
Document Title Construction Environmental Management Plan

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Client Takeda Ireland Ltd

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A	08 Sep 2022	SK	Electronically Approved				Issued for Tender
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Revision Changes

The following is a summary of the main changes that have occurred in this document from the last revision and should be used as a guide only.

REVISION CHANGES	
Section	Remark
19	Addition of Project Environmental Mitigation Strategy
21	Removal of Section 21, Traffic and Pedestrian Access as an appendix. Confirmation that the Traffic Management Plan is contained in the construction execution plan A21DB035-CEP-0001 in Section 7.
11	A21DB035-CMPL-3801 Waste Management Plan
17	Flood risk
8.2	Map added

Contents

1.	INTRODUCTION.....	4
2.	PROJECT ENVIRONMENTAL POLICY	12
3.	ENVIRONMENTAL ROLES & RESPONSIBILITIES	13
4.	SITE ENVIRONMENTAL AWARENESS	18
5.	ENVIRONMENTAL EMERGENCY PLANNING AND RESPONSE	20
6.	SITE ENVIRONMENTAL MANAGEMENT CONTROL MEASURES	23
7.	TRAFFIC MANAGEMENT	26
8.	WATER AND SOILS	29
9.	SITE SERVICES	35
10.	FLORA, FAUNA & BIODIVERSITY.....	35
11.	WASTE MANAGEMENT	37
12.	MATERIALS MANAGEMENT.....	42
13.	AIR QUALITY DUST AND NOISE/VIBRATION.....	46
14.	ARCHAEOLOGY.....	48
15.	ENVIRONMENTAL MONITORING.....	49
16.	ENVIRONMENTAL SITE RULES	52
17.	FLOOD RISK	55
18.	ENVIRONMENTAL ASSESSMENT OF CONTRACTORS & VENDORS.....	57
19.	APPENDIX 1 – CONSTRUCTION ENVIRONMENTAL FORMS	58
20.	APPENDIX 2 – SITE LAYOUT PLAN.....	59

1. INTRODUCTION

1.1 General

This Construction Environmental Management Plan (CEMP) provides the project specific measures that will be put in place and procedures to be followed for the scope of construction works, both permanent and temporary, for the Takeda Thermal Oxidiser Project.

1.2 Basis

This CEMP contains the approach to environmental management at site during the construction phase.

The CEMP is considered a “live” document and will be subject to scheduled reviews and updates in line with the main construction project phases.

The Plan will be updated to include any relevant conditions attached to the grant of Planning Permission, specific Takeda requirements and the key mitigations which are in place and must be complied with for the enabling scope of works.

In summary this CEMP will:

- Provide a basis for achieving and implementing the construction related mitigation measures identified in the Environmental Impact Assessment Report (EIAR) for Takeda Thermal oxidiser project.
- Comply with any relevant conditions attached to the Planning Permission.
- Promote best environmental on-site practices for the duration of the construction phase.

1.3 Project Description

The project consists of:

- A new Thermal Oxidiser & Utilities building to the north of the existing WWTP.
- New process, utilities and solvents pipe work will be installed on an extended pipe rack for the operation of the Thermal Oxidiser.
- Modifications to the existing internal access road will include the addition of a new access road and footpath around the VOC abatement system compound and utilities workshop.
- A permanent pedestrian crossing including associated signage at the existing access road giving access between the contractor’s compound and the VOC abatement system compound.
- Modifications to the existing site lighting, signage, surface water, foul and process wastewater drainage, hard and soft landscaping.

Figure 1.1 Site Plan of Construction Zone including Piperack, Thermal Oxidiser, Utility Building and contractors Compound.

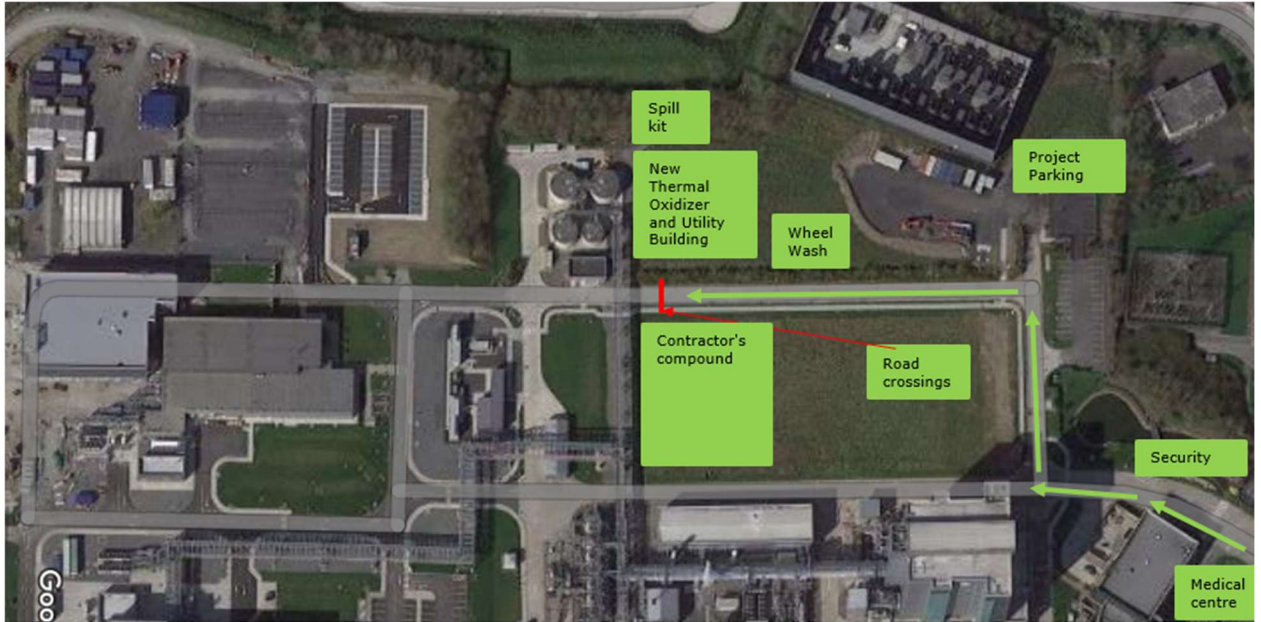


Figure 1.2 Site Plan Highlighting Thermal Oxidiser & Utility Building Location

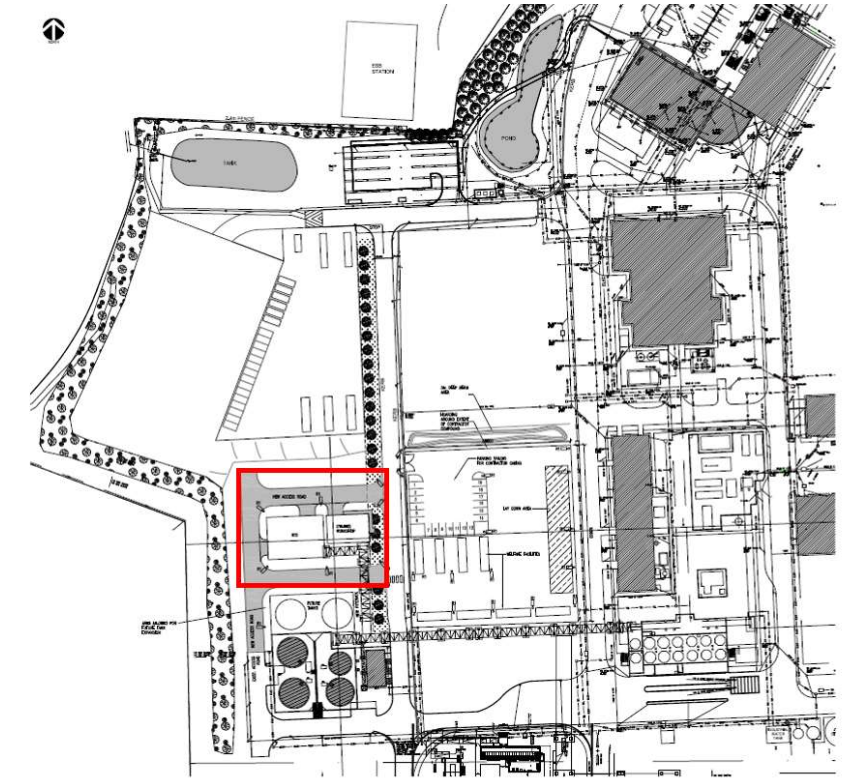
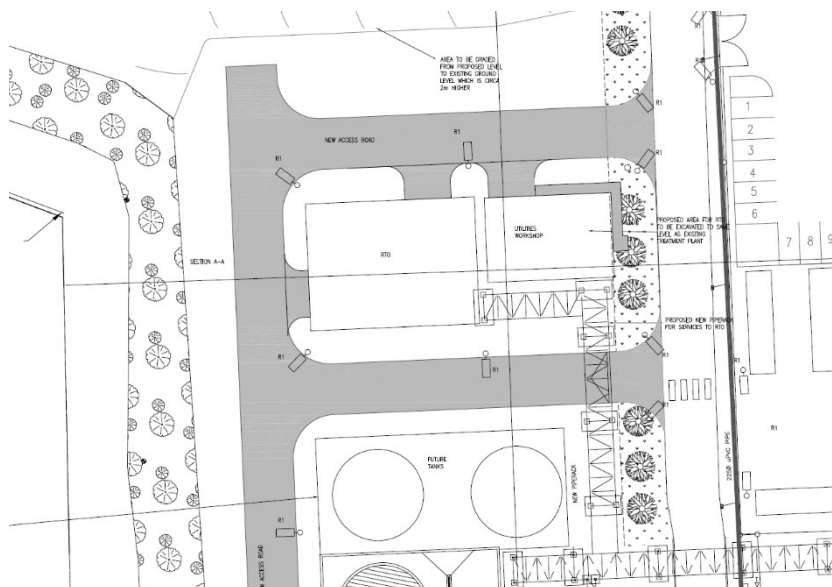


Figure 1.3 Plan View of Thermal Oxidiser, Utility Building & Piperack extension



1.4 Scheduled Works

	Commence	Complete
Construction	January 2023	August 2023
Commissioning	August 2023	October 2023

1.5 Scope

This Construction Environmental Management Plan covers the entire construction phase of the project which includes the following key stages:

- Site clearance.
- Earth works and civils.
- Extension to existing pipe rack.
- New pipe rack to thermal oxidizer.
- New utility building.
- New thermal oxidizer compound.
- Installation of thermal oxidizer.
- Testing and commissioning.
- Landscaping of the site.

