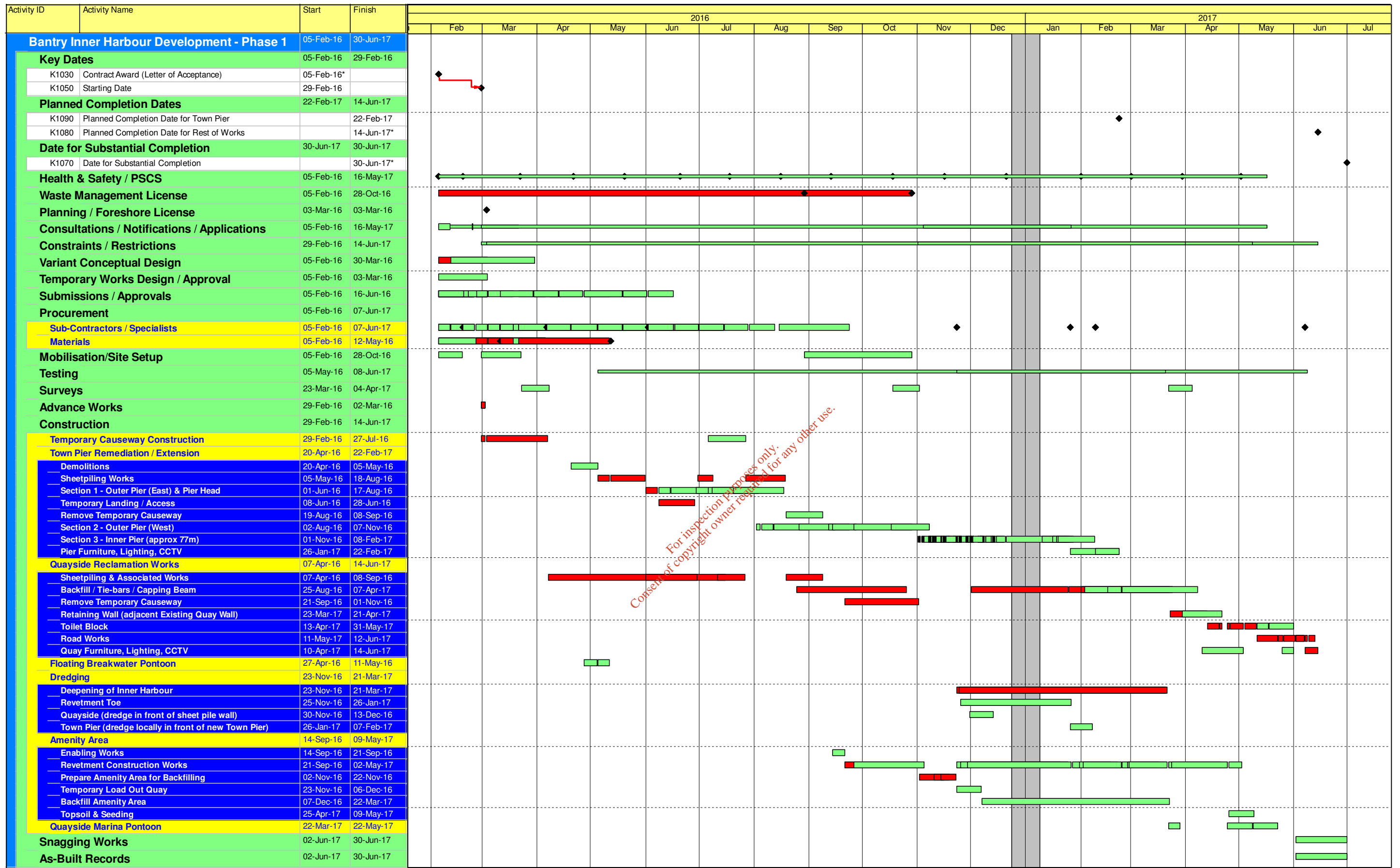


Appendix 2 - Attachment C

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Bantry Inner Harbour Development - Phase 1 - CLAUSE 4.9.1 Programme

SUMMARY

Programme No. - PT15041/17.02.16

Page 1 of 1

- Remaining Level of Effort
- Critical Remaining Work
- Remaining Work
- Milestone



Environmental Management Plan

Bantry Inner Harbour Development Phase 1

Document Revision No: 02			
Reason For Issue: For client approval			Client Approval (if required)
Originator	Reviewer	Approver	
Brian Abbott	Seamus O'Sullivan	Seamus O'Sullivan	Port of Cork

Copy	Circulation:	Name	Company	Location
1	Contract Manager	Liam Collins	BAM	Site
2	Project Manager	Seamus O'Sullivan	BAM	Site
3	General Foreman	Jack Tuohy	BAM	Site
4	Site Health, Safety & Environmental Officer	Alan Mullins	BAM	Site
5	Co. Environmental Coordinator	Brian Abbott	BAM	Head Office, Kill

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1. General Project Details

Project Name	Bantry Inner Harbour Development Phase 1		
Project Location	Bantry , Co. Cork		
Client	Port of Cork (PoC)		
Contract Manager	Liam Collins		
Start Date	8 Feb 2016	Duration (Months)	16 months
Completion Date (Expected)	30 June 2017		
Primary Project Type	Marine project		

Project Description:

1.1 Introduction

This environmental Plan has been written in accordance with BAM Contractors Environmental Procedures. The controlled copy of all environmental procedures is hosted on Sharepoint.

This Plan is a working document, clearly stating the arrangements in place to manage the significant environmental aspects and legal requirements of this project. This Plan covers BAM Civil activities and that of its Subcontractors.

This Plan has been approved by the HSE Department at Kill and has the commitment of the Project Manager and Engineers to fulfil the requirements of the plan.

1.2 Description of the Works

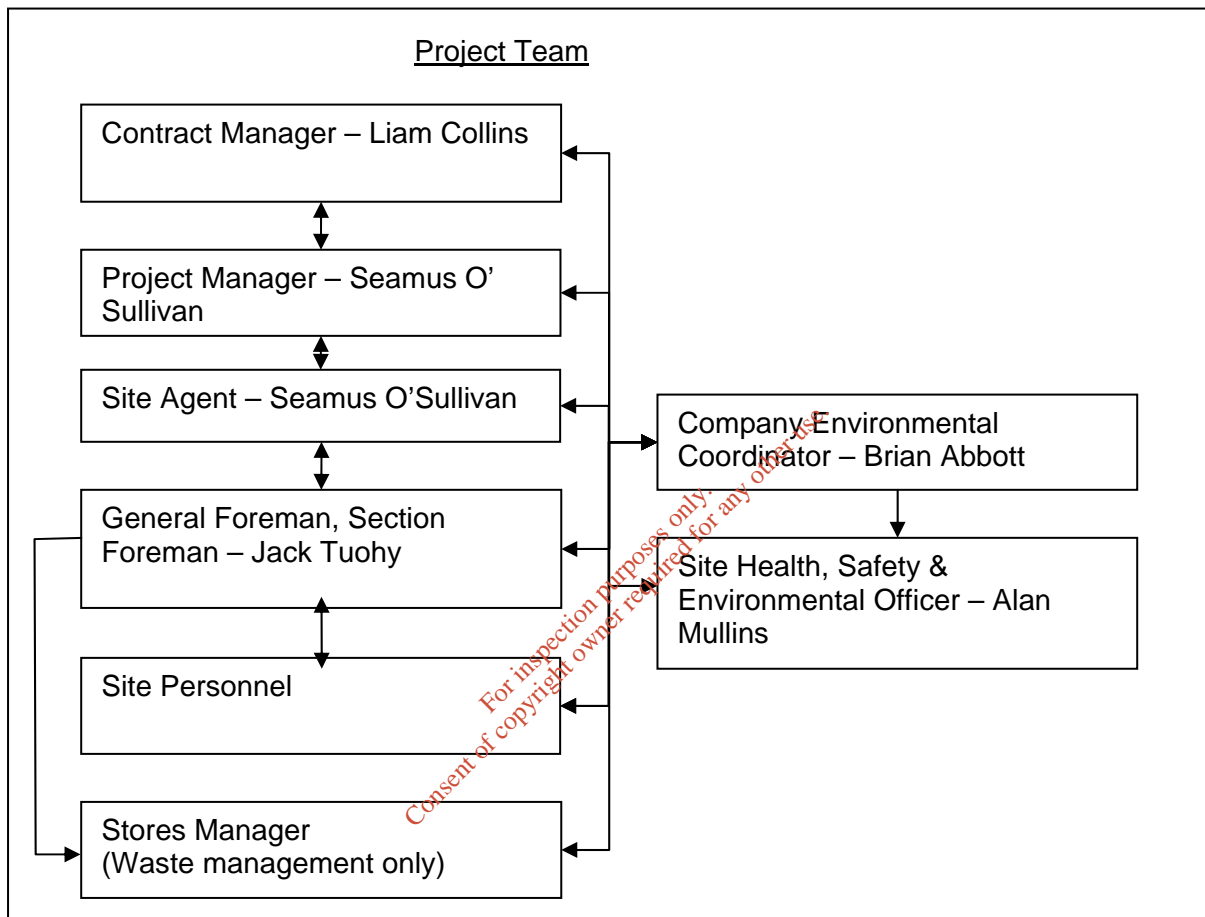
The purpose of the scheme is to provide a sheltered harbour environment and marina with increased water depth and improved pier facilities to promote fishing and tourism activities in the Bantry area. This will also provide additional and improved recreational and amenity areas at the inner harbour. As a means of making use of the dredged sediments it is intended to make beneficial re-use of clean dredged material at adjacent, and connected, locations for land reclamation. The main components of the proposed development at Bantry are as follows:

