ENVIRONMENTAL MANAGEMENT

Code of Practice for the Building and Construction Industry

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## Amendments Issue Dates

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<tr>
<td>1.0</td>
<td>May, 2006</td>
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<td>John Rizzolo</td>
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FEEDBACK FORM

Comments on the documentation and improvement suggestions are welcome. Feedback may be provided using this form, or by email to:

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(Comments or suggestions may be attached as marked up copies of pages from the document)

**Document No. and reference:**


**Issue or comment:**


**Specific change proposed:**


**From:**

Name: _______________________________  Position: ____________________________
Contractor: ________________________________________________________________
Date: ___________________________
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ENVIRONMENTAL POLICY

Ballymun Regeneration Limited is committed to the protection and enhancement of the environment. It takes a close and responsible interest in, and considers and respects, the physical, economic and social environments on all projects in which it is involved.

It aims to contribute towards environmental improvement and sustainable development by using best practice and innovation to minimise environmental impacts. Environmental impacts are to be assessed at every stage of the business process in consultation with organisations working on behalf of BRL including, designers, contractors, local authorities and local stakeholders to develop agreed solutions that are sympathetic to the environment and community. BRL plays an active role in supporting and encouraging contractors in reducing their environmental impacts.

An environmental action plan seeking continual improvement is to be produced on an annual basis setting out specific objectives, targets and implementation steps, with the progress routinely monitored, reviewed and reported to the board of management.

The policy relies on these environmental principles:

- managers will demonstrate the leadership and commitment necessary to foster a culture of environmental responsibility;
- minimise, and where possible, eliminate impacts on the surrounding social and natural environment;
- implementation of the Environmental Management System and manage environmental factors including:
  - pollution minimisation
  - resource and waste management
  - ecologically sustainable development
  - water quality management
- environmental risks are to be identified, assessed and controlled to minimise and mitigate the environmental impacts of our operations;
- all employees, contractors and operators have a responsibility to protect the environment and to prevent pollution;
- all staff will be provided with the knowledge, awareness and resources required to meet their environmental responsibilities; and
- operations, decisions, plans and actions will be conducted in accordance with this policy.

This policy covers both the development works as well as general office procedures.
Our objectives are to:

- Comply with, and endeavour to exceed, the requirements of all relevant environmental legislation, codes and guidelines,
- Continually strive for improvement in the environmental performance of its contractors,
- Take proactive measures to protect and preserve wildlife & flora and their natural habitats,
- Prevent pollution and protect both the natural and built environment
- Reducing the effects of noise, dust, disturbance and inconvenience arising from its activities,
- Establish periodic reviews of environmental impacts associated with company activities,
- Adopt best practice, set targets, monitor and continuously improve environmental performance,
- Identify and implement a continuous programme of measures to minimise identified environmental impacts,
- Involve all employees in development and implementation of our environmental action plan,
- Minimise construction & demolition waste through re-use and recycling to reduce the amount of materials being disposed of in land fill sites and safely dispose of any other type of waste.

General office procedure commitments to focus on include reducing consumption of resources by:

- Use of e-mail for all correspondence, where possible,
- Double sided printing, reuse of scrap paper and segregation of paper waste for recycling,
- Conserve, reuse and recycle eg. printer toner and ink cartridges.
- Reduce energy usage in our buildings through movement-activated lighting and the automatic switching-off of monitors.
- Send Facsimiles from computer

Each and every individual working for this company has a part to play in helping us to achieve and maintain a healthy environment for all.

This policy will be brought to the attention of all employees and to all those working for and on behalf of the company and made available to the public.

This policy is operated in conjunction with the separate details of the Doc 3-Po-CSM Environmental Management - Code of Practice for the Building and Construction Industry document and Doc 1-Po-CSM Project Safety, Health, Environmental, & Community Management Strategy policy.
1.0 ENVIRONMENTAL MANAGEMENT

1.1 Overall Purpose

The purpose of this Code is to provide and maintain environmental protection and to ensure that construction activities are conducted in a manner that minimises impact on the environment, including control of pollution and waste that develops during normal construction practices. It promotes the awareness and use of best practice environmental management by site operatives during the construction phase. It ensures that construction activities have minimal impact on the environment. It applies to both the building construction site and associated activities such as stockpile sites, and construction of new or diversion roads.

1.2 Overall Objectives

1. To ensure environmental safeguards are implemented correctly;
2. To raise awareness in the construction industry and improve overall compliance with environmental protection legislation in Ireland;
3. That works are managed to reduce adverse impacts on the environment;
4. To enhance BRL’s reputation as a company with a good quality environment, community and corporate governance policy.

1.3 Introduction

This code covers a range of potential pollution sources from a variety of building and construction industry practices. In addition, the code addresses issues related to construction activities that are subject to the approval of relevant authorities. These are mainly confined to construction and building works carried out following the granting of planning approval.

The control of site erosion is extremely important during the construction phase of building projects. The quality of stormwater entering our waterways can be greatly influenced by the building and construction industry. This code provides the industry with benchmarks of best practice, based on practices undertaken in Ireland and overseas. The generation of sediment, litter and debris during construction works must be minimised.

It is important that impacts on the environment are considered at the Design & Tender Stages so that adequate resources can be allocated to control strategies as outlined in this code when setting up a site.

An impact assessment of the environmental aspects should be undertaken for all stages of construction, and the controls identified should be monitored continually and recorded to ensure compliance.
Arrangements for this should be included in the Safety and Health Plan, including nominated personnel, monitoring and maintenance arrangements. In addition the emergency procedures should reflect environmental impacts and control measures required.

1.4 Enforcement

Local Authority Enforcement Powers of the Air Quality and Noise Control Unit

The principal legal framework for the prevention and control of air pollution is contained in the Air Pollution Act, 1987 (No. 6 of 1987). This act provides a comprehensive statutory framework for the control of air quality.

Breaches of legislation and Local Authority standards are dealt with by the Air Quality Monitoring and Noise Control Unit. The relevant Environmental Health Officer in this unit will make a site inspection to advise the offending contractors to take the necessary steps to reduce the dust. If necessary a Notice under the Air Pollution Act 1987 may be served and legal proceeding may be taken.

Noise Pollution Control:


This Department has power to serve notice on owner or occupier of a premises where noise is being caused that is 'so loud, so continuous, so repeated of such duration or pitch or occurring at such times that it gives reasonable cause for annoyance'.

Under s.108 of the Act the department may make an application to the District Court for an order to prevent or limit the noise.

Air Pollution Control:

The department make take action under the Air Pollution Act 1987

A notice may be served under this Act either requiring the pollution to cease. Alternatively the notice may specify certain measures to prevent or control air pollution.

Contact Details

Air Quality Monitoring and Noise Control Unit
Environment and Culture Department
Dublin City Council
Block 3, Floor 1
Civic Offices

Telephone: 222 3739
Fax: 222 2366
Local Authority Enforcement Powers of the Water Pollution Control Section

The DCC Pollution Control section looks to ensure that no contamination of groundwater, surface water, sewers or waterways occur. It also aims to prevent any trade effluents (oil, silted water, concrete washings etc.) from entering the foul system.

This section is responsible for licensing the discharge of trade effluent to sewers and waterways. It carries out sampling to ensure licence conditions are met and also investigates pollution incidents. The principal legal framework for the prevention and control of Water Pollution is contained in Local Government (Water Pollution) Acts 1977 & 1990.

Here are a list of numbers which can be called in the case of a pollution incident:

- Dave Guerrine: 086-815 0608 (Inspector Pollution Control)
- Christy McGuire: 086-815 0609 (Assistant Inspector Pollution Control)
- John Collins: 086-601 3557
- John Stack: 086-815 1593
- Aidan Creagh: 087-132 9333

In the case of an out of hours emergency if none of the above numbers are available then the main Dublin City Council switchboard 222-2222 can be called 24hours a day to report the incident.

Contact Details

Water Pollution Control Section
Drainage Division
Dublin City Council
Block 1, Floor 2
Civic Offices
Dublin 8

Telephone: 222 2155
Fax: 222 2300

It is the responsibility of all people involved in projects to adopt environmentally responsible work practices.

Best practice environmental management requires environmental awareness, care and appreciation of your environmental responsibilities.

Prevention is better than cure. Measures taken to prevent environmental impacts are preferred to those designed to control the impact.

Your actions will make a difference
Environmental protection shall include but not be limited to noise pollution, gaseous emissions, noxious/offensive odours, liquid waste collection/storage/disposal and solid waste collection/storage/disposal.

Strict Environmental Protection Agency (EPA), DCC and legislative environmental limits apply for a range of emissions and discharges into the environment. The actions of Contractors must not result in any of these limits being exceeded and not cause pollution of the air, water or land (on-Site/off-Site) environments.

**Contractual Obligations**

At all times during the performance of the Contract, the Contractor shall preserve and protect the natural environment in the general area of the Site and the external areas that may be affected by his operations.

Without limiting the Contractor’s responsibilities under statutory legislation, the Contract shall be performed in such a manner as to ensure:

(a) No substance which can harm or is likely to harm the environment is to be allowed to leak, spill or escape from any container, storage area, or equipment, both on site or in transit;

(b) No oil, chemical or effluent is permitted to escape into DCC’s drainage system, stormwater system, surrounding ground or roads;

(c) All powdered pollutants, including dust, generated during the performance of the contract are contained to prevent air pollution;

(d) All waste generated on-site, must be segregated and then despatched as per this document as noted in Section 7.0, except paper and food scraps which shall be collected in suitable receptacles and disposed of through a waste management contractor(s);

(e) The contractor shall provide and maintain dust suppression equipment and procedures on the site to control airborne dust generated from the work area, unsealed roads and all other dust sources.

**Community Consultation**

Every construction site has its ‘affected community’ whether it be those living, visiting and working close to the project, or those interested in the environment where the project is located.

The community will judge your performance and will respect thoughtful, pro-active and courteous behaviour. Members of the he community have a right to know of incidents and activities that could affect them. They respect the job you have to do, but you must respect the fact that you are intruding into their environment.

- Where works are likely to have a significant impact, keep the community informed of the timing and nature of the works throughout the project and respond to community enquiries and complaints promptly;
- Notify users of facilities, such as roads, footpaths if access is to be restricted; or major events such as noisy activities, roadworks and working outside normal hours is to be undertaken.
Environmental Safety and Risk Management

The Contractor and all employees have a “duty of care” to protect the public and the environment. The EMIP may include incident management plans for high-risk events or events with potential for significant environmental damage such as fires, fuel spills or burst hydraulic lines. Development of fire management plans and fuel spill contingency plans are examples of risk management. Be aware of these plans and respond to incidents in the way documented to ensure any damage or environmental impact is minimised.

- Be aware of emergency procedures, and the persons and organisations to contact in the event of an emergency;
- Be aware of the location of emergency equipment on site.

Prevention of pollution is better than cure

Staging of Works

Provide details of staging of works to minimise detrimental environmental effects.

Possible considerations:
1. Staging of works in relation to weather conditions
2. Staged stripping to minimise the amount of exposed soil at one time
3. Limiting the time that areas are left exposed

Spill Management, Clean-up Procedures

Any site that contains hazardous and/or potentially polluting material should have an emergency spill response plan.

A copy of the Material Safety Data Sheets must be readily available for all materials on-site.

Document how spills of chemicals will be managed on site.

Possible considerations:
1. Spill kits
2. Trained personnel
3. Other site specific measures

Spills must not be washed into the stormwater system
All sites that deal with potentially polluting material should prepare spill response procedures, train employees and provide appropriate clean-up materials. As a minimum, a basic spill response procedure must make employees aware of the need to contain spills and not to wash spills into the stormwater system.

In the event of a spill, the spill source should be quickly and safely stopped and the spilt material isolated and contained from the sewerage & foul systems and waterways. The spill must be cleaned up with reference to the material safety data sheets.

The preparation and ongoing maintenance of a emergency spill response plan is seen as necessary for the purposes of showing compliance with the general environmental duty.

**Emergency Response to Spill or Leakage of Hazardous Material**

The PSCS is to implement procedures, which address possible accident and emergency situations, which could lead to significant environmental impact. Where this possibility is identified, a site specific Emergency Preparedness and Response Plan is prepared.

Plans are to be reviewed and revised as necessary in the light of changed circumstances, the results of testing and in particular after an accident or emergency has occurred.

Help and advice must be sought from the appropriate emergency authorities for large or hazardous spill incidents.

**Emergency Spills**

If a spillage occurs:

- a) act promptly to contain the spill and prevent it from entering any drain/channel as far as practicable;
- b) then dial 01 679 6186 to contact the Pollution Control unit who will instigate emergency spill procedures, as per the “BRL Site Specific Induction”.

If possible, please provide the following information:

- When and where the pollution occurred
- The type of substance discharged
- Extent of the pollution
- Name of contractor and site address
- Any other relevant information
- Your contact details.

The incident will always be investigated and a suitable response mounted.

**Responsibilities for Compliance**

Construction activities should be undertaken in compliance with environmental legislation. However, BRL is committed to adopting best practice environmental management. The Environment Protection Act, 1993 requires that people must not undertake an activity that
pollutes, or might pollute, the environment unless all reasonable and practical measures are taken to prevent or minimise any resulting environmental harm.

All individuals and their organisations have a ‘duty of care’ to prevent or minimise environmental harm.

The Environmental Policy will be communicated to all employees and employees of subcontractors in conjunction with their general health and safety induction. The induction will also encompass Operating Procedures specific to the activities being undertaken and the potential consequences of not following those procedures.

**Deliveries**

Special care should be taken during deliveries, especially when fuels and hazardous materials are being handled. Ensure that all deliveries are supervised by a responsible person, that storage tank levels are checked before delivery to prevent overfilling and that the product is delivered to the correct tank. Put in place a contingency plan and suitable materials to deal with any incident. Ensure that employees know what to do in the event of a spillage. If properly dealt with, a spillage need not result in pollution.

**Storage**

Many of the materials used in construction operations, such as oil, chemicals, cement, lime, cleaning materials and paint have the potential to cause serious pollution.

**a. Fuels, oils and chemicals**

All fuel, oil and chemical storage must be sited on an impervious base within a bund and secured. The base and bund walls must be impermeable to the material stored and of an adequate capacity. Leaking or empty oil drums must be removed from the site immediately and disposed of via a licensed waste disposal contractor.

**b. Security**

All valves and trigger guns should be protected from vandalism and unauthorised interference and should be turned off and securely locked when not in use. Any tanks or drums should be stored in a secure container or compound, which should be kept locked when not in use. Bowsers should be stored within site security compounds when not in use.

**c. Marking**

The contents of any tank should be clearly marked on the tank, and a notice displayed requiring that valves and trigger guns be locked when not in use.
2.0 ENVIRONMENTAL MANAGEMENT SYSTEM

Environmental Management System (EMS) is a structured approach to managing environmental activities on construction projects for both building construction and infrastructure projects.

Environmental impact assessment is undertaken during the planning stage of all projects. It identifies ways to avoid or manage environmental impacts that may arise from the implementation of the project.