The CEMP will be updated in line with the key phases of work.

1.6 Key Reference Documents

The following list outlines the key documents on which the CEMP is based:

Document Reference	Revision / Date
Environmental Impact Assessment Report (EIAR) for Takeda Grange Castle Thermal Oxidiser project by AWN	July 2022
Takeda Industrial Emissions Licence	Reg No PO693-02 2018 & TA 2019
CIRIA Guidance "C532: Control of water pollution from construction sites-guidance for consultants & contractors"	2001
CIRIA Guidance "SPI56: Control of water pollution from construction sites"	2002
CIRIA Guidance "C650: Environmental Good practice on Site	2005
CIRIA C753, The SUDS Manual	2021
Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014);	2014
Eastern Regional Fisheries Board, Fisheries Protection Guidelines: Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites	2006
EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects'	2021
South Dublin County Council Grant of Planning Conditions	SD22A/0303
Construction Safety Health Plan (DPS)	A21DB035-CSHP-003
Waste Management Plan	A21DB035-CMPL-3801
Traffic Management Plan in CEP (sect 1.7)	A21DB035-CEP-0001

1.7 Parties to the Project

The parties to the project for the site development work and infrastructure are provided below:

Activity/Company	Company Name
Client	Takeda Ireland Ltd
Architects & Engineers	DPS Group
Project Environmental Consultant	AWN
Construction Managers	DPS Group
Contractors	Various - To be awarded

1.8 Environmental Responsibilities

The responsibilities are summarised in the table below:

Title	Name & Contact	Responsibility
DPS EHS Manager	Paul Rourke	Preparation and revision of CEMP, monitoring, and auditing of CEMP performance at the site, advising project team on environmental management and regular environmental reporting.
DPS Project Manager	Tomas McCloskey	Provide all inputs required to support the issue of a Construction Environmental Management Plan (CEMP)
DPS Construction Manager	Shane Knowles	Overall responsibility for the organisation, execution and updating of CEMP on site.

<p>Site EHS Co-ordinator</p>	<p>Ed Muldowney</p>	<p>Responsible for implementation of the CEMP including reporting and communications.</p> <p>Communication of requirements to Construction Contractors and Operatives. Monitoring & auditing of CEMP performance at the site, advising project team on environmental management and regular environmental reporting.</p>
<p>DPS Construction Management Team</p>	<p>Stephen Nealon</p>	<p>Read, understand, and implement the environmental policy, follow CEMP.</p>
<p>Contractors and Construction Operatives</p>	<p>ERG Thermal Oxidizer Vendor CSA Package – Rossmore Civils Mechanical Package – TBA E & I Package - TBA</p>	<p>Read, understand, and follow the environmental policy, follow CEMP as it applies to their areas of responsibility</p>
<p>On site Waste Management Contractor</p>	<p>Veolia Rachel Doyle Gabrielle Rodrigues</p>	<p>Ensure compliance with all relevant waste management requirements & report any contractor violations to the DPS CM.</p> <p>Responsible for the management of the central waste storage area and the organisation of skips incoming and outgoing from site.</p> <p>Ensure waste is removed for disposal or for recycling from their work fronts and using the correct collection facilities at the agreed location(s) on site.</p> <p>Manage/Track/Document all construction waste arising from the project.</p> <p>Ensure wastes are correctly packaged, labelled & documented.</p> <p>Ensure waste is removed for disposal or for recycling from their work fronts and using the correct collection facilities at the agreed location(s) on site.</p>

1.9 Consultations & Communications

The DPS Project Manager (and Takeda where appropriate) coordinate and undertake all third-party communications. The DPS EHS Manager and Site EHS Coordinators are to support this role by the provision of further environmental information and monitoring reports as required.

Any external communications i.e. from any third parties or regulatory agencies concerning the CEMP shall be referred to the DPS Project Manager. Where these communications are from the EPA, Takeda shall be immediately notified and will be available to attend site to review the nature of the communication.

1.10 Complaints and Follow-up actions

The Site EHS Coordinator is to record all complaints received relating to site operations during the construction phase of the proposed development on the following register:

- A21DB035-CMF-3706: Register of Complaints

All complaints relevant to the project will be reported within 24 hrs to Takeda. All complaint registers shall be available onsite and discussed with Takeda at weekly EHS meetings.

2. PROJECT ENVIRONMENTAL POLICY

Takeda recognises and seeks to minimise the impacts of its business on the environment. In turn DPS is committed to:

- Executing the Project in full compliance with all applicable environmental regulations and to other requirements to which we subscribe.
- Implementing good environmental practice as part of designs, e.g. carry out design reviews, risk assessments, etc. on all relevant projects.
- Preventing pollution from activities through a system of operational controls that include written instructions and staff training appropriate to the environmental requirements of their work.
- Continually improving Project environmental performance by setting objectives and targets and implementing them through an environmental programme.
- Informing all project employees about Environmental Policy and explaining what they should do to protect the environment.
- Implementing this Policy through the successful operation of the CEMP (Construction Environmental Management Plan).
- This policy will be reviewed periodically, taking into account current and potential future business issues.

3. ENVIRONMENTAL ROLES & RESPONSIBILITIES

3.1 Project Organisation

The overall project environmental organisation chart is presented in Figure 3.1 below. These personnel will liaise with the Takeda Thermal oxidiser project team and the construction contractors with respect to environmental management. The responsibilities of the individual roles are outlined in more detail below and on Org chart A21DB035-ORG-001:

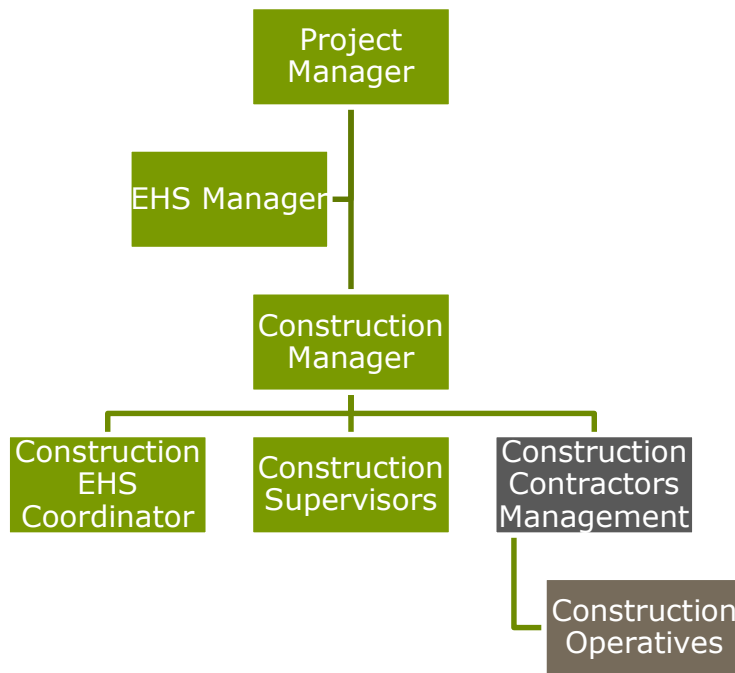


Figure 3.1 - Project Environmental Organisation Chart

3.2 EHS Manager

The EHS Manager is part of the DPS CMT and has an overall responsibility to ensure that all DPS construction phases of projects are managed and executed in accordance with legislation and best practice. The principal duties and responsibilities of this position include:

- Develop and issue the CEMP for the Project.
- Co-ordinate the implementation of the CEMP at the construction site.
- Audit against the CEMP on a regular agreed basis - raising appropriate corrective/preventative actions.
- Assist the CMT in terms of training and advice.
- Participate in the management review of the CEMP for suitability and effectiveness.
- Setting the focus of environmental policy, objectives, and targets across the site.

- Advise the management team on the development, implementation, and maintenance of the CEMP.
- Provision of additional EHS resources to the site to support the CMT in the implementation of the CEMP.

3.3 Construction Manager

The CM Manager is part of the DPS CMT and has an overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The principal duties and responsibilities of this position include:

- Overall responsibility for the development and implementation of the Construction phase Environmental Management Plan (CEMP).
- Allocation of resources to ensure the implementation of the CEMP.
- Participation in the management review of the CEMP for suitability, adequateness and effectiveness.
- Setting the focus of environmental policy, objectives and targets across the site.
- Provision of resources to ensure corrective actions are closed out.
- Attendance at scheduled environmental management reviews.
- Implementation of the Waste Management Plan (A21DB035-CMPL-3801) and Traffic Management Plan (A21DB035-CEP-0001 sect 1.7) at the site through the support of the Site EHS coordinator and the co-operation of all site personnel.
- Ensure that the necessary measures are taken during construction to prevent and minimise dust and noise nuisance.

3.4 Site EHS Coordinator

The Site EHS Coordinator is part of the DPS CMT and is responsible for the following key activities:

- Implement and maintain the site EH&S system.
- Review the Safety Observation Reports, including Environmental Observation.
- Report the EH&S performance to the project management team.
- Develop and communicate the Contract EH&S arrangements.
- Ensure that the requirements of the CEMP are developed and coordinated on site.
- Review the EH&S responsibilities of other managed subcontractors in scoping their work and during Contract execution.
- Advise the CMT on the development, implementation, and maintenance of the CEMP.
- Advise on prevention of environmental pollution and further improvements on existing work methods.
- Advise on legal requirements and changes and ensure the adequacy of controls provided.

- Advise on provision and use of plant and equipment to prevent pollution.
- Advise on potential environmental risks arising from new contracts before work starts, and on the environmental arrangements required.
- Advise on good environmental practice arising from new developments.
- Conduct environmental monitoring as required.
- Undertake inspections and audits in conjunction with procedures as set out in the CEMP, to see that statute, codes of practice and control plans are complied with and that only environmentally sound plant, equipment and methods of work are in place.
- Generate monthly reports as required to show environmental data trends and incidents
- Ensure proper mitigation measures are initiated and adhered to when protected species are encountered.
- Investigate incidents of significant, potential, or actual environmental damage, ensure corrective actions are conducted and recommend means to prevent recurrence.
- Monitor the implementation of the Waste Management Plan.
- Review and acceptance of all waste management documentation.
- Review Safety Data Sheets (SDS).

