Bay Lane SRF

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Waste licence application

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1 SURFACE WATER

1.1 IMPACT ASSESSMENT

This section of the report replicates the relevant water section of the EIAR.

1.1.1 General

The following section identifies, describes and presents an assessment of the likely significant impacts of the proposal on the hydrological environment. The characteristics of the proposal with regard to the water and hydrological environment, relates to operation and post-restoration activities. Issues related to water quality impact on the groundwater are addressed in EIAR **Chapter 9**.

1.1.2 Do Nothing – Current Scenario

If the proposal to use the disused quarry as soil and stone recovery facility does not proceed, the existing site would remain exposed and derelict.

The impact on the Ward River and the unnamed stream will be **Imperceptible**. There are no activities on site which may impact surface water run-off and there is no significant surface water run-off from the site discharging into these watercourses.

1.1.3 Do Something - Proposal

1.1.3.1 Direct Impacts

The sumps, settlement tank and separation tank provide storage for surface water run-off for up to the 50-year return period and is designed to allow for sedimentation prior to discharge to the adjacent stream. Surface water drains will be designed to convey run-off during backfilling operations and for the final restoration to convey run-off to the settlement and separation tank.

As highlighted, there is no existing drainage arrangement for the site, however the construction of surface water channels within the boundary of the open pit will be constructed to drain the surface water run-off from the pit to a pond prior to pumping to the settlement tank during backfilling operations. The surface water channels will be raised during the backfilling operations to ensure the drainage within the open pit are maintained to prevent disruptions to the backfilling operations from flooding or ponding.

The surface water channels are to be buried with drainage pipes and settlement tank to be removed from site when the backfilling of the open pit reaches pre-extraction levels. The proposed finished ground within the open pit will be slightly domed to allow for run-off to discharge to adjacent streams at the north, west, east and south boundaries.

The proposal for the site includes vehicles in operation within the site during the backfilling which increases the potential risk for accidental spillage and leaks. It is recommended that spill kits are always kept on site during the backfilling operations to contain accidental spillage and/or leaks to

reduce potential impact. All surface water and groundwater discharges will be treated at the settlement and separator tank prior to discharge to the unnamed stream. The impact of the proposed backfilling operation and final restoration on the unnamed stream will be **negligible**. Hence there are no additional mitigation measures required.

1.1.3.2 Indirect Impacts

The proposed operation of the site will involve discharge of surface water and groundwater discharges to the unnamed stream. The proposed temporary holding pond and the settlement tank will provide storage for up to the 50-year return period whilst the peak flow discharge to the unnamed stream is limited to greenfield run-off rate to reduce the flooding downstream. The 100-year return period event can be stored on site and will not be discharged downstream during a flood event. The impact of the proposed backfilling operation and final restoration on the Ward River at the confluence with the unnamed stream will be **negligible**.

Table 1.1: Potential Temporary Impacts during operational (void filling) phase

Construction Activity	Attribute	Character of Potential Impact	Importance of Attribute (Table 10.1)	Magnitude of Potential Impact (Table 10.2)	Significance of Potential Impacts (Table 10.3)
Surface Water Run-Off	Surface Water	Silt-laden water can arise from exposed ground and soil stockpiles during construction. Surface water run-off containing large amounts of silt can cause damage to watercourses, in particular drains connecting to the stream, which can cause significant pollution of water through the generation of suspended solids. The site is situated within the Ward River sub-catchment which is classed as Good. All surface water will be restricted to greenfield runoff rates to prevent any flooding downstream.	Medium	Small Adverse	Slight
Accidental Spills and Leaks	Surface Water	Accidental spillages of fuels, chemicals or other contaminants during operational (void filling) phase may result in localised contamination of soils and groundwater underlying the site, and/or surface water run-off could cause release of pollutants to surface water, if materials are not stored and used in an environmentally safe manner. Any spillage which migrates to a local water course could be detrimental to water quality and local fauna and flora.	Medium	Small Adverse	Slight

1.1.4 Mitigation Measures

The proposal for the site has taken account of the potential impacts on the hydrology environment local to the area, e.g. surface water attenuation. Additional measures to mitigate the potential effects on the surrounding hydrology during the operation and final restoration stages are described in further detail below.

- Surface Water channels to be constructed and maintained with pumped discharge to tank during operational (void filling) phase,
- Surface Water channels and settlement tank to be removed at final restoration stage. Finish Ground Profile for the open pit to be slightly domed to allow for surface water run-off to adjacent streams,
- Accumulated settled solids from the settlement tank will be periodically removed by draining down the tank and pumping out the solids using a sludge pump. The settled solids, which are non-hazardous are to be deposited within a sludge bin and removed from site on a regular basis,
- To prevent spillages and leaks of potentially polluting materials and minimise the impact of any spillages that do occur, the following measures will be implemented at the site:
    - No potentially polluting liquids (principally fuel) will be stored onsite. They will be transported onsite in mobile bowsers constructed to the appropriate Irish, British or International Standard, meeting the requirements of the Local Government (Water Pollution) Acts 1977 to 1990 and associated regulations,
    - Potentially polluting liquids such as lubricating oils, waste oils derived from vehicle maintenance, pesticides etc, will be not be stored onsite longer than necessary during their use. Waste oils and fuels generated will be transported offsite immediately by the service provider generating them. Any necessary temporary storage will be in containers located on sealed ground,
    - Spill kits with a supply of materials suitable for absorbing and containing any minor spillage will be available on site at all times. Staff will be appropriately trained in their use.
    - Materials suitable for containing spills including sealing devices and substances for damaged containers, drain seals and booms, and overdrums will be maintained at the site. Staff will be appropriately trained in their use.
    - Surface water channels and drains will be subject to visual inspection by the Facility Manager. Action will be taken to remove any obstructions to flow.
    - In the event of spillage of polluting materials, immediate action will be taken to contain the spillage. The spillage will be reported to the Facility Manager, who will assess the situation and decide on the most appropriate course of action. The action taken will depend upon the size of the spillage, the location of the spillage in relation to sensitive receptors and the chemical and physical nature of the spilled material.
    - Action taken may include:
        - if possible, the leak will be stopped;
        - if it safe to do so, the cause of the spill or leak will be isolated;
        - If the spillage is small, spill granules will be used immediately if necessary to prevent the spill spreading. The area will be cleared and all contaminated material will be sent offsite for appropriate management;

