

Roadstone Dublin Limited

**Remediation of Unauthorised Landfill Sites at Doran's Pit,
Blessington, Co. Wicklow (Waste Licence Ref. No. W 0213-1)
Annual Environmental Report 2008**

**March 2009
SLR Ref: 501-0059-00005**



solutions for today's environment

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- AB** **Reports on financial provision made under this licence**
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INTRODUCTION

This Annual Environmental Report (AER) for the Roadstone Dublin Site at Blessington, contains the data to be reported as set out in Schedule F of the Waste Licence (Ref. W0213-01). This report has been prepared in compliance with Schedule E of the Waste Licence for the year 2008. The 2008 environmental information contained in this AER is summarised in Table 1 below, together with details of the relevant appendices enclosed with the report. The site location is shown in Figure 1.

Excavation and processing of waste at Roadstone Dublin's site at Blessington ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. In December 2008 application for surrender of the waste licence Ref. No. WL0213-1 was made to EPA.

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Table 1 Summary of 2008 Environmental Information

APPENDIX A

STATEMENT OF THE WASTE ACTIVITIES CARRIED OUT AT THE FACILITY IN 2008

Appendix A: Final Statement of the Waste Activities carried out at the Facility

- A1.** The remediation of the unauthorised landfills at Doran's Pit, Blessington, Co. Wicklow consisted of three different phases of work
1. Overburden removal of soil overlying the waste bodies
 2. Excavation, processing and disposal of waste
 3. Restoration of the excavated areas to grassland under a CRAMP proposal (Rev B) October 2008.
- A2.** The overburden removal was completed in 2006 and 62,705m³¹ of overburden was stripped from Areas 6, 4 and 1.
- A3.** The removal and processing of the waste commenced in mid October 2006 and completed in December 2007. The process was divided into separate work programmes.
- i. Excavation of DCI waste directly for removal off site
 - ii. Excavation of soil contaminated with DCI to the process yard for processing
 - iii. Processing of waste by screening / handpicking to separate
 - inert oversize stone and C&D
 - soil for testing (to meet IWAC criteria)
 - waste into its fractions for disposal off site
- A4.** During 2007, 510,064t were excavated from Areas 6, 4 and 1, 117,846t of which left site for disposal/recycling/recovery.
- A5.** Restoration of all area's was completed in early 2008 using available overburden stockpiled adjacent to the working area's with approximately 85,448t being placed into the excavations.

¹ 2006 AER tonnage revised upwards after confirmation of density from 61,255m³.

APPENDIX B

EMISSIONS FROM THE FACILITY

B1. 2008 Noise Monitoring Results: Summary

B2. 2008 Dust Deposition Monitoring Results: Summary

Appendix B1. 2008 Noise Monitoring Results: Summary

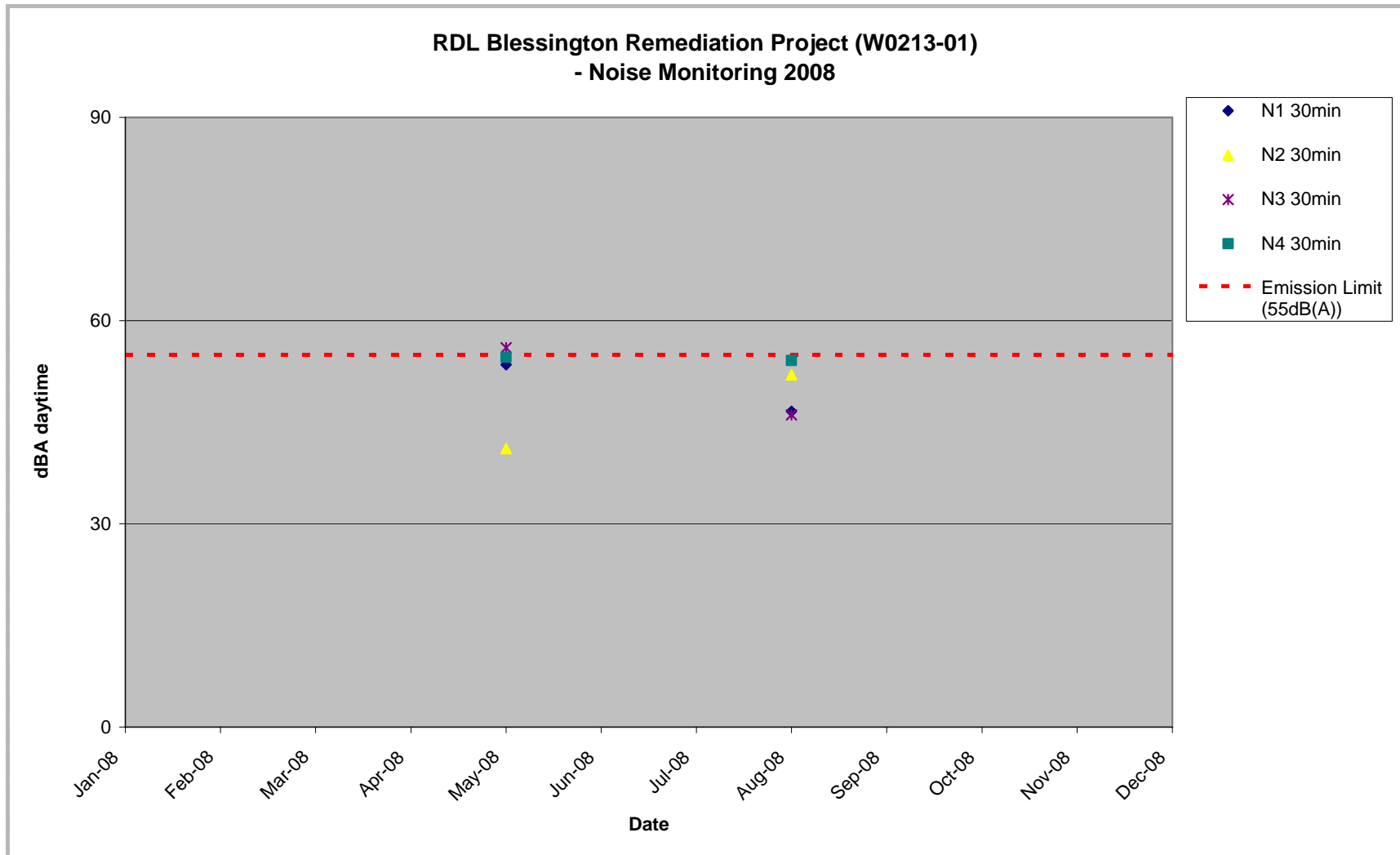


Annual Environmental Report: 2008


Noise Monitoring By: Colin Doyle (RDL)

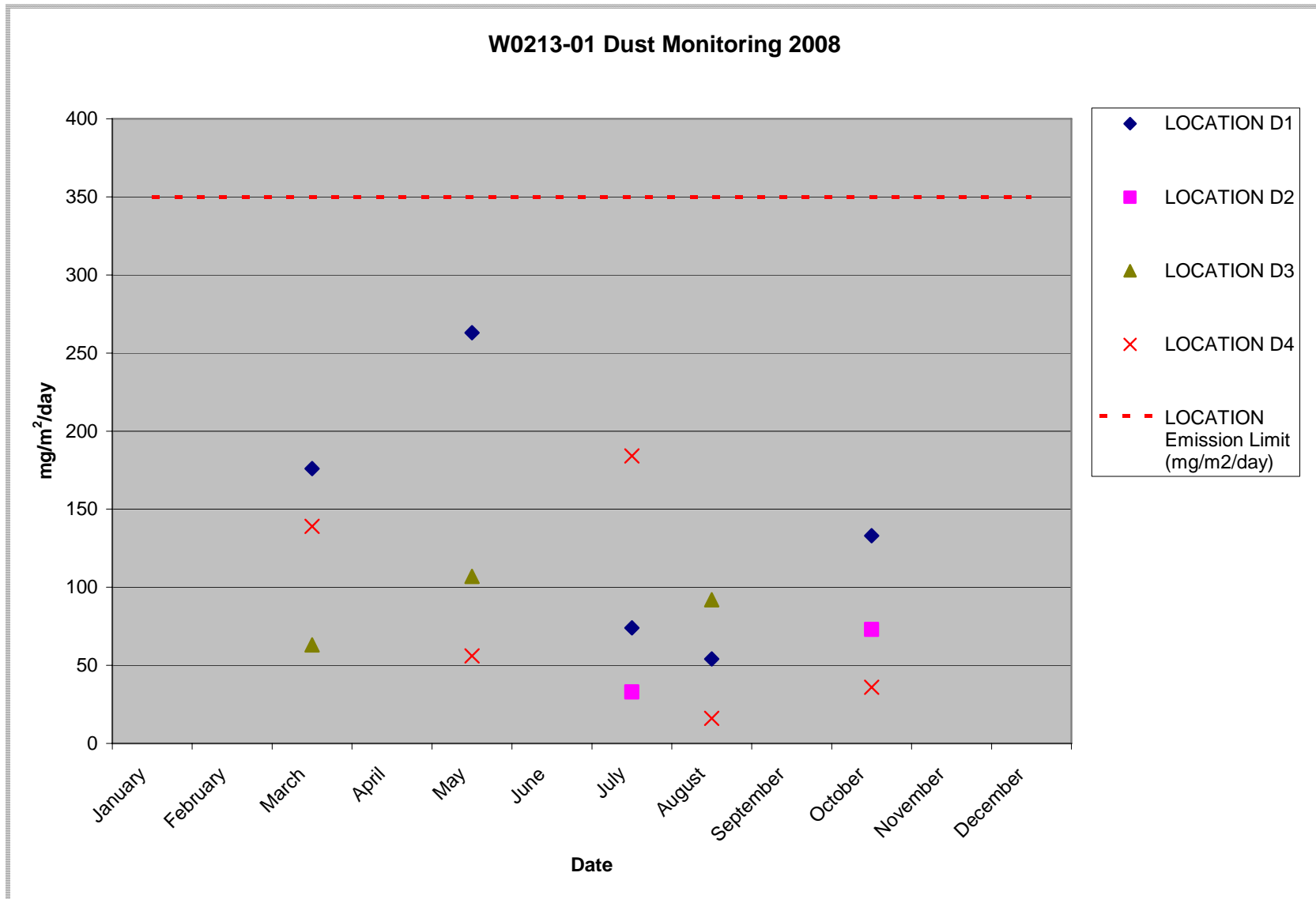
Project Name:	Blessington Remediation Project							
Location:	Doran's Pit, Blessington, Co. Wicklow							
Client:	Roadstone Dublin Limited							
Waste Licence:	WL0213-01							
	MONITORING LOCATION							
	N1		N2		N3		N4	
	30min L(A)eq	15min L(A)eq	30min L(A)eq	15min L(A)eq	30min L(A)eq	15min L(A)eq	30min L(A)eq	15min L(A)eq
07-May- 08	53.5	57.4	41.1	43.7	56	58.9	54.6	55.7
13-Aug- 08	46.6	48.4	52	46.5	46.1	44.9	54.1	55
Refer to Figure 1 Appendix R for Noise Monitoring Locations								

Noise Monitoring



Appendix B2. 2008 Dust Deposition Monitoring Results: Summary

		Annual Environmental Report: 2008		
		Dust Monitoring By: Colin Doyle (RDL)		
Project Name:	Blessington Remediation Project		Dust Monitoring	
Location:	Doran's Pit, Blessington, Co. Wicklow			
Client:	Roadstone Dublin Limited			
Waste Licence:	WL0213-01			
MONITORING LOCATION				
	D1 (mg/m ² /d)	D2 (mg/m ² /d)	D3 (mg/m ² /d)	D4 (mg/m ² /d)
2008				
March	176	N/A	63	139
May	263	N/A	107	56
July	74	33	N/A	184
August	54	N/A	92	16
October	133	73	N/A	36
Refer to Figure 1 Appendix R for Dust Monitoring Locations.				



APPENDIX C

WASTE MANAGEMENT RECORD

C1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site. There was no waste recovered or disposed from the Blessington Remediation Project W0213-01

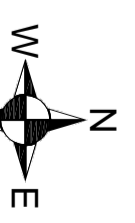
APPENDIX D

2008 WASTE ANALYSIS, RECOVERY & DISPOSAL

D1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site. There was no waste recovered or disposed from the Blessington Remediation Project W0213-01

APPENDIX E

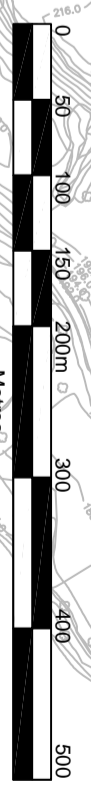
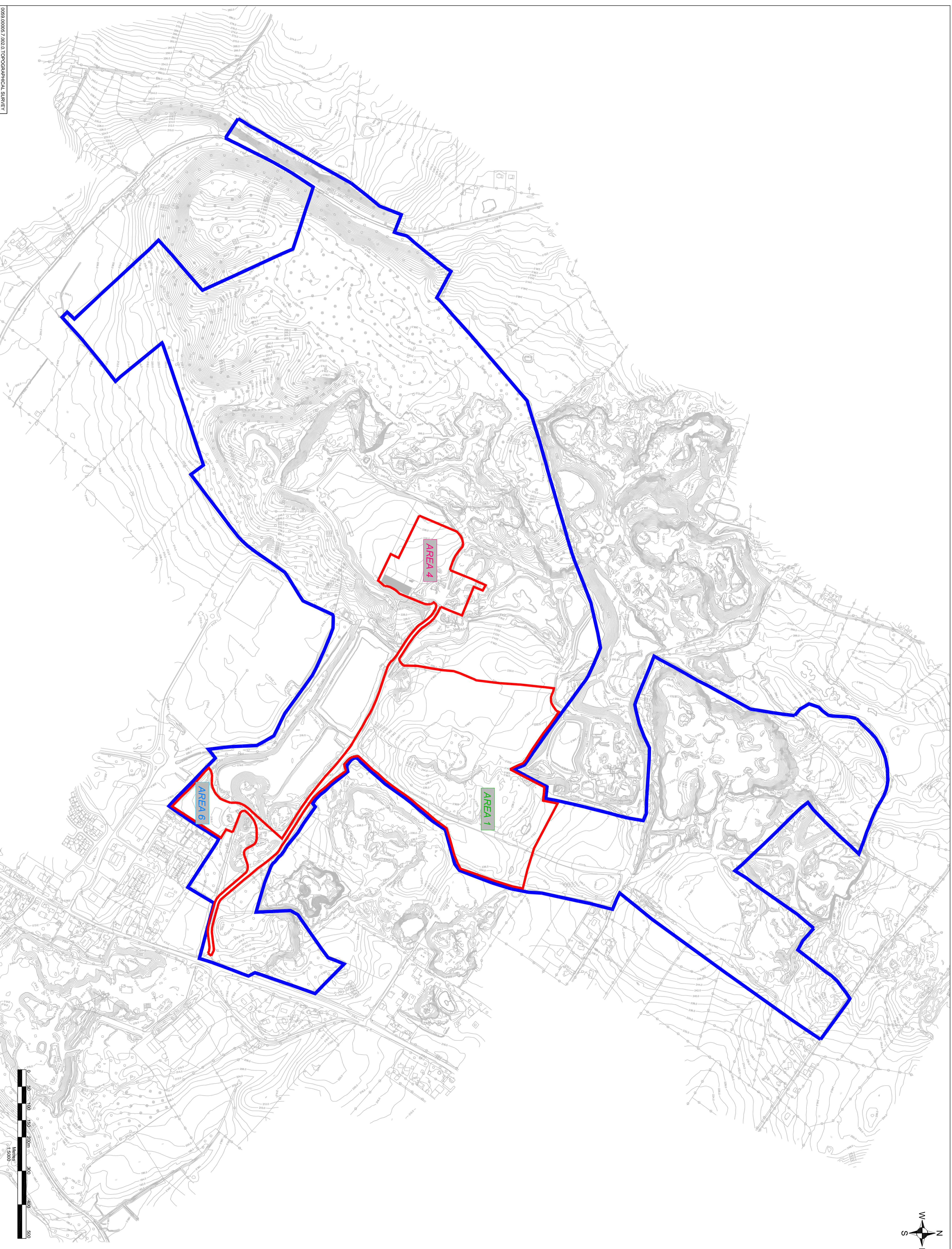
ANNUAL TOPOGRAPHICAL SURVEY



NOTES
1. Ordnance Survey Ireland License No. SIJ 0000709
(c) Ordnance Survey of Ireland & Government of Ireland

LEGEND

-  Roadstone Dublin Ltd. Landholding (c. 234.7 ha)
-  Vision License Application Area (c. 53.9 ha)



roadstone
ROADSTONE DUBLIN LTD.
FORTUNE:STOWN
DUBLIN 24

SLR
ROADSTONE DUBLIN LTD.
REMEDICATION OF UNAUTHORISED
LANDFILL SITES
TOPOGRAPHICAL SURVEY

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Scale: 1:5,000 @ A1
Date: MARCH 2009

APPENDIX F

REMAINING VOID TO BE FILLED AND LANDSCAPED, PROJECTED COMPLETION DATE

F1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site.

In compliance with Section 3.0 of the Closure, Restoration and Aftercare Management Plan (CRAMP) all environmental monitoring is now completed and ceased. It is envisaged that no more monitoring will be carried out in 2009 as closure and restoration phase is now completed. There is no need for further updates and revisions to the existing EMS.

In December 2008 application for surrender the waste licence Ref. No. WL0213-1 was made to EPA.

No more void to be filled and landscaped.

APPENDIX G

REMAINING VOLUMES OF HISTORICALLY DEPOSITED WASTE TO BE TREATED

- G1.** During 2007 all the historically deposited waste was removed from Area 6 (completed in March 2007), Area 4 (completed in August 2007), and Area 1 (completed in December 2007). From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site.

APPENDIX H

DETAILED STATEMENT, WITH MASS BALANCE, OF INERT WASTE TO BE USED IN ON-SITE RESTORATION

H1. During 2008 no soil and stone were recovered from Area's 1, 4 and 6, as the remediation project was completed in 2007.

APPENDIX I

2008 RESOURCE CONSUMPTION SUMMARY

- I.1.** The fuel consumed on site during 2008 operations was approximately 7,000 litres of diesel

- I.2.** Water usage on site is not quantified, as the volumes of water used (canteen, toilet facilities) is not significant and does not warrant metering for this remediation project.

APPENDIX J

2008 COMPLAINTS SUMMARY

- J1.** No complaints were received by Roadstone Dublin Ltd. in relation to the Sites at Doran's Pit, Blessington, Co Wicklow in 2008.

APPENDIX K

SCHEDULE OF ENVIRONMENTAL OBJECTIVES AND TARGETS

- K1.** Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site.
The remediation of the unauthorised landfills at Doran's Pit, Blessington, Co. Wicklow was a short term project with the sole objective of remediating the site within the shortest time frame while ensuring that the conditions attached to the Waste Licence are complied with.
- K2.** There is no requirement for a long term schedule of Environmental Objectives and Targets.

APPENDIX L

ENVIRONMENT MANAGEMENT PROGRAMME & REVIEW OF NUSIANCE CONTROLS – REPORT FOR 2008



Roadstone Dublin Limited

**Remediation of Unauthorised Landfill Sites at Doran's Pit,
Blessington, Co. Wicklow (Waste Licence Ref. No. W 0213-1)
Annual Environmental Audit 2008**

**March 2009
SLR Ref: 501-0059-00005**



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ENVIRONMENTAL AUDIT REPORT

2008



Site Location: Blessington Remediation Project, Doran's Pit,
Blessington, Co. Wicklow

Company: Roadstone Dublin Ltd.

Waste Licence Ref. W0213-01

Purpose of Audit: Annual Review of Environmental Management System
and Actions Arising from EPA 2008 Inspections /
Audits

Date of Audit: 4th December 2008

Date of Report: 16th December 2008

Audit Team: Tim Paul & Aldona Binchy

SLR Consulting Ireland

Project No.: 501.0059.00005



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1 INTRODUCTION

2 ENVIRONMENTAL AUDIT

Environmental Monitoring Plan
Environmental Management Measures and Controls
Contingency Plan
EPA 2008 Inspection / Audit Actions Arising
Staff Training
Performance of Contractors and Sub-contractors
Complaints & Non-Conformances
Revisions to the existing EMS documentation

TABLES

Table 1 Environmental Audit – Environmental Monitoring Plan

Table 2 Environmental Audit – Environmental Management Measures

Table 3 Environmental Audit – Contingency Plan

Table 4 Environmental Audit – EPA 2007 Inspection / Audit Actions Arising

Table 5 Summary of Emission Limit Value Non-Conformances

1 INTRODUCTION

Roadstone Dublin Ltd. commenced remediation of the illegal landfills on their lands at Blessington in May 2006, under Waste Licence Ref. No. W0213-01. An environmental management system (EMS) has been implemented at the site, and a copy of the EMS was submitted to the Environmental Protection Agency (EPA) on the 11th May 2006 in compliance with Condition No. 2.2 of the licence. This was then reviewed and a revised EMS was submitted to the EPA in March 2008.

Under Section 13 of the EMS there is a requirement to review the system on an annual basis. An environmental audit was carried out by SLR Consulting Ireland (formerly John Barnett & Associates Ltd.) on the 4th December 2008 to examine all aspects of the operation of the EMS, its status and adequacy. The areas reviewed as part of the audit were:

- Environmental Monitoring Plan
- Environmental Management Measures and Controls
- Internal and external audit results
- Staff training requirements
- The performance of Contractors and Subcontractors
- Complaints / Non conformances reported and effectiveness of corrective action taken
- Requirement, if any, for revision to the existing EMS documentation

Tim Paul and Aldona Binchy from SLR Consulting Ireland carried out the audit. The audit included an initial site meeting with Mark Prendergast (Facility Manager – Roadstone Dublin Ltd.); an inspection of the site accompanied by Mark Prendergast; a review of the 2008 environmental monitoring plan & results and the environmental management and control records; and a review of complaints / non conformances. The overall implementation of the EMS was also reviewed.

Excavation and processing of waste ceased on 21st December 2007. During 2008 the project entered a closure and restoration phase related to implementation of the closure, restoration and after-use management plan (CRAMP). There was no activities on site during the inspection on the 4th December 2008.

Section 2 of this report describes the findings of the audit. Conclusions arising from the audit are presented in Section 3. A series of audit checklists were used as part of the audit process, and these completed checklists are included as Tables 1 to 4.

2 ENVIRONMENTAL AUDIT

2.1 *Environmental Monitoring Plan*

The 2008 Environmental Monitoring Plan was reviewed as part of the audit. The findings of this review are provided on Table 1. There is a very comprehensive environmental monitoring plan in place at the site. Some minor modifications have been made to the monitoring plan in 2008 as the closure and restoration works progressed. Where relevant, these modifications have been noted under the 'Notes' columns in Table 1.

The audit confirmed that the overall environmental monitoring plan as set out in the EMS has been implemented effectively at the site during 2008. There were no issues arising from this part of the audit.

2.2 *Environmental Management Measures and Controls*

The 2008 Environmental Management Measures and Controls Plan was reviewed as part of the audit. The findings of this review are provided on Table 2.

The audit confirmed that the overall programme of environmental management measures and controls as set out in the EMS has been implemented effectively at the site during 2008. There were no issues arising from this part of the audit.

2.3 *Contingency Plan*

The EMS includes a Contingency Plan. The 2008 Contingency Plan was reviewed as part of the audit. The findings of this review are provided on Table 3.

The audit confirmed that the overall programme of contingency measures as set out in the EMS has been implemented effectively at the site during 2008. There were no issues arising from this part of the audit.

2.4 EPA 2007 Inspections / Audits : Actions Arising

The EPA has not carried out any environmental inspections / audits of the facility in 2008.

2.5 Staff Training Requirements

There was no need for further training during 2008.

2.6 The Performance of Contractors and Subcontractors

No specific audit of contractors and subcontractors has been carried out as part of this audit. The Facility Manager continually reviewed the environmental performance of contractors and subcontractors. This performance to date has been satisfactory.

2.7 Complaints & Non Conformances

No complaints regarding the operation of the facility have been received by the Facility Manager in 2008.

Table 5 provided details of occurrences where the environmental monitoring programme has shown exceedence of emission limit values specified in the licence.

2.8 Revisions to the existing EMS documentation

- i) In compliance with Section 3.0 of the Closure, Restoration and Aftercare Management Plan (CRAMP) all environmental monitoring is now completed and ceased. It is envisaged that no more monitoring will be carried out in 2009 as closure and restoration phase is now completed. There is no need for further updates and revisions to the existing EMS.