Environmental management plans capture the critical project specific issues to be managed on the construction site and provide ways of ensuring that commitments made during the planning phase are incorporated into the design, construction and operational phases of the project.

An EMS comprises those elements of an organisation’s overall management system which ensure that environmental issues are identified and managed.

An Environmental Management System involves a contractor:

- accepting that its activities, products or services have an impact on the environment;
- having planning processes and procedures in place that have the capacity to identify possible environmental impacts;
- having planning processes and procedures in place to develop mitigation measures to minimise environmental impacts;
- establishing responsibilities and procedures for implementing required mitigation measures;
- establishing systems and procedures to review the implementation process; and
- establishing a process of management review of those systems and procedures which support the Environmental Policy: this will lead to continually improving performance.

Most EMS models (including the ISO 14001 standard, which is described later) are built on the “Plan, Do, Check, Act” model introduced by Shewart and Deming. This model endorses the concept of continual improvement.

Your EMS should be built on the “Plan, Do, Check, Act” model to ensure that environmental matters are systematically identified, controlled, and monitored. Using this approach will help to ensure that performance of your EMS improves over time and that you meet your goals for implementing an EMS in the first place.
The basic structure of an EMS, as defined by the ISO 14001 standard, includes a commitment to continual improvement. Within this structure, there are five primary components:

1) Commitment and Environmental Policy;
2) Planning;
3) Implementation and Operation;
4) Checking and Corrective Action; and
5) Management Review.

These components are all interrelated to produce a framework for managing and continually improving environmental performance. The five components of EMS are further subdivided into the following 17 elements:

- Environmental Policy;
- Legal and Other Requirements;
- Environmental Aspects and Impacts;
- Environmental Objectives and Targets;
- Operational Control;
- Environmental Management Programs;
• Organisational Structure and Responsibility;
• Training, Awareness and Competence;
• Communication;
• Documentation;
• Document Control;
• Emergency Preparedness and Response;
• Monitoring and Measurement;
• Nonconformance and Corrective and Preventive Action;
• Records and Record Keeping;
• Environmental Management System Auditing; and
• Management Review.

The following describes the requirements.

**Commitment and policy**

1 Environmental policy

**Planning**

A listing of the environmental aspects and impacts associated with the work, including:

2 Environmental review and identification of environmental impacts
   This section should detail:
   - the activities that are to be carried out;
   - the impact those activities may have on the environment; and
   - the environmental control methods that are going to be used to prevent or minimise those environmental impacts.

3 Identification of legal and other requirements

4 Setting environmental objectives and targets

**Implementation**

Documentation of the measures to be taken to manage the identified aspects and impacts.

5 Resources

6 Accountability and responsibility (A clear indication of the respective environmental responsibilities of the contractor and subcontractors)

7 Training and induction

8 Communication
   This section should detail external and on-site communication including communication with subcontractors in relation to environmental problems and emergencies.

9 Documentation

10 Operational control

11 Emergency preparedness and response
   This section should detail the procedure to be followed in the event of an environmental emergency. An environmental emergency is any event that
causes or has the potential to cause environmental damage. The procedure needs to include:

- the names of key emergency response personnel;
- personnel responsibilities and contact details (including all-hours telephone numbers);
- contact details for emergency services (eg. ambulance, fire brigade, spill clean-up services);
- the location of on site information on hazardous materials, including MSDSs and spill containment material;
- the procedure to follow to minimise/control the emergency eg spill management; and procedures for notifying DCC, the public and/or EPA if required.

Measurement and evaluation

12 Measuring and monitoring ongoing performance

13 Corrective action (This section should state how environmental nonconformance, corrective and preventive action including environmental incidents will be addressed. This may be achieved by referencing relevant sections in an existing Quality System.

14 Records and information management

Review

15 Audit and review (Monitoring and audit procedures including provisions for corrective action)

This section should detail:

- the frequency of EMP review;
- the person(s) responsible for reviewing and making changes to the EMP; and
- how and who informs the project team of those changes.

Environmental Management Documentation

Environmental management requirements during construction will be documented in the Environmental Management Implementation Plan (EMIP). The EMIP is a project-specific document prepared by the PSCS, in accordance with these guidelines. It details how the PSCS will implement and manage environmental aspects of the project. This plan may form part of the Safety & Health Plan. The scope of an EMIP may vary, depending on the scale and environmental impact of the project.

The contractor’s performance will be audited against the Environmental Management Implementation Plan (EMIP), and this Code of Practice.

The contractor’s environmental management responsibilities for major projects where an Environmental Management Plan (EMP) has been prepared, include:

- preparing an EMIP in accordance with the requirements of the EMP and these guidelines to show how the environmental requirements for a project will be met;
- carrying out the work in accordance with the EMIP;
- monitoring and auditing the environmental impact of the work;
• assessing the effectiveness of the EMIP based on monitoring and auditing results, and updating and improving the plans as required.

3.0 CONSTRUCTION NOISE AND VIBRATION CONTROL

3.1 Purpose

To ensure that noise and vibration does not exceed the parameters as set down in the clients specification, the EIS for the project, the relevant BS or ISO Standard or the Law.

3.2 Objectives

1. To minimise the impact of noise and vibration on the immediate neighbourhood.
2. Provide a framework to plan and cater for construction activities outside of normal hours.
3. To minimise the likelihood of damage to adjacent buildings and structures.

3.3 References

The Contractor shall comply with the following environmental statutory requirements:

Applicable Legislation Includes:

- Protection of the Environment Act 2003
- Environmental Protection Agency Act 1992
- Air Pollution Act, 1987
- Safety, Health and Welfare at Work (Control of Noise at Work) Regulations 2006
- Safety, Health and Welfare at Work (Control of Vibration at Work) Regulations 2006
- Environmental Noise Regulations 2006, S.I. No. 140 of 2006

Applicable Codes of Practice or Guidance Notes Includes:

- Guidelines to the Noise Regulations, H.S.A.
- Is Your Work Making You Deaf?, H.S.A.
- Management of Noise in Construction, Facts 50, European Agency for Safety and Health at Work, 2004
• **Integrated Pollution Control Licensing - Guidance Note for Noise in relation to scheduled activities (2006)** (This does relate to IPPC/Waste licensed sites but is useful reference nonetheless).

• **MPG 11** - useful reference document with control measures for on site noise. It is more related to quarry activities but could be applicable for open sites

• **Environmental Noise Survey - Guidance Document EPA (2003)**

### 3.4 Introduction

Construction noise and vibration is a nuisance and can cause structural damage. However, noise and vibration can be controlled and the impacts minimised.

Noise and vibration impacts will vary due to frequencies, intensities, time, place, duration, combination of contributing sources and the location of nearest affected premises. Noise and vibration are transmitted through air, water or ground from the use of plant and equipment.

In the demolition and construction industry a number of activities are notoriously noisy, for example, rock breaking during demolition work or the operation of a jack hammer, pile drivers and vibrating rollers. The use of vibrating wacker plates, electric tools, explosive powered nail guns and vibrators during concrete pours, all cause specific noise problems for the operators and workers in the vicinity in relation to maintaining their hearing ability.

In the demolition and construction industry, a large variety of power tools, equipment and plant is used on a daily basis. Rock breakers, jack hammers and similar types of equipment on demolition sites cause noise levels ranging between 100 - 120dB(A) at the operators' ears. Because of their impulsive nature and the way our ears operate, the noises from these rock breakers and jackhammers are potentially more hazardous to our hearing than excessive noise from operating machines or power tools for example.

Explosive powered nail guns on construction sites may cause peak noise levels well in excess of 140dB(C) at operator ear level.

Electric saws, routers and planers can cause noise levels ranging between 90-100dB(A) at the operator ear level. Typically a large number of power tools are used for short periods at a time, for example to cut a piece of wood. However, these activities occur many times per day and accumulate to a significant exposure during the day.

Almost all trades on demolition and construction sites are exposed to excessive noise on a daily basis, with form workers, signaler, concreters, line hands, steel fixers and carpenters having the highest exposures. The noise levels they are exposed to are comparable to those in a nightclub or hotel where loud music is produced.
3.5 Matters For Consideration

As part of the Safety & Health Plan (where noisy works pile driving, demolition works, rock breaking, jack hammering is intended to be used) BRL may require the PSCS to develop Noise And Vibration Management Plan.

Building work is confined to the hours of 8am to 6pm Monday to Friday, and 8am to 1pm Saturday.

A Noise And Vibration Management Plan must be included in the Construction Management Plan. Refer to the Noise and Vibration Guidelines for instructions on how to develop the plan.

This guideline sets performance objectives for noise and ground borne vibration impact to sensitive zones surrounding construction and demolition sites in the Ballymun Regeneration Scheme.

The guideline takes into consideration the time and duration of proposed activities, the nature of activities intended at the site and the ambient background noise level in the surrounding noise sensitive zones.

- install temporary noise control barriers where appropriate
- notify affected people if noisy activities will be undertaken, e.g. pile driving

To enable noise and nuisance complaints to be managed onsite in the first instance, signage specifying any security measures and key contact details must be erected on the perimeter of the building site (i.e. attached to the building, fence or hoarding). A 24 hour contact name and phone number must be provided. The signage should indicate “For any enquiry, complaint or emergency relating to this site at anytime please contact...”.

1. Instruction shall be given to ensure that vehicles and plant arriving and leaving the site comply with the stated hours of work.
2. Noisy plant and equipment shall be situated as far as possible from noise sensitive buildings. Barriers to reduce noise reaching noise sensitive buildings shall be employed where practicable.
3. Machines in intermittent use shall be shut down or throttled down to a minimum when not in use.
4. Plant shall be maintained in good working order so that extraneous noise is kept to a minimum.
5. Noise emitting machinery, which is required to run continuously, shall be housed in suitable acoustic lined enclosures where practicable.
6. Compressors and generators shall be sited in areas least likely to give rise to nuisance and should be fitted with properly lined and sealed acoustic covers that should be kept closed whenever in use and separately enclosed in a suitable acoustic lined enclosures if required.
7. Pneumatic percussive tools should be fitted with mufflers or silencers of the type recommended by the manufacturers.
8. Machines in intermittent use should be shut down in the intervening periods between work or throttled down to a minimum.
9. Noise emitting machinery that is required to run continuously should be housed, if necessary, in a suitable acoustic enclosure.
10. Care shall be taken to reduce noise when loading or unloading vehicles or dismantling scaffolding or moving materials etc.

11. The noise sensitivity of the area in the vicinity shall be considered when determining the method of piling for foundations. All pile driving shall be carried out by plant equipped with a recognised noise reducing system.

**Noise Induced Hearing Loss is Caused by Exposure to Harmful Noise Levels. Noise Induced Hearing Loss Is 100% Preventable**

**Piling**

The noise sensitivity of the area should be considered when determining the method of piling to be used.

The use of conventional impact hammers should be avoided. Sheet piling should be carried out using hydraulically operated jacks wherever practicable or, if that is not practicable, by using vibratory hammers. Any pile driving should be carried out by plant equipped with a recognised noise reducing system.

Noise impacts from the construction phase will be kept to a minimum by the selection of plant with low inherent potential for noise generation, the need for contractors to maintain effective exhaust systems, the erection of temporary barriers around generators/compressors, etc. and the siting of noisy plant as far away from noise sensitive locations as might be allowed by site constraints.

Develop a noise control plan using:
- engineering controls
- administrative controls
- effective personal protective equipment

Instruction shall be given to ensure that vehicles and plant arriving and leaving the site comply with the stated hours of work.

Noisy plant and equipment shall be situated as far as possible from noise sensitive buildings. Barriers to reduce noise reaching noise sensitive buildings shall be employed where practicable.

Machines in intermittent use shall be shut down or throttled down to a minimum when not in use.

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Care shall be taken to reduce noise when loading or unloading vehicles or dismantling scaffolding or moving materials etc.

The noise sensitivity of the area in the vicinity shall be considered when determining the method of piling for foundations. All pile driving shall be carried out by plant equipped with a recognised noise reducing system.
3.6 Procurement

In an activity where new plant is being purchased or existing plant is being replaced, the first step in the control of noise should be the selection of low noise emission equipment. Regard should be had to The European Communities (Protection of Worker) (Exposure to Noise) Regulations 1990 (S.I. No 157 of 1990) and the European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1988 (S.I. No. 320 of 1988).

BUY QUIET" IS THE MOST EFFECTIVE MEANS OF NOISE CONTROL

"Buy quiet" is the most effective means of noise control because it prevents sources of noise from entering the workplace.

Contractor’s noise policy should require the company to use equipment with the lowest practicable noise emission levels. This requirement should apply to both purchasing and hiring policies, with the aim of achieving employee daily noise exposures of or below an 80 dB(A) measured as an 8 hour LAeq.

3.7 Managing Noise on Site

Noise must be actively managed once work starts on site. This can be seen as a four-stage process.

- **Assess** — a competent person should assess the noise risks.
- **Eliminate** — remove noise sources from site.
- **Control** — put in place measures to prevent exposure, with personal hearing protection as the last resort.
- **Review** — check to see if there are any changes in the work, and amend the assessment and control measures accordingly.

3.8 Managing Noise — before work starts on site

Plan your noise control measures at the:

- design stage — design out or minimise noisy work;
- organisational stage — plan how the site will be managed and the risks controlled;
- contractual stage — ensure that contractors meet their legal requirements;
- building phase — assess the risks, eliminate or control them, and review the assessment.

Before work starts on site:

- implement a low-noise procurement policy (purchase and hire) for machinery and work equipment;
- set desired noise-control requirements in the tender specifications (meeting national legislation as a minimum);
- plan the work process to minimise worker exposure to noise;
• implement a noise-control programme (for example, by planning, training, induction, site layout, maintenance activities).

3.9 Assessment

Worker noise exposure should be assessed, with particular attention being paid to the following:

♦ the workers and their exposure, including:
  • the level, type and duration of exposure, including any exposure to impulsive or impact noise, and whether the worker belongs to a particular risk group;
  • where possible, effects on workers’ health and safety resulting from interactions between noise and vibrations,
  • and noise and work-related ototoxic substances (substances that can harm your ears);
  • risks to workers’ health and safety from failing to hear warning signals or alarms;
  • the extension of exposure to noise beyond normal working hours under the employer’s responsibility;

♦ technical knowledge and information, including:
  • the information on noise emission provided by manufacturers of work equipment;
  • the existence of alternative work equipment designed to reduce the noise emission;
  • relevant information from health surveillance;
  • the availability of suitable hearing protectors.

3.10 Elimination of Noise

Where possible, the production of noise should be eliminated. This can be achieved by changing the construction or work method. Where elimination is not possible, then the noise should be controlled.

Control

There are three steps to the protection of workers from noise, using technical and organisation measures:

• control the noise at source;
• collective measures, including work organisation;
• personal hearing protection.