- for large spills, clay or sand will be used to make a containment and specialist help will be sought to clean up;
- in the event of a potentially serious spillage, immediate action will be taken to prevent the spread of the spill. The Environment Protection Agency will be informed immediately, and remedial action agreed; if the spillage cannot be contained using approved materials, the Environment Protection Agency and senior management will be contacted immediately and specialist help obtained;
- if a vehicle is found to be leaking, it will be moved to a position where the spillage can be contained i.e. quarantine facility, or other hard surfaced area, if it is safe to do so; and
- all personnel will follow instructions provided by managers or other competent persons.

- Appropriate precautions will be taken depending upon the nature of the spilled material to:
  - prevent any harm to human health, and all personnel involved in clean-up will wear protective clothing appropriate for the nature of the spilled material.
  - All spillage incidents, site inspections, and remedial actions will be recorded in the site records.

1.1.5 Residual Impact

The residual impacts are those that would occur after the mitigation measures have taken effect.

Implementing the mitigation measures during the operation and final restoration stage would result in imperceptible to slight impact on the local hydrology.

1.1.6 Monitoring

There will be a water quality monitor with a telemetry signal installed in the unnamed stream immediately downstream of the outfall from the settlement tank. The water quality monitor will provide continuous water quality results for the final effluent. The compliance monitoring and reporting will serve to monitor any potential impacts.

The water quality monitor will test the effluent for Total Suspended Solids, Turbidity, pH, Temperature, Dissolved Oxygen and Electrical Conductivity at regular intervals (i.e. 15mins) and the results will be checked online on a regular basis during the operational (void filling) phase. If the values for the testing exceed the prescribed limits under any Waste Licence issued by the EPA during operation it would indicate a failure with the drainage system which will be investigated and actions taken to fix any issues. Any exceedance of the EPA waste licence limits would be recorded and reporting to the appropriate authorities.

1.1.7 References

EPA (2002): Guidelines on the Information to be Contained in Environmental Impact Statements, Environmental Protection Agency.

EPA (2003): Advice Notes on Current Practice (in the preparation on Environmental Impact Statements, Environmental Protection Agency.
EPA (2011): BAT Guidance Note on Best Available Techniques for the Waste Sector: Landfill Activities, Environmental Protection Agency.
EPA (2015): Draft - Advice Notes on Current Practice (in the preparation on Environmental Impact Statements), Environmental Protection Agency.
EPA (2015): Draft – Revised Guidelines on the Information to be Contained in Environmental Impact Statements, Environmental Protection Agency.
EPA (2017): Draft Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, Environmental Protection Agency.
Fingal County Development Plan 2017-2023. Fingal County Council.
NRA (2008): Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes, National Roads Authority.

1.2 DETAILS AND ASSESSMENT OF IMPACTS OF PROPOSED EMISSIONS

The following section, extracted from the EIAR, identifies, describes and presents an assessment of the likely significant impacts of the proposal on the hydrological environment.

If the proposal to use the disused quarry as soil and stone recovery facility does not proceed, the existing site would remain exposed and derelict. The impact on the Ward River and the unnamed stream will be **Imperceptible**. There are no activities on site which may impact surface water run-off and there is no significant surface water run-off from the site discharging into these watercourses.

It is proposed that stormwater captured onsite will be treated via a petrol interceptor and discharged into the sump for offsite discharge via the settlement tank.

The proposal for the site includes vehicles in operation within the site during the backfilling which increases the potential risk for accidental spillage and leaks. It is recommended that spill kits are always kept on site during the backfilling operations to contain accidental spillage and/or leaks to reduce potential impact. All surface water and groundwater discharges will be treated at the settlement and separator tank prior to discharge to the unnamed stream. The impact of the proposed backfilling operation and final restoration on the unnamed stream will be **negligible**. Hence there are no additional mitigation measures required.

The proposed operation of the site will involve discharge of surface water and groundwater discharges to the unnamed stream. The proposed temporary holding pond and the settlement tank will provide storage for up to the 50-year return period whilst the peak flow discharge to the unnamed stream is limited to greenfield run-off rate to reduce the flooding downstream. The 100-year return period event can be stored on site and will not be discharged downstream during a flood event. The impact of the proposed backfilling operation and final restoration on the Ward River at the confluence with the unnamed stream will be **negligible**.

1.3 CURRENT ELVS

The 2004 Bay Lane Effluent Licence granted by Fingal County Council WPW-F-47 to the previous owners of Bay Lane Quarry is now expired.

GLV Bay Lane Limited has applied for an Effluent Licence. ELVs would be applied by this licence if granted.

1.4 STATEMENTS

Emissions of main polluting substances (as defined in the Schedule of EPA (Licensing)(Amendment) Regulations 2004, S.I. No. 394 of 2004) to water are not likely to impair the environment.

1.5 RECENT EMISSION MONITORING

Samples (4 No.) were obtained from the standing water within the open pit and also from the unnamed stream (2 No.) to confirm the water quality within the site and potential impact of the discharging effluent on water quality of the adjacent stream. All points are marked on Drawing 16.

