

ATTACHMENT E2 – EMISSIONS TO SURFACE WATER

Surface Water Environment

The Huntstown Quarry complex straddles two river catchments, that of the Ward River to the north and the Tolka River to the south, with approximately equal areas of the overall Roadstone landholding in each catchment. Much of the existing (licensed) inert soil recovery facility is located in the northern part of the Roadstone property holding, within the Ward River catchment.

Although mapping indicates that much of the West Quarry (within the licensed site) lies within the Ward River catchment, a small area at its southern end lies within the Tolka catchment. However, as any excess or ponded surface water from the West Quarry is occasionally pumped northwards, across an internal haul road, to sumps in the floor of the North Quarry, this effectively places the entire West Quarry within the Ward River catchment.

This waste licence review application essentially provides for the incorporation of the existing and planned future replacement C&D recovery facilities at Huntstown within the existing licenced recovery area.

Mapping indicates that the existing C&D waste recovery facility at the Central Quarry straddles the Ward and Tolka catchments. However, as surface water run-off collecting in the sump on the quarry floor is pumped northwards into the existing surface water treatment ponds on the eastern side of the central infrastructure area, this too effectively places the entire Central Quarry within the Ward River catchment.

The entire area of the proposed replacement C&D recovery facility in the north-eastern corner of the Roadstone landholding is located within the Ward River catchment.

Surface Water Management Systems

Surface water bodies at the existing recovery facility / licensed site are man-made and comprise sumps on the quarry floors, settlement ponds and channels for water management, and semi-permanent ponds. The only surface water drainage infrastructure at the Huntstown quarry complex occurs around the central infrastructure area where (non-licensed) aggregate processing and concrete production activities are currently concentrated.

This attachment will address surface water run-off arising on the additional lands to be incorporated into the licenced site by way of this waste licence review application. The management of surface water at the licensed soil recovery facility has been addressed previously in earlier waste licence / waste licence review applications and is controlled by the existing waste licence (Ref. W0277) and, as such, will not be covered in detail in this submission.

Existing Recovery Facility – Central Quarry

At the present time, groundwater levels around the Central Quarry are depressed by dewatering activities at the North Quarry and South Quarry which are located on either side.

Rain falling across the existing C&D waste recovery facility at the Central Quarry either

- runs over unsealed ground into the existing quarry void, to a small pond in the north-eastern corner of the quarry floor or
- percolates down through the existing soil / rock at the ground surface as recharge to groundwater, at which point it joins groundwater flow through the ground.

Surface water run-off and any dewatered groundwater at the quarry collect in the pond on the quarry floor, from where it is pumped up to the ground surface to the existing water treatment infrastructure (settlement ponds) located on the eastern side of the central infrastructure area. Thereafter, the run-off is passed through an existing hydrocarbon interceptor and discharged to the Ballystrahan Stream and from there, to the Ward River which flows further to the north.

At the present time, the occasional pumped discharges from the Central Quarry are not monitored routinely prior to mixing with other discharges from (non-licensed) activities at the central infrastructure area. It is envisaged that in future (subject to EPA review) surface water discharges from the recovery facility at the Central Quarry will be sampled and monitored at location W2, immediately upstream of its confluence / discharge into the settlement lagoons which treat run-off from the central infrastructure area. The location of this monitoring point is shown in Drawing E2-1. In this way, the environmental performance at the C&D waste recovery facility can be monitored independently of other site based activities at the quarry complex.

Replacement Recovery Facility – North Eastern Corner

At the present time, rain falling over the proposed replacement C&D recovery facility, at the north-eastern corner of the Huntstown Quarry complex generally

- percolates down through soil at the ground surface and recharges to the underlying groundwater table or
- runs south and west over the existing ground surface to a minor (seasonal) pond in the south-western corner.

It is envisaged that when the long-term recovery facility is in place, rainfall will continue to percolate through a layer of permeable hardstanding (crushed rock) placed over the mineral subsoil and down to the underlying groundwater table, as it does at present. It is envisaged that any surface water run-off which does arise will fall over the built-up / regraded ground surface toward an open collector channel running in a verge on the eastern side of the access road leading to the facility (and along the western side of the C&D recovery facility).

Any surface water run-off will collect in an enlarged pond in the south-western corner of the facility, from whence it will be pumped across the licenced facility to the existing sump / pond on the floor of the North Quarry. This sump / pond acts to lower groundwater level around the North Quarry and surface water run-off and dewatered groundwater collecting in it is pumped to the ground surface via an existing pipe network. The pumped waters are then passed through a series of settlement ponds and interceptor / grit trap prior to being discharged to the Ballystrahan Stream and Ward River catchment.

Off-site discharge from the settlement ponds is currently monitored at a control point designated 'W4' which is located immediately downstream, in accordance with the requirements of the existing EPA waste licence (Ref. W0277). The location of this monitoring point is shown in Drawing E2-1. From there, the discharge waters flow along existing surface water channels and mix with other (quarry) discharge further downstream (see below) before they are ultimately discharged to the Ballystrahan Stream which flows northwards toward the Ward River.

Waste Inspection and Quarantine Area

Any suspect contaminated waste imported to the proposed waste facility is transferred to a covered shed beyond the south-eastern corner of the North Quarry. As the floor of the shed is sealed by a concrete slab, and as no rainfall will come into contact with consignments of suspected contaminated waste, there is no requirement to install drainage infrastructure for the separate collection, storage and/or and treatment of potentially contaminated surface water run-off at the waste inspection and quarantine facility.

