Construction Stage Traffic Management Plan

Saggart Reservoir Contract

Project Reference J1387

NOTE: The plan is a working document that evolves during the course of the works. As such, it may be amended so as to incorporate any changes in design or work procedures and the various appendices will be supplemented with relevant information as the contract progresses. This plan will be maintained in the main site office where it may be inspected at any time.

Rev	Originator	Approver	Date	Description
00	Pearse Scanlon	Tony Croke	25-05-2021	Rev 00
01	Pearse Scanlon	Tony Croke	09-06-2021	Rev 01
02	Ulick Hannon	Tony Croke	28/01/2022	Rev 02

1.0 PURPOSE

The purpose of this Construction Stage Traffic Management Plan is to detail the Measure Coffey will take to comply with Planning Condition 6 of the Final Planning Decision Ref SD18A/0180.

The measures required relate to Construction Traffic arising from the site and shall be managed in accordance with the plan and with the requirements of SDCC Traffic Section.

Coffey will submit a site-specific Construction Traffic Management Plan to SDCC Traffic Section for written approval.

Coffey commit to carry out the development in accordance with this Traffic Management Plan.

2.0 SUMMARY

Please refer to Appendix A – Saggart – Site Layout – Rev 11.

Appendix A shows the proposed site layout and details measures to be taken to adhere to the requirements of the planning condition.

Please refer to Appendix B – Saggart – Site Fencing Layout

Please refer to Appendix C – J – Traffic Management Plans.

Appendix C to Appendix F details the proposed traffic routes to be taken for site construction traffic for access / egress to the site. The TM drawings detail the routes from both the Castle Road Entrance and the Pairc Mhuire entrance to the N7 and the N81.

Appendix G details the traffic route to be taken for material disposal to the adjacent Tertrach site.

Appendix H details the route to be taken for disposal of material off site only.

3.0 WHEELWASH FACILITIES

A wheel wash will be set up at the Castle Road site entrance. As shown in the Site Layout Drawing.

All trucks leaving site will utilise the wheel wash.

Fig 1 – Wheel being set up on site.

4.0 DUST SUPPRESSION AND NOISE MONITORING

Dust Suppression

As the works will be undertaken in close proximity to a residential area (Saggart Village), all necessary precautions to contain dust arising from excavations and construction works will be taken so as to prevent a nuisance being caused to occupiers of buildings and properties in the vicinity of the works.

During construction best practicable means will be employed to minimise air blown dust being emitted from the site. This will include covering skips and slack heaps, daily washing down of haul routes and the use of wheel washing facilities.

CCIL will sample and test dust levels in accordance with best practice. We will establish at least eight key monitoring points on the site. A report on dust sampling and testing results will be provided to Employer's Representative monthly.

A road sweeper will be on site full time. The road sweeper will be utilized to spray the haul roads to suppress dust and clean the roads at the site entrances.

In periods of extended dry weather additional dust suppression measures may be required. In this event a water bowser will be utilized to on site to suppress the dust.

CCIL will set up noise monitoring stations and record the noise levls throughout construction.

For the period during construction, CCIL will ensure that the impact of noise due to construction activities is minimized through the use of good site management, plant maintenance and communications with adjoining property owners.

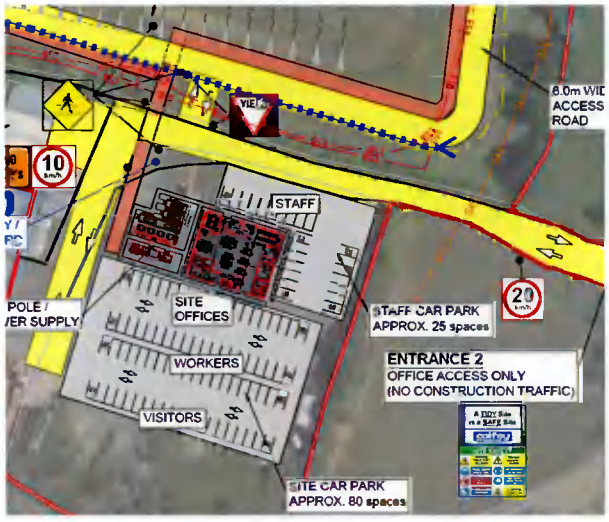
We will engage in local consultation in respect of any noise sensitive location within 30m of the site prior to construction activities commencing.