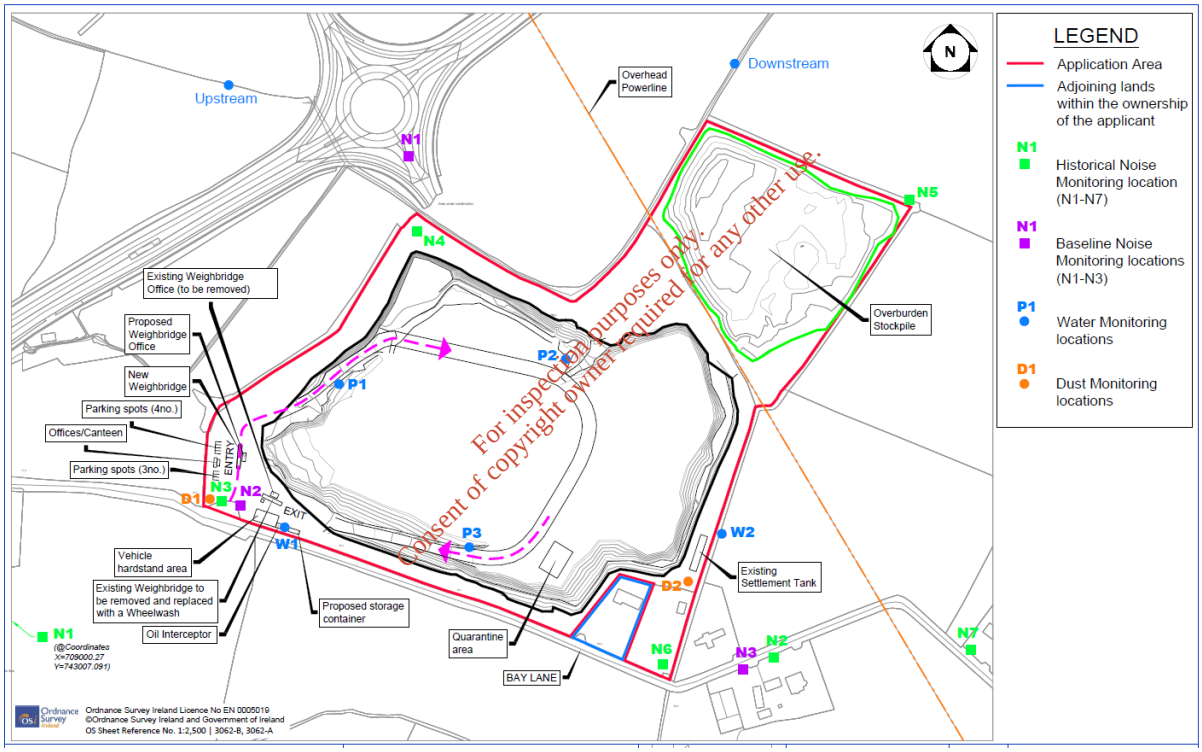

Figure 1.1: Monitoring locations – reproduction of drawing 16

The Drinking Water Regulations were used for reference to parameters not included in the Surface Water Regulations. The results of the comparison indicated that the samples obtained from the standing water within the open pit did not exceed the limits listed in the Surface Water and Drinking Water Regulations. The results also indicated that the samples obtained from the adjacent watercourse did not exceed the limits with the exception of BOD and Total Ammonia. BOD and Total Ammonia exceeded the limits for both Good and High Status for the respective parameters set in the Surface Water Regulations.

The testing has indicated that the maximum suspended solids is 11mg/l which is less than 25 mg/l allowed for discharge to for streams in Ireland. It is also less than the suspended solids in the stream

which was measured at 97mg/l. The water quality monitoring results are included in Appendix 9 of this report.

Surface water results have been compared to guideline values within the following legislation:

- European Communities Environmental Objectives (Surface Waters) Regulations, 2009 (SI No. 272 of 2009) and (Amendment) Regulations 2015 (SI No. 386 of 2015)

Reported inorganic concentrations were all below the relevant surface water guidelines with the exception of:

- Ammoniacal Nitrogen as N which exceeded the guideline of 0.065mg/l within samples; P1 (0.11mg/l), upstream (0.37mg/l) and downstream (0.5mg/l).
- BOD which exceeded the guideline of 1.5mg/l within samples; upstream (2mg/l) and downstream (2mg/l).
- Dissolved Copper which exceeded the guideline of 30mg/l within the sample; P5 (122mg/l).
- Dissolved Nickel which exceeded the guideline of 4mg/l within the samples; P1 (15mg/l), P2 (15mg/l), P3 (15mg/l) and P4 (14mg/l).

Reported organic concentrations (volatiles or semi-volatiles) were all below relevant surface water guidelines with the exception of Fluoranthene which exceeded the guideline of 0.0063µg/l in the downstream sample (0.068 µg/l).

Reported pesticide concentrations were all below laboratory detection limit.

See belowfor the results of the recent point sample monitoring from onsite, standing, surface waters. Also included are results from two offsite points – upstream and downstream.

Note that:

- P4 is a replicate of P2
- P5 is a blank, tap water, sample

Table 1.2: recent point sample monitoring from onsite, standing, surface waters

Parameter *Concentrations in mg/l unless otherwise stated*	***P1***	***P2***	***P3***	***P4***	***P5***	***Up stream***	***Down stream***
Biological Oxygen Demand (5 day)	<1	<1	<1	-	-	2	2
Suspended Solids	11	<10	<10	-	-	22	97
Total Ammonia (as N)	0.085	0.039	0.039	-	-	0.287	0.388
Nitrate (as N)	0.767	1.219	0.767	-	-	0.632	1.129
Molybdate Reactive Phosphorus (MRP)	<0.02	<0.02	<0.02	-	-	<0.02	<0.02
Metals µg/l							

