

KEY

	Drains directly to PES via geocomposite drainage layer		Drains to Swale via geocomposite drainage layer and carrier pipe
	Drains to Pond via geocomposite drainage layer and carrier pipe		Drains to Swale via geocomposite drainage layer

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No.	Date	By	App	Amendment / Issue
F01	07.11.13	RH	ER	FINAL ISSUE
A01	24.04.13	RH	ER	ISSUE FOR APPROVAL
D02	Apr.13	RH	ER	DRAFT ISSUE
D01	Apr.13	RH	ER	DRAFT ISSUE

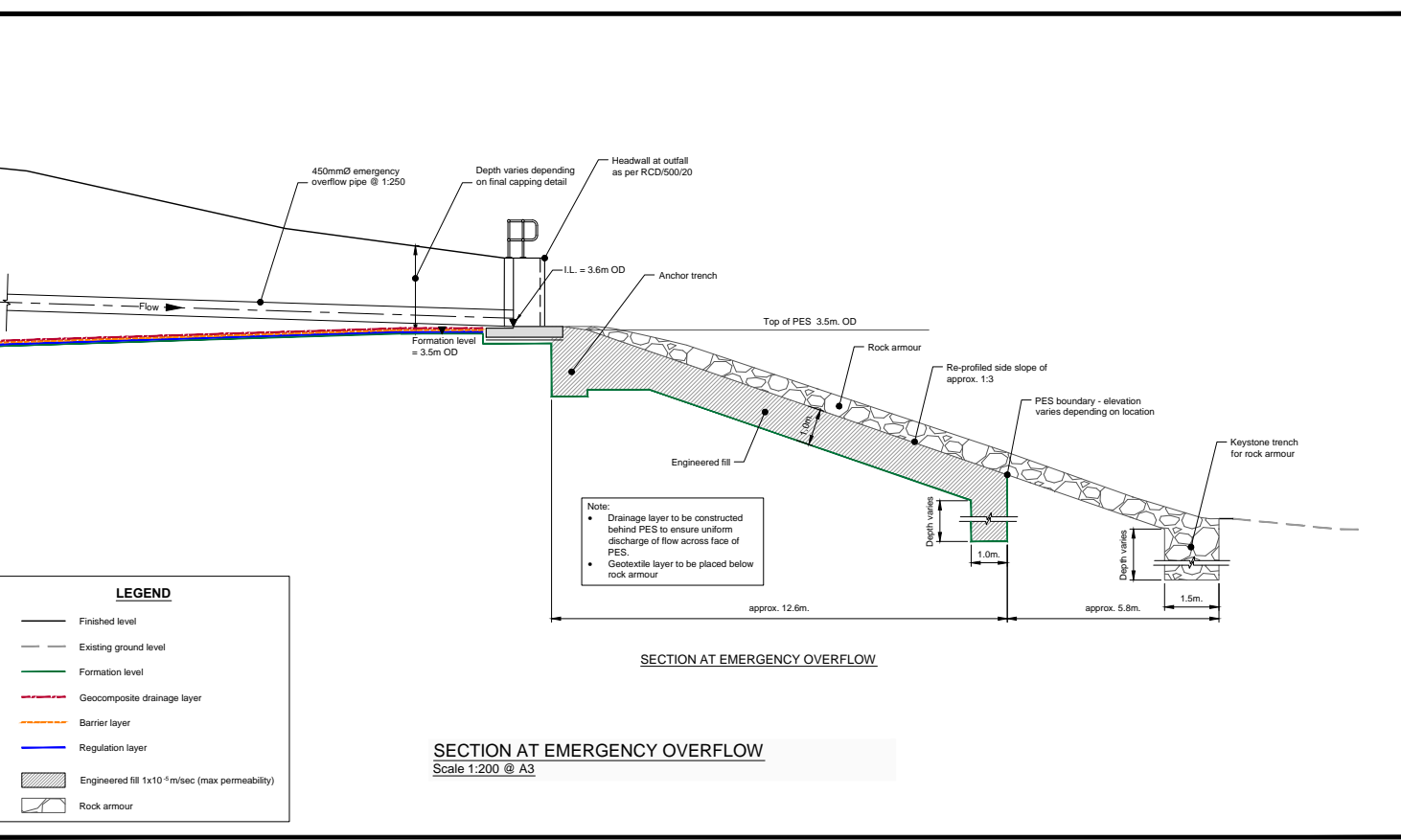
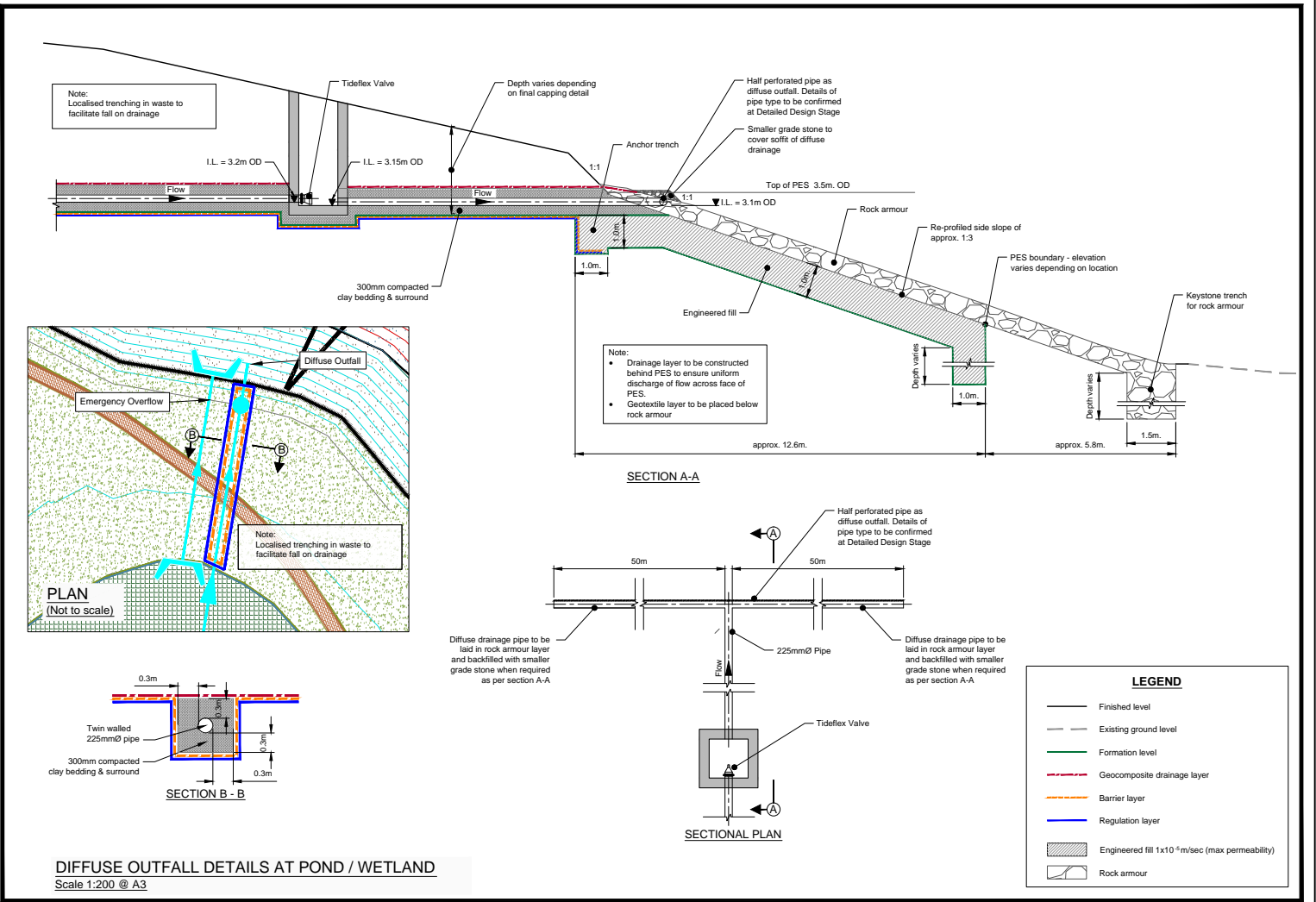
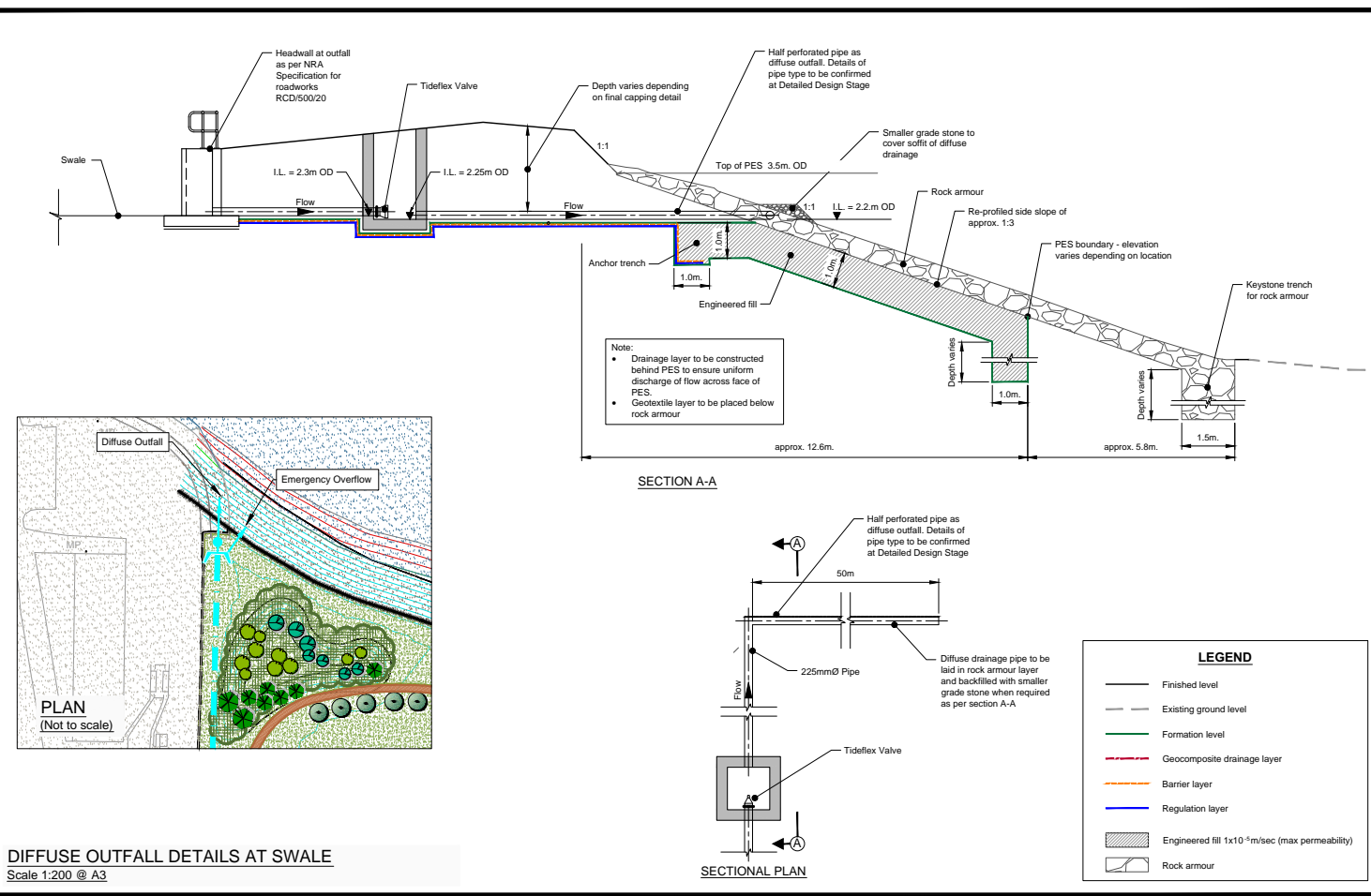
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West Pier
Business Campus
Dun Laoghaire
Co Dublin