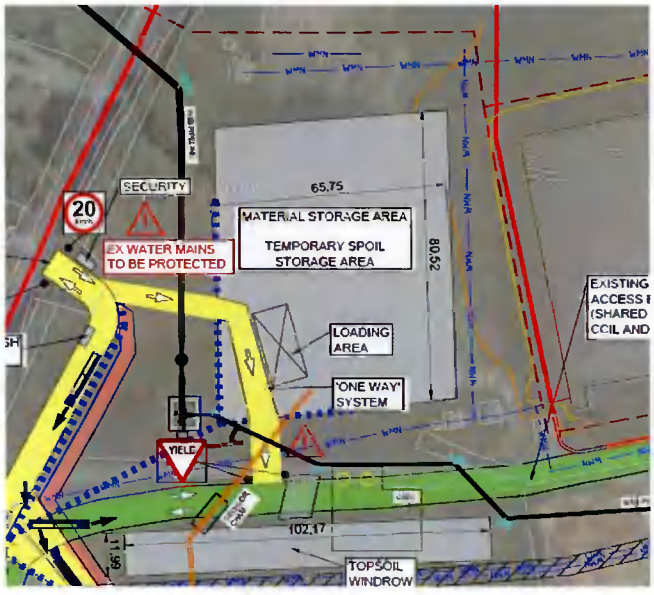
Sensitive locations will be provided with the following information in advance:

- Schedule of works to include time periods and duration.
- Name and contact details of person nominated to manage noise complaints.
- Hours of operation including any scheduled times for the use of equipment likely to be a source of significant noise.

5.0 SITE WELFARE / PARKING, SITE SET UP

- Site parking facilities will be provided in the Site Compound. This is detailed in Appendix A





6.0 USE AND CONTROL OF SPOIL

The material on site has been analyzed in several locations and is considered inert as per Waste Acceptance Criteria.

In summary the arisings from excavations will be as follows: -

- Total excavation will be c. 150,000m3.
- c.100,000m3 of material will be exported from site to a licensed facility.
- c.50,000m3 will be stored on site in stockpiles in the temporary spoil storage area. Standard stockpile management process will be used for the use and maintenance of the stockpiles.

Hinch's Field

Coffey's are currently preparing a Planning Application for submission to SDCC for the temporary storage and permanent disposal of arisings in the adjacent field. The location of the field is shown in Appendix A. The current proposed volume of material which can be deposited in the field is c. 34,000m3. This would reduce the number of truck movements off site by 4000Nr truck movements.

Tetrarch Capital Development

Coffey have an agreement in principle with Tetrarch Developments to deposit c. 25,000m3 of material to their development in the lands East of Pairc Mhuire. The estimated programme would be 1,000m3 per day, so an expected duration of 25 days. The location of the site is shown below.

Coffey intend to use the existing reservoir entrance for the short haul of approx. 70m across Pairc Mhuire to the site entrance. This would greatly reduce the disruption to Saggart Village and the junctions on the N7. We would put in place flag men to control the traffic on site and where the trucks would cross the road into the Fairgreen estate entrance and have the road sweeper in place.

Please refer to Appendix G for the proposed traffic route.

Hurley's Field

Coffey's are currently preparing a Planning Application for submission to SDCC for the temporary storage and permanent disposal of arisings in the adjacent field. The location of the field is shown in Appendix J. The current proposed volume of material which can be deposited in the field is c. 24,000m3. This would reduce the number of truck movements through Saggart Village by 3000Nr truck movements.

7.0 TRAFFIC ROUTES / QUEING TRAFFIC

The proposed Traffic Management routes for materials delivered to site and export of arisings off site are detailed in Appendix C to Appendix I. The main construction access will be on Castle Road with traffic routes to the N81 and the N7. A second alternative access using the existing gate on Pairc Mhuire is also detailed.

The traffic routes will be advised to the material suppliers and included within our purchase order with them. We will also advise the suppliers to avoid deliveries during peak times to minimize congestion.

The main bulk off material on / off site is the disposal of the excavated material, which requires the disposal of c.100,000m3 of material off site or 11,764 Nr truck movements. As above 25,000m3 will be going to the adjacent Tetrarch site, 24,000m3 to Hurley's field, 34,000m3 to Hinch's field and the remaining balance going to licensed facilities further afield. It is expected that most of this traffic will access and exit using the N7.

Appendix H shows the proposed route which would effectively be a 1-way system in and out of the site. Trucks accessing the site from the N7 would use the Rathcoole junction and travel up Mill Road onto Pairc Mhuire, going straight through the junction in the village. Traffic existing the site will turn right onto Castle road and down Garter Lane to the N7 junction at Citywest.

This splits the traffic numbers equally at two separate junctions and avoids any turns at the junction in the village.

