

ATTACHMENT I2 – SURFACE WATER IMPACT

Published mapping indicates that the Huntstown Quarry complex straddles two river catchments, that of the Ward River to the north and the Tolka River to the south. In reality land drainage works and surface water management systems at Huntstown will have slightly altered the boundary between the Ward and Tolka catchments and all lands within the licensed / application site lie within the Ward catchment, with off-site discharges from both the North Quarry and West Quarry being directed to the Ballystrahan Stream which flows northwards from the north-east boundary of the Roadstone property holding toward the Ward River, from

The Ward River and the Ballystrahan stream are currently classified as being of 'Poor' status as a result of urban wastewater discharges siltation and siltation by agriculture. Off-site discharges from the established waste recovery activities at the North Quarry and from the wider quarry complex are currently routed through settlement ponds, grit traps and hydrocarbon interceptors and are regulated by way of an EPA waste licence (Ref. W0277-01) and a discharge licence from Fingal County Council (Ref. No WPW/F/008-01) respectively. Discharge compliance is generally good, although there are occasional exceedences of water quality emission thresholds.

Potential impacts of increasing the rate of backfilling and restoring the North Quarry and West Quarry using inert materials have been assessed and it is considered that in the absence of mitigation measures, the proposed development could have the potential to negatively impact surface water quality, specifically by increasing the risk of

- contaminated soils being placed at the site
- fuel or chemical spillages occurring or
- discharges to the Ballystrahan Stream (or Ward River catchment) having high levels of suspended solids, organic contaminants or nutrients.

During backfilling operations, the upper surface of the backfilled soil is graded so as to ensure that surface water run-off falling over the quarry footprint falls to sumps at temporary low points. Any groundwater daylighting in quarry faces during the backfilling phase is also permitted to flow into the quarry and to run over filled ground to these sumps.

The temporary sumps will effectively function as primary settlement ponds and water collecting in them will be pumped (causing minimum agitation to ponded water) to the existing settlement pond above and behind the eastern face of the North Quarry. Waste will be retained in the pond for sufficient time to allow sediments / suspended solids to fall out of solution. Thereafter run-off will be passed through a grit trap / hydrocarbon interceptor and past the designated licence control / monitoring point (W4) before merging with process waters from adjoining aggregate processing / concrete production facilities and being discharged off-site to the Ballystrahan Stream.

It is envisaged that, as part of the proposed development, a wide range of established surface water management and best practice mitigation measures, together with a number of additional measures, will be implemented during the ongoing restoration, backfilling and recovery activities in order to protect surface water quality. These measures include

- implementation of site management protocols in respect of plant refuelling and maintenance activity to prevent possible accidental discharge of fuel or chemicals
- implementation of detailed soil waste acceptance and handling procedure to prevent intake of contaminated soils;
- continued monitoring of surface water and discharge quality to monitor compliance / detect potential adverse impacts;

On completion, the final landform(s) will be modified as necessary to ensure that any surface water run-off across the infilled quarries will be intercepted and/or channelled eastwards toward the existing (natural / modified) surface water drainage network and the Ballystrahan Stream.

Established surface water monitoring regimes will remain in place for the duration of the waste recovery activities at the existing facility and until such time as quarry backfilling and restoration works are ultimately complete.