Other Site Activities

In addition to discharges from the authorised waste activities and planned future C&D waste recovery facilities, Roadstone also discharges process water from aggregate and concrete production activities at the central infrastructure area, via a series of existing settlement ponds, to a combined discharge to the Ballystrahan Stream and ultimately to the Ward River. This discharge point, which lies downstream of monitoring point 'W4', is designated 'W1'. An effluent discharge licence in respect of combined waters from the licensed facility and concrete production facility (Ref. WPW/F008-01) was issued by Fingal County Council in November 2011. A copy of the discharge licence in respect of this discharge is attached.

The Ward River and its tributary the Ballystrahan stream are classified as being of 'Poor' status (www.epa.ie). The River Ward itself has a median Q-rating of 3 (unsatisfactory). Siltation by agriculture and urban wastewater discharges are believed to be the principal contributors to reduced water quality in the catchment. Details of surface water management systems at the existing / future waste recovery facilities are provided in Attachment D1 of this waste licence review application and Chapter 2 of the Environmental Impact Statement which accompanies it.

Surface Water Management during Recovery Activities

The configuration of the existing surface water management system is indicated on the site infrastructure layout in Drawing D2-1. In order to minimise the risk of pollution to surface waters arising as a result of waste recovery activities at Huntstown Quarry, a number of existing and planned additional mitigation measures are implemented to protect surface water, prevent possible accidental discharge of fuel or chemicals and detect / monitor potential adverse impacts. Note that existing measures will be extended to and/or applied at the relocated C&D facility once it is established and operational. The measures identified give effect to the requirements of the European Communities Environmental Objectives (Surface Water) Regulations 2009 (S.I. No. 272 of 2009).