Parameter *Concentrations in mg/l unless otherwise stated*	***P1***	***P2***	***P3***	***P4***	***P5***	***Up stream***	***Down stream***
Arsenic	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Chromium	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Copper	<7	<7	<7	<7	122	<7	<7
Lead	<5	<5	<5	<5	<5	<5	<5
Nickel	15	15	15	15	<2	<2	4
Zinc	4	5	6	4	5	37	40
Boron	42	49	38	41	<12	17	24
Cadmium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Iron	<20	<20	<20	<20	25	<20	<20
Manganese	41	48	48	46	3	11	54
Mercury	<1	<1	<1	<1	<1	<1	<1
Selenium	<3	<3	<3	<3	<3	<3	<3
Total Hardness (as CaCO3)	1412	1402	1447	1447	1447	268	495
Pesticides & Solvents:							
Aldrin	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Alpha-HCH (BHC)	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Beta-HCH (BHC)	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Delta-HCH (BHC)	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Dieldrin	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Endosulphan I	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Endosulphan II	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Endosulphan sulphate	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Endrin	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Gamma-HCH (BHC)	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Heptachlor	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
o,p'-Methoxychlor	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
p,p'-DDE	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
p,p'-DDT	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
p,p'-Methoxychlor	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
p,p'-TDE	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Azinphos methyl	<0.02	<0.02	<0.02	-	-	<0.02	<0.02

Parameter *Concentrations in mg/l unless otherwise stated*	***P1***	***P2***	***P3***	***P4***	***P5***	***Up stream***	***Down stream***
Diazinon	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Dichlorvos	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Disulfoton	<0.02	<0.02	<0.02	-	-	<0.02	<0.02
Ethion	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Ethyl Parathion (Parathion)	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Fenitrothion	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Malathion	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Methyl Parathion	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
Mevinphos	<0.01	<0.01	<0.01	-	-	<0.01	<0.01
EPH (C8-C40)	<10	<10	<10	-	-	<10	<10
Mineral Oils or Hydrocarbons of petroleum origin							
Naphthalene	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Acenaphthene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Fluorene	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Phenanthrene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Anthracene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Fluoranthene	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.068
Pyrene	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	0.146
Benzo(a)anthracene	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.028
Chrysene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.039
Benzo(bk)fluoranthene	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Benzo(a)pyrene	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Indeno(123cd)pyrene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
Dibenzo(ah)anthracene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(ghi)perylene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
PAH 16 Total	<0.195	<0.195	<0.195	<0.195	<0.195	<0.195	0.281
Benzo(b)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
PAH Surrogate % Recovery	80	82	80	81	77	77	74

2 AIR

2.1 POTENTIAL IMPACT OF THE PROPOSAL

This section of the report replicates the relevant air section of the EIAR.

2.1.1 Operational Dust

Dust is considered a risk of pollution to the atmosphere from the activities associated with the proposed development.

In accordance with the NRA Guidelines, where there are operations at a construction, quarrying or dust risk site, there is a risk that dust may cause an impact at sensitive receptors near the source of the dust generated. The distances identified within which impacts may arise are presented in **Table 2.14** (source NRA Guidelines, May 2011 Revision).

Table 2.14: TII (formerly NRA) Assessment Criteria for the Impact of Dust Emissions from Construction Activities, (with standard mitigation in place)

Source		Potential Distance for Significant Effects (Distance from source)		
Scale	**Description**	**Soiling**	**PM_{10}**	**Vegetation Effects**
Major	Large Construction sites, with high use of haul routes.	100m	25m	25m
Moderate	Moderate Construction sites, with moderate use of haul routes.	50m	15m	15m
Minor	Minor Construction sites, with minor use of haul routes.	25m	10m	10m

A single residential property located immediately to the south east of the boundary of the site at Bay Lane is located within 100 metres of the works and potentially the proposed operations in this area. Another property is located to the south east; however, this is circa 130m from the site boundary. Operations related dust from the proposed development the nearest property is likely to result in a '**Short-Term Slight Adverse**' impact without additional mitigation measures in place. Where dust related impacts are anticipated avoidance and mitigation measures will be put in place to reduce the impact level.

2.1.2 Road Traffic

Road traffic associated with the proposed development can impact directly on local air quality and any sensitive receptors that are located adjacent to the local road networks may experience the impacts to local air quality. Traffic on the road network is predicted to increase during the operational hours of the proposed soil recovery facility. **Section 13.4.3** of this EIAR states that there is a potential peak of circa 196 trucks arriving to the quarry per day (392 truck movements in total) on top of the existing levels during the operation stage.

The main haul route is expected to be via the N2 but other routes such as the R135 and R121 may also be employed depending on the origin of the material sources for the Bay Lane Site. To that end, an assumption of all traffic on the haul routes impacting on any property within 10 metres of the haul route has been undertaken. The results of the analysis along the haul route are presented in **Table 2.15** for the "Do-Nothing" (no development) and "Do-something (with development) for each scenario years 2019, 2021, 2024.

Table 2.15: Local impact to air quality because of road traffic

Scenarios	Nitrogen Dioxide (µg/m³)	Particulates (PM_{10}) (µg/m³)		Benzene (µg/m³)	Carbon Monoxide (mg/m³)
	Annual Average NO_2	Annual Average PM_{10}	Days > 50µg/m³	Annual Average Benzene	Annual Average CO
Background	20.8	12.4	-	0.92	0.285
2019 Do-Nothing	23.40	13.17	0.00	0.97	0.33
2019 Do Something	23.86	13.25	0.00	0.97	0.33
2021 Do-Nothing	23.41	13.18	0.00	0.97	0.33
2021 Do Something	23.85	13.26	0.00	0.97	0.33
2024 Do-Nothing	23.47	13.22	0.00	0.97	0.33
2024 Do Something	23.92	13.30	0.00	0.97	0.33
Annual Limit	**40**	**40**	**35**	**5**	**10**

The results indicate that all levels of pollutants are predicted to remain within the limits for the protection of human health and the WHO guidelines along the proposed haul route for all future scenario years. Using the NRA significance criteria (as outlined in **Table 2.9)** the predicted increases associated with the proposed development relative to the baseline scenario is classed as 'imperceptible'. While the levels remain below the relevant limits these increases and air quality impact from this traffic are classed as '**negligible**'.

2.1.3 Odour

As no biodegradable material will be accepted at the site, there will be no potential for nuisance such as odour, leachate, landfill gas, or vermin at the site.

