

Appendix 9A

Resource Waste Management Plan (RWMP)



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Contract Title:
Ros An Mhil DWQ

Document Title:
Waste Management Plan / Recourse Recover Plan

Date: 30.06.2024

Prepared for:
Department of Agriculture, Food and Marine
(DAFM)

Prepared by:
Ward & Burke

Document Number:
ENV- 15

Project Information

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Client	Department of Agriculture, Food and Marine (DAFM)
Consulting Engineer	GDG (Gavin & Doherty Geosolutions)
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Status	Rev	Date	Originator	Checker	Approver	Issue Description
S3	P01	11.01.23	Emma Murphy	Colin Kelly	Michael Mannion	Initial Release for contract
S3	P02	10.09.23	Emma Murphy	Colin Kelly	Michael Mannion	Reviewed for compliance
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Section	Title	Rev. Status	Rev. Date	Description of Amendments
1.0	Project Particulars	0	Jan 2023	Initial Release for contract
2.0	Contract Team, Roles and Responsibilities	0	Jan 2023	Initial Release for contract
3.0	Project Waste Generation on the contract	0	Jan 2023	Initial Release for contract
4.0	Waste Arisings and Circular Economy	0	Jan 2023	Initial Release for contract
5.0	Storage of Excavated Material/ Waste on Site	0	Jan 2023	Initial Release for contract
6.0	Waste Disposal	0	Jan 2023	Initial Release for contract
7.0	Demolition and Decommissioning	0	Jan 2023	Initial Release for contract
8.0	Record Keeping	0	Jan 2023	Initial Release for contract
9.0	Site Inspection and Waste Audit	0	Jan 2023	Initial Release for contract
10.0	Training on Waste Management	0	Jan 2023	Initial Release for contract
Appendices	Appendix A – LoW (List of Waste) / EWC (European Waste Catalogue)	0	Jan 2023	Initial Release for contract
	Appendix B – Haulier Log	0	Jan 2023	Initial Release for contract

This Document should be read in conjunction with the following:

- Section 3.13 Waste Management – GDG – Outline CEMP
- Ward and Burke Environmental Policy, Sustainability Policy and Energy Policy
- Baseline Questionnaire
- Aspects and Impacts Register
- All Waste Management Legislation
- Planning Conditions
- Environmental Monitoring Programme
- “Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects”, published by the Department of the Environment, Heritage and Local Government in July, 2006, particularly the requirements of
- A Waste Action Plan for a Circular Economy Ireland’s National Waste Policy 2020-2025

This Waste/Resource Management Plan (WMP) plan has been prepared to detail how Ward and Burke will manage waste and resources as part of the Ros An Mhil DWQ Contract.



WBIE-0702-01 (Rev:3)

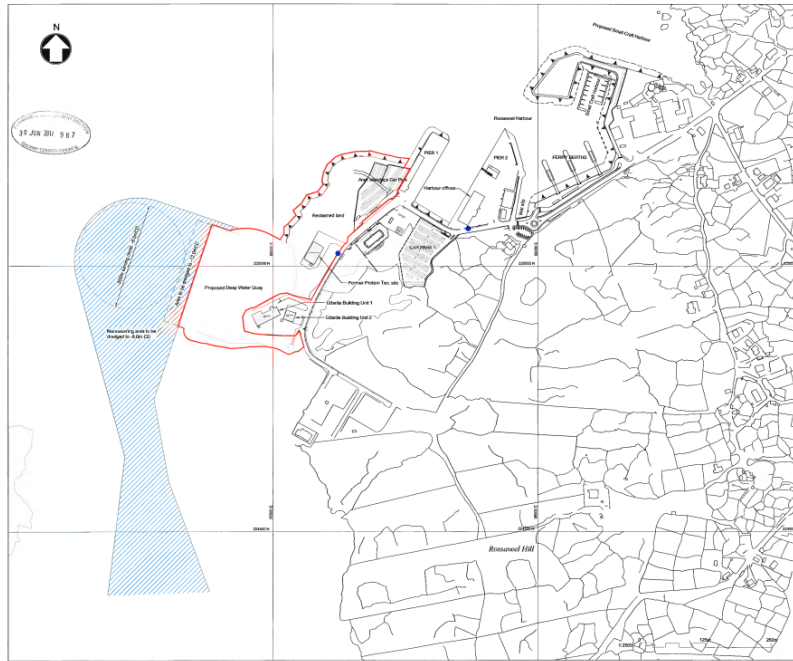


Figure 2 - Finished works

The site extends to include all elements of the development including ancillary and temporary works areas also, such as dredge areas and proposed contractor compound areas. The full extent of the development comprises the following structures and works. In the interests of clarity, these are listed generally in the order in which they will be undertaken / implemented:

There are two distinct strands of work, which have been contractually tendered together but form the essential parts of the proposed construction works, as follows:

1. **Dredging Works** – including drill and blast techniques, and follow-on recovery of the blasted materials for re-use as recoverable infill materials for use in the reclamation works and hinterland behind the new quay wall.
2. **Marine Civils Works** – including detailed preparation of the seabed, placement of the concrete gravity structures and the overall gravity quay wall solution. Final infilling can then proceed after the quay wall is built, with surfacing and construction of the main elements comprising the marine infrastructure including provision of services, drainage and quay furniture.

The dredging works are essentially required to precede the main quay wall construction as they include dredging of the seabed to -10mCD and preparing the seabed and navigable areas prior to the quay wall works commencing. However, there is a requirement for progress to be made in compliance with the planning permission for the scheme so the initial phase of works comprises infilling from land to create the reclamation zone.

The works consist of the following key elements of work:

- Construction of a 200m long quay wall using relatively large-scale concrete gravity components called caissons, which form a continuous berthing face.
- Reclamation of circa 2.7 hectares immediately behind the quay wall which will link the existing onshore components of Rossaveel Fishery Harbour Centre (FHC) to the new quay.

- Associated dredging including a 30m wide x 200m long berth pocket dredged to achieve a minimum level of -10m CD (Chart Datum), and dredging of a navigation channel and turning circle of minimum 150m diameter to achieve a minimum level of -7m CD. Given the that ground conditions on site are dominated by the presence of very strong granite, dredging works will comprise 'drill and blast' techniques to achieve the levels stated. It is expected that blasted rock can be re-used as part of infill materials needed to form the new reclaimed hinterland area behind the new quay wall.
- The new marine infrastructure will be appropriately surfaced and finished with various facilities to make it useable for marine operations, including:
 - Services including electricity, power and new drainage infrastructure, both to collect and filter surface water, oils and discharge materials from the fishing industry, as well as quay wall drainage.
 - Fendering and mooring bollards to allow safe berthage and mooring of vessels.
 - Safety equipment such as ladders, life-rings, etc.

A detailed development description is provided for in Section 3 of the Planning Report submitted with the planning application.

2. Contract Team, Roles and Responsibilities

This Waste Management Plan is to be considered as a live document and it will be updated regularly by the Waste Manager to represent the relevant contract waste packages.

The Waste Management Plan (WMP) is an important tool allowing Ward and Burke Construction Ltd. (WBCL) to monitor and improve environmental performance, meet regulatory commitments and help to reduce waste disposal costs.

Hence, the aim of this WMP is to determine the waste types and amounts to be produced during design and construction and to identify appropriate waste management controls and solutions. In order to ensure the continued management, monitoring and improvement on site.