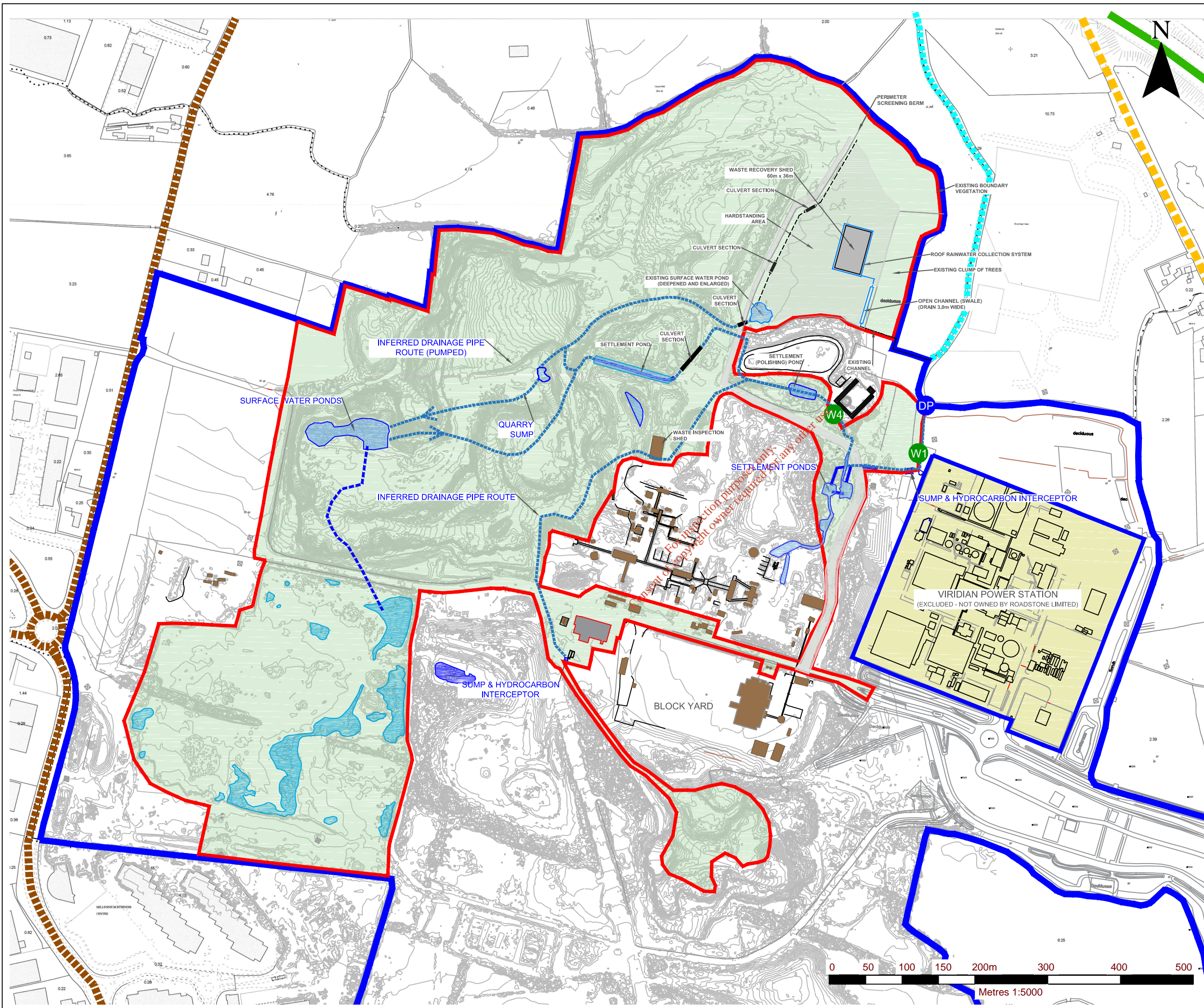
Existing Measures -

- A site specific traffic management system has been put in place to reduce the potential conflicts between vehicles, at both the C&D waste recovery facilities and across the wider quarry complex site where vehicles transit to the quarries and production areas, 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;
- refuelling of vehicles is undertaken at a surfaced area from a fuel tank(s) that is bunded or from a mobile double skinned fuel bowser in order to minimise the risk of uncontrolled release of polluting liquids / liquors;
- the maintenance of plant and machinery is undertaken within the existing site maintenance shed or off-site, as appropriate, to minimise the risk of uncontrolled release of polluting liquids;
- spill kits are available on-site to stop the migration of spillages, should they occur;
- all C&D waste is vetted, inspected and tested to confirm it is inert prior to importation and recovery at the facility. Waste handling procedures at the facility provide for classification, compliance and verification testing of waste intake;
- all surface water run-off collected in the sump at the existing C&D facility at the Central Quarry is pumped to a settlement pond prior to discharge off-site to surface watercourses in order to reduce the concentration of suspended solids.

Proposed Measures –

- Temporary surface water management infrastructure (settlement ponds) will be provided to manage run-off during the construction / establishment phase for the proposed replacement C&D facility;
- Materials used to construct the external hardstanding area will continue to allow rainwater to percolate to the underlying groundwater table and prevent the build-up / generation of mud / wet fines. Heavily trafficked hardstand areas will be regularly maintained regularly as required;
- Stormwater runoff from the roof of the proposed recovery shed at the relocated recovery facility will be collected by gullies and a sub-surface drainage system around the shed and discharge to an open channel grassed channel (swale) running north-south along the eastern boundary of the facility, to be discharged to the channel of a former natural stream which runs east toward the Ballystrahan Stream. As roof-run-off from the proposed shed will be uncontaminated, there is no requirement to provide any treatment prior to its discharge off-site;
- Flood attenuation for roof run-off will be provided by fitting a flow control device / hydrobrake at the downstream end of the swale (and immediately upstream of the channel leading to the Ballystrahan Stream) in order to limit the maximum stormwater run-off to the existing greenfield rate.
- Surface water runoff from the access road and hardstanding areas will be collected by open collector channels to an enlarged pond in the south-western corner of the proposed new C&D waste recovery facility. It is envisaged that the water collecting in the pond will be pumped intermittently as required from there to the existing network of settlement / holding ponds across the quarry complex. The pump will float at the pond and its level controlled by way of an automatic float level switch.
- The surface water run-off will ultimately be pumped from the settlement / holding ponds and passed through the existing polishing pond (reed-bed) and hydrocarbon interceptor / grit trap before being discharged to the Ballystrahan Stream.
- Existing water treatment systems at the quarry complex will continue to be upgraded, as necessary (with provision of additional settlement pond capacity as required) in order to ensure that suspended solids in all off-site discharges are compliant with Emission Limit values set out in the EPA Waste Licence and / or Local Authority Discharge Licence;
- The C&D waste recovery facility will continue to be run in accordance with best waste management practice, with the required plant and staff resources put in place to facilitate this.

0180.00166.0.FIG_E2-1.Surface Water Management System.dwg



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 0000717 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

- ROADSTONE LIMITED LAND INTEREST (c. 200.3 ha)
- APPLICATION AREA (c. 55.0 ha)
- N2 DUAL CARRIAGEWAY
- NORTH ROAD (R135)
- LOCAL ROAD
- BALLYSTRAHAN STREAM
- SURFACE WATER MONITORING LOCATIONS
- DISCHARGE POINT
- EPHEMERAL PONDS IN WEST QUARRY

EMISSION	EASTING	NORTHING
DP	711204	741838
W1	711193	741771
W4	711077	741825

SLR global environmental solutions
 SLR CONSULTING IRELAND
 7 DUNDRUM BUSINESS PARK
 WINDY ARBOUR
 DUBLIN 14
 T: +353-1-2964667
 F: +353-1-2964676
 www.slrconsulting.com

ROADSTONE LIMITED
 WASTE LICENCE REVIEW APPLICATION
HUNTSTOWN C&D WASTE RECOVERY FACILITY
 NORTH ROAD, FINGLAS, DUBLIN 11
SURFACE WATER EMISSION LOCATIONS

DRAWING E2-1
 Scale 1:5,000 @ A3
 Date JUNE 2017

TABLE E.2(i): EMISSIONS TO SURFACE WATERS
(One page for each emission)

Emission Point: W4

Emission Point Ref. N ^o :	W4
Source of Emission:	Dewatered groundwater and surface water run-off pumped from floor of North Quarry / existing soil waste recovery facility. Surface water run-off from proposed C&D waste recovery facility in north-eastern corner of Roadstone landholding
Location :	Immediately east of existing settlement ponds at original ground level on the eastern side of the North Quarry
Grid Ref. (10 digit, 5E,5N):	711077E 7418250N (ITM Co-ordinates)
Name of receiving waters:	Ballystrahan Stream Identified as a tributary to Ward River
Flow rate in receiving waters:	Discharge to Ballystrahan Stream Unknown Dry Weather Flow 0.011 m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	Refer to Table E.1 (ii)

Emission Details:

(i) Estimated volume to be emitted			
Normal / day	800 m ³ /day	Maximum/day	1,800 m ³ /day (Existing Waste Licence)
Maximum rate/hour	75m ³ /hr (Existing Waste Licence)		

