ATTACHMENT E4 – EMISSIONS TO GROUNDWATER

There will be no emissions to public (Local Authority) sewers associated with the continued operation of the waste recovery facility at Huntstown. There is an existing sewage / wastewater system (septic tank) and effluent percolation area servicing the existing site office(s) and canteen located to the south of the internal access road and rear of the block shed (at the location indicated in Drawing E4-1, attached). This treatment system was authorised by the 2014 quarry planning permission.

GROUNDWATER PROTECTION - BACKGROUND

The quarry excavations at Huntstown have intersected the groundwater table and lowered it around the periphery with the excavation of each quarry bench. The surrounding rock is of sufficiently low permeability that the quarry void can be dewatered and kept dry by pumping from temporary sumps at low points in the quarry floor. There are minor groundwater inflows into each of the quarries that drain to the quarry floor, where they are contained in closed depressions / sumps.

In order to maintain dry conditions, water is pumped from quarry floors as and when required, up to the on-site surface water management system(s). After it passes through settlement ponds, grit trap and hydrocarbon interceptor, treated surface water is discharged to the surrounding surface water drainage network(s).

Pumping and dewatering of the North Quarry will continue for the duration of backfilling and restoration activities at the facility. During the backfilling operations, any groundwater daylighting in the quarry faces will continue to flow into the quarry and be diverted via the surface water management system to the local drainage network.

There is no groundwater inflow to the West Quarry. Most rain falling across the West Quarry percolates though the ground to the underlying (depressed) groundwater table and any water ponding on the quarry floor is surface water run-off. During the backfilling operations, any ponded waste will be pumped to the floor of the North Quarry and into the existing surface water management system.

Previous sampling and testing of groundwater from monitoring wells across the Huntstown Quarry complex indicates that groundwater quality at the recovery facility / application site is generally good and that established operations have had no significant impact on local groundwater quality.

GROUNDWATER PROTECTION - QUALITY

In order to minimise the risk of pollution to groundwater arising as a result of waste recovery and backfilling activities, a number of mitigation measures are implemented to protect groundwater, prevent possible accidental discharge of fuel or chemicals and detect / monitor potential adverse impacts.

These measures, which give effect to Articles 3,4,5,6 and 7 of *Council Directive 80/68/EEC of 17 December 1979 on the Protection of Groundwater Against Risk of Pollution by Dangerous Substances* and the *European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010)*, are identified under a range of headings below.

Notwithstanding the measures proposed, it is emphasised that the materials which are imported and handled at the waste recovery facility at Huntstown are inert and, by definition, devoid of contamination by Annex 1 and Annex 2 substances listed in Council Directive 80/68/EC. The continued operation of the waste recovery facility will not require discharge of untreated effluent or any listed dangerous substances to groundwater and no provision for such discharge is (nor will it be) made in any legal consent or authorisation issued in respect of the facility.

Inspection of Imported Material

- Loads of imported material are screened and inspected in line with an approved waste acceptance plan to confirm they are inert prior to deposition at the facility. Additional precautionary measures associated with the acceptance and handling of inert soil waste are detailed in the following sections of the Environmental Impact Statement:
  - Chapter 2, Paragraphs 2.64 to 2.72 (Waste Acceptance and Handling)
  - Appendix 2.1 (Waste Handling and Acceptance Plan)

  Contingency arrangements for uncontrolled spillages / leakages are outlined in Section 3 of the contingency plan provided in Attachment J of this waste licence application).

Handling of Fuels and Chemicals

- All petroleum based products and chemicals are stored in containers and drums stored over bunded pallets (and concrete slabs) in the existing maintenance shed;
- emergency response kits / spill kits are available on-site to stop the migration of spillages / leaks of petroleum based products, should they occur;

- refuelling of vehicles is undertaken at a surfaced (concreted) area alongside a bunded fuel tank or from a mobile double skinned fuel bowser in order to minimise the risk of uncontrolled release of polluting liquids / liquors;
- maintenance of plant and machinery is undertaken at existing on-site maintenance sheds or off-site, as appropriate, to minimise the risk of uncontrolled release of polluting liquids;
- soil and stone waste is vetted, inspected and tested to confirm it is inert prior to importation and deposition at the recovery facility. Waste handling procedures provide for classification, compliance and verification testing of waste;
- all surface water run-off collected in sumps at the North Quarry and West Quarry goes to a settlement pond prior to discharge off-site to surface watercourses in order to reduce the concentration of suspended solids;
- all fuel, chemicals, petroleum based products, mechanical and electrical equipment shall be removed prior to closure of the site.