2.1 Responsibilities for Waste Management on site:

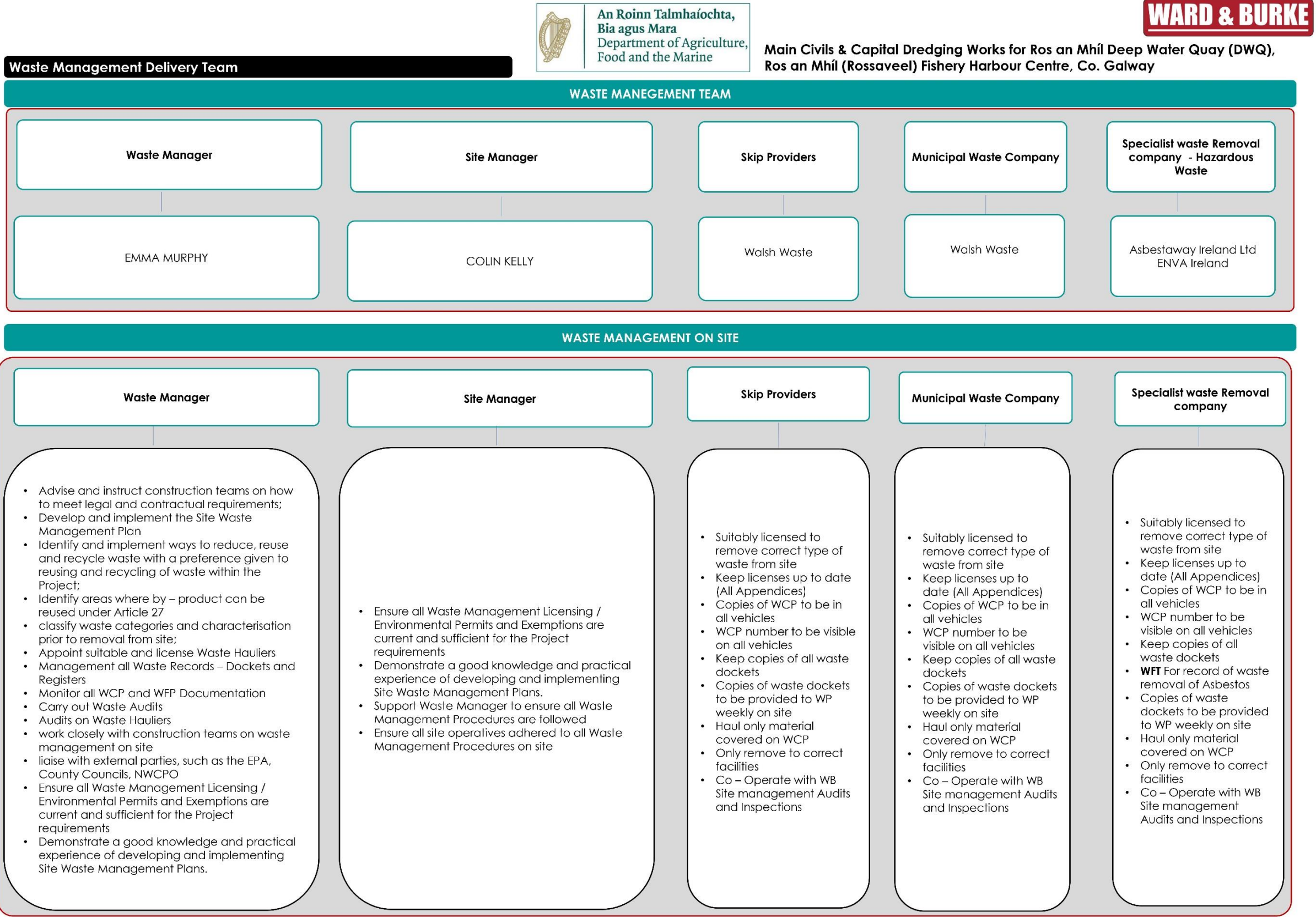


Figure 3 – Rossaveel DWQ_ Waste Management Delivery Team

Role	Responsibility
Waste Manager	The role of Waste Manager will be assumed by the Full Time Site SHEQ Advisor who acts as the overall Environmental Co-Ordinator as defined in the CEMP. The Waste Manager will: • Adhere to circular economy objectives • advise and instruct construction teams on how to meet legal and contractual requirements; • develop and implement and keep up to date the Site Waste Management Plan on a Quaterly Business • identify and implement ways to reduce, reuse and recycle waste with a preference given to reusing and recycling of waste within the Project; • Identify areas where by – product can be reused under Article 27 • classify waste categories and characterisation prior to removal from site; • Appoint suitable and license Waste Hauliers • Management all Waste Records – Dockets and Registers • Monitor all WCP and WFP Documentation • Carry out Waste Audits • Audits on Waste Hauliers • work closely with construction teams on waste management on site • liaise with external parties, such as the EPA. County Councils, NWCPD • Ensure all Waste Management Licensing / Environmental Permits and Exemptions are current and sufficient for the Project requirements • Demonstrate a good knowledge and practical experience of developing and implementing Site Waste Management Plans.
Site Engineer/ SHEQ Advisor	Responsible for the Waste Management on the day to day running on site • Ensure all waste streams are segregated • Ensure waste not missed on site • Ensure waste removed from site removed in suitable and licensed trucks and to license waste facilities • Reuse materials on site • Encourage recycling on site
Waste Hauliers	• Suitably licensed to remove correct type of waste from site • Keep licenses up to date (All Appendices) • Copies of WCP to be in all vehicles • WCP number to be visible on all vehicles • Keep copies of all waste dockets • Copies of waste dockets to be provided to WP weekly on site • Haul only material covered on WCP • Only remove to correct facilities • Co – Operate with WB Site management Audits and Inspections
Waste Facilities	• Suitably licensed to receive correct type of waste • Only accept waste licensed to receive • Keep licenses up to date • Keep copies of all waste dockets • Co – Operate with WB Site management Audits and Inspections

Skip Providers	• Suitably licensed to remove correct type of waste from site • Suitable skips to be provided to site • Keep licenses up to date (All Appendices) • Copies of WCP to be in all vehicles • WCP number to be visible on all vehicles • Keep copies of all waste dockets • Copies of waste dockets to be provided to WP weekly on site • Haul only material covered on WCP • Only remove to correct facilities • Co – Operate with WB Site management Audits and Inspections
Municipal Waste Company	• Suitably licensed to remove correct type of waste from site • Keep licenses up to date (All Appendices) • Copies of WCP to be in all vehicles • WCP number to be visible on all vehicles • Keep copies of all waste dockets • Copies of waste dockets to be provided to WP weekly on site • Haul only material covered on WCP • Only remove to correct facilities • Co – Operate with WB Site management Audits and Inspections
Specialist Waste Removal Company (Contaminated Waste)	• Suitably licensed to remove correct type of waste from site • Keep licenses up to date (All Appendices) • Copies of WCP to be in all vehicles • WCP number to be visible on all vehicles • Keep copies of all waste dockets • WFT For record of waste removal of Asbestos • Copies of waste dockets to be provided to WP weekly on site • Haul only material covered on WCP • Only remove to correct facilities • Co – Operate with WB Site management Audits and Inspections

3. Projected Waste Generation on the contract

3.1 Generation of waste

Construction and Demolition wastes are liable to arise from the following project activities:

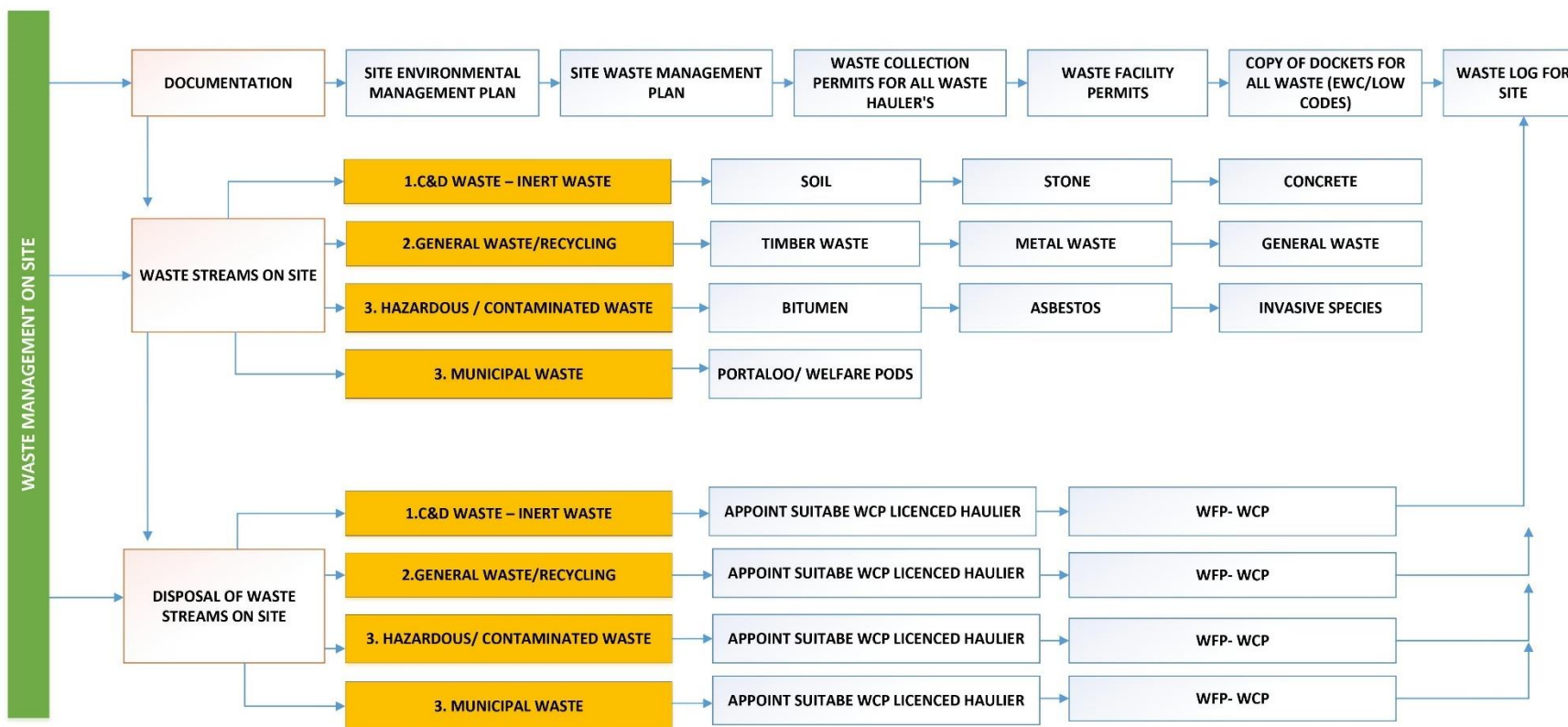
Activity	Waste Generated	Disposal/Treatment Recommendations
General Construction Waste	Waste oils	Collected by waste recycling contractor.
	Other waste	Collected in skips for disposal by licensed waste contractor.
	Timber waste	Reuse where possible for form concrete. Collection for disposal by licensed waste contractor.
General Office	Paper, packaging, canteen etc.	Collected in covered skips/large bins for disposal by a licensed waste contractor.
Temporary Site Toilets	Sewage	Emptied under contract for disposal at an appropriate facility.
Construction and Demolition Waste	Soil and Stone	Removal from site by licensed haulier to licensed waste facility
Construction and Demolition Waste	Concrete	Removed from site for recycling and reuse (6F2)

All different waste streams will be managed accordingly on site.

