



Old Colwyn Coastal Defence and Active Travel Scheme

Outline Site Waste Management Plan

July 2020

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1 Administration and Planning

1.1 Introduction

This Outline Site Waste Management Plan (OSWMP) has been prepared on behalf of Conwy County Borough Council (CCBC) (hereafter referred to as the “Client”) by Mott MacDonald Ltd in support of planning consent and a Marine Licence for the Old Colwyn Coastal Defence and Active Travel Scheme (hereafter referred to as the “Scheme”). The Scheme is located in the Old Colwyn area of Colwyn Bay, North Wales. The SWMP covers coastal defence works in the form of a new rock revetment and promenade raising, in combination with promenade improvements to facilitate active travel, along the Old Colwyn waterfront area between Porth Eirias car park and Splashpoint. The proposed development is given in Section 1.4.

This OSWMP identifies the strategic approach for the management of construction waste and has been produced using the most current available information at the time of writing.

Whilst the development of a SWMP is no longer mandatory, it is still considered best practice and Defra¹ encourages businesses to use SWMP's on a voluntary basis as ‘flexible resource efficiency tools’. A SWMP may still be a requirement of a Local Authority planning condition, BREEAM² or CEEQual³ specification, or of the Client or main contractor.

The SWMP aims to ensure that all construction waste is managed, stored and disposed of in an appropriate manner by approved contractors in accordance with the Waste Hierarchy and all relevant legislation. This is a live document and requires updating regularly as the Scheme progresses. Where the Scheme scope is subject to change, the SWMP will be updated to reflect any changes as necessary.

Best practice suggests that the SWMP approach should be applied from the early design stages and carried forward and revised throughout the Scheme delivery process. This ensures cost savings are maximised by considering waste minimisation initiatives and identifying opportunities to reduce, reuse or recycle waste materials and improve resource efficiency during the earliest design stage.

1.2 Site Location

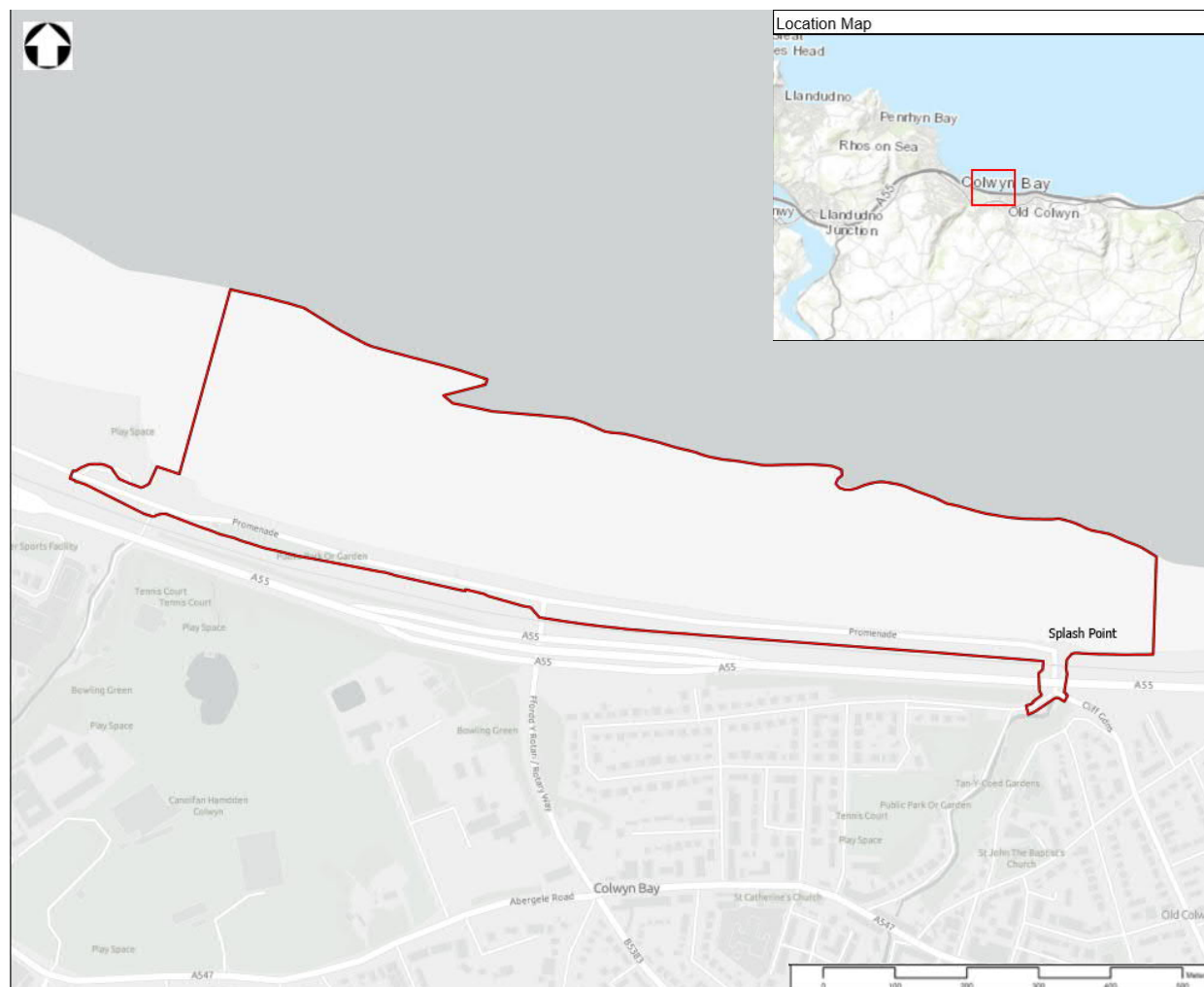
The Scheme is located in Colwyn Bay (Bae Colwyn), North Wales along the easternmost section of the promenade at Old Colwyn, from the eastern side of Porth Eirias in the west to Splashpoint in the east. The site location is given in Figure 1.1.