3.5 Construction Supervisors and Engineers

DPS Construction Supervisors and Engineers are part of the Construction Management Team (CMT) and are responsible for the following:

- Read, understand and implement the Environmental Policy.
- Know the broad requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance.
- Ensure that environmental matters are taken into account when considering subcontractors' construction methods and materials at all stages.
- Be aware of any potential environmental risks relating to the site, plant or materials to be used on the premises and bring these to the notice of the appropriate management.
- Ensure plant suggested is environmentally suited to the task in hand.
- Co-ordinate environmental planning of activities to comply with environmental authorities' requirements and with minimum risk to the environment.
- Give subcontractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists.
- Be aware of any potential environmental risks relating to the subcontractors and bring these to the notice of the appropriate management.

3.6 Contractors Management

The management teams for the contractors are responsible for:

- Providing a copy of the Company Environmental Policy document.
- Developing a Construction Environmental Management Plan in line with best practice and the requirements of this document.
- Ensuring their teams have sufficient and competent resources to execute the agreed CEMP.
- Providing any specialist/task specific training.

3.7 Job Supervisors / Field Engineers: Various Contractors

Contractor Job Supervisors / Field Engineers are responsible for:

- Ensuring that all operatives under their control are competent to carry out their respective tasks. Ensuring that those required to operate plant have sufficient knowledge and training to enable the operation to be carried out safely.
- Promoting and implementing environmental policies, procedures and rules.
- Being aware of legislation, codes of practice, guidance notes and good environmental working practices relevant to their work.
- Determining and implementing:
 - Good environmental methods of working.
 - Systems to identify environmental hazards.
 - Environmentally sound methods for storage/segregation of materials and waste. Effective waste management at site requires the identification of the types of waste and their origin prior to the commencement of any work activity.
- Organising work to be carried out to the required standard with minimum risk to the environment. Give all employees and subcontractors under their control precise instructions on their responsibilities to ensure correct environmental practice.
- Establishing, prior to commencement of subcontract works that subcontractor are aware of their need for work to be carried out in accordance with correct environmental practice. See that the plant and equipment supplied is adequate for the job in hand and that sufficient information is provided to prevent environmental damage.
- Reporting any environmentally damaging incidents are reported immediately, and corrective actions are completed.

3.8 Construction Operatives

All Construction Contractors operatives are responsible for:

- Co-operating and assisting in the implementation of the CEMP.
- Adhering to the following principal duties and responsibilities:
 - co-operate fully with the Management Team and the EHS Coordinator in the implementation and development of the CEMP at the site.

- conduct all their activities in a manner consistent with regulatory and best environmental practice.
- participate fully in the environmental training programme and provide management with any necessary feedback to ensure effective environmental management at the site.
- Adhering fully to the requirements of the Site Rules

3.9 Client

Takeda will be responsible for their input in the following key activities:

- Participate in the scheduled review and update of the CEMP for the duration of the project.
- Agree in conjunction with the DPS CMT the environmental mitigations for each construction phase.
- Participate in the review and any future updates to the Project Emergency Response Plan.
- Manage and coordinate any responses relating to relevant third-party communications.
- Manage any external communications from third parties or regulatory agencies e.g. EPA, H.S.A, input will be sought from the CMT where appropriate.
- Review all environmental incident and near miss reports. Any incidents where an IEL limit value exceedance has occurred or impact to local environment has occurred (e.g. spill/uncontrolled release) will be reported by Takeda directly to the EPA. DPS CMT will generate an incident report and forward to Takeda for their reporting purposes.
- Agree any proposed remediation with the CMT for soil where a contamination event has taken place on the site.

4. SITE ENVIRONMENTAL AWARENESS

DPS will ensure that construction contractors and their operatives are aware of the requirements of the Construction Environmental Management Plan as described below.

4.1 Tender Documentation

The Tender documents included the requirements associated with Construction Environmental Management. Tender negotiations and meetings with contractors included discussion of specific aspects of the work which may have an impact on the environment and including appropriate mitigations. The focus shall be dependent on the trade contract discipline.

4.2 Contractor 's own CEMP

As part of their appointment, successful contractors will use this CEMP as the basis to write their own CEMP, each plan must contain a detailed environmental risk and mitigation table outlining the key measures that will be employed for that phase of work. Future changes/updates made to the CEMP will be communicated to each contractor on each occasion by the CMT to facilitate local plans to be revised and changes communication to contractors.

4.3 Contractor Kick-off Meeting

The DPS Construction Manager and DPS EHS Manager will discuss the requirements associated with the works at the Contractor Kick-off Meeting on site. The focus shall be dependent on the trade contract discipline.

4.4 Site Induction

All Construction Operatives will undergo an initial site induction where the Environmental requirements of the site are outlined.

4.5 Training

DPS will present an Environmental presentation covering expectations for the project.

4.6 Audits

Scheduled audits of the CEMP will be conducted, and the results will be shared with the Contractors and Takeda. All audits and their outcomes will be entered onto a performance monitoring tracking system.

The audit structure (proposed frequency, type and responsibility for EHS audits) is described in the Construction Safety and Health Plan A21DB035-CSHP-001. The audit and monitoring programme will be communicated to contractors prior to construction commencement. Audits of all aspects of the EHS Management System will be integrated into the overall DPS Group Quality Management System. The audits will be conducted by competent personnel, who are independent of the project H&S function.

5. ENVIRONMENTAL EMERGENCY PLANNING AND RESPONSE

5.1 Emergency Response Plan

All emergency responses will be directed and coordinated in accordance with the Project’s Emergency Response Plan. This Plan will incorporate the key emergency elements of the Takeda Site Plan. The Project Emergency Response Team (ERT) will consult closely with the Takeda Site ERT for emergency response preparation, communication, and coordination in the event of an emergency event in the construction site, compound or in a Takeda operational area affecting the construction site. ERT personnel shall have appropriate training pertaining to their roles in respect to environmental emergencies. The general emergency response actions will be posted at strategic locations, such as the site entrance and canteen.

The general emergency response actions will be posted at strategic locations, such as the site entrance and canteen.

5.2 Environmental Emergencies

Some examples of Environmental Emergencies are outlined in the table below

Emergency (Examples)	Response (Examples)
<p>Spillage of Low/Medium Hazardous Chemical</p>	<p>Source to be located and isolated.</p> <p>Area to be cordoned off, contained and the spillage either cleaned up according to the instructions on the Safety Data Sheet (SDS) documents or a specialist called.</p> <p>Classify/categorise the incident and start investigation if required as per the Construction Safety & Health Plan A21DB035-CSHP-001 and the Takeda Classification Matrix</p>
<p>Fuel Spillage</p>	<p>Source to be located and isolated.</p> <p>Spillages to be contained with sand and subsequently cleaned up in the most appropriate manner. If soil is contaminated, soil to be removed by or to a specialist licensed sub-contractor. Classify/categorise the incident and start investigation if required as per the Construction Safety & Health Plan A21DB035-CSHP-001 and the Takeda Classification Matrix</p>

<p>Discharge to water body/course</p>	<p>Evaluate The potential level of impact to, including consideration of: – the discharge constituents, including their concentrations, level of toxicity and persistence in the environment and volume of discharge. If works onsite are found to be the source of the discharge works shall be stopped immediately. If due to inclement weather, then bunds shall be put in place to prevent further discharge to the watercourse.</p> <p>Immediately seek the support of the DPS EHS Manager and DPS Construction Manager. Notify Takeda immediately. Notification of regulatory agencies if required. Classify/categorise the incident and start investigation as per the Construction Safety & Health Plan A21DB035-CSHP-001 and the Takeda Classification Matrix</p>
<p>Release or damage to Foul or Storm Sewer</p>	<p>Investigated release or damage and mitigate accordingly. Ensure the release is contained and not released to any water body. Immediately seek the support of the DPS EHS Manager and DPS Construction Manager Notify Takeda immediately. If works onsite are found to be the source of the discharge works shall be stopped immediately. DPS and Takeda shall then approve an adequate water treatment plan and complete sample testing to ensure compliance with allowable parameters prior to works restarting in the area of the breach.</p> <p>Classify/categorise the incident and start investigation as per the Construction Safety & Health Plan A21DB035-CSHP-001 and the Takeda Classification Matrix.</p> <p>Investigate release or damage and mitigate accordingly</p>

5.3 Incident Reporting

An environmental incident investigation will be performed for all incidents by the Contractor and with the participation of the DPS Construction Manager. The table below provides a typical target for the lifecycle of an environmental Incident.

This shall be recorded on CMF-3701: Environmental Incident/Near Miss reports

Environmental Emergency Lifecycle	Timing
Initial Response	Initial response should be immediate - As soon as reasonably practical
Initial Notification	< 24 Hours a written notification of the Incident will be provided to the DPS Construction Manager and Takeda Project & EHS Management for an emergency environmental incident
Full Report	< 3 Working Days
Close out of Actions	< 10 Working Days
Reporting Frequency for compilation	Monthly

The outcome of the incident and investigation will be shared with the CMT, Contractors and Client.

The Incident Reporting and Investigation protocol is described in Section 6 of the Construction Safety & Health Plan A21DB035-CSHP-001.

5.4 Learning and Preventative Measures

Following an environmental emergency, the cause of the emergency and corresponding emergency methods shall be reviewed by the construction EHS Co-ordinator responsible for site emergency response.

Corrective/preventive actions will be identified and undertaken to mitigate and prevent releases in the future.

5.5 Role of Contractors

Contractors are expected to contribute their expertise in certain areas and appropriate resources to the Emergency Response Team.

6. SITE ENVIRONMENTAL MANAGEMENT CONTROL MEASURES

6.1 Planning Conditions

Permission for the development was granted on 07 Sep-2022.

The conditions set out were as follows:

Condition 1 – Fees to be paid.

Condition 2 – Development to be in accordance with the submitted plans and details.

Condition 3 – Submit details of flood Management and Mitigation.

Condition 4 – Submit a written CEMP.

Condition 5 – Comply with the EIAR

Condition 6 – Submit a Tree Hedgerow Management Plan.

Condition 7 – Removal of Construction Compound within 3 years.

Condition 8 – Submit a water supply infrastructure drawing.

Condition 9 – Submit a detailed Waste Management Plan.

Condition 10 - Submit a soil percolation test results and calculations.

6.2 Environmental Aspects, Impacts and Alternatives.

The environmental aspects, impacts and alternatives for the project have been identified in the Project EIAR. The EIAR details the environmental sensitivities of the site as well as proposing mitigation measures that should be adopted to prevent loss of control and minimise impacts during the construction phase.