PROCEDURE	WASTE MANAGEMENT – CIVIL SITES	WARD & BURKE
REVISION - DATE	REV 1 – DEC 2021	

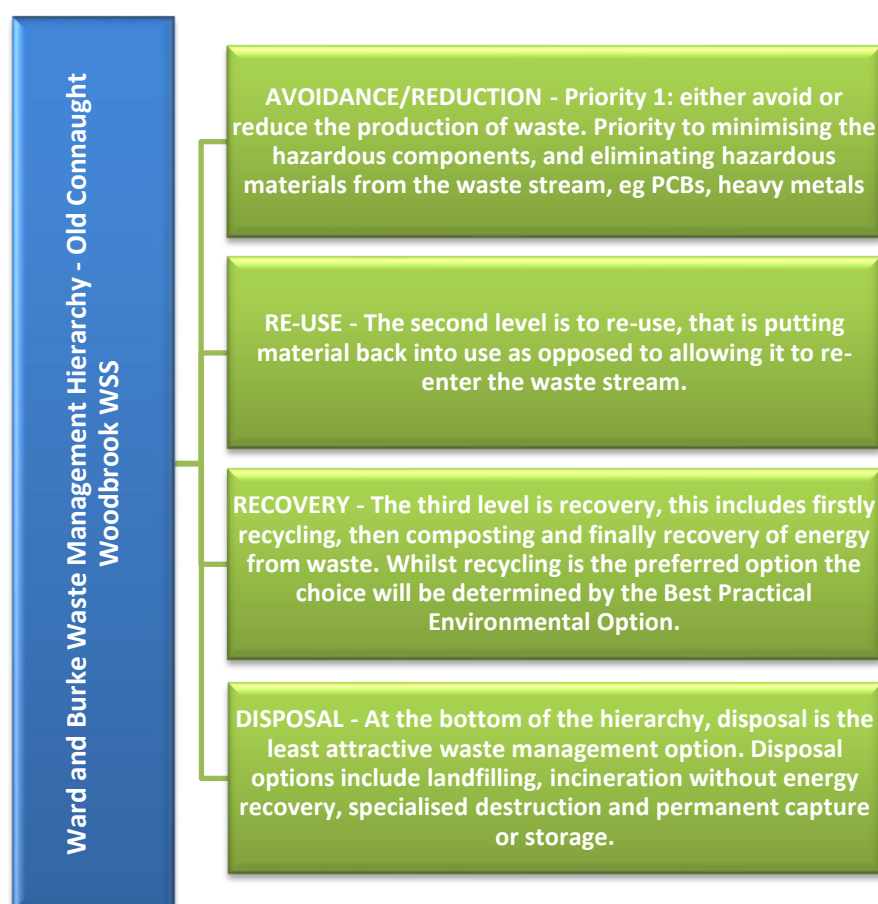
WASTE MANGEMENT PROCEDURE

LEGAL REQUIREMENTS – WASTE MANAGEMENT ACT 1996
WASTE MANAGEMENT (FACILITY PERMIT AND REGISTRATION) REGULATIONS 2007 AND (AMENDMENT) REGULATIONS 2008-2019
WASTE MANAGEMENT (LICENSING) REGULATIONS 2000, 2004, (AMENDMENT) REGULATIONS 2010, 2019.
LOW CODES



4. Waste Arisings and Circular Economy

Summary details on anticipated material surpluses/deficits and waste arisings are shown in the following tables with relevant EWC codes. These tables will be revised, updated and amended at Contract Award stage and thereafter throughout the design development and contract periods. At this juncture, the likelihood of the described waste arising is assessed as below.



The Project Delivery Team will ensure that each WMP component, where applicable, is adequately addressed. To ensure all aspects of this WMP are complied with, regular checks are to be made by the Waste Manager during the monthly site waste inspection process. The Project Delivery Team will also ensure that all WBCL employees and subcontractors staff are provided with appropriate training (e.g., tool box talks) so that everyone understands the requirements of this WMP and the site Waste Management approach.

The site team will apply the Circular Economy throughout the project process. This will mean that rather than just dealing with waste management at site level “on the ground”, waste management will be part of the whole project process – during **design, procurement and construction**.

WBCL’s Waste Management Plan centres around the fundamental waste management prioritisation principles of *prevent/reduce, reuse, recycle, dispose* in line with ‘A Waste Action Plan for a Circular Economy Ireland’s National Waste Policy 2020-2025’.



Figure 4 - Circular Economy Waste Management

4.1 Design

During the design phase of temporary works the Project team will adopt the waste hierarchy with a focus on optimising reuse and recycling options for design so as to minimise ultimate disposal to landfill. Waste temporary works materials should be designed from the viewpoint that they can be reused on other sites, where possible.

Where opportunities for recycling materials are recognised WBCL will ensure that these activities are controlled under the appropriate national legislation (i.e., a valid Environmental Permit / Waste Management Licence or exemption is obtained) and any mobile plant used has a valid mobile plant licence.

4.2 Procurement – Raw Materials

Throughout the pre-construction and construction phases, the Project Delivery Team should ensure that:

- Only the correct amount of materials required are ordered;
- 'Just in time' deliveries are arranged to reduce storage and material losses;
- Materials are sourced from companies with certified environmental standards, where feasible
- The amount of packaging used for materials delivered to the site is reduced or recycled as much as possible;
- Deliveries are rejected if materials are damaged
- Purchase from companies close to sites

4.3 Construction / Production

The Project Delivery Team will ensure that waste management activities during on-site construction work are effectively managed.

Reducing waste where possible will be a priority of the site team.

Ways in which same can be done include;

- Ordering the correct amount of materials to be delivered when needed;
- Ensuring materials are not delivered to site damaged and unusable;
- Reducing the amount of packaging used by suppliers;
- Where possible, establish a 'take back' system with suppliers;
- Ensuring wastes are handled and stored correctly; and
- Limiting the amount waste going to landfill by reusing and recycling where possible.

The Full-Time SHEQ Advisor will ensure that waste legislation matters are continuously audited and monitored including:

- *Waste management documentation and monitoring – certificates and licences*
- *Waste identification, storage and handling*
- *Waste performance, monitoring and reporting.*

WBCL will be responsible for recording all construction waste for the project ensuring that a cross reference to the WMP is added prior to completing the monthly waste data return spreadsheets and returning it back to the SHEQ Manager.

4.4 Waste Management and collection from site

4.4.1 Timber

This waste stream will arise from shuttering and from concrete, packaging and pallets from deliveries.

- A 40 cubic metre open skip will be put in place to collect timber on the site;
- Particular care will be taken to segregate the timber into treated and untreated fractions;
- Timber Waste Signage will be put in place at skips to highlight waste segregation;
- The following timber materials are considered as waste by timber recyclers - plywood, painted timber and pressure treated timber. This waste timber fraction will be disposed of in a mixed waste skip.
- The 40 cubic metre open skip will be located in a designated waste area of the compound.
- This material will be collected by a contracted and licensed non-hazardous waste collectors and brought to a licensed waste recycling facility.

4.4.2 Waste Ferrous/Non-Ferrous Metal

Any metal waste that may arise shall require the following approaches.

- Metal Waste Signage will be put in place at skips to highlight waste segregation;
- These materials will be collected and segregated into skips and collected by a contracted and licensed metal recycler.
- Ferrous & non-ferrous metal skips will be located in designated waste collection areas on site.

4.4.3 Mixed Waste including Food Waste

- All offices and canteens will be equipped with black plastic refuse bags and wheelie bins for the purpose of collecting and delivering this waste stream to the compactor;
- This material will be collected by a contracted and licensed non-hazardous waste management company.

4.4.4 Dry Recyclable Collection from Welfare Facilities

- All offices and canteens will be equipped with clear plastic bags and wheelie bins for the purpose of collecting dry recyclables. This will be strictly managed to prevent any food waste entering the dry recyclable stream;
- Recycling wheelie bins will be located at all welfare facilities and offices;
- Suitable signage will be put in place to highlight same.

4.4.5 Waste Oil and Non-Liquid Oily Waste

- Waste oil collection will be provided at a purpose built double skinned tank in the waste management compound of the site;
- All oil containers will be placed on covered bunds;
- Drip trays and funnels will be used when transferring any oils or fuel from one container to another;
- The collection of non-liquid oily waste (e.g. rags and oil contaminated materials) will be segregated from mixed waste and placed in approved containers for shipment;
- These materials will be collected by a contracted and licensed oil waste management company; and
- Oil Spill kits will be located adjacent to any areas where oil or lubricants are being used.

Materials will be collected by:

- roll on _roll off skip trucks
- Bin lorries
- Specialist oil collection company (Enva)

4.5 Waste Reduction on site

The **measurement of waste** involves monitoring and records of the following criteria (measurement records to be completed as project progresses, below are projected quantities).

Objectives of the waste management for the contract is to overall reduce our waste generation from previous contracts and reuse where possible. Reducing waste generated on site will reduce the overall carbon footprint of the contract.

Again, this table will be revised and updated as the project progresses to accommodate additional wastes or remove those not encountered.



Figure 5- Figure 2 - Circular Economy Waste Management

4.6 Reduction & prevention of waste

In line with good modern industry practice, all efforts will be made by site management to minimize the creation of waste throughout the job. There are several key ways in which this can be dealt with. In order of preference, these are:

- *Re-use of a material on site or on other sites*
- *Re-use of a material off site on other sites*
- *Recycling of a material for use on-site*
- *Recycling of a material for use off-site*
- *Sending of material to a recycling facility*
- *Sending of a material to WML facility as 'exempt' under terms of LOW*
- *Disposal of material to landfill or other processing facility under terms of LOW*

Some practical applications of the above are:

- *Cutting back on the amount of wastage for trimming of material etc. for example cutting of plywood, built into the amount ordered.*
- *Educating foremen and others to cut/use materials such as ply wisely for shutters etc.*
- *To re-use shutters, formwork and temporary works materials as much as possible by careful planning throughout the job.*
- *Reused of pipes and fitting on other jobs*
- *Recycling of paper generated on site.*

- *Increasing the use of electronic transmittal of documents and drawings, as opposed to paper.*
- *Sending an item of formwork to another WBCL site, where that item could be used (assuming no further use is possible without generating costly waste at this site)*

In addition to the above, there are a number of steps that can be taken in order to prevent the creation of waste in the first instance, thus negating the need to deal with the waste product.

These are as follows:

Damage due to work methods	Ensure method statement adhered to. Ensure operatives are equipped properly and trained.
Unused off cuts	Correct sizing of materials prior to order. Liaise with design team to review sizes of key materials.
Site office waste	Use e-mail as much as possible over paper. Draft documents to be issued electronically prior to review.
Excess materials	Correctly review drawings & specifications. Checks by senior engineers on take-offs.
Inappropriate storage	Good housekeeping. Materials sensitive to rain kept covered or in containers.
Materials gone off	Order materials just-in-time. Refer to programmes and plans when ordering.
Materials damaged on arrival	Use of partnering with suppliers to achieve quality. Thorough inspection of delivery prior to unload & distribute.
Vandalism	Site security to patrol all storage areas. Secure fencing and lighting around store areas.
Re-work due to errors	Selection of appropriately trained & experienced operatives. Supervision of construction activities.
Design problems	Liaison with designers as early as possible. Raising of TQs at an early stage to identify problems.
Inappropriate equipment	Selection of equipment by experienced & trained staff. Matching equipment to tasks on a case-by-case basis.
Adverse weather	Planning of works with cognisance taken of weather forecasts. Consideration given to alternative materials.

Material Recycling Options

Recycling

Wherever possible, materials shall be recycled. There will be a skip located in the site compound for the recovery of paper/cardboard and plastic containers. It is the responsibility of the WBCL Safety & Health Officer to ensure safe egress and control access to these skips at all times.