¹ Department of the Environment, Food and Rural Affairs

² Building Research Establishment Environmental Assessment Method

³ Civil Engineering Environmental Quality Assessment and Award Scheme

Figure 1.1: Scheme Location



Source: Red Line Boundary 415437-MMD-00-XX-DR-N-1707

1.3 Existing Site Use

The Promenade features active travel (walking and cycling) routes along the waterfront at Old Colwyn. It is currently under threat from storm damage and tidal flooding (overtopping). Regular overtopping of the existing coastal defences is causing damage to the promenade and defences themselves, sections of which are at imminent risk of failure. The defences were constructed for the majority of the coastline, in the late nineteenth century, comprising vertical seawalls, in general, composed of either masonry or concrete.

1.4 Scheme description

The Scheme comprises a combination of coastal defence, promenade and active travel improvements along the Old Colwyn waterfront area. The Scheme red line boundary and area of permanent construction are illustrated in Figure 1.2.

The Scheme includes the following key components:

- The construction of a rock revetment approximately 32m in cross-sectional width and 1.15km in length, with associated modifications to existing surface water outfalls on the beach to extend them through the new revetment;
- A new access build-out area to be constructed in the western half of the Scheme area which would have several functions, including providing a greater area for pedestrian access; Equality Act compliant ramp access and stepped access to the beach, along with landscaped seating steps at varying levels, to the beach access;
- New pedestrian accesses through the proposed revetment to comprise three sets of beach access steps perpendicular to the linear rock revetment;
- A dedicated fishing platform in the Splashpoint Area
- The raising of the promenade to the west of Rotary Way and the raising of the promenade and highway to the east of rotary way;
- Pedestrian and cycle path improvements, pedestrian crossings and improved promenade access;
- Improved picnic area in a landscaped garden setting and an adjacent outdoor classroom area;
- Improvements in parking provision, street furniture and lighting and provision of space for a new concession building; and
- Marine enhancements including:
 - the creation of rock pools located within the revetment;
 - “vertipools” to retain water on vertical surfaces at lower tidal states; and
 - enhanced sea wall areas and biological armouring units (bioblocks) placed within the existing groynes.
- Terrestrial ecological enhancements include:
 - the use of planting and seeding mixes within the picnic and outdoor area; and
 - planting of wildflowers along the railway embankment (currently in considered).

Figure 1.2: Plan showing the Red Line Boundary and Area of Permanent Construction



Source: Area of Permanent Construction 415437-MMD-00-XX-DR-N-1708

1.5 Scheme information

Table 1.1: Scheme information

Client		Conwy County Borough Council
Person in charge of the Scheme		TBC
Author of SWMP	Design Stage	Shannon Stone
	Construction Stage	TBC
	Operational Stage	TBC
Scheme title/reference		Old Colwyn Coastal Defence and Active Travel Scheme
Scheme location		Old Colwyn, North Wales
Scheme cost (estimated)		£35million
Scheme footprint		TBC
Start date		TBC
Completion date		TBC

Description of Scheme scope	See Scheme description in section 1.4. Works will involve improvements to the coastal defence, promenade and active travel routes
Person responsible for waste management	Principal contractor (TBC)
Document controller	TBC
Version date and number	Draft issue Xx/xx/xxxx [To be updated during revision of plan in the construction and operational stages and in the event of significant design changes].
Location of SWMP	Hard copy to be kept on site

1.6 Responsibilities

1.6.1 Client and Principal Contractor

Ideally a SWMP should be produced before any work in relation to enabling works, excavation and construction for this Scheme commences on site. It is the responsibility of the Client to produce a SWMP, but usually this is undertaken in partnership with the Scheme designers and Principal Contractor.

Copies of the SWMP will be made available, to all relevant site staff and the Client. Any updates to the SWMP shall be identified to the relevant people through toolbox talks. This process will be undertaken every time the plan is updated.