Control of noise at source

Such control measures include:

• using a machine with lower noise emissions;
• avoiding metal on metal impacts;
• damping to reduce noise or isolating vibrating parts;
• fitting silencers;
• carrying out preventive maintenance: as parts become worn, noise levels can change.

Consideration should be given to the use of “Directional Sound” reversing alarm is localised only in the danger area behind the vehicle, is perceived as quieter and less disturbing to neighbouring residents.

**Collective control measures**

Actions can be taken to reduce the exposure to noise of all those who may be exposed, in addition to the steps above.

On sites with more than one contractor, liaison between employers is essential. Collective measures include:

• isolating noisy procedures and restricting access to noisy areas;
• interrupting the path of airborne noise through the use of noise enclosures and barriers;
• using absorptive materials to reduce reflected sound;
• controlling ground-borne noise and vibration by using floating slab measures;
• organising work so that the time spent in noisy areas is limited;
• planning to have noisy work done when as few workers will be exposed as possible;
• implementing work schedules that control exposure to noise.

**Personal hearing protection**

Personal hearing protection should be used as a last resort.

Where used:

• the personal hearing protection must be worn and its use enforced;
• it should be suitable for the job, type and level of noise,
• and compatible with other protective equipment;
• workers should have a choice of suitable hearing protection, so that they can find the most comfortable;
• training should be given on how to use, store, and maintain the hearing protection.

The contractor will also be required to ensure that:

• all plant used in the works will be properly maintained;
• the engines of vehicles and other plant will be properly fitted with exhaust silencers;
• where compressors and pneumatic tools are used on site they shall be provided with effective acoustic covers and silencers;
• the period and duration of noisy site activities, deliveries via lorry, use of generators, etc. are limited, normal hours of working generally being restricted to 0800 to 1800 hours, Monday to Friday, and 0900 – 1300 hours on Saturday, unless otherwise restricted by Planning Permission.

Monitoring of noise by the contractor and local authority at critical locations during the construction phase will be an integral part of on-site management.

British Standard **BS 5228:1997 “Noise Control on Construction and Open Sites”** provides detailed guidance on the methods and techniques available to control noise from
construction work and it will be used on this project. In addition, all work and machinery should meet the official requirements of acceptable noise emission of the Dublin City Council.

3.11 VIBRATION CRITERIA

The effects of ground vibration on buildings near construction sites may be broadly defined by the following three categories:

1. Disturbance to building occupants:
2. Effects on building contents:
3. Effects on building structures:

In general, vibration criteria for human disturbance (1) are more stringent than vibration criteria for effects on building contents (2) and building structural damage (3). Hence, compliance with the more stringent limits dictated by category 1, would ensure that compliance is also achieved for the other two categories. This is because people are able to feel vibration at levels lower than those required to cause superficial damage to susceptible classes of buildings.

Possible Considerations:

Evaluation of human exposure to whole body vibration - Continuous and shock induced vibration in buildings.

vibration in which the occupants or users of buildings are inconvenienced or disturbed; vibration where building contents may be affected; and,

vibration in which the integrity of a building or structure itself may be prejudiced.

Vibration controls

The following construction vibration control measures can be implemented to minimise vibration impact on neighbouring occupancies and to meet human comfort vibration limits:

- A vibration management plan should be implemented to avoid adverse vibration disturbance to occupancies;
- Vibration testing of equipment on site should be carried out to determine acceptable buffer distances to commercial and residential occupancies;
- Where vibration is found to be excessive, management measures may include modification of construction methods such as using smaller rock breakers, utilisation of hand rather than machine methods when working near sensitive locations, establishment of safe buffer zones and if necessary, time restrictions for the most excessive vibration activities. Time restrictions would need to be negotiated with affected receivers;
- Additional vibration monitoring should be conducted when construction activities are at the nearest point to the nominated occupancies. This monitoring may signal to the contractor, by way of a buzzer or flashing light, when levels approach / exceed the recommended limits in nearby occupancies; and
- Before, during and after the construction stages it is advisable that a dilapidation report is undertaken to assess the state of buildings sharing the site boundary.
4.0 DUST AND FUME CONTROL

4.1 Purpose

To ensure that dust and other emissions to the air do not exceed the parameters as set down in the client’s specification. The EIS for the project, the relevant BS or ISO Standard or the Law.

This practice may be used to:

- Reduce wind erosion and dust.
- Minimise deposition of dust and wind transported soils into water bodies through runoff or wind action.
- Reduce respiratory problems.
- Minimise low visibility conditions caused by airborne dust.

4.2 Objective

1. That air quality (airborne dust and pollutants) in and around a construction site is maintained at acceptable levels throughout the construction period.

4.3 References

The Contractor shall comply with the following environmental statutory requirements:

Applicable Legislation Includes:

- Protection of the Environment Act 2003
- Environmental Protection Agency Act 1992
- Air Pollution Act, 1987

Applicable Codes of Practice or Guidance Notes Includes:

4.4 Introduction

Dust can cause significant nuisance to nearby residents and can cause pollution of stormwater.

Dust emissions from the site should be controlled so as to minimise any adverse effect on an amenity value of an area.

To this end all roadways, entrances and main traffic areas to a site should be compacted, sealed or coated with a dust suppressant or mist spray regularly to minimise dust. Particular care should be taken during the site preparation phase because of the potential for considerable disturbance to the ground surface.

Dust generation is the main air quality issue on construction sites. Dust is a nuisance in the environment, can be a health hazard and a risk to traffic safety. It can be generated by:

- operating plant, equipment and vehicles
- wind blowing over cleared ground, stockpiles or uncovered loads of construction materials
- demolition.

Air quality can also be adversely affected by vehicle exhaust emissions. Measures to control air quality:

- control the movement of construction traffic
- water or seal the surface over which construction traffic moves

4.5 Matters for Consideration

Provide details of any equipment and activities that may cause excessive dust or otherwise effect air quality. Dust suppression techniques/equipment may be required depending upon the following:

- Weather and wind conditions
- Exposure/proximity to the public and surrounding buildings
- Proximity to air intake vents on adjacent buildings. Intake from these vents must be prevented through the installation of adequate filters or other approved measures.

Minimising Dust Generation

Provide details on the measures to inhibit dust generation on site.

Possible Considerations:

1. Retaining vegetation
2. Soil stabilisation
3. Roughening soil surface
4. Stockpile protection
5. Restricted vehicle movements
6. Preventing dust from material being transported
7. Wind fences
8. Other site-specific considerations

- During the construction phase of the development, best practicable means shall be employed to minimise air blown dust being emitted from the site.
- Minimise dumping of loose materials on a site. If dumping of loose material is unavoidable, detail methods for preventing dust and other airborne matter impacting on the surrounding area. Ensure these measures are adequate when the site is unattended.
- Minimise airborne dust arising from trucks and other vehicles entering and leaving the site by providing details on the method and frequency of watering down driveways and trucks with consideration to water efficiency.
- All stockpiles shall be planned and sited to minimise the potential for dust nuisance. Detail methods for preventing loose materials from becoming airborne.
- Equipment powered by internal combustion engines must be properly maintained and regularly serviced to prevent the discharge of excessive pollutants, including smoke and/or toxic fumes or odours, and must meet acceptable noise levels.
- During demolition works on the site, all necessary steps to contain dust shall be taken so as to prevent or limit dust being carried to occupiers of other buildings in the locality.
- During any construction or commercial site clearance, excavated materials shall be damped down or otherwise suitably treated to prevent the emission of dust from the site.
- Exhausts and ductwork from equipment must be located away from air intakes, windows, enclosed areas and public areas.
- Materials can only be cut in designated areas set away from boundaries and public areas, with adequate dust (and noise) suppression. Where cutting needs to occur in situ, localised dust suppression measures must be utilised.
- Burning of materials on site is not permitted.
- Watering down of the site shall be carried out where necessary to minimise dust transfer into neighbouring premises.

1. During demolition works on the site, all necessary steps to contain dust shall be taken so as to prevent or limit dust being carried to occupiers of other buildings in the locality.
2. During any construction or commercial site clearance, excavated materials shall be damped down or otherwise suitably treated to prevent the emission of dust from the site. All stockpiles shall be planned and sited to minimise the potential for dust nuisance.
3. During the construction phase of the development, best practicable means shall be employed to minimise air blown dust being emitted from the site.
4. Watering down of the site shall be carried out where necessary to minimise dust transfer into neighbouring premises.
Have a site control plan

- evaluate possible sources from materials brought onto the job
- review materials and related activities from all trades on the site
- consider dusts from rock or concrete being crushed, drilled, cut or pulverised
- look for ways to eliminate exposure
- when possible, set up work areas where dust is created away from others to minimise worker exposure
- schedule and co-ordinate work activities before or after shift hours
- build temporary barriers or shields to deflect dust from self and other workers
- Review MSDS for possible hazardous fume exposures
- Use water hoses to wet the dust or material
- Train, fit, and use appropriate respiratory protection
- Run tile and masonry saws wet
- Buy or hire equipment with vacuum exhaust systems and filters and equipment that minimise dust
- Cease using any equipment if dust control system is not working
- Use water through the drill stem to reduce the amount of dust in the air, or a dust collection system
- Use other less hazardous materials - example: abrasives with less than 1% crystalline silica for abrasive blasting
- Remove dust from equipment and surrounding area with water hose rather than compressed air

 Contractors must pay particular attention to the spread of airborne dust, smoke and fumes. Contractors should maintain all operating equipment in proper working order to ensure air pollution from that source is minimised. During the works, the level of airborne dust is to be kept to a minimum by recognised dust suppressant techniques such as regular sweeping of dust debris, the use of water spray suppression and other appropriate site management measures will be required throughout the construction phase to eliminate potential fugitive dust emissions from exposed soil surfaces, material compounds and construction vehicle activity.

### 4.6 Potential Environmental Impacts

Air pollution in the form of dust, smoke or from construction and demolition sites, and roadworks must be controlled. It can pose a health risk to the immediate neighbourhood dwellers who may inadvertently inhale such pollution. Dust, Smoke & fume can sweep across roadways restricting vision and creating hazardous driving conditions, or simply be a nuisance to people.

Also where works are being completed in the road or footpath in public areas, the need to control dust from the cutting or grinding process is vital if pollution is not to affect pedestrians, shoppers, and enter business premises particularly shop premises polluting the air and food.
5.0 SEDIMENT AND WATER POLLUTION CONTROL

5.1 Purpose

To ensure that only uncontaminated water is egressed from sites via public mains sewers of natural watercourses.

5.2 Objectives

1. Prevent contamination of, or damage to, stormwater drains & foul system and waterways.
2. Ensure sediment from the building site is retained on-site during construction work.

5.3 References

The Contractor shall comply with the following environmental statutory requirements:

Applicable Legislation Includes:

- Protection of the Environment Act 2003
- Local Government (Water Pollution) Regulations, 1978 & 1992

Applicable Codes of Practice or Guidance Notes Includes:

- Greater Dublin Regional Code of Practice for Drainage Works, Version 6
5.4 Introduction

Runoff from building sites travels through gutters and drains to local waterways and eventually ends up in a river or harbour or on a beach. Contaminated runoff can kill fish and other water life, seriously polluting the environment where people swim, fish, boat and play. Many building activities can pollute stormwater. Allowing contaminated stormwater to enter the stormwater system or a waterway will result in prosecution under the Local Government Water Pollution Acts.

Soil contains plant nutrients, minerals, organic matter and seeds. It can also contain pesticides and toxic heavy metals. Building disturbs and loosens soil and can create large volumes of dust and debris. If building sites have no erosion and sediment controls these materials will be washed through stormwater drains into creeks, rivers and eventually the ocean.

Sediment and other residues can contain agents which are directly toxic to aquatic life. If these agents are allowed to enter freshwater and marine environments, they can add to nutrient loadings and encourage excessive algal growth which may damage fragile ecosystems.

When soil, sand, dust, cement, paint and building debris reach the waterways, they can:

- produce unpleasant smells
- smother water plants
- suffocate water animals
- spoil the look of waterways
- reduce fish breeding
- lower the quality of drinking water.

Soil erosion and the generation of sediment during construction activities cannot be entirely prevented. Sound project planning can reduce the potential for erosion but control measures will always be necessary to reduce the impact of erosion both on-site and off-site. The control measures may consist of a combination of construction strategies, structural and vegetative measures, and soil stabilisation techniques. For maximum effect, it is important that all of the control measures implemented must be integrated into the site development plan. The complexity and extent of control measures required will depend largely on the magnitude and duration of the construction activity.

Dublin City Council Drainage Requirements

The Developer shall take all necessary precautions to avoid causing any damage or interference with flow in existing public sewers and shall ensure that debris, silt, mud, grease, concrete, concrete wash, oil etc. does not enter the sewer. Any damage or interference with the public drainage system shall be rectified at the Developer’s expense. This is especially important during the construction phase of the development. Dublin City Council Development Plan States “It is the policy of Dublin City Council to require all significant developments to submit, prior to commencement of developments, details of a Sediment and Water Pollution Control Plan, for the agreement of the Drainage and Environmental Division.”
Trade Effluent Discharge

Any site which requires to discharge ground or surface water from the site to a foul or surface water sewer during construction must apply to DCC for a Trade Effluent Discharge Licence in accordance with the Local Government (Water Pollution) Acts 1977 & 1990. Pumping of Trade Effluent without a licence can result in prosecution under the above acts.

The pumping of any waters from a construction site, whether surface water or ground water may require a discharge licence to be issued in accordance with the Local Government (Water Pollution) Acts 1977 & 1990, as amended. The Sanitary Authority must be contacted by the developer, prior to commencement of works on site in order to discuss licence requirements and proposals for control of water pollution on site. Copies of application forms can be obtained from the appendices to this document or from the relevant Sanitary Authority.

If there is to be any pumping of groundwater or discharge of any other trade effluent, under the relevant Water Pollution Acts, the Developer is obliged to apply for a licence from the Local Sanitary Authority. The Local Sanitary Authority must be notified at least 10 days in advance of the commencement of any proposed drainage works.

The Developer shall take any additional measures required to ensure that no discharge from their site shall impair the quality of waters in the area.

There has been some confusion between what goes into the stormwater and sewerage systems. These systems are completely separate from one another.

Stormwater system

- Stormwater consists of rain and other water runoff from outdoor drains, gutters, roads etc.
- Stormwater drains carry stormwater into natural waterways such as rivers, creeks and the sea.
- When stormwater is contaminated by pollutants such as oil, grease, fertilisers, litter and heavy metals our natural waterways also become polluted.
- This pollution can cause problems such as fish deaths and algal blooms.
- No treatment of the stormwater occurs. Only clean rain runoff is legally allowed to enter the stormwater system.

Sewerage system

- The sewerage system consists of toilet and grey water (laundry, bathroom & kitchen waste) as well as wastewater that has been authorised to be discharged into the sewerage system by the Local Authority. This water is treated before being pumped to sea. Certain wastes cannot be treated by the sewerage system (such as oils and solvents) and must be taken away for treatment by a licensed waste contractor.
**General Comments**

Sites where there may be contaminated ground (mineral oil, hydrocarbons of petroleum origin, metals, sulphates, chlorides, phenols, PAH’s etc.) are treated on a separate basis and will have specific conditions imposed relating to treatment of contaminated ground water. Pollution Control Unit should be contacted at least 3 weeks prior to the proposed commencement of discharge date for these sites.