Surface Water Quality Data at V-Notch Weir (North) at Huntstown

Parameter	Discharge Licence Limits	WasteLicence Emission Limits (W4)	Units	Location	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North
				Sample ID	121018	121918	122519	123676	124477	125543	125674	125862
				No. Samples	10/04/2015	21/05/2015	24/06/2015	26/08/2015	01/09/2015	18/11/2015	24/11/2015	02/12/2015
Ammoniacal Nitrogen			mg/l	19		<0.08	<0.08	<0.08	<0.08	<0.08	0.26	<0.08
BOD	5	5	mg/l	19	<2	<2	<2	<2	3	2	<2	<2
Orthophosphate as P		0.5	mg/l	19		<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33
pH	6.0-9.0	6.0-9.0	pH Units	19	7.8	8.1	7.9	7.9	7.9	8.1	7.8	8.1
Suspended Solids	20	15	mg/l	18	1	3	2	<1	<1	13	4	15
Temperature oC	25	25	°C	16	13	14	18	16	16	11	10	12
COD	30		mg/l	8		10	9	6	6	8		
Detergents as MBAS	10		mg/l	8		<0.05	0.13	<0.05	0.28	<0.05		
Dissolved Oxygen	6		mg/l	8		9.2	8.3	8.8	8.7	9.3		
Mineral Oil	10		mg/l	8		0.023	<0.01	<0.01	<0.010	0.021		
Phosphate as P	1		mg/l	6				<0.33	<0.33	<0.33		
Sulphate	300		mg/l	8		238	229	223	249	221		
Ammonia as NH4	1	0.5	mg/l	7	<0.01	<0.10	<0.10	<0.10	<0.10	<0.10		
Zinc			mg/l	3		0.01		<0.01				
Cadmium			mg/l	3		<0.03		<0.03				
Copper			mg/l	3		<0.05		<0.05				
Iron			mg/l	3		<0.05		<0.05				
Lead			mg/l	3		0.26		0.25				
Magnesium			mg/l	3		22		18				
Manganese			mg/l	3		<0.03		<0.03				
Nickel			mg/l	3		<0.10		<0.10				
Dissolved Solids			mg/l	3		460		415				
DRO						0.025		0.021				
TPH						0.048		0.030				

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Surface Water Quality Data at V-Notch Weir (North) at Huntstowr

Parameter	Discharge Licence Limits	WasteLicence Emission Limits (W4)	Units	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North	V-Notch North
				126433	126545	126727	126938	127094	127225	127597	127761	128188
				08/01/2016	13/01/2016	21/01/2016	28/01/2016	04/02/2016	11/02/2016	26/02/2016	03/03/2016	18/03/2016
Ammoniacal Nitrogen			mg/l	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08
BOD	5	5	mg/l	<2	<2	<2	<2	<2	<2	<2	<2	<2
Orthophosphate as P		0.5	mg/l	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33		<0.33	<0.33
pH	6.0-9.0	6.0-9.0	pH Units	8.0	8.0	7.7	7.7	7.9	7.7	7.9	7.9	8
Suspended Solids	20	15	mg/l	10	11	5	21	34	37	15	17	19.00
Temperature oC	25	25	°C	18	5	8	8	10	10	8	9	7.00
COD	30		mg/l		8					6		
Detergents as MBAS	10		mg/l		<0.05					<0.05		
Dissolved Oxygen	6		mg/l		9.6					9.9		
Mineral Oil	10		mg/l		<0.010					0.017		
Phosphate as P	1		mg/l		<1					<0.33		
Sulphate	300		mg/l		280					254		
Ammonia as NH4	1	0.5	mg/l		<0.10							
Zinc			mg/l		<0.01							
Cadmium			mg/l		<0.03							
Copper			mg/l		<0.05							
Iron			mg/l		<0.05							
Lead			mg/l		<0.20							
Magnesium			mg/l		17							
Manganese			mg/l		<0.03							
Nickel			mg/l		<0.10							
Dissolved Solids			mg/l		468							
DRO												
TPH												