T +353 1 4882900
F +353 1 2835676
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Drawn	RH	Project	EAST TIP REMEDIATION PROJECT
Checked	CP		
Approved	CP		
Date	March 2013	Title	PRELIMINARY SUB-SURFACE DRAINAGE LAYOUT
Scale	nts @ A1 nts @ A3	Job No.	MCE0734
		File Ref.	MCE0734DG1009eF01.dwg
		Drg. No.	DG1009e
		Rev.	F01

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F01	07.11.13	RH/ER	FINAL ISSUE	ER
A01	24.04.13	RH/ER	ISSUE FOR APPROVAL	ER
D01	Apr.'13	RH/ER	DRAFT ISSUE	ER

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West Pier Business Campus
Dun Laoghaire
Co Dublin

T +353 1 4882900
F +353 1 2835676
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Drawn	RH	Project	EAST TIP REMEDIATION PROJECT	
Checked	CP			
Approved	CP			
Date	March 2013	Title	DETAILS OF DIFFUSE OUTFALLS AT SWALE & POND/WETLANDS, & EMERGENCY OVERFLOW	
Scale	nts @ A1 1:200 @ A3	File Ref.	MCE0734DG1009F01.dwg	Job No. MCE0734
Job No.	MCE0734	Drg. No.	DG1009f	Rev. F01