6.3 Environmental Auditing and Inspection

Regular inspections are necessary to ensure compliance with environmental conditions by all staff, employees and contractors.

The Site EHS Co-ordinator will perform regular audits of the site in line with best practice. These audits will be combined Environmental Health and Safety Audits.

Additionally, the Site EHS Coordinator shall conduct monthly environmental audits of the facility and document the audit on:

CM-F-3705: Construction Environmental Audit Checklist

6.4 Non-conformances/Poor practices

All non-conformances, including those identified through environmental audits are to be logged on CM-F-3702: Environmental Non-conformance Log. The log shall be summarised by the Site EHS Co-ordinator and issued to the project management team monthly.

6.5 Corrective Actions

The Site EHS Coordinator shall provide advice on how the non-conformance can be resolved.

The CM Manager shall provide the necessary resources to close the non-conformance.

The project team member with responsibility for closing out the Non-conformance shall:

- Identify the cause of the non-conformance through investigation if necessary.
- Identify and agree appropriate corrective and preventive actions.
- Plan, implement and agree corrective actions (including timeframes) with the Site EHS Coordinator

6.6 Environmental Incident / Near Miss

Environmental incidents and near misses will be documented on Form:

- CM-F-3701: Environmental Incident/Near Miss reports.

Completed forms will be reviewed by the Site EHS Coordinator. Corrective actions will be communicated to the on-site team by the Site EHS Coordinator, as required.

6.7 Preventative Actions

Preventative actions identified will follow the Hierarchy of controls. When agreed actions are in place the environmental procedures and / or environmental training programmes shall be modified or created where necessary to document and communicate the controls for avoiding repetition of non-conformances and non-compliances.

6.8 Regulatory Audit / Inspection

All corrective action requests will be numbered and logged using CMF-3702: Environmental Non-conformance Log.

6.9 CEMP Review

The CEMP will be reviewed by the DPS EHS Manager and Takeda at 6 monthly intervals and/ or for different stages of project completion, after a serious environmental incident or significant

change in environmental legislation and in line with the construction schedule for continuing suitability, adequacy, and effectiveness.

6.10 Monitoring, Measurement and Operational Control

Specific monitoring of the site will be in place in accordance with best practice and planning conditions. This is dealt with in a later section of this document.

7. TRAFFIC MANAGEMENT

7.1 General

A Traffic Management & Control Plan (TMP) for the project is incorporated in section 1.7 of the Construction Execution Plan (A21DB035-CEP-0001). In advance of site mobilisation, the contractor will provide a logistics plan to the CMT for evaluation, acceptance and incorporation into the overall TMP.

7.2 Objective

Construction traffic will be managed to ensure the protection of personnel under the existing site measures; restricted and monitored access, and speed limits. Public roads outside the site will be regularly inspected for cleanliness and cleaned, as necessary. A summary of the environmental elements only is provided below.

7.3 Site Access

There are two existing accesses to the Takeda Ireland Limited (TIL) site off the Grange Castle Business Park single carriageway. (Refer to Appendix 4 for details)

- Primary access - 9.5 metres wide with 1.5m wide footpath which has manned control is located to the north of the campus.
- Emergency Access – 6-metre-wide gated access. This access is located between the two accesses above.

In general personnel and construction vehicles will enter through the Primary Entrance off the Nangor Road. Arrangements will include for on-site messing areas to reduce the quantity of traffic entering and leaving site at lunchtimes.

7.4 Car parking

Sufficient parking for construction operatives allowing for a certain amount of sharing will be provided on site.

7.5 Site Rules

Site rules consistent with safe and efficient operation of construction sites will be established. These will include for environmental impacts and mitigations. These are detailed in Minimum EHS Requirements for Construction, A21DB035-EHSF-312.

7.6 Management of Deliveries

Deliveries will be coordinated to ensure that they do not coincide with heavy traffic times.

7.7 Construction Plant on site

All construction plant will be inspected prior to entry to site to ensure it is in good working order and will not present any environmental risks to the site. Fuelling and preventative maintenance of equipment will be performed only in the designated and suitable protected area.

7.8 Emergency Vehicles

Emergency vehicle access routes will be maintained at all times with full access around the site. In the event that an emergency vehicle must attend site, they will be met at security point by a member of the Emergency Response Team (ERT) and accompanied to the incident location. Takeda ERT will assist if and/or when required. The Permit to Work system will be utilised to ensure that all road closures are properly planned and communicated to the workforce.

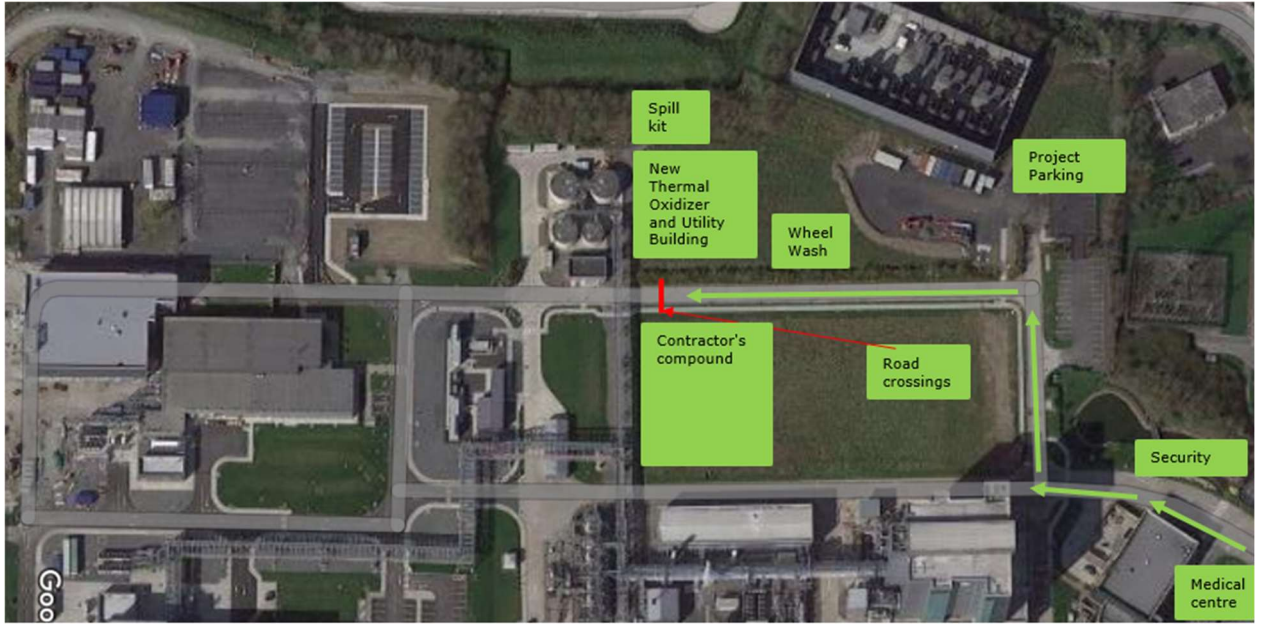
7.9 Traffic Management Plan

The contractor shall develop their own Logistics Plan. The Contractor Plan will be agreed and then incorporated into the project CMT Traffic Management Plan. The Contractor logistics plan will be agreed two weeks prior to mobilisation.

The overall plan will inform the Contractor of the key information; identification and number of entry and exit points, pedestrian routes, traffic routes, turning areas, direction of traffic flow, delineation by barriers and fencing, pedestrian crossing points, lay down areas, assembly point/emergency response meeting points, etc.

As the project progresses, this Plan will be updated to meet changing requirements.

The Traffic Management & Control Plan will be posted in locations (e.g. site safety notice board, canteen, and permit office) that allows for review by the entire project workforce.



8. WATER AND SOILS

8.1 Objectives

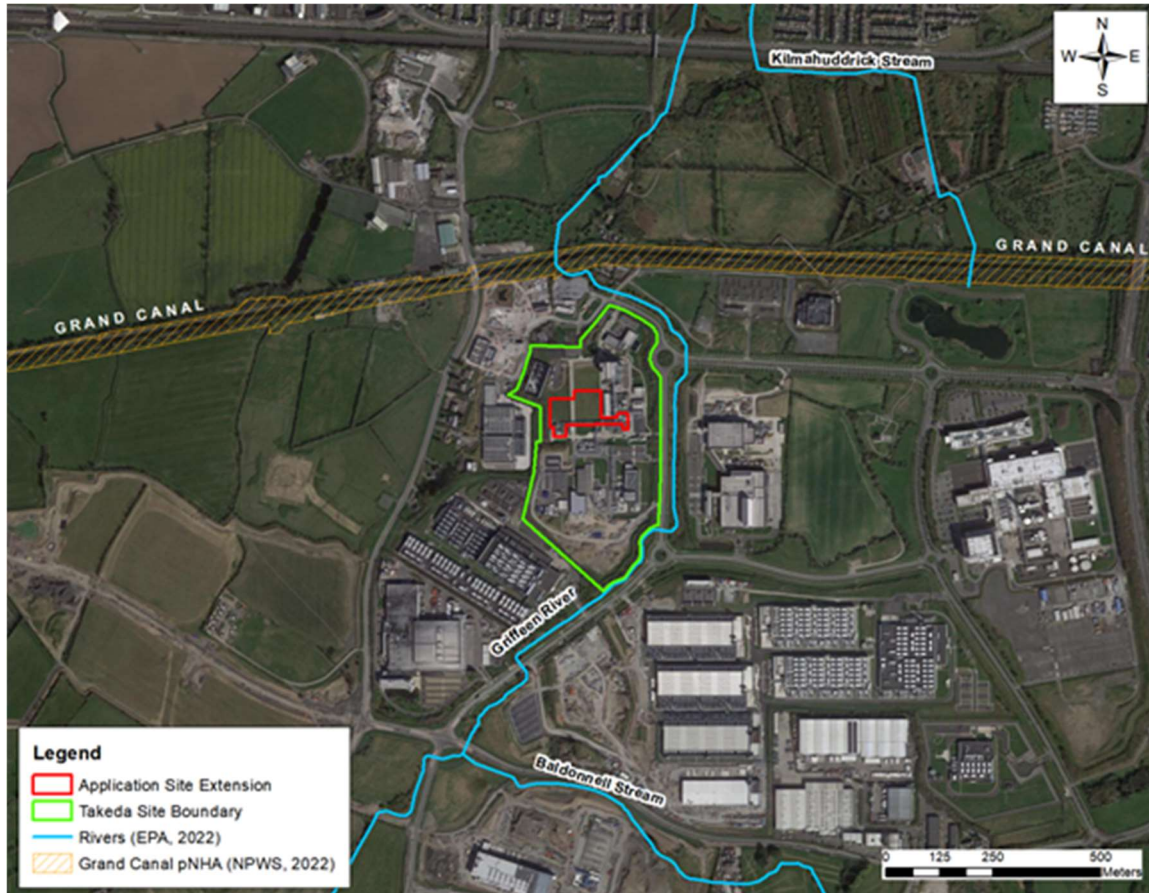
To prevent discharges of soiled or contaminated waters from the main construction site and to prevent any potential impacts to watercourses, soil strata and below ground water aquifers. Any discharges to storm water network must be pre-approved and meet the Takeda IE Licence parameters.