TABLE 1 Roadstone Dublin Ltd - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Environmental Monitoring Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Environmental Monitoring Plan	Yes	No	N/A	Notes
Records of all monitoring maintained on site	√			
Dust monitoring				
4 begerhoff dust monitoring locations	√			
Monthly monitoring carried out by Roadstone technicians	√			Monitoring frequency reduced to quarterly
Ecological Monitoring				
Bird and vermin populations are closely monitored by staff			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
New freshwater macroinvertebrate survey and biological pollution assessment carried out	√			Carried out in May 2008
Groundwater Monitoring				
23 No. groundwater monitoring wells tested monthly	√			Monitoring frequency reduced to quarterly
Groundwater monitoring matches parameters of Table 1 attached *	√			
Landfill Gas Monitoring				
Landfill gas monitoring undertaken at existing G.W wells and at existing vent stacks along the vent trench along the boundary between the buried waste at Area 6 and the Woodleigh Estate	√			
Testing includes volumetric flow rate, atmospheric pressure, temperature and landfill gas composition	√			
Monitoring complies with Schedule C1.2 of the Waste Licence attached **	√			
Calibrated portable landfill gas analyser (GA2000) used to carry out the monitoring	√			
Gas monitored monthly	√			
Monthly testing is undertaken by external environmental consultants as an addition	√			
Leachate / Trade Effluent Monitoring				
Perched' g.w./leachate within buried Areas 1 & 4 sampled & tested at 8 No. Monitoring wells on a quarterly basis			√	Wells were removed at the end of 2006
Perched' g.w./leachate levels recorded on weekly basis			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Leachate tested for same parameters as g.w (table 1 attached)*			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Visual / odour inspection of trade effluent holding tank made on daily basis			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Minimum freeboard of 0.5m is maintained in the leachate / trade effluent holding tank at all times			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Meteorological Monitoring				
Met. Parameters recorded on daily basis from centre of site	√			Monitoring ceased in November 2008.
Precipitation (rainfall) volume, Temperature, Wind speed and direction, Barometric pressure	√			
Wind sock fixed to entrance of site, visible to the public	√			
Noise Monitoring				

TABLE 1 Roadstone Dublin Ltd - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Environmental Monitoring Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Environmental Monitoring Plan	Yes	No	N/A	Notes
Noise monitored on a monthly basis at 4 locations for 30 minutes	√			Monitoring frequency reduced to bi-annually
Monitoring undertaken using a Norsonic 1251	√			
Monitoring includes L(A)eq, L(A) ₁₀ and L(A) ₉₀ , 1/3 octave band	√			
Odour Monitoring				
Every practicable measure is taken to minimise odour emission			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Roadstone Agents and Contractors to report and record odour emissions at remediation sites and close to residences as they arise			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Records kept of any complaints about odour emissions from nearby residents			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Ongoing reviews of hydrogen sulphide concentrations recorded in landfill gas monitoring undertaken during remediation works			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Report of odour emissions/complaints and actions maintained on site			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Surface Water Monitoring				
Monitoring at 7 locations	√			
Visual inspection and field parameters on weekly basis	√			
Full list on monthly basis	√			Monitoring frequency reduced to quarterly
Field testing for water level, pH, EC, Redox potential & DO	√			
Laboratory used is externally accredited	√			
Water tested according to table 1 attached *	√			
Nuisance Monitoring				
Inspection of site undertaken on weekly basis of potential nuisances (litter, vermin, flies, birds, mud, dust, odour)			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Inspection also undertaken in area immediately beyond site, specifically the Woodleigh Estate			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Record kept of all on site observations and/or findings and measures implemented to mitigate environmental nuisances			√	Excavation and processing waste ceased in December 2007, Monitoring ceased for 2008.
Reporting				
Quarterly monitoring report prepared and submitted to the EPA no later than 10 days (2 weeks) after the end of the quarter	√			
Environmental Monitoring Programme reviewed on a regular basis with the EPA	√			

TABLE 2 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Env. Mmgt. Measures

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

<i>Environmental Management Measures & Controls</i>	Yes	No	N/A	Notes
Area of exposed waste at a minimum			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Exposed waste covered at the end of each day			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
<i>Bird Control</i>				
Netting provided around the active excavation and landfilling areas to restrict access where required			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Bird scaring devices			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
External birds of prey used			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
<i>Dust Control</i>				
Water from tractor drawn bowser sprayed on dry exposed soil/waste surfaces as and when required			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Open excavations backfilled and grassed as soon as practicable after waste excavation and removal	√			Completed in 2008.
Temporary wheel wash at the end of the paved internal access road			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Wheel wash inspected on a daily basis			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Wheel wash inspection and maintenance reports maintained on site			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.

TABLE 2 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Env. Mmgt. Measures

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Environmental Management Measures & Controls	Yes	No	N/A	Notes
Regular sweeping of the paved internal road and the existing N81 immediately in front of the site			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
<i>Litter Control</i>				
All trucks transferring waste off-site use netting or a tarpaulin cover			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Netting provided around the active excavation to catch any windblown litter			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Litter caught in netting collected on a regular basis			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Loose litter around excavation areas, haul routes and surrounding areas manually collected on a regular basis			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Collected litter placed in collector bins in the covered waste storage area and transferred off-site			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Facility operation suspended if wind speeds are exceptionally high			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Litter control infrastructure inspected daily and record of inspection kept			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Litter netting damaged is temporarily repaired same day and repaired to original standard within 3 working days			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Inspection maintenance reports maintained on site			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.

TABLE 2 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Env. Mmgt. Measures

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Environmental Management Measures & Controls	Yes	No	N/A	Notes
Litter reported on adjacent properties removed by 10:00 hours the next working day			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Odour Control				
When removing leachate from wells or sumps for off-site treatment, the tanker pipe is lowered beneath the free surface of the leachate			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
All segregated putrescible, odourous waste arising from unauthorised landfill sites are removed from the on-site processing facility to an authorised waste disposal facility			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Odour control system established and used to absorb odourous gases emitted by biodegrading waste			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Inspection maintenance reports maintained on site			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Vermin Control				
Application of rodenticides and insecticides as and when required around the engineered landfill and remediation sites			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Bait laid at regular intervals around the engineered landfill and remediation sites			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
Dead/dying rats removed by vermin/pest control company			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.

TABLE 2 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Env. Mmgt. Measures

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Environmental Management Measures & Controls	Yes	No	N/A	Notes
Inspection maintenance reports maintained on site			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
<i>Leachate Holding Tank - Level Control</i>				
Electrical Indicator fitted with continuous siren and flashing light			√	Excavation and processing waste ceased in December 2007, No activities related to waste carried out on site in 2008.
<i>Fuel Storage Tank</i>				
Containment bund around the tank at the waste processing and storage area			√	Tank removed at end of 2007

TABLE 3 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Contingency Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Outline Contingency Plan	Yes	No	N/A	Notes
<i>Fire Management Plan</i>				
Electrical appliances in use on site are tested in accordance with the Electrical Testing Regs	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Site buildings are kept tidy and cleaned regularly	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Potentially combustible waste is covered	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
The site manager ensures fire related nuisances and hazards arising from waste excavation & removal are minimised	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All employees have undergone training relevant to their role in fire prevention, use of fire extinguishers, and emergency procedures.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Smoking is only permitted at designated areas and specifically not at the operational areas on the site.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Where appropriate, plant is fitted with automated fire protection equipment	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.

TABLE 3 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Contingency Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Outline Contingency Plan	Yes	No	N/A	Notes
A formal permit to work system is in place and approval obtained prior to any hot work being carried out on site plant and equipment.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Were any hot loads encountered amongst the buried waste	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Fire extinguishers are provided in the site buildings	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Smoke and fire alarms are fitted in the site offices.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
<i>Monitoring Techniques</i>				
Monitoring for underground fires is routinely carried out	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
<i>Fire Action Plan</i>				
Has there been a fire on site?		√		
<i>Spillage & Leakage Management Plan</i>				
All polluting materials delivered to site are unloaded by suitably qualified employees from the delivery company, and overseen by a designated site operative	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.

TABLE 3 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Contingency Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Outline Contingency Plan	Yes	No	N/A	Notes
Fuels used on site are stored within tanks constructed to the appropriate standard, meeting the requirements of the Local Government (Water Pollution) Acts and associated Regulations	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Other potentially polluting liquids such as odour control chemicals, lubricating oils, waste oils derived from vehicle maintenance, pesticides etc, are stored within the site compound within a self-bunded purpose designed lockable storage facility.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All solid wastes arising on site and other solid potentially polluting materials are segregated according to category and stored within containers constructed to ensure the contents do not spill or escape	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All potentially polluting liquids are stored in bunded tanks or tanks located within an area bunded to contain 110% of the volume of the largest vessel contained within the bund, or 25% of the aggregated total capacity, whichever is the greater	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Any minor spillages or rainwater that accumulates within bunded areas are removed at regular intervals to ensure the capacity of the bund is maintained	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Inspection of storage bunds is carried out in accordance with the 'work instruction for the inspection of storage bunds'.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.

TABLE 3 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Contingency Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Outline Contingency Plan	Yes	No	N/A	Notes
All bunds, containers and tanks are inspected on a daily basis by the site manager or his designated deputy	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Has there been remedial action			√	Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
In the event that remedial action is required, arrangements will be made to transfer any potentially polluting materials to secure alternative storage pending completion of the remedial work			√	Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
A supply of materials suitable for absorbing and containing any minor spillage are maintained on site	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Materials suitable for containing spills including sealing devices and substances for damaged containers, drain seals and booms, and overdrums are maintained at the site	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All plant and equipment are subject to maintenance in accordance with manufacturer's recommendations	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All drains are subject to daily visual inspection by the Site Manager / Site Staff	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.

TABLE 3 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Contingency Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Outline Contingency Plan	Yes	No	N/A	Notes
All drain connections have been installed during the construction process, and this activity was carried out under full CQA supervision	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Construction of the installations was fully documented	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All vessels and pipework in use at the site were designed to ensure that failure due to over pressure is prevented.	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Materials used are designed to accommodate the design pressures, and valves and vents at appropriate locations within the system				Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
All site personnel are tasked with monitoring for evidence of spillage and leakage, during their day-to-day routine	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
The condition of bunds, tanks and containers is inspected on a daily basis	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
A daily and weekly inspection checklist is used to record inspections of infrastructure, operations, pollution control and amenity management and monitoring				Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.

TABLE 3 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - Contingency Plan

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

Outline Contingency Plan	Yes	No	N/A	Notes
The inspection checklist is used by the site manager to identify requirements for remedial action	√			Excavation and processing waste ceased in December 2007, only closure and restoration related activities carried out on site in 2008. Office compound decommissioned.
Has there been a spillage/leak on site?		√		
Location of these materials				Doran's Pit
Security Management Plan				
The site control office has a security alarm		√		Doran's Pit's -Security applied (guards)
Windows are fitted with bars and /or shutters			√	Office compound decommissioned.
The main site control area, env. man. compound and plant storage area has security lighting			√	Office compound decommissioned.
The site has security fencing which extends around the perimeter of the site	√			
There is a separate fence and gates around the environmental compound	√			
Security gates spanning the full width of the access road are provided at the entrance to the site	√			
The gates are locked outside operational hours	√			
Gates and fencing are inspected weekly by the site manager or his nominated deputy	√			
Notices warning against unauthorised access (and alerting potential trespassers to on site hazards) have been erected at the site entrance and adjacent to the footpath	√			
Notices are repeated as necessary at locations around the perimeter of the site.	√			
The site has a security system - guards or alarms?	√			Doran's Pit's -Security applied (guards)
All visitors to the site register their presence by signing in the visitors book on entry to the site, and again on exit	√			
Has there been fly tipping on site		√		
Has there been a security breach on site		√		
Explosion				
Gas levels are monitored at the site on a regular basis	√			

TABLE 4 Roadstone Dublin Ltd. - Blessington Remediation Project (Waste Licence Ref. No. 213-1): Environmental Audit - EPA 2006 Inspection / Audit

Audit Team: Tim Paul and Aldona Binchy (SLR Consulting Ireland)

Date of Audit: 4th December 2008

EPA LICENCE AUDIT REPORT : ACTIONS ARISING	Yes	No	N/A	Notes
			√	No EPA audit carried out oin 2008.

APPENDIX M

ENVIRONMENTAL MANAGEMENT PROGRAMME –PROPOSAL FOR CURRENT YEAR

N 1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site.

In compliance with Section 3.0 of the Closure, Restoration and Aftercare Management Plan (CRAMP) all environmental monitoring is now completed and ceased. It is envisaged that no more monitoring will be carried out in 2009 as closure and restoration phase is now completed. There is no need for further updates and revisions to the existing EMS.

In December 2008 application for surrender the waste licence Ref. No. WL0213-1 was made to EPA.

APPENDIX N

FULL TITLE AND WRITTEN SUMMARY OF ANY PROCEDURES DEVELOPED BY ROADSTONE DUBLIN LTD IN 2008

Appendix N: Full title and written summary of any procedures developed by the licensee in the year which relates to the facility operation

The only procedure developed by Roadstone Dublin Ltd in relation to the remediation of unauthorised landfills at Doran's Pit, Blessington, Co. Wicklow is the Closure, Restoration and Aftercare Management Plan (Revision B) dated October 2008.

The contents of the Plan are as provided below. Copies of this document were submitted to the Agency on 14th October 2008.

CONTENTS

1.0		Introduction
2.0		Scope of the Plan
3.0		Criteria for Closure and Restoration of the Facility
4.0		Restoration Scheme
5.0		Aftercare Management Plan
6.0		Budget Costing & Programme
7.0		Final Validation Report
Figures	C1	Site Location
	C2	Site Layout
	C3.1a	Area 1: Original Situation – Plan & Section
	C3.1b	Area 1: Final Restoration – Plan & Section
	C3.4a	Area 4: Original Situation – Plan & Sections
	C3.4b	Area 4: Final Restoration – Plan & Sections
	C3.6a	Area 6: Original Situation – Plan & Sections
	C3.6b	Area 6: Final Restoration – Plan & Sections
	C3.6c	Area 6: Treatment of Drainage Channel - Plan & Section
	C4	Environmental Monitoring Plan (Post-Restoration)
Appendices	A	Environmental Monitoring Plan (Post-Restoration)
	B	Landscaping Specification
	C	Programme for the Remediation Works

APPENDIX O

POLLUTION EMISSION REGISTER - REPORT FOR 2008 & PROPOSAL FOR 2009

- O1.** PRTR electronic version will be submitted to the Agency when the licensee receives notification of the availability of the electronic PRTR version for completion. At the time of printing this report AER electronic system was not available.

APPENDIX P

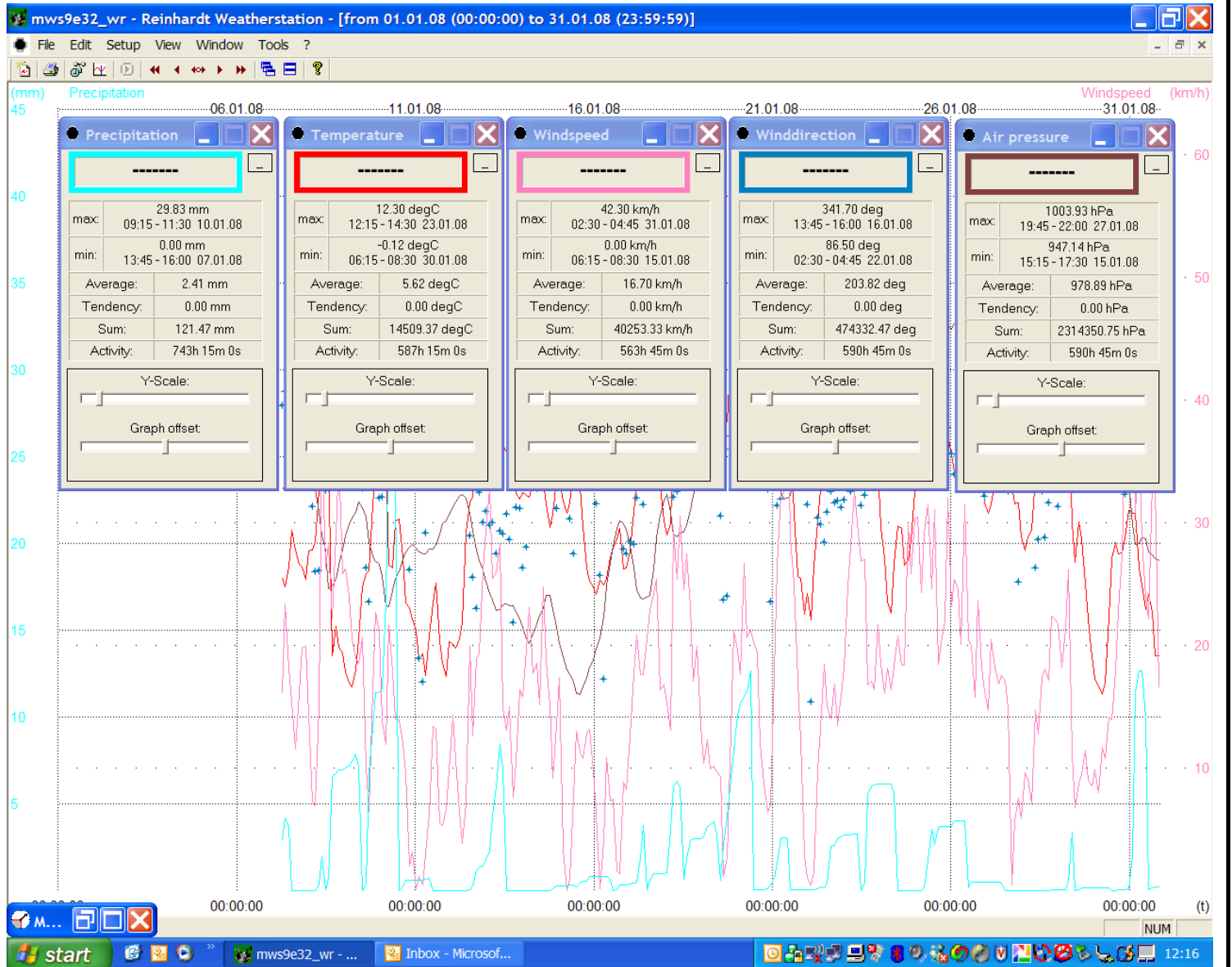
METEOROLOGICAL DATA SUMMARY

Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	2.41	mm	
Temperature (Avg.)	5.62	°C	
Wind Speed (Avg.)	16.70	Km/h	
Wind Direction (Avg.)	203.82	°	
Barometric Pressure (Avg.)	978.89	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06

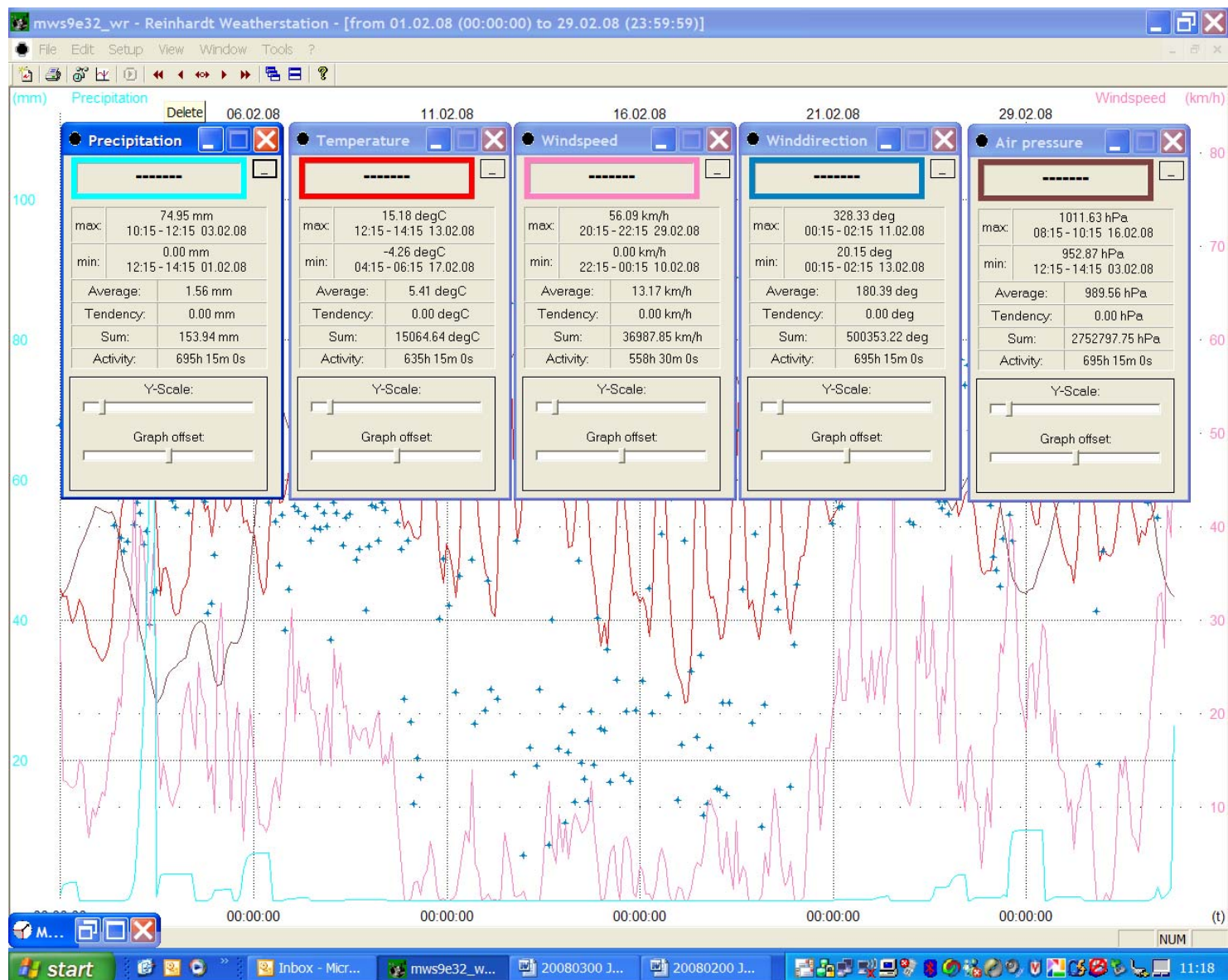


Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	1.56	mm	
Temperature (Avg.)	5.41	°C	
Wind Speed (Avg.)	13.17	Km/h	
Wind Direction (Avg.)	180.39	°	
Barometric Pressure (Avg.)	989.56	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06

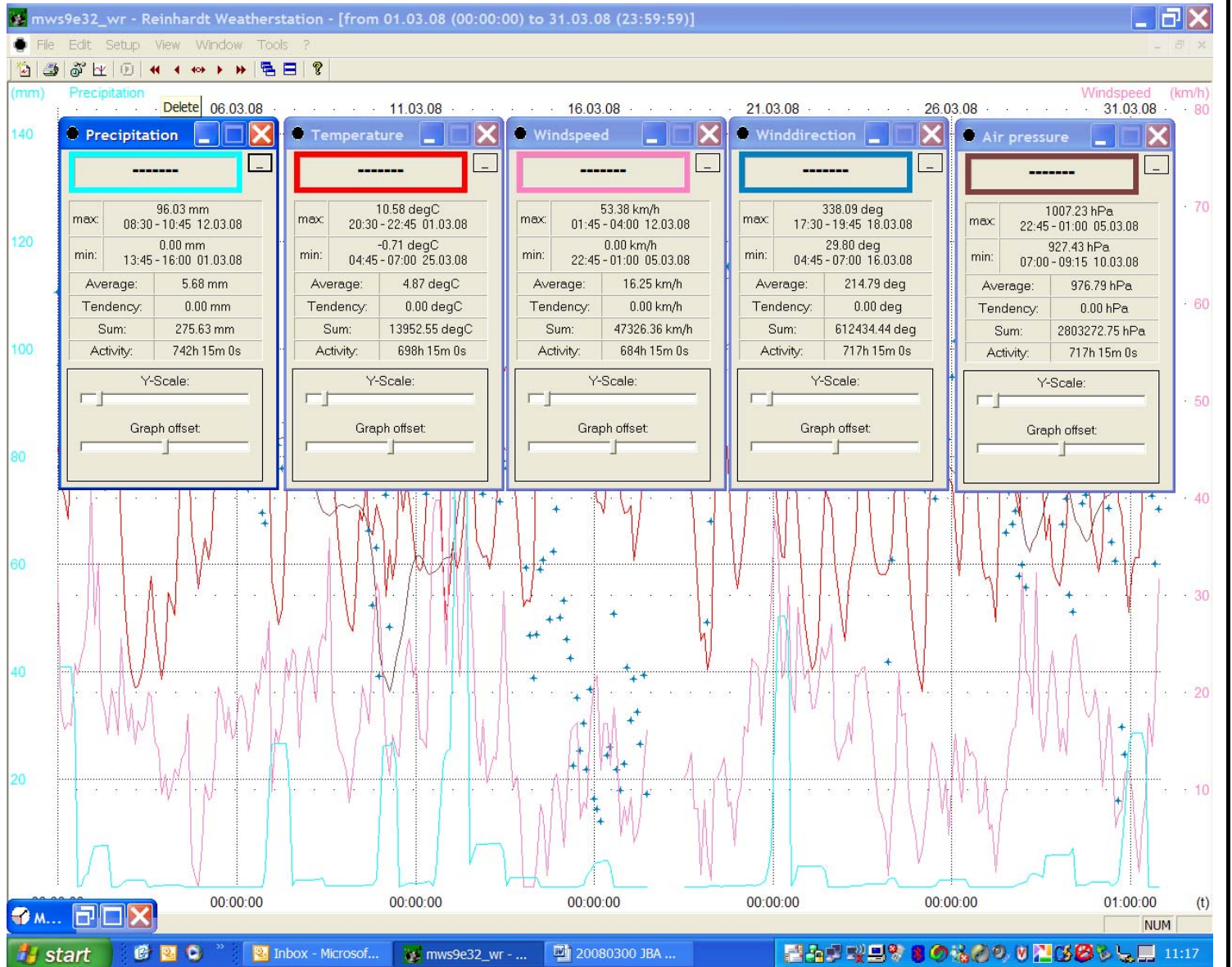


Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	5.68	mm	
Temperature (Avg.)	4.87	°C	
Wind Speed (Avg.)	16.25	Km/h	
Wind Direction (Avg.)	214.79	°	
Barometric Pressure (Avg.)	976.79	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06



Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited

Meteorological Monitoring

Waste Licence	WL0213-01
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Condition	3.15 [Schedule C5]
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Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	33.4	mm	Casement Data
Temperature (Avg.)	7.6	°C	Casement Data
Wind Speed (Avg.)	10.1	Km/h	Casement Data
Wind Direction (Avg.)	185.88	°	Blessington BRP approx ¼ to 23/4
Barometric Pressure (Avg.)	1010.18	hPa	Casement Data

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stiegelmayr on 11/09/06



Date: May 2008

Sheet: 1

By: Mark Prendergast

Project Name: **Blessington Remediation Project**

Location: **Doran's Pit, Blessington, Co. Wicklow**

Client: **Roadstone Dublin Limited**

Meteorological Monitoring

Waste Licence: **WL0213-01**

Condition: **3.15 [Schedule C5]**

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	1.2	mm	Casement Data
Temperature (Avg.)	12.7	°C	Casement Data
Wind Speed (Avg.)	8.1	Knots	Casement Data
Wind Direction (Avg.)	95.8	°	Casement Data
Barometric Pressure (Avg.)	1015.4	hPa	Casement Data

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stiegelmayr on 11/09/068

Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes		
Precipitation (Avg.) Volume	3.52	mm	76.5	mm (total)	Casement
Temperature (Avg.)	12.31	°C	13.3	°C	Casement
Wind Speed (Avg.)	13.43	Knots	9.1	Knots	Casement
Wind Direction (Avg.)	229.59	°			
Barometric Pressure (Avg.)	986.39	hPa	1015.2	hPa	Casement