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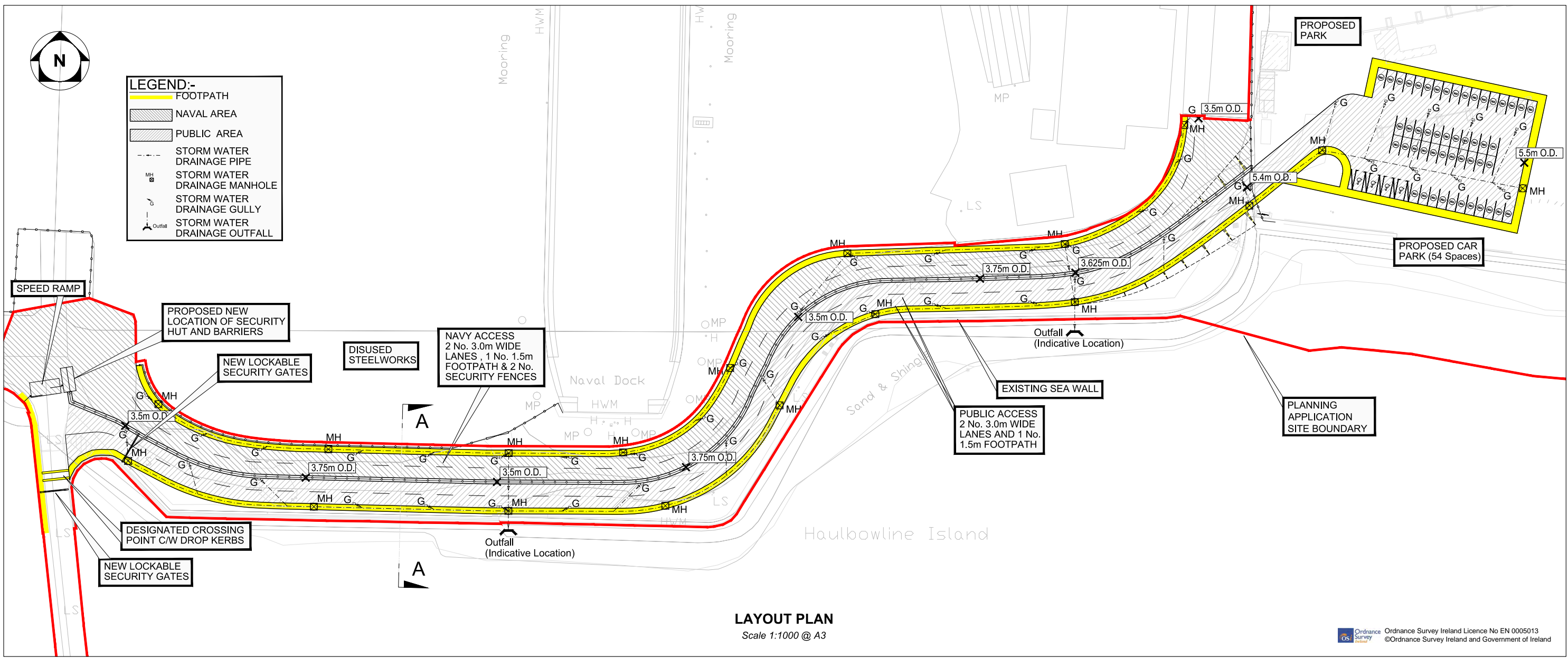
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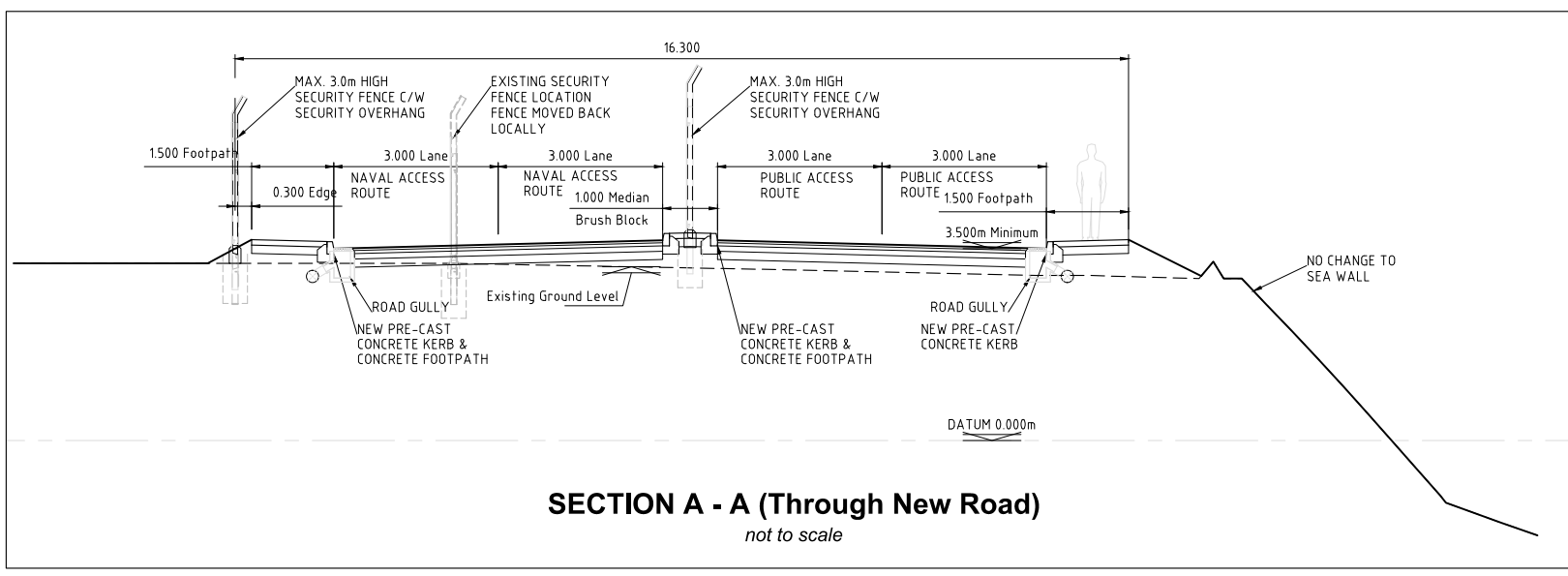
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Drawn	RH	Project	EAST TIP REMEDATION PROJECT		
Checked	ER				
Approved	ER				
Date	March 2013	Title	FINAL CONTOURS		
Scale	NTS @ A1 1:2500 @ A3				
Job No.	MCE0734	File Ref.	MCE0734DG1009gF01.dwg	Dr. No.	DG1009g
				Rev.	F01



LAYOUT PLAN
Scale 1:1000 @ A3

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SECTION A - A (Through New Road)
not to scale

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A01	24.04.13	RH	ER	ISSUE FOR APPROVAL	
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West Pier
Business Campus
Dun Laoghaire
Co Dublin