Inspection at the weighbridge will check the visual appearance and odour of each load, only if both these characteristics are satisfactory can the transaction be complete and delivered to the backfilling area.

The nature of the waste significantly limits the generation of odour impacts; therefore, the impact of odour is considered "**negligible**" and no mitigation measures are required.

2.1.4 Emissions of Greenhouse Gases

Emissions of GHG from the proposed development may arise from the following sources:

- Embodied emissions in site materials relative to other materials;
- Direct emissions from plant machinery/equipment;
- Transport emissions from vehicles importing/exporting material to and from the site.

Embodied emissions are the carbon footprint of a material, i.e. the total emissions released throughout the supply chain of the material. This includes the energy required for extraction, processing, operation and disposal of a material and for some materials such as steel or glass the use of recycled materials has a lower embodied GHG emission than the use of virgin material.

These emissions have been estimated using the Environment Agency (EA) *Carbon Calculator for Construction Sites* and the results are presented in **Table 2.10**.

Table 2.10: Summary of Greenhouse Emissions from the Proposed Development

Item	Estimated GHG Emissions (tCO_2eq)
Quarried Material (waste soil and stone)	7,400
Plant Emissions	318
Material Transport	7,897
Personnel Transport	75
TOTAL	**15,690**

The total estimated greenhouse gas emissions associated with the proposed development is calculated at 15,690 tonnes of CO_{2eq} which will result in a "**permanent slight adverse impact**" for climate.

2.1.4.1 Climate Change Adaptation

In terms of the risk of major disasters which are relevant to the proposed development, given the location and physical characteristics of the proposed development, the main potential risks of flooding, wind, rain and weather events are reduced.

Regarding the flood risk of the proposed development, the Waste Licence boundary is will not be affected by a 100-year event. A flood risk assessment of the proposed development is presented in EIAR **Chapter 10** and confirms the low vulnerability of the proposed development.

2.1.5 Potential for Cumulative Impacts

Cumulative impacts from the existing waste operations, power generation and other industrial operations have been accounted for the in the baseline assessment undertaken.

The Article 27 operations in the area have the potential to generate cumulative traffic emissions and fugitive dust in addition to the proposed Bay Lane Soil Recovery Facility.

The proposed Irish Water development of a biosolids storage facility at Newtown, near Kilshane Cross would operate approximately 2.25km from Bay Lane Soil Recovery Facility. This operation has the potential to generate fugitive odours, however, as outlined earlier the proposed Bay Lane facility will have negligible odour impact so hence no cumulative odour impact is predicted.

2.1.6 'Do-Nothing' Impact

The 'Do-Nothing' scenario refers to the site remaining vacant as per the existing baseline scenario. This scenario will result in short term positives for the areas air quality as it will reduce the amount of

traffic as HGVs will no longer report to the site. However, negative medium- and long-term dust impacts have potential to occur with the open faces remaining unrestored.

2.2 DETAILS AND ASSESSMENT OF IMPACTS OF PROPOSED EMISSIONS

Dust and increased traffic volumes associated with the subject site is likely to be the main impact source. The potential for dust to be emitted depends on the type of activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations.

A single residential property located immediately to the south east of the boundary of the site at Bay Lane is located within 100 metres of the works and potentially the proposed operations in this area. Another property is located to the south east, circa 130m from the site boundary. Operations related dust from the proposed development the nearest property is likely to result in a 'Short-Term Slight Adverse' impact without additional mitigation measures being in place. Where dust related impacts are anticipated avoidance and mitigation measures will be put in place to reduce the impact level - A dust minimisation plan will be implemented during operation.

Given the limited duration and scale of the operations for the proposed site infrastructure and facilities, the associated traffic volumes are not predicted to exceed the 10% of the current AADT on Bay Lane. As such, the predicted impacts of traffic at this stage of the development on local air quality are not considered significant.

Post restoration, the operational sources of pollution (i.e. dust and traffic) would be eliminated and there would cease to be any potential impact to air quality for this phase. When the activities cease post restoration there will be no potential for negative impact on air quality or climate.

In terms of the risk of major disasters which are relevant to the proposed development, given the location and physical characteristics of the proposed development, the main potential risks of flooding, wind, rain and weather events are reduced.

The proposed development is to restore the void created from quarrying operations, therefore, the proposed development will not have additional significant impacts on the microclimate or local climate of the area. Rainfall, wind speeds and wind direction will not significantly influence environmental impacts as no odours, gases or harmful leachates will be generated at the proposed development.

If natural extreme weather conditions do occur during operation times, GLV Bay Lane Limited will take the appropriate methods to ensure safety of all people associated with the site. If a major snow event was to occur the site will be shut down and be re-opened when it is safe to do so.

2.2.1 Dust Control

Dust will be minimised via the following methods:

- Phased restoration of the site, with final cover and grassing being applied to each completed phase, as soon as practicable.
- Use of a wheel-wash to prevent off-site movement of mud/dust onto public road network.
- Maintenance and good housekeeping at site roads and hardstanding areas.
- Servicing and maintenance of on-site plant and equipment.
- Incoming soil and stone delivery loads which have dust-generating potential, will be covered.
- Speed restrictions for soil and stone delivery vehicles on site roads.
- Use of a bowser, as and when necessary, to reduce dust on hardstanding areas.
- Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. The double-handling of material will be avoided where possible and drop heights will be minimised during material loading and unloading.
- As part of the facility's Environmental Management System, site staff will conduct routine site inspections, which will include checks to ensure that dust control measures are working effectively and that public roads outside the site are clean.
- Regular dust monitoring to confirm that there is no dust nuisance to neighbours from the site's activities.

2.3 CURRENT ELVS

There are no current ELVs associated with air at the site.

2.4 EXISTING ENVIRONMENT

As the site is located within Air Quality Zone A (Dublin Conurbation), baseline air quality has been determined from the data available from the EPA monitoring results for the Zone A network and the Dublin Airport Authority (daa) air quality monitoring network to determine compliance with relevant ambient air legislation.