### 5.5 Matters for Consideration

Building and construction site practices are consistently being identified as significant sources of stormwater pollution in council stormwater management plans. Stormwater runoff from construction activities can have a significant impact on water quality. As stormwater flows over a construction site, it picks up pollutants like sediment, debris, and chemicals. Polluted stormwater runoff can harm or kill fish and other wildlife. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation’s waters.

A stormwater plan must be developed detailing the following:

- Site water retention will not cause structural damage to excavations or retaining walls
- Drainage of the site to the legal point of discharge throughout construction
- Prevention of stormwater entering adjoining properties or into the sewerage system
- Capture and filtering of stormwater in sediment control points before entering the legal point of discharge.

### Soil Stabilisation

Provide details on the soil stabilisation methods to be employed on site during construction and after works.

Possible considerations:

1. Stabilisation matting
2. Grass/ vegetation establishment
3. Mulching
4. Rock armouring
5. Other site specific soil stabilisation methods
Stockpile Protection

Document how stockpiles will be protected from erosion.

Possible considerations:

1. Diversion of run-off away from stockpile areas
2. Sediment retention structures downslope from stockpiles
3. Temporary grassing of stockpiles in place >28days
4. Position away from drainage lines and at least 10m from waterways
5. Cover stockpiles
6. Minimise the number and size of stockpiles
7. Max 2: 1 height to width ratio
8. Other site specific stockpile management measures

- Install erosion and sediment controls before work starts.
- Leave as much vegetation as possible. Install temporary fences to define ‘no go’ areas that are not to be disturbed.
- Specify the location of site entries and traffic paths to, from and around the site. Ensure the site entry and traffic routes are stabilised with crushed rock, bitumen or similar.
- Provide grated drains at stormwater exit points from the site to prevent uncontrolled run-off.
- Natural rainwater run-off must be controlled to prevent sediment draining into the stormwater system. Upslope water must be diverted to prevent it from travelling through the site.
- Downpipes must be connected as soon as a roof is installed on the site.
- Identify natural falls of the site and provide sediment filters such as straw bales filters, gravel surface barriers, sandbags, pit baskets or geo-textile mesh screens at runoff points.
- Straw bales/geo-textile mesh screens must be replaced on a regular basis so they remain effective.
- Sediment traps or filters must be placed around any drain affected by construction works to prevent sediment entering the stormwater system. Sediment controls are often moved during construction works and should be checked daily to ensure they are put back in place properly.
- Dewater sites by pumping water to a sediment basin prior to release off site - do not pump directly off site.
- Specify the proposed storage locations for loose materials such as soil, sand and gravel and provide details of precautions to prevent displacement. Sediment barriers may be required for fine materials.
- Depending on the size/frequency of truck movements, the surface materials and site location, designated truck/vehicle/ equipment wash down areas may be required.
Wash down areas must be located near the site entrance and be designed to capture and treat water prior to discharge into the stormwater system.

- Pump out any water collected at the bottom of excavation sites.
- If the water contains only sediments, it can be filtered and pumped to stormwater. Limits for suspended solids: When pumping to stormwater sewers DCC usually impose a limit for SS in the region of 20mg/L. There may be instances where trade discharge licences are going to the foul system and in this instance a SS limit of 400mg/L is imposed.
- Polluted water must not enter the stormwater system and may be pumped to the sewer system with the appropriate approvals from the **DCC Drainage Division**. In some circumstances, a liquid waste company may be required to collect the contaminated water for disposal at a licensed treatment facility.
- Waste material, including liquid wastes such as paint, concrete slurries and chemicals, must not be discharged into a stormwater drain.
- Specify facilities to enable paint brushes, rollers and spray equipment to be cleaned without any discharge of by-product into the stormwater system.
- Wherever possible, natural vegetation must be retained to absorb water flows and to minimise dust. Revegetation should occur as soon as possible after the completion of works.
- Maintain equipment to prevent fuel and oil leaks
- Spread the topsoil back when the work is finished and revegetate the site as soon as possible to control erosion.
- Specify the location of site entries and traffic paths to, from and around the site. Ensure the site entry and traffic routes are stabilised with crushed rock, bitumen or similar. Install rumble grids or similar to collect mud from the wheels of trucks leaving the site. Rumble grids must be cleaned daily with consideration given to water saving measures including recycling. Water run-off from cleaning the grid must be filtered prior to entering the legal point of discharge.
- Store all chemicals, fuels and other hazardous liquids and solids within a bunded and covered area
- Soil, sand, rubbish and other building materials can be washed by rain, blown by wind, or carried off site on vehicle tyres. These materials get washed down street gutters into drains and end up:
  - polluting our creeks, rivers, beaches and bays.
  - destroying the habitats of fish and aquatic plants.
  - ‘silting up’ streams and lakes and blocking stormwater pipes, causing flooding which requires dredging and destroying aquatic habitats.
  - making roads and footpaths slippery and dangerous, for pedestrians as well as vehicles.
- There are laws and local authority laws to try to reduce these problems. These laws mean that it is an offence to:
  - not place litter in a bin;
  - discharge paint, plaster or concrete washings to the stormwater system;
  - allow sediment and brick, tile or concrete dust or slurry to be washed off the building site;
  - deposit mud from vehicle tyres on the road;
• deposit or store construction materials on roads, nature strips and footpaths without a permit.

IT’S THE RESPONSIBILITY OF THE SITE MANAGERS OF BUILDING SITES TO MAKE SURE THEY DON’T POLLUTE WATERWAYS

5.6 Sediment and Water Pollution Control Plan

Each construction project should have a Sediment and Water Pollution Control Plan (SWPCP) prepared. This plan should be integrated into the Safety and Health Plan and should incorporate the following key elements:

1) Ensure that the least land is exposed to the risk of erosion for the shortest period of time.

2) Effectively control surface runoff entering and leaving the site.

3) Effectively control the generation of dust, litter and debris within the site.

4) Install erosion control works and measures to minimise the amount of site erosion.

5) Install sediment collection devices to prevent the export of sediment from the site.

6) Rehabilitate all disturbed areas as soon as possible.

7) Maintain the erosion control and sediment collection devices.

Because issues of a smaller scale will need to be addressed at the building stage of development, an updated SWPCP should be provided as the works progress.

The sequence of preparing an effective SWPCP should be in the following steps:

- Investigate the site characteristics.
- Comment on the effectiveness of the site water management.
- Integrate all clearing and grading works with the site layout design.
- Determine the existing and proposed drainage patterns.
- Select the appropriate erosion control practices.
- Select the appropriate sediment collection devices.
- Outline the site rehabilitation programme.

5.7 Documentation

The following documentation should be provided to support the proposed SWPCP:

- a report containing
  - a brief description of the nature and purpose of the development
  - a description of the existing site topography, soil erodibility, vegetation and drainage pattern(s)
  - a description of neighbouring areas, such as creeks, lakes, reserves and existing development that may be affected by the land disturbance
  - a statement regarding the impact the proposal will have on the existing drainage pattern within and adjacent to the development site
  - a description of the methods adopted to control erosion and sediment during construction
➢ a brief description of how the site will be stabilised after construction is completed

**Detail**

The amount of detail required to be prepared for a SWPCP will vary between projects. Suitable risk management techniques should be used to determine the appropriate recurrence interval standard for the works required to comply with this code. In essence, an assessment should be conducted that relates the exposure risk created by the activity to the likely environmental harm or damage.

Factors that should be considered as part of this risk management assessment include but are not necessarily limited to:

➢ the size and nature of the external contributing catchment
➢ the scale of the project
➢ the estimated duration of the works involved with the project
➢ susceptibility of the exposed surfaces to be eroded
➢ ecological sensitivity of the surrounding environment
➢ consequences of the failure of any of the SWPCP works
➢ ability to instigate effective emergency clean up procedures in the event of a failure
➢ season

**Site Layout**

The following information should appear on one or more site plans at a scale of either 1:200 or 1:500:

- existing contours at a maximum interval of 2 metres
- interim (if applicable) and final design contours at a maximum interval of 2 metres
- site boundaries and existing adjoining land use
- location of identified critical areas within or near the proposed development with potential for serious erosion problems
- limits of site disturbance including areas of cut and fill volumes at each disturbance location and proposed stockpile areas
- areas of existing vegetation to remain undisturbed and type of site protection measures to be used
- the location and size of all temporary, semi-permanent and permanent erosion and sediment control structures, devices and measures
- details of the proposed permanent stormwater management system, including all inlets, drains and outlets
- site rehabilitation proposals, including all permanent vegetated areas.
**Standard Symbols**

It is suggested that the standard symbols shown in figure 2 be adopted for use in the preparation of all SWPCPs.

![Image of map legend with symbols]

**Fig. 2: Example Map Legend**

**General Criteria**

In addition to the elements cited above, the following list of objectives should be considered for all types of construction projects.

- Limit site access to nominated and controlled areas.
- Locate and secure all stockpiles away from concentrated water flow paths.
- Ensure that erosion control and sediment collection structures are in place before site clearing work begins.
- Locate sediment traps and basins in locations that will not create adverse flood risks to adjoining properties.
- Clearly specify the conditions under which any of the erosion control or sediment collection structures can be decommissioned.

### 5.8 Building Construction Works

All building construction works must be conducted in such a manner so as to minimise the entry of pollutants into the stormwater system. This includes, but is not necessarily limited to, the following building activities and trades.
Hard waste

- All hard waste must be stored on-site in such a manner so as to prevent any materials from entering the stormwater system either by wind or water action. They must be disposed of to a waste depot, licensed to receive that waste.
- Smaller items should be kept in covered bins. They must be disposed of to a waste depot, licensed to receive that waste.
- Consideration should be given to recycling waste wherever facilities for receipt of items are available.

Concrete works

- Where possible, all residues and wastes generated by concrete works must be prevented from entering the stormwater system. Where this is not possible, such as in concrete pavement cutting works, the amount of waste that can enter the stormwater system must be minimised.
- On-site mixing of concrete, either by hand or by mechanical means, should be carried out in a designated area of the site which is capable of containing all excess water, residues and waste.
- Where site conditions require the use of concrete pumps from public roadways, temporary bunds must be provided across all downslope gutters to trap any spilt material. All spilt material must be removed from the roadway and gutter before the temporary bunds are removed.
- Concrete mix trucks, pumps and equipment must not be washed down in roadways, footpaths or reserves. These vehicles and equipment should be washed down either within a designated contained area within the site or at a suitably designed and operated depot washdown facility.
- Waste concrete slurry should be allowed to dry and either be disposed of on-site or taken to a licensed waste depot.

Brick works and brick cutting

- Mortar must not be mixed in gutters or any other location, which will drain to the stormwater system.
- All wastewater from brick cutting activities must be prevented from entering the stormwater system.
- Brick cutting activities that generate surplus wastewater should not be carried out on public roads, footpaths or reserves.

Painting

- Paint waste and wash waters must not be discharged to the stormwater system.
- Water-based paint cleaning water should be disposed of to sewer or diverted into a contained area lined with newspaper on-site. When it is dry, place the newspaper with paint residue in a solid waste bin.
Oil-based clean up material should be filtered for reuse of the solvent or taken to a waste depot that is licensed to accept these wastes. Place the paint residue after filtering in a solid waste bin.

Unused paint should be kept in the tin or other sealed container and disposed of to a waste depot licensed to receive this waste.

**Plastering**

- Plastering waste and wash waters must not be discharged to the stormwater system.
- All residues and wastes from plastering activities should be allowed to dry within a designated contained area of the site. Solid waste should be disposed of either on-site or taken to a licensed waste depot.
- Alternatively, solid wastes from plastering activities such as calcium sulphate may be used as a clay modifier in gardens.

**Refuelling Facilities and Oil Storage**

The risk of spilling of fuel is at its greatest during refuelling of plant. Vehicle and equipment fuelling procedures and practices are designed to minimise or eliminate the discharge of fuel spills and leaks into storm drain systems or to watercourses.

- Hard standing bunded area to be formed for the re-fuelling and servicing of Dumpers, Compressors and other small plant. This procedure to be enforced across the site. Unless it is completely impractical all small, mobile plant must be refuelled and serviced on a designated Hard-Standing Area and away from any drains or watercourses.
- Small plant should be collected at the end of the working day and re-fuelled in the evening or prior to commencement of work in the morning.
- Mobile Cranes, JCBs and other large plant may be re-fuelled by delivery tanker only, in-situ around the site.
- All re-fuelling should only be from diesel tanks equipped with proper fuel nozzles. No fuel should be d e-canted in cans or other unapproved containers. Purpose made Fuel Containers to be used for fuelling small plant in-situ around the site.
- Never leave a vehicle unattended during refuelling or jam open a delivery valve.
- Check hoses and valves regularly for signs of wear and ensure that they are turned off and securely locked when not in use.
- No fuel should be stored in Compound other than in properly bunded Diesel Tanks. Oils, additives and solvents all to be securely stored in bunded areas or on Poly Spill Pallets.
- Temporary fuel dispensing areas should be covered. These areas must be isolated from surface runoff generated elsewhere on-site by utilising surface grades, bunds and/or diversion drains. Potentially polluting substances that escape must be quickly and reliably retained and appropriately recycled or managed. As a general rule with polluting substances, the facility should be equipped with a sealed and
reliable bund if it is not already equipped with double walled construction and leak detection.

- In addition to the bunding and hardstanding area for fill points DCC require Petrol Interceptors to be installed for the drainage from these areas on larger sites.
- Diesel pumps and similar equipment should be placed on drip trays to collect minor spillages. These should be checked regularly and any accumulated oil removed for disposal.
- Employees must be trained to reduce pollution risks by eliminating refuelling spillage.
- Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fuelling trucks and shall be disposed of properly after use. Absorbent spill clean-up materials shall be available in fueling and maintenance areas and used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be removed promptly and disposed of properly.
- Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.
- Dedicated fuelling areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m (50 ft) from downstream drainage facilities and watercourses. Fuelling must be performed on level-grade areas.
- Nozzles used in vehicle and equipment fuelling shall be equipped with an automatic shut-off to control drips. Fuelling operations shall not be left unattended.
- Protect fuelling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.

Even small amounts of oil can cause significant pollution to the environment. Storage, use and handling of oil must therefore be tightly controlled.

All liquid materials that are potentially hazardous to the environment must be stored and handled carefully to avoid leaks and spills. For large quantities, such materials should be located within a bunded compound. The bund should be:

- impervious to infiltration
- able to safely contain at least 120% of the volume of the largest container located within the bund
- roofed to minimise the collection of rainwater inside the bunded compound.

Liquid handling facilities should be covered and bunded to prevent possible stormwater contamination as well as to assist in the control of any spills.