2 Proposals for Minimisation, Reuse and Recycling of Waste

2.1 General Measures

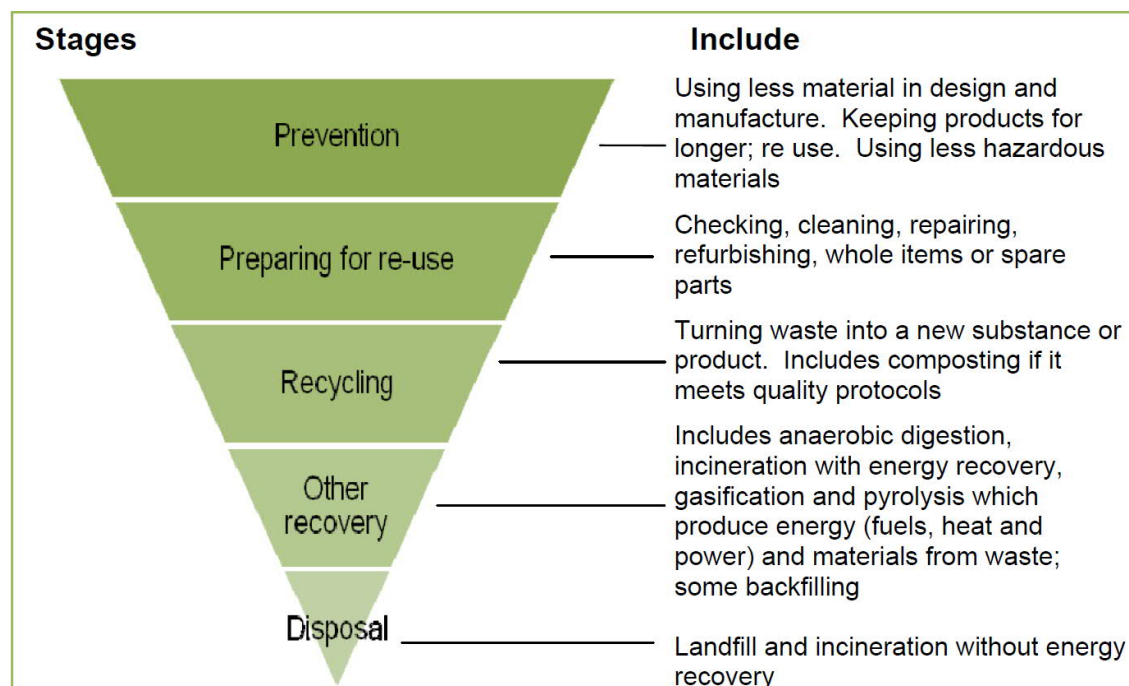
The SWMP should be used to record any early decisions, design changes, construction methods or material specifications which have helped to minimise waste arising on site.

The waste management hierarchy illustrates the waste management options according to what is best for the environment.

It gives top priority to preventing waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal (e.g. landfill). The higher up the waste hierarchy waste is managed, the greater the cost and resource savings will be.

The waste management hierarchy is illustrated in Figure 2.1.

Figure 2.1: The Waste Hierarchy



Source: Guidance on applying the Waste Hierarchy, DEFRA, June 2011
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf, accessed 20 July 2020

Eliminating waste at source is the best way to make dramatic savings in waste handling and processing costs and reduce the overall impact on the environment. This can be achieved through:

- Careful procurement of materials;
- Better utilisation of materials already available on site;

- Reducing the amount of waste generated where it cannot be eliminated completely; and
- Re-use and then recycle as much as possible, once it is not possible to reduce the waste any further.

Disposal of waste to landfill or incineration (without energy recovery) should be a last resort after all the above options have been considered.

Waste prevention is at the top of the waste hierarchy and this should continue to be a priority throughout the Scheme, including during construction.

The purpose of this SWMP is to facilitate the implementation of the waste management hierarchy principles as set in order of preference; the highest options will be adopted where reasonably practicable, but usually a combination of options will be appropriate.

Waste will arise mainly from removal of vegetation, site clearance, enabling works, demolition, excavation, construction and landscaping activities. The proposed scheme will require specific construction materials (such as revetment rock, concrete, asphalt and cabling etc.) to be imported to the site. A Bill of Quantities (BoQ) or similar document has been used to identify, at high-level, the potential types and quantities of waste materials produced from this Scheme.

The Principal Contractor will be required to identify appropriately permitted facilities that can accept and treat the waste materials produced, in order to divert them from landfill. Actions to be taken to facilitate resource efficiency throughout the Scheme, and therefore, minimise waste produced, are detailed in the subsequent section below.

Potentially contaminated material should be kept separate from clean materials and sent for either recycling or recovery at appropriately permitted facilities.

Unsuitable waste materials will be separated, where possible and collected in receptacles for subsequent further separation and treatment at off-site facilities.

In order to ensure the appropriate reuse of the materials the earthworks should be carried out, where necessary, under a Materials Management Plan (MMP) in accordance with industry adopted guidance "The Definition of Waste: Development Industry Code of Practice Version 2" published by Contaminated Land Applications In Real Environments (CL:AIRE) in March 2011.

2.2 Construction Waste

Common waste streams generated by construction sites and likely to be generated by these works include:

- Surplus construction materials as a result of over-ordering;
- Materials damaged on site or in transit;
- Hazardous materials;
- Packaging materials;
- Surplus demolition and excavation materials, from site clearance and enabling works; and
- Site compound waste from canteen, accommodation and welfare areas.

2.2.1 Demolition Materials

Material arising from the demolition shall be carefully stored in segregated piles for reuse on site if possible. If any material deemed acceptable is produced from the enabling works e.g. good quality topsoil, this should be stored and re-laid within the Scheme, or if this is not possible

should be sent for reuse elsewhere or alternatively for further treatment or processing at an appropriately permitted facility off-site.