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Drawn	RH	Project	EAST TIP REMEDICATION PROJECT	
Checked	CP	Title	UPGRADED ACCESS ROAD TO EAST TIP & NAVAL DOCKYARD & ASSOCIATED CROSS SECTION	
Approved	CP	Scale	nts @ A1 As shown @ A3	
Date	March 2013	Job No.	MCE0734	File Ref.
Scale	nts @ A1 As shown @ A3	File Ref.	MCE0734DG1009\F01.dwg	Drg. No.
		Drg. No.	DG1009h	Rev.
				F01



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4

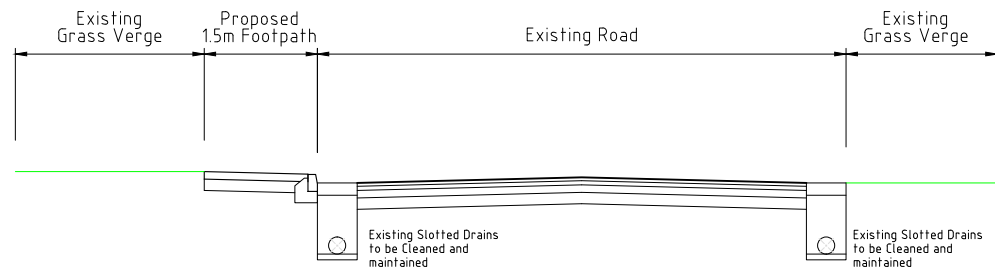


FIGURE 5



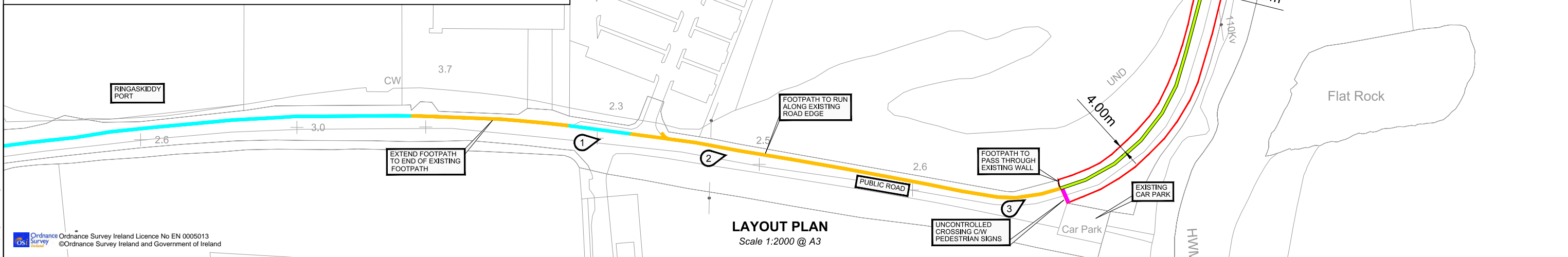
FIGURE 6

PHOTOGRAPHS OF EXISTING ACCESS ROAD



TYPICAL SECTION THROUGH EXISTING ACCESS ROAD AND PROPOSED FOOTPATH

Scale 1:100 @ A3



LAYOUT PLAN

Scale 1:2000 @ A3

Client

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A01	24.04.13	RH	CP	ISSUE FOR APPROVAL	
D01	Apr.'13	RH	CP	DRAFT ISSUE	

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West Pier
Business Campus
Dun Laoghaire
Co Dublin

T +353 1 4882900
F +353 1 2835676
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E ireland@rpsgroup.com

Drawn	RH	Project	EAST TIP REMEDIATION PROJECT	
Checked	CP	Title	FOOTPATH IMPROVEMENTS ON ACCESS ROAD TO HAULBOWLINE ISLAND	
Approved	CP	Scale	nts @ A1 As shown @ A3	
Date	March 2013	Job No.	MCE0734	File Ref.
Scale	nts @ A1 As shown @ A3	Drg. No.	DG1009i	Rev.
Job No.	MCE0734	File Ref.	MCE0734DG1009iF01.dwg	Rev.
Scale	nts @ A1 As shown @ A3	Drg. No.	DG1009i	Rev.
Job No.	MCE0734	File Ref.	MCE0734DG1009iF01.dwg	Rev.
Scale	nts @ A1 As shown @ A3	Drg. No.	DG1009i	Rev.

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SECTION E EMISSIONS

Give particulars of the source, location, nature, composition, quantity, level and rate of emissions arising from the activity and, where relevant, the period or periods during which such emissions are made or are to be made.

The applicant should address in particular any emission point where the substances listed in the Schedule of S.I. 394 of 2004 are emitted.

E.1 Emissions to Atmosphere

Details of all point emissions to atmosphere should be supplied. Table E.1.(i) (for Landfill Gas Flare emissions) must be completed for all landfills with a flare. Complete Table E.1(ii) and E.1(iii) for all other main emission points, including stack sources (incinerator stacks, landfill gas utilisation plants, air handling unit emissions etc.). Complete Table E.1(iv) for minor/fugitive/ground emission points.

Attachment E.1 Emissions to Atmosphere

Currently, the waste mass at the East Tip is exposed and has the potential to disperse dust during dry windy conditions. During construction there will be no point source emissions to atmosphere, however, the entire waste body is considered the source of fugitive dust, asbestos, greenhouse gas and odour emissions. Please refer to attached Drawing DG1010.