The site is bounded to the north by the ward river (Shallon) tributary stream, the remaining boundaries are made up of greenfield and agricultural land employed for a mixture of pasture and tillage uses. There are various sensitive receptors (houses, commercial operations) located in the area and these receptors vary in distance from the proposed development. These receptors may experience a change in air quality and the extent of these changes in air quality is identified in this assessment. The nearest sensitive residential receptors to the proposed development are the residential dwellings on Bay Lane.

Dust deposition monitoring has not been carried out at the site.

2.5 EMISSIONS OF MAIN POLLUTING SUBSTANCES

Emissions of main polluting substances (as defined in the Schedule of EPA (Industrial Emissions) (Licensing) Regulations 2013, S.I. No. 137 of 2013) to the atmosphere are not likely to impair the environment.

3 NOISE

3.1 IMPACT ASSESSMENT

This section of the report replicates the relevant noise section of the EIAR. It discusses the potential impact of the proposed works in relation to noise and vibration. The potential noise and vibration impacts of the proposed works have been evaluated for the operational stage to include road traffic noise associated with HGV movements to the facility and backfilling of the inert C&D wastes into the quarry.

3.1.1 Road Traffic Noise

The road traffic impact has been undertaken in accordance with the UK's Highway Agency, Design Manual for Roads and Bridges (DMRB) HD 213/11 Volume 11, Section 3, Part 7 Revision 1. The DMRB states that noise should only be assessed when changes in traffic flow are greater than 25% or a 20% decrease in traffic flow. It is envisaged that the soil will be imported locally via the R121 or from wider locations via the M2/N2. The traffic impact assessment outlined in EIAR **Chapter 13** therefore was focused on Bay Lane Roundabout and the impact on the N2-R121 Link Road.

Traffic data in the form of existing and proposed AADT volumes on the N2-R121 Link Road and Bay Lane are presented in **Chapter 13** of EIAR. The traffic assessment has considered the following two scenarios for "with soils recovery" – a typical average scenario and a peak scenario if there is a surge in demand. The background scenario represents "without soils recovery".

3.1.1.1 Typical Average Scenario

Regarding proposed HGV numbers, the proposed scenario as set out in EIAR **Chapter 13** 'Traffic' comprises the following:

> "The proposed soil recovery works will comprise 740,000 m^3 of fill to be imported to the site over a 30 month works programme. Based on a volume per truck of 11m^3 and a 30-month work programme it is considered that typically the soil importation works will generate circa 2,160 trucks to the site per month. Based on an average 22 working days per month this equates to an **average of circa 98 trucks arriving to the quarry per day** (196 truck movements in total)."

When operating at this typical average scenario, the site will generate a total additional daily movement of circa 196 trucks onto the local road network. Table 3.1 presents the traffic volume figures and the associated change in noise level that will be experienced by the residential properties situated along these roads.

Table 3.1: Change in Noise Level due to Traffic (typical average scenario over 30-month programme)

Year	N2-R121 Link Road		Change in Noise Level	Bay Lane		Change in Noise Level
	Background	"with soils recovery "		Background	"with soils recovery "	
2018 (Base Year)	10,469	10,665	0.1	271	467	2.4

Year	N2-R121 Link Road		Change in Noise Level	Bay Lane		Change in Noise Level
	Background	"with soils recovery "		Background	"with soils recovery "	
2019 (Year of Commencement)	10,836	11,032	0.1	281	477	2.3
2021 (2.5 Years – Earliest Works Completion)	11,150	11,346	0.1	289	485	2.2
2024 (5.0 Years – Worst Case Completion)	11,639	11,835	0.1	300	496	2.2

It is anticipated that the additional road traffic noise attributable to the development will result in an increase in the baseline noise environment by less than 3dB(A) for properties located along N2-R121 link road and Bay Lane with other receptors further from the road network experiencing a lower impact.

Table 3.1**,** Table 3.2 offers guidance as to the likely impact associated with a change in traffic noise level. The predicted increase in traffic noise is barely perceptible and the associated noise impact is classified as Minor. The increase in traffic associated with the proposed development scheme is therefore not expected to give rise to significant noise nuisance in the area.

3.1.1.2 Peak Scenario

Regarding proposed HGV numbers, the proposed peak scenario as set out in EIAR **Chapter 13** Traffic' comprises the following:

> "However, it is expected that the profile of movements over the 30 months will not be consistent and it is considered there will be short term peak surges within the duration of the works which will be compensated then by times where the truck numbers drop below average. It is unknown for how long any peak profiles would occur, but it could be for six summer months within a year (with no truck movements then for the remaining six months of the year). For this assessment it is proposed to also undertake a worst-case analysis of the potential peak profiles where it is assumed that double the average amount of trucks will arrive on site. This equates to a potential peak of circa 196 trucks arriving to the quarry per day (392 truck movements in total)."

When operating at this peak scenario, the site will generate a total additional daily movement of circa 392 trucks onto the local road network. **Table 1.11** presents the traffic volume figures and the associated change in noise level that will be experienced by the residential properties situated along these roads.

Table 3.2: Change in Noise Level due to Traffic (peak scenario over 30-month programme)

Year	N2-R121 Link Road		Change in Noise Level	Bay Lane		Change in Noise Level
	Background	"with soils recovery "		Background	"with soils recovery "	
2018 (Base Year)	10,469	10,861	0.2	271	663	3.9
2019 (Year of Commencement)	10,836	11,228	0.2	281	673	3.8
2021 (2.5 Years – Earliest Works Completion)	11,150	11,542	0.2	289	681	3.7
2024 (5.0 Years – Worst Case Completion)	11,639	12,031	0.1	300	692	3.6

It is anticipated that the additional road traffic noise attributable to the development will result in an increase in the baseline noise environment during this peak scenario by less than 4dB(A) for properties located along Bay Lane with other receptors further from the road network experiencing a lower impact. The predicted increase in traffic noise is noticeable and the associated noise impact is classified as Moderate for properties along Bay Lane. It should be noted that this impact is associated with short term peak surges and as such would be temporary in nature.