1. Dredging of Harbour Basin;
2. Fishing Docks and Quay Wall Improvements;
3. Revetment construction;
4. Fishing Pier Refurbishment;
5. Land Reclamation within Bantry Harbour;
6. Breakwater and Open Pile Quay Construction;
7. Installation of pontoons and Marina Services;

2. Environmental Management System

Project Roles and Responsibilities

2.1 Organisation Chart



2.2 Communication

The principal lines of internal communication in relation to the EMP are shown above. Environmental issues are communicated to staff through the site induction, toolbox talks and monthly safety meeting.

Communication with other external parties will be in accordance with the consultation requirements (section 6) and in response to complaints (section 3).

2.3 Responsibilities

Company	Role (Job title)	Environmental Management Responsibilities
BAM Civil	Company Environmental Coordinator	Conducts Environmental Risk Assessment, advises on environmental issues and controls, and conducts internal environmental audits.
BAM Civil	Contract Manager	Approves and implements EMP
BAM Civil	Site / Project Manager	Monitors implementation of control measures, ensures that activities, including subcontractor activities, comply with the requirements of the relevant performance requirements.
BAM Civil	Site Safety, Health Environmental Officer	Conducts weekly environmental inspections; carries out toolbox talks on environmental issues. Coordinates emergency response, including spills. Checks spill kits and orders spill control materials when required
BAM Civil	Site Engineer	Ensures that works are carried out in accordance with the EMP and with the approved works method statement. Includes Environmental matters in weekly site inspections.
BAM Civil	Section Engineers / Foreman	Carry out toolbox talks; coordinates water/noise/dust monitoring and remedial actions; ensures that works are carried out in accordance with the EMP and with the approved works method statement. Performs environmental inspections.
BAM Civil	Quantity Surveyors	Tracks the costs associated with the implementation of environmental matters and forwards to the Company Environmental Coordinator as required.

3. Environmental Management Arrangements

3.1 Environmental Management

The environmental management system (EMS) complies with the ISO 14001:2004 standard. Those aspects of the EMS relevant to this project are outlined in this document which also contains references to specific procedures.

3.1.1 Planning

The environmental planning for the project is based on information from:-

- The clients project information and tender documentation
- Planning Permission register number 12/00735
- Bantry Inner Harbour Development Environmental Impact Statement; RPS 2012
- EPA waste licence for waste management activities at Bantry harbour (pending)

Such information has been used in the environmental assessment of the activities for this project.

3.1.2 Monitoring and checking

The significant environmental aspects of the project are monitored regularly by carrying out the following at the frequency stated below:-

Monitoring and Checking	Frequency
Environmental Inspections by Site Managers	Monthly
Environmental Inspection by Foremen	Weekly
Environmental Inspections by HSE Officer	Weekly
Environmental Audits by Env Co-ordinator	Quarterly
Surface Water Inspections (recorded)	Continuous & Daily
Surface water inspection (visual)	Daily
Noise and Vibration Monitoring	Weekly
Dust Monitoring (visual)	Daily
Dust deposition monitoring	Monthly
Marine Mammal Observer	Daily
Dredge material (WAC analysis)	1 sample per 1000m ³ of dredging
Slump testing on stabilised dredge material	5 sample per treated cell
Mussels in Inner Bay for Mercury and heavy metals	Immediately before, (ii) 2 weeks after and (iii) 3 months after dredging

3.1.3 Action Register

A record of environmental management actions is to be kept on site. The progress for all actions is reported regularly to the appropriate member of the Management Team and as per the EPA waste licence conditions. Such actions will include information taken from:-

- Environmental inspections
- Audit actions: non-conformances and observations
- Progress of actions following environmental incidents
- Significant communications with stakeholders
- Project issues requiring management action
- Complaints

These actions will be closed out, signed and dated by the appropriate person in the appropriate timeframe.

3.1.4 Performance

Environmental Performance of the project is monitored by:-

- Environmental review meetings as a part of the Monthly Safety Meetings
- Site inspections
- Audits conducted by the BAM HSE Department
- Audits conducted by the Port of Cork
- EPA inspections for compliance of the waste licence
- A review of the quantities of waste created
- External communications and feedback
- Review of objectives and targets (targets table section 7)
- Corporate Social Responsibility (CSR) reporting

3.2 Communications

3.2.1 Environmental Complaints

All environmental complaints will be recorded in the project Complaints Register. The Register is maintained on site by a nominated member of the Management Team who also allocates responsibility for resolving any issues and follows up complaints to ensure they are resolved. Any issues that are deemed to be significant will be reported to the Site Management Team and the relevant authorities as appropriate. Complaints are reviewed during internal audits by the Environmental Coordinator, where any additional measures to improve performance are discussed. Complaints are reported to Head Office also. See EP-24 Complaints and Incident Procedure for more details.

All complaints received from external sources and incidents must be reported to the Project Manager, the EPA (for waste management activities) and a representative of the Port of Cork.

All notifications, records and reports will be submitted to the EPA as per the sites waste licence.

3.2.2 Environmental Incidents

Environmental incidents related to activities controlled under the site's EPA waste licence, will be reported to the EPA as per waste licence conditions and the EPA's "Guidance to Licensees/COA holders on the Notification, Management and Communication of Environmental Incidents".

Under this reporting system the environmental impact assessment criteria is as follows:

Ranking	Classification	Impact on the environment
1	Minor	<p>No contamination, localised effects</p> <p>Minor effect on air quality as evidenced by dust or odour complaint(s) ELV breaches</p> <p>An emission which does not comply with the requirement of the licence/COA (A pattern of repeated minor incidents should be taken into account when considering the level of response)</p>
2	Limited	<p>Simple contamination, localised effects of short duration</p> <p>Local limited impact to water, land and air</p> <p>Notification to and short term closure of potable water extractors required</p>

3	Serious	Simple contamination, widespread effects of extended duration Significant effects on water quality Major damage to an ecosystem (e.g. significant impact on fish population) Longer term closure of potable water extractors Significant reduction in amenity value Significant Damage to agriculture or commerce Significant Impact on man
4	Very Serious	Heavy contamination, localised effects of extended duration
5	Catastrophic	Very heavy contamination, widespread effects of extended duration

The following shall be notified, as soon as practicable after the occurrence of any incident which relates to a discharge to water:

- i. Inland Fisheries Ireland / Department of Agriculture, Food and the Marine in the case of discharges to receiving waters
- ii. Marine Institute (MI), Sea Fisheries Protection Authority (SFPA), Food Safety Authority of Ireland (FSAI) and an Bord Iascaigh Mhara (BIM) in the case of discharges to or likely to impact a shellfish water.
- iii. Cork County Council, in the case of discharges to designated bathing waters
- iv. PoC, Cork County Council and Irish Water, relation to discharges to sewer

Incident notification records shall include details of the nature, extent, and impact of, and circumstances giving rise to, the incident or accident. The record shall include all corrective actions taken to manage the incident or accident, minimise wastes generated and the effect on the environment, and avoid recurrence. In the case of a breach of the waste licence conditions, measures to restore compliance. The licensee shall, as soon as practicable following notification, submit to the Agency the record.