8.2 Silt Management

Surface water runoff during the construction phase may contain increased silt levels or become polluted from construction activities. Runoff containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silt water can arise from dewatering excavations, exposed ground, stockpiles and access roads.

Run-off water containing silt will be contained on site via settlement tanks and treated prior to discharge to the existing surface water drainage system. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, 20 m buffer zone between machinery and surface water drains, refuelling of machinery off site where possible). All surface water drainage from the Takeda site is treated via hydrocarbon interceptors prior to controlled discharge offsite.

Any minor ingress of groundwater and collected rainfall in the excavations will be pumped out during construction. It is estimated that the inflow rate of groundwater will be low and limited to localised perched water. It is therefore proposed that the water be discharged via the existing surface water drainage system. Monitoring will be adopted to ensure that the water is of sufficient quality to discharge to the surface water drainage system. The use of silt reduction measures as outlined above (if required) will be adopted if the monitoring indicates the requirements for the same with no silt permitted to discharge to the surface water drainage system. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavations are kept relatively dry.



8.3 Soil Storage and Management

Excavated soils will be separated into topsoil and subsoil stockpiles. Topsoil may be reused for reinstatement and landscaping the temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the surface water drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.

Soil from works will be stored away from existing drainage features to remove any potential impact. Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained. All conditions for the management of retained excavated soil will be detailed in a RAMS which must be approved by Takeda in advance.

8.4 Suspected Soil contamination

Should any unusual staining or odour be noticed, samples of this excavated soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. If it is determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. Excavated soils will be separated into topsoil and subsoil stockpiles. Contamination free topsoil may be reused for reinstatement and landscaping.

Any subsequent suspect areas where contamination may exist or has occurred during construction activities must be reported immediately to the CMT and Client. All proposed remediations and further actions must be agreed with Takeda and be in compliance with best practice Soil Management Procedures.

8.5 Soil for removal from site

GII did a site investigation report early in 2022 and after the surveys that were carried out it was concluded that there is a low risk of any contaminated soil in the development area.

Soil proposed for removal from site must meet particular waste acceptance criteria in place by the receiving facility. Refer to Table 8.1 overleaf.

8.6 Source of Fill & Aggregates

All fill and aggregate for the Proposed Development will be sourced from reputable suppliers.

All categories of aggregates and fills to be segregated/ stored, managed and clearly identified in a secure area.

Refer to Table 8.1 overleaf for requirements.

Description	Environmental Parameters/Conditions	By	Number of Locations	Frequency
Excavated soil	Waste Acceptance Criteria test and any additional parameters specified by the accepting C&D Facilities or appropriate receiver.	Contractor	Includes excavated soil from any of the work fronts covered under the enabling scope	Will depend on the protocol in place by receiving C&D Facilities or appropriate receiver.
Fill & Aggregates	<ul style="list-style-type: none"> Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development. Environmental Management status; and Regulatory and Legal Compliance status of the Company 	Supplier		

Table 8.1 Soil Management

8.7 Surface & Construction Water Discharge to Takeda’s stormwater system

In the event that a contractor seeks to discharge construction water to the Takeda storm water drainage system, the following requirements must be met:

- A pre-approved RAMS from Takeda and DPS CMT must be in place. This must be approved by all relevant parties to ensure all construction water has been suitably treated and tested (and results within range) prior to its discharge/disposal to Takeda’s licensed surface water discharge point EP-WS-01.
- The Contractor must make arrangements (by a competent person) to have the water tested and adequately stored until it has been approved for discharge.
- Water proposed for discharge containing silt will be pumped and contained in settlement tanks. Solids shall be allowed to settle. Water displaying a significant level of suspended solids post this settlement phase must be collected by the contractor for off-site treatment.
- Water proposed for discharge to EP-WS-01 must comply with IE license control and monitoring requirements for (pH, TOC and visual inspection) for storm water emissions. Refer to Table 15.2.
- The contractor shall supply any temporary works or slabs to support the required equipment.

- The contractor shall supply any materials (e.g., silt busters) or chemicals including bunding of chemicals required for treatment prior to discharge.
- The contractor shall supply all tanks, pumps and lines from work fronts to treatment locations prior to discharging to the approved discharge point.

Should any breach of discharge parameters occur, works will be stopped immediately to identify the source of the breach. Where there is an exceedance of limit set the sites surface water is contained (via initiation of a hydro brake flow control device) where the normal discharge route to the outlet chamber is shut and excess surface water overflows into the firewater retention tank. When situation is resolved (i.e.) limit exceedance, fire alarm, or increased flow addressed) water in the firewater retention tank can then be pumped back into the inlet monitoring chamber, whereby it then flows through the Class 1 interceptor and continues to the outlet monitoring chamber. Surface water in the firewater retention pond will only be discharged back into the inlet monitoring chamber after it has been confirmed that no contamination has occurred, and water quality is within alarm warning and trigger limits which much be approved by TILGC’s Environmental Health and Safety (EHS) personnel.

Any suspected or actual breach of a discharge parameter must be reported to Takeda immediately and the emergency incident reporting escalation must be followed.

If the source of the breach is found to originate from the Project’s civil enabling work fronts, then the contractor shall be responsible for all remediation works required.

8.8 Surface & Construction Water Discharge Monitoring

All water proposed for discharge to Takeda’s stormwater system must comply with the sites licence requirements. Contractors will be responsible for ensuring all discharges are monitored in line with Table 8.2 below and records are kept of all discharges. The contractor shall also record the source and location of the discharge on each occasion.

Description	Environmental Parameters & Limits	By	Locations	Frequency
Surface and Construction water Discharge to Takeda Storm Water System	pH (refer to Table 15.2) TOC (refer to Table 15.2) No significant levels of suspended solids	Contractor Test results to be approved by CMT and Takeda prior to discharge.	To be agreed in advance where the tie in point will be to the Takeda storm system	When discharging under agreement with Takeda to storm line

Table 8.2 Surface water discharge monitoring

8.9 Additional Mitigations

Wheel wash and road sweeper:

- Designated wheel wash facility/facilities will be provided for heavy vehicles and equipment exiting site. Excess wash water shall be routed through a settlement or a suitable holding tank/bund.
- A Road sweeper will be supplied in the CSA package to maintain the high road standards.

Concrete:

- Best practice in bulk-liquid concrete management addressing pouring and handling, secure shuttering / formwork, adequate curing times will be implemented.
- Concrete lorries will be washed out either offsite or where this can't be facilitated the CSA contractor will use a concrete wash out system on site as below. RAMS and permits will be required prior to work commencing.

Fuel, Oils and Chemicals:

- Storage of Fuels, Oils and Chemicals used will be stored in sealed containers in a bunded area.
- All refuelling, oiling, and greasing will take place above drip trays or on an impermeable surface and away from drains. Vehicles will not be left unattended during refuelling.
- All plant shall be well maintained with any fuel or oil drips dealt with on an ongoing basis.
- Drip trays shall be used onsite for all generators etc.
- Any minor spillage during this process will be cleaned up immediately.



9. SITE SERVICES

9.1 Sewage

The contractor compounds within the site will be linked by a common purpose-designed temporary foul sewer that will collect and convey all domestic wastewater by gravity/pump and connect into the existing foul sewer on the site. This sewer drains by gravity to the existing local authority foul sewer. No new connections required to the existing local authority sewer.

9.2 Canteen \ Messing Areas

A grease trap at the outlet from the canteen area will be installed to minimise the release of fats, oils and grease to the external sewer. A maintenance contract will be put in place for the disposal of fats, oils and grease with an approved contractor for disposal to a licensed facility.

The Construction Manager shall ensure that these facilities are provided and adequately maintained.

10. FLORA, FAUNA & BIODIVERSITY

10.1 Objective

There will be a permanent minor loss of recolonised ground. The potential effects on local ecology are neutral, imperceptible and non-significant for the construction phase.

See EIAR sect 8.5.1.

Moore group Environmental services report EIAR section 8.10.

10.2 Scope

All construction activities on site having a potential to impact on flora and/or fauna.

10.3 General Requirements

Cutting, grubbing, burning or destruction by other means of vegetation growing on uncultivated land or in hedges or ditches during the nesting and breeding season for birds and wildlife is restricted from 1st March to 31st August. Removal of hedgerows and trees must be done outside of this restricted period unless the site qualifies for an exemption under Section 40 of the Wildlife Act 1976 as amended by Section 46 of the Wildlife (Amendment) Act 2000 and agreed with the National Parks and Wildlife Service.

The Wildlife Act affords protection to a range of wildlife in Ireland including wild birds, animals and plants. Whilst the project may receive permission from planning authorities to proceed with the development, this does not override laws that apply to the wilful harm of protected species.

The following which may be found in the Project Area are protected:

- All wild birds and their eggs, nests and young with the exception of certain species.
- Certain mammals including otters, badgers and all bat species.

10.4 Habitat Evaluation

An evaluation of the habitat was carried out and found:

- No signs of protected mammals were identified.
- There is limited potential for Bird Habitats in the in the footprint of the proposed development.
- There are no rare or protected habitats recorded in the study area inside the site boundary.
- The habitats under the footprint of the proposed development are of low ecological value.
- There would be no significant impact as a result of the proposed development on the local ecology or fauna.

10.5 Ongoing Vigilance

Notwithstanding the assessment of Flora and Fauna, the project will continue to be vigilant.

If protected species including Bats and Bat roosts are found during site clearance, then works will cease and the National Parks and Wildlife Service (NPWS) will be contacted to avoid an offence being committed.