Emission Point: W1

Emission Point Ref. N ^o :	W1
Source of Emission:	Surface water run-off from central infrastructure area (principally aggregate processing / concrete production area – outside of waste licence area) and occasional run-off from the Central Quarry Also treated surface water run-off from the floor of the North Quarry / existing waste recovery facility and proposed replacement C&D recovery facility.
Location :	Immediately east of an central infrastructure area and was access road leading to waste recovery facility at North Quarry
Grid Ref. (10 digit, 5E,5N):	711193E 741771N (ITM Co-ordinates)
Name of receiving waters:	Ballystrahan Stream Identified as a tributary to Ward River
Flow rate in receiving waters:	Discharge to Ballystrahan Stream Unknown Dry Weather Flow 0.011m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	Refer to Table E.1 (ii)

Emission Details:

(i) Estimated volume to be emitted			
Normal / day	800 m ³ /day	Maximum/day	1,800 m ³ /day (Existing Waste Licence)
Maximum rate/hour	75m ³ /hr (Existing Waste Licence)		

TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : SW4 (Waste Licence W0277)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	Max. ¹ (kg/day)	Max. ¹ (kg/year)	
Total Suspended Solids	<u>Not Monitored</u>	<u>Not Monitored</u>			15mg/l	15mg/l	12kg/day	4,380kg/yr	N/A
pH	<u>Not Monitored</u>	<u>Not Monitored</u>			9	9			
Biochemical Oxygen Demand	<u>Not Monitored</u>	<u>Not Monitored</u>			5mg/l	5mg/l	4kg/day	1,460kg/yr	N/A
Orthophosphate (as P)	<u>Not Monitored</u>	<u>Not Monitored</u>			0.5 mg/l	0.5mg/l	0.4kg/day	146kg/yr	N/A
Ammonia (as N)	<u>Not Monitored</u>	<u>Not Monitored</u>			0.5mg/l N	0.5mg/l N	0.4kg/day	146kg/yr	N/A

¹ Based on average daily flow rate of 800m³/day

Emission point reference number : SW1 (FCC Discharge Permit WPW/F/008-01)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	Max. ¹ (kg/day)	Max. ¹ (kg/year)	
Total Suspended Solids	<u>Not Monitored</u>	<u>Not Monitored</u>			30mg/l	30mg/l	24kg/day	8,760kg/yr	N/A
pH	<u>Not Monitored</u>	<u>Not Monitored</u>			9	9			
Biochemical Oxygen Demand	<u>Not Monitored</u>	<u>Not Monitored</u>			5mg/l	5mg/l	4kg/day	1,460kg/yr	N/A
Chemical Oxygen Demand	<u>Not Monitored</u>	<u>Not Monitored</u>			30mg/l O ₂	30mg/l O ₂	24kg/day O ₂	8,760kg/yr O ₂	N/A
Phosphate (as PO ₄ ⁻ P)	<u>Not Monitored</u>	<u>Not Monitored</u>			1mg/l P	1mg/l P	0.8kg/day P	292kg/yr N	N/A
Ammonium (as N)	<u>Not Monitored</u>	<u>Not Monitored</u>			1mg/l N	1mg/l N	0.8kg/day P	292kg/yr N	N/A
Sulphate (as SO ₄)	<u>Not Monitored</u>	<u>Not Monitored</u>			300mg/l	300mg/l	240kg/day	87,600kg/yr	N/A
Mineral Oil	<u>Not Monitored</u>	<u>Not Monitored</u>			10mg/l	10mg/l	8kg/day	1470kg/yr	N/A
Detergents	<u>Not Monitored</u>	<u>Not Monitored</u>			10mg/l	10mg/l	8kg/day	14691kg/yr	N/A

¹ Based on average daily flow rate of 800m³/day

COMHAIRLE CONTAE FHINE GALL

FINGAL COUNTY COUNCIL

LICENCE TO DISCHARGE TRADE EFFLUENT TO WATERS

To: Roadstone Wood Ltd.,
Fortunestown,
Tallaght,
Dublin 24.

Ref. Number in Register: **WPW/F/008 - 01**

Fingal County Council (hereinafter referred to as "the Council") in exercise of the powers conferred on it by the Local Government (Water Pollution) Acts 1977 and 1990, hereby grants a Licence, Reference Number WPW/F/008 - 01 to Roadstone Wood Ltd., (hereinafter referred to as "Licensee") to discharge trade effluent to waters from their premises at Huntstown Quarry, Ashbourne Road, Finglas, Dublin 11, subject to the following conditions:-

1. The temperature of the treated effluent shall not exceed **25 degrees Centigrade**, or **ambient temperature** if it exceeds **25 degrees Centigrade**.
2. The **pH** of the treated effluent shall lie in the range **6.0 to 9.0**.
The **pH** of the receiving waters shall not be altered by more than **+/- 0.5 pH** units by the effluent discharge.
3. Over any 24 hour period, the mean concentration of **biochemical oxygen demand (B.O.D.)** in the effluent shall not exceed **5 mg/litre O₂** and the maximum concentration of **B.O.D.** shall not exceed **7 mg/litre O₂**. The total quantity of biochemical oxygen demand discharged in this period shall not exceed **9.0 Kgs**.
4. Over any 24 hour period, the mean concentration of **chemical oxygen demand (C.O.D.)** in the effluent shall not exceed **30 mg/litre** and the maximum concentration of **C.O.D.** shall not exceed **50 mg/litre**. The total quantity of chemical oxygen demand discharged in this period shall not exceed **54.0 Kgs**.
5. Over any 24 hour period, the mean concentration of suspended solids in the effluent shall not exceed **20 mg/litre** and the maximum concentration of **suspended solids** shall not exceed **30 mg/litre**. The total quantity of suspended solids discharged in this period shall not exceed **36.0 Kgs**.
6. The concentration of mineral oils in the effluent shall not exceed **10.0 mg/l**.
The total quantity of mineral oils discharged per day shall not exceed **18.0 Kgs**.