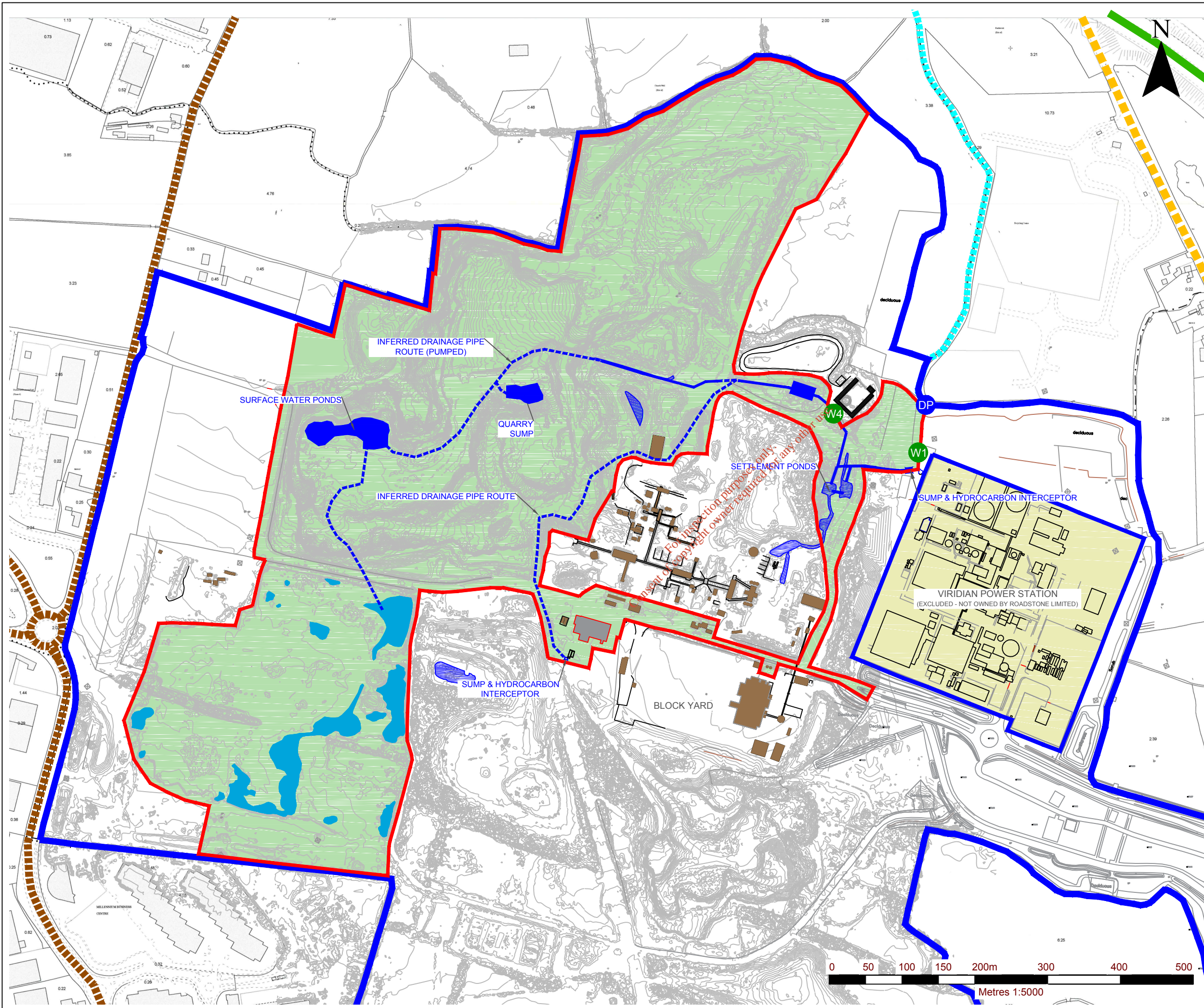
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Surface Water Quality Data at V-Notch Weir (North) at Huntstowr

Parameter	Discharge Licence Limits	WasteLicence Emission Limits (W4)	Units	V-Notch North	V-Notch North	V-Notch North
				128013	128188	128392
				10/03/2016	18/03/2016	31/03/2016
Ammoniacal Nitrogen			mg/l	<0.08	0.08	<0.08
BOD	5	5	mg/l	<2	<2	<2
Orthophosphate as P		0.5	mg/l	<0.33	<0.33	
pH	6.0-9.0	6.0-9.0	pH Units	7.8	7.7	7.9
Suspended Solids	20	15	mg/l	39	19	4
Temperature oC	25	25	°C	10	7	8
COD	30		mg/l			4
Detergents as MBAS	10		mg/l			<0.05
Dissolved Oxygen	6		mg/l			9.4
Mineral Oil	10		mg/l			<0.010
Phosphate as P	1		mg/l			<0.33
Sulphate	300		mg/l			237
Ammonia as NH4	1	0.5	mg/l			
Zinc			mg/l			
Cadmium			mg/l			
Copper			mg/l			
Iron			mg/l			
Lead			mg/l			
Magnesium			mg/l			
Manganese			mg/l			
Nickel			mg/l			
Dissolved Solids			mg/l			
DRO						
TPH						

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0180.00152.0.FIG_12-1_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 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
- 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

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

DRAWING I2-1

Scale: 1:5,000 @ A3
 Date: SEPTEMBER 2016