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stiegelmayr on 11/09/068

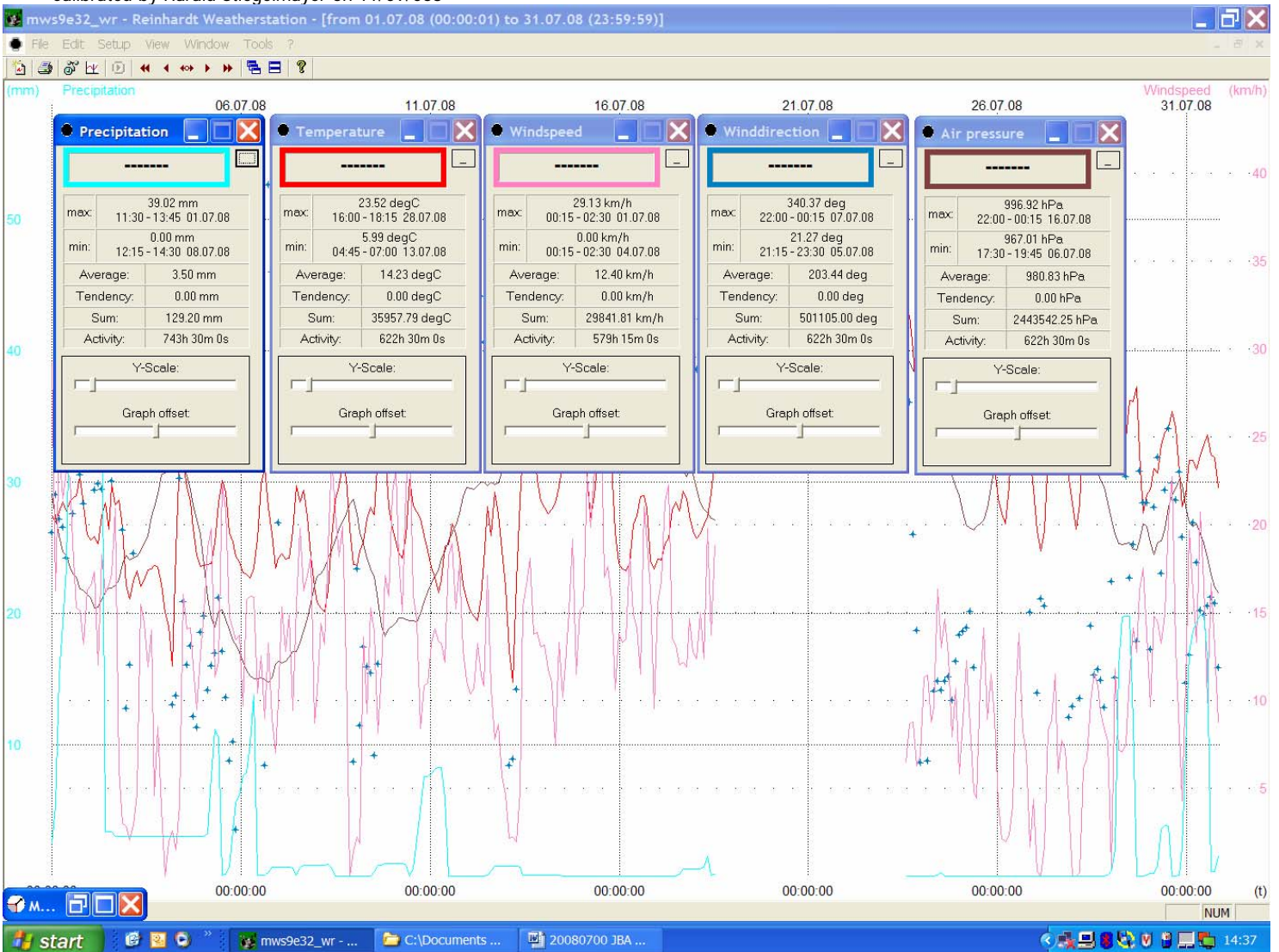


Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	3.50	mm	
Temperature (Avg.)	14.23	°C	
Wind Speed (Avg.)	12.40	Km/hr	
Wind Direction (Avg.)	203.44	°	
Barometric Pressure (Avg.)	980.83	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stiegelmayr on 11/09/068



Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	3.07	mm	
Temperature (Avg.)	14.09	°C	
Wind Speed (Avg.)	12.18	Km/hr	
Wind Direction (Avg.)	220.10	°	
Barometric Pressure (Avg.)	978.22	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/068



Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	2.47	mm	
Temperature (Avg.)	11.87	°C	
Wind Speed (Avg.)	10.25	Km/hr	
Wind Direction (Avg.)	200.16	°	
Barometric Pressure (Avg.)	985.67	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06



Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	158.63	mm	
Temperature (Avg.)	9.07	°C	
Wind Speed (Avg.)	14.83	Km/hr	
Wind Direction (Avg.)	218.59	°	
Barometric Pressure (Avg.)	966.97	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06



Project Name:	Blessington Remediation Project
Location	Doran's Pit, Blessington, Co. Wicklow
Client	Roadstone Dublin Limited
Waste Licence	WL0213-01
Condition	3.15 [Schedule C5]

Meteorological Monitoring

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume	98.00	mm	
Temperature (Avg.)	6.29	°C	
Wind Speed (Avg.)	18.90	Km/hr	
Wind Direction (Avg.)	232.02	°	
Barometric Pressure (Avg.)	980.90	mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06





Date: December 2008

Sheet:

By: Mark Prendergast

Project Name: **Blessington Remediation Project**

Location: **Doran's Pit, Blessington, Co. Wicklow**

Client: **Roadstone Dublin Limited**

Meteorological Monitoring

Waste Licence: **WL0213-01**

Condition: **3.15 [Schedule C5]**

Parameter	Value	Unit	Notes
Precipitation (Avg.) Volume		mm	
Temperature (Avg.)		°C	
Wind Speed (Avg.)		Km/hr	
Wind Direction (Avg.)		°	
Barometric Pressure (Avg.)		mb	

- Monitoring Location is M1
- Sensor weather station is MWS 5MV
- Calibrated by Harald Stieglmayer on 11/09/06

APPENDIX Q

AMBIENT MONITORING SUMMARY

Q1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site. There was no ambient monitoring carried out on site during 2008.

APPENDIX S

VOLUME OF TRADE EFFLUENT / LEACHATE AND/OR CONTAMINATED STORMWATER PRODUCED AND VOLUME TRANSPORTED OFF SITE

- S1.** Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site. There was no trade effluent/leachate generated and disposed of in 2008.

APPENDIX T

TANK AND PIPELINE TESTING AND INSPECTION REPORT

- T1.** Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. There was no tank and pipeline testing and inspection carried out in 2008.

APPENDIX V

ENERGY EFFICIENCY AUDIT AND REPORT SUMMARY

- V1.** Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. No energy efficiency audit has been carried out in 2008.

APPENDIX W

REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MINIMISE GENERATION OF LEACHATE / TRADE EFFLUENT FOR DISPOSAL

W1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. There was no leachate/ trade effluent generated on site during 2008.

APPENDIX X

DEVELOPMENT / INFRASTRUCTURAL WORKS SUMMARY

- X1.** Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site. There was no new development and infrastructural works carried in 2008.

APPENDIX Y

REPORT ON MANAGEMENT AND STAFFING STRUCTURE AT FACILITY

Appendix Y: Report on Management and staffing structure at the facility during 2008

Roadstone Dublin Ltd

- Facility Manager: Mark Prendergast
- Monitoring Technician: Colin Doyle

John Barnett & Associates/ SLR Consulting Ireland

- Project Director: Tim Paul
- Project Manager: Derek Luby
- Monitoring Technician: Aldona Binchy
- Environmental Scientists: Various

Mouchel Parkman Ireland

- Local Director: Colin Acton
- Local Client Manager: Helen Ward

Mouchel Parkman UK

- Project Director: Chris Chapel
- Project Manager: Mark Hinsley
- Specification & Contract Documents: Peter Russell
- Groundwater QRA: Richard Winstarrley/James Nelson
- Soil Testing IWAC Specification: Jamie Cutting
- Human Health QRA: Hilary Ilsley
- Checking: Tony Brown
- SHE: John Banks/Teresa Hailey

Chemtest UK

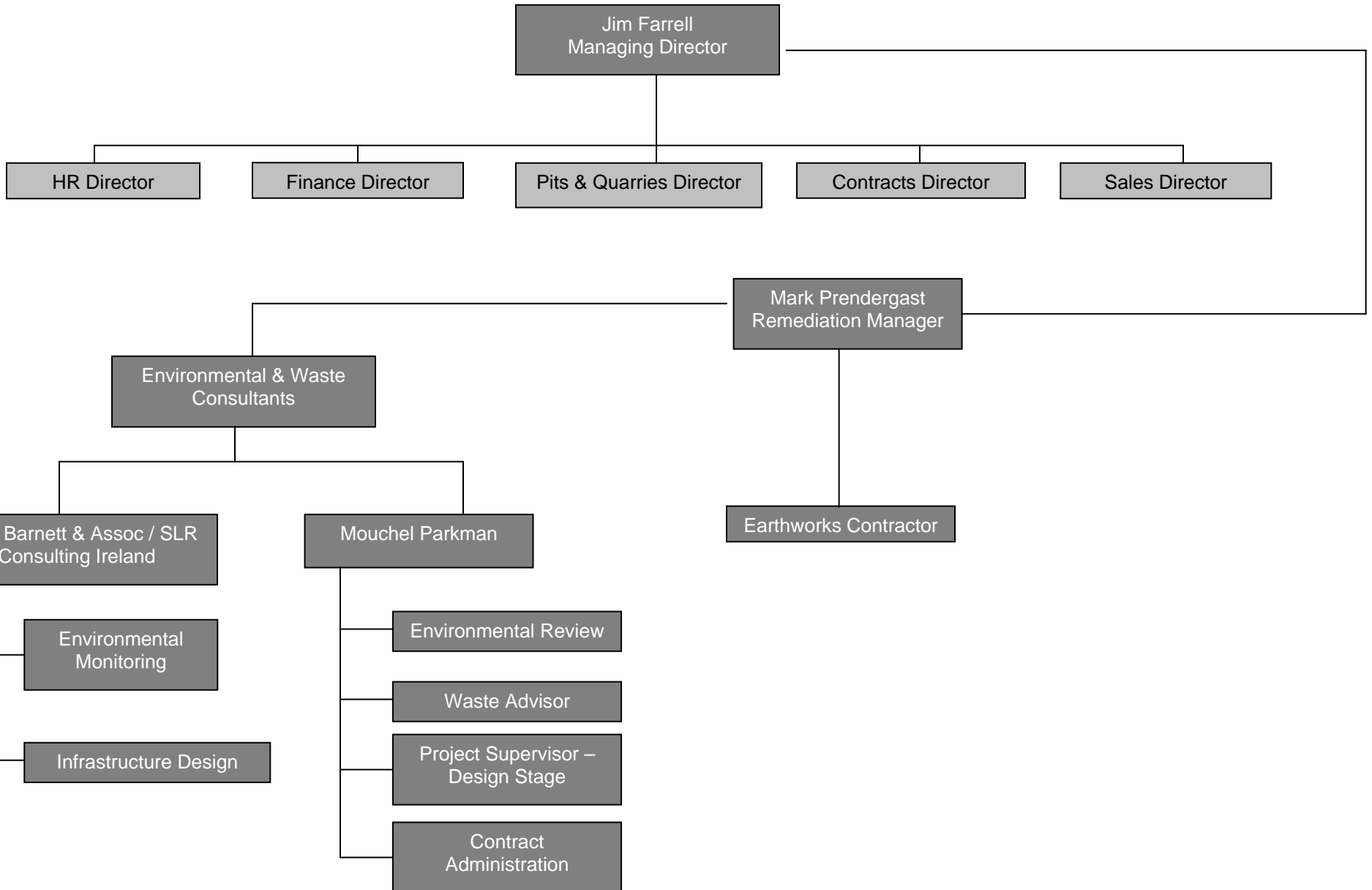
- Operations Director: Phil Hellier

Eartworks Contractor

CLM

- Machine Operators: Various

Closure and Restoration – Organisation & Management Structure



APPENDIX Z

REPORT ON 2008 PROGRAMME FOR PUBLIC INFORMATION

Appendix Z: Report on 2008 programme for public information

As part of the Environmental Management System a Public Communications Programme was established between local interested parties and Roadstone. Following on from the format established in 2006 and 2007, Roadstone remained in contact and at the disposal with the local residents (Woodleigh Estate committee - waste). Similar phone contact was kept between the Blessington Forum and Roadstone.

Meetings: Woodleigh Estate - No Meetings

Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase.

Public office information is available for members of public at Roadstone Dublin Limited, Belgard Quarry, Fortunestown, Tallaght, Dublin 24.

APPENDIX AA

REPORT ON DUTY AND STANDBY CAPACITIES OF WASTE PROCESSING PLANT AT THE FACILITY

AA 1. Excavation and Processing of waste at Roadstone Dublin's site at Blessington, Co Wicklow ceased on the 21st of December 2007. From January 2008 onwards, the project entered the closure and restoration phase. All waste processing plant was removed from the site.

APPENDIX AB

REPORTS ON FINANCIAL PROVISION MADE UNDER THIS LICENCE

AB 1. Information regarding financial provision made has not changed since the Waste Licence Application (dated December 2004), refer to enclosed copy of CRH plc 2008 results.



CRH plc 2008 Results





ROBUST DELIVERY IN A CHALLENGING YEAR

Year ended 31st December	2008 euro m	2007 euro m	% change
Revenue	20,887	20,992	- %
EBITDA*	2,665	2,860	- 7%
Operating profit*	1,841	2,086	- 12%
Profit on disposal of non-current assets	69	57	+21%
Profit before tax	1,628	1,904	- 14%
	euro cent	euro cent	
Earnings per share	233.1	262.7	- 11%
Cash earnings per share	386.9	404.9	- 4%
Dividend	69	68	+1.5%

* EBITDA and operating profit are stated before profit on disposal of non-current assets.

- CRH has delivered full-year profit before tax of euro 1,628 million, a decrease of 14% compared to the record result in 2007, and in line with guidance provided in the Interim Management Statement of 11th November 2008 and in the Trading Update Statement of 6th January 2009.
- There was a lower decrease in earnings per share which fell 11% to 233.1c (2007: 262.7c), as a result of the share buyback and a lower effective tax rate, 22.5% compared with 24.5% in 2007.
- Operating profit in our Europe divisions declined by euro 57 million to euro 1,049 million, a 5% decrease. Acquisitions completed in 2007 and 2008 contributed an incremental euro 73 million of operating profit, while organic operating profit declined by euro 130 million.
- Operating profit for the Americas operations decreased by euro 188 million to euro 792 million, down 19%. The weaker average US dollar/euro exchange rate accounted for euro 67 million of the decrease in operating profit. In US dollar terms, operating profit declined 13%.
- Overall operating profit margin decreased to 8.8% (2007: 9.9%).
- Profit on disposal of non-current assets at euro 69 million was ahead of 2007 (euro 57 million). It is anticipated that a strong level of profit on disposals will be an ongoing feature of the Group's activities.
- Expenditure on acquisitions and investments during 2008 totalled euro 1 billion.
- Despite lower profitability, EBITDA/net interest cover remained high at 7.8 times for the year (2007: 9.4 times), above the Group's comfort range of 6 to 6.5 times.
- The proposed 1.5% dividend increase for 2008 marks the 25th consecutive year of dividend growth, and follows increases of 31% in 2007 and 33% in 2006. Dividend cover for the year at 3.4 times was broadly in line with our previously stated target of 3.5 times for 2008.

Myles Lee, Chief Executive, said today:

"Despite a challenging backdrop, CRH performed robustly in 2008 and succeeded in limiting the decline in performance following 15 consecutive years of growth between 1992 and 2007. The outlook for 2009 is extremely challenging and management's attention and efforts are resolutely focussed on commercial delivery and on ensuring that our businesses are strongly positioned through additional cost reduction and cash generation measures to cope with whatever trading circumstances may evolve. In addition, we continue to strengthen our financial flexibility in order to ensure that the Group is well positioned to take advantage, in its traditional long-established disciplined manner, of a likely increased flow of development opportunities as the year progresses."

Announced Tuesday, 3rd March 2009

This Results Announcement contains certain forward-looking statements as defined under US legislation. By their nature, such statements involve uncertainty; as a consequence, actual results and developments may differ from those expressed in or implied by such statements depending on a variety of factors including the specific factors identified in this statement and other factors discussed in our Annual Report on Form 20-F filed with the SEC.

Contact CRH at Dublin 404 1000 (+353 1 404 1000)

Myles Lee	Chief Executive
Glenn Culpepper	Finance Director
Éimear O'Flynn	Head of Investor Relations
Maeve Carton	Head of Group Finance

RESULTS

HIGHLIGHTS

CRH has delivered a robust set of results in a challenging business climate with full-year profit before tax of euro 1,628 million, a decrease of 14% compared to the record result in 2007.

The results include the proportionate consolidation of joint ventures in the Group's income statement, cash flow statement and balance sheet, while the Group's share of profit after tax of associates is included as a single line item in arriving at Group profit before tax.

- Sales revenue: euro 20,887 million, unchanged
- EBITDA*: euro 2,665 million, down 7%
- Operating profit*: euro 1,841 million, down 12%
- Profit on disposal of fixed assets: euro 69 million, up 21%
- Profit before tax: euro 1,628 million, down 14%
- Basic earnings per share: 233.1c, down 11%
- Cash earnings per share: 386.9c, down 4%
- Dividend per share: 69c, up 1.5%

* *EBITDA (earnings before interest, tax, depreciation, asset impairments and amortisation) and operating profit do not include profit on disposal of non-current assets.*

The average US dollar/euro rate of 1.4708 for 2008 was 7% weaker versus the euro than in 2007 (1.3705). This, combined with movements in average rates for the Group's other operating currencies, had a negative impact of euro 50 million on profit before tax.

Note 3 on page 15 analyses the key components of 2008 performance.

DIVIDEND

The Board is recommending a final dividend of 48.5c per share, an increase of 1% on the 2007 final dividend of 48c. This gives a total dividend for the year of 69c, an increase of 1.5%, representing the 25th consecutive year of dividend growth. It is proposed to pay the final dividend on 11th May 2009 to shareholders registered at the close of business on 13th March 2009.

The 1.5% total dividend increase follows increases of 31% and 33% in 2007 and 2006 respectively, and brings dividend cover to 3.4 times, just below our previously stated target of 3.5 times for 2008.

DEVELOPMENT

Total acquisition spend was euro 1 billion in 2008. First-half expenditure of euro 0.7 billion included the purchase of a 45% stake in Indian cement manufacturer My Home Industries and 100% of UK construction accessories producer Ancon along with 35 other smaller acquisitions across the Group's operations. With the deteriorating economic environment, we deliberately curtailed our development activity with second-half spend of euro 0.3 billion including the purchase of a 35% stake in French builders merchant Trialis together with 15 other transactions plus the acquisition of a further 5% stake in My Home Industries.

SEGMENT REVIEW

EUROPE – MATERIALS



Analysis of change

euro million	2008	2007	Total Change	Acquisitions			
				Organic	2007	2008	Exchange
Sales revenue	3,696	3,651	+45	-205	+194	+74	-18
% change			+1%	-6%	+5%	+2%	-
Operating profit*	631	586	+45	+4	+19	+16	+6
% change			+8%	+1%	+3%	+3%	+1%
Margin	17.1%	16.1%					

*Operating profit is before profit on disposal of non-current assets

Europe Materials experienced a change in economic conditions during 2008. After a positive first half when continuing advances in eastern Europe more than compensated for declines in Ireland and Spain, the deteriorating global economic environment impacted second-half performance. Overall, operating profit for the year was up 8% on a record 2007 performance.

Ireland: Construction demand in Ireland fell significantly in 2008. The decline of the residential sector, which commenced in 2007, accelerated through the year. Sales to the commercial sector, which were strong in the first half, weakened considerably in the second half. The infrastructure and agricultural sectors continued to see strong demand. Cost reduction programmes were intensified with consequent one-off rationalisation costs. Overall operating profit declined compared to 2007.

Benelux: Our Benelux cement trading, readymixed concrete and aggregates business, consolidated into Europe Materials in 2007, had a good first full year in the Division and exceeded target returns.

Finland/Baltics: Finland's economy grew at a more modest rate in 2008 following the strong expansion of recent years. Overall construction demand advanced during the first half; however, the second half saw slowing non-residential construction, an accelerating decline in residential output and completion of a number of infrastructure projects. As a result, demand for our products was at a lower level than in 2007; however, improved efficiencies and strong cost control led to increased operating profit. The Baltic States had a difficult year and overall profit in Latvia and Estonia declined. Our operations in St. Petersburg benefited from declining input costs, but weaker second-half demand resulted in a lower outcome.

Central/Eastern Europe: The Polish construction market experienced a good year. Increases in commercial and industrial construction compensated for a decline in infrastructure and public non-residential building and also in housing activity in the main cities. Cement volumes remained at 2007 levels. The concrete products businesses performed very well with increased volumes in readymixed concrete and pavers, although walling products were impacted by a slowdown in the residential sector. Overall in Poland, improved efficiencies and good input cost recovery resulted in improved margins and operating profit was up significantly on 2007 levels. In Ukraine, cement volumes grew strongly in the first half but fell back in the second half as political and economic difficulties intensified. Better pricing and the use of coal in place of high-cost natural gas resulted in higher operating profit.

Switzerland: Infrastructure and public non-residential spending increased and more than compensated for declines in housing and industrial activity. Cement volumes were in line with 2007 levels but significant fuel cost increases were not fully recovered resulting in cement profits behind 2007. Margins in our readymixed concrete and aggregates business increased and the outcome was ahead of 2007. Our combined Swiss operations delivered a satisfactory performance in 2008.

Iberia and Eastern Mediterranean: Construction activity in Spain fell significantly. New infrastructural projects in Catalonia benefited our operations in the second half of the year. However, the residential and non-residential sectors were particularly affected and despite adjusting capacity by consolidating locations, operating profit declined significantly. The Portuguese economy grew in 2008; however, construction declined with lower activity in all sectors. Our Secil joint venture with three cement plants operated at full capacity taking advantage of strong export markets. Secil also enjoyed a positive performance in its activities outside Portugal and reported a good uplift in operating performance due to a favourable pricing environment and production efficiencies. Construction demand in the southwest Aegean region of Turkey was somewhat negative and this, combined with increased competition, resulted in declining volumes and prices, and lower operating profit, from our joint venture Denizli Cement.

Asia: Sanling Cement in northeastern China achieved record volumes and improved factory efficiency. However, competitive pricing in the region resulted in a lower outcome. Our 50% Indian joint venture, My Home Industries (MHIL), has been included in our consolidated results from May 2008. The significant economic and construction growth in the Andhra Pradesh market continued as anticipated and MHIL performance was ahead of our expectations.



euro million	2008	2007	Total Change	Analysis of change			Exchange
				Organic	Acquisitions		
				2007	2008		
Sales revenue	3,686	3,628	+58	-143	+100	+172	-71
% change			+2%	-4%	+3%	+5%	-2%
Operating profit*	224	308	-84	-99	+6	+16	-7
% change			-27%	-32%	+2%	+5%	-2%
Margin	6.1%	8.5%					

*Operating profit is before profit on disposal of non-current assets

Following a positive first quarter, our markets became increasingly difficult as the year progressed and our Products operations saw operating profit decline by 27%, impacted by rationalisation costs of euro 35 million.

Concrete Products: Architectural operations faced difficult conditions in several markets and performed significantly below 2007. Our Belgian, French and Danish paver and tile businesses suffered from weak residential markets and falling consumer confidence while the UK block business experienced a significant volume drop. In Germany, the downturn in new residential construction impacted results. Results in our Dutch operations improved driven by a restructuring project which commenced in 2007, while our Slovakian businesses continued to perform strongly. Structural concrete operations delivered profits below 2007. Our Danish and Irish businesses were significantly impacted, from the beginning of the year, by difficult conditions in residential markets. Belgium and the Netherlands, which include our sand-lime brick operation, were less affected, with the decrease in the residential sector only becoming evident from the third quarter. Operations serving non-residential markets across Europe performed well, with strong results in Belgium and France driven by tight operational control. Significant restructuring involving factory closures and capacity reduction was undertaken across both Architectural and Structural operations during 2008.

Clay Products: Results in the Clay Products group declined significantly in 2008, primarily due to difficulty in the UK brick market. In response to falling sales, four factories were closed, extensive production shutdowns implemented and overhead costs reduced. Energy prices increased significantly during the year which, combined with production cut-backs, closure costs and redundancy programmes, resulted in an outcome well below prior year. In Mainland Europe, our country-based organisation was restructured to form two operating regions, Central Europe and Eastern Europe, improving cross-border trading and reducing administration costs. Volumes declined as the year progressed; however, this was largely offset by strong pricing and overall the profit performance for these operations was similar to 2007.

Building Products: In total, 2008 operating profit was broadly in line with 2007.

Construction Accessories experienced another year of performance and growth. The contribution of Ancon, acquired in April 2008, exceeded our expectations and all our businesses showed solid operating results despite deteriorating market conditions towards the end of the year.

Our Building Envelope Products include Entrance Control, Climate Control and Roller Shutters & Awnings businesses. Entrance Control operations in fencing, security and access systems experienced another year of solid performance. In Climate Control, our rooflight & ventilation activity reported further progress in operating results, driven by a strong performance in its German business. The Roller Shutters & Awnings business experienced difficult market conditions due to declining consumer confidence and unfavourable weather conditions in the Netherlands.

Despite good progress on profit improvement initiatives, Insulation Products had a difficult year. The slowdown in residential markets, especially in the UK and Ireland, high volatility in input prices and price pressure in Eastern Europe were the main reasons for a disappointing result.

	2008	2007	Analysis of change				
			Total Change	Organic	Acquisitions		Exchange
euro million					2007	2008	
Sales revenue	3,812	3,435	+377	-86	+269	+165	+29
% change			+11%	-3%	+8%	+5%	+1%
Operating profit*	194	212	-18	-35	+7	+9	+1
% change			-8%	-16%	+3%	+4%	+1%
Margin	5.1%	6.2%					

*Operating profit is before profit on disposal of non-current assets

The effects of the worldwide financial crisis led to a slowdown in business activity as 2008 progressed. Sales increased aided by contributions from eight acquisitions completed in 2008. However, after a record 2007, operating profit declined by 8%.

Builders Merchants: Trading across our Builders Merchants operations, which had a generally good first half, weakened with the economic climate and organic sales registered a decline of approximately 4%.

In the Netherlands, after a relatively strong first six months, sales weakened in the second half resulting in lower annual like-for-like sales and operating profit compared with 2007.

In France, our heritage operations in Ile-de-France (100%), Burgundy (58%) and Franche-Comté (58%) witnessed a slowdown which resulted in reduced sales and profit.

Compared to other Western European construction markets, the Swiss market showed some resilience. However, internal reorganisation costs resulted in a slightly disappointing outcome with profits down on 2007 despite higher sales.

Our Austrian operations benefited from reorganisation initiatives taken in 2007 and 2008. These measures included the closure of some loss-making branches and, although 2008 sales decreased, operating profit returned to positive territory. Further initiatives continue to be implemented to restore margins to appropriate levels.