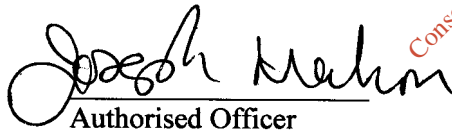
Petroleum hydrocarbons shall not be present in the effluent which would :

- (a) Form a visible film on the receiving water surface or form coatings on the substratum.
- (b) Impart a detectable hydrocarbon taste to edible finfish and/or shellfish.
- (c) Cause deleterious effects on aquatic life.

7. The concentration of detergents in the effluent shall not exceed **10.0 mg/l**.
The total quantity of detergents discharged per day shall not exceed **18.0 Kgs**.
8. The concentration of **Ammonium (as N)** in the effluent shall not exceed **1 mg/l as N**.
The total quantity of **Ammonium** discharged per day shall not exceed **1.8 Kg as N**.
9. The concentration of **Phosphates (as PO₄-P)** in the effluent shall not exceed **1 mg/l as P**.
The total quantity of **Phosphates** discharged per day shall not exceed **1.8 Kg as P**.
10. The concentration of **Sulphates (as SO₄)** in the effluent shall not exceed **300 mg/l**.
The total quantity of **Sulphates** discharged per day shall not exceed **540.0 Kgs as SO₄**.
11. Over any 24 period, the maximum volume of effluent discharged shall not exceed **1,800 cubic metres**.
12. Materials classifiable as Hazardous Waste under the Waste Management Acts, shall not be discharged to waters.
13. Other wastewaters (including firewater, accidental spillages etc.) arising on the site shall not be discharged to waters without prior authorisation of Fingal County Council.
14. The effluent discharged shall be of the same nature and composition as described and conditioned in this licence. The effluent shall contain no other substances in such a concentration, nor to be discharged in such a manner as to be harmful or detrimental to public health or to domestic, commercial, industrial agricultural or recreational uses of the receiving waters.
15. All storage tanks for fuel and/or chemicals shall be surrounded by a bund capable of retaining 110% of the volume of the largest single tank within the banded area. The intake and outlet for the tanks shall be positioned inside the bund. Provision shall be made to remove and dispose of the rainwater so as to ensure the specified volume is always available within the bund. The bund shall be constructed and maintained by the Licensee to specifications agreed with Fingal County Council.
16. The Licensee shall keep records, in such form as required, of volume, rate of discharge, nature and composition of the trade effluent discharged and these shall be available at all reasonable times for inspection by duly authorised persons as defined in Section 28(9) of the Local Government (Water Pollution) Acts 1977 & 1990. Copies of such records shall be sent to the Council on demand.
17. A record or log-book of cleaning, maintenance and performance of each settling tank shall be kept and made available for inspection at all times by duly authorised persons as defined in Section 28(9) of the Local Government (Water Pollution) Acts 1977 & 1990.
18. The Licensee shall display in a prominent position a notice to the effect that in the event of an accidental discharge, spillage or deposit of any polluting matter which enters or is likely to enter any waters or a sewer, the person responsible shall notify the Council as soon as practicable after the occurrence and the and that failure to do so is an offence under Section 14, Local Government (Water Pollution) Acts 1977 & 1990.

19. A fee of **€205.00** per sample collected by the Fingal County Council representative for compliance monitoring is payable to Fingal County Council, this charge covers the cost of sample collection and chemical analysis and is payable on demand.
20. The Licensee shall monitor the discharge of treated effluent to ensure compliance with the conditions of this licence. Representative samples of the **treated final effluent and the upstream and downstream receiving waters** shall be taken by the Licensee and tested for the chemical and physical characteristics conditioned in this licence using standard methods. The frequency of sampling shall be as necessary but shall not be less than **12 times per year (monthly)**.

The costs of all such tests shall be borne by the Licensee.
21. The applicant shall permit authorised persons as defined in Section 28(9) of the Local Government (Water Pollution) Acts 1977 & 1990 as Amended, to inspect, examine and test, at all reasonable times, any works and apparatus installed in connection with the trade effluent and to take samples of the trade effluent.
22. The Licensee shall submit monitoring results to Fingal County Council on an annual basis, but not later than **January 15th** for the previous year.
23. Failure to comply with any of these conditions will result in prosecution under section 16(9) of the Local Government (Water Pollution) Acts 1977 & 1990. A conviction could result in substantial fines (up to €5,000) and/or imprisonment.


Authorised Officer

Dated this 24th day of NOV. 2011

ATTACHMENT E4 – EMISSIONS TO GROUNDWATER

There will be no emissions to public (Local Authority) sewers associated with the established or planned future increases in licensed waste recovery activity 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 captured and 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 traps and hydrocarbon interceptors, treated surface water is discharged to the surrounding surface water drainage network(s).

This attachment will address groundwater impacts arising from C&D recovery facilities on the additional lands to be incorporated into the licensed site by way of this waste licence review application. Management of groundwater at the licensed soil recovery facility has been addressed previously in earlier waste licence / waste licence review applications and is controlled by the existing waste licence (Ref. W0277) and, as such, will not be covered in detail in this submission.