Once full a recycling company will collect the contents of this bin. Modern recycling techniques mean that many construction materials can be recycled. Taking cognisance of this, WBCL will ensure that, where reasonably practicable and economically acceptable, recycling will be carried out with as many materials as possible. The following is a guide:

Timber: The recycling of timber is a three-stage process. The process includes shredding, screening and metal segregation to produce a woodchip. The low moisture content from recycled timber provides an advantage over virgin wood stock, reducing utility costs prior to manufacturing wood chip board or as a secondary fuel source in an organic 'waste to energy'

process. The use of recycled wood also preserves virgin wood stock. WBCL will actively re-use timber on this or other WBCL sites, with recycling to be used for large volumes.

Glass: Glass cullet can be processed at a rate of 10 tonnes per hour, to produce screened fractions of glass to recycle into a variety of industrial uses, (providing colour is not an issue). Markets such as water filtration, shot blasting with abrasive characteristics, paint additives with light reflecting properties and acoustic attenuators and insulation are able to utilise recycled glass.

However, it is not thought that sufficiently large volumes of glass will be generated on site to warrant recycling, although this will be constantly reviewed.

Fluorescent tubes: The mercury powder contained within these is a valuable resource and can be re-cycled where sufficient amounts of tubes are available.

Paper: Paper will be put into the paper re-cycling bin on site. The full bags are put in the wheelie bin and collected regularly for transportation to the nearest processing facility. The sorted and baled paper is then sent to paper mills for recycling.

Plastics: The availability of recycling of plastics generated on site will depend on the type and amount of plastics generated. Whilst low-density polyethylene (LDPE) used for plastic film - shrink wrap, stretch wrap etc, can be recycled, as can HDPE, PET and PVC used for bottles and Polystyrene (PS) used for drinks cups and packaging, consideration needs to be given to quality, quantity and the cost of getting it out of waste and to the processor.

With this project, as nearly all plastic would need to be baled for transport and storage and this would generally demand an 'on site' baler, this approach would not be practicable or economically viable given the amount of plastics of the above types likely to be generated.

5 Storage of Excavated Material/ Waste on Site

Waste stored on site, whether from construction activity or general consumer waste from the site facilities etc., shall be stored in a safe manner to minimise the likelihood of cross-contamination, further pollution, vandalism or vermin infestation. This will involve using various storage mechanisms and ensuring the proper segregation of waste.

Segregation of waste shall include provision of appropriately signed and classified storage areas/skips, using various signs to assist the site team and operatives with the process of storing and sorting waste. Typical signs are shown on image below.

6.1 Waste storage in compounds

6 Waste Disposal

Once excavated material is fully classified as waste and had no other use correct waste disposal procedures will be adhered too.

Disposal of waste will always be the final stage in the waste hierarchy assessment. However, on the project there will be elements of waste requiring disposal. All waste will be disposed of under correct licensing.

The process for selecting appropriate disposal hauliers and facilities will be selected based on waste type being generated.

<http://facilityregister.nwcpc.ie/>

Waste Collection Permits Database: <https://www.nwcpc.ie/permitsearch.aspx>

Prior to any movement, establishing from any waste carrier where the waste is to be taken to and making sure that the destination is authorised to receive it i.e., obtaining a full copy of the waste management licence (WCP) and Waste Facility Permits.

Results shall be recorded within Waste Management Duty of Care Checks (Chain of Custody form) by the full time SHEQ Advisor on site (Waste Manager/Environmental Co-Ordinator).

The Waste Manager ensures discharge consents are obtained (e.g., from wash down or dewatering activities) to surface waters or the foul sewerage system

The Waste Manager ensures that chain of custody forms and waste transfer notes are audited for compliance for the removal of all wastes from site **and that they include:**

7.1 Description of Waste

A description of the waste is required which should include: a written description which should be as informative as possible, a List of Waste (LOW) code (6 digit code e.g. 20 03 01), how the waste is packed, whether loose or in a container, and what kind of container; and the amount of waste, which should include the total weight in kilograms. **Reference Appendix B**

Some wastes may require more detailed information (e.g. should future holders require specific information on how to handle or store the waste etc.) in the description which would be because of special problems posed by the waste. This information should include: the type of premises or business the waste was produced by; name of the substance(s) in the waste; the process which produced the waste; and any chemical or physical analysis of the waste.

Current Holder of Waste

This section should be filled in by the current holder (transferor) with all relevant details of their permit or registration.

Person Collecting the Waste

This section should be filled in by the person collecting the waste (transferee) with all relevant details of their permit or registration.

The Transfer

This section should be filled in with the address or collection point for the point of waste transfer and the date it occurred. Also required in this section is the broker who arranged the transfer if this is relevant, and crucially the location to which the waste is being taken (ensuring it has a current licence from the EPA licenced to take the EWC classification of waste – this can be checked on the website link given earlier in this section).

7.2 Procedures for dealing with hazardous waste

Hazardous waste takes many forms and the proper identification and management of hazardous waste is a crucial part of a project such as old Connaught Woodbrook WSS

In addition to the waste types identified earlier in the document, particularly asbestos, unexpected or unforeseen hazardous waste must also be properly managed.

WBCL shall monitor excavation works to check for unexpected or unusual materials with a contaminative potential. This material may consist of, but not be limited to, buried drums, tanks or containers, soil, groundwater or liquids with an unusual colour or odour, or other evidence of contamination. If this type of material is encountered WBCL shall stop work in the affected area until we have identified the exact nature and extent of the material, undertaken (or amended) risk assessments and amended and submitted the risk assessments and revised mitigation proposals for acceptance. This approach shall be included in the Safety, Health, Environment and Quality procedures for the project.

There are a number of ways of identifying contamination, some of which require the use of equipment, such as a photo ionisation detector (PID) which detects volatile gases. Other methods include the use of field testing kits to obtain approximate concentrations of constituents within soil or water using hand held probes (e.g. to determine pH - the level of acidity), Eh (measure of the proportion of oxygen), temperature and dissolved oxygen in waters. The use of such techniques is often specific to the waste being assessed.

There are also visual and olfactory (odour) signs of contamination that does not require the use of specialist equipment. A summary of some typical visual and olfactory indicators of contamination is presented below, along with guidance regarding ways to identify these.

7.2.1 Visual Indicators of Contamination

The following are examples of visual indicators of contamination commonly identified in contaminated soils:

- **Brick, wire and other man made constituents.**
General indicators that the soil may have originated from a former brownfield site and chemical contaminants may be present.
- **Ash, coal, clinker**
The presence of these constituents within soils may indicate contamination from metals.

- **Fibrous material**
Any fibrous material should be treated with caution and may be an indication of asbestos containing materials.
- **Tar**
Black viscous liquid or semi-solid tar in veins. Usually elevated concentrations of polycyclic aromatic hydrocarbons (PAHs), benzene, toluene, ethylbenzene and xylene (BTEX) and phenolics.
- **Coal Tar**
Black (sometimes blue/black), solid or highly viscous material [.]
- **Black staining.**
The staining could be due to the presence of tar or contamination from fuel oil, and subsequently mean there are elevated concentrations of PAHs and BTEX, among other contaminants.
- **Blue staining.**
Blue coloured soils may be an indication of especially high concentrations of cyanide.
- **Sheen/Oil**
A sheen on any water within soils or on the surface of soils may be indicative of the presence of materials such as hydrocarbon oils.
- **Olfactory Indicators of Contamination**
There is no specific guidance in terms of olfactory indications of contamination and the sense of smell can vary considerably between people. However, the following are examples of odours that may indicate particular types of contamination, and can often be detected even without being in very close proximity to the waste:
- **Hydrocarbon (e.g. petrol, diesel or oil-like) odour**
This would usually indicate the presence of hydrocarbons such as total petroleum hydrocarbons (TPH from diesel or petrol), PAHs and BTEX.
- **Solvent odour (e.g. paint, glue or thinner-like odour)**
Solvents such as tetrachloroethene, trichloroethene and phenols.
- **Rotten egg**
This is usually indicative of hydrogen sulphide and may indicate reducing conditions are present, potentially caused by the presence of contamination.
- **Other odours**
Odours may result from historic spills, leaks and ground gas from chemicals such as methane and ammonia.

Handling and disposal of hazardous waste will follow the procedures outlined above for waste management. In addition however, there are a number of further steps and controls that can be taken in regard to dealing with hazardous waste. Each case must be assessed on a case-by-case basis but outline procedures are presented below.

7.2.2 Reducing the Hazardous Nature of the Waste

There are three principle ways to reduce the hazardous nature of the waste:

- *Remove one or more hazards associated with waste;*
- *Reduce one of the hazards to a lower hazard, e.g.: corrosive reduced to irritant; very toxic reduced to toxic or harmful; or toxic reduced to harmful; or*
- *Remove the risk from the hazard, e.g. solidification to prevent ingestion of some toxic wastes or reducing the hazardous nature of the waste, even if the waste remains hazardous.*

7.2.3 Facilitate Handling

In order to facilitate handling, the characteristics of the material should be changed to reduce the negative impacts on the environment or human health. This should consider the handling of material during placement of the waste in landfill and any foreseeable subsequent handling of the waste, but not the handling of the waste prior to land filling.

7.3 Simple Steps in Sampling and Testing Potentially Contaminated Soils and Waters

Sampling and testing of wastes and water from waste sites is frequently required to determine compliance with a site's permit. This note covers some basic procedures for sampling and testing of soils, other granular materials and water samples.

7.3.1 The Main Types of Tests

There are four main types of tests for waste soils: testing of the solid portion (e.g. the soil) of the waste; basic characterisation tests (comprehensive leachability tests); compliance tests, (whether specific wastes comply with specific limits); and on-site verification tests which are rapid checks to confirm the wastes are the same as those which have been tested for compliance.

7.3.2 Sampling Methods

7.3.2.1 Soil Sampling

Suitable sampling and chemical analysis of the soil/subsoil shall be undertaken prior to its excavation. Any soil that is to be excavated and disposed of shall be sampled, analysed and classified to determine the most suitable disposal outlet. Any soil that is to be reused on-site shall be sampled and analysed to confirm its suitability.