Sales at Bauking, the German joint venture in which we have a 48% stake, held up fairly well, but like-for-like sales versus 2007 were down marginally and, despite relentless cost control, like-for-like operating profit also declined. The 2007 acquisitions were successfully integrated and performed according to expectations. Overall in Germany, including acquisition effects, sales advanced and operating profit was at a similar level.

DIY: Our DIY operations which were adversely affected by weakening consumer confidence in the first half of the year proved more robust through the second half as a result of strong management action.

In the Netherlands and Belgium, like-for-like sales were flat compared with 2007. Increased competition and promotional campaigns had a negative impact on margins; however, this was mitigated by tight cost control and sharp franchise formula management leading to only a modest decrease in operating profit.

In Germany, Bauking operates 54 DIY stores under the brand name Hagebau. In a very competitive market, Bauking managed to keep costs under tight control which led to a slight decline in operating profit while maintaining a similar sales level to 2007.

In Portugal, sales increased supported by the opening of 5 new stores; however, start-up losses for the new openings and difficult market conditions resulted in lower profits than in 2007. In Spain, market circumstances in Alicante/Valencia have been very challenging and results were below expectations.

	2008	2007	Total Change	Analysis of change			
				Organic	Acquisitions		Exchange
euro million				2007	2008		
Sales revenue	5,007	5,445	-438	-464	+332	+65	-371
% change			-8%	-8%	+6%	+1%	-7%
Operating profit*	462	570	-108	-86	+9	+8	-39
% change			-19%	-15%	+2%	+1%	-7%
Margin	9.2%	10.5%					

*Operating profit is before profit on disposal of non-current assets

Americas Materials had a very challenging year with unprecedented increases in bitumen and energy costs and a sharp decline in market volumes across all major business lines. Through effective pricing, energy management and cost cutting initiatives, the Division was able to limit the overall decline in US dollar operating profit to 13% from 2007 record levels; a solid result.

Overall energy costs increased by 41% compared with 2007 despite lower volumes as prices surged during the construction season. The increase was mainly driven by bitumen, which experienced a 60% price increase from 2007 levels. The pricing of energy used at our asphalt plants, consisting of fuel oil, recycled oil and natural gas, increased by 45%. Diesel and gasoline jumped 38% and 19% respectively.

In order to offset the substantial jump in energy costs, selling prices were increased across all our product lines with an 11% increase in aggregates pricing, a 28% increase in asphalt and a 4% increase in readymixed concrete. With the significant increases in selling prices and relatively fixed public infrastructure spending, highway paving volumes declined in 2008. Including acquisitions, aggregates volumes declined 16%, asphalt declined 10% and readymixed concrete dropped 7%. Heritage aggregates volumes showed a 17% drop with asphalt down 14% and readymixed concrete down 21%.

Management implemented several energy and cost reduction initiatives in 2008 to limit the decline in profit. Our winter-fill strategy helped to contain bitumen cost increases and we successfully increased our usage of recycled asphalt to lessen bitumen requirements. Division-wide purchasing programmes were initiated to reduce the unit cost of purchased materials and supplies while continued operational best practice efforts helped reduce both labour and equipment cost while eliminating waste. Reductions in fixed overhead staffing and other fixed costs were progressively implemented in response to shrinking demand.

In 2008, we reorganised our operations geographically into East and West, each containing four divisions.

East: The Northeast division had a difficult year mainly due to significant declines in New Jersey and Connecticut markets. Our Central division companies in Ohio and Michigan experienced volume reductions consistent with our overall declines in aggregates and asphalt. However, with sound pricing initiatives, good bitumen purchasing, and effective cost controls, the division was able to achieve a good advance in profit. The Mid-Atlantic division saw its operating profit decrease slightly due mainly to challenging markets in Pennsylvania and Delaware with reduced demand and higher energy costs. The Southeast division experienced a difficult year with severe market declines leading to a sharp fall-off in operating profit.

West: Our Southwest division was impacted by volume declines in aggregates and rapidly escalating variable costs associated with asphalt production. Proactive efforts to increase prices and reduce costs along with the successful integration of 2007 acquisitions resulted in an overall profit increase for this division. The Rocky Mountain/Midwest division moved profits ahead in 2008 due to strong demand and positive performance in western Colorado, Wyoming and South Dakota. Our Midwest companies experienced a tougher year with a slower economy and poor highway activity in Minnesota. In the Northwest, worsening economies in Northern Idaho and Oregon had a severe impact on our volumes and although favourable pricing somewhat softened the negative impact, profits fell sharply. Our Staker Parson operations saw a significant drop-off in volumes from the very strong levels of 2007, reflecting a weakening economy in both Utah and Idaho.



euro million	2008	2007	Total Change	Analysis of change			
				Organic	Acquisitions		Exchange
				2007	2008		
Sales revenue	3,243	3,510	-267	-291	+223	+39	-238
% change			-8%	-8%	+6%	+1%	-7%
Operating profit*	238	340	-102	-94	+11	+4	-23
% change			-30%	-27%	+3%	+1%	-7%
Margin	7.3%	9.7%					

*Operating profit is before profit on disposal of non-current assets

Our Products businesses faced another tough year with ongoing financial and credit market turmoil, further declines in new residential construction and a slowdown in non-residential markets. Significant cost reduction measures were implemented across our businesses which somewhat mitigated the impact of volume declines.

Architectural Products Group (APG): APG faced very difficult trading conditions due to the ongoing deterioration in the residential construction sector, a second-half slowdown in its non-residential markets, weaker demand from the homecenter channel, and rising raw material, energy and fuel costs. Reflecting these negative factors, our United States masonry, brick and dry-mix divisions experienced considerable profit declines, while our Canadian masonry and United States lawn and garden businesses held up relatively well. Management actions to reduce the bottom line impact through extensive cost reductions and regional consolidation of plant networks somewhat offset the negative external factors. Overall, APG recorded an 8% decline in sales and a 59% decline in operating profit.

Precast: Overall volumes were down approximately 9% with operating margins off significantly from a strong 2007. Drainage products and plastic box enclosures were particularly hard hit while non-residential also slowed as tight credit and project completions negatively impacted sales. In spite of the harsh economic backdrop and an increasingly competitive market, good cost control and effective price management lessened the profit impact.

Glass: Trading conditions in the architectural glass market weakened in 2008 as commercial construction activity declined. Despite raw material cost increases, higher input costs, and a more competitive environment, margins were stable. Management's focus on customer service, cost control and product mix enabled the group to achieve an exceptional outcome. Sales and profits increased 18% and 28% respectively, due to the outstanding performance of the Engineered Products group. Of note were the full-year contribution from the Vistawall acquisition completed in June 2007 and significantly improved results from Antamex, our Canadian-based supplier of high-performance curtain wall systems and engineering design services.

MMI: MMI's sales volumes generally declined because of reduced market activity. However, with benefits from rationalisation and cost reduction measures, profits improved markedly helped by an enhanced view of value pricing and price increases in advance of rapidly increasing steel costs. Management responded to the decline in sales volumes through overhead reductions and rationalisation of the distribution network in its fencing business, and through closure of a manufacturing plant at its welded wire reinforcement (WWR) division. MMI also took action to enhance its leadership resources significantly during the year and recruited new senior level leadership for both the WWR and construction accessories operations.

South America: Our operations in Argentina and Chile performed well despite a deteriorating economic climate as the year progressed. In Argentina, operating profit from our ceramic tile and glass businesses was slightly down on 2007 levels. Our Chilean glass business reported an improved outcome while profits in our Santiago-based distributor of specialised building products acquired in early 2008 was impacted by second-half currency devaluation of the Chilean peso.

	2008	2007	Total Change	Analysis of change			
				Organic	Acquisitions		Exchange
euro million					2007	2008	
Sales revenue	1,443	1,323	+120	-59	+254	+15	-90
% change			+9%	-4%	+19%	+1%	-7%
Operating profit*	92	70	+22	+9	+18	-	-5
% change			+31%	+13%	+25%	-	-7%
Margin	6.4%	5.3%					

*Operating profit is before profit on disposal of non-current assets

Americas Distribution comprises two divisions which supply specialist contractor groups; Roofing/Siding which accounts for approximately 58% of annualised sales and Interior Products (wallboard, steel studs and acoustical ceiling systems) which represents approximately 42% of annualised sales.

Roofing/Siding (Exterior Products): US petroleum-based roofing systems benefited from a surge in demand due to hailstorms in southern and central US cities and a spike in petroleum costs to create a positive pricing environment for the Roofing/Siding division.

Interior Products: While Interior Products markets were challenging, with significant wallboard price deflation, the inclusion of a very positive full-year trading contribution from the November 2007 acquisition of Acoustical Materials Services in the western United States and Baja California, offset organic declines.

Overall Americas Distribution operating profit increased 41% in US dollar terms and operating margins advanced by over a full percentage point from 5.3% to 6.4%.

FINANCE

Net finance costs for the year of euro 343 million showed an increase compared with the euro 303 million reported for 2007. EBITDA/net interest cover for the year remained strong at 7.8 times (2007: 9.4 times), above the Group's comfort range of 6 to 6.5 times.

Year-end 2008 net debt at euro 6.1 billion compared with euro 5.2 billion at December 2007, an increase of euro 0.9 billion after a combined spend of euro 2.1 billion on acquisitions and capital expenditure, euro 0.4 billion on share buyback and after an adverse translation of euro 0.2 billion mainly attributable to the stronger year-end rate for the US dollar. The year-end net debt/EBITDA ratio was 2.3 times (2007: 1.8 times), one of the lowest in our sector.

During 2008, CRH raised a total of euro 0.8 billion of long-term funding in international bond markets, arranged euro 0.5 billion of new bank term finance and renewed and extended euro 1.7 billion of existing bank facilities. These actions, combined with the Group's traditional strong cash flow profile and an intensified focus on cash generation, leave CRH well-positioned in terms of debt facilities and maturity profile with unutilised bank term facilities at end-2008 of euro 1.6 billion. The Group continues to assess conditions in the international debt capital markets with a view to further debt issuance at the appropriate time and is committed to maintaining an investment grade credit rating.

As announced on 7th November 2008, in light of the stresses in financial markets, and to maintain maximum financial flexibility, the share repurchase programme launched on 3rd January 2008, which was limited to a maximum of 5% of the 547 million Ordinary shares in issue at 31st December 2007, was terminated following the repurchase of approximately 18.2 million shares, equivalent to 3.3% of Ordinary Shares in issue at year-end 2007, at an average price of euro 22.30 per share.

DEVELOPMENT



Following a record acquisition spend of euro 2.2 billion in 2007, total acquisition spend in 2008 was lower at euro 1 billion. First-half expenditure amounted to euro 0.7 billion; however, with the deteriorating economic environment, we significantly curtailed development activity as the year progressed, resulting in a second-half spend of just euro 0.3 billion.

During 2008, we acquired 50% of My Home Industries Limited (MHIL), an Indian cement producer headquartered in Hyderabad with strong market positions and excellent reserves in central and eastern Andhra Pradesh. MHIL has current annual production capacity of approximately 3 million tonnes from modern facilities and is CRH's first acquisition in India. Since year end, we have acquired 26% of Yatai Cement, the leading cement manufacturer in northeastern China with 14 million tonnes of cement capacity, currently being expanded to 18 million tonnes. As previously announced, we have an option to increase our stake to 49% in due course. Our Europe Materials Division, which has responsibility for our cement developments in Asia, is working with our new partners to enhance existing performance and to expand at a measured pace these initial CRH positions in China and India. A further 7 bolt-on deals were completed by the Europe Materials Division during 2008.

Europe Products had an active year. Our Concrete Products group delivered CRH's first acquisition in Hungary with the acquisition of Ferrobeton, a leading precast concrete elements producer operating four plants in Hungary and one in Slovakia, which manufacture a similar product range to our existing operations in Romania. Our Building Products group expanded its very successful Construction Accessories platform with the acquisition of Ancon, a UK-based designer and manufacturer of a range of stainless steel fixing systems, with operations in continental Europe, the Middle East and Australia. A further 7 bolt-on deals were completed.

Europe Distribution acquired an initial 35% minority stake in Trialis, a successful and leading independent regional builders merchant operating 190 branches in central, south and southwest France, and added a total of 23 branches in 7 bolt-on acquisitions.

Americas Materials completed 19 bolt-on transactions expanding its network of locations.

Americas Products had a quiet year as attention was focused on responding to a deteriorating operating environment. Nevertheless, some 7 bolt-on transactions were completed across Precast, Architectural Products and MMI operations.

Americas Distribution completed one transaction in its exterior products segment. In South America, 2008 saw the acquisition of a leading distributor of specialised building products in Santiago, Chile.

With a challenging trading backdrop for many of our businesses, management's emphasis is firmly concentrated on operational delivery and, as a result, development activity continues to be limited to acquisition opportunities that offer compelling value and exceptional strategic fit. This emphasis is also reflected in capital expenditure which is being adjusted across the Group to reflect the reduced demand environment. 2008 capital expenditure of approximately euro 1 billion is little changed on 2007 despite higher 2008 spending on previously announced cement facilities in Ireland, Poland, Ukraine and the United States.

The outlook for 2009 is extremely challenging. January and February have seen the most severe winter for many years in Europe and North America and this will exacerbate the impact of already weak markets on the outcome for the first half of the year which in 2008 benefited from a relatively mild winter and a generally positive trading backdrop in Europe. The first half of 2009 is therefore expected to be sharply lower than 2008. However, lower energy costs, ongoing interest rate reductions and the recently agreed infrastructure stimulus package in the United States should encourage activity as the year progresses. Consequently, given the weaker relative performance in the second half of 2008, the underperformance anticipated in the first half of 2009 is expected to moderate in the seasonally more important second half.

Europe: In Europe Materials, activity levels in Ireland and Spain are set to fall further in 2009 with less severe declines expected in Finland and Portugal. Switzerland is again forecast to perform robustly. In Poland, increased activity in infrastructure is expected to be offset by declines in other sectors while in Ukraine, the slowdown experienced in the latter months of 2008 is likely to be more pronounced. Recent weakness in the Polish Zloty and Ukrainian Hryvnya, if maintained, will have a negative effect on the reported euro outcome. Ongoing reductions in fuel and energy costs combined with savings from cost reduction measures will benefit 2009.

Demand for our Products & Distribution activities is down across the main Eurozone countries. Housing starts are lower and while non-residential demand remains reasonable the trends are weakening. Infrastructure in Eastern Europe and the RMI sector generally should prove more resilient. Concrete Products will benefit from significant restructuring in 2008 and new initiatives in 2009. Clay Products should improve with lower energy costs and the absence of restructuring charges. Building Products faces weaker demand in its non-residential segments. Distribution is likely to benefit from more resilient DIY demand but its builders merchants activities will decline.

Overall, despite significant benefits from ongoing restructuring, we expect a much more demanding trading environment than in 2008 for our European operations.

Americas: The recently approved United States federal economic stimulus package includes a strong infrastructure component favouring road and highway maintenance spending. We expect that this will contribute positively to Americas Materials infrastructure volumes in the second half of 2009, although residential and commercial volumes are expected to face further erosion. Bitumen and energy costs, which saw unprecedented mid-year increases in 2008, have moderated over recent months, and therefore we expect to benefit from much more stable input cost levels through 2009. The Division continues to focus on cost and overhead savings, operational efficiencies and additional price improvements. These initiatives combined with a more stable input cost backdrop should partly offset the effect on Americas Materials US dollar profits of likely further overall volume reductions.

New US residential demand is expected to decline further in 2009 as is residential repair, maintenance and improvement activity although to a lesser degree. Non-residential construction is expected to fall due to the weaker economy and tighter commercial credit standards. Against this backdrop, and despite significant operating improvements implemented in 2008 and the benefit of further targeted cost reduction measures, we anticipate a further decline in Americas Products & Distribution in 2009.

Overall, the Americas in 2009 are expected to be weaker in US dollar terms. However, the recent strengthening of the US dollar, if maintained, will result in a relatively more favourable reported euro outcome.

Overall: Management's attention and efforts are resolutely focussed on commercial delivery and on ensuring that our businesses are strongly positioned, through additional cost reduction and cash generation measures, to deal with whatever trading circumstances may evolve. In addition, we continue to strengthen our financial flexibility in order to ensure that the Group is well positioned to take advantage, in its traditional long-established disciplined manner, of a likely increased flow of development opportunities as the year progresses.

GROUP INCOME STATEMENT

For the year ended 31st December 2008



	2008 euro m	2007 euro m
Revenue	20,887	20,992
Cost of sales	(14,738)	(14,715)
Gross profit	6,149	6,277
Operating costs	(4,308)	(4,191)
Group operating profit	1,841	2,086
Profit on disposal of non-current assets	69	57
Profit before finance costs	1,910	2,143
Finance costs	(503)	(473)
Finance revenue	160	170
Group share of associates' profit after tax	61	64
Profit before tax	1,628	1,904
Income tax expense	(366)	(466)
Group profit for the financial year	1,262	1,438
<i>Profit attributable to:</i>		
Equity holders of the Company	1,248	1,430
Minority interest	14	8
Group profit for the financial year	1,262	1,438
Earnings per Ordinary Share		
Basic	233.1c	262.7c
Diluted	231.8c	260.4c
Cash earnings per Ordinary Share	386.9c	404.9c

GROUP BALANCE SHEET

As at 31st December 2008



	2008 euro m	2007 euro m
ASSETS		
Non-current assets		
Property, plant and equipment	8,888	8,226
Intangible assets	4,108	3,692
Investments accounted for using the equity method	743	574
Other financial assets	127	78
Derivative financial instruments	416	124
Deferred income tax assets	333	336
Total non-current assets	<u>14,615</u>	<u>13,030</u>
Current assets		
Inventories	2,473	2,226
Trade and other receivables	3,096	3,199
Derivative financial instruments	10	9
Liquid investments	128	318
Cash and cash equivalents	799	1,006
Total current assets	<u>6,506</u>	<u>6,758</u>
Total assets	<u><u>21,121</u></u>	<u><u>19,788</u></u>
EQUITY		
Capital and reserves attributable to the Company's equity holders		
Equity share capital	186	186
Preference share capital	1	1
Share premium account	2,448	2,420
Treasury Shares and own shares	(378)	(19)
Other reserves	87	70
Foreign currency translation reserve	(644)	(547)
Retained income	6,387	5,843
	<u>8,087</u>	<u>7,954</u>
Minority interest	70	66
Total equity	<u>8,157</u>	<u>8,020</u>
LIABILITIES		
Non-current liabilities		
Interest-bearing loans and borrowings	6,277	5,928
Derivative financial instruments	84	52
Deferred income tax liabilities	1,461	1,312
Trade and other payables	137	141
Retirement benefit obligations	414	95
Provisions for liabilities	253	248
Capital grants	14	11
Total non-current liabilities	<u>8,640</u>	<u>7,787</u>
Current liabilities		
Trade and other payables	2,919	2,956
Current income tax liabilities	186	244
Interest-bearing loans and borrowings	1,021	570
Derivative financial instruments	62	70
Provisions for liabilities	136	141
Total current liabilities	<u>4,324</u>	<u>3,981</u>
Total liabilities	<u>12,964</u>	<u>11,768</u>
Total equity and liabilities	<u><u>21,121</u></u>	<u><u>19,788</u></u>

GROUP CASH FLOW STATEMENT

For the year ended 31st December 2008



	2008 euro m	2007 euro m
Cash flows from operating activities		
Profit before tax	1,628	1,904
Finance costs, net	343	303
Group share of associates' profit after tax	(61)	(64)
Profit on disposal of non-current assets	(69)	(57)
Group operating profit	1,841	2,086
Depreciation charge (including asset impairments)	781	739
Share-based payments	24	23
Amortisation of intangible assets	43	35
Amortisation of capital grants	(3)	(3)
Other non-cash movements	(15)	(2)
Net movement on provisions	(28)	(49)
(Increase)/decrease in working capital	(57)	261
Cash generated from operations	2,586	3,090
Interest paid (including finance leases)	(371)	(352)
Income taxes paid:		
- Irish corporation tax	(18)	(18)
- Overseas corporation tax	(304)	(370)
Net cash inflow from operating activities	1,893	2,350
Cash flows from investing activities		
<i>Inflows</i>		
Proceeds from disposal of non-current assets	168	156
Interest received	51	64
Capital grants received	4	3
Dividends received from associates	42	30
	265	253
<i>Outflows</i>		
Purchase of property, plant and equipment	(1,039)	(1,028)
Acquisition of subsidiaries and joint ventures	(777)	(1,858)
Investments in and advances to associates	(156)	-
Advances to joint ventures and purchase of trade investments	(50)	(40)
Deferred and contingent acquisition consideration paid	(34)	(107)
	(2,056)	(3,033)
Net cash outflow from investing activities	(1,791)	(2,780)
Cash flows from financing activities		
<i>Inflows</i>		
Proceeds from issue of shares	6	36
Decrease in liquid investments	175	29
Increase in interest-bearing loans and borrowings	1,379	1,481
Increase in finance lease liabilities	3	2
	1,563	1,548
<i>Outflows</i>		
Ordinary Shares purchased (Treasury and own shares), net	(383)	(31)
Repayment of interest-bearing loans and borrowings	(1,008)	(753)
Repayment of finance lease liabilities	(16)	(27)
Net cash movement in derivative financial instruments	(100)	(113)
Dividends paid to equity holders of the Company	(347)	(250)
Dividends paid to minority interests	(5)	(5)
	(1,859)	(1,179)
Net cash (outflow)/inflow from financing activities	(296)	369
Decrease in cash and cash equivalents	(194)	(61)
Cash and cash equivalents at beginning of year	1,006	1,102
Translation adjustment	(13)	(35)
Cash and cash equivalents at end of year	799	1,006



GROUP STATEMENT OF RECOGNISED INCOME AND EXPENSE

For the year ended 31st December 2008

	2008 euro m	2007 euro m
Items of income and expense recognised directly within equity:		
Currency translation effects	(97)	(410)
Actuarial (loss)/gain on Group defined benefit pension obligations	(348)	159
(Losses)/gains relating to cash flow hedges	(28)	8
Tax on items recognised directly within equity	58	(74)
Net expense recognised directly within equity	(415)	(317)
Group profit for the financial year	1,262	1,438
Total recognised income and expense for the year	847	1,121
Equity holders of the Company	834	1,116
Minority interest	13	5
Total recognised income and expense for the year	847	1,121

1 Basis of Preparation

The financial information presented in this report has been prepared in accordance with the Group's accounting policies under International Financial Reporting Standards as approved by the European Union and as issued by the International Accounting Standards Board (IASB), and on a basis consistent with the prior year published financial statements.

2 Translation of Foreign Currencies

This financial information is presented in euro. Results and cash flows of subsidiaries, joint ventures and associates based in non-euro countries have been translated into euro at average exchange rates for the year, and the related balance sheets have been translated at the rates of exchange ruling at the balance sheet date. Adjustments arising on translation of the results of non-euro subsidiaries, joint ventures and associates at average rates, and on restatement of the opening net assets at closing rates, are dealt with in a separate translation reserve within equity, net of differences on related currency borrowings. All other translation differences are taken to the income statement. Rates used for translation of results and balance sheets into euro were as follows:

euro 1 =	Average		Year ended 31st December	
	2008	2007	2008	2007
US Dollar	1.4708	1.3705	1.3917	1.4721
Pound Sterling	0.7963	0.6843	0.9525	0.7334
Polish Zloty	3.5121	3.7837	4.1535	3.5935
Ukrainian Hryvnia	7.7046	6.8982	10.8410	7.3588
Swiss Franc	1.5874	1.6427	1.4850	1.6547
Canadian Dollar	1.5594	1.4678	1.6998	1.4449
Argentine Peso	4.6443	4.2718	4.7924	4.5948
Israeli Shekel	5.2556	5.6270	5.3163	5.6201

3 Key Components of 2008 Performance

euro million	2008	2007	Total Change	Analysis of change			
				Organic	Acquisitions		Exchange
					2007	2008	
Revenue	20,887	20,992	-105	-1,248	+1,372	+530	-759
Operating profit	1,841	2,086	-245	-301	+70	+53	-67
Profit on disposals	69	57	+12	+13	-	-	-1
Trading profit	1,910	2,143	-233	-288	+70	+53	-68
Finance costs, net	-343	-303	-40	+39	-67	-29	+17
Associates	61	64	-3	-8	+2	+2	+1
Profit before tax	1,628	1,904	-276	-257	+5	+26	-50
<i>PBT % change v. 2007</i>			-14%				-3%

4 Seasonality

Activity in the construction industry is characterised by cyclicity and is dependent to a significant extent on the seasonal impact of weather in the Group's operating locations with activity in some markets reduced significantly in winter due to inclement weather.

5 Analysis of Revenue, EBITDA and Operating Profit by Business



	2008		2007	
	euro m	%	euro m	%
Revenue				
Europe Materials	3,696	17.7	3,651	17.4
Europe Products	3,686	17.6	3,628	17.3
Europe Distribution	3,812	18.3	3,435	16.4
Americas Materials	5,007	24.0	5,445	25.9
Americas Products	3,243	15.5	3,510	16.7
Americas Distribution	1,443	6.9	1,323	6.3
	20,887	100.0	20,992	100.0
EBITDA *				
Europe Materials	806	30.2	746	26.1
Europe Products	392	14.7	461	16.1
Europe Distribution	258	9.7	261	9.1
Americas Materials	724	27.2	834	29.2
Americas Products	369	13.8	468	16.4
Americas Distribution	116	4.4	90	3.1
	2,665	100.0	2,860	100.0
Depreciation charge (including asset impairments)				
Europe Materials	174		159	
Europe Products	156		145	
Europe Distribution	59		46	
Americas Materials	260		263	
Americas Products	117		112	
Americas Distribution	15		14	
	781		739	
Amortisation of intangible assets				
Europe Materials	1		1	
Europe Products	12		8	
Europe Distribution	5		3	
Americas Materials	2		1	
Americas Products	14		16	
Americas Distribution	9		6	
	43		35	
Operating profit				
Europe Materials	631	34.3	586	28.1
Europe Products	224	12.2	308	14.8
Europe Distribution	194	10.5	212	10.2
Americas Materials	462	25.1	570	27.3
Americas Products	238	12.9	340	16.3
Americas Distribution	92	5.0	70	3.3
	1,841	100.0	2,086	100.0
Profit on disposal of non-current assets				
Europe Materials	16		29	
Europe Products	15		11	
Europe Distribution	15		3	
Americas Materials	20		11	
Americas Products	2		2	
Americas Distribution	1		1	
	69		57	

* EBITDA excludes profit on disposal of non-current assets and comprises Group operating profit (earnings) before interest, tax, depreciation, asset impairments and amortisation.