Traffic Movement

- A site specific traffic management system has been put in place to reduce the potential conflicts between vehicles, both at the recovery facility and in the wider quarry complex site where vehicles transit to the recovery facility, thereby reducing the risk of an accidental vehicle collision;
- the speed limit is enforced to further reduce the likelihood and significance of collisions between vehicles;
- all plant is regularly maintained and inspected daily for leaks of fuels, lubricating oil or other contaminating liquids/liquors.

Monitoring

- Groundwater monitoring measures have been implemented at the quarry complex and existing recovery facility in accordance with planning consents and waste licence requirements under the Waste Licence. These monitoring measures will continue at and around the recovery facility / application site in order to monitor any potential impact of the inert waste recovery operations on groundwater.
- Groundwater monitoring is being undertaken in accordance with Schedule C.5 of the waste Licence at GW01, GW02, GW03, GW04 and GW05. As noted previously, monitoring and sampling at GW06 has been suspended as no groundwater is intercepted by the well since the South Quarry was deepened. Groundwater quality monitoring will be undertaken on at least a six monthly basis.
- The results of all groundwater monitoring undertaken will be recorded and submitted to the EPA in an Annual Environmental Report for its record and review;
- It is currently envisaged that the groundwater monitoring regime will remain in place for the duration of the quarry backfilling and restoration works. Sampling and monitoring will continue as long as backfilling activities continue and for a short period thereafter.

GROUNDWATER PROTECTION - FLOW

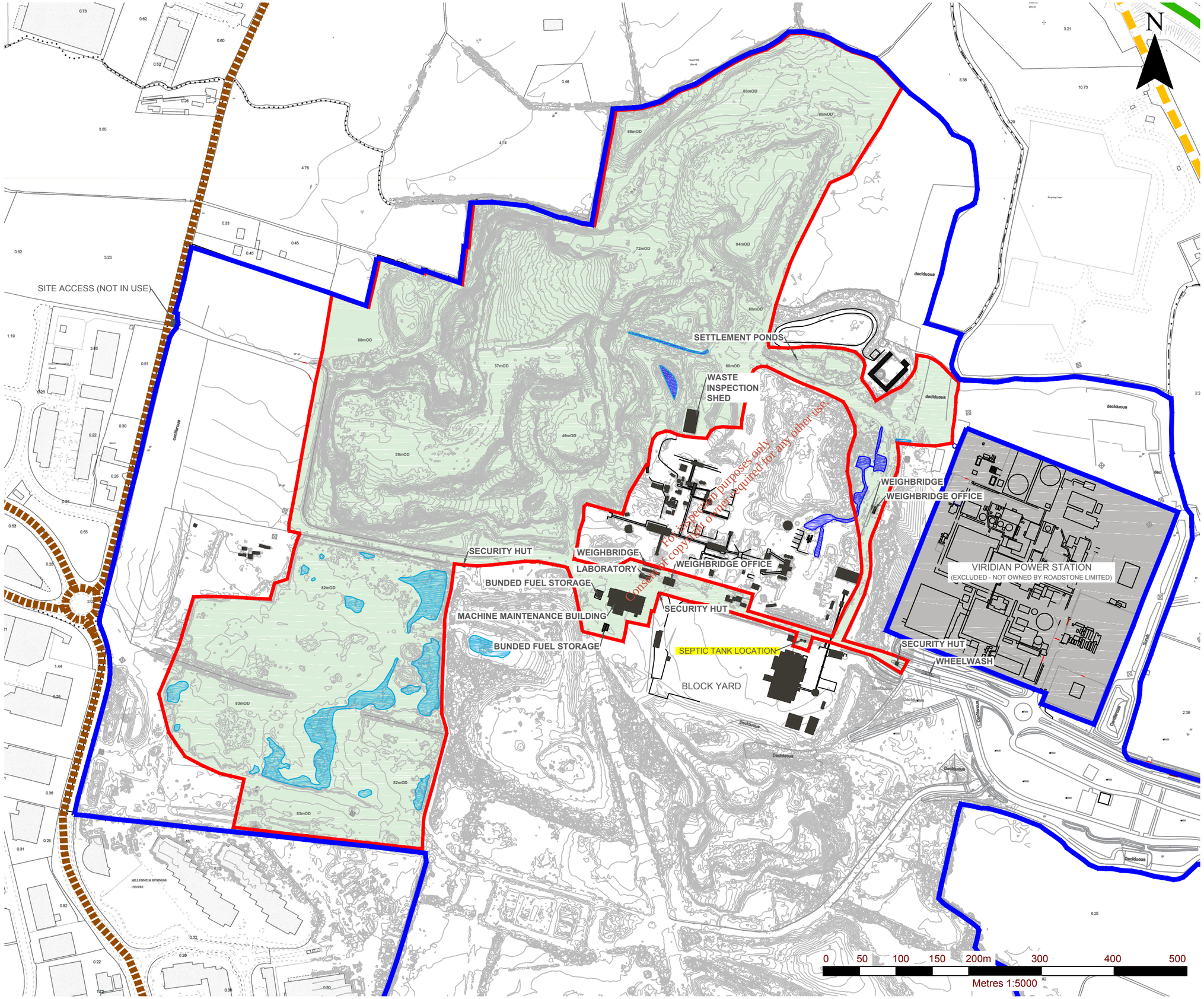
The bedrock formations underlying the application site and the wider Huntstown Quarry complex are generally considered to be Locally Important (LI) karstified aquifers. Maps published by the EPA indicate that the site is located in an area with high to extreme groundwater vulnerability status. This reflects the potential for rapid groundwater movement through thin (or non-existent) soil cover into the underlying (poor) bedrock aquifer.