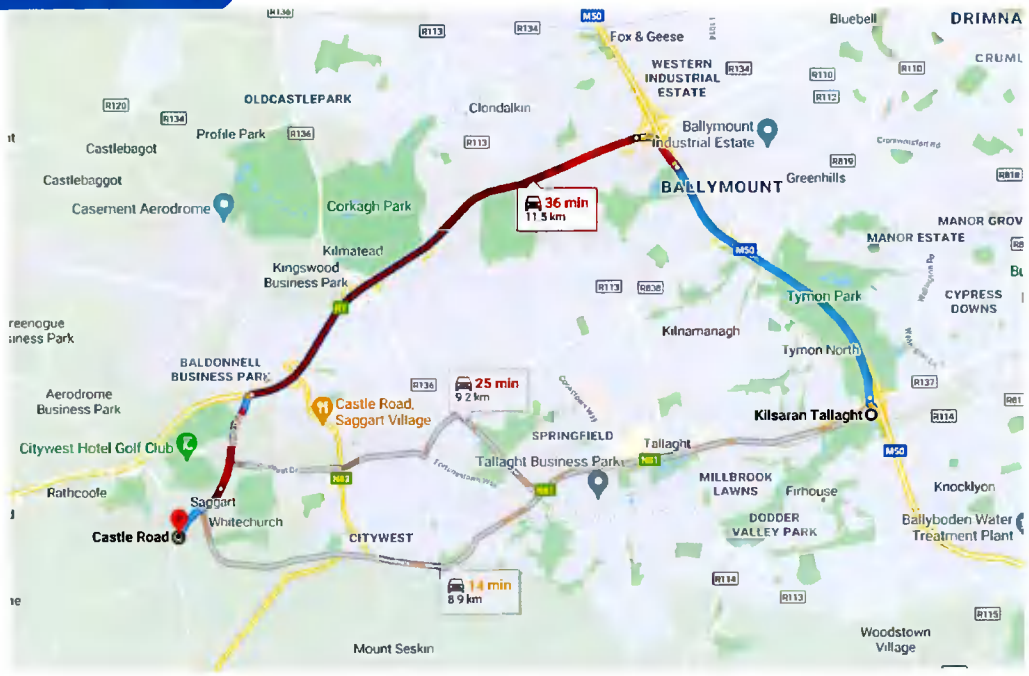
It also avoids the passing of any trucks on the road network and greatly reduces congestion and the also avoids trucks meeting at the site entrance or the junction in the village. The is a very important safety control.

When arisings are being taken from site the trucks will be loaded to provide a 10-minute gap between each truck as they leave site. The gate man will monitor this.

8.0 DELIVERIES

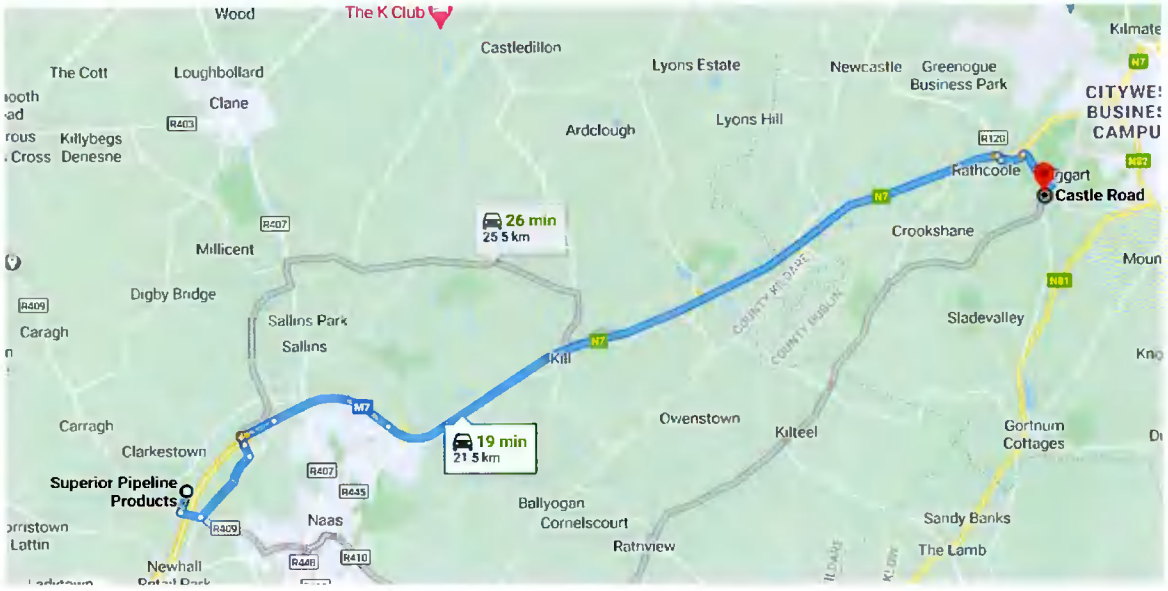
Concrete Deliveries

- 26,000m3 of concrete to be delivered = 3058 truck movements
- The concrete will be delivered from Tallaght Batching plant
- 20Nr Reservoir Base pours @ 650m3 each = 80Nr trucks per day for each base slab pour
- This will require an early start with first delivery at 6am.



Pipelines Deliveries

- Pipeline materials are being delivered from our supplier SPP in Naas.
- Phase 1 Delivery June'21 – 25Nr truck movements over 1 week period
- Phase 2 Delivery Mar'21 to Seb '22 – 100Nr truck movements



9.0 COMMUNICATIONS

All issues (such as monitoring, complaints, or incidents) specific to the project will be recorded and communicated to Irish Water. All communication records will be documented in theEnvironmental File and recorded in the CCIL Site Correspondence Log on the server for receiving,documenting, and responding to communications (internal and external) from relevant interested parties concerning the sites, project and contract environmental effects and management.