There are three main methods of sampling soils. These are:

- *spot sampling which is sampling from one location, usually from a specific point from a stockpile or from a borehole or excavation hole (trial pit);*
- *composite sampling which involves mixing small samples from a number of locations to form a single composite sample;*
- *Targeted sampling towards the highest risk materials in a load.*

The following points apply to any method of sampling soils and filling sample containers:

- *sampling should be done using clean equipment such as a stainless steel trowel;*
- *the sampling equipment should be cleaned between samples to avoid cross contamination;*
- *the sample should be as representative as possible of the material being investigated;*
- *sample from within a waste pile, not just the surface, as this will be more representative of the waste as a whole;*

- *fill containers to ensure enough sample is provided for the laboratory tests;*
- *Avoid placing large or bulky items in samples, such as bricks or large stones.*

The sample description should be recorded or labelled and attached to each sample container using a permanent marker pen. The sample description should consist of as many of the following as possible:

- *the site name or location;*
- *date and time of sampling;*
- *a basic description of what the materials looks like e.g. sandy or clayey soil, its colour and any obvious items present e.g. bricks, stones, etc.;*
- *Any detailed information available e.g. a European Waste Catalogue (EWC) number or the source of the materials from documentation provided with it, such as a waste transfer note number.*

7.3.2.2 Water and Leachate Sampling

If samples from water are required these should be collected from undisturbed water. Avoid getting sediment or soil in the sample jar if possible. The container should be filled to the brim, ideally with no air bubbles trapped under the lid.

The sample description should be recorded or labelled on the sample container using a permanent marker pen. This is best done before the sample is taken, when the container is dry and should consist of the following:

- *the site name;*
- *the location of sampling point;*
- *date and time of sampling;*
- *any observations such as odour or colour.*

7.3.2.3 The Analytical Laboratory

The testing of wastes should be undertaken at an accredited laboratory. As a minimum, the selected laboratory should be INAB accredited. The analysis of the wastes should reflect the likely contaminants present in the waste, e.g. if wastes have been produced from a former petrol station, then as a minimum, testing for hydrocarbons (petrol and diesel), should be undertaken. Should testing be required, it is the responsibility of the producer of the waste to ensure the waste is tested for the appropriate contaminants.

7.3.2.4 Chemical Testing (Sample Containers)

Sampling containers vary with each laboratory. As a general rule the following container types are used:

Soils

plastic tubs (holding 1 or 2 kg) for analysis for metals (usually 2 per sampling location); and amber coloured glass jars for soils for analysis of organic contaminants e.g. petrol hydrocarbons.

Water

large (1 or 2 litre) plastic bottles for analysis of metals;
amber glass bottles (usually 1 litre) for analysis of organic contaminants;
small glass vials (typically 100 ml) for analysis of volatile substances.

7.3.2.5 The Waste Acceptance Criteria (WAC) Test

The waste acceptance criteria (WAC) test analyses both soil and leachate. There are only two situations where WAC testing is used, namely:

- *To assess whether a material is inert waste.*
- *To assess the type of hazardous waste.*

Inert WAC testing is only undertaken on inert wastes where there is a suspicion of contamination present.

For wastes that are already classified as hazardous, WAC testing is mandatory before it is landfilled. There is no WAC test for non-hazardous wastes. There are two parts to the WAC test; analysis of the solid portion, where the soils are tested, and analysis of the leachate. The leachate analysis is done in two stages, the first is two parts water to one part soil, the second is eight parts water to one part soil. The results are combined (taking into account the initial moisture of the waste) and the results reported as a ten to one dilution.

There are three WAC tables for granular wastes; inert (for inert wastes), stable non-reactive and hazardous (both for hazardous wastes).

7.4 Dealing with PAH in Bitumen on site

Before works commence:

Before works commence of a section of road the trench width will be plained out.

As sample of the plained out material will be taken for PAH Testing.

Plained out material will be temporarily stored on site until the results come back.

When results are back:

No PAH detected:

Material can be removed to a suitably licensed facility.

PAH detected:

Ward and Burke will ensure that any material containing PAH substances are managed in accordance to the relevant waste management legislation, including the Waste Management Act, 1996 (S.I. No. 10 of 1996) and all subsequent amendments, specifically Waste Management (Amendment) Act 2001 (S.I. No. 36 of 2001). [Also reference update in April 2020.](#)

Depending on the concentration levels identified the disposal options may include one or more of the following:

- disposal to licensed landfill. (Envia Ireland – Location to be decided at time based on results and guidance from Envia Ireland on same).
- disposal to landfill specially licensed for receiving material with larger concentrations of PAH substances. (Envia Ireland – Location to be decided at time based on results and guidance from Envia Ireland on same).

- disposal to a waste facility outside Ireland(Enva Ireland – Location to be decided at time based on results and guidance from Enva Ireland on same).

Disposal of hazardous waste shall only be undertaken at a licensed hazardous waste facility (Enva Ireland – Location to be decided at time based on results and guidance from Enva Ireland on same).

Ward and Burke will employ a suitably licensed haulier to remove the material, with the appropriate waste collection permit.

The appointed contractor (Enva Ireland) will get a Waste Transfer License.

WTFs are issued electronically. The following points are relevant:

- An account must be setup to use the electronic system. The system can be accessed here <https://wrms.dublincity.ie/wrms/frontoffice/>
- a WTF is purchased.
- a WTF may be purchased by a consignor, carrier or consignee.
- the WTF must be signed and accompany the waste while in transit. Ward and Burke will keep a record of same on site.
- the receiving facility logs in to the system and confirms receipt of the waste.
- Ward and Burke will keep a copy of the receipt of same on site.
- one WTF can be completed for a number of collections but these must relate to a single facility on a particular day.

7.5 Dealing with Asbestos on site

Asbestos handling and disposal will be managed for WBCL by a suitably trained and competent asbestos management contractor.

Asbestos has the potential to be encountered in many different forms. There are six different types of asbestos, under two main groups. Five are from the Amphibole group and one from the Serpentine group. The three most common types are chrysotile, amosite and crocidolite.

Chrysotile is the most commonly used form of asbestos and can be found today in pipes as well as roofs, ceilings, walls and floors of homes and businesses. Chrysotile asbestos also was used in automobile brake linings, pipe insulation, gaskets and boiler seals. Although it is more prevalent, some studies show it takes more exposure to chrysotile than other types of asbestos to develop related diseases. Chrysotile is the only type of asbestos that is from the serpentine family and is known as white asbestos. These fibres are curly and are comprised of sheets of crystals. Throughout industrial history, more than 95 percent of all asbestos used around the world was of the chrysotile variety. In many countries where other types of asbestos have been banned, the “controlled use” of chrysotile is still permitted.

Chrysotile asbestos has been utilized in a number of products, including:

- *Gaskets*
- *Cement*
- *Insulation*
- *Brake pads*
- *Brake linings*
- *Joint compound*
- *Roofing materials*

The other five types of asbestos are classified in the amphibole category. Amosite (brown asbestos) and crocidolite (blue asbestos) are considered the most commercially valuable types. Anthophyllite, tremolite and actinolite are the other non-commercial forms of amphibole asbestos. All amphibole fibers are straight and longer than chrysotile fibers, and studies suggest it may take less exposure to amphibole asbestos to cause mesothelioma than chrysotile asbestos.

Exposure to **amosite** asbestos creates a higher risk of cancer in comparison with other types of asbestos. Several asbestos studies suggest exposure to amosite can cause lung cancer, mesothelioma and asbestosis. In its natural state, amosite is known as the mineral grunerite. Commercially, grunerite is referred to as amosite or brown asbestos. Commercial products that have been manufactured with amosite include:

- *Cement sheets*
- *Thermal insulation*
- *Plumbing insulation*
- *Insulation boards*
- *Tiles, including those for ceilings, roofs and floors*
- *Chemical insulation*
- *Electrical insulation*
- *Roofing products*
- *Fire protection*
- *Gaskets, lagging*

Multiple asbestos studies suggest **crocidolite** may be responsible for more deaths than any other type of asbestos because its fibres are so thin - about the diameter of a strand of hair. When airborne, these fibres can be inhaled easily and become lodged in the lining of the lungs, more so than other forms of asbestos forms. Once inside the body, the fibres do not break down easily. This can lead to potentially life-threatening lung and abdominal conditions, including lung cancer, mesothelioma and asbestosis. Like other types of asbestos, crocidolite was used to make a number of commercial and industrial products.

Some of the leading uses of crocidolite asbestos included:

- *Ceiling tiles*
- *Fire protection*
- *Insulation boards*
- *Chemical insulation*
- *Spray-on insulation*
- *Acid storage battery casings*
- *Water encasement (enclosing)*
- *Cement sheets containing asbestos*
- *Electrical or telecommunication wires*
- *Thermal insulation (lagging and gaskets)*

Tremolite fibres have been useful for commercial products because they are strong, flexible, heat-resistant, and can be spun and woven into cloth. Tremolite was used in a variety of commercial and industrial products because of its ability to insulate and fireproof materials. Some of the more common products that contained tremolite included:

- *Paints*
- *Sealants*
- *Insulation*
- *Roofing materials*
- *Plumbing materials*

Tremolite contains calcium, magnesium, silicon, hydrogen and oxygen. The mineral can be brown, grey, white or green and may appear to be transparent.

Anthophyllite asbestos is known to cause asbestos-related diseases; however, most studies indicate the risk of developing mesothelioma from anthophyllite exposure is much less than it is from exposure to other types of asbestos. Although it took much longer for anthophyllite to be recognized as a mesothelioma risk than it did for amosite, chrysotile and crocidolite asbestos, there is a clear connection from exposure to it and to the development of mesothelioma.

Anthophyllite is one of the rarest types of asbestos and does not have a long history of commercial use.

Actinolite asbestos can appear in multiple forms such as dense and compact or brittle and fibrous, along with different colours, including white, grey, brown or green. Actinolite is typically used with the similar mineral vermiculite, which expands when heated. Vermiculite and actinolite make for an effective, light-weight insulation material.

Actinolite may still be present in buildings, homes or other locations that were constructed before asbestos was known to be a hazardous material.