There shall be ongoing vigilance with respect to wildlife in the vicinity of the construction site and any unusual species, dead species or damaged habitats will be reported immediately to the Construction Manager and/or the Site EHS Coordinator.

10.6 Landscaping

Landscaping works shall be undertaken to the satisfaction of the council as presented in A21DB035-AE-PL-304 proposed landscaping layout, no later than the first planting season following commissioning of development. Any plant failures through disease, weather exposure, neglect or damage shall be replaced with equivalent species within one year of such failure.

11. WASTE MANAGEMENT

11.1 Objectives

To minimise the generation of wastes within the construction site and to ensure that any wastes generated are handled, segregated, stored, transported and disposed/recycled or recovered in accordance with current regulatory requirements.

A separate waste management plan has been issued to meet the conditions of planning.

A21DB035-CMPL-3801.

11.2 Scope

It is estimated that 7400m³ of soils and fill material will be excavated removed/disposed of offsite by a permitted waste management company at a licensed facility.

All other waste (including hazardous waste if identified) will be managed by the CMT and the on-site waste management contractor Veolia.

11.3 Waste Minimisation and Management

All site wastes are to be managed in accordance with the Waste Management Plan (A21DB035-CMPL-3801) which forms an important input into the overall CEMP. The Site EHS Coordinator will co-ordinate the implementation of the WMP at the site through the support of the CM Manager and the co-operation of all site personnel. Takeda's onsite contractor Veolia will be the licensed contractor for waste management.

11.4 Project waste management Plan

A WMP will be developed for the project by the Contractor. Once agreed, this will be incorporated into the master WMP. Initially the WMP will identify the key waste streams that will be generated during the enabling phase. This is a live document and will be revised as the project construction phases develop.

Regular auditing of the area should take place to ensure that there is no unauthorised mixing of wastes or overfilling of waste containers.

The WMP Plan shall identify the waste management contractors selected and responsible for the identified streams. All approved waste management contractors must hold valid licenses and will consult directly with the on-site CMT particularly in the production of waste management records and waste regulatory compliance documentation.

All waste shipped off-site shall be packaged to meet all regulatory requirements and in such a manner as to prevent any releases during transportation. Each shipment of waste shall have documentation with it, including a description of the waste, where it originated, and to whom it is

being shipped. Copies of all documentation shall be maintained in the site waste management record.

Waste awareness training shall be included in induction training for all site personnel.

In addition, the following mitigation measures will be implemented

- Building materials will be chosen to 'design out waste'.
- On-site segregation of waste materials will be conducted to increase opportunities for off-site reuse, recycling, and recovery.
- Left over materials (e.g., timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A Waste Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works.
- All construction staff will be provided with training regarding the waste management procedures.
- All waste leaving site will be reused, recycled, or recovered, where possible, to avoid material designated for disposal.
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted, or licenced facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained

11.5 Waste Management Contractor

Veolia are the onsite approved contractor for the management and disposal of all project waste.

11.6 Waste Segregation and Labelling

A designated waste compound will be provided on-site in the contractors compound, including dedicated clearly marked waste containers/ skips for segregation of wastes including:

- Timber.
- Mixed metals.
- Plastic piping.
- Dry recyclables.
- General waste.
- Paper/cardboard.
- Paint/chemical containers.
- Oils and greases.

11.7 Hazardous Waste

A designated hazardous waste and refuelling area will be provided on-site. The area shall be suitable constructed including appropriate bunding. The wastes will be segregated, labelled and stored in dedicated waste containers appropriate to the type of wastes including:

- waste oil.
- oily rags.
- grease cartridges.

This area will also be used for the storage of diesel and refuelling operations.

11.8 Bunds (containing Rainwater)

Contractors are expected to store fuels, oils, hazardous materials etc. in appropriate containment. This will include the provision of secondary containment and use of storage cabinets e.g. Chemstore units,

Where contractors are storing material on an external bund (not self-contained or located under roof) then Contractor inspections will include for the management of those bunds in the context of rainwater removal. Contractors must ensure via their own daily inspections that bunds are not allowed to overfill and that these are managed by either off-site disposal off site or through an approved RAMS allowing the water to be discharged via the Takeda storm water system.

11.9 Concrete Wash-out

See section 8.9.

11.10 Domestic / Canteen Waste

Waste from the on-site canteen and office kitchenettes is segregated and stored in a designated waste lay-down area. Waste collected in this area includes:

- food waste.
- dry recyclables.
- General waste.

Waste minimisation measures will be promoted where possible through advice from Site EHS Coordinator training initiatives and auditing of on-site practices.

11.11 Waste Storage

The Construction Manager will ensure that the waste lay-down area will be supervised and suitably secured to control deposition and removal of waste.

Windblown litter will be prevented by the use of suitable waste storage containers and all site personnel should ensure that there is no unauthorised mixing of wastes or overfilling of waste containers.

Where waste containers are full this should be reported to the Site EHS Coordinator or Construction Manager.

At all times, hazardous waste containers shall be clearly identified as to the contents and hazard type if applicable.

11.12 Waste Transport

All waste shipped off-site shall be packaged to meet all regulatory requirements and in such a manner as to prevent any releases during transportation.

Each shipment of waste shall have documentation with it, including a description of the waste, where it originated, and to whom it is being shipped. Copies of all documentation shall be maintained in the site waste management record.

11.13 Disposal of Soil

CSA subcontractors will be required to produce the licence of their proposed landfill and their own Waste Transport Permits prior to appointment. Disposal will be monitored for the duration of the contract. All waste will be transferred to a licensed transfer, recycling or disposal facility.

Only waste generated on-site may be stored on the site.

No waste is to be imported onto the site.

11.14 Waste Management Training

Waste awareness training shall be included in induction training for all site personnel.

11.15 Site Waste Management Record

The Site EHS Coordinator will update and maintain the waste management record for the site.

The main waste contractor, and any further appointed waste contractors, will be required to furnish the following documentation:

- A valid waste collection permit for the geographic area of the project site.
- A waste facility permit and/or waste licence for all waste facilities which the waste is transferred to / disposed of / recovered at.
- Any further relevant regulatory documentation.

- The waste contractors may be audited by construction EHS co-ordinator if it is deemed necessary.
- All documentation arising from the above requirements shall be filed in the site waste management record.

The waste contractors shall provide weekly and monthly reports of wastes removed from the site. The Site EHS Coordinator shall record these volumes on the templates, including:

- Retain doc number Non-Hazardous Construction Waste Summary.
- Retain doc number Hazardous Construction Waste Summary.
- These shall be filed in the waste management record.
- All further relevant information received from the waste contractors shall be filed in the Waste Management Record.

For hazardous wastes the following records shall be provided by the waste contractor and retained on file:

- Consignment or C1 form for the waste shipment.
- A disposal or recovery certificate for the consignment.
- Other relevant shipment documentation.

12. MATERIALS MANAGEMENT

12.1 Objectives

To ensure that all materials, particularly chemicals of a hazardous nature, brought on to the site are handled and stored in a manner which prevents any potential contamination of soil or groundwater at the site.

12.2 General Requirements

No materials shall be left/stored on the public road and/or footpath during the construction period. The Construction Manager shall maintain the site in a neat and litter free condition.

12.3 Safety Data Sheets

Safety Data Sheets (SDSs) shall be submitted to the Site EHS Co-ordinator(s) for any hazardous chemicals proposed to be brought on to the construction site. SDSs are submitted, reviewed, accepted and filed in the main site office. The introduction of chemicals by subcontractors (particularly during process and mechanical installation) will be the subject of subcontractor RAMS

12.4 Storage of Chemicals

Impermeable containment is to be provided around all oil/diesel/petrol/chemical storage tanks with the containment capacity being 1.5 times the volume of the tank requiring containment.

All hazardous materials and non-hazardous materials with a potential to contaminate ground waters must be stored within a facility with secondary containment. The main expected types of secondary containment required, with examples, are outlined below:

Materials	Example of Secondary Containment Required
Small containers of chemicals	Chem store cabinet type unit
205 litre drums of chemicals	Spill pallet or spill containment decking. Dedicated Bund
IBCs of chemicals	IBC Spill Pallet. Dedicated Bund
Pallets with bags of solid forms of chemicals	Spill pallet or containment decking. Dedicated bund.
Tanks of chemicals	Double skinned with drip tray at delivery and dispensing points or within a dedicated bund

The Site EHS Coordinator should be consulted on the most appropriate type of secondary containment required.

All tank and drum storage areas shall be rendered impervious to the materials stored therein. Minimum secondary containment capacity for outdoor and indoor storage areas shall be equal to 110% of the largest tank/container capacity or 25% of the total volume of substance which could be stored within the bunded area. Secondary containment shall be constructed of chemically resistant, impervious material designed to withstand exposure to the elements and hazardous substances contained.

12.5 Spill Kits

Spill kits stations have been established and identified on site at all locations where there is a risk of a loss of hazardous materials (including at the bunded fuelling areas and tanker delivery points). There shall be a contract in place with the spill kit supplier to regularly check and restock all kits across the site. There should also be surplus stock provided on site in order to provide for emergencies. It should be ensured that the spill kit absorbent material is suitable for the type of chemicals stored nearby. The minimum stock which should be held in the spill kit is as follows (Note: the quantity of stock should be appropriate for the volume of hazardous materials stored nearby):

- A clear sign indicating the location of the spill kit station.
- Short-form instructions for spill clean-up.
- High density absorbent pads.
- Absorbent socks (large and small).
- Absorbent granules.
- Bags and tape for storing used absorbents.
- Gloves and safety goggles.

12.6 Hazardous Materials

The loading and unloading of all hazardous materials at the site shall be conducted in a safe manner which reduces the potential for any spillages or loss of material to ground.

Hazardous materials shall only be transported to and from the site by competent HAZCHEM trained drivers.

Transport of hazardous materials within the construction site shall be carried out only by suitably trained drivers and appropriate measures should be taken to ensure that the load is adequately secured in transit.

12.7 Risk Assessment Method Statements (RAMS)

The introduction of chemicals by subcontractors (particularly during process and mechanical installation) will be the subject of subcontractor RAMS where detailed control measures will be developed.

Contractors will be expected to provide detailed information around key control measures including.

SDS details, proposed storage, spill procedure, PPE requirements, secondary containment, emergency information etc...

Where there is a spillage event involving any chemical material, this must be reported to the Site EHS Coordinator and Takeda immediately.