Environmental incidents relating to the all project works and not just those governed by the proposed EPA waste licence will be reported under the BAM HSE incident reporting system (see company environmental procedures EP-06 Environmental Incident procedure and EP-24 Complaints and Incident Procedure.

Actions with regard to specific incidents including water pollution and exceeding the limit levels for dust, noise and vibration, are detailed in Section 8.

Report all Environmental Incidents immediately to the HSE Department 045 886557.

3.3 Suppliers and Subcontractors

3.3.1 Subcontractors

All subcontractors will be required to work in accordance with BAM Civil site specific Environmental Management Plan. Works operations will be managed by the relevant Project Managers / Site Agents to ensure appropriate procedures are being followed. ISO 14001 states consideration should be given to aspects related to the organisations activities, products and services such as environmental performance and practices of contractors and suppliers. In order to achieve this, we ensure our subcontractors sign contracts which state they must comply with our environmental policy, our EMS and work within the Environmental Legal Framework while working for us on our projects.

During the recruitment stage, we would enquire as to whether they had been prosecuted with regard to breaching environmental legislation and this would also be considered. We would also enquire to the progress of their environmental management system (or equivalent) to ensure they were working in a responsible fashion and in a way which would be of a similar fashion to BAM Civil. Lines of communication would also be outlined during this recruitment stage to ensure they were aware of our environmental management system and how this will affect them and what they need to achieve in order to be suitable candidates for our projects.

A subcontractor appraisal form is in use and can be accessed through COINS. This document will be used to ensure subcontractors who are not sufficient are not permitted on any future BAM sites.

A list of subcontractors has been identified below:-

Contract	Company	Environmental Contact	Commencement Date	Duration
TBC				

3.3.2 Suppliers

All suppliers and sub-contractors are made aware of the company's environmental requirements where it is possible they could produce waste or pollution. An employee supervises all deliveries of environmental hazardous materials e.g. diesel fuel and oil drums.

4. Summary of Emergency Procedures

- Environmental Emergency Preparedness and Response Plan
- Containing and cleaning up spills (EP-15)
- Environmental Incident Procedure (EP-06)
- Environmental Complaints and Incidents Procedure (EP-24)
- Sharepoint online incident tracking system

5. Environmental Planning, Aspects and Controls

5.1 Environmental Risk Assessment

A number of site visits have been carried out by BAM staff where notes were produced which identified any significant environmental aspects. These notes were compared with the environmental information supplied by the client's representative and have been used as a basis for performing the environmental risk assessment.

5.2 Environmental Risk Assessment Report

The significance of all the environmental aspects for each activity on the project have been assessed. The assessment followed the method defined in EP-02 Environmental Risk Assessment.

Please see appendix 3 for the risk assessment report for this project.

5.3 Environmental Assessment and Management Controls

The management controls, which have been put in place, are appropriate to the nature, duration and scale of the activity on this project and the particular sensitivity of the local environment. They will be revised in the event of any significant changes to the scope of the activity during this project, especially when there is additional works, or a change in the method of works.

Additional management controls shall be adopted when there are changes to client requirements, stakeholder interests to a particular local environmental sensitivity.

The significant risks which are highlighted in the risk assessment and the management controls are communicated to the workforce by site inductions and toolbox talks.

5.4 Method Statements

The significant environmental aspects and the actions to apply the required controls are described in the method statement.

Method statements are produced in accordance with the contract requirements by the Site Management Team and reviewed by the Project Managers / Site Agents prior to submission for approval. When developing method statements, the EMP, Site Maps and any other relevant environmental management documents shall be reviewed to assess the potential impacts of the particular activity.

All method statements shall include a section entitled "Environmental & Waste Management". For activities that have significant potential to cause adverse environmental impacts reference will be made in this section of the M/S to the control measures in Section 8 of the EMP. Additional control measures may be included where those in Section 8 prove

inadequate to suit the local conditions at the site of the activity, and/or where specific measures are required by any of the authorities. The method statement must include:-

- Reference to the EMP and WMP
- The proposed method of construction and how impacts shall be mitigated
- Waste (storage, removal, end disposal sites where known)
- Hazardous Substances (storage, removal and end disposal sites where known)
- Works close to waterways (sediment controls if needed)
- Dust
- Noise and Vibrations
- Refuelling
- Fuel storage
- Drip trays/spill kits and other precautionary measures

Prior to the commencement of the works, all Method statements will be reviewed by a competent person by referring to Section 8 of the EMP. Following the review, improvements will be made to the method statements as required.

6. Environmental Compliance Requirements

In accordance with Environmental Procedure 01 (EP-01) Environmental Compliance Assessment, a review of all relevant literature and contractual requirements relevant to the contract will be completed.

- Planning Conditions
- Contract Documents
- Preliminary Health and Safety Plan
- EPA waste Licence (pending)
- All other contractual conditions and documents

These requirements have been tabulated in Appendix 2 (table of contractual requirements) to demonstrate how each of the requirements is addressed in the EMP.

Evaluation of Compliance

Compliance will be evaluated through inspections and audits and also reviewed at the regular site management meetings.

6.1 Consultation with Relevant Authorities

Consultation has been undertaken with the following authorities:

- Bantry Town Council
- Cork County Council
- EPA
- Inland Fisheries Ireland
- Port of Cork
- National Parks & Wildlife Service

6.2 Site Restrictions & Hold Points

In accordance with the contract clauses or notification from the Port of Cork the following environmental restrictions apply to the construction of the works:

Clause	Restriction – refer to Contract and planning conditions for complete details
--------	--

	Bantry Inner Harbour Development Phase 1, Works Requirements Specifications Oct 2015
	Bantry Inner Harbour Development; Environmental Impact Statement; RPS; Aug 2012
	Cork County Council Planning Register Number 12/00735
	EPA Waste Licence (pending)

6.3 Table of Environmental Licences, Permits and Permissions

6.3.1 Maintaining arrangements for environmental licence, permits and permissions

These are all legal documents associated with the work and may be from a contractor/supplier/client, or it may be an EPA or Local Authority Licences/Permit and will be maintained by the Manager Team on site.

6.3.2 Licences and Permits

PoC will be requested to supply information on the licences and permissions that are required for the project. The Port of Cork will have the responsibility for licence applications.

The relevant environmental regulator may be informed early in the project of the environmental aspects of the work. A meeting on site will be arranged where applicable.

N.B. a copy of all formal licences is to be sent to the HSE Department, Kill.

The following table indicates the licences and permissions that may be required:-

Licence / Permission	Regulator	Operations
Discharge consent into watercourse or sewer	Irish Water	Any solid or liquid entering controlled waters (river, pond, stream, ditch) unless it is clean water
Consent for work near a watercourse	Inland Fisheries Ireland	Any work which include work over or under the water
Derogation Licences	National Parks and Wildlife Services	Cutting of protected trees, protected species (bats, badgers, frogs etc), work in or near any SPA, SAC, NHA) Derogation licences for protection species and removal of invasive species
Permissions / Licences	Department of Environmental, Communities and Local Government	Excavation work in any site containing archaeological remains or natural habitat, protected Monument.
Waste Licence	EPA	Waste facility licence for storage and treatment of contaminated dredge material at Bantry pier
Waste Collection Permit	NWCPO	Waste collection permit for haulage of waste offsite
Waste facility licence/permit	EPA/LA	Appropriate facility licence, permit or COR for the disposal of all waste offsite
Planning Permissions	Cork County Council	All works to be carried out as per Planning Register Number 12/00735

6.4 Company Policy & Procedures

A copy of the Company Environmental Policy is displayed at the project site offices. The policy determines the company's overall approach to environmental management, which is developed through the EMS. This EMP has been developed taking into account the:

- Company Environmental Policy;
- Objectives and targets as specified in the Yearly Environment Plan; and

- Requirements of relevant specific procedures as contained in the Environmental Procedures Manual

6.5 Relevant Statutory Provisions

A library of environmental legislation, relevant codes of practice, standards and best practice guidance documents is maintained at the BAM Head office in Kill, Co. Kildare. This library is updated by the Company Environmental Coordinator through regular reviews or as required by changes in legislation and standards and developments in industry best practice. Legal Register is on sharepoint for general viewing.

6.6 Design Requirements

The environmental requirements for design are reviewed by Malachy Walsh and Partners and incorporated into the design as appropriate. The design requirements are reviewed by the Project Managers and Engineers to ensure that the environmental considerations relevant to the construction works are incorporated into the works.