Fugitive Dust

To simulate the potential emissions of the proposed construction stage, emissions have been assessed using a standard air dispersion modelling assessment following the procedures presented in the EPA Guidance Note AG4 "Air Dispersion Modelling for Industrial Installations".

The model used for Air Dispersion Modelling is the US EPA approved AERMOD Prime model (Version 7.7.1), which is the current regulatory model in the US and a recommended model under the EPA guidance.

Emission factors for the proposed construction operations have been derived from the AP 42 *Compilation of Air Pollutant Emission Factors* (5th Edition, USEPA).

The results of the modelling of construction dusts, metals and other constituents of the East Tip material indicates a significant variation in impact over the proposed phases of the remediation programme. The existing dormant site is currently acting as a source of pollution from windblown dust on the surrounding area with levels of various parameters detected in the baseline surveys. The predicted impact during the dormant phase is a *slight negative impact* over the long term.

For the mobilisation (month 1) and construction (months 2-9) the levels of dust generation and impact are largely similar. Both phases are predicted to cause an increase in air quality impacts in line with the increased material excavation, processing, etc. These increases are predicted to cause some breaches in PM₁₀, Vanadium and Manganese levels and a monitoring and mitigation strategy has been devised to ensure these levels are suitably mitigated (refer Section 9.5.1 of the accompanying EIS) and there are no breaches of these levels during these phases. The predicted impact during these phases of the work is considered to be a *moderate adverse temporary negative impact*.

WASTE Application Form

Once the capping phase (months 10-16) commences the levels of material processing decreases and the resultant air quality impact decreases. During this phase the impact of metals and other constituents is reduced as the source is restricted to windblown dust (as Phase 1) while there remains potential impacts for total and fine dusts from the mobilisation of subsoils and topsoils. The predicted impact during this phase is considered to be a *temporary moderate negative impact*.

Once capping and construction of the PES is completed the waste body will be contained. As a result as the project enters the end use and aftercare phase there will be no pathway for fugitive dust emissions to enter the atmosphere. As such, there are no predicted impacts to air quality during this phase.

In summary, while the impacts to air quality from the construction stage of the project are predicted to increase to a significant negative over a temporary basis, the net impact of the remediation will be a *long-term positive moderate impact*.

Fugitive Asbestos Emissions

Quantification analysis of the waste samples undertaken in 2012, has shown that the asbestos content is present in trace fractions typically in the 0.003%-0.006% range. Typically lower risk chrysotile has been identified, however loose asbestos fibres at the surface of the waste body have the potential to become air borne and could cause risks to the users of the site through inhalation.

Fugitive Greenhouse Gas Emissions

Greenhouse gas emissions may be generated from construction activities. To calculate GHG emissions generated from construction activities, a carbon calculator tool developed by the Environment Agency in the UK specifically for construction projects was used. The carbon calculator calculates the embodied carbon dioxide (CO₂) of materials plus CO₂ associated with their transportation. It also considers personal travel, site energy use and waste management.

Fugitive Odour Emissions

The potential sources of odour from the construction stage of the proposed development relate to the following:-

- Potential odours from the excavation and handling of waste material. The waste material is known to contain low levels of sulphur but also some elevated levels of volatile organic compounds which have the potential to generate odours.
- Potential for fugitive odours from the importation of topsoil. Topsoil may contain bacteria that generate sulphur compounds which are known to cause some odour nuisance.

Please refer to Chapter 9 (Air Quality and Climate) of the EIS for further details on the above emissions.

Mitigation measures are detailed in Section F of this application document and Chapter 9 of the EIS will be implemented to mitigate such emissions.

It is proposed to cap the waste mass which will eliminate the risk of dust generation post construction.

E.2 Emissions to Surface Waters

Attachment E.2 Tables E.2(i) and E.2(ii) should be completed, where relevant.

Attachment E.2 Emissions to Surface Waters

Construction Phase

Currently, the entire waste body may be considered a surface water emission point. During construction, the waste body remains a potential source of emissions to surface water (Please refer to DG1010). Emissions may occur as a result of topsoil and subsoil stripping of the pitch, stockpiling activities, rainwater run off/seepage from the waste body along the foreshore and contaminant wash out in the waste body by subsurface groundwater flux as a result of seepage collection, recirculation and infiltration.

- The excavation and scrape back of waste material along the foreshore to install the perimeter engineered structure, has the potential to intercept natural low tide seepage from the waste and top of the alluvial silt which may disturb sediments and result in *sediment release* to the marine environment.
- Re-profiling of the waste material to create the necessary topographic landform and the excavation of trenches along the western boundary with the Naval site to facilitate construction of the PES may result in the generation of dust and mobilise *dissolved phase contaminants* into groundwater if waste is emplaced below the tidal varying groundwater table in the waste.
- Potential diesel fuel spillages from the use of plant and machinery on site and/or failures of storage containment or refuelling activities have the potential to cause *emissions* to groundwater.