Appendix A – - Saggart - Site Layout - REV 7
Appendix B - Saggart - Site Fencing - REV3
Appendix C - J1387-TM-002 - N7 - Castle Rd rev2
Appendix D - J1387-TM-003 - N7 - Pairc Mhuire rev2
Appendix E - J1387-TM-004 - N81 - Castle Rd rev2
Appendix F - J1387-TM-005 - N81 - Pairc Mhuire rev2
Appendix G - J1387-TM-007 - Citywest Material Disposal
Appendix H - J1387-TM-008 - N7 Material Disposal
Appendix I - J1387-TM-006 - Saggart CTM Site Entrances
Appendix J – J1387- TM – 010 – P. Hurley

J1387 –Site Waste Management Plan for Saggart Reservoir Design Build Contract

Contents

1. Scope of the Project

1.1 Existing Works

The existing facility in Saggart comprises two separate operational reservoir complexes: Saggart reservoirs and Boherboy reservoir. The Saggart reservoir complex comprises three separate tanks supplied by trunk transfer systems from Ballymore Eustace Water Treatment Plant (BME) and a secondary chlorination facility dosing supplies at the inlets. The trunk transfer system from BME comprises:

- an aqueduct that discharges to twin 33" (assumed cast iron) mains at Windmillhill approximately 3km upstream of the Saggart site (known as the BME culvert); and
- a 1600mm diameter prestressed concrete (Macrete) trunk pipeline.

The Saggart reservoir complex is operated by Dublin City Council (DCC) and the Boherboy complex by South Dublin County Council (SDCC) on behalf of Irish Water (IW).

1.2 Summary Description of Proposed Works

IW has identified a requirement to provide additional effective storage of 100Ml (100,000m^3) at the existing reservoir site at Saggart and associated upgrade works. This is to provide security of supply and resilience by the provision of sufficient storage capacity at the site for operations and transfer of treated water from the complex to strategic service reservoirs in the Greater Dublin Area.

A new on-site electro chlorination plant building (OSEC building) housing a new replacement secondary chlorination plant is also required as the existing chlorination plant has reached the end of its service life. The new OSEC building shall house an ESB substation, chlorination plant and associated equipment, de-chlorination plant, a backup power generator, controls and welfare facilities.

1.3 Compound Space Available

Adequate space available on site for site compound offices, welfare and drying hut. Material storage area and waste soils will be stored on site temporarily for no longer than six months.

1.4 Thresholds

Section 3 of "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (2006, DECLG) requires that project construction and demolition (C&D) waste management plans should be prepared for "Civil Engineering projects producing in excess of 500m^3 of waste, excluding waste materials used for development works on the site."

1.5 Content

This plan sets out the provisions required for compliance with the 2006 Best Practice Guidelines for the preparation of waste management plans noted above, and in particular the waste management hierarchy, namely, waste prevention being the priority, followed by reuse (also a prevention activity), recycling, recovery and finally disposal. This project C&D Waste Management Plan has been written to a recommended scope and level of detail commensurate with the type and size of the project. In particular it addresses the information requirements and structure recommended in sections 3.2, 3.3 and 3.4 of the Best Practice Guidelines.

Attention is focused on the development of a C&D waste management approach which will establish goals for the diversion of waste from landfill and focuses upon waste prevention, reuse and recycling opportunities.

The guidelines require that content of the plan should be oriented to the following aspects of the development:

- An analysis of the wastes being generated and expected materials surpluses
- Specific waste management objectives of the project
- Methods proposed for waste prevention, re-use and recycling
- Material handling procedures
- Proposals for the education of the workforce about quality waste management and C&D Waste Management Plan implementation.

1.6 Site Waste Management Plan Duration

This C&D Waste Management Plan will be maintained through the life of the Saggart Reservoir contract. During the detailed design stage there will be consultation between all parties to ensure that adequate considerations have been taken of material handling issues.

Waste management issues will remain highly significant throughout the project lifecycle. Besides forming part of the design of the project, they will affect the tendering process, be reflected in the contract drafting stage and in the construction phase.

Different degrees of detail will be required at these stages of the project. The obligation to augment and implement the plan will shift from the designer to contractor and this point in the project lifecycle will be clearly defined. The obligation to follow the existing plan and develop it further will form part of the contract documents for the project.

1.7 Specific Waste Management Objectives

The aim of this project C&D Waste Management Plan is to promote an integrated approach to managing C&D waste throughout the duration of the project. The estimated timescale for this project is 30 months. The plan:

- Promotes sustainable development, environmental protection and optimum use of resources
- Takes an integrated approach whereby the management of C&D waste is given due consideration throughout the project
- Outlines how the project clients, planners, designers, contractors and suppliers will act co-operatively to reduce C&D waste.