6.7 Control of Documents

All documents relevant to the construction works shall be kept and stored in accordance with the below table. Documents that are part of the site environmental management system, including inspection reports, monitoring records and meeting minutes shall be kept for the duration of the project as per UKAS (United Kingdom accreditation scheme).

No.	Document	Raised By	Retained By	Statute or UKAS	Currently Held	Retention times (years)
1	Register of Environmental Aspects	Env Co-ordinator	Env Co-ordinator	UKAS	Head Office and Sites	3
2	Waste Transfer notes (where applicable)	External	Env Co-ordinator Site	Statute	Sites	3
3	Hazardous waste transfer notes	External	Env Co-ordinator Site	Statute	Sites	5
4	Waste Collection Permits	Local Authority	Env Co-ordinator	UKAS	Sites	Period of validity +1
5	Waste Facility Permits/Licences	Local Authority/EPA	Env Co-ordinator	UKAS	Sites	Period of validity +1
6	Energy Monitoring Records	Env Co-ordinator	Env Co-ordinator	UKAS	Head Office and Sites	3
7	Water Monitoring Records	Env Co-ordinator	Env Co-ordinator	UKAS	Sites	3
8	Local Authority / Environmental Protection Agency Licences	Local Authority / EPA	Env Co-ordinator Site	UKAS	Sites	Period of validity + 1
9	Environmental communication from external sources	External	Env Co-ordinator	UKAS	Sites	3
10	Audit Reports	Env Co-ordinator	Env Co-ordinator Head Office	UKAS	Head Office and Sites	3
11	Corrective Action Forms	Env Co-ordinator	Env Co-ordinator Head Office	UKAS	Head Office and Sites	3
12	Env N/C or Env	Any member of	Env Co-ordinator	UKAS	Head	3

	Incident Report	staff	Head Office		Office	
13	Water treatment log sheets	Site Staff	Site Staff	UKAS	Site	3
14	Calibration Certificates	External testers	Site Staff/ Env Co-ordinator	Statue	Site	3
15	Environmental Management Plans	Site Staff	Site Staff	UKAS	Sites	3
16	Waste Management Plans	Site Staff	Site Staff	UKAS	Sites	3
17	Environmental Risk Assessment	Env Co-ordinator	Env Co-ordinator and HSE Officer	Best Practice	Head Office	3
18	Department of Arts Heritage and Gaeltacht	Env Co-ordinator	Env Co-ordinator Site	Best Practice	Sites	3

Controlled documents will be:

- Reviewed at least annually and updated as appropriate;
- Marked as superseded once obsolete or destroyed;
- Dated and marked with dates of revisions.

7.0. Environmental Objectives & Targets

The objectives and targets are set in relation to the aspects identified from each site in order to reduce our significant aspects. As a minimum they should include:-

- The prevention of pollution, including emissions to air, water and land
- Nuisance impacts including dust, noise and vibration
- Protection of habitat areas and individual species, if applicable
- Storage and use of fuels and hazardous substances, including spills
- Waste management

7.1 Environmental Management Targets

The environmental management targets for the Bantry Inner Harbour project are as follows.

Targets	Measurable	Methodology	Responsibility	Timescale
Ensure no incidents of pollution to water.	Water monitoring (TTS, Turbidity, TBT etc), Slump testing of stabilised dredge material. No of Environmental Incidents. Quarterly audits, No of complaints reported	Sediment controls to be used (environmental bucket, silt curtain, lined cells for stabilisation methods. No contaminated waters to be discharged to the harbour waters. Work with CIRIA guidelines, site EPA waste licence conditions and apply BAM precautionary measures	Site Management Team	Start to completion
Ensure sediment on roads is cleared.	Raise needs for road cleaning duties during wet or busy periods	Ensure roads are swept and cleaned on a regular basis. Road conditions within the site should be kept clean at all times.	Site Management Team	Start to completion

Minimise waste production	Lean Construction Techniques, segregation more, reuse more (waste hierarchy)	Purchase less, ensure packaging is removed by supplier where possible and other materials reused & recycled	Site Management Team	Start to completion
Minimise fuel and oil spillages from site activities. Bunds to be used with all fuels and oils	Environmental Incidents, spills contained in bunds	Ensure that drip trays are used at all times under static plant, when refilling, & storing, ensure fuel storage areas are bunded.	Site Management Team	Start to completion
Ensure correct disposal of all hazardous wastes e.g aerosol cans	Waste segregation, waste costs	All hazardous wastes to be disposed as per Irish Legislation and BAM requirements	Site Management Team	Start to completion
Lower consumption of materials and fuel on monthly basis (relative to project revenue)	Smart meters, energy bills, service costs	Ensure all energy using equipment is switched off when not in use. Select best value for money providers where possible	Site Management Team	Start to completion
Reduce site electricity by 2.5% on monthly basis (relative to project revenue)	Smart meters, energy bills, service costs	Ensure all energy using equipment is switched off when not in use. Select best value for money providers where possible	Site Management Team	Start to completion
Lower emissions of dust, smoke and fumes during works	Air quality, dust particle increase	Ensure all equipment is well serviced and maintained. Switch of equipment when not in use. Use dust suppression techniques when applicable	Site Management Team	Start to completion
Minimise amount of Public complaints	Complaints received to Site Management Team	Ensure when works which will impede public access are taking place, all residents are informed for the timescale (where applicable) and all restrictions are kept to a minimum	Site Management Team	Start to completion
Minimise water usage consumption	Water charges, waste water disposal (discharge volumes)	All grey water to be reused on site where possible. 'Fresh' water supply to be kept to a minimum where possible. TBT-12 Water on Construction Sites	Site Management Team	Start to completion
Minimise airborne & groundbourne noise	Noise triggers breached (where applicable)	All construction noise limits set out in the requirements will be adhered to.	Site Management Team	Start to completion
Minimise vibration	Vibration triggers breached (where applicable)	All vibration limits set out in the works requirements will be adhered to.	Site Management Team	Start to completion
Ensure no vehicle movement and material placement does not cause damage to flora and fauna	Correct habitat protection used. Wildlife surveys where applicable	All fauna/animal species to be untouched where possible. Professional advice to be sought on removal procedures	Site Management Team	Start to completion

The standard environmental management measures for the project are to:

- Conduct all activities in accordance with the:
 - Company environmental policy and procedures;
 - Relevant statutory regulations and provisions;

- Contractual requirements with the client; and
- Requirements of relevant authorities;
- Minimise adverse environmental impacts during construction;
- Enhance natural environments during the course of construction, where practical
- Reduce the significance of our aspects and impacts through our working methods

The standard environments objectives and targets which must be met on all sites as part of our EMS system:

- Conduct all operations within the limit levels set out for noise, dust and vibration (i.e. Zero exceedences);
- Zero water pollution incidents;
- Zero cross contamination of inert or non-hazardous materials with hazardous substances or contaminated soil;
- Hazardous substances including fuels and oils to be banded at all times.
- Compliance regarding waste management i.e. licensed waste contractors, permits etc.
- All contaminated materials to be managed in manner which prevents further contamination and to be disposed to appropriately licensed facilities.

In order to help achieve these targets, the below table highlights compliance tools.

7.2 Initiatives to ensure compliance with BAM Targets

Sites	Area	Objectives & Targets	Method for achieving	Assistance by HSE Dept. (method)	Responsibility
All sites and offices	Waste	Reduce waste sent to landfill by 2%	Adhere to the waste hierarchy. Lean construction techniques	EA-30 Excavated materials on site (<i>Article 27 Notification Forms</i>). CIRIA documents on Lean Construction	Site Teams and HSE Dept.
		Increase site segregation of construction waste by 2%	Additional recycling skips on site Increase staff knowledge and participation	EP-16 waste definitions and classifications, TBT-03 Managing Waste, TBT-02 Environmental Awareness, EB-11 Site Set up	Site Teams and HSE dept.
		Increase recycling rates	Increase site awareness of improved waste management practices	Waste posters, environmental alerts and bullets to be issued focusing on new waste strategies	Site Teams and HSE Dept.
All sites and offices	Energy	SMART Meters for all sites	SMART meters installed in cabins	Advice on installation and data collected	Site Teams and HSE Dept
		Reduce CO ₂ emissions by 2%	Implement an energy reduction initiative in sites and offices	Environmental information to be issued focusing on new waste strategies	Site Teams and HSE Dept
		Temperature control in cabins	Thermostats installed	Advice on installation and data collected	Site Teams and HSE Dept
		Energy initiatives	SEAI Initiatives	<ul style="list-style-type: none"> ● Online calculation tools (energy) ● Energy posters ● Relatively paperless sites 	HSE Dept IT Dept.