The increase in road traffic noise for the typical average and peak scenario has been assessed. Based on the existing noise climate which is located along a flight path from Dublin Airport is influenced by airborne aircraft noise and road traffic noise along the N2-R121 dual carriageway link road. As such the increase in traffic associated with the proposed development is therefore not expected to give rise to significant noise nuisance in the area.

3.1.2 Daily Truck Movements

The delivery of soils materials by HGVs to the site would produce a near constant source of noise emissions due to the predicted number of HGV trips expected on an hourly and daily basis. Filled trucks produce less noise due to the weight of material preventing little movement of the trailer, empty trucks are recognised to be noisier as the trailers tend to bounce on internal springs and produce intermittent and unpredictable loud bangs, and such bangs are echoed within the walls of typical stone and soils trailers when empty.

To assess the potential traffic noise level during the different scenarios "with soils recovery", the specific noise levels associated with passing traffic added to the existing baseline has been assessed. For mobile items of plant that pass at intervals (such as earth-moving machinery passing along a haul road), it is possible to predict an equivalent continuous sound level using the method F.2.5 outlined in BS 5228 - 1. The general expression for predicting the L_{Aeq} alongside a haul road used by single-engine items of mobile plant is:

$$L_{Aeq} = L_{WA} - 33 + 10\log10Q - 10\log10V - 10\log10d$$

where:

L_{WA} is the sound power level of the plant, in decibels (dB);
Q is the number of vehicles per hour;
V is the average vehicle speed, in kilometres per hour (km/h);
d is the distance of receiving position from the centre of haul road, in metres (m).

3.1.2.1 Typical Scenario

Using the traffic data provided for the Typical Scenario the calculation has assumed that there will be 20 deliveries of stone material per hour (10 inbound and 10 outbound). The item of plant delivering the fill material will be a 7 tonne Dumper (Ref C.4.3 of BS5228-1) with a sound pressure level of 76dB, travelling an average speed of 64.9 km/hr with a minimum distance of 20m between the haul route and the nearest noise sensitive receptors. As such, the predicted noise level at a residential property 20m from the haul road will result in a noise level of 56dB.

3.1.2.2 Peak Scenario

Using the traffic data provided for the Peak Scenario the calculation has assumed that there will be 40 deliveries of stone material per hour (20 inbound and 20 outbound). The item of plant delivering the fill material will be a 7 tonne Dumper (Ref C.4.3 of BS5228-1) with a sound pressure level of 76dB, travelling an average speed of 64.9 km/hr with a minimum distance of 20m between the haul route and the nearest noise sensitive receptors. As such, the predicted noise level at a residential property 20m from the haul road will result in a noise level of 59dB.

3.1.3 On-site Sources for Backfilling Works

During void filling, the principal sources of additional noise around the application site will be from bulldozers and dump truck movements. To determine the impact of the proposed backfilling activities at the site, noise predictions were undertaken in accordance with BS 5228-1: 2009: *Code of Practice for Noise and Vibration Control on Construction and Open Sites: Noise to predict noise levels at nearby noise sensitive receptors*. Operational (void filling) phase noise levels will vary considerably depending on the nature of the activity required. **Table 12.12** provides an overview of the type of plant and machinery which will be required as part of the works.

Table 3.3: Typical Construction Noise Levels

Item & BS5228-1: 2009 Reference	No. Required	Predicted dB at 10m
Tracked bulldozer with blades to level materials (Ref C.5.14)	1	86
Shovel Loader to transport	1	90

materials (Ref C.9.7)		

The backfilling activities consist of backfilling the quarry with soil and stone waste and then covering with a soil layer for the purposes of reclamation of the former quarry to restore the site to natural levels. This will involve firstly the waste acceptance for backfill material as outlined in EIAR Chapter 5 and secondly the backfilling, covering and contouring by compaction by tracked dozer. Indicative phasing of the proposed backfill works is presented in figures in Section 5.

Plant and machinery on site will be used in accordance with the site's restoration plan. A single residential property located immediately to the south east of the boundary of the site at Bay Lane is located within 100 metres of the works (R1) and potentially the proposed operations in this area. Another property is located to the south east; however, this is circa 130m from the site boundary (R2). Given the transient nature of the site and the proposed layout, activities will be at varying distances from the nearest sensitive receptors depending on the location of works.

For the majority of the time, plant and equipment will be a greater distance from the nearest noise sensitive locations than that used for the calculations and consequently will have lesser impact. The assessment is therefore representative of a "worst-case" scenario and the following assumptions have been made in predicting construction noise levels:

- The use of a dozer or tracked excavator which may be required to move and compact imported fill material within the quarry void.
- The nearest noise sensitive locations are located approximately 100m and 130m from proposed work areas; there are no residences located within 10m of the subject site.
- All items listed are operating for a proportional period of 1 hour.
- All items are operating simultaneously for 100% of the time.

Table 3.4 summarises the noise prediction calculations at the noise sensitive locations located 100m and 130m respectively from the proposed works area.

Table 3.4: Predicted Operational Noise Levels at Noise Receptors

Item & BS5228-1: 2009 Reference	No. Required	Sound Pressure Level L_{Aeq} at 10m	Predicted Noise Levels at Receptors	
			R1 (100m)	R2 (130m)
Tracked bulldozer with blades to level materials (Ref C.5.14)	1	86	56	53
Shovel Loader to transport materials (Ref C.9.7)	1	90	60	57
Combined Level dB $L_{Aeq,1hour}$			61	59
Existing Baseline Noise level (using the arithmetic average L_{Aeq} for NSL3)			65	
Cumulative Noise Level L_{Aeq}			66	66

Predictions are based on a $L_{Aeq,1hour}$ value with all machinery operating for proportional periods of 1 hour. This may be considered a worst-case scenario as this machinery will not all operate simultaneously and will be used at varying stages as the works progress. In reality this will not occur, and noise levels would be expected to be significantly below those predicted as machinery would operate intermittently.