This material has been found in products such as:

- *Paints*
- *Sealants*
- *Drywall*
- *Joint compounds*

If asbestos is encountered. It will be dealt with in accordance with:

- The Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations (including amendments)
 - The Safety, Health and Welfare at Work (Construction) Regulations, 2013
 - HSA Guidelines on Asbestos-containing Materials (ACMs).
-
- Once the excavation gang have exposed the crown of the Asbestos pipe they will proceed to carefully excavate along the sides of the pipe and around the collars where the pipe is to be removed. Some hand digging may be involved. A Banksman will observe digging at all times.
 - Upon completion of excavation, the trench shall be inspected by the Site Engineer and witnessed by R.E. staff. The existing services and ground conditions will be recorded. Photos will record the condition of the AC pipe and any damage will be recorded.
 - Water shall be provided at the location either by tanker supply or connection to the nearest hydrant. Water will be sprayed on the pipe collars to dampen the locus and ensure that no dust escapes to the air.
 - All operatives involved in the removal of the AC pipe shall have full PPE and asbestos awareness training.
 - Once the site engineer is satisfied that all the procedures are in place the team will proceed to slide the existing jointing collar by manually hitting the collar with a sledge to move the collar from the joint. All to be carried out while wetting the area from water hose.
 - Once the collar has been removed collect up any broken pieces, double wrap and store in the bags provided by the licensed disposal company. All pipes to be double wrapped & taped with 1000 gauge polythene and stored in the specified area of compound marked Hazardous until removed by licensed disposal company.
 - Once collars successfully removed the main pipe can be addressed. The gang will carefully place fabric slings around the pipe length to be removed. These shall be connected to the excavator and as the excavator takes the pressure the pipe will be gently rocked to ensure that the section of pipe can be lifted out of the excavation without damage to the remaining pipe ends. It is very important that the pipe is lifted in a level plane to avoid snagging as it is raised.
 - Once clear of the excavation all asbestos material will be removed to the compound via All pipes to be double wrapped & taped with 1000 gauge polythene and stored in the specified area of compound marked Hazardous until removed by licensed disposal company.
 - The area for temporary storage will be fenced off with Heras fencing panels. Suitable signage will be in place for on the fencing.
 - Asbestaway are the appointed disposal company for the project.
 - The waste disposal company are fully licensed, and the Waste Permit Numbers will be available.
 - Asbestaway will collect the wrapped asbestos from the designated area of the compound.
 - Asbestaway will remove the material to their depot for forwarding to final destination.
 - Once the material has progressed to its final destination a final cert will be issued by Asbestaway confirming its final location at a fully licensed facility and to include details such as type and weight of asbestos involved.

- WTFs are issued electronically. The following points are relevant:
 - An account must be setup to use the electronic system. The system can be accessed here <https://wrms.dublincity.ie/wrms/frontoffice/>
 - a WTF is purchased.
 - a WTF may be purchased by a consignor, carrier or consignee.
 - the WTF must be signed and accompany the waste while in transit. Ward and Burke will keep a record of same on site.
 - the receiving facility logs in to the system and confirms receipt of the waste.
 - Ward and Burke will keep a copy of the receipt of same on site.
 - one WTF can be completed for a number of collections but these must relate to a single facility on a particular day.

7.6 Dealing with Contaminated Waste on site - Invasive Species

From the pre-construction assessment from Flynn Furney the contract ecologist there are is no invasive species within it the works area.

Same will be monitored during works and if any invasive species are identified Ward and Burke Ecology Consultant to give advice on same.

7.7 Dealing with Contaminated Waste on site contaminated spoil

All existing site investigation records for site to date do not show any evidence of contaminated soil.

The waste acceptance criteria (WAC) test analyses both soil and leachate. There are only two situations where WAC testing is used, namely:

- *To assess whether a material is inert waste.*
- *To assess the type of hazardous waste.*

When the WAC Test results come back we will then decide on where said material needs to be disposed of.

8 Demolition / Decommissioning

Where demolition is required it will consist of removal of walls and breaking out of the floor slabs, again with demolished waste materials either re-used, or where not possible, disposed of in accordance with the procedures set out earlier in this WMP. The area shall be backfilled and reinstated on completion.

Where possible, decommissioned items will be re-used or recycled. For example, items of the MEICA installation to be decommissioned include:

- *Access covers;*
- *Ladders;*
- *Pumps, pipework and valves;*
- *Guiderails and chains;*
- *Level sensors and brackets;*
- *Comminutors;*
- *Redundant electrical and I&C installations;*
- *Redundant stainless steel kiosks and associated equipment.*

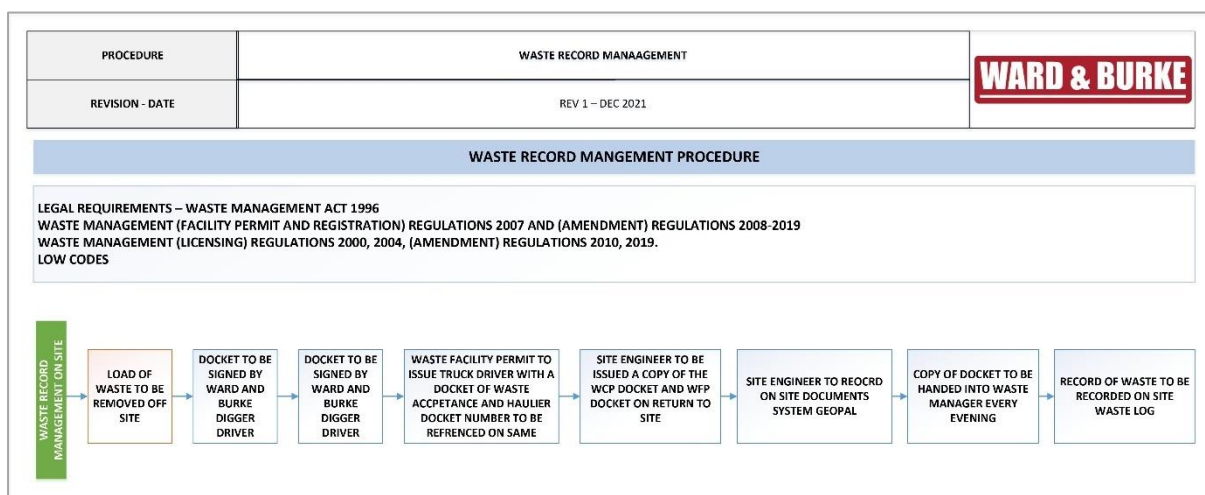
These items will be screened and subjected to the waste hierarchy outlined earlier for potential re-use/recycling where possible.

Transportation arrangements for materials shall be assessed on a case-by-case basis. Waste Carriers, Brokers or Dealers handling or carrying waste (i.e. authorised persons) in the course of their business, or in any other way for profit, must be registered. WBCL will only employ registered waste carriers or hauliers who have current registration complimentary to the type of material being handled. A registered carrier's authority for transporting waste is the company's certificate of registration, or a copy of his certificate of registration provided by the EPA. Photocopies are not valid and do not provide evidence of the carrier's registration.

The certificate or copy certificate will show the date on which the carrier's registration expires. The company's certificate shall be checked on the EPA site. Waste may only be transferred to an authorised person, or an authorised waste carrier for transport purposes to an authorised person.

Transportation vehicles will generally consist of covered tippers, ro-ro skips and oil/sludge removal tanker vehicles. This will be incorporated in the site transport plan. However, transport of materials needs to be assessed on case-by-case basis as site conditions and the nature of the material dictate.

9 Record Keeping



All waste disposal will be documented via our chain of custody forms. These forms are pre-printed to be site specific and detailed information about each transfer event is manually logged on the form. The detailed document is designed to include all information required by the various waste collection permits and waste licences including:

- *Weight - Quantity*
- *EWC code – Waste Description*
- *Waste origin*
- *Date*
- *Time*
- *WDP Haulier Name and Details*
- *Vehicle details*
- *Waste Facility Permit location*
- *Receipt of acceptance*

All chain of custody forms is printed in triplicate and a copy is retained on site. A monthly summary is maintained and produced for all waste movements.

Waste Facility Database: <http://facilityregister.nwcpo.ie/>

Waste Collection Permits Database: <https://www.nwcpo.ie/permitsearch.aspx>

WBCL is required to check the validity of the permit(s) held by any Waste Collection Contractor and to confirm that the waste material is disposed of at an authorised facility. An authorised facility is a facility which has been granted waste authorisation in the form of a waste licence, a waste facility permit or a certificate of registration.

Management and disposal of waste on site:

 Waste Collection Log						Stradbally East Kilcolgan Co. Galway Ph: 091-776827 Fax: 091-776828 E-mail: info@wardandburke.com		
Site:			Haulier:			Waste Collection Permit No:		
Date	Docket No	Vehicle Reg No.	No. of Loads	Approx Volume Tonnes	EW Code	COR/WFP No.	Origin	Material Type
16/04/2021	185411	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
16/04/2021	185412	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
16/04/2021	185416	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
16/04/2021	185417	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
19/04/2021	185418	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
19/04/2021	185419	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
19/04/2021	185420	182 c 2549	1	15	17 05 04	NWCPO-14-11381-02	Mallow Site	Soil and Stone
				105				
Bitumenous Material Concrete Skios Welfare Municipal Waste Sheet1 (+) : [x]								

Figure 6 - Sample populate Waste Log

See Permits log and Waste log on Sharepoint – Folder 07 Environment – 03 Permits and Dockets

10 Site Inspection and Waste Audits

Ward and Burke Construction will carry out Environmental Audits on site along with specific waste Audits to ensure compliance with all internal management systems (ISO 14001) all legislative requirements.