2.2.2 Excavated Soils

Any excavated materials will be carefully stored in segregated piles for subsequent reuse on the site, wherever possible. These excavated materials could be reused as deposition material for infilling or landscaping.

Any surplus materials should be removed from site for either direct beneficial use elsewhere (such as land remediation projects) or recovery at an off-site facility. Surplus excavated materials including soils, gravels, clay and man-made fill can potentially generate significant implications on disposal costs, if it cannot be reused on site.

Excavated pavement material can be stripped, stored and later re-laid, or sent for recovery off-site.

2.2.3 Vegetation

Any vegetation removed should be chipped and used for landscaping or sent for composting if reuse is not possible.

2.2.4 Packaging

Any packaging waste should be source segregated for recycling or returned to suppliers. If feasible, pre-fabricated material should be used and imported to site. In certain circumstances this will reduce the amount of packaging required and waste produced.

2.2.5 Hazardous Waste

Hazardous wastes, including any contaminated soil arisings classed as hazardous, will be identified, kept separate from inert or non-hazardous construction waste materials, tested and disposed of in accordance with the Hazardous Waste Regulations 2005, as amended. Should hazardous waste and other contaminants be encountered, it will be managed and handled appropriately, kept separate and removed off site in accordance with legislation and disposed of or treated at an appropriately permitted site by a licensed contractor in accordance with all appropriate regulation.

2.2.6 Unacceptable Materials

Other unusable construction waste materials will be collected in receptacles with mixed construction waste materials, for subsequent separation and recycling at an off-site facility.

2.2.7 Imported Materials

Surplus or waste materials arise from either the materials imported to the site or those generated on site. Imported materials are those which are brought on to the Scheme for inclusion into the permanent works. Where possible consideration should be made for the reuse of materials back into the Scheme, however, the proposed scheme will require specific materials to be imported to the site.

Any waste produced through the importation of materials needs to be monitored and included in the SWMP under construction works. Where possible consider the use of materials with a higher recycled content such as concrete e.g. for the base of any areas requiring concreting.

Materials should be ordered so that the timing of the delivery, the quantity delivered, and the storage is not conducive to the creation of unnecessary waste. Additional waste from imported material is likely to come from packaging materials and spillages, but these are difficult to quantify at this time.

2.3 Resource Efficiency

Table 2.1 highlights some of the various resource efficiency measures that can be used to minimise waste during the site works, for a typical project of this type. The table shows the responsibilities apportioned to designated personnel to ensure the measures are undertaken. It demonstrates the decisions and actions involved in facilitating a reduction in the amount of waste and surplus materials being produced. This is intended to assist in minimising the amount of material which would traditionally be sent to landfill and to help provide a cradle-to-cradle approach.

Table 2.1: Resource Efficiency Measures for the Scheme

Planning Waste Minimisation during Construction	Waste Minimisation Decisions Taken	Resource Saving	Responsibility ⁴	Date Action Commenced
Design	<p>Enabling the purchase of materials in shape/dimension and form that minimises the creation of off-cuts/waste.</p> <p>Ensure design considerations take into account the five principles for Resource Efficient design:</p> <ul style="list-style-type: none"> • Design for Reuse and Recovery • Design for off-site Construction • Design for Materials Optimisation • Design for Resource Efficient Procurement • Design for Deconstruction and Flexibility (for the future) 	Minimal waste produced	Project manager	From the design outset
Construction methods	Sequencing the works such that re-use of materials can be undertaken.	Minimal waste produced	Project manager/principal contractor	During design and planning stages and implemented during the construction.
Materials	Assess the quantities of materials required on site.	Prevents lost time in re-ordering of damaged	Project manager/principal contractor	During construction planning and

⁴ It is the responsibility of the client to appoint a principal contractor for the purposes of the SWMP Regulations if one or more contractors are working on this project. If the project does not use a contractor, responsibility for updating the plan remains with the client.

Planning Waste Minimisation during Construction	Waste Minimisation Decisions Taken	Resource Saving	Responsibility ⁴	Date Action Commenced
	Just in time delivery (as needed basis) to prevent over supply.	equipment, reduces need for storage if over ordering occurs.	Project manager	throughout the project construction.
	Secure storage to minimise the generation of damaged materials/theft.			During design and throughout the procurement/ construction stages of the project.
	Keeping deliveries packaged until they are ready to be used.			
	Inspection of deliveries on arrival.			
	Increase the use of recycled content; this could include traditional use of recovered material such as crushed concrete demolition waste and by procuring mainstream manufactured products with higher recycled content than their peers. Quick win areas of the Scheme in which to implement this for could be concrete frames, flooring and brick/block work.	An increase in the demand for such products would reduce the quantity of waste going to landfill. Use of recycled material results in a reduction in demand for extraction of virgin materials and subsequently the carbon and environmental footprint.		

It is anticipated that the contractor(s) will endeavour to reuse or recycle materials on the Scheme where possible.