The results of the assessment indicate that the predicted noise levels for backfilling works would result in combined noise levels of 61dB L_{Aeq} and 59dB L_{Aeq} at R1 and R2 respectively. With regards to the potential impact of the proposed operations the predicted specific $L_{Aeq, 1hr}$ dB(A) noise levels have been logarithmically added to the existing ambient noise levels for the daytime period at NSL3 (65dB L_{Aeq}). With reference to the *Guidelines for Noise Impact Assessment* produced by the Institute of Environmental Management and Assessment (IEMA) as outlined in Table 3.4, the cumulative noise impact from machinery associated with the backfilling operations at receptors R1 and R2 is Negligible.

3.1.4 'Do-Nothing' Impact

If the proposed works do not proceed, the existing noise environment near the study area would remain at ambient levels as are currently typical of the area.

Traffic volumes on the surrounding road network are not likely to increase by any noticeable amount, therefore the existing noise environment is not expected to change in the Do-Nothing scenario.

Over time, it is anticipated that the volume of industrial activities and aircraft movements in the area will increase as economic activity increases and that this in turn is likely to lead to an increase in ambient and background noise levels.

3.2 ELVS AND PROPOSED NOISE LIMIT CRITERIA

There are no current ELVs associated with noise at the site.

Details of proposed noise limit criteria are included in section 7.5 - 'Noise Emissions Attachment'. The limits are aligned with Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4, January 2016) produced by the Environmental Protection Agency.

Noise mitigation measures are also discussed in Attachment 7.5 of this EPA waste licence application.

3.3 DETAILS AND ASSESSMENT OF THE IMPACTS OF PROPOSED NOISE EMISSIONS

Noise emissions will be associated with incoming/outgoing soil and stone delivery vehicles and mobile restoration plant and machinery. The EIAR concluded that, during normal operation of the facility, there should be a negligible noise impact at all nearby residents. These conclusions are summarised in this section.

The potential noise and vibration impact of the proposed works have been evaluated for the operational stage to include road traffic noise associated with HGV movements to the facility and backfilling of the inert C&D wastes into the quarry.

3.3.1 Road Traffic Noise

The road traffic impact has been undertaken in accordance with the UK's Highway Agency, Design Manual for Roads and Bridges (DMRB) HD 213/11 Volume 11, Section 3, Part 7 Revision 1. The DMRB states that noise should only be assessed when changes in traffic flow are greater than 25% or a 20% decrease in traffic flow. It is envisaged that the soil will be imported locally via the R121 or from wider locations via the M2/N2.

The traffic assessment has considered the following two scenarios for "with soils recovery" – a typical average scenario and a peak scenario if there is a surge in demand. The background scenario represents "without soils recovery".

When operating at this typical average scenario, the site will generate a total additional daily movement of circa 196 trucks onto the local road network. The increase in traffic noise predicted by the EIAR is barely perceptible and the associated noise impact is classified as Minor. The increase in traffic associated with the proposed development scheme is therefore not expected to give rise to significant noise nuisance in the area.

When operating at the peak scenario, the site will generate a total additional daily movement of circa 392 trucks onto the local road network.

It is anticipated that the additional road traffic noise attributable to the development will result in an increase in the baseline noise environment during this peak scenario by less than 4dB(A) for properties located along Bay Lane with other receptors further from the road network experiencing a lower impact. The predicted increase in traffic noise is noticeable and the associated noise impact is classified as Moderate for properties along Bay Lane. It should be noted that this impact is associated with short term peak surges and as such would be temporary in nature.

The increase in road traffic noise for the typical average and peak scenario has been assessed. Based on the existing noise climate which is located along a flight path from Dublin Airport is influenced by airborne aircraft noise and road traffic noise along the N2-R121 dual carriageway link road. As such the increase in traffic associated with the proposed development is therefore not expected to give rise to significant noise nuisance in the area.

3.3.2 Daily Truck Movements

The delivery of soils materials by HGVs to the site would produce a near constant potential source of noise emissions due to the predicted number of HGV trips expected on an hourly and daily basis. Filled trucks produce less noise due to the weight of material preventing little movement of the trailer, empty trucks are recognised to be noisier as the trailers tend to bounce on internal springs and produce intermittent and unpredictable loud bangs, and such bangs are echoed within the walls of typical stone and soils trailers when empty.

Using the traffic data provided for the Typical Scenario the calculation has assumed that there will be 20 deliveries of stone material per hour (10 inbound and 10 outbound). The predicted noise level at a residential property 20m from the haul road will result in a noise level of 56dB.

Using the traffic data provided for the Peak Scenario the calculation has assumed that there will be 40 deliveries of stone material per hour (20 inbound and 20 outbound). The predicted noise level at a residential property 20m from the haul road will result in a noise level of 59dB.

3.3.3 On-site Sources for Backfilling Works

During void filling, the principal sources of additional noise around the application site will be from bulldozers and dump truck movements. The cumulative noise impact from machinery associated with the backfilling operations at receptors R1 and R2 is Negligible.

3.3.4 'Do-Nothing' Impact

If the proposed works do not proceed, the existing noise environment near the study area would remain at ambient levels as are currently typical of the area.

Traffic volumes on the surrounding road network are not likely to increase by any noticeable amount, therefore the existing noise environment is not expected to change in the Do-Nothing scenario. Over time, it is anticipated that the volume of industrial activities and aircraft movements in the area will increase as economic activity increases and that this in turn is likely to lead to an increase in ambient and background noise level.

4 SEWER

No emissions to sewer are proposed.

A small onsite proprietary waste water treatment plant will be installed onsite suitable to the required duty levels. This will be commissioned by adequately qualified persons and will operate in compliance with EPA Code of Practice: Wastewater Treatment Systems for Single Houses.