Pumping and dewatering of the Central Quarry will remain unchanged in the short-term while C&D waste recovery activities continue for a limited duration pending establishment of the replacement recovery facility in the north-eastern corner of the Roadstone landholding. During this period, any groundwater daylighting in the quarry faces will continue to flow into the sump on the quarry floor and be diverted via the surface water management system to the local drainage network.

There will be no groundwater inflows to the proposed replacement C&D recovery facility. Most rain falling across the replacement facility will continue to percolate through hardstanding and the underlying ground to the underlying (depressed) groundwater table. During the site establishment and operational phases, any water ponding on the quarry floor will be managed as surface water and 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 and wider quarry complex 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 all materials which are imported to, and handled at, the authorised waste recovery facilities 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 C&D waste recovery facility and its planned relocation to the north-eastern corner of the Roadstone landholding will not require discharge of untreated effluent or any listed dangerous substances to groundwater and no provision for such discharge is made in any legal consent or authorisation issued in respect of the facility (nor will it be).

A number of measures (listed overleaf) are implemented at the facility to provide for groundwater protection.

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 acceptance at the recovery facility;
- Waste handling procedures provide for classification, compliance and verification testing of waste intake.

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;
- All fuel, chemicals, petroleum based products, mechanical and electrical equipment will be removed prior to closure of the licensed facility;
- Contingency arrangements for uncontrolled spillages / leakages are outlined in Section 3 of the contingency plan provided in Attachment J of this waste licence review application.

Traffic Movement

- A site specific traffic management system has been put in place to reduce the potential conflicts between vehicles, both at the recovery facilities and in the wider quarry complex where vehicles transit to the recovery facilities, 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 the requirements of the waste licence. These monitoring measures will continue at and around the recovery facilities in order to monitor any potential impact they may have on groundwater;
- Groundwater monitoring is being undertaken in accordance with Schedule C.5 of the waste licence at GW01, GW02, GW03, GW04 and GW05. Groundwater quality monitoring is undertaken on at least a six monthly basis;
- The results of all groundwater monitoring undertaken is 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 recovery activities at the licensed site and for an agreed 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) will not alter established regional groundwater flows around the existing (or extended) waste recovery facility (or the wider quarry complex).

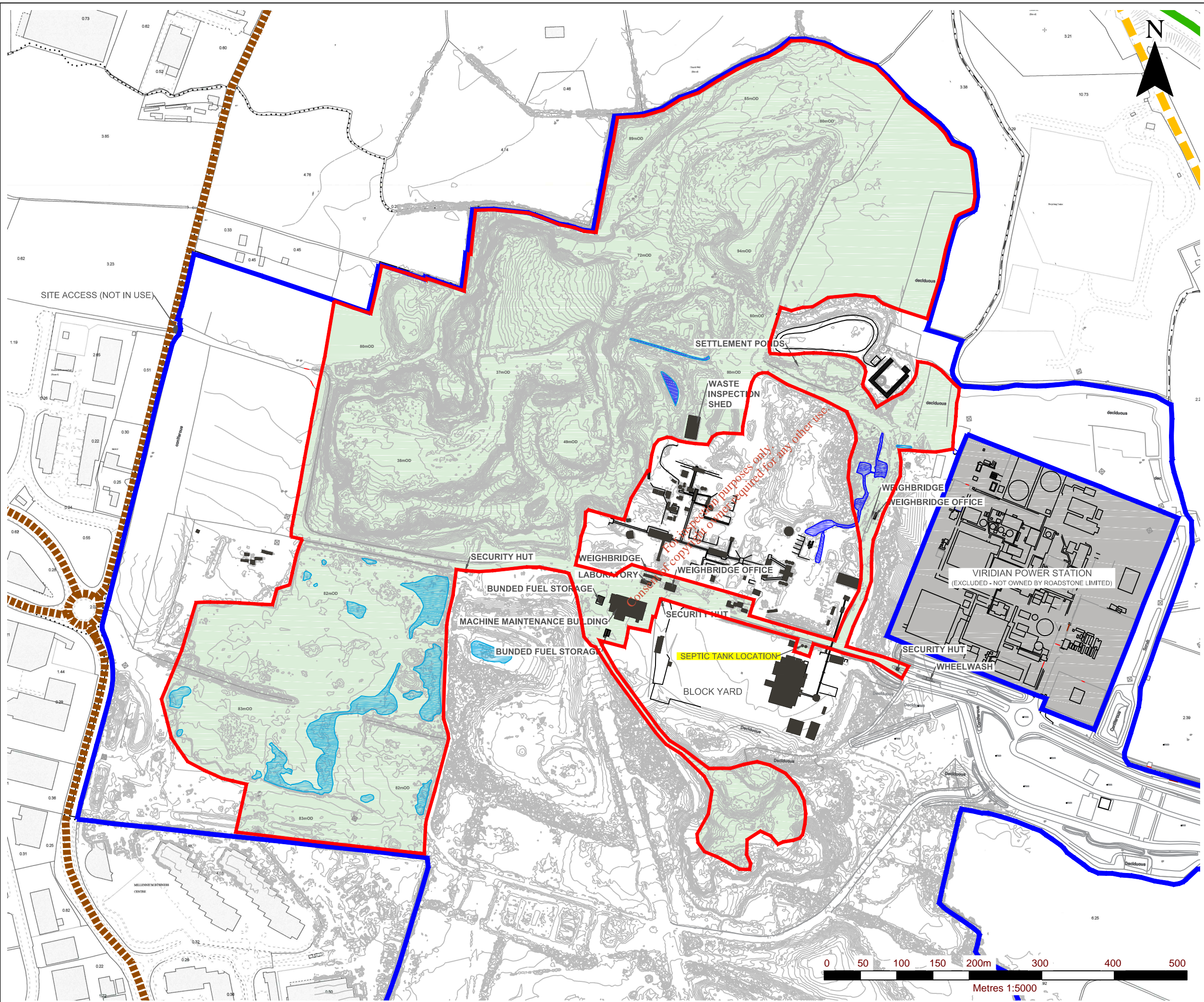
Over the longer-term, backfilling of quarry voids with imported soil and stone and wider site restoration works are unlikely to have any adverse long term impact on the local groundwater flow regime. It will not create any barrier to regional groundwater flow, nor will it reduce groundwater recharge or lead to a reduction in groundwater levels at off-site supply wells.