Inert materials generated from the construction project will be managed sustainably and in accordance with best practice as set out in National and Regional Waste Policy. The aim will be to reuse as much as possible of the material generated by the works. The material generated will be primarily a clean natural material and it will have a range of uses. On-site material generated will be put to reuse in one of several possible construction applications. Excess material which cannot be reused on-site will be managed in an appropriate manner. As a final option material which cannot be reused on-site or reused or recovered off-site at a suitable location/facility will be sent for disposal at an appropriately authorised waste facility such as a municipal or inert waste landfill. It is anticipated that the quantity of materials sent off-site for disposal will be limited and this option will be a "last resort" after exhausting higher order solutions.

2. Waste Authorisations and Storage

2.1 Authorisation

It is anticipated that waste/surplus materials will have to be moved off site given the limited re-use potential within the proposed development and within the greater site and given the limited available space on site for storage or processing. Coffey Construction (I) Ltd (CCIL) will be required to engage specialist waste service contractors to manage the materials on its behalf. The specialist waste service contractors will be required to possess a waste collection permit, for the collection and movement of waste off-site. The contractors will be required by that permit to bring the waste materials to facilities which currently hold a Waste Licence/Waste Permit/Certificate of Registration as appropriate for the particular material. The appropriate authorisations required at the project sites are as follows:

Authorisation Type	Needed for the Project?
Waste Licence	No
Waste Permit/ Cert of Reg.	No
Waste Collection Permit	Yes – all persons removing waste from site under contract
Transfrontier Ship. Not.	No
Movement of Hazardous Waste Form	**Carrier**: person who undertakes the movement of waste, other than a Consignor. **Waste Producer**: anyone whose activities produce waste (original waste produce or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste. **Consignor**: producer or holder of waste who causes such waste to be moved fron the premises at which it is being held.

2.2 Waste Storage

In general, no form of statutory authorisation is needed for the temporary storage of waste such as excavated materials at the site where it was produced, pending collection and removal off-site. The Waste Management Act defines the phrase "the temporary storage of waste", limiting it to a six-month duration. This means that the temporary storage of waste does not require a waste licence, waste facility permit or registration certificate provided the storage does not exceed this period.

The restriction in the Waste Management Acts about the allowable duration of temporary storage suggests that appropriate waste authorisation may be required to allow for longer interim waste storage where the period will exceed six months.

3. Wastes Arising

3.1 Rock, Soil, Clay and Stone

The quantity of surplus excavated materials estimated as being generated as a consequence of the proposed development is based on preliminary site investigation (SI) data at this stage, pending completion of the SI works and development of the design.

Material	Quantities
Subsoil from excavations	180,000m^3
Stone from temporary haul roads	5726m^3

3.2 Concrete and Masonry

The proposed contract will comprise the construction of reinforced concrete structures. The estimated volume of concrete required is 25000m^3. Based on an estimated wastage rate of 2%, approximately 1200 tonnes of waste or excess cured and uncured concrete is likely to be generated and will require management. Paving slabs, kerbs, bricks and blocks will be generated in very small quantities (approximately 15m^3 on this project).

3.3 Canteen/ Office and Packaging Waste

Canteen, office and packaging waste and office waste (at the construction stage) will be generated in quantities, estimated at 0.5 tonnes per month and will be collected as mixed dry recyclables.

3.4 Other Materials

- Sewage from site toilets will be collected by specialist subcontractors under licence.
- Broken equipment, used shuttering, scrap parts, scrap metal, scrap pipes and other metals will be collected in a dedicated metals collection system.
- Vegetative waste in the form of large and small trees, hedges and other plant matter is expected and will be managed together with grass and topsoil.
- Wood timber, pallets and construction timber will be generated in limited quantities.

3.5 Hazardous Waste

There is an existing 24" asbestos cement (AC) outlet pipe to which CCIL will be required to make a connection. We note too that there may be more AC pipes present, which may need to be connected to the new infrastructure, diverted or removed and disposed of.

CCIL will carry out an asbestos survey of the structures to be demolished or refurbished. We will engage Rialta Environmental Ltd, who are licenced to dispose of asbestos waste.

In the event that further hazardous waste is encountered, this material will be moved and double bagged, prior to movement off-site for disposal. They will be transported under the CCIL Waste Collection Permit to a site holding a valid waste permit or Certificate of Registration (COR) and collection and delivery records will be maintained.

Fuels, lubricants, oils and hydraulic fluids will be used in machinery during construction and in very small quantities during operation and maintenance. Bituminous materials such as bitumen macadam and asphalt, tars will be used in small quantities. Solvents, adhesives, sealants, oils, and paints will be used during construction. While estimated waste volumes are unclear at this stage, the contractor will be

required to manage wastage in accordance with the relevant legislation. The use of spill kits will be a requirement on site.