A detailed description of the surface water management system and mitigation measures during the construction phase are provided in Chapter 5 (Project Description), Chapter 6 (Construction Activities) of the EIS and Section F of this Application. Additional information is also detailed in Chapter 13 (Soils, geology and Hydrogeology) of the EIS

End Use, Maintenance and Aftercare Phase

Following construction, surface water collected on the site will be channelled to the wetland area and the swale prior to discharge to the Cork Harbour area via two diffuse outfall channels. The channels will be located outside the PES and capping system and will not be in contact with the waste body. Please refer to drawing DG1009 d-f for details for the proposed surface water collection and emission points.

There will be two point discharges which will operate as an emergency overflow to the drainage systems during exceedances of the design return period.

Tables E.2(i) and E.2(ii) in Annex 1 Standard Forms, details the surface water emissions during the Construction phase and End use, Maintenance and Aftercare phase. Given the site is surrounded by the waters of Cork Harbour, additional tables are provided to provide the necessary information.

A detailed description of the surface water management system and mitigation measures during the End use, Maintenance and Aftercare phase are provided in Chapter 5 (Project Description), Chapter 6 (Construction Activities) of the EIS and Section F of this Application.

Additional information is also detailed in Chapter 13 (Soils, geology and Hydrogeology) of the EIS.

E.3 Emissions to Sewer

Attachment E.3 Tables E.3(i) and E.3(ii) should be completed, where relevant.

Not Applicable

E.4 Emissions to Groundwater

Describe the existing or proposed arrangements necessary to give effect to Articles 3, 4, 5, 6, and 7 of Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution by certain dangerous substances and the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010).

Table E.4(i) should be completed, as relevant, for each source.

Supporting information should form **Attachment E.4**

Attachment E.4 Emissions to Groundwater

Emissions during the Construction Stage

The following construction activities have the potential to cause emissions to groundwater.

- The excavation and scrape back of waste material along the foreshore to install the perimeter engineered structure, has the potential to intercept natural low tide seepage from the waste and top of the alluvial silt which may disturb sediments and result in *sediment release* to the marine environment.
- Re-profiling of the waste material to create the necessary topographic landform and the excavation of trenches along the western boundary with the Naval site to facilitate construction of the PES may result in the generation of dust and mobilise *dissolved phase contaminants* into groundwater if waste is emplaced below the tidal varying groundwater table in the waste.
- Potential diesel fuel spillages from the use of plant and machinery on site and/or failures of storage containment or refuelling activities have the potential to cause *emissions* to groundwater.

These activities will take place all over the waste body therefore the waste body itself is considered a groundwater emission point. Specific ground water emission points are not known at this stage. Details of infiltration locations will be determined during the detailed design phase.

Mitigation measures detailed in Section F of this application and Chapter 13 (Soils, Geology and Hydrogeology) of the EIS will be implemented to mitigate such emissions.

Emissions during the End use, Maintenance and Aftercare Phase

Potential emissions to groundwater during the End use, Maintenance and Aftercare phase include contaminant migration from the waste body to subsurface tidal groundwater in the waste body and alluvium layer beneath the waste body and contaminant migration from the water body to the underlying limestone aquifer.

Sub surface groundwater bodies (i.e groundwater flux within the waste body and beneath the waste body within the alluvium layer) may act as a pathway to transport contaminants to the surrounding marine water (surface water).

Please refer to Chapter 13 (Soils Geology and Hydrogeology) for further details on potential emissions.

Methods of mitigating and monitoring potential impacts during the Construction and End use, Maintenance and Aftercare phases are detailed in Chapter 13 (Soils, Geology and Hydrogeology) of the EIS and Section F of this application.

Drawing DG1014 and DG1015 illustrates the source-pathway-receptor linkages (pollutant linkages) for the site pre-construction and post-construction (during the end use) respectively.

E.5 Noise Emissions

Give particulars of the source, location, nature, level, and the period or periods during which the noise emissions are made or are to be made.

Table E.5 (i) should be completed, as relevant, for each source.

Supporting information should form **Attachment E.5**

The Agency's *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (2012) should be consulted (available on www.epa.ie) where a noise impact assessment is required. A planned programme of improvement towards meeting upgraded standards is required and should have due regard to the noise control and mitigation measures outlined in section 8, and Appendix IX of the *Guidance Note*. This programme should highlight specific goals and a time scale, together with options for modification, upgrading or replacement, as required, to bring the emissions within the limits as set out in the *Guidance Note*.

Attachment E.5 Noise Emissions

Construction activities carried out within the Waste Licence Boundary are the primary source of noise emissions.

Construction activities at the East Tip site will last approximately 18 months as outlined in Chapter 6 (Construction) of the EIS. The activities taking place at the site during this 18 month period will vary greatly in terms of numbers of vehicles/plant operational, types of activities taking place and areas of work (please refer to Chapter 6 (Construction) and Chapter 10 (Noise and Vibration) of the EIS). Therefore, the site itself is considered the noise emission point and noise emission levels emitted will vary constantly.

WASTE Application Form

In order to complete a worst-case noise impact assessment it was assumed that all items of plant/equipment are active at the same time. To ensure the most conservative approach, the assessment also assumed that all items of plant/equipment are active at the nearest boundary of the proposed development site to the relevant noise sensitive receptor.