12.8 Storage of Fuels & Oils

A dedicated refuelling area will be provided on site for the supply of fuel for site vehicles. Suitable spill kits (as described below) are to be provided in this area for responding to minor spillages.

Under no circumstances shall there be any fuel storage tanks provided on the site outside this main fuelling area unless approved by the Site construction EHS Coordinator.

All fuels and oils must be stored within a facility with secondary containment. The main expected types of secondary containment required, with examples, are outlined below:

Materials	Examples of Secondary containment required
205 litre drums of oils	Spill pallet or spill containment decking. Dedicated bund
Tanks of oils	Double skinned with drip tray at delivery and dispensing points or within a dedicated bund

Hazardous substances, fuel and oil shall be stored in appropriate and properly labelled containers or tanks. Containers shall be closed unless adding or removing hazardous substances or oil.

Hazardous substances and oil shall be stored only in areas designated and designed to accommodate such storage. These areas shall be labelled and have the appropriate emergency response equipment i.e. spill kits.

All over ground tanks containing hydrocarbons shall be contained in waterproof bunded areas of sufficient volume to hold 110% of the volume of the largest tank within the bund. All valves on

the tank shall be contained within the bunded area. The bunded area shall be fitted with a locking penstock valve which shall be opened only to discharge storm water to the interceptor. The developer shall ensure that the valve is locked at all times.

All diesel tanks in addition to the diesel filling area, if used on site in the site development stage shall be bunded.

12.9 Refuelling

Refuelling of rubber tyre vehicles will only to be carried out in designated area (contractors compound) area away from any water course and using appropriate drip tray, funnels or fuel nozzles.

Tracked machines and static equipment will be refuelled locally by an onsite mobile bowser. Drip trays are to be used during refuelling operations if performed outside of a contained area and spill kits will be carried in the fuel bowser vehicle. The mobile fuel bowser must be located in the designated fuel point which is bunded.

12.10 Excavated Materials

Excavated Material will be moved directly to the permanent berms where possible.

In order to minimise the risk of contamination, any stockpiled material designated for removal will be removed off-site as soon as possible. Surface water drain gratings in areas near or close to where stockpiles are located will be covered by appropriate durable polyurethane covers or similar. Active treatment systems such as silt busters or similar will be adopted, depending on turbidity levels and discharge limits.

12.11 Mobile Equipment

All mobile equipment which are either fuelled or use hydraulic power including:

- Generators.
- Construction Saws.
- Hydraulic Breakers/pinchers and the like.

at the site shall be placed on suitably sized drip trays. If spills occur within the drip trays, then these should be cleaned up immediately using a spill kit. Drip trays should be kept free of rainwater at all times.

13. AIR QUALITY DUST AND NOISE/VIBRATION

13.1 Objectives

To prevent, where possible, and minimise dust and noise/vibration nuisance during site construction activities. Not to pollute or reduce the present levels of air quality.

13.2 Scope

All construction activities on site which having a potential to generate dust and noise/vibration nuisance and effect air quality.

Air dispersion modelling was carried out by AWN Consulting Ltd using AERMOD. (See EIAR 9.2.3.1)

13.3 Air quality & dust

The following measures are to be implemented on site to minimise dust emissions and maintain air quality using best practice guidance:

- CEMS analyser for continuous monitoring for the environment has been incorporated into the design of the Thermal Oxidizer.
- Where soil stripping occurs the resulting soil fraction should be separated into topsoil and subsoil stockpiles.
- The temporary storage of spoil is to be managed (in terms of spoil height and location) to prevent release of windblown dust.
- All construction trafficked areas are to be damped down by water spraying as required.
- Local roads used by construction traffic will be continuously monitored, cleaned and maintained as appropriate to ensure that any excess material carried off-site is removed immediately.
- Any unsurfaced roads within the site will be restricted to essential site traffic only.
- An on-site speed limit of 15 km/h is in place at the site. Adherence to this limit will prevent the unnecessary generation of fugitive dust emissions.
- Bowers or mist generators shall be used during dry weather or other periods at potential dust sources e.g. internal site routes or near site entrances. The quantity of water sprayed should be sufficient to suppress the dust whilst not generating significant surface water emissions.
- Any site operations which have the potential to create dust e.g. earthworks should be identified for mitigation measures (e.g. water hosing/dust suppression) and these measures should be specified in the works permit or method statement.
- Site speed limits for plant and other vehicles should be rigidly enforced in order to prevent dust cloud generation within the site.
- There shall be no open burning of wastes or other materials at the site under any circumstances.
- All plant and machinery on-site will be regularly serviced in accordance with manufacturer's specifications in order to reduce potential smoke particulate emission from plant and other vehicles. No defective plant shall be brought on to the site.

- Hard surface roads will be swept by road sweeper to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only.
- A wheel wash facility will be provided for vehicles exiting site in order to ensure that mud and other wastes are not tracked onto public roads. This will be located in the new site compound.
- Material handling systems and stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting, or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off site, trucks will be stringently covered with tarpaulin. Before entrance onto public roads, trucks will be inspected to ensure no potential for dust emissions. Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin to restrict the escape of dust.

13.4 Noise and Vibration

Construction activities shall be carried out, such that no noise nuisance is caused to local residences or facilities. It is not anticipated that any activity at the site will result in significant vibration nuisance. Any activity that is known to result in a significant increase in ambient noise levels or increased vibration shall be notified to the Site EHS Coordinator in advance. The current IED licence does not require noise monitoring. (See EIAR 10.3.1)

To minimise noise, equipment specifications will include (for example):

- Stringent equipment sound power levels (the noise level at full load shall not exceed 85 dBA when measured at a distance of three feet from the equipment surface in any direction).
- Acoustic cladding, enclosures and barriers.
- Limit the amount of onsite work using off site fabrication were applicable.
- Limit the hours for site activities that are likely to create high levels of noise.

Where noise levels are exceeded then it shall be treated as an Environmental Incident, including incident reporting and preventative action. All site personnel should report any significant noise sources to the Site EHS Coordinator and Construction Manager as early as possible in order to prevent noise emissions.

Table 13.1

Guidelines for Noise Impact Assessment Significance (DMRB)	CNT per Period	EPA EIAR Significance Effects	Determination
Period	Baseline Noise Category	Construction Noise Threshold Value $L_{Aeq,1hr}$ (dB)	Depending on CNT, duration & baseline noise level
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	A	65	
Evening (19:00 to 23:00hrs)	A	55	
Night-time (23:00 to 07:00hrs)	A	45	

It is recommended that during the construction of the proposed development vibration from construction activities to off-site residences be limited. Indicative values are presented in Table 10.3 (EIAR) It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage, these limits may need to be reduced by up to 50%. (EIAR, Ch10 Section 10.6.1)

14. ARCHAEOLOGY

14.1 Objectives

The objective of this section is to support the protection and conservation of Irelands' Archaeological heritage throughout construction activities.

14.2 Scope

All construction activities on site which having a potential to uncover archaeological deposits and features.

14.3 Construction Phase

No features of archaeological or architectural heritage were identified along the route of the Proposed Development, and the land required for the Proposed Development has been extensively and significantly developed in the past, no mitigation is required with respect to archaeology, architectural or cultural heritage. (ERAI AWN EIAR, Ch12, Section 12.6.1)

15. ENVIROMENTAL MONITORING

15.1 Objectives

This procedure outlines how environmental monitoring will be conducted at the construction site.

15.2 Scope

This procedure applies to all construction activities on the site and local environmental and residential receptors.

15.3 Monitoring

Variable	Activity	By	Number of Locations (to be agreed)	Frequency
Air	Test Air Quality	Contractor	N/A	Not identified
Water	Test Water Quality	Contractor	N/A	Not identified
Water	Visual inspection of water course	Contractor	N/A	Daily/Weekly
Dust	Dust deposition at boundary	Contractor	N/A	Not identified
Noise	Noise measure at boundary	Contractor	N/A	Not identified

Table 15.1 Summary of Environmental Monitoring Requirements

Note: Contractor monitoring requirements will be finalised post Planning consent.

Takeda Grange Castle storm outlet parameters for pH and TOC

Parameter	Monitoring Frequency	Sampling Methods	Value	Response to Alarms
TOC	Continuous	TOC Analyzer	>15 mg/l	High Alarm
			>20 mg/l	High-high Alarm and valve closure
			>30 mg/l	EPA Notification
pH	Continuous	pH Probe	≥ 9.0	EPA Notification
			≥ 8.5	High-high Alarm
			≥ 8.3	High Alarm and valve closure
			≤ 6.7	Low Alarm
			≤ 6.5	Low-low Alarm and valve closure
			≤ 6.0	EPA Notification
Fire Alarm	N/A	N/A	N/A	Valve Closure
TOC Analyzer Fault	N/A	N/A	<0.5 mg/l or any fault that causes the unit to cease operation	Valve Closure

Table 15.2 Takeda Storm outlet parameters

Various audits of site activity will be conducted as required. These audits will include site walkover, review of environmental practices, visual inspection of waste facilities, contractor permits, visual inspection of roads and footpaths.

15.4 Monitoring equipment

All monitoring equipment will be maintained and calibrated in accordance with standard methods or equipment specifications.

15.5 Review

The Site EHS Coordinator will review all environmental monitoring results as soon as they are available. The review should take account of the following in particular:

- The completeness of monitoring data.
- Any unusual spikes or trends in the data.
- All results are correctly recorded using the correct record sheets and are signed off (where relevant).
- Any breaches of target or action levels in monitoring data.

Any issues observed on reviewing the monitoring data should be followed up as early as possible and follow up checks or retesting should be conducted, as necessary.

Where necessary, investigations should be carried out on any unusual results. These investigations should involve inspections and interviews with the relevant project team members.

Any breaches of IE Licence limits and/or indication of any pollution event on site will be reported by the CMT to Takeda immediately

Monthly reports of monitoring results should be prepared for review and issued to the management team.

16. ENVIRONMENTAL SITE RULES

16.1 General

All construction personnel will be provided a Construction Environmental Induction. Personnel using chemicals shall receive further training in the use of chemicals on construction sites. Training packs are attached. The following is a non-exhaustive list of environmental site rules.

16.2 Site Clearance

- There shall be no wildlife or wildlife habitat disturbance – report any habitats encountered or any observed disturbances.
- Do not disturb any contaminated materials or buried waste / unusual materials encountered - contact the foreman and the Site EHS Coordinator immediately.

16.3 Fires

- No fires may be lit on the site under any circumstances.