6 Geographical Analysis of Revenue, EBITDA and Operating Profit



	2008		2007	
	euro m	%	euro m	%
Revenue				
Ireland*	1,116	5.3	1,402	6.7
Benelux	3,070	14.7	2,918	13.9
Poland	849	4.1	710	3.4
Rest of Europe	6,150	29.4	5,672	27.0
Americas	9,702	46.5	10,290	49.0
	20,887	100.0	20,992	100.0
EBITDA**				
Ireland*	160	6.0	207	7.2
Benelux	354	13.3	354	12.4
Poland	262	9.8	218	7.5
Rest of Europe	680	25.6	687	24.1
Americas	1,209	45.3	1,394	48.8
	2,665	100.0	2,860	100.0
Depreciation charge (including asset impairments)				
Ireland*	49		48	
Benelux	93		82	
Poland	42		37	
Rest of Europe	205		183	
Americas	392		389	
	781		739	
Amortisation of intangible assets				
Ireland*	1		-	
Benelux	4		2	
Poland	-		-	
Rest of Europe	13		10	
Americas	25		23	
	43		35	
Operating profit				
Ireland*	110	6.0	159	7.6
Benelux	257	14.0	270	12.9
Poland	220	11.9	181	8.7
Rest of Europe	462	25.1	494	23.7
Americas	792	43.0	982	47.1
	1,841	100.0	2,086	100.0
Profit on disposal of non-current assets				
Ireland*	12		26	
Benelux	18		7	
Poland	-		-	
Rest of Europe	16		9	
Americas	23		15	
	69		57	

* Total island of Ireland

** EBITDA excludes profit on disposal of non-current assets and comprises Group operating profit (earnings) before interest, tax, depreciation, asset impairments and amortisation.

7 Proportionate Consolidation of Joint Ventures

<i>Group share of:</i>	2008 euro m	2007 euro m
Revenue	1,172	1,076
Cost of sales	(806)	(734)
Gross profit	366	342
Operating costs	(229)	(229)
Operating profit	137	113
Profit on disposal of non-current assets	1	-
Profit before finance costs	138	113
Finance costs (net)	(13)	(14)
Profit before tax	125	99
Income tax expense	(26)	(25)
Group profit for the financial year	99	74
Depreciation	50	43

8 Earnings per Ordinary Share

The computation of basic, diluted and cash earnings per share is set out below:

	2008 euro m	2007 euro m
Profit attributable to equity holders of the Company	1,248	1,430
Preference dividends paid	-	-
Numerator for basic and diluted earnings per Ordinary Share	1,248	1,430
Amortisation of intangibles	43	35
Depreciation charge (including asset impairments)	781	739
Numerator for cash earnings per Ordinary Share	2,072	2,204
	Number of Shares	Number of Shares
Denominator for basic earnings per Ordinary Share	535.5	544.3
Weighted average number of shares (millions) in issue	3.0	4.8
Effect of dilutive potential shares (share options)	538.5	549.1
Denominator for diluted earnings per Ordinary Share	538.5	549.1
	euro cent	euro cent
Earnings per Ordinary Share	233.1	262.7
- basic	231.8	260.4
- diluted	386.9	404.9
Cash earnings per Ordinary Share (i)	386.9	404.9

- (i) Cash earnings per share, a non-GAAP financial measure, is presented here for information as management believes it is a useful financial indicator of a company's ability to generate cash from operations.

9 Net Debt



	2008 euro m	2007 euro m
Net debt		
<i>Non-current assets</i>		
Derivative financial instruments	416	124
<i>Current assets</i>		
Derivative financial instruments	10	9
Liquid investments	128	318
Cash and cash equivalents	799	1,006
<i>Non-current liabilities</i>		
Interest-bearing loans and borrowings	(6,277)	(5,928)
Derivative financial instruments	(84)	(52)
<i>Current liabilities</i>		
Interest-bearing loans and borrowings	(1,021)	(570)
Derivative financial instruments	(62)	(70)
Total net debt	(6,091)	(5,163)
Including Group share of joint ventures' net debt	(153)	(164)

The movement in net debt for the year ended 31st December 2008 was as follows:

	At 1st January euro m	Cash flow euro m	Acquis- itions euro m	Mark-to- market euro m	Trans- lation euro m	At 31st December euro m
Cash and cash equivalents	1,006	(262)	68	-	(13)	799
Liquid investments	318	(175)	-	-	(15)	128
Interest-bearing loans and borrowings	(6,498)	(358)	(55)	(287)	(100)	(7,298)
Derivative financial instruments	11	100	-	281	(112)	280
Group net debt - including JVs	(5,163)	(695)	13	(6)	(240)	(6,091)

Liquidity information - borrowing facilities

The Group manages its borrowing ability by entering into committed borrowing agreements. Revolving committed bank facilities are generally available to the Group for periods of up to five years from the date of inception. The undrawn committed facilities available as at the balance sheet date, in respect of which all conditions precedent had been met, mature as follows:

	2008 euro m	2007 euro m
Within one year	589	195
Between one and two years	519	1,282
Between two and five years	409	122
After five years	49	-
	1,566	1,599

Lender covenants

The Group's major bank facilities and debt issued pursuant to Note Purchase Agreements in private placements require the Group to maintain its consolidated EBITDA/net interest cover (excluding share of joint ventures) at no lower than 4.5 times for twelve-month periods ending 30th June and 31st December. Non-compliance with financial covenants would give the relevant lenders the right to terminate facilities and demand early repayment of any sums thereunder thus altering the maturity profile of the Group's debt and the Group's liquidity.

10 Finance Costs, Net



Net finance costs for the financial year were as follows:

	2008 euro m	2007 euro m
Net Group finance costs on interest-bearing cash and cash equivalents, loans and borrowings	330	292
Net pensions financing credit	(15)	(15)
Unwinding of discount on provisions/deferred consideration	21	22
Net charge re change in fair value of derivatives	7	4
Total net finance costs	343	303
Including Group share of joint ventures' net finance costs	13	14

11 Summarised Cash Flow

The table below summarises the Group's cash flows for the years ended 31st December 2008 and 31st December 2007.

	2008 euro m	2007 euro m
Inflows		
Profit before tax	1,628	1,904
Depreciation (including asset impairments)	781	739
Amortisation of intangibles	43	35
	2,452	2,678
Outflows		
Working capital movements	(62)	227
Tax paid	(322)	(388)
Dividends	(369)	(318)
Capital expenditure	(1,039)	(1,028)
Other	(89)	(81)
	(1,881)	(1,588)
Operating cash inflow	571	1,090
Acquisitions and investments	(1,072)	(2,227)
Ordinary Shares purchased (Treasury and own shares), net	(383)	(31)
Proceeds from disposal of non-current assets	168	156
Share issues	28	104
Translation adjustment	(240)	237
Increase in net debt	(928)	(671)

12 Acquisitions

The principal business combinations completed during the year ended 31st December 2008 by reporting segment, together with the completion dates, were as follows; these transactions entailed the acquisition of a 100% stake where not indicated to the contrary:

Europe Materials: India: My Home Industries (45% acquired 22nd May, additional 5% acquired 22nd August); the Netherlands: Drentse Beton Centrale (30th September); Poland: Osielec quarry (4th January); Spain: Moron quarry (4th March); Switzerland: Belser (9th July); Turkey: 50% of readymixed concrete assets of Basaran RMC (15th January); Ukraine: BudUkrmaterial (15th August); United Kingdom: C4 Industries (30th January).

12 Acquisitions - continued



Europe Products: Belgium: Hela (29th January); China: Goldway Beijing & Sinasia (22nd January); Germany: Hammerl (26th February); Hungary: Ferrobeton (3rd April); Ireland: Concrete Stairs Systems (24th January); the Netherlands: Jonker Beton (15th April); Sweden: Distanssystem (12th May); United Kingdom: SWS (20th March) and Ancon (30th April).

Europe Distribution: France: Cleau (1st August); Germany: Paulsen (1st July); the Netherlands: Imabo Nieuwegein (20th May), Hagens Bouwmaterialen (28th May) and Hasco (1st August); Switzerland: Reco-Regusci (5th May) and Stürm (20th June).

Americas Materials: Colorado: Valco (22nd January), Varra Companies (7th July) and Casey Concrete (1st August); Florida: Ace Asphalt (15th July); Idaho: American Paving (16th May); Iowa: Bedrock Ready Mix (13th June); Massachusetts: Kroboth Companies (14th January); Mississippi: Bonds (15th September); Nebraska: Mallard Sand & Gravel (30th January); New York: New Windsor Equipment Rentals and Service (13th June); North Carolina: Western Materials (16th June); Ohio: HP Streicher (18th January); Oregon: Dalton Rock (15th September); Tennessee: Renfro Construction Company (14th February) and Highland Sand Company (4th April); Utah: Dixie Redi-Mix (7th March), Holdaway Pit (15th April) and JR Ready Mix (21st November); Virginia: Floyd Asphalt Paving Company (2nd January).

Americas Products: North America – California: Underground Precast Solutions (20th August); Florida: Pilot Steel Assets (28th April) and Gem Seal (21st July); Georgia: Southern Drainage Products & Supply (14th April); Iowa: Waupaca Northwoods (12th November, also Missouri, Wisconsin); Kentucky: remaining 50% of Landmark (1st February); Nevada: Tri-Delta (14th April); South America - Chile: 81% of Comercial Duomo (26th February).

Americas Distribution: North America – Illinois: Tri-State Roofing & Siding Wholesale (3rd March, also Wisconsin).

	2008 euro m	2007 euro m
<i>Identifiable net assets acquired (excluding net debt assumed)</i>		
Non-current assets		
Property, plant and equipment	429	999
Intangible assets	412	935
Investments in associates/other financial assets	3	(44)
Deferred tax assets	1	18
	<u>845</u>	<u>1,908</u>
Current assets		
Inventories	66	263
Trade and other receivables	126	411
	<u>192</u>	<u>674</u>
Minority interest	4	(25)
Non-current liabilities		
Deferred income tax liabilities	(82)	(122)
Retirement benefit obligations	(8)	(19)
Provisions for liabilities	-	(3)
Capital grants	(2)	-
	<u>(92)</u>	<u>(144)</u>
Current liabilities		
Trade and other payables	(89)	(313)
Current income tax liabilities	(12)	(6)
Provisions for liabilities	(4)	17
	<u>(105)</u>	<u>(302)</u>
Total consideration (enterprise value)	<u>844</u>	<u>2,111</u>

12 Acquisitions - continued

<i>Consideration satisfied by:</i>	2008 euro m	2007 euro m
Cash payments	837	1,922
Professional fees incurred	8	19
Cash and cash equivalents acquired	(68)	(83)
Net cash outflow	777	1,858
Net debt (other than cash and cash equivalents) assumed on acquisitions		
- non-current interest bearing loans and borrowings	9	22
- current interest bearing loans and borrowings	46	200
Deferred and contingent acquisition consideration (NPC)	12	31
Total consideration (enterprise value)	844	2,111

None of the business combinations completed during the financial year was considered sufficiently material to warrant separate disclosure of the attributable fair values.

No contingent liabilities were recognised on the business combinations completed during the financial year or the prior financial years.

The principal factor contributing to the recognition of goodwill on business combinations entered into by the Group is the realisation of cost savings and synergies with existing entities in the Group. Intangible assets arising on acquisitions completed during the financial year ended 31st December 2008, together with exchange translation, account for the majority of the net increase in intangible assets disclosed in the Group Balance Sheet on page 12.

The carrying amounts of the assets and liabilities acquired determined in accordance with IFRS before completion of the combination, together with the adjustments made to those carrying values to arrive at the fair values disclosed above, were as follows:

	Book values euro m	Fair value adjustments euro m	Accounting policy alignments euro m	Adjustments to provisional fair values euro m	Fair values euro m
Non-current assets (excluding goodwill)	212	266	2	5	485
Current assets	193	-	(3)	2	192
Non-current liabilities	(23)	(68)	-	(1)	(92)
Current liabilities	(96)	(4)	3	(8)	(105)
Minority interest	4	-	-	-	4
Identifiable net assets acquired	290	194	2	(2)	484
Goodwill arising on acquisition	543	(194)	(2)	13	360
Total consideration (enterprise value)	833	-	-	11	844

The initial assignment of fair values to identifiable net assets acquired has been performed on a provisional basis in respect of a number of the business combinations disclosed above given the timing of closure of these deals; any amendments to these fair values made during the subsequent reporting window (within the twelve-month timeframe from the acquisition date imposed by IFRS 3) will be subject to subsequent disclosure. The total adjustments processed in 2008 to the fair values of business combinations undertaken during the 2007 financial year, where those fair values were not readily or practicably determinable as at 31st December 2007, are identified in the column entitled "adjustments to provisional fair values" in the table above.

12 Acquisitions - continued

The post-acquisition impact of business combinations completed during the year on Group profit for the financial year was as follows:

	2008 euro m	2007 euro m
Revenue	530	1,215
Cost of sales	(392)	(881)
Gross profit	138	334
Operating costs	(85)	(233)
Group operating profit	53	101
Profit on disposal of non-current assets	-	-
Profit before finance costs	53	101
Finance costs (net)	(26)	(42)
Profit before tax	27	59
Income tax expense	(8)	(18)
Group profit for the financial period	19	41

The revenue and profit of the Group determined in accordance with IFRS for the year ended 31st December 2008 would not have been materially different than reported on page 11 if the acquisition date for all the business combinations completed during the year had been as of the beginning of that year.

A number of business combinations have been completed subsequent to the balance sheet date, none of which is individually material to the Group.

13 Changes in Share Capital and Reserves

	2008 euro m	2007 euro m
Total equity at beginning of year	8,020	7,104
Issue of shares:		
- Share option and participation schemes	6	36
- Issued in lieu of dividends	22	68
Treasury Shares and own shares purchased, net	(383)	(31)
Share-based payment expense	24	23
Dividends	(369)	(318)
Movement in minority interest	4	25
<i>Items of income/(expense) recognised directly within equity:</i>		
Currency translation effects	(97)	(410)
Actuarial (loss)/gain on defined benefit pension obligations	(348)	159
(Losses)/gains relating to cash flow hedges	(28)	8
Tax on items recognised directly within equity	58	(74)
Profit for the year attributable to equity holders	1,248	1,430
Total equity at end of year	8,157	8,020

14 Retirement Benefit Obligations

The Group operates either defined benefit or defined contribution pension schemes in all of its principal operating areas. In consultation with the actuaries to the various defined benefit pension schemes (including post-retirement healthcare obligations and long-term service commitments, where relevant), the valuations of the applicable assets and liabilities have been marked-to-market as at the end of the financial year taking account of prevailing bid values, actual investment returns and corporate bond yields and other matters such as updated actuarial valuations conducted during the financial year.

The financial assumptions employed in the valuation of scheme liabilities for the current and prior financial years were as follows:

	Eurozone		Britain & NI		Switzerland		United States	
	2008	2007	2008	2007	2008	2007	2008	2007
Rate of increase in:	%	%	%	%	%	%	%	%
- salaries	3.80	4.25	3.50	4.00	2.25	2.25	3.50	4.50
- pensions in payment	1.80	2.25	2.75 - 3.25	3.25	0.50	1.00	-	-
Inflation	1.80	2.25	2.75	3.00	1.50	1.50	2.00	2.50
Discount rate	5.80	5.50	6.25	5.75	3.50	3.50	6.25	6.25
Medical cost trend	5.25	5.25	n/a	n/a	n/a	n/a	10.00	11.00

The following table provides a reconciliation of scheme assets (at bid value) and the actuarial value of scheme liabilities (using the aforementioned assumptions):

	Assets		Liabilities		Net deficit	
	2008	2007	2008	2007	2008	2007
	euro m	euro m	euro m	euro m	euro m	euro m
At 1st January	1,836	1,739	(1,931)	(2,001)	(95)	(262)
Translation adjustment	(40)	(67)	53	79	13	12
Arising on acquisition	10	133	(18)	(152)	(8)	(19)
Employer contributions paid	59	62	-	-	59	62
Employee contributions paid	19	17	(19)	(17)	-	-
Benefit payments	(116)	(84)	116	84	-	-
Actual return on scheme assets	(364)	46	-	-	(364)	46
Change in asset limit adjustment	10	(10)	-	-	10	(10)
Current service cost	-	-	(51)	(60)	(51)	(60)
Past service cost	-	-	(1)	(2)	(1)	(2)
Curtailement gain	-	-	2	-	2	-
Interest cost on scheme liabilities	-	-	(98)	(92)	(98)	(92)
Actuarial gain/(loss) arising on:						
- experience variations	-	-	(15)	(25)	(15)	(25)
- changes in assumptions	-	-	134	255	134	255
At 31st December	1,414	1,836	(1,828)	(1,931)	(414)	(95)
Related deferred tax asset (net)					94	33
Net pension liability					(320)	(62)

15 Related Party Transactions

There have been no related party transactions or changes in related party transactions that could have a material impact on the financial position or performance of the Group during the 2008 financial year. Sales to and purchases from associates during the year ended 31st December 2008 amounted to euro 17 million (2007: euro 19 million) and euro 584 million (2007: euro 497 million) respectively. Amounts receivable from and payable to associates as at the balance sheet date are not material and are included in trade and other receivables and payables in the Group Balance Sheet.



16 Other

	2008	2007
EBITDA interest cover (times)	7.8	9.4
EBIT interest cover (times)	5.4	6.9
<i>EBITDA = earnings before interest, tax, depreciation and amortisation, excluding profits on disposal</i>		
<i>EBIT = earnings before interest and tax, excluding profits on disposal</i>		
Average shares in issue	535.5m	544.3m
Net dividend per share (euro cent)	69c	68c
Dividend cover (Earnings per share/Dividend per share)	3.4x	3.9x
Depreciation charge (including asset impairments)		
– subsidiaries (euro m)	731	696
– share of joint ventures (euro m)	50	43
Amortisation of intangibles – subsidiaries (euro m)	43	35
Amortisation of intangibles – share of joint ventures (euro m)	-	-
Share-based payment expense (euro m)	24	23
Income tax expense - Irish tax (euro m)	18	13
Income tax expense - overseas tax (euro m)	259	413
Income tax expense - deferred tax (euro m)	89	40
Market capitalisation at year-end (euro m)	9,502	13,051
Total equity at year-end (euro m)	8,157	8,020
Net debt (euro m)	6,091	5,163
Net debt as a percentage of total equity	75%	64%
Net debt as a percentage of market capitalisation	64%	40%

17 Statutory Accounts

The financial information presented in this report does not represent full statutory accounts. Full statutory accounts for the year ended 31st December 2008 prepared in accordance with IFRS, upon which the Auditors have given an unqualified audit report, have not yet been filed with the Registrar of Companies. Full accounts for the year ended 31st December 2007, prepared in accordance with IFRS and containing an unqualified audit report, have been delivered to the Registrar of Companies.

18 Board Approval

This announcement was approved by the Board of Directors of CRH plc on 3rd March 2009.

19 Annual Report and Annual General Meeting (AGM)

The 2008 Annual Report is expected to be posted to those shareholders who have requested a paper copy on Wednesday, 1st April 2009 together with details of the Scrip Dividend Offer in respect of the final 2008 dividend. The 2008 Annual Report will be available on the Company's website, www.crh.com, from Thursday 2nd April 2009. A paper copy of the Annual Report may be obtained at the Company's registered office from that date. The Company's AGM is scheduled to be held in the Royal Marine Hotel, Dun Laoghaire, Co. Dublin at 11am on Wednesday, 6th May 2009.

APPENDIX AC

ANY AMENDMENTS TO THE CRAMP

AC 1. Revised Closure, Restoration & Aftercare Management Plan (Rev B) was issued in October 2008, refer to enclosed copy.

ROADSTONE DUBLIN LIMITED

REMEDIATION OF UNAUTHORISED LANDFILL SITES

AT DORAN'S PIT, BLESSINGTON, CO. WICKLOW

**CLOSURE, RESTORATION AND AFTERCARE MANAGEMENT
PLAN (CRAMP)**

OCTOBER 2008



Prepared by :

John Barnett and Associates
6 / 7 Dundrum Business Park
Windy Arbour
Dublin 14

Prepared for :

Roadstone Dublin Limited
Fortunestown
Dublin 24

Roadstone Dublin Limited

Remediation of Unauthorised Landfill Sites

Closure, Restoration & Aftercare Management Plan (CRAMP)

PROJECT DETAILS
CLIENT : Roadstone Dublin Limited
PROJECT : Remediation of Unauthorised Landfill Sites, Blossington, Co. Wicklow
JOB NO : 3545/05

DOCUMENT TITLE	REVISION	STATUS	DATE
Closure, Restoration & Aftercare Management Plan	Draft	For review / comment	6 June 2006
Closure, Restoration & Aftercare Management Plan	Final Draft	For review / comment	8 June 2006
Closure, Restoration & Aftercare Management Plan	Rev 0	Issued	9 June 2006
Closure, Restoration & Aftercare Management Plan	Rev A	Issued	15 May 2008
Closure, Restoration & Aftercare Management Plan	Rev B	Issued	13 Oct 2008

REV.	FILE REFERENCE	AUTHOR	REVIEWED	APPROVED	DATE
Draft	3545_05/tp/dl/pmc	Tim Paul	Derek Luby	Tim Paul	6 June 2006
Final Draft	2006_06_08JBA3545-05CRAMP01tp/dl/pmc	Tim Paul	Derek Luby	Tim Paul	8 June 2006
Issued	2006_06_09JBA3545-05CRAMP01tp/dl/pmc	Tim Paul	Derek Luby	Tim Paul	9 June 2006
Issued	2008_05_15JBA3545-05CRAMP01tp/dl/pmc	Derek Luby	Tim Paul	Tim Paul	15 May 2008
Issued	2008_10_13JBA3545-05CRAMP01tp/dl/pmc	Derek Luby	Tim Paul	Tim Paul	13 Oct 2008

DISTRIBUTION				NO. OF COPIES
	Paper	Disk	E-mail	
Roadstone Dublin Limited	✓		✓	2
Mouchel Parkman (Mark Hinsley)	✓		✓	1
Environmental Protection Agency	✓			3
JBA File	✓			1

Report No 2008_10_13JBA3545-05CRAMP01/tp/dl/pmc

13 October 2008

Rev B

CONTENTS

Document Issue Sheet

1.0	Introduction
2.0	Scope of the Plan
3.0	Criteria for Closure and Restoration of the Facility
4.0	Restoration Scheme
5.0	Aftercare Management Plan
6.0	Budget Costing & Programme
7.0	Final Validation Report

Figures	C0	Site Planning / Waste Licence Areas
	C1	Site Location
	C2	Site Layout
	C3.1a	Area 1: Original Situation – Plan & Section
	C3.1b	Area 1: Restoration – Plan & Section
	C3.4a	Area 4: Original Situation – Plan & Sections
	C3.4b	Area 4: Restoration – Plan & Sections
	C3.6a	Area 6: Original Situation – Plan & Sections
	C3.6b	Area 6: Restoration – Plan & Sections
	C3.6c	Area 6: Treatment of Drainage Channel - Plan & Section
	C3.6d	Site Access Road – Plan
	C4	Environmental Monitoring Plan (Post-Restoration)

Appendices	A	Planning Consents (Restoration Conditions)
	B	Environmental Monitoring Plan (Post-Restoration)
	C	Landscaping Specification
	D	Programme for the Restoration Works

Roadstone Dublin Ltd

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

1.0 INTRODUCTION

This Closure, Restoration and Aftercare Management Plan (CRAMP) has been prepared in compliance with Condition No. 10 of Waste Licence No W0213-01, issued to Roadstone Dublin Ltd. for the Remediation of Unauthorised Landfill Sites at Blessington Co. Wicklow. The site location and site layout are shown on Figures C1 and C2, respectively.

The scope of this document is outlined in Section 2.0. Criteria for the successful closure and restoration of the facility are provided in Section 3.0. The proposed restoration scheme(s) for each of the three areas to be remediated are described in Section 4.0. Provisions for aftercare management are presented in Section 5.0. An outline costing and programme are provided in Section 6.0. Section 7.0 provides details of the final validation report.

Restoration of lands is currently being undertaken by the Waste Licensee at Area 1 Area 1 West and at Area 4 and has been substantially completed. Final restoration of the lands at Area 6 will be undertaken by third parties concurrent with future construction of the Blessington Inner Relief Road (in accordance with the outline scheme shown in Figures C3.6b and C3.6c). Final Restoration of the Waste Licensees landholding, incorporating the remediated areas under this waste licence, W0213-01, will be subject to a future Waste Licence application in order to comply with existing and proposed planning permissions and conditions set down by section 261 under Quarries Registration.

The CRAMP takes into account, where relevant, guidance contained in the publication '*Landfill Manuals - Landfill Restoration and Aftercare*' (EPA, 1999).

This version of the CRAMP is the second revision (Rev. B) to the original issued in June 2006 and has been modified to take account of the progression and evolution of the site remediation works and the operational and planning requirements of the adjoining quarry over the intervening period. The CRAMP will be reviewed and revised as required as the site restoration and aftercare works progress. Any further amendment to this CRAMP will be notified to the EPA (hereafter referred to as 'the Agency') for written agreement, in compliance with Condition No. 10.5.3 of Waste Licence WL0213-01.

Conditions attaching to several planning consents require the Licensee to restore former extractive areas across the Doran's Pit complex. The relevant conditions from these consents are reproduced in Appendix A. They attach to extant planning permissions, recent planning permissions currently under appeal to An Bord Pleanála and/or planning conditions drafted by the Planning Authorities in accordance with Section 261 of the Planning and Development Act 2000. Figure C0 shows the relationship between the existing waste licence area (W0213-01) and those covered by various planning consents.

As can be seen, some worked out areas of the Doran's Pit complex are not covered by any existing planning consent. Rather than approach the site restoration works on a piecemeal basis, the Licensee intends to prepare a masterplan in the near future which will provide a coherent vision for final restoration of worked-out lands (including the waste licence area) and its long-term land-use. It is anticipated that this masterplan will be developed and agreed with both Kildare and Wicklow County Councils and that it may require some additional planning consent. Given the likely scale of the works, it will also require a new waste licence to provide for importation and backfilling and/or raising of worked-out areas using inert soil and stones.

This version of the CRAMP will therefore be subsumed into, and superseded by, a future CRAMP which will be developed as part of the new waste licence which the Licensee will apply for in the near future.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

2.0 SCOPE OF THE PLAN

The objective of the CRAMP is to ensure that the three excavated waste areas (Areas 1, 4 and 6 shown on Figure C2) are restored to grassland.