Sites	Area	Objectives & Targets	Method for achieving	Assistance by HSE Dept. (method)	Responsibility
		Reduction in fuel usage / air emissions	Car Purchasing	Procurement of low emissions vehicles by Plant Department. Video conferencing capabilities in Offices to cut down on travel times, emissions.	Site Teams and HSE Dept
All sites and offices	Env Auditing & Performance	All sites to achieve 'Pass' mark from quarterly audits	Quarterly audits	Regular environmental information and directions to be issued to the sites	Sites Teams and HSE Dept.
		Appraisal system for environmental performance	Subcontractor appraisal system (COINS)	Detailed information of the systems and scores circulated to all.	Sites Teams and HSE Dept.

8.0. Environmental Control Measures

Control measures will be implemented both on an activity specific basis for the area of works, and independently of any specific activities as part of the general site management. Throughout this section reference may be made to standard procedures contained in the Environmental Procedures Manual that shall be adopted on site. The Environmental Procedures are available on sharepoint.

The project shall be developed in accordance with the control measures and with reference to the following guidance documents:-

- BRE (2003) Control of dust from construction and demolition activities;
- BS 5228-1: 2009 + A1: 2014 : CoP for Noise and vibration control on construction and open sites: Part 1: Noise
- BS 5228-2: 2009 + A1: 2014: CoP for Noise and vibration control on construction and open sites: Part 2: Vibration
- BS 5837: 2012 Trees in relation to design, demolition and construction works
- BS8895-1:2013 Designing material efficiency in building projects Part 1: CoP for strategic definition
- CIRIA 650 (2005) Environmental Good Practice On Site (Second Edition);
- CIRIA 532 (2001) Control of Water Pollution from Construction Sites – Guidance for consultants and contractors;
- Inland Fisheries Ireland (2016) Guidelines on the protection of fisheries during construction in and adjacent to waters
- Fisheries Guidelines for Local Authority Works (Department of Marine and Natural Resources, 1998).
- Dept Arts, Heritage & Gaeltacht (2014) Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters

Other guidance documents may be referenced for specific issues throughout this section. Copies of these documents are held by the Company Environmental Coordinator and on Sharepoint.

The control measures and monitoring requirements listed in this section must be implemented throughout the project.

8.1 Water Pollution Control

All watercourses that are potentially impacted by the works are identified on the site maps included in Appendix 4.

8.1.1 Water Pollution Control Measures

The potential for the construction and dredging works to have an impact on the water quality in the harbour and nearby shellfish waters shall be minimised through the implementation of the following control measures, which have been developed with reference to the guidance contained in EP-10 Surface Water Control, EP-13 Bulk Fuel & Oil Storage, EP-14 Storage & Handling of Hazardous Substances and EP-15 Containing & Cleaning Up Spills.

Mitigation measures during the dredging process will include the use of environmental dredging buckets fitted to the dredging excavators and the use of a 'Dig Master' system which facilitates for specific positioning of the dredge bucket. A silt curtain will also be used if required to minimise any sedimentation from the dredge material.

Once the material is excavated from the dump barge it will be placed in cells behind the Amenity area revetment where the water collected during the dredging operation can drain prior to the material being stabilised. The water draining from the dredge material will naturally filter through the geotextile and rock revetment of the Amenity area.

Analysis of the sediment sampling undertaken for the project in 2015 has classified the contaminated dredged material as non-hazardous (EWC Code 17 05 04) according to the HazWasteOnline Classification Tool. Based on the QRA undertaken by the project designers, it is not considered that there is a significant contamination potential from the movement and placement of the dredge spoil material.

Once the material has dewatered it will be treated using cement stabilisation. The stabilisation treatment is a remediation technology that reduces the mobility of contaminants. Immobilisation is achieved by reaction of contaminants with reagents to promote sorption, precipitation or incorporation into crystal lattices, and/or by physically encapsulating the contaminants. The method produces a high strength monolithlike product that physically reduces the mobility and chemically binds contaminants to the produced matrix. The treated mass can then be incorporated into the permanent works as engineered fill.

All treated materials will be tested as per Appendix 1/73 and dredging, treatment and disposal records maintained as per Appendix 6/71 of the Works Requirement Specification.

To mix the cement through the wet dredge material, BAM will mount an Allu PMX500 power mixer to a 35 ton excavator. This is a rotating agitator mixing which will feed and mix the cement from Allu PF7+7 power feeder with Allu DAC system into the dredge material, the attachment is powered by the hydraulics of the excavator. The agitator will be lowered into the cell of dredge material and the cement added through the agitator. The agitator then mixes the cement through the dredge material ensuring the mix is homogeneous throughout. The material is then for a sufficient period for the chemical reaction between the water and cement to take place. Once the moisture content of the material is reduced to the required levels it will be placed and compacted into the permanent works.

Any other wastes such as tyres, trolleys, traffic cones found in the dredge material will be collected in site skips and removed to a licenced/ permitted waste facility by an appropriately permitted waste contractor. These wastes will be identified when loading onto the dredging

barge or at the waste treatment area. In either situation, the waste will be manually separated from the dredge material and placed in quarantine area prior to removal offsite.

Dredging of the harbour will be limited to periods between November to March so as to reduce the potential to pollute or disturb any nearby spawning and shellfish areas.

8.1.2 Water Quality Monitoring

Water monitoring will be carried out through automatic sampler buoys which will be located externally to the harbour and supplied by PoC. These samplers will measure total suspended solids and water turbidity.

In addition to this BAM will take one water sample daily for laboratory analysis. These samples will be analysed for

- Suspended sediment concentration;
- Turbidity;
- TBT

Samples will be taken at the mouth of the harbour and at the higher of mid depth or 3m below the water surface. Water samples will be collected and stored in accordance with the testing laboratory's instructions. The water samples will be transported to the lab every Friday in cooled sample boxes. Consultation will be held with the environmental laboratory to ensure that all testing takes place within recommended timeframes.

Results from this environmental monitoring shall be reviewed by the Site Management team upon receipt to verify that operations are within the limits specified. Limit levels will be set based on background levels. These levels will be determined by the Client prior to works commencing. The limit levels shall not exceed 30% above background levels. Results will be provided by Tuesday of the following week and supplied to the Resident Engineer.

8.1.3 Water Pollution Incidents

Should any monitoring or inspections indicate that pollution of the Bantry Inner Harbour Development Phase 1 project has occurred then the site management team shall immediately inspect the waste treatment area and sediment control facilities to ascertain whether they are operating effectively. All operations may be stopped and/or additional control measures installed to prevent further pollution to the harbour. Appropriate action shall be taken in consultation with the Site Agent. Water sampling with additional parameters will be tested to ensure all pollutants are identified. As described in section 3.2.2, incidents will be reported to the EPA and other relevant authorities immediately, and logged on the BAM Incident Register as per EP-24 Complaints and Incidents Procedure.

8.2 Noise & Vibration Control

The primary sources of noise and vibration associated with the contract have been identified in the project EIS as follows:

- Construction plant

Activity	Plant	Noise Level (dB L _{Aeq}) at 10m
Demolition / Site clearance / Excavation / Removal of waste/rubble	Bulldozer	80
	Excavator	82
	Lorries (drive by)	70
	HGV and tippers	84
Rock Breaking	The Noise level generated during rock breaking, possibly using explosives, will depend on the type and amount of explosive and / or the machinery used. The resultant noise would also be modified by water depth although to what degree is unknown.	
Piling	Hydraulic Piling	89
	Vibratory Piling	88
	Large Rotary Bored Piling	83
	Continuous Flight Auger Piling	79
Dredging	Ship chain bucket	96
	Digging out river bed: Tracked Excavator Water Pump	85
	Loading dredged aggregates: Wheeled Loader	84
Foundations	Compressor	81
	Water Pump	80
	Concrete Pour	86
	Place and vibrate concrete cycle	80
	Cement Mixers	74
Steel Erection	Large crane operations	86
	Articulated lorry	70
Concrete Frame	Large crane operations	86
	Place and vibrate	80
General Construction Works	Surfacing	85
	Internal fit/ bricklaying	70
Road works/landscaping	Surfacing/rolling	76 - 86
Infilling/ Levelling	Dump truck	82
	Wheeled excavator/ Loader	78
	Dozer	80