A Design for Resource Efficiency (D4RE) workshop was held in 4 March 2020 with the design team. The aim of the workshop was to identify opportunities to improve resource efficiency during the design of the Scheme. This would ensure cost savings are maximised by identifying opportunities to reduce, reuse or recycle waste materials, identify material optimisation, improve resource efficiency and ensure the Scheme is designed for deconstruction and flexibility.

Actions to be taken to facilitate resource efficiency throughout the Scheme, and therefore minimise waste produced, are detailed in Table 2.2 which identifies recommended minimisation measures for this Scheme. The measures shown with an asterisk (*) are opportunities identified for the Scheme through the D4RE workshop and recorded in the Opportunities Matrix⁵.

Table 2.2: Summary of Recommended Minimisation Measures

Summary of Recommended Minimisation Measures	
Use of prefabricated or pre-cast elements	It is recommended that as much of the construction as possible will be carried out off site, with pre-fabricated units being delivered to site when required. Some elements of the design can be pre-fabricated off-site to minimise on-site waste arisings and associated vehicle movements.

⁵ The Design for Resource Efficiency Record (document reference 417437-MMD-00-XX-RP-N-1723) provides the details of identified opportunities from the D4RE workshop within an Opportunities Matrix..

Summary of Recommended Minimisation Measures

	<p>These pre-fabricated units will generate less on-site waste through off-cuts and storage damage. Units should be sourced from a supplier that recycles off-cuts and materials at the pre-fabrication site otherwise this measure simply shifts the waste problem from one location to another.</p>
Excavation	<p>Surplus excavated materials including beach material, soils, gravels and man-made fill can potentially generate the largest quantities of all the construction waste streams with significant potential implications on disposal costs if these cannot be reused on site.</p> <p>*Excavating activities confined to the minimum areas required for the works to minimise the quantity of contaminated material removed. It is recommended that excavated material (other than beach material), if possible, will be stored for reuse as landscaping material or reinstatement.</p>
Stockpiling	<p>*Temporary stockpiling of fill materials prior to incorporation in the Scheme would be avoided where possible, to ensure double handling and damage is minimised and therefore avoidance of waste.</p>
Material reuse	<p>Concrete: Concrete will be taken up and should be source segregated, for recycling either as fill/capping on site and/or removed to an off-site facility.</p> <p>*Ensure the revetment slopes are as steep as feasible to minimise the volume of material required.</p> <p>Tarmac: Tarmac will be taken up and, if possible, should be reused on site for either tarmac hardstanding, capping or for sub-base.</p> <p>*Target remediation of voids rather than the whole extent of the highway to limit material use.</p> <p>Landscaping features: If any landscaping features such as trees and shrubs are to be removed to facilitate either the demolition or construction of the works, these features should be appropriately removed and stored for the duration of the works and then replanted. If this is not possible, then they should be chipped for reuse onsite in landscaping or removed off-site for further management.</p>
Minimisation of contaminated land arisings	<p>Where possible contaminated material should be clearly identified and delineated prior to the works commencing to reduce the likelihood of non-contaminated material being excavated. This material could be remediated and reused on site, or, if found to pose no risk to receptors (e.g. groundwater and human health) should be left undisturbed. The latter can minimise potential transport and disposal costs. This approach should be standard practice among designers and contractors.</p>
Contractor targets	<p>The Principal Contractor should consider setting off-cut/surplus targets for sub-contractors with a positive incentive scheme for on-site waste champions.</p> <p>Good practice suggests that a maximum 3% wastage rate, based on the total amount of construction material handled on site is achievable.</p>
Avoiding over-purchasing and accurate delivery times	<p>Over-purchasing can lead to significant wastage and should be avoided in the first place. Ensuring materials are ordered for delivery shortly before they are used on the Scheme would also avoid possible damage and therefore wastage.</p>
Use of take back schemes	<p>Some suppliers offer a take back scheme, which should be utilised where practicable, particularly for packaging and pallets.</p> <p>*Collaborating with nearby projects to provide and use surplus material, where suitable.</p>
Monitoring and review	<p>The Principal Contractor should use the waste data provided from the waste removed from the Scheme and the periodic review process (required as part of the SWMP) to their advantage to assess whether the waste objectives are being met, and if not to review procedures to steer the Scheme towards achieving them. This will require clear responsibilities to be identified, supported with authority and incentives to act on any deviations from the SWMP.</p>
Education and awareness	<p>Waste minimisation must be underpinned by education and awareness throughout all levels of the project team, from the design team to site contractors who handle the construction materials. This could be via site inductions and frequent toolbox talks (included as part of Health and Safety updates, etc.) which all contractors and site workers will be expected to attend.</p>

Summary of Recommended Minimisation Measures

Consideration of End of Life materials	Consideration should be given to what will happen to the materials specified when they reach the end of their useful life. Where possible, elements should be designed for repair, modular repair, recycling at the end of life or safe disposal. The use of hazardous materials during construction, in particular, should be minimised.
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* Identified opportunities from the D4RE workshop for minimisation of waste materials for the Scheme

Table 2.3 below identifies some additional measures that should be considered and implemented, where appropriate, to ensure that the Scheme is as resource efficient and cost effective as possible. The measures shown with an asterisk (*) are opportunities identified for the Scheme through the D4RE workshop and recorded in the Opportunities Matrix. Table 2.3 is not an exhaustive list and does not suggest that all measures should be implemented but aims to provide a list of possible opportunities undertaken on similar projects.

