existing site entrance with a right turning lane. The through lanes on either side are 3.0m wide and the right turning lane is 3.0m wide. The length of the ghost island junction for the Drehid Waste Management Facility provides adequate deceleration length and turning length for a design speed of 85 kph in accordance with DMRB TD 42/95. Queuing length of 5m is also provided. In the peak year of operation, as outlined on Table 4.9.2, it is expected that the proposed intensification and extension will generate approximately 9 movements per hour, of which 4.5 will be accessing the Facility. In the likely scenario of 2/3 (67%) of the traffic approaching the site from the South, only 3 of these vehicles will approach from the South. Clearly, this will not lead to traffic queues at the site entrance.

A 7.5m access road has been provided with junction radii of 20m off the R403 to the development. A recessed gate has been provided at a setback of 80m from the site entrance. The access road narrows to 6m wide on the approach to the facility. This is adequate width to allow two HGVs to pass one another with a clearance of 1.0m.

Warning signs and advance direction signs indicating the presence of the facility and

Road Markings are provided in the vicinity of the site entrance junction.

As part of the construction of the initial stage of the permitted Facility, a road safety audit has been carried out in accordance with the relevant sections of the National Roads Authority standard (HD 19/04 and HA42/04) on the constructed site entrance. The road safety audit was subsequently submitted to Kildare County Council who approved the new site entrance.

4.9.8.2 Public Transport

There is no regular public transport service in operation in the immediate vicinity of the Facility; however there are public bus services that run from Allenwood to Dublin, Edenderry and Birr. Allenwood is located approximately 3.0 km from the Waste Management Facility. It is not expected that the number of users of this bus service will be increased by the development.

4.9.8.3 Pedestrians

There are no pedestrian facilities in place on the R403 in the vicinity of the development. As it is not expected that there will be any pedestrian activity to and from or within the Waste Management Facility, no pedestrian facilities are considered to be required for this development.

4.9.8.4 Cyclists

There are currently no cycle facilities in place on the R403. Due to the low volume of cycle trips expected to and from the development in the future, cycle lanes are not considered to be necessary for this development.

4.9.9 Conclusions and Mitigation Measures

4.9.9.1 Conclusions

The conclusions to this section of the EIS are as follows:

- Stress tests carried out at junctions on the R403 and adjoining road network indicate that the proposed intensification and extension of the Drehid Waste Management Facility will generate a maximum additional 2.7% traffic even in the unlikely event that all the traffic comes from either the south or north.
- Based on NRA guidelines, it is therefore concluded that there will be no significant short or long-term impact due to operational and/or construction traffic associated with the proposed intensification and extension of the development.
- The spreading of the facility generated traffic between the route options will also

proportionally reduce the traffic loading on any one route.

- The existing access routes to the site (some of which have been upgraded since the previous planning application was lodged) have been demonstrated to be clearly capable of accommodating the additional traffic associated with the proposed intensification and extension of the Drehid Waste Management Facility.
- A road safety audit carried out on the existing site entrance junction, was submitted to and subsequently approved by Kildare County Council.
- The new site entrance as constructed provides adequate access for a dedicated entrance onto a Regional road with a 80km/h speed limit.
- Adequate visibility splays of 4.5 x 160m have been provided at the site entrance junction in accordance with NRA DMRB TD 42/95.
- A ghost island junction at the existing site entrance junction with a right turning lane has been provided. This is adequate for the proposed traffic increases.
- Since the lodgement of the original planning application for the Drehid Waste Management Facility, a significant number of network improvements have taken place, which has had a positive impact on traffic movements to the Facility.
 - M4 Kilcock to Kinnegad Motorway
 - R402 road improvements
 - N7 widening from Naas to Dublin
 - Naas - Sallins road to Newbridge road link

4.9.9.2 Mitigation Measures

There are no mitigation measures necessary for the proposed intensification and extension of the Drehid Waste Management Facility.

4.10 Interaction of the Foregoing

The significant impacts of the proposed development and the measures proposed to mitigate these impacts have been outlined in this report. However, in any development with the potential for environmental impact there is also the potential for interaction between impacts of the different environmental aspects.

The result of these interactions may either exacerbate the magnitude of the impact or may in fact ameliorate it. As part of the requirements of an Environmental Impact Statement the interaction of the impacts on the surrounding environment, need to be addressed.

There is the potential for interaction between the impacts of the proposed development within and adjacent to the previously permitted waste management facility and its proposed extension as follows:

- Dust suppression and vehicle wheel washes are currently utilised to mitigate the impact of wind blown dust around the site and to nearby dwellings. These measures will reduce the impact on human beings and material assets in the community.
- Travel patterns will not be disrupted by the proposed development, however vehicle numbers will increase. Mitigation measures, which have been employed at the site entrance, will reduce the impact of the previously permitted facility and its proposed intensification and extension. These measures have improved road safety for all road users.
- Odours are reduced by ensuring the exposed waste face is minimised and covered on a daily basis and that the composting operation is undertaken within fully enclosed buildings.
- Professional vermin control experts will be employed if deemed necessary to ensure vermin activity is minimised. These measures will reduce impacts on human beings and material assets.
- Compliance monitoring is currently undertaken, as per regulatory conditions and annual environmental reports have been compiled to detail the performance of the existing facility. These reports are made available to all interested parties, which will allay public concerns as to the operation of the site and will result in a positive interaction with respect to human beings.
- The facility is operated to Best Available Techniques (BAT) as per EPA recommendations. All information is be available to interested parties, a complaints register is maintained and the EPA undertakes regular environmental audits, which demonstrate how the facility is performing. These measures result in interaction in all environmental criteria.
- Finally, it should be noted that throughout the EIS potential interaction between various environmental criteria are discussed. The previously permitted facility

and its proposed extension is sited at a significant distance from the local road network and residential properties, with the nearest residence being approximately 980m from the landfill footprint (permitted and extension). Avoidance of impacts was used throughout the design of the facility. The impact and mitigation measures proposed are designed to further ameliorate the impact of the proposed intensification and extension of the previously permitted waste management facility on the wider environment.

While there is potential for the above impacts to interact and result in a cumulative impact, it is unlikely that any of these cumulative impacts will result in significant environmental degradation.

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