Activity	Predicted "Worst - Case" Construction Noise Level dB L _{Aeq, 1 hour} at noise sensitive receivers			
	@ 50m	@ 100m	@ 150m	@ 200m
Demolition / Site clearance / Excavation / Removal of waste/rubble	72	64	60	57
Dredging	73	65	61	57
Hydraulic Piling <u>or</u>	74	66	62	58
Vibratory Piling <u>or</u>	73	65	61	57
Large Rotary Bored Piling <u>or</u>	68	60	56	52
Continuous Flight Auger Piling	64	56	52	48
Foundations	73	66	61	58
Steel Erection	71	63	59	56
Concrete Frame	71	64	60	56
General Construction Works	70	62	58	55
Road works/landscaping	64	56	52	48
Infilling/ Levelling	69	62	57	54

Noise limits outside of the normal working hours are as follows:

Period	Hours	Permitted Ambient Noise Level, Leq, measured at Building Facades [dB(A)]	Period of Hours over which Leq, is applicable.	Maximum Sound Level (see note (iv) below) measured at Building Facades [dB(A)]
Monday to Friday	20.00hrs to 06.00hrs	70	1 hour	80
Saturday	-	70	1 hour	80
Sunday and Public Holidays (following PoC and EPA approval)	-	60	1 hour	65
All unattended plant outside normal working hours.		60	18 hours	65

The noise levels (see Note (i) below) for periods outside the normal working hours will only be permitted when consent has been given to exceptional working

Schedule of Total Noise Levels at Building Facades

Notes:

- (i) Noise levels relate to free field conditions. Where noise control stations are located 1 metre from façades of buildings, the permitted noise levels can be increased by 3dB(A).
- (ii) The ambient noise level, Leq, at a noise control station is the total Leq from all the noise sources in the vicinity over the specified period.
- (iii) The existing ambient noise level, Leq, at a control station is the total Leq from all the noise sources in the vicinity over the specified period prior to the Commencement of the Works.

(iv) Maximum sound level is the highest value indicated on a sound level meter which meets the requirements of BS 5969 Type 1 or 2 set to SLOW response, and frequency weighting A

Operating limits for vibration are as follows:

Frequency	Vibration Limit	Location
<10 Hz	5mm/s	A.C Watermains
<10 Hz	8.5mm/s	Any occupied property
10 to 50 Hz	10mm/s	Residential property
50 to 100 Hz	20mm/s	At completed structures

All works are scheduled to be completed within the working hours as specified in the contract.

Working Hours	
Monday to Friday	08:00-1800hrs
Saturday	08:00-1300hrs
Sunday and Bank Holidays	No Working

Best practicable means should be employed to minimise noise levels, in accordance with the British Standard BS 5228 Noise and vibration control on construction and open sites (Parts 1 and 2) for basic information and procedures for noise and vibration control. A copy of this standard is available at the site or from sharepoint.

In accordance with other construction sites and with common local authority guidance the following noise criteria as shown in Table 6.10 taken from the EIS will be implemented throughout the project.

Table 6.10: Noise criteria for construction sites

Day of Week / Times	Maximum L_{Aeq} at Nearest Noise Sensitive Receiver / Site Boundary
<u>Monday to Friday</u>	
07:00 - 19:00	75 dB $L_{Aeq, 12hr}$
19:00 - 22:00	65 dB $L_{Aeq, 1hr}$
22:00 - 07:00	No noise audible
<u>Saturday</u>	
08:00 - 13:00	75 dB $L_{Aeq, 5hr}$
13:00 - 22:00	65 dB $L_{Aeq, 1hr}$
22:00 - 07:00	No noise audible
<u>Sunday</u>	No noise audible

8.2.1 Noise & Vibration Control Measures

Noise reduction measures will be undertaken in accordance with the Procedure EP-09 Noise and Vibration Control, which has been developed taking into account the requirements of BS 5528, particularly Section 10, and include:

- Good communication with landowners and residents in the proximity of the harbour shall be maintained.
- Plan the working hours and duration of work with consideration for the effects of noise/vibration on any noise sensitive receiver;
- The normal working hours shall be Monday to Friday between 0800 and 1900 hours and Saturday between 0800 and 1330 hours, with no working on Sundays or public holidays, except where consent is granted to work outside of these hours.
- Any plant such as generators and pumps which is required to work outside the hours of 0800 hours to 1900 hours, Monday to Friday shall be surrounded by an acoustic enclosure.
- Traffic management proposals shall include measures to minimise journey times during the construction period.
- All vehicles and mechanical plant shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order for the duration of the works in compliance with BS 5228.
- Any item of plant, which is ineffectively silenced, shall be removed from the site.
- Noise barriers (in combination with low surfacing) will be used where necessary.
- All compressors shall be “sound reduced” models fitted with mufflers or silencers of the type recommended by the manufacturers.
- Pumps and mechanical static plant shall be enclosed by acoustic sheds or screens where appropriate.
- Use of hoarding and other noise baffling equipment

8.2.2 Noise & Vibration Monitoring

- Noise and vibration monitoring will take place on a weekly basis at agreed locations via the use of calibrated monitoring equipment.

8.2.3 Noise & Vibration Incidents

Should any monitoring indicate that noise or vibration levels have exceeded the intervention values then the plant or equipment causing the noise / vibration shall be powered down immediately. Appropriate action shall be taken in consultation with the Site Agent to reduce the noise and/or vibration levels. Actions may include:

- Servicing and or modifying the plant / equipment;
- Replacing the plant / equipment;
- Moving the operation away from sensitive receptors;
- Rescheduling the activity;
- Erecting noise barriers where other measures are not practical

When noise and vibration monitoring is taking place, all monitors should take into account the background noise and situation when monitoring. External noise and vibration reports to reference to this fact also.

The incident shall be logged in the Incident Register if levels have been breached and background noise was deemed not a factor at the time of the occurrence.

8.3 Air Pollution Control

The main types of air pollution that will result from the works are dust and exhaust emissions from combustion engines, and plant machinery and vehicles. Activities with the potential to produce dust are:

- Plant and vehicle movement;
- Bulk materials handling;
- Stockpiles;
- Vehicle movement off site.

8.3.1 Dust Minimisation Plan

Dust shall be minimised on site through the implementation of the following control measures developed in accordance with the Procedure EP-08 Air Pollution Control:

- A mechanical road sweeper will be in operation at all time to clean the site hard-standing, roads or footpaths in the vicinity of the site.
- Material handling system and site stockpiling of materials shall be designed and laid out to minimise exposure to wind.
- Mandatory speed limits will be enforced within the harbour area particularly in weather conditions which are conducive to dust generation.
- Dust suppression systems will be used during dredge stabilisation operations.
- Vehicles either delivering or removing material from site which have a dust potential will be covered with tarpaulin to minimise the release of dust.
- Exhaust emissions where practical shall be minimised by ensuring that all plant, equipment and vehicles are in good working order and regularly serviced to ensure efficient running, by using the smallest engine-sized plant and equipment suitable for the task and by ensuring that engines are not left idling unnecessarily.
- Provision of easily cleaned hard-standings for vehicles entering, parking and leaving the site.

8.3.2 Other Air Quality Control Measures

- Exhaust emissions where practical shall be minimised by ensuring that all plant, equipment and vehicles are in good working order and regularly serviced to ensure efficient running, by using the smallest engine-sized plant and equipment suitable for the task and by ensuring that engines are not left idling unnecessarily.
- Burning of materials on site shall not be permitted.

8.3.3 Dust Monitoring

- Daily visual dust monitoring will take place on site.
- The foreman will include formal dust monitoring in his weekly inspection
- Dust deposition monitoring with a threshold limit of 350mg/m²/day will be carried out at the Amenity area as per the site EPA waste licence.

8.4 Habitat (Flora & Fauna) Protection

General ecological mitigation measures have been incorporated into the project design from the project EIS and the requirement during the construction stage is to ensure that these measures are implemented. Any additional mitigation measures will be implemented during construction as required to limit additional habitat and fauna disturbance outside the area of works.

All work activities will comply with the Environmental Protection Agency Act 1992 and amendments and Wildlife Act 1976 and amendments 2000 to 2010 and the European Communities (Birds and Natural Habitats) Regulations 2011.