Table 2.3: Additional Considerations for Reuse and Recycling of Waste Materials for a Project of this Type

Opportunity	Description
Landscaping	Use site excavated material within landscaping design as: <ul style="list-style-type: none"> • drainage base; and • mound features
	Reuse or recycle tarmac and asphalt (provided there is onsite storage) for paths, construction storage space and hard standing for plant etc.
	Retain top soil, treat on site with compost (or other remediation) and use for green roofs, soft landscaping etc.
	Manufacture top soil using surplus excavated soil blended with compost
	Reuse bricks, concrete paving blocks and excavated rocks for landscaping finishes features etc.
	Chipping green waste on-site for use in the landscaping for the Scheme
	Use existing soft landscape that cannot be retained (trees, shrubs) as: <ul style="list-style-type: none"> • Compost; • Soft landscape top mulch; • External furniture; and • Large features e.g. trees stumps for benches
	Reuse existing landscape items by repairing rather than throwing away (e.g. existing fencing, benches etc.)
Concrete	Recycle aggregates (either on site or offsite) in concrete mix as fill etc.
	Use post tensioned floor slabs instead of reinforced slab
	Use reusable/modular shuttering for slab cores etc; e.g. PER system with integral handrails
Packaging	Reuse packaging by returning to supplier/manufacture or using it for other purposes e.g. timber packaging pallets can be chipped and used for landscaping top mulch
Foundations	Reuse existing foundations
Existing structures	*Reuse of structural features at the site where appropriate (but not limited to): <ul style="list-style-type: none"> • Lighting • Parking meters • Ramp • Benches • Wave return wall
Volumetric	Use pre-fabricated solutions for, where appropriate (but not limited to): <ul style="list-style-type: none"> • Benches

Opportunity	Description
	<ul style="list-style-type: none"> • Litter bins • Picnic tables • Fishing platform
Precast concrete	<p>Use precast concrete solutions for (but not limited to):</p> <ul style="list-style-type: none"> • Stairs; • Retaining walls and other armour materials • Ramps
Steel construction	<p>Use steel frame design</p> <p>Use prefabricated steel stairs</p> <p>Use bi-steel for lift cores and core units</p> <p>Use H -pile foundation to enable future reuse</p> <p>*Use recycled steel for rebar</p>
Services	<p>Rigorously plan M&E plant and distribution routes to reduce access requirements and facilitate future maintenance</p> <p>Rigorously plan M&E layout and distribution routes to reduce building works by consolidating risers, ducts etc.</p> <p>Enable consolidation of trades to reduce M&E penetrations in already finished surfaces</p> <p>Design service ducts to be shared for all services, with convenient access points</p> <p>Avoid or reduce the extent of surface water attenuation systems and pipework by reducing run-off collection areas and consider other methods:</p> <ul style="list-style-type: none"> • Reduce surface areas for vehicles by use of cellular grass paving; • Greater use of soakaways
Detail Design	<p>Review the necessity for all finishes (e.g. assess if fair faced structure and other elements suffice)</p> <p>Optimise RC promenade slabs layout any size to reduce cutting and offcuts</p>
Avoidance of excavation	<p>Use driven pile foundations rather than replacement piles</p> <p>Optimise structure position and levels to minimise excavation required (e.g. *keep existing asphalt in place when raising up the road and promenade levels)</p> <p>Construct new reinforced concrete (RC) seawalls on top of the existing</p>
Standardisation and dimensional co-ordination	<p>Use 3D modelling to avoid clashes/conflicts of services/structure etc. and thus reduce construction errors and consequent rework</p> <p>Co-ordinate structure and services so that service ducts are incorporated without the need to chase out, minimising waste production. Order services based on BIM / structure model to deliver just enough cable / ducting length and minimise generation of off-cuts.</p>
Supply chain	<p>Employ waste specialist consultant/contractor with expert knowledge in waste minimisation</p> <p>Discuss methods of waste minimisation with supplier/manufacturers of wall lining systems</p> <p>Discuss methods of waste minimisation with design team, potential subcontractors and suppliers at an early stage</p> <p>Discuss options for packaging reduction with subcontractors and suppliers</p>
Specification	<p>Specify responsibly sourced materials that reduce waste or materials with high recycled content</p> <p>Specify adequate protection to fragile materials to minimise damage on site</p>
Contract/contractor	<p>Involve the contractor from early design and decision stages to identify methods of waste minimisation in relation to procurement routes</p>