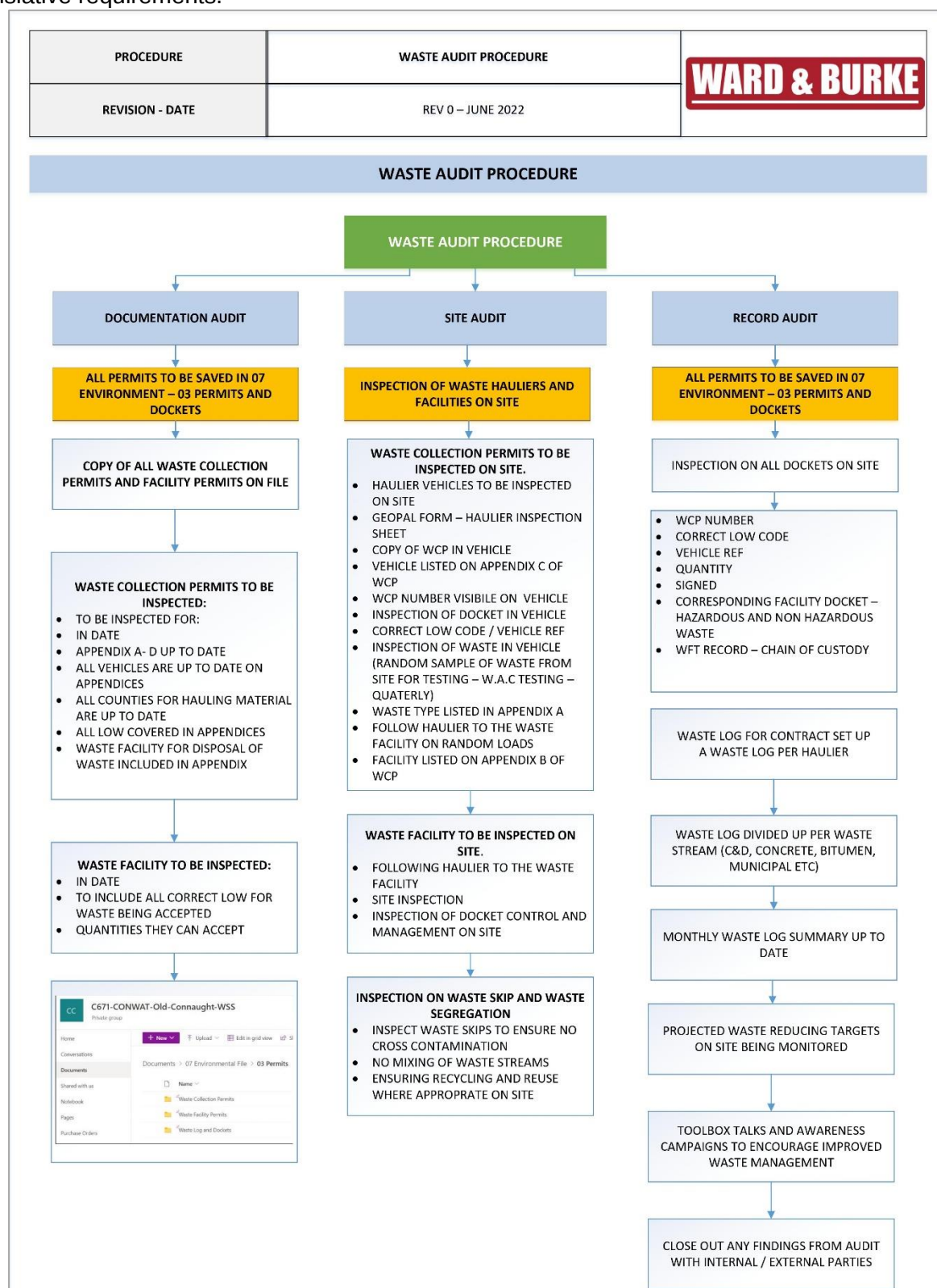


Figure 7 - Waste Audit Procedure

Any findings on audits will need to close out and actioned.

Where nonconformities are identified same will be recorded on the site NCR Register for monitoring and tracking.

Trends will be monitored and tracked to ensure close out and suitable control measures are implemented.

WARD & BURKE NCR Register - Rossaveel DWQ Contract								
NCR No.	NCR Title	Date NCR was requested to be raised by WB/ ER	NCR Discipline	Description/Details	Source of NCR (Company Name)	Status/Comments	Close out of NCR	Corrective Action to Prevent Reoccurrence
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

Figure 8 – Rossaveel DWQ NCR Register

11 Training on Waste Management

All site operatives will be trained and briefed on waste management on site. This will be done in several ways including:

- Site Induction
- Workshops on site
- Waste Removal procedures on site
- Toolbox talks
- Close out of audits
- Audit findings
- Awareness Campaigns
- Monitoring nonconformities and closing out of same
- Monitoring quantities and putting improvement measures in place to meet reduction targets for the site

Appendix A – LoW (List of Waste) / EWC (European Waste Catalogue)

Construction and Demolition Wastes (EWC 17 prefix):

Domestic Non-hazardous (EWC 19 & 20 prefix)

A licensed external waste disposal contractor as required transports this waste to a licensed landfill site. Records are maintained of the quantity of domestic waste generated.

Construction and Demolition (EWC 17 prefix)

Suitable soils will be re-cycled for agricultural or developmental benefit locally to permitted sites. Unsuitable soil will be stockpiled on site and will be transported to a licensed landfill site. Records will be estimated and maintained of the quantity of construction and demolition waste generated.

Fuel Waste (EWC 13 prefix)

Waste oil is stored on site in labelled containers and will be collected by a licensed oil-recycling contractor as necessary. Records will be maintained on the volumes of waste oil generated.

Paper and Cardboard (EWC 19 & 20 prefix)

All office paper will be collected in a confidential bin and be collected by a company for recycling. Office waste such as printer cartridges, plastics etc will also be recycled.

Steel (EWC 17 prefix)

All waste steel reinforcing will be stockpiled and disposed of by a licensed contractor and on completion of each structure; it will be collected for recycling by a scrap steel merchant.

Timber (EWC 17 prefix)

Timber waste will be kept to a minimum through the re-use of shutters etc throughout the job. At the end of the job the majority of timber will be sent onto a new site for re-use. Any timber that cannot be reused because of poor quality etc will be sent for disposal at a licensed facility.

EWC Code	Waste Description	Likelihood
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)	H
17 01	concrete, bricks, tiles and ceramics	
17 01 01	concrete	H
17 01 02	bricks	H
17 01 03	tiles and ceramics	
17 01 06*	mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances	M
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	H
17 02	wood, glass and plastic	
17 02 01	wood	H
17 02 02	glass	H
17 02 03	plastic	H
17 03	bituminous mixtures, coal tar and tarred products	
17 03 01*	bituminous mixtures containing coal tar	M
17 03 02	bituminous mixtures other than those mentioned in 17 03 01	H

17 03 03*	coal tar and tarred products	M
17 04	metals (including their alloys)	
17 04 01	copper, bronze, brass	M
17 04 05	iron and steel	H
17 04 06	tin	
17 04 07	mixed metals	M
17 04 09*	metal waste contaminated with dangerous substances	
17 04 10*	cables containing oil, coal tar and other dangerous substances	M
17 05	soil (including excavated soil from contaminated sites), stones and dredging spoil	
17 05 03*	soil and stones containing dangerous substances	M
17 05 04	soil and stones other than those mentioned in 17 05 03	H

Other “Non-Construction/Demolition” Wastes Anticipated on the Project:

EWG Code	Waste Description	Likelihood		
13	OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)			
13 01 11*	synthetic hydraulic oils	M		
13 01 12*	readily biodegradable hydraulic oils	M		
13 01 13*	other hydraulic oils	M		
13 02	waste engine, gear and lubricating oils			
13 05	oil/water separator contents	L		
13 07 01*	fuel oil and diesel	L		
15	WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED			
15 01	packaging (including separately collected municipal packaging waste)	M		
15 01 01	paper and cardboard packaging	M		
15 01 02	plastic packaging	M		
15 01 03	wooden packaging	M		
15 01 04	metallic packaging	M		
15 01 05	composite packaging	M		
15 01 06	mixed packaging	M		
15 01 11*	metallic packaging containing a dangerous solid porous matrix (for example asbestos), including empty pressure containers	L		
15 02	absorbents, filter materials, wiping cloths and protective clothing	H		
15 02 02*	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	M		
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	M		
16	WASTES NOT OTHERWISE SPECIFIED IN THE LIST	L		
16 01 03	end-of-life tyres	L		
EWG	Description	Likelihood	Site method	Storage

13	OIL WASTES AND WASTES OF LIQUID FUELS (except edible oils, and those in chapters 05, 12 and 19)		
13 01 11*	synthetic hydraulic oils	M	Bunded oil storage
13 01 12*	readily biodegradable hydraulic oils	M	Bunded oil storage
13 01 13*	other hydraulic oils	M	Bunded oil storage
15	WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED		
15 01 01	paper and cardboard packaging	M	Bunded oil storage
15 01 02	plastic packaging	M	Covered skips
15 01 03	wooden packaging	M	Covered skips
15 01 06	mixed packaging	M	Covered skips
15 02 02*	absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances	M	Bunded oil storage
15 02 03	absorbents, filter materials, wiping cloths and protective clothing other than those mentioned in 15 02 02	M	Covered skips
17	CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)		
17 01 01	concrete	H	Uncovered spoil heap
17 01 02	bricks	H	Uncovered spoil heap
17 01 06*	mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances	M	Covered spoil heap
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06	H	Uncovered spoil heap
17 02 01	wood	H	Covered spoil heap
17 03 02	bituminous mixtures other than those mentioned in 17 03 01	H	Uncovered spoil heap
17 04 05	iron and steel	H	Uncovered skip
17 05 03*	soil and stones containing dangerous substances	M	Covered spoil heap
17 05 04	soil and stones other than those mentioned in 17 05 03	H	Covered spoil heap
20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS		
20 01 01	paper and cardboard	H	Commercial wheelie bin
20 01 02	glass	M	Commercial wheelie bin
20 01 08	biodegradable kitchen and canteen waste	H	Commercial wheelie bin
20 03 01	mixed municipal waste	H	Commercial wheelie bin

In addition to dealing with the storage and segregation of wastes, there is a need to ensure that waste is secure in storage and handling in order that it does not escape or migrate into another receiving environment.

The table below assesses each of the waste streams with a likelihood of generation of 'medium' or 'high'. The plan looks at the likelihood of pollution to the following sources prior to control methods being put in place:

- Land
- Airborne – odour or airborne contamination
- Water – groundwater or sea contamination

EWC		Land	Airborne	Water	Storage	Mitigation from loss/migration
13 01 11*		H	M	H	Bunded oil storage	Ensure all plant is inspected and serviced in accordance with its schedule. Provide bunded disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
13 01 12*		H	M	H	Bunded oil storage	Ensure all plant is inspected and serviced in accordance with its schedule. Provide bunded disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
13 01 13*		H	M	H	Bunded oil storage	Ensure all plant is inspected and serviced in accordance with its schedule. Provide bunded disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
15						
15 01 01		M	L	L	Covered skips	Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
15 01 02		M	L	M	Covered skips	Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
15 01 03		M	L	M	Covered skips	Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
15 01 06		M	M	M	Covered skips	Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
15 02 02*		H	H	M	Bunded oil storage	Ensure all plant is inspected and serviced in accordance with its schedule.