8.4.1 Construction Mitigation Measures

General habitat control measures shall be implemented in accordance with EP-12 Habitat, Flora and Fauna Protection. Additional site specific controls will also include:

- A qualified and experienced marine mammal observer (MMO) shall be appointed to monitor for marine mammals and to log all relevant events
- Dredging activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring, as determined by the MMO, is not possible the sound-producing activities shall be postponed until effective visual monitoring is possible.- Note once normal operations commence, there is no requirement to halt or discontinue the activity at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 500m radial distance of the sound source, i.e., within the Monitored Zone.
- In waters up to 200m deep, the MMO shall conduct pre-start-up constant effort monitoring at least 30 minutes before the sound-producing activity is due to commence. Where operations occur in waters greater than 200m depth (i.e., >200m), pre-start-up monitoring shall be conducted at least 60 minutes before the sound-producing activity is due to commence
- If there is a break in sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down or location change) then all pre-start marine mammal monitoring must be undertaken in accordance with the above conditions prior to the recommencement of dredging activity
- Construction works to be avoided during breeding seasons where possible. Controls on noise, lighting, pollution and speed restrictions in certain areas may also be required.

8.4.2 Fish and Fisheries Habitat Mitigation Measures

In addition to the mitigation measures referred to in section 8.1 for water pollution, the following measures will be implemented to reduce the impacts from dredging to include:

- Dredging activities will take between November to March to prevent any potent negative effects during the mussel spawning and shrimp settlement seasons.
- All excavators will be fitted with a "Dig Master" system. The system is run from a global positioning system, from this operator is aware of the location x, y & z respectively and also the orientation of the bucket of the machine. This ensure only the designated areas are dredged.
- All excavators carrying out the dredging works will be fitted with environmental dredging buckets which will minimise the loss of any dredge spoil into the harbour.
- A silt curtain will be put in place in liaison with the Harbour Master on marine traffic.

8.5 Waste Management

A Waste Management Plan will be instituted during the works and the waste management measures for the project are detailed in this separate document, which includes:

- Waste management targets
- The potential waste materials produced during the project;
- Waste handling procedures;

- Waste Permits required;
- Waste reuse, recycling and disposal techniques; and
- A map showing designated waste handling areas.

The Waste Management Plan also covers the handling and disposal of hazardous wastes such as fuels and used absorbent materials.

With regard to potential nuisance from temporary site offices and canteen, the following measures shall be observed:

- Site offices shall be maintained in a tidy condition.
- Litter shall be cleaned up daily, particularly around skip bins, in accordance with EP-19 Litter Management.

8.6 Hazardous Materials Handling & Storage

During the works there will be a requirement for the use of hazardous substances, including:

- | | |
|-----------------|-------------------------|
| • Fuel oil | • Shuttering Oil |
| • Diesel | • Liquid cement |
| • Hydraulic Oil | • Concrete Curing Agent |

The management of such substances shall be carried out in accordance with the procedures for:

- Bulk Fuel and Oil Storage (EP-13);
- Storage and Handling of Hazardous Substances (EP-14);
- Containing and Cleaning Up Spills (EP-15).

All chemicals not covered by EP13, EP14 and EP15 shall be managed in accordance with the requirements of the relevant safety data sheet (SDS) and the Health and Safety Plan.

- Hazardous materials are kept in lockable stores at site compound locations. Spill kits are also kept at these locations. Any hazardous materials must be returned to the stores at the end of each day and not left on site.
- Oil and fuel will be stored in bunded areas and shall be stored well away from any water discharge point or, where not possible, the discharge point will be adequately protected to prevent spills from entering.
- Diesel pumps, generators or similar shall be placed on impervious drip trays to capture minor spills and leaks and located at least 10m from any water discharge point.
- Tools and equipment shall not be washed in or near any watercourses and if undertaken on site wash water shall be directed to appropriate retention controls and not allowed to directly enter any watercourse.

Fuels, lubricants and hydraulic fluids for equipment used on the construction site shall be carefully handled to avoid spillage, properly secured against unauthorised access and provided with spill containment. Fuelling and lubrication of equipment shall not be carried out in the vicinity of water discharge points. Waste oils and hydraulic fluids shall be collected in leak-proof containers and transported off-site for disposal or recycling at appropriately licensed facilities.

8.7 Vermin Control

Control measures associated with are as follows:

- Cabins and offices will be kept clean on a daily basis and formally cleaned at least once per week.
- Bins will be provided to dispose of food waste and other waste which may attract vermin.
- Office doors to remain closed where possible, in particular canteen doors.
- Regular inspection of the offices will be carried out to ensure vermin are not present.
- Where all control measures are implemented and vermin are still found to be present, a vermin removal company shall be contacted.

8.8 Landscape

Any landscape measures shall be implemented in accordance with the Landscape Design required by the contract, to be prepared by the Designer.

8.9 Archaeology

An archaeologist experienced in maritime archaeology will be retained for the duration of the relevant works.

In the event of archaeologically significant features or material being uncovered during the construction phase, machine work should cease in the immediate area to allow the archaeologist/s to inspect any such material.

Once the presence of archaeologically significant material is established, full archaeological recording of such material will be carried out. If it is not possible for the construction works to avoid the material, full excavation would be recommended. The extent and duration of excavation would be a matter for discussion between PoC and the licensing authorities.

It is recommended that an archaeological dive team is retained for the duration of any in-water disturbance works on the basis of a twenty-four or forty-eight hour call-out response schedule, to deal with any archaeologically significant/potential material that is identified in the course of the ground disturbance activities.

9. Management Review

The implementation of the EMP is reviewed monthly on site at the internal site meetings. These meetings are attended by site management and by personnel responsible for the implementation of the EMP. During the meeting all aspects of the environmental management are considered, including:

- Upcoming work
- Environments risks foreseen
- Control measures for the protection of the environment
- Internal and external audit results
- Inspection and monitoring results;
- Environmental alerts and bullet-ins
- Any issues raised by site staff or in relation to environmental management
- Site goals and targets
- Control measures for protection of the environment
- Any other significant issues;

Changes are made to the on-site management as required to achieve a continual improvement in environmental performance.

Environmental issues will be brought to the attention of the workforce through toolbox talks and through the Monthly HSE Meeting.

The EMP itself shall be reviewed at least every three months by the Site Management Team to ensure that it continues to be adequate and effective and changes made as required. Any changes shall be made by the Site HSE Officer and a new revision of the EMP issued to all personnel on the circulation list on page 1 of this document. Site audits carried out by the PoC will also include a review of the project EMP, changes made as required.

10. Training & Competence

The environmental management goals and strategy shall be communicated to all staff and contractors at the safety and environmental induction. All employees and contractors are required to undertake a site induction prior to conducting any work on site (for further details refer to the Health and Safety Plan) and employees shall be made aware of their responsibilities in accordance with this management plan. A record of inductions shall be kept by the Safety, Health & Environmental Officer.

Toolbox talks will be conducted with relevant employees on various aspects of the environmental management plan, activity control measures and environmental procedures. Three toolbox talks on environmental or waste issues must be conducted per quarter.

Toolbox talks shall be conducted by the Site HSE Officer, Section Engineers or others nominated by the Site HSE Officer. The schedule for toolbox talks shall be at the discretion of the Site Management Team and additional toolbox talks will be given in response to complaints, or where the particular environmental risks have been identified.

10.1 Recommended Toolbox Talks

Toolbox Talk Topic	Reference Material	When*	Recipients
Environmental Management	Environmental Policy, EMP, Environmental Procedures Manual	Commencement of site activities	All site crews
TBT 01	Hazardous Substances	Regular Intervals	All site crews
TBT 02	Environmental Awareness	Regular Intervals	All site crews
TBT 03	Managing Waste	Regular Intervals	All site crews
TBT 04	Spill Control	Regular Intervals	All site crews
TBT 05	Waste Pollution Prevention (Fuel & Oil)	Regular Intervals	All site crews
TBT 06	Silt Management	Regular Intervals	All site crews
TBT 07	Fire	Regular Intervals	All site crews

TBT 08	Storage of Hazardous Waste on Site	Regular Intervals	All site crews
TBT 10	Chemical & Fuel on site	Regular Intervals	All site crews
TBT 12	Water on Construction Sites	Regular Intervals	All site crews
TBT 13	Dust and Air Quality	Regular Intervals	All site crews
TBT 14	Noise and Vibration	Regular Intervals	All site crews
TBT 15	Archaeology	Regular Intervals	All site crews
TBT 16	Working in previous developed areas	Regular Intervals	All site crews
TBT 17	Pumping and over pumping	Regular Intervals	All site crews
TBT 18	Water pollution - cement and concrete	Regular Intervals	All site crews
TBT 19	Material handling and housekeeping	Regular Intervals	All site crews
TBT 20	Washing down plant and equipment	Regular Intervals	All site crews
TBT 21	Energy conservation - electricity and fuel	Regular Intervals	All site crews
TBT 22	Bentonite	Regular Intervals	All site crews
TBT 23	Be a good neighbour	Regular Intervals	All site crews
TBT 24	Sustainability	Regular Intervals	All site crews
TBT 25	Bantry Harbour environmental issues	Prior to commencement and at regular intervals there after	All site crews