Several measures are place to monitor and detect any potential groundwater impact arising from the continued operation of, and planned increase in, licensed waste recovery activity at Huntstown. Groundwater levels will continue to be recorded at the time of groundwater sampling.

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

For inspection purposes only.
Consent of copyright owner required for any other use.

0180.00166.0.FIG_E4-1.Groundwater Emissions Location_recover.dwg



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 0000717 (C) ORDNANCE SURVEY & GOVERNMENT OF IRELAND

LEGEND

- ROADSTONE LIMITED LAND INTEREST (c. 200.3 ha)
- APPLICATION AREA (c. 55.0 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

SLR global environmental solutions

SLR CONSULTING IRELAND
 7 DUNDRUM BUSINESS PARK
 WINDY ARBOUR
 DUBLIN 14
 T: +353-1-2964667
 F: +353-1-2964676
 www.slrconsulting.com

ROADSTONE LIMITED
 WASTE LICENCE REVIEW APPLICATION
 HUNTSTOWN C&D WASTE RECOVERY FACILITY
 NORTH ROAD, FINGLAS, DUBLIN 11
 GROUNDWATER EMISSION LOCATION

DRAWING E4-1

Scale 1:5,000 @ A3	Date JUNE 2017
-----------------------	-------------------



ATTACHMENT E5 – NOISE EMISSIONS

Noise at the licensed soil waste recovery facility and the existing authorised C&D waste recovery facility is principally generated by HGV truck movements in and out of the recovery facilities, by earthworks equipment (bulldozers and mechanical excavators), by crushing and screening plant and by loading shovels.

There are currently no fixed point source noise emissions at the recovery facilities at Huntstown Quarry, although with the planned future relocation of C&D waste recovery activity to the north-eastern corner of the quarry complex, noise emissions from C&D waste processing activity (principally from the crushing and screening plant) will be confined within the proposed waste recovery shed.

Noise monitoring in and around the licensed site and Huntstown quarry complex indicates that average ambient noise levels in the local area typically range between 60dBA L_{Aeq} and 75dBA L_{Aeq} , depending on location and proximity to the N2 Dual Carriageway or M50 motorway and the frequency of overhead aircraft movements along the flight path leading in and out of Dublin Airport. These noise levels are consistent with daytime levels in busy urban areas close to heavily trafficked roads.

Additional HGV movements and more frequent operation of C&D waste processing plant could potentially give rise to an increase in ambient noise levels at and around the licensed recovery facility. Noise prediction assessments however indicate that there will be minimal, if any, increase in noise levels arising at nearby residences as a result of increased / relocated C&D waste processing activity and any associated increase in HGV movements to and from the recovery facilities at Huntstown.

The resultant predicted (maximum) future noise levels at nearby sensitive receptors are comparable to, and only slightly elevated above, existing ambient levels, making it highly unlikely that any adverse noise impacts will be noticed or experienced by nearby residents.

For inspection purposes only.
Consent of copyright owner required for any other use.

ATTACHMENT E6 ENVIRONMENTAL NUISANCES

General

A number of environmental controls are required to eliminate or minimise the potential nuisance to the public arising from the recovery of inert soil and stone and the handling and processing of C&D waste and recovered / recycled aggregates at Huntstown.

The environmental control measures outlined in the following sections focus primarily on those measures in place around the existing recovery facility at the Central Quarry which will continue in operation when C&D waste intake increases to 95,000 tonnes per annum and is eventually relocated to the replacement facility at the north-eastern corner of the landholding. Other measures which are in place around the licensed soil waste recovery facilities are not specifically addressed herein.

C&D recovery activities at the Central Quarry were previously regulated by way of a waste facility permit issued by Fingal County Council. Going forward, as waste recovery activity is intensified to 95,000 tonnes per annum in the short term and then ultimately relocated to the new facility, it will be regulated by way of a review to the existing EPA waste licence (Ref. W0277).

Any additional control measures, over and above those already in place and/or outlined below, which may be instructed on foot of the proposed waste licence review to provide for the increased and/or relocated waste intake, will also be implemented.

Bird Control

As the C&D waste being stored / recovered at the Huntstown facility is free of putrescible (food / kitchen) waste, the on-site activities do not attract scavenging birds such as gulls and crows. Accordingly, there is no requirement to implement any specific bird control measures at the existing or planned facility.

In the unlikely event that any putrescible waste is identified among imported waste materials, it will be immediately removed to the waste quarantine area pending removal off-site to an authorised waste disposal or recovery facility.