The scope of the CRAMP includes:

- i) Criteria for Closure and Restoration of the Remediation Facility
- ii) Retention of buildings, wheelwashes, weighbridges, wells, drainage infrastructure and paved areas at Area 4 Process Yard and at the site entrance for future quarry use (subject to grant of planning permission, Reg. Ref. 08/1345).
- iii) Removal of temporary offices, all waste management infrastructure including processing and recycling plant, machinery and equipment and any waste, materials or substance or other materials that may present a risk of environmental pollution.
- iv) Restoration of the excavated unauthorised landfill sites to grassland.
- v) Modification of Area 1W to provide storage facility for silt arisings generated by sand washing at the quarry.
- vi) Provision of an aftercare management plan for the restored areas.
- vii) Provision of a final validation report to confirm that there is no continuing risk to the environment.
- viii) Outline costing and programme for implementation of the CRAMP.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

3.0 CRITERIA FOR CLOSURE AND RESTORATION OF THE FACILITY

In accordance with Condition No. 10.6.2 of the Licence, the following criteria have been adopted as benchmarks for the successful closure and restoration of the licensed facility, and to ensure minimum impact to the surrounding environment:

- i) Removal of all domestic, commercial and other non-inert wastes off-site to external approved disposal and/or recovery facilities. Completed December 2007.
- ii) Retention of buildings, wheelwashes, weighbridges, wells, drainage infrastructure and paved areas at Area 4 Process Yard and at the site entrance for future quarry use (subject to grant of planning permission, Reg. Ref. 08/1345, request for additional information issued 22 September 2008).
- iii) Removal of temporary offices, all waste management infrastructure including processing and recovery plant, machinery and equipment and any waste, materials or substances or other materials that may present a risk of environmental pollution. Completed Q2 2008.
- iv) Restoration of the excavated unauthorized landfill sites to grassland. Ongoing.
- v) Landfill derived gas concentrations shall be measured (post-restoration) at monitoring locations within the restored areas, and at off-site locations. Should monitoring indicate an exceedence of the emission limit values contained in Schedule B1 of the licence (Methane (1% v/v), Carbon Dioxide (1.5% v/v)), a residual risk assessment will be completed and submitted to the Agency. Ongoing.
- vi) Groundwater quality shall be measured (post restoration) at monitoring locations shown in the Environmental Monitoring Plan, refer to Appendix B. If testing for any parameter indicates an exceedence on threshold limits agreed with the EPA under Condition No. 6.23 of the Licence, a residual risk assessment will be completed and submitted to the Agency. Ongoing

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

4.0 RESTORATION SCHEME

As stated in Section 2.0 above, the principal restoration objective at this site is to restore the three excavated waste areas to grassland. The completion of the Blessington Inner Relief Road will cross part of Area 6, and the proposed road alignment has been adopted in the restoration scheme for this area.

The original ground levels and cross-sections for each of the four areas Area 1, Area 1W, Area 4 and Area 6 are shown on Figures C3.1a, C3.4a and C3.6a. Final restored contours are shown on Figures C3.1b, C3.1c, C3.4b and C3.6b together with cross-sections showing final excavation levels and final restored levels.

Retention of buildings, wheelwashes, weighbridges, wells, drainage infrastructure and paved areas at Area 4 Process Yard and at the site entrance for future quarry use (subject to grant of planning permission, Reg. Ref. 08/1345, request for additional information issued 22 September 2008).

All waste management infrastructure including processing and recovery plant, machinery and equipment and any waste, materials or substances or other materials that may present a risk of environmental pollution have been removed from the site.

The proposed restoration methodology will be based on the Environmental Protection Agency (1999) *Landfill Manuals : Landfill Restoration and Aftercare – Appendix C: Agricultural Restoration and Aftercare*.

Restoration Methodology

- Final Landform:** Restored areas will be profiled so that the slopes are stable and so that surface water run-off is directed to a surface water body as at Area 1 and Area 1W and a roadside drainage system as at Areas 4 and Area 6. The final landforms at Area 1, Area 1W and Area 4 require minimal re-contouring and additional earthworks following completion of excavation and remediation works, refer to Figures C3.1b, C3.1c and C3.4b. Final restoration works in these areas are currently in progress and are substantially complete.
- The landform at Area 6 in contrast requires importation and placement of further inert material in order to create the landform for the proposed Blessington Inner Relief Road, refer to Figure C3.6b and C6.c. It is intended that final restoration of the lands at Area 6 will be undertaken by third parties concurrent with future construction of the Blessington Inner Relief Road.
- Only inert materials meeting the standards specified in the EU Council Decision 2003/33/EC shall be used in the restoration operations (in accordance with Condition No. 8.7.2 of the Licence)
- Soil Profile:** Up to 50mm of topsoil will be overlaid on graded subsoil surfaces. Topsoil shall have no more than 5% stones.
- Rootable depth:** The entire topsoil / subsoil profile will be capable of exploitation by plant roots.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

-
- Planting:** The ground surface will be revegetated by a combination of grass seeding and natural recolonisation. Hydroseeding may be considered as an alternative to the traditional sowing of dry seed.
- Hedgerows:** Area 6 – Reinforce the existing hedgerow along the eastern boundary with the Woodleigh Estate, particularly where gaps arise. This work will be undertaken by third parties concurrent with future construction of the Blessington Inner Relief Road.
- Fencing:** Provide stock-proof post and wire fencing around the perimeter of each restoration area. As of the time of writing, this work is substantially complete.
- Access:** Access will be maintained to each area for ongoing aftercare and agricultural use.
- Drainage** The final landforms, as shown on Figures C3.1b, C3.1c, C3.4b and C3.6b will allow for natural drainage of the lands. In the short-to medium term, in advance of the preparation of the final restoration masterplan for the Doran's Pit complex, surface water run-off will be directed to a surface water body in a closed depression at Area 1. The ponded water will either evaporate (during summer) or will infiltrate into the underlying sand and gravel. The surface water body will be perched at least 10m above the phreatic water level in the sand and gravel aquifer. It is necessary to provide a surface water feature at the location proposed as it is at a low point, at the bottom of a closed depression, from where surface water run-off cannot be removed by gravity flow.
- Surface water run-off around Area 1W will either be retained within the proposed bunded storage facility for silt arisings or will run-off over the ground surface to the large existing groundwater pond at the western end of the quarry site.
- At Area 4, surface water run-off will fall to a roadside drainage system along the eastern and northern boundaries. The collected run off will discharge to the surface water body at a low point to the north of the existing cyclone and from there will either evaporate or infiltrate into the underlying sand and gravel.
- At Area 6, over the short-term, surface water run-off will be directed to low points at the base of the excavation. The water collecting in these areas will either evaporate (during summer) or will infiltrate into the underlying sand and gravel. The surface water body will be perched at least 8m to 10m above the phreatic water level in the sand and gravel aquifer. In the medium to long term, surface water run-off will fall to the roadside drainage system along the proposed Blessington Inner Relief Road and will be directed from there to a discharge point along the Burgess Stream beyond the site boundary. It is currently envisaged that the inner relief road and the roadside drainage system will be constructed by third parties following surrender of the Waste Licence. At that time, the landform beyond the site boundary will be modified to accommodate the drainage system and its connection to the pre-existing outfall to the Burgess Stream.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

Drainage ditches will be provided around the perimeter of the site, and this will allow for natural infiltration of surface water run-off into the underlying sand & gravel.

At present there is a spring-fed channel eroded into the natural sand and gravel along the western side of Area 6. This will remain in-situ over the short term. Over the medium to long term, it is envisaged that the channel will be backfilled over during the construction of the Blessington Inner Relief Road. Prior to backfilling above this channel to create the ground profile indicated on Figure C3.6b, the channel will be culverted along its length (using a 225mm diameter PVC drainage pipe) and surrounded by granular single-sized drainage stone, refer to Figure 3.6c. The drainage pipe will collect groundwater emerging along the spring line and transfer it to a soakaway to be constructed at a low point above to the specification and design indicated on Figure 3.6c.

Landscaping

The excavated waste areas will ultimately be restored to grassland / natural vegetation.

The existing hedgerow along the eastern boundary of the Area 6 will be reinforced, where required as part of the future construction works for the Blessington Inner Relief Road. It is currently envisaged that planting will consist of a narrow belt of woody trees / shrubs (principally whitethorn, hawthorn, ash and rowan). Two parallel staggered rows 300 mm apart will be planted with a total of 6 - 8 transplants per metre run (450 - 600 mm high). An outline Landscaping Specification is provided in Appendix C

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

5.0 AFTERCARE MANAGEMENT PLAN

The active phase of the Aftercare Management Plan will comprise three main activities:

i) Soil Husbandry:

The development of soil will be encouraged by:

- Assessing and checking soil to monitor the level of plant nutrients.
- Checking for signs of soil compaction
- Checking that drainage systems are functioning adequately

ii) Crop Husbandry:

The lands are to be restored to grasslands, and the quality of the grassland will be assisted by:

- Ensuring machinery operations on the restored lands are kept to a minimum
- Avoiding over-stocking and over-grazing
- If necessary, carrying out weed control.

iii) Environmental Monitoring (Post-Restoration):

A programme of landfill gas and surface water / groundwater quality monitoring will be continued post-completion of the remediation works for a 12 month period from December 2007 or until such time as the waste licence is surrendered, whichever is shorter. The proposed frequency of monitoring is as follows:

- Landfill Gas : Monthly for the entire twelve month restoration and aftercare period
- Surface water: Weekly within the first three months, and monthly thereafter.
- Groundwater: Monthly within the first three months, and quarterly thereafter.

The monitoring locations are shown on Figure C4, and further details of the monitoring programme are provided in Appendix B. The monitoring results for the first 3 months will be incorporated into the environmental management system (EMS) and will be included in the final validation report (refer to Section 7.0 below).

It is envisaged that the duration of the active aftercare management period will be 12 months from completion of the waste excavation and remediation works in December 2007 or until such time as the waste licence is surrendered, whichever is shorter.

Following this, aftercare will revert to a more passive approach relating to grazing activities, periodic inspections and maintenance of boundary fences / accesses.

The aftercare management plan will be supervised by the Facility Manager or other designated Roadstone Dublin Ltd. staff member.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP**6.0 BUDGET COSTING AND OUTLINE PROGRAMME****Budget Costing:**

It is envisaged that the budget cost of implementing the CRAMP for each of the three excavated areas will be as follows:

Work Element	Area 6 (€)	Area 4 (€)	Areas 1 and 1W (€)
Earthworks	52,500	7,500	7,500
Drainage	2,500	N/A	N/A
Soakaway	1,000	N/A	N/A
Grass-seeding	3,850	9800	26,950
Fencing	500	750	1,750
Reinforce Hedgerow (Area 6)	5,000	N/A	N/A
Post Restoration Topographic Surveys	1,500	1,000	3,000
Post Restoration Monitoring	20,000	12,000	40,000
Total Cost (Ex. VAT)	€86,850	€25,050	€79,200

The total cost estimate for implementation of the CRAMP is €191,100. This budget cost estimate will be reviewed, and updated, as the remediation works progress. With the exception of the works associated with the restoration of Area 6, which will be borne by the Developer constructing the Blessington Inner Relief Road, all costs will be borne by Roadstone Dublin Ltd. Provision has been made in the company's financial accounts to cover the cost of the remediation works, including the CRAMP.

Programme

A copy of the programme for the restoration works is provided in Appendix D. This indicates that the short-term backfilling and restoration work at the three unauthorised landfill sites is expected to be substantially complete within 2-3 months and 12 months respectively of completing the waste excavation work across the licenced area. As of the time of writing these works are substantially complete.

Post-restoration monitoring will be carried out over a 12 month period immediately following completion of waste excavation works in December 2007 or until such time as the waste licence is surrendered, whichever is shorter. The results of this monitoring programme will be used in preparing the final validation report for the site.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

7.0 FINAL VALIDATION

As required by Condition No. 10.7 of the Licence a Final Validation Report (including a Certificate of Completion for the CRAMP) for the site will be submitted to the Agency within 3 months of completion of work outlined.

Following completion of the site excavation works at each of the three unauthorised landfill sites, a Validation Report was submitted to the Agency. It is envisaged that the final validation reports will incorporate early restoration phase monitoring data for the first 3 months of 2008 and that these will be used to support an application for surrender of the waste licence.

The final validation report will state how the requirements of the waste licence have been met during the operation of the facility and provide flow / mass balance diagrams detailing the final fate of all waste and recovered materials excavated.

The Final Validation Report(s) will include:

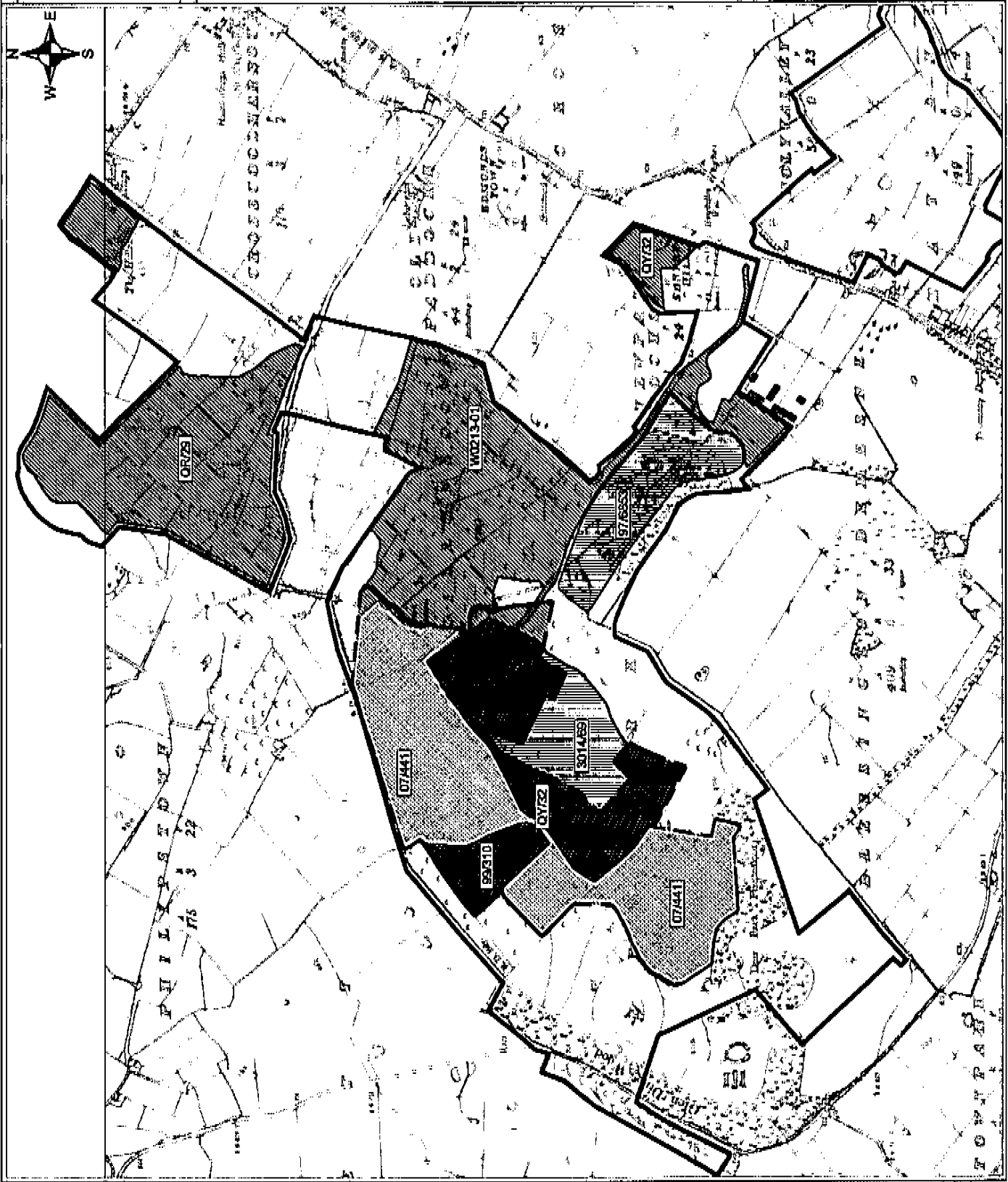
- i) Final 'As-Restored' drawings and photographs (before, during and after) for each excavated waste area. Drawings to show sampling locations for validation samples; locations of monitoring and exploration boreholes and trial pits and cross-sections ('as excavated' and 'restored')
- ii) Results of validation testing and post-restoration monitoring (including first three months post excavation):
 - Test results for soil at the base of the excavation
 - test results for all acceptable material to be used in the restoration works
 - landfill gas monitoring results
 - groundwater and surface water quality monitoring results.
- iii) Final re-run of the Quantitative Risk Assessment (QRA) for each of the restored areas to confirm that the risks to groundwater (at the 100 metre compliance point from the Roadstone land ownership boundary) are insignificant.
- iv) A Certificate of Completion for the CRAMP.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

FIGURES

NOTES



LEGEND

- FOL Land Ownership (e.g. DILK)
- ▨ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▤ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▥ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▧ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▨ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▤ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▥ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)
- ▧ (Diagonal Hatching) ODCB (Co. Wick) ODCB (Co. Wick)

Revision	By	Check'd By	Date	Description
0	PMC	DL	10/08	REVISION COMMENT 1 REVISION COMMENT 2 REVISION COMMENT 3

re roadstone
ROADSTONE DUBLIN LTD.
 FORTUNESTOWN
 TALLAGHT
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Collaborative Working Agreement No. 01/000709
 (c) Dublin City Council and Owners of Land

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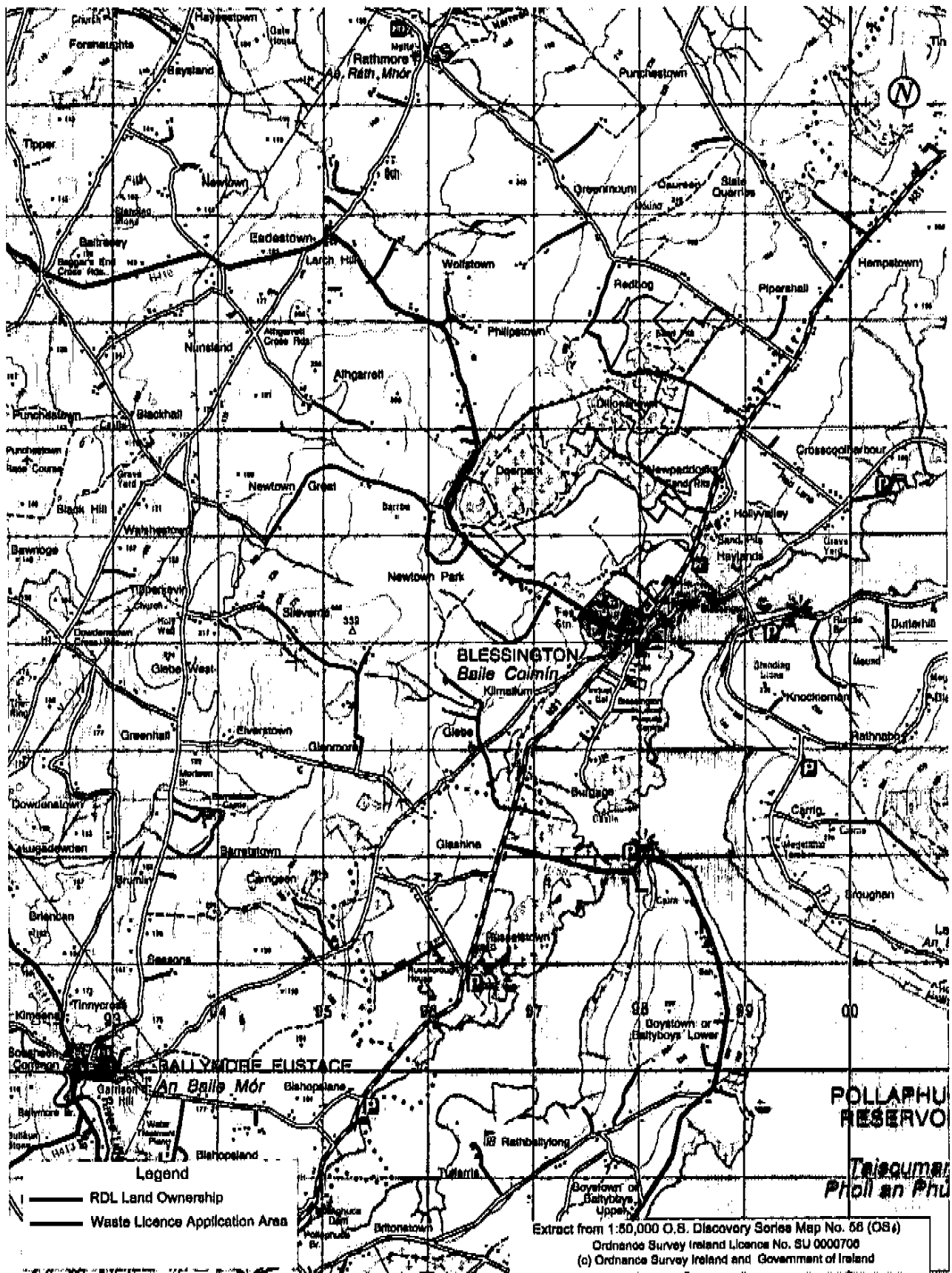
Site: **Lands at Blessington, Co. Wicklow**

Project: **Remediation of Unauthorised Landfill Sites**

Drawing Title: **Planning Permission Granted Area**

Project File Reference	Drawn By
DC59-0005.05.19.000.0	PMC
Scale	Check'd By
1:10,000@A3	DL
Drawing Number	Revision
DRAWING 0	0

FINAL DRAFT



ROADSTONE DUBLIN LTD.
 PORTLINGTON
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 JOHN BARNETT & ASSOCIATES
 7 DUNDUM BUSINESS PARK
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 DUBLIN 14

Site:	Lands at Blessington, Co. Wicklow	
Project:	Remediation of Unauthorised Landfill Sites	
Title:	Site Location	
Drawn: pmc	Scale: 1: 50,000	FIGURE C1
Job. No: 3545-05	Date: May 2006	



Site:	Lands of Blessington, Co. Wicklow
Project:	Remediation of Unauthorised Landfill Sites
Title:	Site Layout
Drawn: PM	Scale: 1:5000
Job No: 35-05-05	Date: May 2006
FIGURE C2	

Rev.	Date	By	Description
B	May 2006	PM/C	W/L Axis Revised
A	May 2006	PM/C	Scrapable Areas Revised

Rev.	Date	By	Description
			Scrapable Areas Revised
			W/L Axis Revised
			Gas Monitoring Well
			Groundwater Monitoring Well
			Scrapable Soil (Temporary)
			Whole Licence Boundary
			Residential Landfilling Boundary

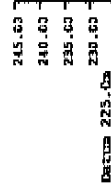
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DUBLIN 24



EXISTING GROUND LEVEL

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TALLAGHT
DUBLIN 24

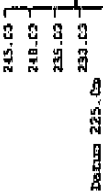
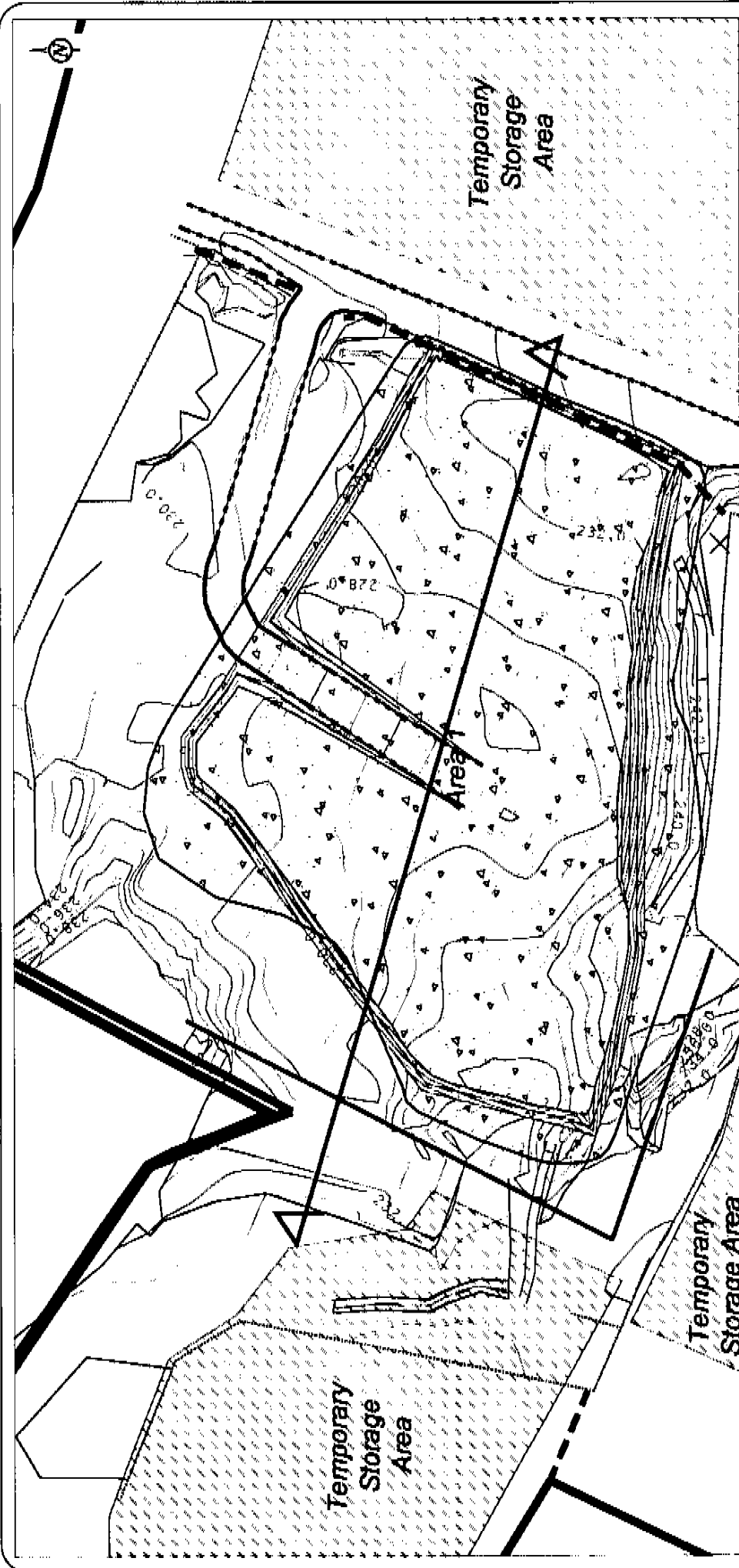
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Rev.	Date	By	Description

Site: Lands of Blessington, Co. Wicklow
Project: Remediation of Unauthorised Landfill Sites
Title: Area 1-Existing Situation - Plan and Section
Drawn: PM
Job No: 04-05
Scale: 1:1,000
Date: May 2006