Opportunity	Description
	Consider financial incentives and penalties to reduce waste
	Required the contractor to produce an SWMP at an early stage that includes a site storage and logistics plan
	Require all tendering contractors to provide information on how they plan to reduce waste through the supply chain and site activities
	Require Just-in-Time (JiT) deliveries
	Use consolidation centre to facilitate JiT delivery
	Select procurement route that minimises packaging
	Use ordering procedures that avoid waste (e.g. no over ordering take back schemes for both material surplus and offcuts)
	Plan the work sequence to reduce on site waste
	Include within the tender documents, the requirement to sign off 'the waste per work package' – waste must not exceed a contractual agreed limit
Materials	Use lime mortar or other mortars so that bricks and blocks can easily be dismantled
	*Reuse existing armour stone in the coastal defence where satisfying the specification
	Reuse suitable excavated material
	Recycle existing blacktop for use within the Scheme (cold recycling if coal tar is present)
	*Use recycled cement replacement
	Use mechanical fixings that facilitate deconstruction
	Avoid gluing and composite materials
	Specify materials that can be reused rather than recycled
	Use landscaping materials that can be easily taken up and reused (e.g. cellular grass paving)
	Use structural elements that can easily disassembled (e.g. *bolted and clamped handrails for ease of replacement in the future)
Logistics	*Use by-product of quarry/armour stone extraction as underlayers, fill, aggregate or roadstone
	Design deconstruction at an early stage
	Consider compaction of certain wastes to reduce haulage requirements

* Identified opportunities from the D4RE workshop for reuse and recycling of waste materials for the Scheme

Note: The table can be updated with actual design considerations in terms of minimising resource use and waste produced.

2.4 Waste Minimisation Statement

The purpose of the SWMP is to facilitate the implementation of the waste hierarchy principles and to minimise the production of waste from the outset of the Scheme. Such measures are to be incorporated into the design and implemented in the construction stage of the Scheme. This is in addition to ensuring correct waste disposal procedures in accordance with the waste duty of care provisions as set out under section 34 of the Environmental Protection Act (1990). Where waste cannot be reused or recycled, it should be disposed of in accordance with the Landfill Directive (1999/31/EC) and waste acceptance requirements.

2.5 Initial Review of Anticipated Waste Arisings

Table 2.4 illustrates an initial qualitative assessment of the potential and expected waste arisings for a Scheme of this type. The aim of this assessment is to identify the waste streams

anticipated to be encountered during the Scheme and consider the possible management options for these materials (which would include identification of suitable local waste management or disposal sites that can accept the waste). This initial assessment considers the reuse and recycling potential of each waste stream anticipated and identifies some indicative benchmark recycling targets which could be used to steer the detailed SWMP as the Scheme develops.

Table 2.4: Initial Review of Anticipated Waste Arisings

Activity	Anticipated Waste Stream	Anticipated Volume	Recovery Potential	Overall Priority for Recovery	Indicative Recovery Target	Management Options
Site clearance	Vegetation	Low	High	Medium	100%	<p>Vegetation including trees, shrubs, and plants etc removed during site clearance works should be collected in skips or stockpiled on site to await removal. Where possible some vegetation could be chipped and reused back within the scheme as landscaping. If it cannot be reused in the Scheme it will need to be sent off-site for processing.</p> <p>A local merchant facility would be the most practicable treatment solution. All waste must be pre-treated before it is sent for final disposal, whether this is segregation on site or off-site at a transfer facility</p>
Demolition works	Concrete, brick and block, tiles, plastics, steel, asbestos, timber, asphalt, tar products, lampposts, street furniture, shelters, key clamp railings, storm gates etc	High	Medium	High	70%	<p>Concrete can be readily separated easily recycled with good quality assurance. Concrete can be segregated from other inert material and sent for screening and certification. Concrete may be crushed on site using mobile crusher.</p> <p>Metals will be segregated and sent for off site recycling.</p> <p>Demolition waste that cannot be reused on site will be removed by licensed contractors and recovered at appropriately permitted waste facilities.</p>
Earthworks	Topsoil	Low	High	High	90% - 100%	Topsoil has excellent potential for reuse opportunities in landscaping around the development. A Soil Management Plan should be developed in order to facilitate the re-use.
	Beach material	Medium	High	Low	Not applicable	Locking the sediment within the Scheme would create a deficit of marine sand to the environment and interrupt sediment down-drift to the east. Beach material will be relocated along the coastline and not reused in the Scheme.
	Excavated natural ground	Medium	High	High	100%	Opportunities for the reuse of material as infill or as a base for any access routes should be explored. If the

Activity	Anticipated Waste Stream	Anticipated Volume	Recovery Potential	Overall Priority for Recovery	Indicative Recovery Target	Management Options
						material is low grade subsoil, there is potential to reuse this as a landscaping or infill material prior to the laying of topsoil.
	Excavated man-made ground	Medium	High	High	70%	Due to the properties of man-made fill, opportunities to reuse the material compared to natural or topsoil are more limited. However, reuse where possible within the Scheme or send off site for recycling.
	Contaminated soil	Low/negligible	Low	Low	10%	All soil extracted (whether contaminated or not) will need to be stockpiled at the site and subject to laboratory analysis prior to reuse or removal to an off-site waste facility (following EU Waste Acceptance Criteria (WAC) testing if required) to identify whether the material can be reused as fill material or will require landfilling at an appropriately permitted site. Contaminated soils may be considered for reuse if it is in accordance with the CL:AIRE ⁶ CoP v2 and a risk assessment has been undertaken to ensure there is no environmental risk if it is reused and its reuse fits with the justification in the CL:AIRE CoP v2.
Construction	Concrete, bricks and mortar, slates	Low	High	High	100%	This could potentially create waste through damage to bricks and blocks and spillages of cement and mortar. Any arisings should be contained in an appropriate skip to be sent for off-site reprocessing.
	Cables	Low	Low	Low	80%	Cables are likely to be used in the wiring of the electrical components, such as lampposts and parking meters. Off-cuts of cable will therefore be required to be disposed of. Avenues of recycling of cable are limited, even though the copper can be recovered. Any arisings should be contained in an appropriate skip to be sent for off-site reprocessing or disposal.
	Bitumen road surface	Low	High	High	80%	Through careful ordering of material, it is likely that there will be very little (if any) waste generated from road surfacing activities. Any excess road-surfacing material