3.6 Summary of Volumes of Materials Anticipated

C&D Waste Material	Volume
Subsoil from excavations	180,000m^3
Stone from temporary haul roads	5726m^3
Reinforcement from demolition	498t
20-yard skips	55 nr.
Concrete from demolition	6537 m^3
Existing concrete	1685t

4. Proposals for Prevention / Reuse / Recycling

The options for managing the material generated on-site are explored in detail and are outlined in this chapter. A preferred approach which maximises the resource potential of the material is identified along with contingency arrangements if the preferred options do not materialise.

4.1 Prevention

C&D waste prevention opportunities will arise from avoiding material surpluses or damaging materials in storage or prior to use. CCIL will be tasked with ensuring that materials are ordered in a manner conducive to minimising the generation of waste and unnecessary handling.

4.2 Reuse On-Site

The preferred outcome from an environmental, transportation and resource efficiency perspective is to maximise the reuse of material generated from the works on-site. The primary opportunity in this regard will be from the excavated under the footprint of the reservoir, tanks and chambers. All excavation works will be carried out in accordance with current best practice and excavation materials will be segregated to minimise any potential cross-contamination.

4.2.1 Soil

Suitable sampling and chemical analysis of the soil/sub-soil will be undertaken prior to its excavation. Any soil that is to be reused on-site will be sampled and analysed to confirm its suitability. To enhance the suitability of the material, soil will be handled and stored in a protected manner to ensure the end material is of a consistent quality and unsuitable fractions are not allowed to contaminate the product. Some soil will be used as fill, with remainder disposed of off-site.

4.2.2 Weathered Rock / Rock

The level of rock is varied across this project and was encountered at its shallowest point at 10.50m and its greatest depth of 13.3m and is classified as weathered sandstone/mudstone rock. If rock is encountered, it shall be crushed and stockpiled and used where possible for access roads, temporary fill in various locations throughout the project.

4.2.3 Existing Conditions

The SI had been carried out in advance of this tender. The sites were generally characterised by topsoil deposits 200mm to 400mm thick, made ground up to 2.2m, overlaying glacial deposits: soft to stiff glacial till or dense fluvioglacial sand/ gravel at relatively shallow depth across the site.

4.2.4 Summary

Excavation of soil and rock are considered suitable for certain on-site construction applications. These materials will be carefully stored in segregated piles on the site for subsequent reuse or, where this is not possible, removed from site for direct beneficial use elsewhere.

4.3 Reuse Off Site

Although the reuse of material generated from the works will be maximised on-site, some excess materials will remain and will require management. The excess materials will be primarily excavated soil and rock.

The preferred approach for the management of the excess materials will be to reuse them as a Class 1 fill material following processing on site, at third-party development projects including existing quarries.

The reuse of material off-site as a fill in third-party construction project represents a good use of the resource and reduces the quantity of virgin material required for construction. Where such wastes/surpluses are to be used beneficially in other projects, tracking and authorisation documentation, adequate to ensure traceability of the material, will be implemented, as outlined in this plan.

4.4 Recycling and Recovery Off Site

If the options to reuse materials off-site at third-party development locations do not materialise, the excess material will be sent for recovery at a location with a waste authorisation permit in place. Any material sent off-site, for recycling or recovery to a waste facility will be transported by a haulier holding a valid waste collection permit collection and delivery records maintained.

4.4.1 Rock, Soil and Stone

Suitable sampling and chemical analysis of the soil/sub-soil will be undertaken prior to its excavation. Any soil that is to be excavated and disposed of will be sampled, analysed and classified to determine the most suitable disposal outlet.

Traditionally, the recovery of much of the Irish C&D waste stream has been managed by placing it in a variety of land use applications. This treatment, collectively known as backfilling, includes land reclamation, improvement or infill works. The largest fraction of the C&D waste stream arising is soil and stones, which (if uncontaminated) typically undergoes little if any treatment prior to recovery at these sites.

The table below contains the sites that will be used for disposal of the material from site. The details of each site are contained in the Appendices as referenced below.

Ref	Name	Location	ID No.
Appendix 1	OPW Site	Kileenmoore, Naas, Co. Kildare	WFP-KE-20-0102-01
Appendix 2	Citywest GAA	St Mary's, Park Road, Saggart	ART27-2271
Appendix 3	Timahoe	Timahoe East, Kildare	Art27-2287

4.4.2 Packaging, Mixed Dry Recyclables and Food Waste

Packaging and some office waste will be generated onsite during the construction stage, including paper, plastics, metals etc. These will be gathered separately in a mixed dry recyclables bin. An arrangement will be made with an authorised waste collector – Greyhound Recycling service this area for example - for these materials to be collected in the course of normal commercial waste collection runs. These materials will be brought to an appropriate MRF for appropriate processing and recycling.

The Waste Management (Food Waste) Regulations 2009 apply to Class 10 premises, i.e. those with canteen services where food is supplied to employees or prepared on the premises for the purposes of supply to employees, which (a) is situated on the site of construction, development or refurbishment works, and (b) where the duration of such works exceeds a period of 9 months. The Saggart site will not provide canteen facilities, so the terms of the Regulations do not apply to that facility. The volumes of food waste generated onsite are expected to be small, and it is proposed to manage the material by provision of a home composting unit or a brown bin service.