Tank, drums or other types of containers must be of sufficient strength and structural integrity to hold the oil without leaking or bursting in their expected use.

**Records and Storage**

All Hydro-carbon fuels, Gas Bottles and Diesel Tanks will be stored and maintained in a bunded area

Records will be maintained as follows:
Quantities of all types of combustible fuel, gases stored on site

**Secondary containment**

Secondary containment will prevent oil escaping to the environment in the event of leakage from the tank or ancillary equipment. **Situate all tanks and their ancillary equipment within an oil tight secondary containment system such as a bund.** It is necessary to consider the potential escape of oil beyond the bund area in the event of the tank being damaged. The risk of this can be minimised by:

- keeping the primary container as low as possible;
- increasing the height of the bund wall;
- leaving sufficient space between the tank and bund walls;
- not siting one tank above another;

For illustrative purposes, Figure 1 shows a bunded storage tank installation constructed in situ, with both fixed and flexible draw-off pipes. It does not show features relating to a closed integrally bunded storage tank. For steel tanks in open bunds, a minimum distance of 750 mm between the tank and the bund wall and 600 mm between the tank and the base is recommended to allow access for external inspection.

![Fig. Example Open Bunded Oil Storage Tank](image)
Storage, Loading and Unloading Areas

All hard materials should be stored and handled to avoid contamination of stormwater. Stormwater drainage must be directed around or away from all stockpiles that could potentially cause pollution of stormwater. Hard stockpile areas should either be covered or located in such a manner so as to prevent erosion of the stored material and subsequent pollution of stormwater.

Poor waste management, erosion and drainage control will decrease the quality of water discharged from the site, and may affect groundwater or adjoining marine areas. Any change in water quality due to pollution may affect aquatic life, plants, animals, and create unsafe and unsightly waterways.

The generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes) from a construction site must be minimised. These substances must not enter waterways, stormwater systems or underground water tables.

5.9 Washing Down Plant & Machinery

Plant and machinery cleaning procedures and practices are used to minimise or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain system or to watercourses.

Washing down plant and machinery, hosing down concrete truck mixers or degreasing engines can all lead to serious pollution incidents if it is not properly carried out. The resulting dirty water should not be allowed to enter stormwater system, which generally discharge directly into local streams, rivers or soakaways. Careful consideration must be given to where washing down is carried out. Ensure that any wash down slurry or residue is contained and cannot enter drains or watercourses.

When plant and machinery washing/cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area shall have the following characteristics, and shall be arranged with the construction storm water coordinator:

- Located away from storm drain inlets, drainage facilities, or watercourses.
- Paved with concrete or asphalt and bermed to contain wash waters and to prevent run-on and runoff.
- Configured with a sump to allow collection and disposal of wash water.
- Wash waters shall not be discharged to storm drains or watercourses.
- Used only when necessary.

When cleaning plant and machinery with water:

- Use as little water as possible. High pressure sprayers may use less water than a hose, and shall be considered.
- Use positive shutoff valve to minimize water usage.
− Facility wash racks shall discharge to a sanitary sewer, recycle system or other approved discharge system and shall not discharge to the storm drainage system or watercourses.

### 5.10 Good Housekeeping Practices

- Identify all storm drains, drainage swales and creeks located near the construction site and make sure all subcontractors are aware of their locations to prevent pollutants from entering them.
- Clean up leaks, drips, and other spills immediately.
- Refuel vehicles and heavy equipment in one designated location.
- Wash vehicles at an appropriate off-site facility. If equipment must be washed on-site, do not use soaps, solvents, degreasers, or steam cleaning equipment, and prevent wash water from entering the storm drain.
- Never wash down pavement or surfaces where materials have spilled. Use dry cleanup methods whenever possible.
- Avoid contaminating clean runoff from areas adjacent to your site by using berms and/or temporary or permanent drainage ditches to divert water flow around the site.
- Keep materials out of the rain. Schedule clearing or heavy earth moving activities for periods of dry weather. Cover exposed piles of soil, construction materials and wastes with plastic sheeting or temporary roofs. Before it rains, sweep and remove materials from surfaces that drain to storm drains, creeks, or channels.
- Place waste bins around the site to reduce litter. Dispose of non-hazardous construction wastes in covered dumpsters or recycling receptacles. Recycle leftover materials whenever possible.
- Dispose of all wastes properly. Materials that can not be reused or recycled must be taken to an appropriate landfill or disposed of as hazardous waste.
- Train your employees and inform subcontractors about the stormwater requirements and their own responsibilities.
## 5.11 Environmental Impacts of Stormwater Pollution

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential Negative Impact</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sediment Accumulation</td>
<td>• Smothering of plants and animals that live on the bottom of rivers, creeks and the sea.</td>
<td>• Erosion of sediment from building sites</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Erosion from bare earth areas, e.g. unsealed roads, driveways and car parks, poorly maintained lawns</td>
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<tr>
<td></td>
<td></td>
<td>• Soil and sand piled on nature strips, footpaths, driveways and gutters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Washing cars in street</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Air pollution carried by rain into storm water systems</td>
</tr>
<tr>
<td>Turbidity in Waterways</td>
<td>• Reduced aesthetic value (water looks ‘muddy’)</td>
<td>• Washing cars with detergent containing phosphorous</td>
</tr>
<tr>
<td></td>
<td>• Reduced aquatic plant growth</td>
<td>• Excessive use of fertilisers</td>
</tr>
<tr>
<td></td>
<td>• Clogging of fish gills</td>
<td>• Decay of plant material - e.g. leaves</td>
</tr>
<tr>
<td></td>
<td>• Hinders the ability of aquatic predators (e.g. certain fish species) to see their prey</td>
<td>• Leaky or overflowing sewerage systems</td>
</tr>
<tr>
<td>Nutrient Enrichment</td>
<td>• Nitrogen and phosphorous stimulates the growth of algae and aquatic plants</td>
<td>• Littering e.g. bottles, plastic wrapping and caps, cigarette butts</td>
</tr>
<tr>
<td></td>
<td>• Decay of algae and plant matter reduces dissolved oxygen levels</td>
<td>• Overflowing rubbish bins</td>
</tr>
<tr>
<td></td>
<td>• Excessive growth of algae and aquatic plants reduces waterway aesthetic values</td>
<td>• Waste dumping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Uncovered loads (e.g. Trailers)</td>
</tr>
<tr>
<td>Gross Pollutants</td>
<td>• Reduces aesthetic appeal of waterways</td>
<td>• Run-off from roadways or car parks</td>
</tr>
<tr>
<td></td>
<td>• Can kill some marine aquatic life (e.g. fish, dolphins, sea birds)</td>
<td>• Deterioration of building surfaces (e.g. rusting galvanised iron roofs)</td>
</tr>
<tr>
<td></td>
<td>• Decay of some gross pollutants can decrease dissolved oxygen levels</td>
<td>• Swimming pool water</td>
</tr>
<tr>
<td>Trace Metal Pollution (Heavy Metals)</td>
<td>• Stress on aquatic plants and animals</td>
<td>• Leaks from vehicles</td>
</tr>
<tr>
<td></td>
<td>• Contamination of the food chain with trace metals</td>
<td>• Maintenance of cars</td>
</tr>
<tr>
<td>Petrol, Oils and Grease</td>
<td>• Reduces aesthetic appeal of waterways</td>
<td>• Illegal dumping of waste lubricating oils</td>
</tr>
<tr>
<td></td>
<td>• Can harm some aquatic life</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Decay of some hydrocarbons can decrease dissolved oxygen levels</td>
<td></td>
</tr>
<tr>
<td>High Run-Off Rates</td>
<td>• Increased pollutant loads</td>
<td>• Impervious surfaces (e.g. roads, roofs, paved areas, footpaths) directly connected to the storm water system</td>
</tr>
</tbody>
</table>
6.0 CONCRETE WASTE MANAGEMENT

6.1 Purpose

To prevent soil, stormwater drains and waterways from being contaminated by the use of cement, concrete material and concrete cutting operations.

6.2 Objective

1. To prevent soil, groundwater and stormwater drainage system being contaminated by cement waste when concrete delivery vehicles washout their rotating drum following a delivery to site.
2. And for the flush out of concrete pumps and concrete cutting operations.

6.3 References

The Contractor shall comply with the following environmental statutory requirements:

Applicable Legislation Includes:

- Protection of the Environment Act 2003
- Environmental Protection Agency Act 1992
- Planning & Development Act, 2000
- Waste Management Act 1996 and 2001
- Litter Pollution Acts, 1997 and 2001
- Litter Pollution Regulations, 1999

6.4 Introduction

Waste cement washout is caustic (highly alkaline) and very toxic to fish and other aquatic organisms. It also contains sediment that coats the stream bed and destroys habitat. These materials can degrade local waters when allowed to flow into our storm drain system.

Concrete contains Chromium and Portland cement (the active ingredient of concrete, as well as mortar and tile grout) is the ingredient that kills fish. When it dissolves in water it forms calcium hydroxide \( \text{(Ca(OH)}_2\text{)} \), a highly alkaline substance, and as a result produces a very high pH value. Additionally, washout wastes contain fine particles of sand and cement. If these particles become suspended in the waters of a pond or stream, they can interfere with the ability of fish to breathe. Concrete washout wastes pose a very real threat to surface waters and to all life forms that depend on them.
6.5 Matters For Consideration

Concrete trucks, mixers, hoppers, concrete pump trucks and concrete finishing tools must be washed at job sites. This is necessary to prevent road hazards and for the continued use of the equipment. However, washout of concrete equipment must be done with careful regard for its potential impact on the environment. The wastes from concrete washout can harm the environment if allowed to runoff from construction sites.

**JOBSITE WASHOUT LOCATIONS**

Possibly the most important factor when washing out your vehicle or tools at the job site is the location for the washout. An acceptable washout location will have the following characteristics:

- Washout water should not leave the washout location
- Runoff from a rainstorm will not carry wastes away from the washout location. Washout will not impact future land uses (i.e., parks, open spaces, etc.)
- The location is accessible to the vehicle

Never washout into or near a stream, river, lake or wetland. Never washout into a gully, foul, drainage ditch, road or water course. Most ditches lead to a surface water body eventually. Most construction sites will have designated a specific washout site. If you are unfamiliar with a site or do not see any sign, ask the site supervisor to point out the washout location. When you washout there, make sure to position your vehicle or tools so that your washout wastes fall onto the washout area. Wastes should not flow or runoff from the designated area. Sometimes, a pit, depression or bermmed area will have been excavated for washout. Such contained washout areas may be necessary where the site slopes steeply or where it is near a stream or river.
It is often useful to washout onto or near piles of loose excavated dirt. The loose dirt absorbs the waste and often forms a barrier against runoff. If you know of an area that is about to be paved over, such as a roadbed, you can washout there. Once paved over, your wastes will never leave the site. One good way to know if you have picked a good washout location is to ask yourself the question: “What would happen to my washout wastes if a big rain storm were to hit as soon as I leave?” If the answer is “Nothing”, then you have picked a good location. If the answer is, “This waste would probably be washed off and flow into the river or lake”, then you had better keep looking for an acceptable location.

Pump trucks may require a special location to washout. Since pumps usually generate a larger volume of wastes than mixers, pump trucks may not be able to use mixer truck washout areas. If the designated washout location might be overwhelmed by the volume from a pump truck, the pump truck operator will have to find a better location.

**Onsite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures**

- Temporary concrete washout facilities shall be located a minimum of 15 m from storm drain inlets, open drainage facilities, and watercourses, unless determined infeasible by the RE. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to utilise the proper facilities.
- Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.
- Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.
- Perform washout of concrete mixers, delivery trucks, and other delivery systems in designated areas only.
- Wash concrete only from mixer chutes into approved concrete washout facility. Washout may be collected in an impermeable bag or other impermeable containment devices for disposal.

**General Good Business Practices**

- Schedule projects for dry weather periods.
- Keep materials out of the rain. Store both dry and wet materials under cover, protected from rainfall and runoff. Also, protect dry materials from the wind.
- Secure open bags of cement to keep windblown cement powder away from streets, gutters, storm drains, rainfall and runoff.
- Prepare a plan/ procedure for dealing with any spillages (including concrete) before work starts.
- Ensure that adequate measures are taken to prevent run off from concrete operations or wash out from entering drains and/or watercourses.
• Plan storage areas so that Cement powder, mould release oils, concrete retarding and concrete – curing agents should be stored in areas way form storm water sewers, grids, channels and watercourses or adequate measures are taken to protect against pollution. Also all potentially polluting substances should be located on impermeable surfaces with controlled drainage.
• Storage areas should be fenced off and, when not in use, locked to prevent theft and vandalism.
• Store cement power under cover and keep it dry in order to prevent wastage.

**During Construction**

Place erosion controls (i.e. berms or temporary vegetation) down slope to capture runoff carrying mortar or cement before it reaches the storm drain.

• Do not order or mix up more fresh concrete or cement than you will use.
• Set up and operate small mixers on tarps or heavy drop cloths.
• When breaking up paving (cement or asphalt), be sure to pick up all the pieces. Recycle them at a crushing company.
• Dispose of small amounts of excess dry concrete, grout and mortar in the trash.
• **Never bury waste material.**
• Recycle or dispose of it as hazardous waste material.

**Maintenance and Inspection**

- The Contractor’s shall monitor on site concrete waste storage and disposal procedures at least weekly or as required.
- The shall monitor concrete working tasks, such as saw cutting, coring, grinding and grooving daily to ensure proper methods are employed.
- Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 100mm for above grade facilities and 300mm for below grade facilities. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition.
- Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.
- Temporary concrete washout facilities shall be inspected for damage (i.e. tears in polyethylene liner, missing sandbags, etc.). Damaged facilities shall be repaired.

### 6.6 Concrete Cutting Operations

**Summary**

Concrete cutting operations produce highly visible solid and liquid wastes which must be managed properly to prevent pollutants discharging to fresh and marine waters and the flora and fauna that live within them through the stormwater system.
A combination of portable bunds, wet vacuum system, and filtration and reticulation units, can collect, filter and store liquid and solid wastes on site and reuse wastewater in the cutting process.

This process of waste management provides a cleaner and safer cutting area and improves the health of our waterways and oceans and reduces your business’s environmental liability and potential for fines and prosecution.

**Potential impact of activities on creeks, rivers and oceans**

The cutting of concrete produces two types of waste: wastewater and solid residues. Solid residues — the most recognisable wastes forming the plume that flows from the cutting zone — are fine particles of concrete waste and other materials encased in the concrete that are released through the cutting process.

Wastewater contains treatment chemicals and waste materials that collect on nearby surfaces that can enter the stormwater system. Sediment, heavy metals, litter and organic matter are often washed away by concrete cutting wastewater.