FIGURE C3.1a



EXISTING GROUND LEVEL

APPROX. BASE OF EXCAVATION

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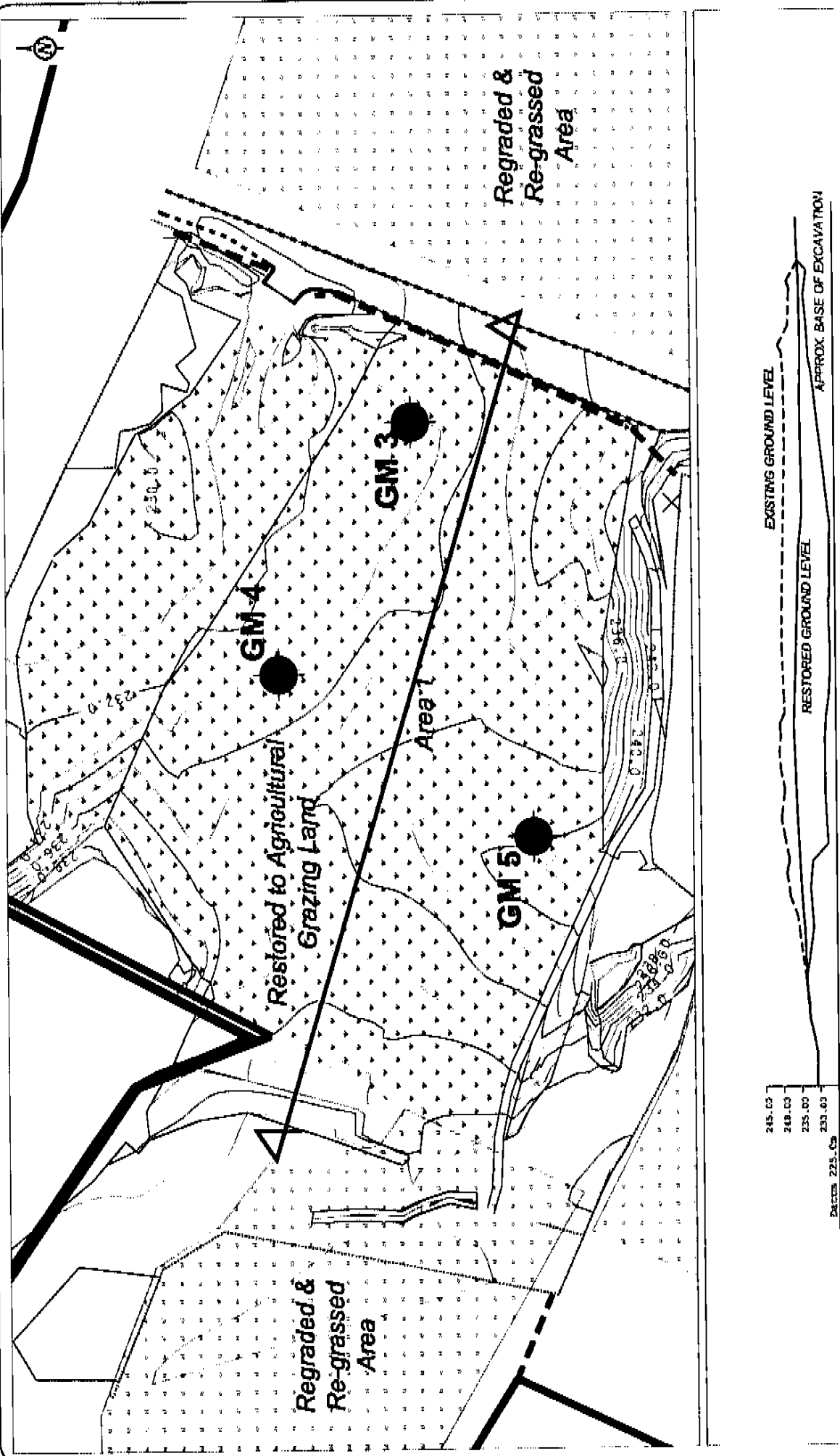
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Rev.	Date	By	Description

Site: Lands at Blessington, Co. Wicklow
Project: Remediation of Unauthorised Landfill Sites
Title: Area 1-Base of Excavation - Plan and Section
Drawn: PM
Scale: 1:1,000
Job. No: 3645-06
Date: May 2006

FIGURE C



Site: Lands at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Area 1 Restored - Plan and Section
 Drawn: PM
 Scale: 1:1,000
 Job. No: 5545-05
 Date: May 2005

Rev.	Date	By	Description

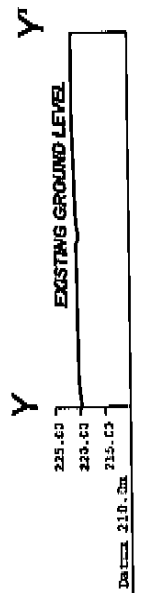
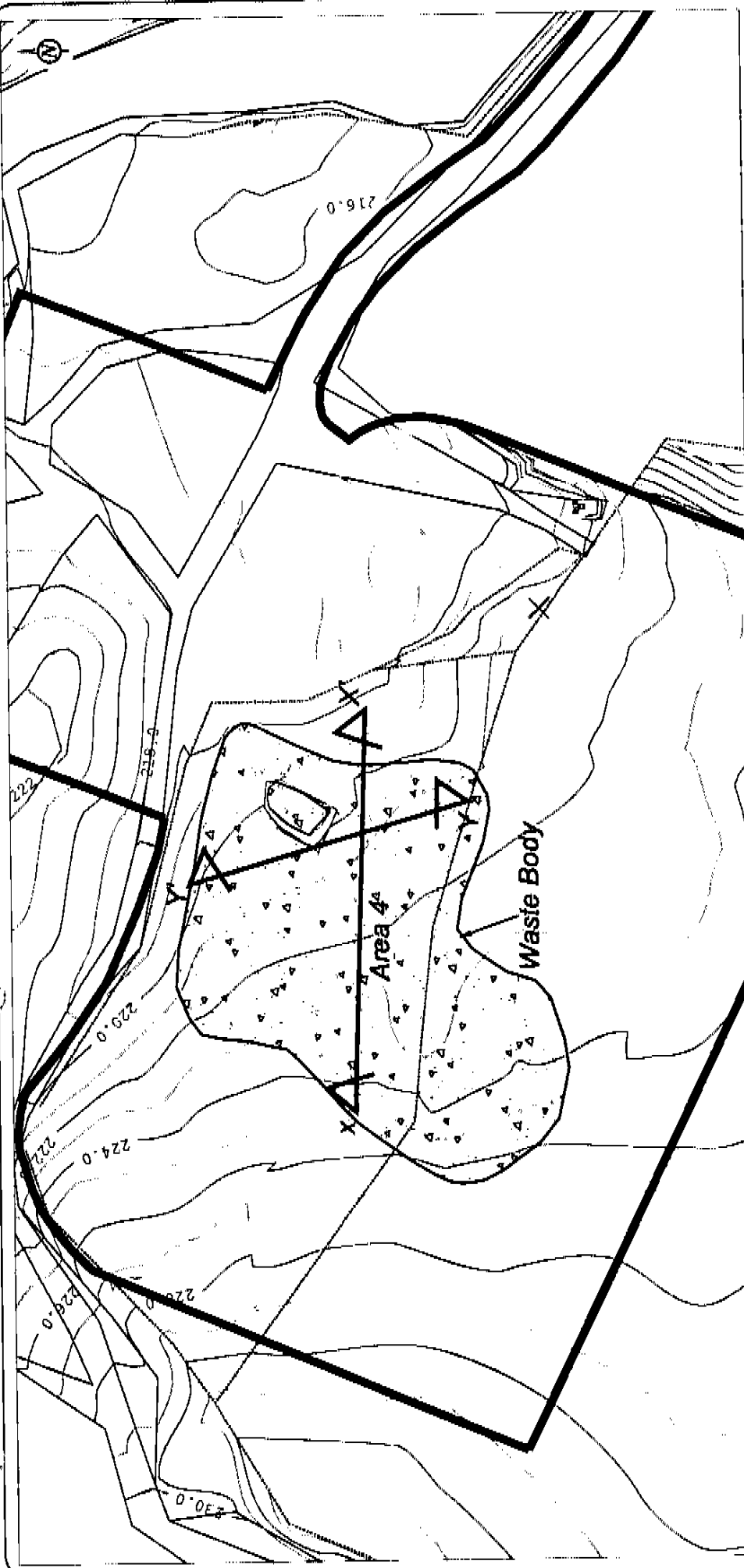
Note:
 1. Final restored level may vary depending on actual excavation levels

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FIGURE C3.1c



Site	Lands at Blessington, Co. Wicklow
Project	Remediation of Unauthorized Landfill Sites
Title	Area 4-Existing Situation - Plan and Section
Drawn: PM	Scale: 1:1,000
Job. No: 3545-05	Date: May 2005

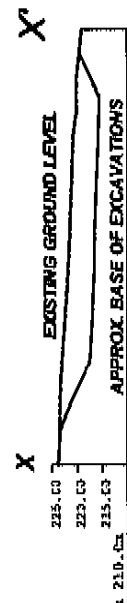
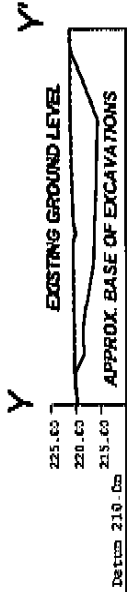
FIGURE C3.4a

Rev.	Date	By	Description

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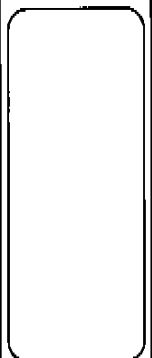
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Site: Lends at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Area 4-Base of Excavations - Plan and Section
 Drawn: PM
 Scale: 1:1,000
 Job. No: 3545-05
 Date: May 2006

Rev.	Date	By	Description

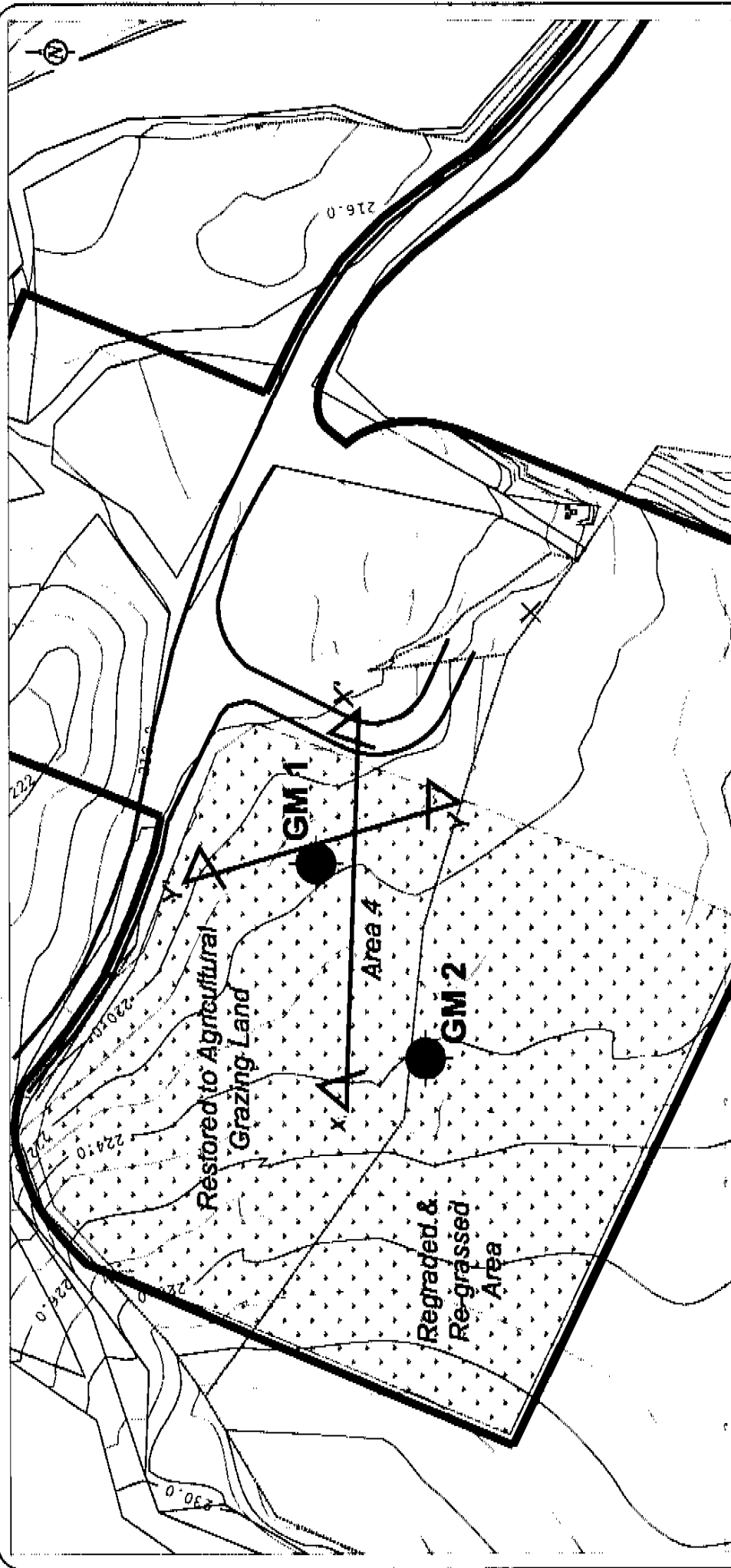


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FIGURE C



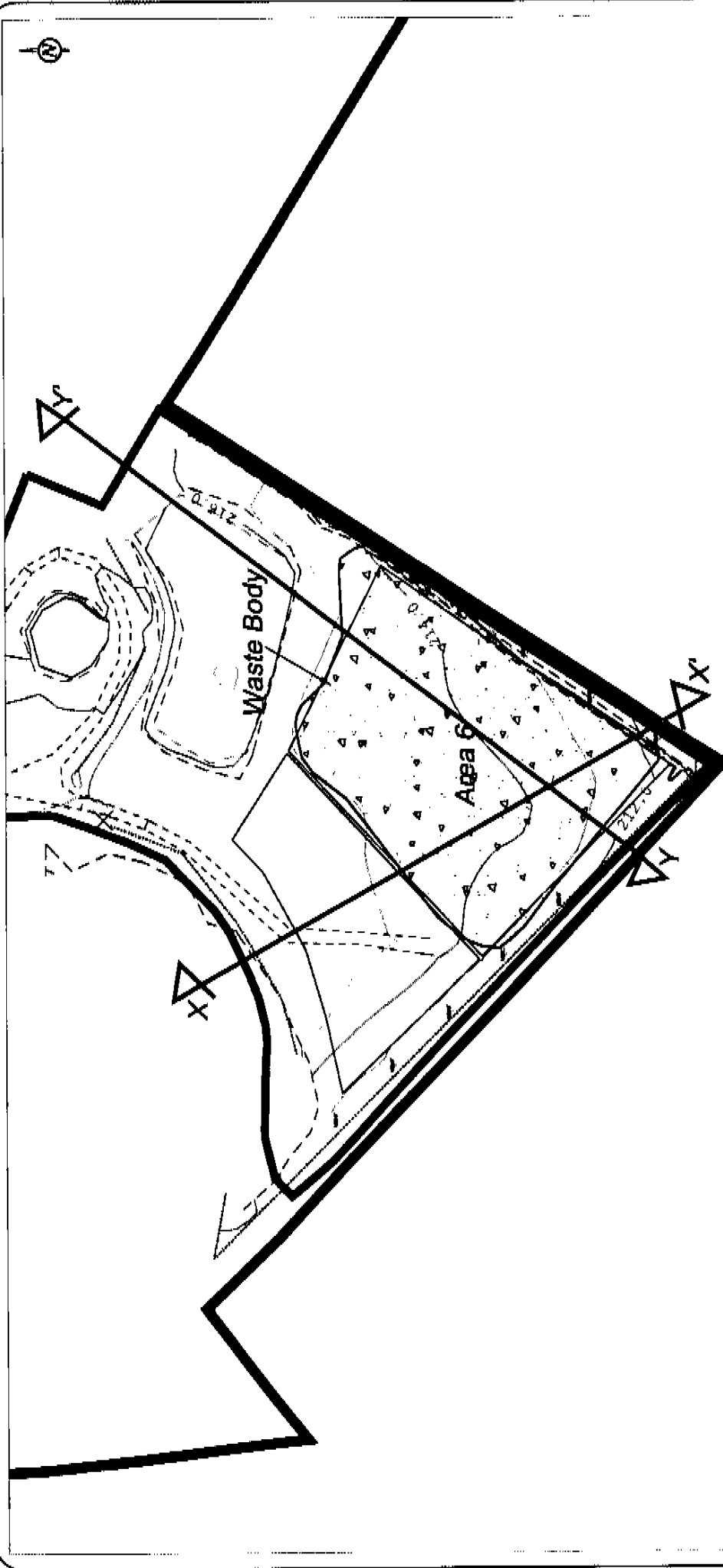
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Note:
 1. Final restored level may vary depending on actual excavation levels

Rev.	Date	By	Description

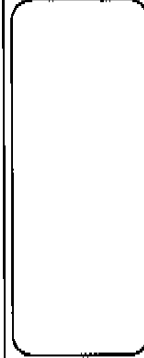
Site: Lando at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Area 4 - Restored - Plan and Section
 Drawn: PM
 Job. No: 5545-05
 Scale: 1:1,000
 Date: May 2006
FIGURE C3.4c



Site:	Lands at Blessington, Co. Wicklow
Project:	Remediation of Unauthorised Landfill Sites
Title:	Area 6-Existing Situation - Plan and Section
Drawn: PM	Scale: 1:1,000
Job. No: 3545-05	Date: May 2005

FIGURE C3.6a

Rev.	Date	By	Description



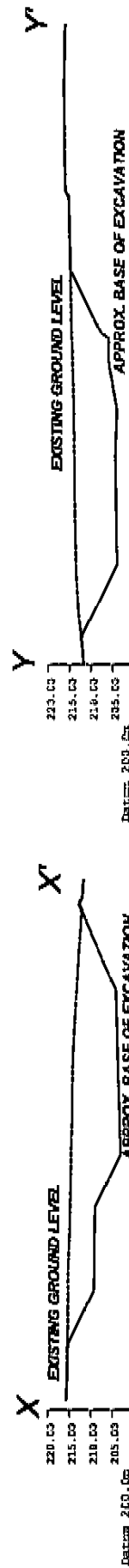
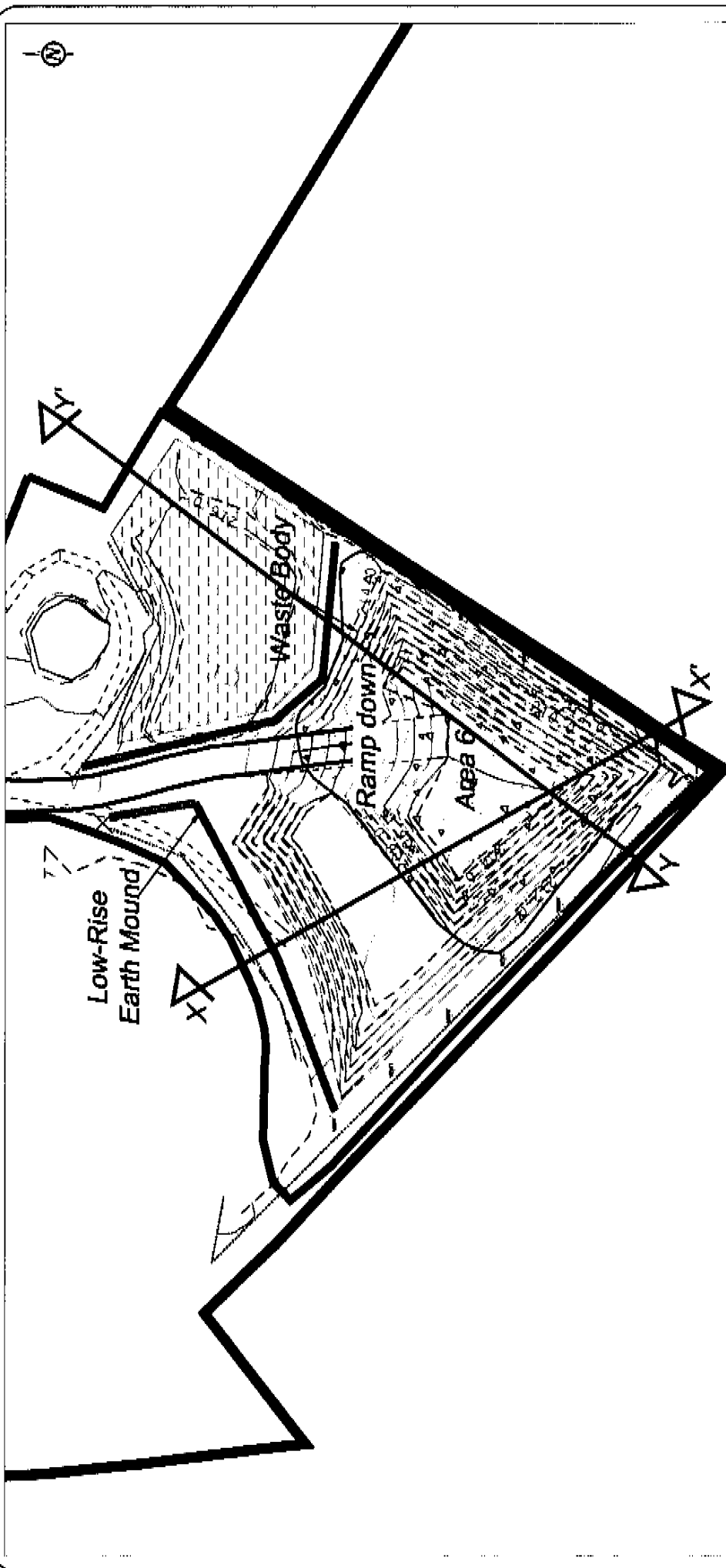
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Site:	Lands at Blessington, Co. Wicklow
Project:	Remediation of Unauthorised Landfill Sites
Title:	Area 6-Base of Waste - Plan and Section
Drawn: PN	Scale: 1:1,000
Job No: 3543-05	Date: May 2005
FIGURE C	

Rev.	Date	By	descriptor



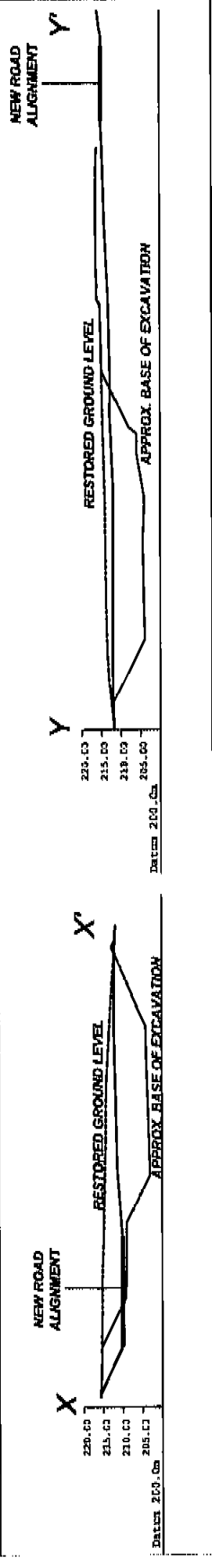
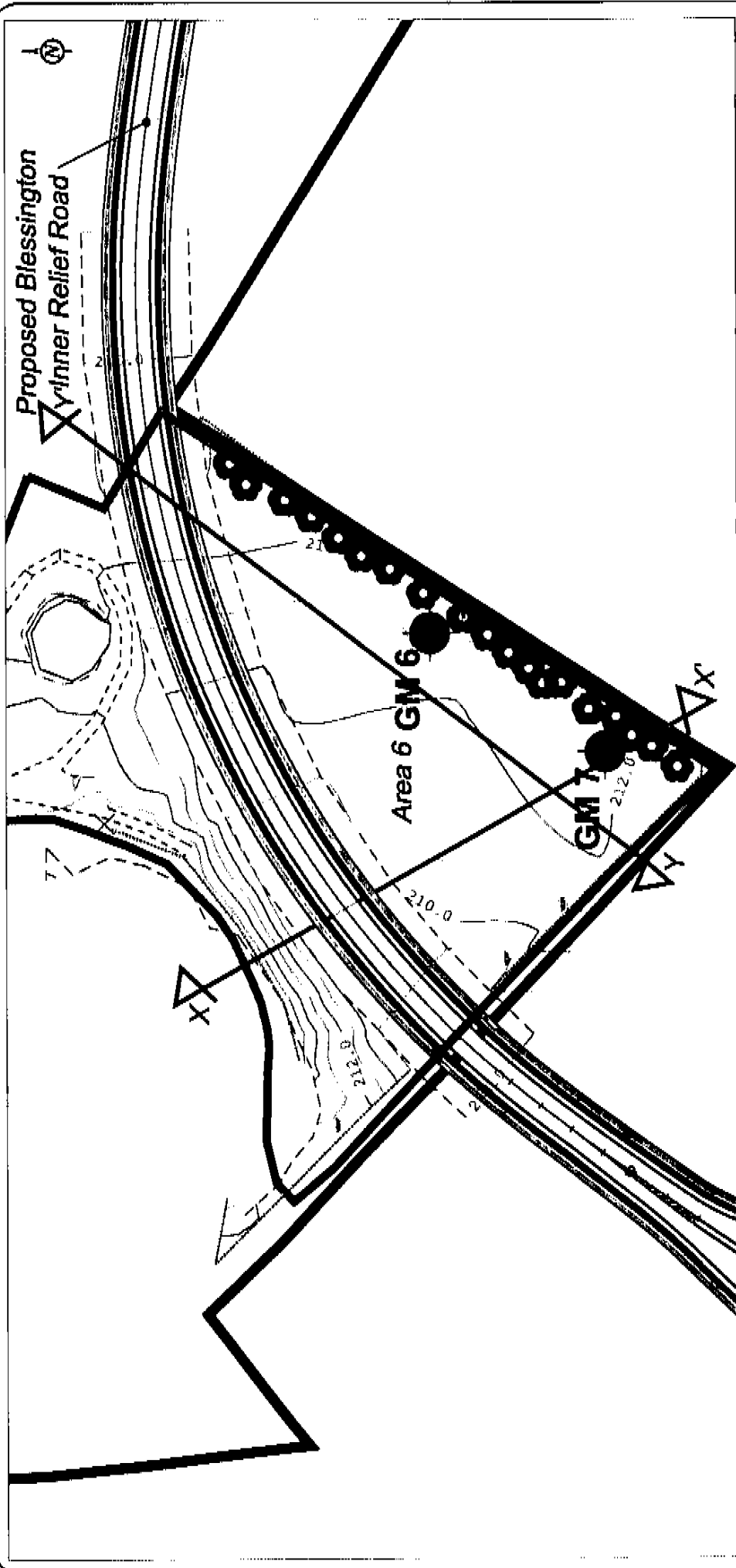
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TALLAGHT
DUBLIN 24