Appendix 1:

Table of Requirements for ISO14001

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Table of Requirements for ISO14001

	ISO14001	EMP	Section
4.2	Environmental Policy	Company Environmental Policy	Appendix 5
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		Contract Requirements	Appendix 2
4.3.3	Objectives, targets and programmes	Environmental Management Goal	7
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4.4.1	Resources, roles, responsibility and authority	Organisation & Responsibilities	2.1
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4.4.3	Communication	Environmental Management Strategy	3.2
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Appendix 2:

Table of Contractual Requirements for Environmental Management

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Table of Contractual Requirements for Environmental Management
(From Project Specific Construction Requirements)

EMP Section	Section / Clause
	TBC

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Appendix 3:

Environmental Risk Assessment Report

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Appendix 4:

Site Maps

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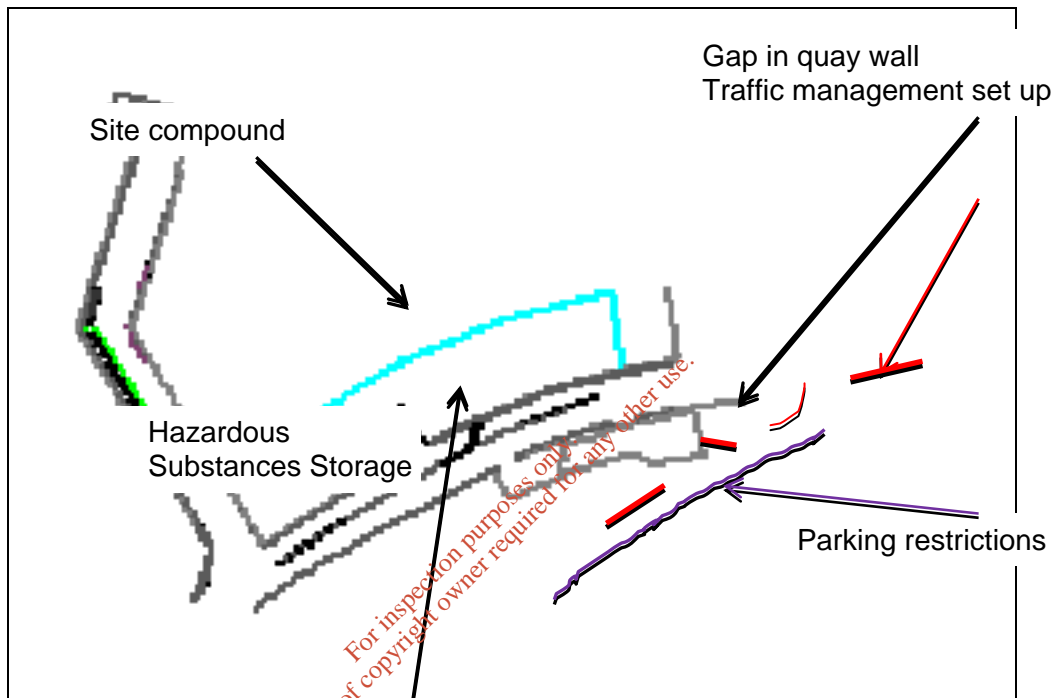
Location of the Works



Proposed access routes for the project and site location

- 1) – Pier
- 2) – Amenity Area
- 3) – Cove Works Area

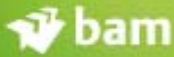
Proposed Works Area



Appendix 5:

Environmental Policy

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Environmental Policy

BAM Civil, one of Ireland's largest construction organisations, provides services in design, civil engineering, building, facilities management, project management and property development, across a wide range of construction projects.

The organisation promotes a responsible and proactive approach to environmental and waste management at every level of the business and on all sites of operation.

BAM Civil recognise that business aims must be balanced against environmental considerations. We are committed to continually improving our environmental performance and managing our operations to minimise potentially adverse impacts on the environment.

Specifically, where it is within the organisation's control or influence, BAM Civil will:

- Identify the significant environmental aspects of our activities by assessing their potential impact on the environment.
- Based on our significant environmental aspects, set specific objectives and targets, against which we shall monitor and review our performance.
- Comply with legal and other compliance obligations that are applicable to our activities and relevant to the environmental aspects of the business.


- Develop management processes and procedures that prevent pollution, protect native species and habitat, minimise waste generation, promote recycling and the use of recyclable materials, and maximise the efficient use of material and energy resources.
- Implement strategies to communicate our environmental commitments and requirements to employees, customers, suppliers, subcontractors and other interested parties.
- Provide training and support to employees, so they understand and can fulfil their responsibilities with regard to environmental impact and performance.
- It is the individual responsibility of all persons working for or on behalf of BAM Civil to support and apply the Environmental Policy and Environmental Management System as it pertains to their activities.



T. Cullinane, CEO

Date: February 2016



EP-19	Litter Management			
Note: Always print or copy to double-sided pages	PROC. NO: EP-19	REV: 02	DATE: 26.03.2013	PAGE: 1/1

Purpose:	To provide a guideline for the procedures to be implemented for the management of litter in accordance with the regulatory requirements and Environmental Policy.
Scope:	All sites and activities
Responsibility:	Contract/Project Manager, General Foreman, Area Supervisors
<p>Regulatory / Management Requirement:</p> <p>Under the Litter Pollution Act 1997 and Regulations 1999 there are a number of requirements with regard to littering. The primary obligation (Section 6) placed upon the owner or occupier of a property that can be seen from a public place is to keep the premises litter free. Where litter has accumulated the local authority can issue a notice requiring its removal. If the owner or occupier does not comply with the notice the local authority can do whatever is necessary to clean up the site and require the owner / occupier to pay all costs involved.</p> <p>The Litter Pollution Regulations 1999 make the following activities offences under the Act:</p> <ul style="list-style-type: none"> • Depositing a substance or object so as to create litter in a public place or litter that is visible to any extent from a public place. <i>Section 3 (1)</i>; • Depositing for collection by or on behalf of a local authority a substance, material or thing, or <ul style="list-style-type: none"> ○ Loading, transporting, unloading or otherwise handling or processing anything, or ○ Carrying on a business, trade or activity; in a manner that creates or tends to create litter in a public place or litter that is visible to any extent from a public place. <i>Section 3 (2)</i> • Placing municipal waste into or near a litter receptacle. <i>Section 3 (3)</i> • Failing to take measures in using a vehicle to transport goods or materials to prevent the creation of litter on a public road or in a public place. <i>Section 4 (1)</i> • Failing to take measures to prevent the creation of litter in the vicinity of a skip. <i>Section 4 (2)</i> • Failing to keep a footpath or margin adjoining a public road free of litter. <i>Section 6 (4)</i> • Removing litter from a footpath or margin onto a road. <i>Section 6 (5)</i> <p>The penalty for persons found guilty of an offence is a fine not exceeding €3000 upon summary conviction in the District Court, or €130,000 on conviction on indictment.</p>	
<p>Management Procedure:</p> <p>During site inductions and pre-start meetings ensure that all personnel and contractors are aware of the requirement to keep the site and any surrounding public places free of litter.</p> <p>Ensure security measures are put in place to prevent fly tipping on the site.</p> <p>At the commencement of site activities designate responsibility for checking work areas, and particularly the area around skips, and ensuring they are kept free of litter and that waste is placed into the appropriate skip or bin.</p> <p>Any personnel involved in the transport of materials around the site or off-site must ensure that such transport does not cause litter to be deposited on a public road or place.</p> <p>Undertake regular inspections (as part of the Environmental Inspection – refer to EP-05) to ensure compliance with the above requirements.</p> <p style="text-align: center;">For further information or advice contact the Environmental Coordinator, on 045 886536</p>	
<p>References:</p> <p>Litter Pollution Act 1997 and Regulations 1999 & EPA Acts 1992-2003</p> <p>FAS & CIF (2004) Construction & Demolition Waste Management – A Training Programme for Contractors & Site Managers (Course Notes)</p>	