**How YOU can prevent stormwater pollution**

1. Surround the ‘cutting zone’ with portable bunds to contain liquid and solid wastes. Be aware of the location of nearby stormwater drains or sumps and surround them with additional portable bunds where appropriate to prevent these wastes flowing off site.
2. As the concrete is cut, use a wet vacuum system to collect the concrete residues and wastewater and pass the solid and liquid wastes through a filtration system on site. An option for smaller jobs is to use an absorbent material or quarry sand to absorb wastewater. Make sure these materials are swept up and disposed of appropriately and do not enter the stormwater system.
3. Minimise the volume of wastewater produced during concrete cutting operations by recycling and reusing the wastewater.
4. Collect and store solid residues produced from the cutting process on site in a sealed container.
5. Have a licensed waste transporter collect all stored liquid and solid waste and take them to a licensed disposal, treatment or storage facility.
6. Turn back water to minimise water use when using the concrete cutter.
7. Keep and maintain spill response materials on work vehicles for use in the event of a spill or accidental discharge. In the event of a spill, ensure that they are swept up and disposed of appropriately.

**Why you need to ensure your activities don’t pollute**

- Greater awareness of the impact of concrete cutting wastes on the environment
- Public expectations that concrete cutting activities won’t pollute the environment
- Good business management includes reducing your business’s environmental impact
- Compliance with legal and environmental responsibilities to avoid fines and other penalties
- Cleaner work environment and improved efficiency from less time spent cleaning up discharges
- Reduced water usage (if wastewater recirculation system is used)
- Contributing to conservation of the environment increases company pride and improves your corporate image
- Potential marketing opportunities to showcase business’s good environmental performance
- Demonstrate your environmental compliance/management plan as part of a contract or tender process
- Polluted waterways can threaten many types of leisure activities
7.0 WASTE AND MATERIALS REUSE MANAGEMENT

7.1 Purpose

The purpose is to promote an integrated approach to C & D waste management, throughout the duration of construction activities. To promote sustainable development, environmental protection and optimum use of resources.

![Figure 1.1: Cycles in Community Design](image)

7.2 Objectives

1. Promote awareness in the house construction companies regarding environmental issues, best practice and use of recycled and reclaimed materials.
2. Maximise the re-use and/or recycling of construction materials.
3. Ensure that all Contractors are aware of their legal duties when dealing with waste.
7.3 References

The Contractor shall comply with the following environmental statutory requirements:

Applicable Legislation Includes:

- Protection of the Environment Act 2003
- Environmental Protection Agency Act 1992
- Planning & Development Act, 2000
- Waste Management Act 1996 and 2001
- Litter Pollution Acts, 1997 and 2001
- Litter Pollution Regulations, 1999
- Waste Management (Landfill Levy) Regulations, 2002
- Waste Management (Collection Permit) Regulations, 2001
- Waste Management (Licensing) (Amendment) Regulations, 2001
- Waste Management (Licensing)(Amendment) Regulations, 2002
- Waste Management (Permit) Regulations, 1998
- Waste Management (Movement Of Hazardous Waste) Regulations, 1998
- Waste Management (Hazardous Waste) (Amendment) Regulations, 2000
- Waste Management (Movement Of Hazardous Waste) Regulations, 1998
- Waste Management (Planning) Regulations, 1997
- Waste Management (Transfrontier shipment of waste) Regulations 1998
- Waste Management (Packaging) Regulations 1997, 2003

Applicable Codes of Practice or Guidance Notes Includes:

7.4 Introduction

The correct handling, storage and disposal of waste materials is vital if environmental harm and public complaint are to be avoided. Schemes which aim to minimise waste and increase recycling are not only beneficial to the environment but can also reduce costs. The Duty of Care (Reference 1) requires waste producers to ensure that waste does not escape from their control and is passed only to an authorised person accompanied by a full written description.

Construction & Demolition waste is a significant contributor to the current waste management crisis in Ireland, with estimated arisings between 4-6 million tonnes/pa. The DOELG have set targets for recycling of C & D waste of 50% by 2003 and 85% by the year 2013.

Throughout this guide, we use the term “waste reduction” to define waste management practices that will result in less waste going to the landfill. These practices include: waste prevention, salvage, deconstruction and recycling. This guide will explain what these practices are and how to incorporate them into your projects.

The aim of this section is to illustrate BRL’s strategy with regards to waste management and recycling of material and our commitment to achieving these targets.

Key to this strategy are the three principles underlying the Government’s strategy for sustainable waste management:

- Best Practicable Environmental Option (BPEO)
- the waste hierarchy
- the proximity principle

These themes are addressed throughout this strategy and carry through to the objectives and action plan.

Why prevent waste and recycle?

Reduce Costs
Recycling, reusing salvaged building materials and minimising materials and packaging reduces your waste disposal costs and material expenses.

Reduce the Building’s Environmental Impact
Preventing and recycling wastes:

- reduces depletion of natural resources such as trees, oil and minerals.
- creates less pollution by reducing manufacturing and transportation-related emissions.
- uses less energy and water compared to many virgin material product manufacturing processes.
- reduces greenhouse gasses by using less energy for manufacturing and transportation.
How can you prevent waste from construction?

Waste prevention is more beneficial than recycling. Why? Identifying potential waste early in the design process decreases waste generated during construction. If you don’t create waste, you don’t have to plan how to reuse or recycle it.

- **Design with standard sizes for all building materials.** This avoids creating waste when standard sized materials are cut to unusual lengths.
- **Design spaces to be flexible and adaptable to changing uses.** This avoids creating waste during remodels.
- **Design for deconstruction.** Some of the principles include: the dis-entanglement of systems, materials bolted together instead of glued, a construction and deconstruction blueprint, built-in tie-offs and connection points for workers and machinery, no hazardous materials and highly recyclable materials.

**Best Practicable Environmental Option**

**BPEO** ensures that decisions are made through a systematic and consultative process, emphasising the protection and conservation of the environment. The process ensures the least damage to the environment as a whole, at acceptable cost, both in the long and short term.

**What is waste?**

For our purposes waste is defined as:

*Any substance or object that you discard, intend to discard, or are required to discard is waste and as such is subject to a number of regulatory requirements.*

The term ‘discard’ has a special meaning. Even if material is sent for recycling or undergoes treatment in-house, it can still be waste. Whether or not a particular material is waste is for the person producing it to decide in accordance with the law.

Construction, demolition and landclearing debris (CDL) is all non-hazardous solid waste resulting from construction, demolition and landclearing (CDL) activities. CDL waste materials that can be salvaged, reused or recycled include, but are not limited to, the following:
| Waste Classification |

Wastes from construction, demolition and excavation operations will normally be a controlled waste, classified as commercial or industrial waste, and hence subject to waste-related legislation.

### 7.5 Waste Hierarchy

Under the waste hierarchy, the most effective environmental solution is to reduce the generation of waste in the first place. Where further reduction is not practicable, re-use of products and materials should be attempted. Failing that, value should be recovered from the waste through recycling, composting or energy recovery. Only when these alternatives have been explored should the disposal option be pursued.

#### Most Favoured Environmental Option

- **Prevention**
- **Minimisation**
- **Re-use**
- **Recycling and composting**
- **Energy recovery with heat & power**
- **Disposal**

#### Least Favoured Environmental Option
Proximity Principle

The proximity principle suggests that waste should generally be disposed of as near to its place of production as possible; recognising the impacts associated with transportation, and promoting self sufficiency in the location of waste management facilities during the planning process.

Waste Treatment and Storage

All wastes must be stored in designated areas which are isolated from surface drains. Skips should be covered to prevent dust and litter being blown out and rainwater accumulation and should be regularly inspected and replaced when full. Used chemical containers may need special handling and the manufacturer’s instructions should be followed. If plant maintenance is carried out on site, used oil should be stored in a bunded area for collection.

1 Waste Prevention/Avoidance

Preventing the generation of waste or reducing the amount of waste generated.

Examples of practices for achieving waste avoidance—

- input substitution
- increased efficiency in the use of raw materials, energy, water or land
- process redesign
- product redesign
- improved maintenance and operation of equipment
- closed-loop recycling.

2 Waste Minimisation

To control construction waste materials, BRL requires the PSCS to install an appropriate management system to ensure waste minimisation. BRL has identified the following priorities as part of its strategy for waste minimisation:

1. off-site treatment or conversion of wastes
2. on-site treatment or conversion of wastes
3. recovery and reuse of materials for recycling
4. reduction or minimisation of waste
5. elimination or avoidance of waste

The control of waste should incorporate the following elements:

- nominate a responsible person for waste management
- development a waste management plan for each site
- communicate policy to all site operatives
- reducing the volume – surplus material identification
- anticipating waste generation through planning
- allow for just-in-time delivery, purchasing smaller amounts
- using lesser amounts in normal work activities and or finding a less hazardous substitute
- construction materials stored in designated areas with stacking arrangements supervised by a competent person store and handled securely to avoid damage to materials
- keep materials packaged until ready to use
- tracking of substances that may degrade or become dangerous over time
- labelling of all substances
- demolish for maximum re-use and/or recycling of waste
- conduct waste audits
- communicating waste minimisation policy to subcontractors
- installation of appropriate signage to raise awareness

Engage the Whole Supply Chain

- Engage the help of your waste removal contractor in the process.
- Use supplier take-back schemes wherever possible.
- Seek outlets for materials for recycling – paper, timber etc.
- Re-use as much waste material on site as possible.
- Return over-ordered materials wherever possible.

3 Waste Re-Use

Re-using waste, without first substantially changing its form.

Examples—
- recovering solvents, metals, oil, or components or contaminants from catalysts and re-using them for a secondary purpose
- applying waste to land in a way that gives agricultural and ecological benefits
- substituting waste for virgin material in a production process.

4 Waste Recycling

Treating waste that is no longer useable in its present form and using it to produce new products.

5 Energy Recovery from Waste

Recovering and using energy generated from waste.

Example—
Burning waste, using the heat to heat water and using the hot water in an industrial process.
6 Waste Disposal

Disposing of waste, or treating and disposing of waste, in a way that causes the least harm to the environment.

Examples of treatment before disposal—
- employing a biotreatment to degrade material into a compound or mixture
- employing a physico-chemical treatment (for example, evaporation, drying, calcination, catalytic processing, neutralisation, precipitation or encapsulation) to obtain a compound or mixture
- blending or mixing waste to obtain a compound or mixture
- storing or repackaging waste
- employing thermal processes, with or without catalysts, to convert waste into a non-hazardous material.

Examples of disposal—
- disposal to a landfill
- destroying thermally without recovering heat or another secondary product.

7.6 Management of Site Waste

Adequate provision should be made for the storage and disposal of waste materials and scrap.
Waste should not be allowed to accumulate on site and never stored along access routes or passageways. Harmful or toxic waste should be stored and disposed of in accordance with Statutory provisions. Waste food should be stored in sealed containers and disposed of safely - never throw waste food around the site as it will only attract rats.

We recognise that the opportunity exists and that by following this strategy outlined below we gain benefits in other arenas such as transport, health and safety, energy, consumption of raw materials, waste, pollution, etc. Our target for this project is to achieve a 50 to 60% reduction in site waste. We shall seek continuous improvement on our target figure through a process of educating the workforce in the importance achieving this benchmark and we shall achieve this by:

- The prevention through rigorous design and management of unnecessary waste arriving at site in the first place.
- The minimisation of landfill deposits through careful reuse of and recycling of waste i.e. timber, metal, hard plastics, concrete aggregate, paper, glass, etc.

The PSCS must develop a resource recovery and waste management plan, detailing the following:

- Efforts to minimise waste on site by avoiding over-estimation of purchasing requirements, minimising packaging materials, and buying environmentally approved and recycled content products
- Procedures for the collection and sorting of recyclable construction materials
- The type and quantity of materials that are to be re-used or recycled
- Provision of containers for recyclable materials including cardboard, glass, metal, plastic and green waste
- The re-use of timber, glass and other materials
- The recycling of asphalt, metal, bricks, tiles, masonry, concrete, plasterboard, plastic, batteries, cardboard, carpet and other materials
- Provisions for collection of daily rubbish from workers
- Procedures for removal of waste (materials that cannot be reused or recycled) from the site
- Procedures for removal of hazardous or dangerous materials from the site.

Removal of hazardous or dangerous materials from the site must be in accordance with and all legislation.

Waste collection shall only occur during permitted hours.

For outside bins, self-closing lids must be installed to ensure waste does not become airborne.

Litter and debris ‘trapped’ against site fencing must be regularly cleaned.

Burning off on site is prohibited.

Ensure all fuel and chemicals are appropriately contained and bunded in safe locations
- avoid spillage during refuelling and servicing of plant and equipment
- collect, store and dispose of waste oil correctly
- be aware of and comply with emergency site plans for accidents and incidents that may cause environmental harm
- ensure materials are readily available on site to control an incident that may cause environmental harm
- dispose of any harmful solid and liquid waste at an approved and licensed disposal site

7.7 Separation of Waste Material at Source

To facilitate material recycling and reuse- Skips should be used for site segregation of waste into various categories such as:-

<table>
<thead>
<tr>
<th>Recycling</th>
<th>Re-use</th>
</tr>
</thead>
<tbody>
<tr>
<td>- General (paper, cardboard etc.)</td>
<td>- Excavation Spoil (Topsoil)</td>
</tr>
<tr>
<td>- Wood (off-cuts, scraped pallets)</td>
<td>- Wood (Shuttering, Hoarding, Chipboard, pallets)</td>
</tr>
<tr>
<td>- Hazardous substances (batteries, chemicals, paints, etc.)</td>
<td>- Brick, block, pavers</td>
</tr>
<tr>
<td>- Tarmacadam</td>
<td>- Metal fixtures</td>
</tr>
<tr>
<td>- Inert (hardcore, concrete)</td>
<td>- Oils, paints, chemicals</td>
</tr>
<tr>
<td>- Plastic (plastic wrapping, packaging, etc.)</td>
<td>- Plastic</td>
</tr>
<tr>
<td>- Bricks, blocks, tiles or cut natural stone or rubble</td>
<td>- Bricks, blocks, tiles</td>
</tr>
<tr>
<td>- Scrap Metal</td>
<td>- Metal (architecture fixtures)</td>
</tr>
<tr>
<td>- Scrap Glass</td>
<td>- Glass (window panes)</td>
</tr>
</tbody>
</table>
Skips shall be set up in agreed locations throughout the site as agreed with the site supervisor and the waste disposal company. All skips shall be netted as required and all skips shall be clearly marked using colours to signify the type of waste that is to be deposited in each skip.

- Site supervisors are to ensure that the correct material is deposited in each skip and that skips are to be signed off before leaving site.
- Site Supervisors should, where possible make arrangements for source segregated material to be recycled or reused at a facility close to their creation.

### 7.8 Implementation Plan for the Segregation of Waste

The following plan should be implemented by the site management:

The system of large single skips will be replaced by four smaller skips for segregation of materials categorised as:

- Timber
- Metal
- Plastic
- Rubble

A separate skip, preferably Red in colour and having securable lids at each end will be provided for Hazardous Waste.