Typical noise levels from the construction plant are detailed in Table E.5.1 of Annex 1 Standard Forms.

On account of the proximity of the proposed construction works to the Naval dockyard workshops, there may be potential for some vibration impacts at these workshops. The most significant potential source of vibration may be piling (if it takes place).

Table E.5(i) in Annex 1 identifies the main anticipated sources of noise on site.

Noise emissions will also be generated as a result of traffic, access road construction works and footpath improvement works which will take place outside the Waste Licence Boundary.

Please refer to Chapter 10 (Noise and Vibration) of the EIS for further details. Chapter 10 (Noise and Vibration) and Chapter 14(Ecology) of the EIS detail noise mitigation measures that will reduce noise from the proposed development to the lowest possible levels.

During the End use, Maintenance and Aftercare phase, no significant noise or vibration emissions are predicted from the site.

E.6 Environmental Nuisances

Attachment E.6 should contain the appropriate documentation. Information provided should follow the sequence and use the headings as relevant established in Table D.6. Additional advice on completing this section is provided in the *Guidance Note*.

TABLE E.6 ENVIRONMENTAL NUISANCES

Bird Control	Control method specified	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
Dust Control	Control method specified	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
Fire Control	Control method specified	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
Litter Control	Control method specified	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
Traffic Control	Control method specified	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
Vermin Control	Control method specified	yes <input type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
Road Cleansing	Control method specified	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable
	Attachment included	yes <input checked="" type="checkbox"/>	no <input type="checkbox"/>	not applicable

Attachment E.6 Environmental Nuisances

Bird Control and Vermin Control

It is not anticipated that any significant bird control measures will be required at the site other than ensuring all canteen waste generated by construction works is stored in an enclosed/covered skip prior to off- site removal.

It is not anticipated that any significant vermin control measures will be required at the site other than possibly around the waste storage area. Details of proposed control measures should be included in the appointed Contractors CEMP prepared prior to construction works.

Dust Control

Dust control measures are detailed in Section E.1 and Section F.1 of this application and Chapter 9 (Air Quality and Climate) of the accompanying EIS.

Fire Control

The appointed Contractor will be required to have adequate fire control and emergency response measures in place prior to construction. Such measures will be contained in the Construction Environmental Management Plan (CEMP).

Litter Control

Prior to and during construction, nuisances such as litter will be addressed through the contractors development of a waste management plan for the site, which will form part of the CEMP.

Following construction, it is proposed to install rubbish bins within the recreational area to assist in the collection of rubbish in addition to performing regular litter picking duties as required. This will be a routine part of the maintenance duties to be carried out when the site becomes a recreational amenity.

Traffic Control

The mobilisation and demobilisation of construction plant and the delivery of materials for the capping system and PES will generate the majority of traffic associated with the proposed remediation project. Chapter 8 (Traffic and Transport) of the EIS, outlines the proposed designated haul route and access point to the East Tip for materials and HGVs. The option to bring materials in by barge will be explored further at the detailed design stage.

Residents in the vicinity of the works will be made aware of construction activities. Chapter 8 (Traffic and Transport) of the EIS outlines measures to be included in the Traffic Management Plan (TMP) to reduce impacts to the local community (including pedestrian crossings and speed restrictions). These measures should be incorporated into the detailed TMP which will be prepared once the location of source material is known and in agreement with Cork County Council.

Road Cleansing

The contractor will be required to ensure that all local roads, including the access road to the site, are maintained and kept clean as far as is reasonably practicable. This shall be achieved by providing a jet spray wheelwash and sufficient hard standing area for parked vehicles and sufficient length of hard standing between the wheel wash facility and the site entrance to ensure that there is maximum removal of soil material prior to exiting the site.

In addition to this the Contractor shall be required to employ road sweepers to ensure local roads are kept clean and free of debris which may have originated from the site.

Attachment E Drawings

**DG1010 - Construction phase emission points
DG1011 – Enduse, Maintenance and Aftercare
phase emission points**



LEGEND

- A2-1** Air Emission Point (Diffuse)
- N1** Noise Emission Point (Diffuse)
- GW1** Ground Water Emission Point (Diffuse)
- SW1** Surface Water Emission Point (Diffuse)



Former Steelworks Site

Naval Dockyard

Waste Licence Application Boundary

A2-1
N1
GW1
SW1

Site Entrance

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No.	Date	By	App	Amendment / Issue
F01	07.11.13	RH/ER		FINAL ISSUE
A01	24.04.13	RH/ER		ISSUE FOR APPROVAL
D01	Apr '13	RH/ER		DRAFT ISSUE
		DM/CM		Amendment / Issue



West Pier
Business Campus
Dun Laoghaire
Co Dublin

T +353 1 4882900
F +353 1 2835676
W www.rpsgroup.com/ireland
E ireland@rpsgroup.com

Drawn	RH	Project	EAST TIP REMEDIATION PROJECT		
Checked	ER				
Approved	ER				
Date	March 2013	Title	CONSTRUCTION PHASE EMISSIONS PLAN		
Scale	NTS @ A1 1:2500 @ A3				
Job No.	MCE0734	File Ref.	MCE0734DG1010F01.dwg	Drg. No.	DG1010
				Rev.	F01

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