Quarry dewatering at Huntstown has been ongoing for in excess of 30 years. Continued dewatering (at least in the short-to-medium term) to facilitate backfilling of the North Quarry and West Quarry with inert soil waste will not alter established regional groundwater flows around the recovery facility (or the wider quarry complex).

Over the longer-term, backfilling of the quarry void is unlikely to have any adverse long term impact on the local groundwater flow regime; it will not create any barrier to regional groundwater flow, nor will it reduce groundwater recharge or lead to a reduction in groundwater levels at off-site supply wells.

As noted previously, several measures are place to monitor / detect any potential groundwater impact arising from the continued operation of the waste recovery facility. Groundwater levels will also be recorded at the time of groundwater sampling.

Further information is provided in Chapter 6 of the EIS which accompanies this waste licence application.



NOTES

1. EXTRACT FROM 1:2,500 ORDNANCE SURVEY DIGITAL SHEET **NO'S. 3062-A, 3062-B, 3062-C, 3062-D, 3063-A, 3063-C, 3130-A & 3130-B**.

2. ORDNANCE SURVEY IRELAND LICENCE NO. **SU 0000716 (C)** ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

- ROADSTONE LIMITED LAND INTEREST **(c. 200.3 ha)**
- APPLICATION AREA **(c. 48.65 ha)**
- N2 DUAL CARRIAGEWAY
- NORTH ROAD (R135)
- LOCAL ROAD
- SEMI-PERMANENT / EPHEMERAL PONDS IN WEST QUARRY (JUNE 2016)

EMISSION	EASTING	NORTHING
Septic Tank	710986	741477

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ROADSTONE LIMITED
WASTE LICENCE REVIEW APPLICATION

HUNTSTOWN WASTE RECOVERY FACILITY
NORTH ROAD, FINGLAS, DUBLIN 11

GROUNDWATER EMISSION LOCATION

DRAWING E4-1

Scale	Date
1:5,000 @ A3	SEPTEMBER 2016

0180.00152.0.FIG_E4-1.Grounwater Emissions Location.dwg