High visibility signage should be used as follow:

a) “Please note all waste materials are segregated on this site”
   A number of these should be placed at various locations around the site.

b) Timber only – Metal only – Plastics only – Rubble only

c) Strictly low/medium hazardous materials and their containers only

The signage should be capable of either being attached to the skip or if the area has a wall or fence behind it, attached to that.

Empty hazardous waste containers- cans and drums should be compacted or consolidated prior to being disposed of, as disposal of this waste will come at a cost.

---

**Ten actions for site managers**

1. **Ensure** sub-contractors are briefed on project aims for waste reduction and segregation.
2. **Establish** a company or site benchmark (or use ours) against which to measure results.
3. **Allocate** clear and accessible space for segregated waste skips.
4. **Use** mini-skips where work is remote from main skip area and transfer by forklift.
5. **Engage** all site workers with toolbox talks, briefings and canteen poster campaigns.
6. **Publish** waste performance figures on site and elsewhere.
7. **Compare** performance with other sites in your company/ area/industry sector.
8. **Use** existing staff, such as forklift drivers, to monitor operation of waste segregation.
9. **Re-use** as much of the waste as possible on site, e.g. brick/concrete.
10. **Identify** new outlets for and ways to use waste products.
All sub-contractors should be briefed in respect of the segregation plan. Subcontractors handling low/medium hazardous materials and containers should be made aware of the need to compact or consolidate empty containers.

In the unlikely event, where it is identified that a sub-contractor is using any Highly Toxic or Corrosive substance, which may re-act when disposed of with Low/ Medium Hazardous Waste, action will be taken and documented regarding the disposal of the substance and its containers.

In respect of the “Policing” of segregation, sub contractors should be made aware that any products deposited in the wrong skips will normally be identifiable and traceable back to them. The action then to be taken is for the site management to decide.

Segregation of materials at the point of work and subsequent transportation to the main skips will be reviewed on an individual basis, however a system of Wheelie Bins at work points is a practical solution.

**Waste and Materials Reuse Management Plan**

A Waste and Materials Reuse Management Plan must be completed for all projects. For guidance on preparing the plan see #######.

A waste management plan does not need to be lengthy or complicated to be effective, but a successful plan should contain the following information.

- Waste recycling or reuse goals
- Analysis of project waste
- Disposal methods
- Material handling procedures
- Instructions for the crew and subcontractors

**Draft wording to be included in the subcontract packages.**

It is the policy on this project to provide and maintain environmental protection during the construction period of the project, including control of pollution and waste that develops during normal construction practices and that is not associated with permanent environmental control features incorporated in the project, and in so doing comply with all the applicable laws and regulations of authorities having jurisdiction.

Project specific Environmental Procedures require all subcontractors and suppliers to comply with the following requirements:

Subcontractors and suppliers will be responsible for the cleaning up and removal off site and either recycling where possible or disposal of all their own waste products, this will include all waste materials not incorporated in the body of the works. This is also deemed to include any packaging, wrapping or crates in which the materials may have been delivered.
7.9 WASTE MANAGEMENT REGISTER

As part of the BRL Safety, Health and Environmental Strategy, each Project is required to set up a system to record and quantify the management of all waste and scrap from the site.

This register should record the following details for each item disposed of:

- Name of project of origin, location, design & size of development
- Type of waste- Main categories eg. Excavated spoil, concrete, masonry, wood etc.
- Applicable Waste Disposal Procedure
- Quantity of material
- Name of Waste or Scrap Contractor used
- Date of Disposal
- Destination of material
- Initials of person making the entry
- Proposed use
- Waste collection permit/licence details
- Documentation issued by the Waste or Scrap Contractor used
- Estimated costs
- Any comments

This register is to ensure that the contractor’s obligations for ensuring all waste is dealt with in an appropriate manner in compliance with all relevant legislation are met.
7.10 10 Things You Can do to Save Waste on the Construction site

<table>
<thead>
<tr>
<th></th>
<th>Plan to avoid waste</th>
<th>Better design will minimise waste and promote the use of recycled content products</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Buy recycled content products</td>
<td>Use recycled content products where possible to save valuable resources, money and the environment</td>
</tr>
<tr>
<td>3</td>
<td>Establish recycling facilities</td>
<td>On and off-site sorting facilities increase recovery of valuable materials</td>
</tr>
<tr>
<td>4</td>
<td>Our waste can be your raw materials</td>
<td>Co-ordinating different jobs – waste materials recovered at one job can be used on others</td>
</tr>
<tr>
<td>5</td>
<td>Get smart about recycling!</td>
<td>Train workers and contractors to support material recovery programs and keep everyone ‘in the loop’</td>
</tr>
<tr>
<td>6</td>
<td>Take recycling off-site too</td>
<td>Specialised off-site recycling contractors can recycle the waste you can’t.</td>
</tr>
<tr>
<td>7</td>
<td>Collect data</td>
<td>Collect information on the amount of waste you generate to help recycling initiatives and save money. Doing a waste audit is easy.</td>
</tr>
<tr>
<td>8</td>
<td>Protect valuable supplies</td>
<td>Protect valuable new products from damage to reduce waste and save money</td>
</tr>
<tr>
<td>9</td>
<td>From trash to treasure</td>
<td>Reprocess waste on-site (e.g. crush concrete for roadbase) and turn waste into a valuable (even profitable) resource</td>
</tr>
<tr>
<td>10</td>
<td>Encourage free waste disposal</td>
<td>Others can take your recycled materials away, for nothing!</td>
</tr>
</tbody>
</table>

Good ‘housekeeping’ of waste is important and improves site safety. So:

- Make waste a key site improvement target from the start of the project.
- Set realistic targets.
- Make sure that responsibility for individual wastes is clearly defined.
- Use toolbox talks and posters to keep waste ‘on the agenda’ for all.
- Be aware that waste volumes increase as completion is approached.
- Packaging is a major contributor to waste.
- Ensure that materials are stored in appropriate conditions.
APPENDICES

Construction Management Plans

Element 1: Operating Hours, Noise and Vibration Controls
Element 2: Air and Dust Management
Element 3: Sediment and Water Pollution Control Plan
Element 4: Waste and Materials Reuse Management
Element 1: Operating Hours, Noise and Vibration Controls

This original document or copy when completed, is to be kept on site with the Safety and Health Plan documentation and forms part of the Project Contract documentation.

Project Contacts
Company operational Details .................................................................
Directors Name .................................................................................
Company Name .................................................................................
Company Business Address .................................................................
Company Contact Number ....................................................................

Onsite person responsible for compliance with this Construction Management Plan
Name .................................................................................................
Contact Number ............................................................................... 
After Hours Contact Number ............................................................... 

Contact person in control of the site
Name .................................................................................................
Contact Number ............................................................................... 
After Hours Contact Number ............................................................... 

Construction Works
Demolition ☐
Excavations ☐
Construction ☐

I ................................................................. have due authorisation and delegation to sign this Construction Management Plan on behalf of the Company listed above and take responsibility for ensuring compliance with our commitment specified herein, the Environmental Protection Agency Act 1992, Local Government (Water Pollution) Acts, 1977-1990 and any other relevant legislation.

Signed ................................................................. Dated ..............................

Please return a signed copy to:
Health & Safety Manager
Mr John Rizzolo
Ballymun Regeneration Limited
Civic Centre,
Main Street, Ballymun
Dublin 9
### Element 1: Operating Hours, Noise and Vibration Controls

#### Required Measures

<table>
<thead>
<tr>
<th>Operating Hours, Noise and Vibration Requirements</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Outline details/justification</th>
<th>Shown on plan?</th>
<th>BRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Matters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Is the area designated within a ‘sensitive’ zone?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>Noise Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Will excessive noise be emitted from any plant or construction activity on the site? If so, state measures adopted to reduce noise emission.</td>
<td>Provide details:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
</tr>
<tr>
<td>3 Has a Noise and Vibration Management Plan been submitted?</td>
<td>Provide details:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>Signage</strong></td>
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<td></td>
</tr>
<tr>
<td>4 Has appropriate signage with 24 hour emergency site contact details been displayed?</td>
<td>Provide details:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>Traffic</strong></td>
<td></td>
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</tr>
<tr>
<td>5 Will traffic conditions change? Has Council’s Office of the Director of Traffic-Management and Control Division been notified? Please attach approval copy.</td>
<td>Permit Approval Details:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
</tr>
<tr>
<td><strong>After Hours</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6 Is an after hours work permit required? If so, has an application been made?</td>
<td>Permit No: ...................</td>
<td>Permit Details:</td>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

I have read the Explanatory Guideline for Operating Hours, Noise and Vibration Controls. I am aware of the overall statutory and BRL requirements and my responsibilities and obligations to such requirements.

Signed .................................................... Dated ...........................................
Element 2: Air and Dust Management

This original document or copy when completed, is to be kept on site with the Safety and Health Plan documentation and forms part of the Project Contract documentation.

**Project Contacts**

Company Operational Details ..........................................................

Directors Name ..........................................................

Company Name ..........................................................

Company Business Address ..........................................................

Company Contact Number ..........................................................

**Onsite contact person responsible for compliance with this Construction Management Plan**

Name ..........................................................

Contact Number ..........................................................

After Hours Contact Number ..........................................................

**Contact person in control of the site**

Name ..........................................................

Contact Number ..........................................................

After Hours Contact Number ..........................................................

**Construction Works**

Demolition ☐

Excavations ☐

Construction ☐

I, .......................................................... have due authorisation and delegation to sign this Construction Management Plan on behalf of the Company listed above and take responsibility for ensuring compliance with our commitment specified herein, the *Environmental Protection Agency Act 1992, Local Government (Water Pollution) Acts, 1977-1990, Air Pollution Act 1987* and any other relevant legislation.

Signed .......................................................... Dated ..............................................

Please return a signed copy to:

Health & Safety Manager

Mr John Rizzolo

*Ballymun Regeneration Limited*

*Civic Centre,*

*Main Street, Ballymun*

*Dublin 9*
## Element 2: Air and Dust Management

### Required Measures

<table>
<thead>
<tr>
<th>Air and Dust Management Requirements</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Outline details/justification</th>
<th>Show n on plan?</th>
<th>BRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Matters</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 Is a building permit required for the works?</td>
<td></td>
<td></td>
<td></td>
<td>Permit No: ………………………………</td>
<td>Yes / No</td>
<td></td>
</tr>
<tr>
<td>If yes, give details of permit and Building Surveyor.</td>
<td></td>
<td></td>
<td></td>
<td>Building Surveyor: ..................................................................................................................</td>
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<tr>
<td><strong>Prevention and Control</strong></td>
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<tr>
<td>2 Specify equipment type onsite which may cause excessive dust or affect air quality and how excessive dust will be suppressed.</td>
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<td>Provide details: ..........................................................................................................................</td>
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<td>Yes / No</td>
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</tr>
<tr>
<td>3 Specify methods used to prevent impact of dust and airborne matter on the surrounding area.</td>
<td></td>
<td></td>
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<td>Provide details: ..........................................................................................................................</td>
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<td>...........................................................................................................................................</td>
<td>Yes / No</td>
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</tr>
<tr>
<td>4 State how airborne dust from trucks and vehicles entering/leaving the site will be minimised.</td>
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<td>Provide details: ..........................................................................................................................</td>
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<td>...........................................................................................................................................</td>
<td>Yes / No</td>
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</tr>
<tr>
<td>5 State clearly how dust and noise will be suppressed from boundaries and public areas when cutting materials in-situ such as brick, block</td>
<td></td>
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<td>Provide details: ..........................................................................................................................</td>
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<td>...........................................................................................................................................</td>
<td>Yes / No</td>
<td></td>
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<tr>
<td>6 If dust onsite is to be controlled with water tankers, specify frequency and duration.</td>
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<td></td>
<td></td>
<td>Provide details: ..........................................................................................................................</td>
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<td>Yes / No</td>
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<tr>
<td><strong>Storage</strong></td>
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<tr>
<td>7 Specify materials likely to be stored onsite and the methods used to reduce loose</td>
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<td>Provide details: ..........................................................................................................................</td>
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<td>...........................................................................................................................................</td>
<td>Yes / No</td>
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<tr>
<td>materials from wind effects and other prevailing weather elements.</td>
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<tr>
<td>Smoke and Pollution</td>
<td>………………………………………………………………………………………………………</td>
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</table>

| 9 | Is plant and equipment onsite to be maintained and regularly serviced to prevent excessive smoke, pollutants and/or toxic fumes being emitted? | Provide details: ……………………………………………………………………………………………………… |

I have read the Explanatory Guideline for Air and Dust Management. I am aware of the overall statutory and Dublin City BRL requirements and my responsibilities and obligations to such requirements.

Signed .................................................. Dated .................................
Element 3: Sediment and Water Pollution Control Plan

This original document or copy when completed, is to be kept on site with the Safety and Health Plan documentation and forms part of the Project Contract documentation.

Project Contacts
Company Operational Details .................................................................
Directors Name ..............................................................................
Company Name ..............................................................................
Company Business Address ............................................................... 
Company Contact Number .................................................................

Onsite Contact Person Responsible for Compliance With this Construction Management Plan
Name ................................................................................................
Contact Number ..............................................................................
After Hours Contact Number ............................................................... 

Contact Person in Control of the Site
Name ................................................................................................
Contact Number ..............................................................................
After Hours Contact Number ............................................................... 

Construction Works
Demolition ☐
Excavations ☐
Construction ☐

I, ................................................................. have due authorisation and delegation to sign this Construction Management Plan on behalf of the Company listed above and take responsibility for ensuring compliance with our commitment specified herein, the Local Government (Water Pollution) Acts, 1977 & 1990, Local Government (Water Pollution) Regulations, 1978 & 1992 and any other relevant legislation.

Signed ................................................................. Dated .................................