4.4.3 Wood, Metals and Other Materials

Waste or surplus wood and metals will be source segregated for subsequent separation and recovery off-site at an authorised facility. Other C&D waste materials will be collected in receptacles with mixed C&D waste materials, for subsequent separation and disposal off-site at an authorised facility. There are numerous options in the market and close by to handle the materials.

4.4.4 Concrete

Raw or uncured waste concrete from construction activities will be source segregated or collected in receptacles with mixed C&D waste materials, for subsequent separation and recovery at a remote facility. There are numerous options in the market and close by to handle the materials.

4.4.5 Mixed/ Contaminated Construction and Demolition Waste

It is expected that, despite best efforts to segregate materials into single streams for recovery, there will be some volumes of mixed or contaminated materials which will require to be collected together skips for subsequent recovery/disposal.

4.4.6 Hazardous Waste

Special attention will be paid to the anticipated hazardous waste arisings and the manner in which such materials will be identified, assessed, handled, stored, treated and removed. Fuels, lubricants, oils and hydraulic fluids, solvents, tars, adhesives, sealants, oils, and paints etc. will be stored in sealed containers on-site. These materials will be carefully handled prior to and during use to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to codes of practice. Any spillages will be immediately contained and the contaminated soil collected and stored for removal from the site by an authorised contractor for proper disposal. The containers for these materials will be appropriately handled.

Hazardous waste generated will be identified and collected appropriately in leak-proof or other appropriate containers, stored separately separate from other waste materials in order to avoid contamination and the details recorded by the contractor. Arrangements will be made for the safe removal by an authorised collector and for subsequent recycling/recovery/disposal at a remote facility.

Any discharge of surface water from excavations will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic testing of discharge water samples will be carried out in accordance with the requirements of Dublin City Council and South Dublin County Council.

4.5 Disposal

The disposal of excess materials generated on the project to a waste licensed facility will only be considered when all other options to reuse or recover the material off-site have been exhausted. It is expected that a minimum quantity of material will be sent to landfill for disposal. Only material is found to be unsuitable for reuse or recovery purposes will be sent for disposal. The EPA authorises a number of soil recovery facilities and landfills for inert wastes and for municipal solid waste (MSW). These facilities may also be able to provide outlets for recovery of the materials, as road manufacture or cover materials. These facilities are listed in the Regional Plan, e.g. Carrigmore Landfill in County Wicklow.

4.6 Pollution Control Efforts

The following pollution prevention control measures will inform the final Environmental Management Plan and associated risk assessment method statements (RAMS) for the project:

- Wash-down water from exposed concrete surfaces will be trapped to allow sediment to settle out and reach neutral pH before clarified water is released to the river or drain system or allowed to percolate into the ground.
- Disturbance associated with high noise levels will be controlled by means of a risk and noise assessment and precautionary measures in accordance with best practice at construction stage. Ongoing monitoring and reporting during construction is also recommended.
- Dust and fine particle generation from C&D activities on the site will be substantially reduced through carefully selected mitigation techniques and effective management and will include the provision for wheel washing facilities, the use of static sprinklers, etc.
- The following guidelines and documents will be consulted during the detailed planning of the works phase and the preparation of the site and project specific tasks. Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA) in particular:
  - C532 Control of water pollution from construction sites: guidance for consultants and contractors (Masters-Williams et al, 2001)
  - SP156 Control of water pollution from construction sites – guide to good practice (Murnane et al, 2002).

5. Roles

CCIL and our sub-contractors will be required to clearly identify their role is and what is expected of them. This element will be supported by a management and monitoring system that ensures that the defined requirements take place. This process will be enforced systematically. Relevant staff, including that of sub-contractors, will be given "ownership" of the elements of any on-site waste management scheme that are

within the scope of their responsibilities. Good communication between parties will be applied, with each body being clear on what their responsibilities are and what is expected of them. Contracts issued to sub-contractors will include provisions to support or enforce these initiatives. CCIL will lead by example, setting the standard for how waste will be managed onsite.

5.1 Assignment of Responsibilities for Construction and Demolition Waste

CCIL will allocate responsibility for materials and waste management to the project Environmental Manager (EM) who will be responsible for putting into place the relevant procedures and have overall responsibility for the implementation of the project C&D Waste Management Plan.

The EM will ensure that any onsite procedures for raw materials handling and waste management are put into practice and that the roll-out of these systems on the ground is regularly monitored or otherwise policed. Seniority in the project team is required to ensure that any difficulties encountered are raised at an appropriate level within the project team and acted upon. Relevant individuals will have access to ordering and stock control records, as well to information on waste removal practices. They will also have sufficient authority to be effective in the context of the project team's overall management and in dealing with sub-contractors.