Dust Control

In dry, windy weather conditions, the C&D waste recovery activities may give rise to dust blows across and beyond the existing or planned waste recovery facility. In order to control dust emissions, the following measures are / will be implemented:

- water is sprayed from a tractor drawn bowser on dry exposed surfaces and waste stockpiles (paved roads, unsealed haul roads and hardstand areas);
- at the proposed replacement facility, a sprinkler system will also be installed along the access road and around the northern and eastern boundary of the recovery facility to suppress dust rise from vehicles movements and fugitive emissions from stockpiles;
- dust blows at the existing facility are largely screened by the 20m high side walls at the Central Quarry.
- dust blows at the replacement facility will be partially screened by the perimeter screening berms along the northern and eastern boundaries and by perimeter planting which will establish over time.
- areas of bare or exposed soils will, insofar as practicable, be kept to a minimum, and covered by rock fill / hardstanding materials (6" or 200mm down).
- all HGV's exiting the recovery facility are routed through the existing wheelwash facility along the egress route to the R135 North Road. This minimises the transport of fines by HGVs over the access / egress road and the public road network;

The amount of dust or fines carried onto the public road network is further reduced by periodic sweeping of internal paved site roads and surrounding public roads as required. It is possible that the increased waste intake may necessitate increased road cleaning effort when potentially adverse (dry, windy) weather conditions arise.

Traffic Control

The intensification of waste recovery activities at the existing facility (and planned replacement facility) will result in the importation of up to 95,000 tonnes of C&D waste, approximately 70,000 tonnes above the current C&D waste intake limit.

Assuming a maximum annual waste intake of 95,000 tonnes / year is sourced entirely from off-site locations and projects, this would correspond to an average of 18 trips per day (equivalent to 36

movements per day), in and out of the Huntstown facility, an increase of 13 trips (or 26 movements) per day over the current permitted intake rate.

In addition, it is expected that the recovery facility will produce up to 95,000 tonnes of secondary aggregate per year, potentially generating a further 18 HGV trips (36 movements) in and out of the recovery facility each day.

It may be possible to reduce the number of additional traffic movements generated by the increased activity at the C&D waste recovery facility by encouraging "backloading", whereby trucks delivering aggregates / blocks from the adjoining facility will return with pre-sorted construction and demolition waste for the recovery facility. Recycled secondary aggregates may also be dispatched off-site in place of virgin aggregates from the adjoining quarry.

Notwithstanding the potential to reduce traffic movements by 'backloading' or substitute for output of virgin aggregates, the proposed increased intake / export rate to / from the C&D waste recovery facility would generate an average of 4 trips per hour in total over an 11 hour working day (equivalent to an average of 8 movements per hour).

The projected rate of intake / export compares with the existing maximum permitted intake rate of 1,500,000 tonnes / year to the adjoining soil waste recovery facility which corresponds to an average of 24 trips per working hour (equivalent to 48 movements per hour), in and out of the Huntstown facility.

As indicated in Chapter 13 of the Environmental Impact Statement which accompanies this waste licence review application, intensification of operations at the waste recovery facility will have no adverse impact on traffic flows along the existing North Road (the former N2 National Primary Road) or the surrounding local road network.

Should it be necessary, Roadstone has contingency measures in place to ensure safe and orderly queuing of HGV traffic along the existing network of internal paved roads, should it be required if periods of intense or elevated demand at its recovery facilities occur.

Any roadside vegetation which could potentially impact on visibility splays will continue to be cut back as required in order to maintain visibility for HGV traffic exiting onto the R135 North Road.

Litter Control

As the C&D waste materials being imported to the recovery facility are largely free of litter, the recovery activities are unlikely to give rise to problems with windblown litter. Accordingly, there is no requirement to implement any specific litter control measures at the facility.

In the unlikely event that any litter waste is identified among the imported C&D waste, it will be immediately removed to the waste quarantine area pending removal off-site to an authorised waste disposal or recovery facility.

Odour Control

The C&D waste being imported and recovered at Huntstown is inert, inorganic and free of biodegradable material and/or organic contamination. It will not therefore break down and emit odorous gases over time.

In the absence of any organic waste, the recovery activities at the Huntstown facility are highly unlikely to give rise to odour nuisance and there is therefore no requirement to implement any specific odour control measures at the facility.

In the unlikely event that any organic and/or biodegradable waste is identified or suspected among imported waste, it will be immediately removed to the waste quarantine area pending removal off-site to an authorised waste disposal or recovery facility.

Vermin Control

As the C&D waste being recovered at the facility is free of putrescible (food / kitchen) waste, on-site activities will not attract vermin (rats) for the duration of the recovery operations. Accordingly, no specific vermin control measures are implemented at the facility.

In the unlikely event that any putrescible waste is identified among imported materials, it shall be immediately transferred to the waste quarantine area pending removal off-site to a licenced waste disposal or recovery facility.

Fire Control

As the C&D waste being recovered at the facility is free of flammable materials and biodegradable waste which could create a fire or explosion risk, on-site waste recovery activities will not present a fire risk for the duration of the recovery operations. Accordingly, there is no requirement to implement specific fire control measures at the facility.

Notwithstanding this, the following operational practices will be implemented in order to prevent fire at the facility:

- smoking at the waste office / weighbridge office and staff canteen is prohibited
- any biodegradable or flammable waste included in materials imported to site is immediately transferred to the waste quarantine area pending removal off-site to an authorised waste disposal or recovery facility
- plant and equipment is removed if they exhibit signs of overheating etc.

In the unlikely event that a fire does occur, the local fire stations in Finglas and Swords will be contacted and emergency response procedures will be implemented. Fire extinguishers (water and foam) are provided at all offices to deal with any small outbreaks which may occur.

For inspection purposes only.
Consent of copyright owner required for any other use.