Please return a signed copy to:
Health & Safety Manager
Mr John Rizzolo
Ballymun Regeneration Limited
Civic Centre,
Main Street, Ballymun
Dublin 9
# Element 3: Sediment and Water Pollution Control Plan

## Required Measures

<table>
<thead>
<tr>
<th>Stormwater and Sediment Requirements</th>
<th>Yes</th>
<th>No</th>
<th>N/A</th>
<th>Outline details/justification</th>
<th>Show on plan?</th>
<th>BRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stormwater Measures</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>1 How is stormwater to be prevented from entering adjoining properties?</td>
<td></td>
<td></td>
<td></td>
<td>Provide details:</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>2 How is upslope water to be diverted to prevent it travelling through the site?</td>
<td></td>
<td></td>
<td></td>
<td>Provide details:</td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>3 Are down pipes to be connected as soon as any roof is installed onsite?</td>
<td></td>
<td></td>
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<td></td>
<td>Yes/No</td>
<td></td>
</tr>
<tr>
<td>4 Specify how stormwater will be filtered before being pumped to a legal point of discharge?</td>
<td></td>
<td></td>
<td></td>
<td>Provide details:</td>
<td>Yes/No</td>
<td></td>
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<tr>
<td><strong>Excavation Work</strong></td>
<td></td>
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<tr>
<td>5 Has the location and extent of excavations been provided in the Stormwater Plan of the site at?</td>
<td></td>
<td></td>
<td></td>
<td>Provide details:</td>
<td>Yes/No</td>
<td></td>
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<tr>
<td><strong>Site Entries</strong></td>
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<tr>
<td>6 Are the site entry and traffic routes to be stabilised?</td>
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<td>Provide details:</td>
<td>Yes/No</td>
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<tr>
<td>7 Are rumble grids or similar to be provided to collect mud from vehicles leaving the site?</td>
<td></td>
<td></td>
<td></td>
<td>Provide drawing and give details:</td>
<td>Yes/No</td>
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<tr>
<td></td>
<td>Question</td>
<td>Provide details:</td>
<td>Yes / No</td>
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<tr>
<td>8</td>
<td>Is a cleaning plan specified for rumble grids?</td>
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<td>9</td>
<td>Is a grated drain provided at the entrance of the site to prevent uncontrolled run-off?</td>
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<tr>
<td></td>
<td><strong>Drainage and Sediment Control</strong></td>
<td></td>
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<tr>
<td>10</td>
<td>Will the site be properly drained to prevent site water retention that may cause structural damage to excavations or retaining walls?</td>
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<tr>
<td>11</td>
<td>Will provisions be made to pump out any water collected at bottom of excavation sites? Will water be pumped to the sewer with the necessary approvals?</td>
<td></td>
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<tr>
<td>12</td>
<td>Have natural falls of the site and sediment controls been identified in the Stormwater Plan?</td>
<td></td>
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<tr>
<td>13</td>
<td>Is there a maintenance program to replace sediment barriers when sediment controls become ineffective?</td>
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<tr>
<td>14</td>
<td>Will drains on and near the site have sediment traps or filters around them? Will these be checked daily?</td>
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</tbody>
</table>
| 15 | How will any loose materials such as soil, sand and gravel be managed to prevent displacement? | Provide details:  
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Yes / No |
|   | **Washing and Clean-Up** |   |
| 16 | Are vehicle wash down areas provided near site entries? Do they capture and treat water prior to discharge? | Provide details:  
………………………………………………………………………………………………………  
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Yes / No |
| 17 | Do wash down areas use more than 3000 litres per day of recycled water? | Provide details:  
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Yes / No |
| 18 | Are facilities in place to enable paint brushes, rollers and spray equipment to be cleaned without discharge of by-product into stormwater systems? | Provide details:  
………………………………………………………………………………………………………  
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Yes / No |
|   | **Vegetation** |   |
| 19 | Is vegetation retained where possible to absorb water flows and minimise dust? | Provide details:  
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……………………………………………………………………………………………………….  
Yes / No |
| 20 | Will vegetation be reinstated as soon as possible on completion of works? | Provide details:  
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……………………………………………………………………………………………………….  
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Yes / No |

I have read the Explanatory Guideline for Stormwater and Sediment Control. I am aware of the overall statutory and BRL requirements and my responsibilities and obligations to such requirements.

Signed  ..........................................  Dated  ..............................
Element 4: Waste and Materials Reuse Management

Project Details
Company Operational Details ............................................................
Directors Name ..........................................................................
Company Name ..........................................................................
Company Business Address ..........................................................
Company Contact Number ............................................................

Onsite contact person responsible for compliance with this Construction Management Plan
Name ..........................................................................................
Contact Number .........................................................................
After Hours Contact Number .........................................................

Contact person in control of the site
Name ..........................................................................................
Contact Number .........................................................................
After Hours Contact Number .........................................................

Construction Works
Demolition ☐
Excavations ☐
Construction ☐

I, ................................................................. have due authorisation and delegation to sign this Construction Management Plan on behalf of the Company listed above and take responsibility for ensuring compliance with our commitment specified herein, the Environmental Protection Agency Act 1992, Planning & Development Act, 2000, Waste Management Act 1996 and 2001, Litter Pollution Acts, 1997 and 2001 and all other relevant legislation.

Signed ................................................................. Dated .................................

Please return a signed copy to:

Health & Safety Manager
Mr John Rizzolo
Ballymun Regeneration Limited
Civic Centre,
Main Street, Ballymun
Dublin 9
## Element 4: Waste and Materials Reuse Management

### Required Measures

<table>
<thead>
<tr>
<th>Waste and Materials Reuse Requirements</th>
<th>Yes</th>
<th>N</th>
<th>N/A</th>
<th>Outline details/justification</th>
<th>Shown on plan?</th>
<th>BRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Matters</strong></td>
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</tr>
<tr>
<td>1 Has a Resource Recovery and Waste Management Plan been developed?</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Has a responsible contact person been designated to deal with waste/reuse/recycling queries?</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Has the type and quantity of materials to be removed from the site been specified?</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details:</td>
<td></td>
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<tr>
<td><strong>Minimising Waste</strong></td>
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<tr>
<td>4 How will over-estimation of purchasing requirements be minimised to reduce onsite waste?</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Will waste onsite be minimised by avoiding products that are over-packaged?</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Will waste onsite be minimised by buying environmentally improved and recycled products?</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details:</td>
<td></td>
<td></td>
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<tr>
<td><strong>Bins and Skips</strong></td>
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<tr>
<td>7 Are separate bins to be provided for each type of recyclable</td>
<td>Yes</td>
<td>N/A</td>
<td></td>
<td>Provide details and location:</td>
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</tbody>
</table>
## Waste Management

### 8. Will bins and recycling facilities be provided for workers' daily rubbish?

<table>
<thead>
<tr>
<th>Provide details:</th>
<th>Yes / No</th>
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### 9. Do outside bins have self-closing lids to prevent waste becoming airborne?

<table>
<thead>
<tr>
<th>Provide details:</th>
<th>Yes / No</th>
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</table>

### Hazardous Waste

### 10. Will hazardous or dangerous materials, including asbestos, be removed from the site in accordance with the relevant legislation?

<table>
<thead>
<tr>
<th>Provide details:</th>
<th>Yes / No</th>
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</table>

### 11. Will noise reduction measures be put in place for waste collection?

<table>
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<tr>
<th>Provide details:</th>
<th>Yes / No</th>
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</table>

### Fencing

### 12. Are provisions in place to regularly clean litter and debris ‘trapped’ against site fencing both internal and external?

<table>
<thead>
<tr>
<th>Provide details:</th>
<th>Yes / No</th>
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</table>

I have read the Explanatory Information for Waste and Materials Reuse Management. I am aware of the overall statutory and BRL requirements and my responsibilities and obligations to such requirements.

**Signed** …………………………………… **Dated** …………………
Attachment 1

DCC CONDITIONS (Discharge to Foul)

DRAINAGE DIVISION

1. Where settling tanks or treatment tanks are mandatory, a record or log book of cleaning, maintenance and performance of each settling tank shall be made and kept available for inspection at all times by officials of Dublin City Council on demand.

2. The trade effluent discharged shall be of the same nature and composition as described and conditioned in this licence.

3. No substance shall be present in the trade effluent in such concentration as would constitute a danger to personnel working in the sewer or to the sewer fabric, or would interfere with the operation of downstream handling facilities.

4. In the event of an accidental discharge, spillage or deposit of any polluting matter which enters or is likely to enter any waters or a sewer, the person responsible shall notify the City Council as soon as practicable afterwards (Section 14, Local Government (Water Pollution) Act, 1977).

5. The Licensee shall provide and maintain such inspection chambers as are required for the purpose of taking samples of trade effluent.

6. The Licensee shall keep records in such form as required, of the volume, rate of discharge, nature and composition of the trade effluent discharged into the sewer. Copies of such records shall be sent to Drainage Division Dublin City Council.

7. The Licensee shall permit authorised persons to inspect, examine or test, at all reasonable times, any works or apparatus installed in connection with the trade effluent, and to take samples of the trade effluent.

8. An appropriately designed on-site treatment shall be installed to treat the groundwater prior to discharge to Dublin City Council’s sewer. The treatment plant shall ensure that the effluent complies with the limits as set out in this licence. Details of the treatment plant are to be submitted to Dublin City Council prior to the commencement of discharge to the sewer.

9. All oil tanks including lubricating oil tanks and oil used for space heating and generators shall be contained with a bunded area, designed in accordance with Dublin City Council guidelines.
CONDITIONS

CENTRAL LABORATORY

10. The temperature of the trade effluent shall not exceed 42 degrees Centigrade.

11. The pH shall lie in the range six to ten.

12. Over any 24 hour period, the mean concentration of Suspended Solids (SS) in the trade effluent shall not exceed 400 mg/litre, and the maximum concentration of suspended solids shall not exceed 500 mg/litre. The total quantity of suspended solids discharged per day shall not exceed 6 Kgs.

13. The concentration of mineral oils, fats and grease (OFG) in the effluent shall not exceed 10mg/l. The total quantity of OFG discharged per day shall not exceed 0.01 Kgs.

14. Over any 24 hour period, the mean concentration of Biochemical Oxygen Demand (BOD) in the trade effluent shall not exceed 400 mg/litre, and the maximum concentration of suspended solids shall not exceed 500 mg/litre. The total quantity of Biochemical Oxygen Demand discharged per day shall not exceed 6 Kgs.

15. Over any 24 hour period, the mean concentration of Chemical Oxygen Demand (COD) in the trade effluent shall not exceed 800 mg/litre, and the maximum concentration of suspended solids shall not exceed 1000 mg/litre. The total quantity of Chemical Oxygen Demand discharged per day shall not exceed 12 Kgs.

16. The effluent shall be screened prior to discharge to the sewer to remove gross solids which may give rise to blockage in the sewer.

17. Materials classifiable as Hazardous Waste under the Waste Management Act, 1996, shall not be discharged to sewer.

18. The effluent discharge shall not contain petroleum hydrocarbons, organic solvents or other volatile organics (including dissolved methane gas) which would give rise to flammable or explosive vapours in the sewer.

19. Non-effluent wastewater (including firewater and accidental spillages arising on the site) shall not be discharged to sewers without the prior authorisation of the Main Drainage Division of Dublin City Council.

20. The Licensee shall monitor the discharge of trade effluent to ensure compliance with the conditions of this licence. Representative samples of the trade effluent shall be taken by the Licensee and tested for the chemical and physical characteristics conditioned in this licence using standard methods.

21. The frequency of sampling shall be as necessary but shall not be less than 12 times per year (monthly). The costs of all such tests shall be borne by the Licensee.

22. Monitoring results shall be submitted to Dublin City Council on a monthly basis.

VOLUMETRIC CONDITIONS AND CHARGES

23. The discharge of trade effluent shall not exceed 15 m3/day.

24. The maximum rate of discharge must not exceed 5 litres/ Second.

25. Charges as approved by the Sanitary Authority and based on volume and load, will be applied at appropriate intervals.
Attachment 2

DCC CONDITIONS

DRAINAGE DIVISION

1. Where settling tanks or treatment tanks are mandatory, a record or log book of cleaning, maintenance and performance of each settling tank shall be made and kept available for inspection at all times by officials of Dublin City Council on demand.

2. The trade effluent discharged shall be of the same nature and composition as described and conditioned in this licence.

3. No substance shall be present in the trade effluent in such concentration as would constitute a danger to personnel working in the sewer or to the sewer fabric, or would interfere with the operation of downstream handling facilities.

4. In the event of an accidental discharge, spillage or deposit of any polluting matter which enters or is likely to enter any waters or a sewer, the person responsible shall notify the City Council as soon as practicable afterwards (Section 14, Local Government (Water Pollution) Act, 1977).

5. The Licensee shall provide and maintain such inspection chambers as are required for the purpose of taking samples of trade effluent.

6. The Licensee shall keep records in such form as required, of the volume, rate of discharge, nature and composition of the trade effluent discharged into the sewer. Copies of such records shall be sent to Drainage Division Dublin City Council.

7. The Licensee shall permit authorised persons to inspect, examine or test, at all reasonable times, any works or apparatus installed in connection with the trade effluent, and to take samples of the trade effluent.

8. All oil tanks including lubricating oil tanks and oil used for space heating and generators shall be contained within a bunded area. The main site fuel tank shall be placed at ground level and all fuel being delivered to plant shall be pumped so that spillage and or leakage shall be retained within the bund.

9. An appropriately designed on-site treatment shall be installed to treat the groundwater prior to discharge to Dublin City Council’s sewer. The treatment plant shall ensure that the effluent complies with the limits as set out in this licence. Details of the treatment plant are to be submitted to Dublin City Council prior to the commencement of discharge to the sewer.

10. A pH monitoring and treatment system shall be installed to maintain the pH at within the levels conditioned in this licence.

11. A flow meter shall be installed in order to record the volume of effluent discharged per day. Flow records shall be kept and submitted to this office on a fortnightly basis.
CONDITIONS

CENTRAL LABORATORY

12. The temperature of the trade effluent shall not exceed 42 degrees Centigrade.

13. The pH shall lie in the range six to nine.

14. Over any 24 hour period, the mean concentration of Suspended Solids (SS) in the trade effluent shall not exceed 20 mg/litre, and the maximum concentration of suspended solids shall not exceed 30 mg/litre. The total quantity of suspended solids discharged in this period shall not exceed 0.15 Kgs.

15. Over any 24 hour period, the mean concentration of Biochemical Oxygen Demand (BOD) in the trade effluent shall not exceed 20 mg/litre, and the maximum concentration shall not exceed 30 mg/litre. The total quantity of suspended solids discharged in this period shall not exceed 0.15 Kgs.

16. Over any 24 hour period, the mean concentration of Chemical Oxygen Demand (COD) in the trade effluent shall not exceed 30 mg/litre, and the maximum concentration shall not exceed 50 mg/litre. The total quantity of suspended solids discharged in this period shall not exceed 0.25 Kgs.

17. The concentration of mineral oils shall not exceed 10.0 mg/litre. The total quantity of free residual chlorine discharged per day shall not exceed 2.0 Kgs.

18. Non-trade effluent waste (including fire water and accidental spillages arising on the site) shall not be discharged to sewers without the prior authorisation of the Main Drainage Division of Dublin City Council.

19. The effluent discharge shall not contain petroleum hydrocarbons or organic solvents (including chlorinated organic solvents) which would give rise to flammable or explosive vapours in the sewers.

20. The effluent shall be screened prior to discharge to the sewer to remove gross solids which may give rise to blockage of the sewer.

21. The Licensee shall monitor the discharge of trade effluent to ensure compliance with the conditions of this licence. Representative samples of the trade effluent shall be taken by the Licensee and tested for the chemical characteristics conditioned in this licence using standard methods. The frequency of sampling shall be as necessary, but shall not be less than fortnightly.

22. Monitoring results shall be submitted to Dublin City Council on a fortnightly basis.

VOLUMETRIC CONDITIONS AND CHARGES

23. The discharge of trade effluent shall not exceed 5 m3/day.

24. The rate of discharge of trade effluent shall not exceed 5 litres/sec.

25. Charges as approved by the Sanitary Authority and based on volume and load, will be applied at appropriate intervals.