16.4 Waste

- All waste to be disposed of in the dedicated waste lay down area.
- Always segregate waste into the correct container e.g. timber, metal etc.
- Do not litter around waste containers.
- Do not mix hazardous and non-hazardous wastes.
- Report overflowing containers – do not add waste to them.
- No unapproved stockpiling

16.5 Dust

- Keep to the site speed limit and don't create dust clouds on site.
- Report any roads requiring sweeping / cleaning down.
- Use on-site wheel wash facility to keep access roads clear of mud.
- Report any wheel wash malfunctions.
- Report any dust clouds or visible dust nuisance.

16.6 Water

- Do not discharge any materials to internal or external drains under any circumstances.
- Discharges must be controlled and tested in line with the requirements of this document
- Report any visible contamination in drains or watercourses immediately.

- Do not wash anything in or into drains or watercourses – use designated areas provided on-site.
- Machinery and/or equipment is not to be stored/parked within 10m of a watercourse
- Do not operate between the silt fence and the watercourse
- Report any damage to the silt fence
- Do not stockpile excavated material adjacent to watercourses
- Do not disturb any animals or plants in water habitats and report any observed animal activity on-site.

16.7 Noise & Vibration

- Ensure that you keep to the permitted operating hours of the site.
- Monday – Saturday (inclusive)
- Always carry out your work in a manner which prevents or mitigates noise nuisance.
- Report any noisy equipment immediately and have it repaired.

16.8 Materials Management

- All materials and deliveries to be planned and co-ordinated.
- All fuelling of Plant to be performed within the fuel storage bund.
- Machinery and/or equipment is not to be stored within 10m of a watercourse.
- All generators to be placed on drip trays.
- All chemicals to be stored in bunded area, spill pallets or Chemstore cabinets.
- Chemical containers to be secure and correctly/clearly labelled.
- All Chemical storage to be > 10m from any drain or watercourse.
- Spill kits to be available at Chemical stores.
- Safety Data Sheets are available for all chemicals from the main site office.
- Ensure that the application and/or use of chemicals is focussed on containment and minimises waste.
- All spills and near-misses must be reported.
- Spill kits to be employed for spills and used kit to be bagged for hazardous waste disposal.
- Fuel hoses or valves on tanks to be fully closed after use.
- All operating plant to be well maintained. Major Maintenance to be performed off-site. Minor maintenance over drip trays and/or in Fuel Storage area.

16.9 Archaeology

- There are no archaeological sites or monuments within the proposed development.
(See EIAR 12.5.1)

- If any archaeological finds are made, then halt excavations and report any visible archaeological finds to the Site EHS Coordinator immediately.

16.10 Wildlife

- No invasive species recorded during the habitat survey.
- The potential effects on local ecology are neutral and imperceptible.
- Respect all plants and animals in and around the construction site.

16.11 Waste

- Segregate waste and put in correct receptacle.
- Haz waste to be stored in the Fuel Bund area.
- Do not litter within or around the construction site.
- Pick up and dispose of any litter you see at the site.
- Eat food in the site canteen / eating cabins / tea rooms only.
- No littering around the waste compound.
- Use recycling facilities provided for food waste and dry recyclables.

16.12 Environmental Housekeeping

- The Housekeeping Motto is: "A place for everything, and everything in its place".
- Keep fuelling (diesel fill) area and waste bin and skip areas in a tidy condition.
- No storage of obsolete equipment allowed on site.

IF IN DOUBT CONTACT THE SITE EHS COORDINATOR

17. FLOOD RISK

17.1 Flood risk assessment

The area of site vulnerable to flooding in a 1% AEP event is shown in the image below (excerpt from original Flood Risk Assessment – stage 3 submitted as part of the approved planning application SD22A/0303). The proposed site (VOC Abatement System Compound and Utilities Workshop) is indicated by the red box on the image below.

To mitigate the risk of contamination to the surface water system the VOC abatement system utilities area is fully bunded. The top of the bund is set 950mm above the 1% AEP MRFS flood level. The Urea IBC containers units are bunded and positioned within the bunded compound (creating a double bund).

As the top of the bund is set 950mm above the 1% AEP MRFS flood level there is no risk of inundation of flood water into this area. In the event of a spill or leak within this area the sump drain can be diverted and pumped to a container for disposal rather than continuing to the process water drainage. The method of collection and management of any leak or spill in this area is carried out as per the EPA environmental licencing requirements for the site and Takeda’s EHS team guidance.

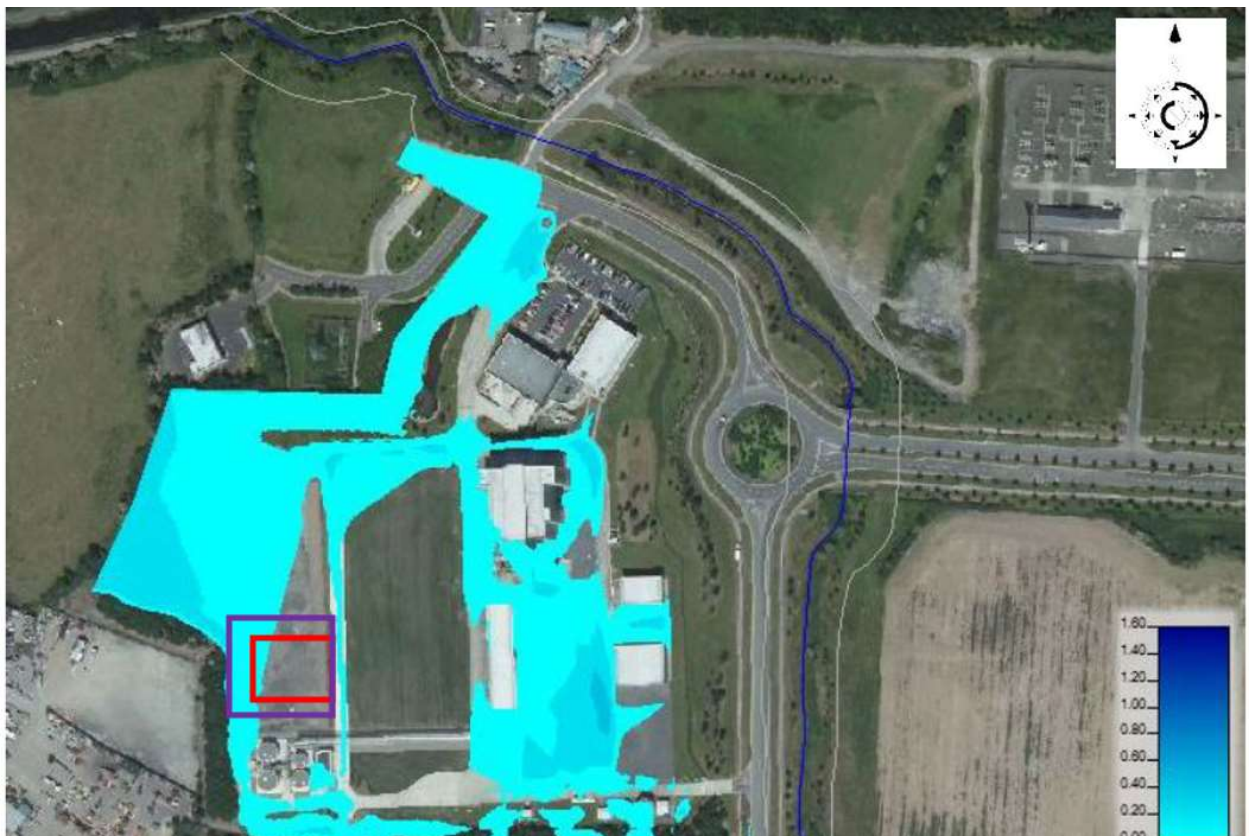


IMAGE - Flood depth on Takeda site for 1% AEP MRFS event (excerpt from FRA stage 3 as submitted with the planning application).

RED BOX: Indicates extent of VOC abatement system plinth and Utilities workshop. Total area 940m sq.

PURPLE BOX: Site including the new access road. Total area 2240m sq.

In the event of a 1% or .05% AEP flood, the location of the development will not impede but has the potential to marginally narrow the overland flow path travelling north (through the site towards culvert 1 of the Griffeen river). This occurs between the western site boundary planted berm and the VOC Abatement system compound. The current modelled level of water passing over this area is 0-20cm (1% AEP Flood event, from FRA stage 3 document submitted as part of the planning application).

As the VOC Abatement System is fully bunded (the bund is set 950mm above the 1% AEP MRFS flood level, ground level of bund set 600mm above the flood level), there is no risk of contamination to the flood water from the proposed development.

18. ENVIROMENTAL ASSESSMENT OF CONTRACTORS & VENDORS

18.1 Objective

To outline how the vendors, construction contractors and subcontractors will be selected and controlled with respect to environmental probity requirements.

18.2 Scope

All vendors, subcontractors and construction contractors under the management of the project team.

18.3 Contractor & Vendor Selection

Contractors operating at the site are required to submit a site-specific CEMP for the entire duration of that contractor's construction activities. Contractor Environmental Plans shall be assessed by the DPS Site EHS Coordinator. Any identified potential environmental issues and concerns should be queried or resolved with the vendor/contractor. Where necessary, site visits or probity audits shall be carried out.

All waste hauliers must have a valid waste collection permit. In addition, all waste recovery/disposal facilities must have a waste permit or licence.

18.4 Contractor & Vendor Site Control

Whilst working at the construction site, all contractors shall:

- Comply fully with the requirements of the CEMP implemented by DPS.
- Ensure full co-operation between personnel and the Site EHS Coordinator.
- Dedicate the necessary resources to ensure commitments agreed in the contractor's Environmental Plan are met.
- Maintain records as required.
- Ensure that their staff are aware of all environmental requirements.
- Nominate an EH&S co-ordinator who will liaise with the DPS Site EHS Coordinator all matters relating to the CEMP.

19. APPENDIX 1 – CONSTRUCTION ENVIRONMENTAL FORMS

Form	Description
CMF-3701	Environmental Incident/Near Miss Report Form
CMF-3702	Environmental Non-conformance Log
CMF-3703	Non-Hazardous Construction Waste Summary
CMF-3704	Hazardous Waste Construction Summary
CMF-3705	Construction Environmental Audit Checklist
CMF-3706	Register of Complaints and Follow-up Actions
CMF-3707	Surface Water Inspection Log

20. APPENDIX 2 – SITE LAYOUT PLAN

Drawing of proposed site layout