					Provide bunded disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
15 03	02	M	M	M	Covered skips Provide covered area to limit waste generation (wetting). Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17					
17 01	01	L	L	L	Uncovered spoil heap Provide designated waste storage area. Limit size and qty of spoil storage areas. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17 02	01	L	L	L	Uncovered spoil heap Provide designated waste storage area. Limit size and qty of spoil storage areas. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17 06*	01	H	M	M	Covered spoil heap Provide covered area to limit waste generation (wetting). Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17 07	01	L	L	L	Uncovered spoil heap Provide designated waste storage area. Limit size and qty of spoil storage areas. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17 01	02	L	L	L	Covered spoil heap
17 02	03	M	L	L	Uncovered spoil heap Provide designated waste storage area. Limit size and qty of spoil storage areas. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17 05	04	L	L	L	Uncovered skip Recycle materials under licence
17 03*	05	H	M	H	Covered spoil heap Provide covered area to limit waste generation (wetting). Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
17 04	05	M	M	M	Covered spoil heap Provide designated waste storage area. Limit size and qty of spoil storage areas. Provide staff training on the waste management strategy. Disposal/recovery under licence.
20					
20 01	01	M	L	M	Commercial wheelie bin Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.

Waste Management Plan

20 02	01	L	L	L	Commercial wheelie bin	Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
20 08	01	M	M	M	Commercial wheelie bin	Provide covered area to keep recyclable materials dry. Provide waste disposal area. Provide staff training on the waste management strategy. Disposal/recovery under licence.
20 01	03	M	M	M	Commercial wheelie bin	Provide designated covered waste units. Provide staff training on the waste management strategy. Disposal/recovery under licence.

Appendix B – Invasive Species list

A list of current *established* invasive species threats in Ireland is shown below:

Species	Habitat	Threat
Asian clam	Freshwater	Competition with native species, biofouling.
Bloody-red shrimp	Freshwater	Competition with native species.
Chinese mitten crab	Freshwater	Threatens ecosystem functioning and protected species.
Chub	Freshwater	Negative impact on native salmonid species.
Curly Waterweed	Freshwater	Significant change to the invaded ecology of habitat.
Dace	Freshwater	Negative impact on native salmonid species.
Floating Pennywort	Freshwater	Clogs waterways and negatively impacts on native species.
New Zealand pigmyweed	Freshwater	Competition with native species.
Nuttalls waterweed	Freshwater	Negative impacts on native species.
Parrotts feather	Freshwater	Competition with native macrophytes.
Water Fern	Freshwater	Reduction of native light reaching the flora and fauna in bottom of water
Zebra Mussel	Freshwater	Competition with native species, biofouling.
Dildemnum vexillum	Marine	Alters marine habitats
Slipper Limpet	Marine	Alters marine habitats
Smooth cordgrass	Marine	Negative impacts on native intertidal communities
Wire weed	Marine	Competition with native species
Black Rat	Terrestrial	Negative impacts on native flora and fauna
Brown Rat	Terrestrial	Negative impacts on native flora and fauna
Feral Ferret	Terrestrial	Threatens protected bird species
Giant Hogweed	Terrestrial	Public health hazard. Competition with native species.
Giant rhubarb	Terrestrial	Competition with native species.
Grey squirrel	Terrestrial	Threatens red squirrel and woodlands.
Harlequin Ladybird	Terrestrial	Threatens native ladybird population (recently discovered in Ireland).
Himalayan balsam	Terrestrial	Competition with native plants
Hottentot Fig	Terrestrial	Changes to dune environments
Japanese Knotweed	Terrestrial	Reduction of the diversity of species.
Muntjac Deer	Terrestrial	Preventing seed regeneration of important conservation species.
New Zealand Flatworm	Terrestrial	Reducing population of native earthworms.
Rhododendron	Terrestrial	Competition with native plants
Ruddy duck	Terrestrial	Negative impacts on the survival of the white-headed duck.

Invasive terrestrial non-native plants/noxious weeds

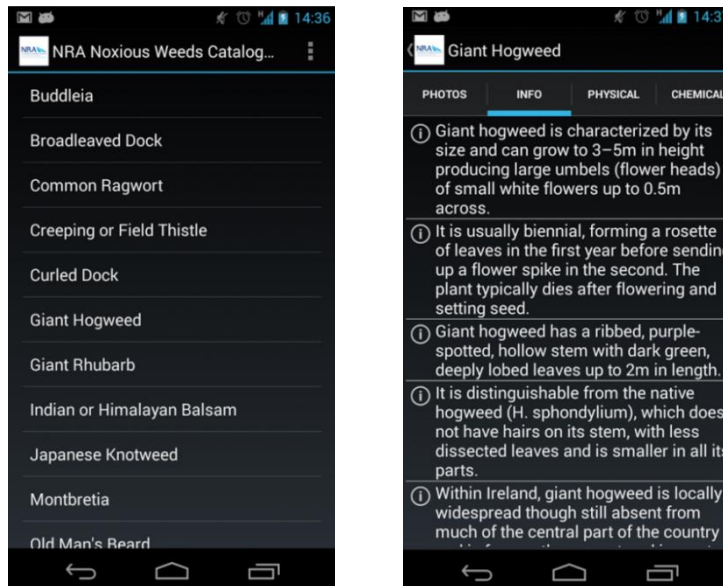
In terms of noxious weeds and non-native invasive plant species, Japanese Knotweed is possibly the most likely to be encountered at site. The tables below give indications of the most effective forms of treatment for the key invasive plant species. Treatment and management methods must always be tailored to the species and level of infestation at site.

This guidance does not act as a replacement for undertaking a site survey and developing a site specific management plan. Treatment should include all stands and buffer zones appropriate to the species.

Japanese Knotweed	
Recommended Method	Herbicide control unless site is needed for development. In these circumstances follow a combination of chemical and physical methods.
Biological	None generally recommended at present.
Physical	Deep excavation and deep burial. Hand cutting will not achieve control and may promote growth/spread. Do not use a strimmer as this will spread the plant.
Chemical (Herbicide)	Various residual and non-residual herbicides are suitable.
Other Methods	Root barrier membranes can also be used to contain the species and/or stop spread to your site. Other patented methods of treatment have been developed by commercial contractors. Ensure biosecurity measures are in place to prevent further spread off site of plant / rhizome material.

The following requirements will be followed when working near Japanese Knotweed.

- *If Japanese knotweed is encountered on Site, the Employer shall be contacted immediately. Any stands of Japanese knotweed will be avoided.*
- *It is important to identify Japanese Knotweed as early as possible. A site survey shall be carried out by an Environmental Consultant/suitably qualified ecologist.*
- *All personnel on site shall be made familiar with the plant species and the key ID features (the NRA Noxious Weed App is available for download and is recommended to help with plant ID). They shall be made aware of the risks associated with Japanese knotweed in order to help limit accidental spread.*
- *Japanese knotweed contaminated areas shall be clearly marked out on Site. Area(s) that will not be disturbed during the works shall be fenced off, allowing a buffer of at least 7 meters (from the edge of a colony) to allow for the likely extent of the rhizomes.*
- *The use of strimmers, mowers or chippers on Japanese knotweed material is not permitted. The upright stems/leaves shall not be cut, flailed or removed. Should any parts of the upright stems/leaves be accidentally disturbed, a specialist consultant shall be Employed. Specialised treatment/removal may be required as a result of such activities.*
- *No ground disturbance shall be permitted within 7 m of the upright stems. If the ground within 7 m of a stand of Japanese knotweed must be disturbed then a suitably qualified specialist shall be contacted prior to works commencing and appropriate treatment measures shall be implemented. Ground disturbance/soil extraction etc. without appropriate treatment measures could cause the spread of Japanese knotweed.*
-



Screenshots from the NRA Noxious Weeds Catalogue Android App

- *On leaving areas of a Site known to contain Japanese Knotweed, any machinery/clothing that has been used shall be thoroughly inspected and cleaned within a designated area. This area shall be as close as possible to the contaminated area on which the machinery/person has been working to avoid the spread of Japanese knotweed. This area shall be monitored in the spring for Japanese knotweed growth and a spraying programme implemented, if necessary.*
- *A suitable inspection will take place between November and March to identify any dead shoots from the previous year. In winter no growth is evident above ground but the below-ground parts of the plant will still be alive. WBCL shall follow the guidance of the ecologist when dealing with and working with invasive species on site.*

Other invasive species (e.g. Himalayan balsam and Giant Hogweed)

Avoidance is best practice for small scale works, such as mechanical and electrical works. Wash boots and clothing after visiting any site infected with invasive species (on Site before leaving near invasive plant contaminated area). This will ensure that these species are not spread to other sites. The NRA guidance document "The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads" and the NRA Noxious Weeds Catalogue (Android) App have ID tips and control guidance recommendations. However, as above, each site treatment programme is unique and shall be inspected and recommended by a suitably qualified specialist.

The procedure for disposal of invasive species follows the procedures set out for hazardous waste earlier in this document. Priority is given to dealing with invasive species using the guidelines above without the need for disposal, wherever possible.

Appendix C – Waste Haulier and Waste Facility Log

NOTE: LIVE DOCUMENT TO BE KEPT UP TO DATE AS PROJECT PROGRESSES

	A	B	C	D	E	F	G
1	Waste Management Register						
2	Contract:	Rossaveel DWQ					
3	Date:	13/01/2023					
4	Waste Hauliers Permits						
5	Company	Waste Collection Permit Number:	Expiry of Permit	Locations to Haul	Waste Types_Low Code	Trucks	NWCPO Link to WC Permit
6	ENVA Ireland	NWCPO-08-01116-03	22/05/2024	All Ireland	Refrence Appendix A	Refrence Appendix C	http://www.nwcpo.ie/details.aspx?recordId=37757
7							
8							
9	Waste Facility Permits						
10	Company	Waste Facility Permit Number:	Expiry of Permit	Waste acceptance LoW Code			NWCPO Link to Facility Permit
11							
12							
13							
14							
15							
16							