Site: Lands at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Area 6-Restored - Plan and Section
 Drawn: PM
 Job No: 3545-05
 Scale: 1:1,000
 Date: May 2008
FIGURE CS.6c

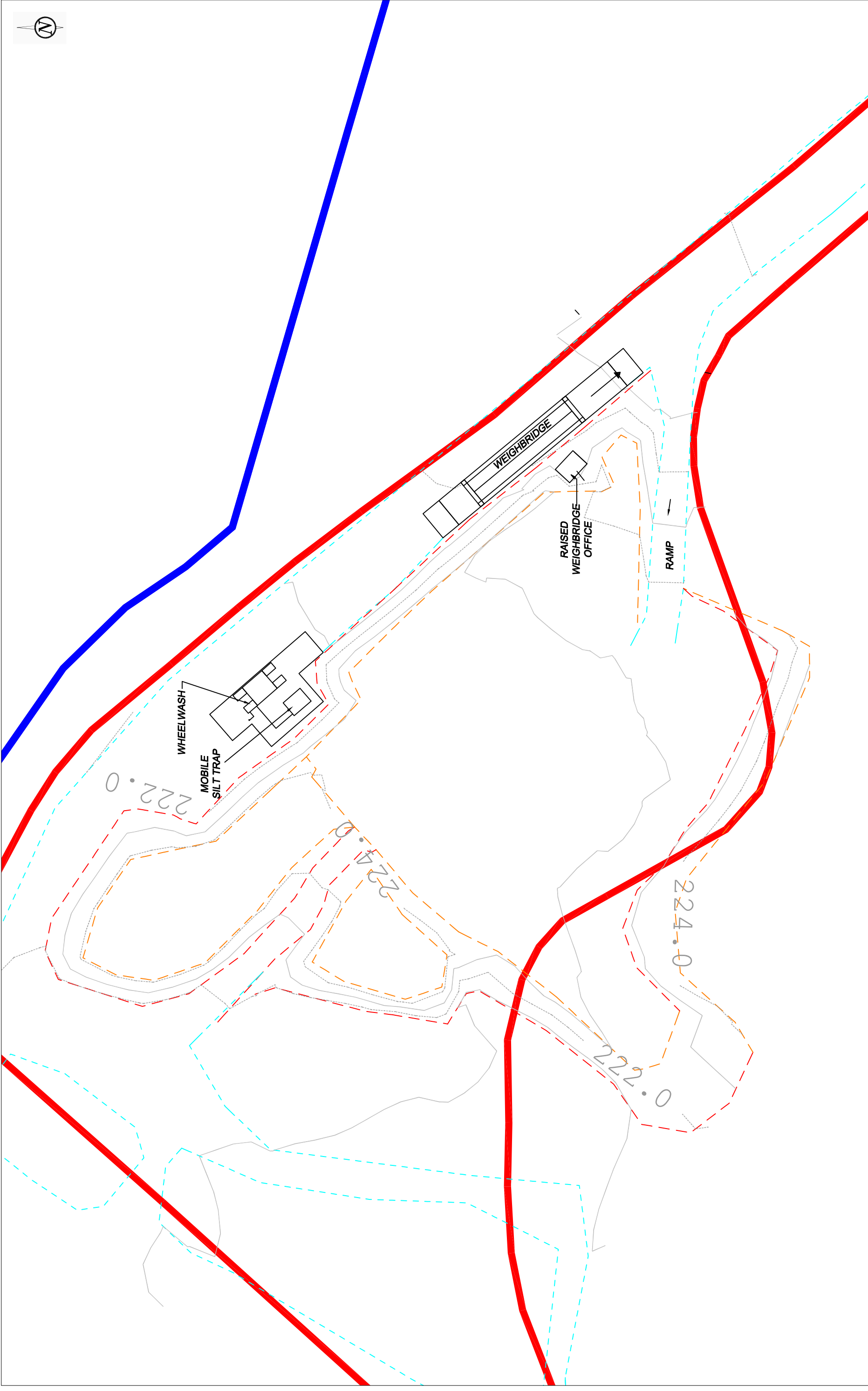
Rev.	Date	By	Description

Note:
 1. Final restored level may vary depending on actual excavation levels
 Landscaping will be carried out as part of road scheme

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 DUBLIN 14

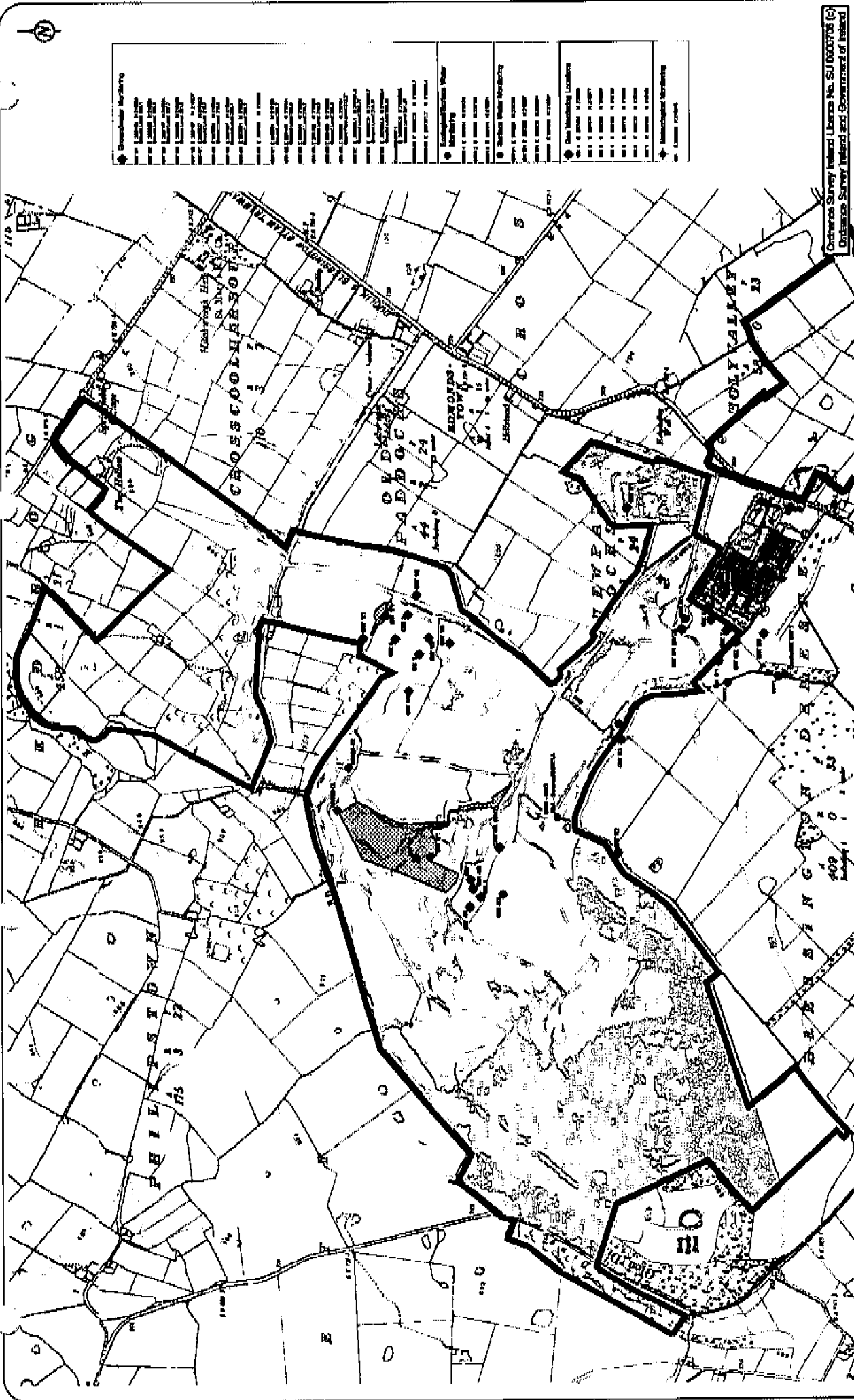
RDL Land Interest

- Waste Licence Area
- Existing Fence Line
- - - Top & Bottom of Banks
- - - Existing Access Tracks

Rev.	Date	By	Description

Site: Lands at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Weighbridge & Wheelwash Area
 Drawn: PM
 Job. No: 3545-05
 Scale: 1:500
 Date: May 2008

FIGURE C3.6d



Ordnance Survey Ireland License No. SU 0000708 (C)
 Ordnance Survey Ireland and Government of Ireland

Site: Lends at Blessington, Co. Wicklow
 Project: Remediation of Unauthorised Landfill Sites
 Title: Environmental Monitoring Locations - Remediation Phase
 Drawn: PM
 Scale: 1:10,000
 Date: April 2008
 Job. No: 3545-04

FIGURE C4

Rev.	Date	By	Description

Numbered Circle: Landmark
 Dotted Circle: Station Marker

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Roadstone Dublin Ltd

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

APPENDIX A
PLANNING CONSENTS
(RESTORATION CONDITIONS)

Roadstone Dublin Ltd

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

PLANNING REQUIREMENTS

1. Quarry Registration Ref No.: QY/32, Wicklow County Council

Condition No. 32

Within six months of the date of issuing of conditions the Owner / Operator shall submit the following information to the Planning Authority and the Environment Section of Wicklow County Council for their written agreement:

- (a) *Plan showing the proposed extraction scheme for the quarry.*
- (b) *Plan showing the proposed Restoration scheme for the quarry and indicating Phasing of such restoration as appropriate.*

The source of all material proposed to be used in respect of all restoration works, together with full details of the type of material and the quantities involved, shall be submitted as part of the restoration scheme.

The restoration scheme shall, inter alia,

- (a) *provide for the carrying out of such works as may be necessary to make the land useful for agricultural purposes and consistent in appearance with surrounding land,*
- (b) *make provision for the moulding of surface levels, the provision of natural surface and subsoil drainage, vegetation planting and re-seeding and*
- (c) *provide for the phased carrying out of rehabilitation and landscaping operations within a definite period or periods related to the anticipated pace of extraction operations.*

The Extraction scheme and Restoration scheme shall be reviewed every 2 years, at the time of the topographic survey required under condition 27.

Upon permanent cessation of quarrying operations, the site shall be fully restored in accordance with the agreed restoration plan. All plant, machinery and structures shall be removed from the site.

REASON: *To ensure the satisfactory restoration of the site in the interests of the amenities and proper planning and sustainable development of the area*

An appeal to the terms of the quarry registration was submitted to An Bord Pleanála on 22 May 2007 (Ref No. PL27.QC2190) in accordance with the provisions of Section 261 of the Planning and Development Act, 2000. The only issue under appeal is the frequency with which the proposed restoration scheme should be updated and amended.

2. Quarry Registration Ref No.: QR/29, Kildare County Council

DRAFT Condition No. 26

- a) *Within six months of the date of this agreement, or such other period as may be agreed with the Planning Authority, the quarry operator shall submit for the writing agreement of the Planning Authority a remediation and landscaping scheme. This scheme shall include details of:*

- *Final site levels (and if appropriate interim site levels),*
- *Landscaping proposals and a timescale for implementation of those proposals,*
- *All existing trees and hedgerows on the site, specifying those proposed for retention, together with measures for their protection during the period in which the development is carried out,*

- b) *The remediation proposals shall include the following:*

- *The purpose, aims and objectives for the after-use of the quarry complex,*
- *A review of the visual impact, archaeological and nature conservation opportunities and constraints for the workings,*
- *Details of the proposed final landform and phased progression of workings toward this form,*
- *Details of water (ground and surface water) management,*
- *Details of soil movement and management, associated with remediation,*
- *Description of target habitats and range of species appropriate for the workings,*

Roadstone Dublin Ltd

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

- *Details of habitat linkages and continuity of habitat within and outside the site,*
 - *Selection of appropriate strategies for maintaining or introducing target habitats and species,*
 - *Techniques and practices for establishing habitats and species,*
 - *Sources of soil forming materials, plant stock and other species introductions,*
 - *Method statement for ground forming, soil preparation and habitat and species establishment,*
 - *Prescriptions and programme for initial aftercare and longer term management,*
 - *Timing of the remediation operations in relation to phased working of the site,*
 - *Proposals for monitoring the success of all remediation works,*
 - *Disposal of wastes arising from the remediation,*
 - *A suitably qualified and licensed Archaeologist shall assist in the preparation of the remediation plan.*
- c) *The site shall be remediated and landscaped in accordance with the agreed scheme.*
- d) *Details of material to be imported for remediation purposes shall be submitted to and agreed in writing with the Planning Authority as part of the scheme,*
- e) *The remediation and landscaping scheme shall also include an estimate of the total cost of the remediation plan along with an estimate of all individual phases. A suitably qualified and independent person acceptable to the Planning Authority shall prepare the estimate.*
- f) *Where a dispute arises between the parties relating to the amount of the estimates mentioned at part (e) above the matter shall be referred for determination to an independent expert to be agreed between the quarry operator and the Planning Authority and in default of agreement the independent person shall be appointed by the President of the Irish Branch of the Chartered Institute of Arbitrators.*

REASON: *To allow the Planning Authority assess the proposed remediation plan and to ensure that the site is remediated in the interest of visual amenity and proper planning and sustainable development of the area.*

3. Planning Permission (Planning Register Reference No. 07/441)

Condition No. 27

- (a) *Within six months of the date of issuing of conditions the developer shall submit the following information to the Planning Authority and the Environment Section of Wicklow County Council for their written agreement:*
- i) *Plan showing the proposed extraction scheme for the quarry.*
 - ii) *Plan showing the proposed Restoration scheme for the quarry and indicating Phasing of such restoration as appropriate.*

The above plans shall have regard to conditions 27(b) and (c) as follows:

- (b) *The soil overburden material from the site shall be used along with the importation of sufficient inert material to restore the site by an average depth of 1m*

The source of all material proposed to be used in respect of all restoration works, together with full details of the type of material and the quantities involved, shall be submitted as part of the restoration scheme.

- (c) *The restoration scheme shall, inter alia,*
- i) *provide for the carrying out of such works as may be necessary to make the land useful for agricultural purposes,*
 - ii) *make provision for the moulding of surface levels, the provision of natural surface and subsoil drainage, vegetation planting and re-seeding and*
 - iii) *provide for the phased carrying out of rehabilitation and landscaping operations within a definite period or periods related to the anticipated pace of extraction operations.*
- (d) *The Extraction scheme and Restoration scheme shall be reviewed every 2 years, at the time of the topographic survey required under condition 27.*
- (e) *Upon permanent cessation of quarrying operations, the site shall be fully restored in accordance with the agreed restoration plan. All plant, machinery and structures shall be removed from the site.*

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

REASON: To ensure the satisfactory restoration of the site in the interests of the amenities and proper planning and sustainable development of the area.

4. Planning Permission (Planning Register Reference No. 70/3014)

Condition No. 3

The applicant to rehabilitate the area to the satisfaction of the County Council during the operating of and cessation of work on the pits

REASON: In the interests of preserving amenity in a landscape area of outstanding natural beauty.

5. Planning Permission (Planning Register Reference No. 97/6853)

Condition No. 2

On cessation of extraction in adjoining pit the lands encompassing the settlement ponds shall be reinstated in accordance with the details in paragraph 11.7 of the Environmental Impact Statement submitted on 8th August 1997.

REASON: To ensure restoration of the site in the interests of visual amenity

4. Planning Permission (Planning Register Reference No. 99/410)

No condition pertaining to restoration was stipulated though reference to reinstatement is made in reference to the planting of trees in line with the phased reinstatement of the site.

Roadstone Dublin Ltd.

Lands at Blessington, Co Wicklow
Remediation of Unauthorised Landfill Sites; CRAMP

APPENDIX B
ENVIRONMENTAL MONITORING PLAN
(POST-EXCAVATION)

Landfill Gas Monitoring

Methodology

Landfill gas monitoring will be undertaken on the gas monitoring wells GMW1 to GMW7 (to be installed within the restored areas), and on existing groundwater wells. This monitoring will include testing for volumetric flow rate, atmospheric pressure, temperature and landfill gas composition (specifically methane, carbon dioxide, oxygen, carbon monoxide and hydrogen sulphide). The proposed range of testing complies with the requirements of Schedule C1 2 of the Waste Licence.

A calibrated portable landfill gas analyser (GA2000) will be used to carry out the monitoring.

Frequency

Landfill gas monitoring will be undertaken monthly over the 12 month post excavation period from December 2007 or until such time as the waste licence is surrendered, whichever is shorter (refer to Figure C4 for the monitoring locations).

Groundwater Monitoring

Methodology

Groundwater analysis will be undertaken in accordance with an established Quality Assurance / Quality Control System using documented operating procedures. It will also be subject to external audit by consultants appointed by Roadstone Dublin during the remediation Contract (as per Condition 6.2 of the Waste Licence).

Groundwater samples will be tested for the range of parameters listed in Appendix C5 of the Waste Licence. Details of analysis methods and detection limits are provided in Table 1.

Field testing (for water level, pH, electrical conductivity, redox potential, dissolved oxygen) and sampling will be undertaken by external environmental consultants, who will also forward groundwater samples to an independent, externally accredited laboratory for water quality testing.

Frequency

Post-excavation, the frequency of groundwater monitoring will be monthly during the first three months for a limited range of parameters (including groundwater level; dissolved oxygen, electrical conductivity, ammoniacal nitrogen, chloride, pH and sulphate).

Testing for the range of parameters listed in Appendix C5 of the Waste Licence will be undertaken quarterly over the 12 month post-excavation period from December 2007 or until such time as the waste licence is surrendered, whichever is shorter (refer to Figure C4 for the monitoring locations).

Surface Water Monitoring

Methodology

Field testing (for water level, pH, electrical conductivity, redox potential, dissolved oxygen) and sampling will be undertaken by external environmental consultants, who will also forward surface water samples to an independent, externally accredited laboratory for water quality testing.

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

Surface water analysis will be undertaken in accordance with an established Quality Assurance / Quality Control System using documented operating procedures. It will also be subject to external audit by consultants appointed by Roadstone Dublin during the remediation Contract (as per Condition 6.2 of the Waste Licence).

Surface water samples will be tested for the range of parameters listed in Schedule C5 of the Waste Licence. Details of analysis methods and detection limits are provided in Table 1.

Frequency

Post-excavation, the frequency of surface water monitoring will be monthly during the first three months for a limited range of parameters (including dissolved oxygen, electrical conductivity, ammoniacal nitrogen, chloride, pH and sulphate).

Testing for the range of parameters listed in Appendix C5 of the Waste Licence will be undertaken quarterly over the 12 month post-excavation period from December 2007 or until such time as the waste licence is surrendered, whichever is shorter (refer to Figure C4 for the monitoring locations).

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

Existing Parameters	Method	Detection Limit	Groundwater	Surface Water
General				
Reduced Level	-	-	✓	✓
pH	*	0.1 units	✓	✓
Electrical Conductivity	*	10µs/cm	✓	✓
Dissolved Oxygen	*		✓	✓
Redox Potential	*		✓	✓
COD (filtered)	<i>SPECTRO</i>	15mg/l	✓	✓
BOD (filtered)	<i>5 Day ATU</i>	2mg/l	✓	✓
Inorganics				
Fluoride	<i>KONE</i>	0.05mg/l	✓	✓
Chloride	<i>KONE</i>	1mg/l	✓	✓
Sulphate (SO ₄)	<i>KONE</i>	3mg/l	✓	✓
Sulphide	<i>KONE</i>	0.05mg/l	✓	✓
Ammonium	<i>KONE</i>	0.2mg/l (as N)	✓	✓
Nitrate	<i>KONE</i>	0.3mg/l (as N)	✓	✓
Nitrite	<i>KONE</i>	0.05mg/l (as N)	✓	✓
Metals/Metalloids (dissolved**)				
Cd (0.4µg/l)	<i>ICP-MS</i>		✓	✓
Cu (5µg/l)	<i>ICP-MS</i>		✓	✓
Cr (1µg/l)	<i>ICP-MS</i>		✓	✓
Ag (1µg/l)	<i>ICP-MS</i>		✓	✓
Pb (5µg/l)	<i>ICP-MS</i>		✓	✓
Sr (0.05mg/l)	<i>ICP-MS</i>		✓	✓
Ni	<i>ICP-MS</i>	10µg/l	✓	✓
Zn	<i>ICP-MS</i>	5µg/l	✓	✓
Se	<i>ICP-MS</i>	0.05µg/l	✓	✓
As	<i>ICP-MS</i>	10µg/l	✓	✓
P	<i>ICP-MS</i>	0.05mg/l	✓	✓
Fe	<i>ICP-MS</i>	1µg/l	✓	✓
Mn	<i>ICP-MS</i>	1µg/l	✓	✓
Petroleum Hydrocarbons				
Banded TPH	<i>GC-FID</i>	10µg/l	✓	✓
Fractionated TPH	<i>CIWG</i>	***	✓	✓
PAH (Speciated)	<i>GC-MS</i>	0.01µg/l	✓	✓

TABLE 1 : Test Suites for Groundwater and Surface Water Quality Analysis

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

	Method	Detection Limit	Groundwater	Surface Water
General				
Complex Cyanide			✓	✓
Free Cyanide			✓	✓
Orthophosphate			✓	✓
Phenol (Speciated)			✓	✓
Volatile Organic Compounds	GC-MS (USEPA 524)	1 µg/l	✓	✓
Semi Volatile Organic Compounds	GC-MS (USEPA 525)	1 µg/l	✓	✓
Faecal Coliforms			✓	✓
Total Coliforms			✓	✓
Organochlorine Pesticides	(USEPA Method 608)		✓	✓
Organophosphorous Herbicides			✓	✓

TABLE 1 : Test Suites for Groundwater and Surface Water Quality Analysis (cont'd)

Roadstone Dublin Ltd.

Lands at Blessington, Co Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

APPENDIX C
LANDSCAPING SPECIFICATION

Roadstone Dublin Ltd.

Lands at Blessington, Co. Wicklow
Remediation of Unauthorised Landfill Sites: CRAMP

LANDSCAPING SPECIFICATION

1. IMPLEMENTATION

- (i) Overburden soils within the restored areas and/or temporary stockpile areas shall be graded to appropriate contours.
- (ii) All tree / hedge planting to be carried out during the months between October and May in appropriate weather conditions. Planting shall not be carried out when the ground is frozen or extensively waterlogged.
- (iii) Hedgerow planting to be set out in accordance with Figure C3.6b. The Client shall be informed of any discrepancies and any earth movements, or tree and shrub planting within 2 metres of services.
- (iv) The Contractor shall certify that the plants supplied are true to species and specification. Species substitutions can only be made prior approval of the client.

2. CULTIVATION

- (i) Cultivate soils to a minimum depth of 300mm. Break soil down to a fine tilth and remove deleterious material and stones exceeding 100mm in any dimensions.
- (ii) Grading prior to planting. Grade cultivated soils to even falls removing localised low and high points.

3 SEEDING

Seeding shall be used to vegetate the restored areas to grassland.

The seed to be used is to be fresh and for use in the season of seeding. A certificate is to be provided in respect of each consignment of seed mix giving the supplier's name, proportions of constituents of the mixture and a signature of representative of the supplier. The seed to be used shall be a grassland pasture mix (60 kg. per ha.) of the following constituents, or similar approved:

- 15% Moy Perennial Ryegrass
- 15% Rosalin Perennial Ryegrass
- 15% Spelga Perennial Ryegrass
- 10% Twins Perennial Ryegrass
- 10% Tyrone Perennial Ryegrass
- 20% Condesa Perennial Ryegrass
- 10% Antara Perennial Ryegrass
- 5% Hula White Clover

When the grass is between 40mm and 75mm high the contractor shall remove debris and all stones and clay balls larger than 40mm in any dimensions.

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4. HEDGEROW / TREES (AREA 6)

- (i) Trees shall conform to BS 3936 for nursery stock and shall be supplied true to size and species name.
- (ii) All trees to be planted upright to the same depth as grown in the nursery. Fork base of tree pit to a depth of 150mm and remove stones over 75mm in dimension before positioning tree stake. The roots shall be spread evenly around the bottom of the pit and finely broken down topsoil returned and carefully worked between the roots and firmly consolidated. Trees, whips and shrubs to be protected by spiral tree guards or equivalent after planting.
- (iii) All light standard and bareroot trees are to have to have low single stakes driven into the pit before the tree is placed in the hole and backfilling commences.
- (iv) The tree stakes will be pressure impregnated peeled soft wood round stakes. Preservative shall be non-injurious to plant material. Stakes will be pointed at one end and free from protrusions. The tree stakes will be 1200mm, two thirds of their length to be driven into the ground.
- (v) Between the tree and the stake a rubber tree collar tree tie shall be entered, linked by a rubber strap running through the collar and around the tree, the collar will be fixed to the stake with two galvanised nails.
- (vi) Bareroot whips to be planted upright to their natural level. The pit holes shall be larger than the extent of the root system. Roots shall be spread out. Topsoil mixed with additives is to be placed around root, gently shaking them to and fro to avoid air pockets and trodden down firmly and filled in with topsoil.
- (vii) Container grown whips shall not be disturbed other than by taking them out of the pots to untwine and spread the roots out. Containerised plants shall be sufficiently moist to ensure that the plant can be easily removed without disturbing the roots. Soil shall be packed around the root-ball and firmly trodden down.

5. MAINTENANCE

Where landscaping works are undertaken, the maintenance period shall be 12 months from the date of practical completion of the works. Two visits shall be made to the site during this period to maintain the landscaping works.

During each maintenance visit the Contractor shall:

- (i) Notify the client if he believes water would be beneficial during this period.
- (ii) Remove and replace immediately dead or diseased plants.
- (iii) Remove any dead wood from trees or plants.
- (iv) Re-firm loose trees, shrubs and plants as necessary.
- (v) Check stakes and re-affirm ties as necessary.
- (vi) Check spiral tree protection and replace where necessary.
- (vii) Prune shrubs, bushes etc. removing excessively strong/weak growth to promote healthy, even and well-balanced plants.

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APPENDIX D
PROGRAMME FOR THE RESTORATION WORKS