The project EM will be assigned the authority to instruct all site personnel to comply with the specific provisions of the plan. At the operational level, a Ganger, Foreman etc. from CCL and Team Lead (or other appropriate personnel) from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the project C&D Waste Management Plan are performed on an on-going basis. Service contracts for machinery will require that any materials not immediately removed from site be stored at a location and in the manner specified by the project EM.

5.2 Proposals for Training and Information Dissemination

Copies of the project C&D Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the project C&D Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions at the Site Induction. Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the project C&D Waste Management Plan. Posters will be designed to reinforce the key messages within the project C&D Waste Management Plan and will be displayed prominently for the benefit of site staff. The Plan will make provision for the EM and site crew to be trained in materials management thereby being in a position to:

- Distinguish reusable materials from materials suitable for recycling
- Ensure maximum segregation at source
- Co-operate with site agent on the best locations for stockpiling reusable materials
- Separate materials for recovery
- Identify and liaise with operators of recovery outlets.

6. Record Keeping, Auditing and Monitoring Costs

6.1 Record Keeping

The project EM will arrange for full details of all material arising, movements and treatment of C&D waste and other surplus materials to be recorded during the construction stage of the project. Each consignment of C&D waste taken from the site will be subject to documentation, which will conform with the Table below and will ensure full traceability of the material to its final destination.

Detail	Particulars
Name of Project of Origin	e.g. Saggart Reservoir – Design Build Contract
Material being Transported	e.g. Soil, demolition concrete, crushed asphalt, etc.
Quantity of Material	e.g. 15 tonnes
Date of Material Movement	e.g. 01/01/2019
Name of Carrier	e.g. Coffey Construction (I) Limited
Waste Collection Permit	e.g. All waste collection permits which are held by subcontractors involved in moving waste away from the project, NWCPO-
Destination of Material	e.g. Waste facility permit and number
Proposed Use	e.g. Reuse/ reclamation of land
Destination Authorisation	e.g. Waste licences, waste permits, waste facility permits and

	registration certificates
Exemptions	e.g. details of any exemption from the above requirements claimed by any organisation employed to handle wastes

6.2 Auditing

Details of the inputs of materials to the construction site and the outputs of wastage arising from the project will be investigated and recorded in a Waste Audit, which will identify the amount, nature and composition of the waste generated on the site. The Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of C&D waste.

6.3 Cost Calculation

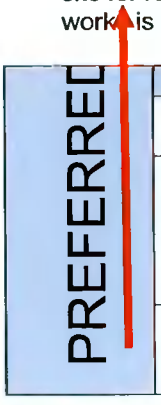
The waste quantities measured during the audit will be used to quantify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences which can be applied to future projects. The total cost of C&D waste management will be measured and will take account of the purchase cost of materials (including imported soil), handling costs, storage costs, transportation costs, revenue from sales, disposal costs, etc. Costs will be calculated for the management of a range of C&D waste materials, using the format shown in the Table below - separate record forms will be compiled in respect of each waste material.

Cost Element	Estimated Quantities
Material	Soil and Stone EWC 17 05 04
Quantity of Waste (tonnes)	500 tonnes
Purchase Cost i.e. Import Costs (€)	e.g. 0
Materials Handling Costs (€)	€1 per tonne
Material Storage Costs (€)	e.g. 0
Material Transportation Costs (€)	€5 per tonne
Revenue from Material Sales (€)	e.g 0
Material Disposal Costs(€)	€2.50 per tonne
Material Treatment Costs (€)	e.g. 0
Total Waste Management Costs (€)	€10000 for S&S
Unit Waste Management Costs (€)	€8.50 per tonne

7. Summary

The preferred strategy is to reuse as much of the material as possible on-site, but this is limited to some soil, rock and topsoil as set out in section 4.2. Excess material will be made available for reuse off-site. It is anticipated that the available material will be a clean and valuable resource capable of meeting the specifications of a typical Class 1 material. This material can be reused in local projects under development and/or quarries in the local area and beyond. The availability of the material and the scheduling of local construction projects will be kept under review as the project develops.

If reuse of surplus material is not possible, it will be sent for appropriate recovery. Any site identified for recovery of soil and stone will require the appropriate planning permission or waste authorisation in place to accept the material on-site. The south west region has a number of active Waste Permitted Facilities and Municipal Waste Landfill and Inert Landfill facilities which could accept inert waste from the project site for recovery purposes. A summary of the management options for the main materials arising from the work is as follows:



Route	Materials	Application/ Destination
Re use onsite	Rock/soil	Fill under northern end of covered reservoir, this material can be used for the temporary material storage area
Reuse offsite	Rock/soil	Infill for quarry or recovery at dedicated soil recovery facility (main part) Potential project outlets to be identified and monitored with discussion with project developers to be advanced a the construction phase approaches
Recycling offsite	Metals, wood, paper, cardboard,	Dedicated recycling stream

	Recovery offsite	Mixed residual waste	Recovery via SRF likely depending upon operator
	Disposal offsite	Asbestos	Landfill disposal