⁶ CL:AIRE Contaminated Land: Applications in Real Environments

Activity	Anticipated Waste Stream	Anticipated Volume	Recovery Potential	Overall Priority for Recovery	Indicative Recovery Target	Management Options
						can be reworked into a reusable form to enable use on future highway construction projects.
	Concrete drainage pipes, kerbs and walls	Low	High	High	100%	Small quantities may arise, although pre-casting of the components prior to arrival on the site would reduce wastage in the first place. Any arisings should be placed in the skips and sent to a local recycling facility for crushing down and subsequent reuse on other projects.
	Liquid waste	Low	Low	Low	0%	Disposal of liquids from temporary welfare facilities should be undertaken by a licensed contractor. Disposal of liquid wastes down surface water drains may cause water pollution, which if it occurs is a strict liability offence and can lead to expensive clean-up costs and enforcement action being undertaken. Only clean, uncontaminated surface water is discharged to surface water drains. Permission to discharge to foul sewer, if required, should be obtained from the relevant sewerage undertaker. All contaminated liquids should be stored in appropriately designed containers, with secondary containment systems in place and sent for disposal or treatment.
	Hazardous waste (paints, resins, oils etc.)	Low	Medium	Medium	50%	These waste streams should be segregated from other (non-hazardous) waste streams and stored in appropriately designed and secure bunded storage areas/cupboards for subsequent identification and removal for treatment offsite at a hazardous waste facility.
General site waste	Packaging waste (plastics, wood, film, metal and cardboard	Low	Low	Medium	50%	This waste will predominantly consist of plastic sheeting, shrink-wrap, wooden pallets, metal strips (binding). Each waste stream should be segregated into colour-coded skips and removed off-site to an appropriate waste facility for recycling. Opportunities should be explored for supplier packaging take back schemes.

Activity	Anticipated Waste Stream	Anticipated Volume	Recovery Potential	Overall Priority for Recovery	Indicative Recovery Target	Management Options
	Canteen waste (comprising of food waste but also mixed waste)	Low	Medium	Medium	50-75%	<p>This waste stream would likely comprise food waste and non-recyclable materials. Consideration should be given for providing separate bins for the collection of food waste, recyclables and non-recyclable (residual) materials.</p> <p>Food waste can be sent to an in-vessel composting (IVC) facility or an Anaerobic Digestion (AD) facility, whilst non-recyclable (residual) waste can be sent to an Energy-from-Waste (EfW) facility or a landfill.</p>
	Welfare facilities waste (sewage sludge)	Medium	Low	Low	0%	<p>Limited options to recover waste arising from on-site welfare facilities. Sewage sludge from the toilet facilities will be pumped out and sent to an appropriately permitted treatment plant. Other wastes such as paper towels etc. would be sent to an EfW facility or a landfill.</p>
	Site office waste (paper, cardboard, plastics and non-recyclable)	Low	Medium	Medium	75%	<p>Likely to comprise paper, cardboard, metal cans, plastic bottles and some non-recyclable material such as tissues. All recyclable materials should be sent to recycling facilities; all non-recyclable materials should be sent to an EfW facility or a landfill. Offices should be equipped with bins to segregate each waste stream for collection and future recycling off-site.</p>

3 Waste Management

3.1 Segregation

A specific area shall be laid out and labelled to facilitate the separation of materials for potential reuse, recycling, and offtake/return. Recycling and waste bins are to be kept clean and clearly marked to avoid contamination of materials. Skips for segregation of waste currently identified are:

- Inert (e.g. concrete and rubble);
- Hazardous (e.g. contaminated land, Japanese Knotweed if identified);
- Mixed non-hazardous (non-biodegradable waste);
- Mixed non-hazardous (biodegradable waste);
- Metal (e.g. copper and iron, mixed ferrous and non-ferrous);
- Wood (e.g. fencing/hoarding, worktops, doors, frames etc);
- Waste Electronic and Electrical Equipment (WEEE) - to be handled in conjunction with measures outlined within the Waste Electronic and Electrical Equipment Regulations 2006 (as amended);
- Canteen/office/welfare waste; and
- Recyclables.

The Scheme will accord with the Waste (England and Wales) Regulations 2011, as amended which make the following provisions which came into force on 1 January 2015:

- Businesses to present metal, plastic, glass, paper and card for separate collection;
- Waste contractors to provide collection and treatment services which deliver high quality recycling; and
- A ban on any metal, plastic, glass, paper, card and food collected separately for recycling from going to incineration or landfill.

It is essential that the excavation and construction work is carried out closely with the waste management contractors, in order to determine the best techniques for managing waste and ensure a high level of recovery of materials for reuse or recycling.

Successful recycling and reuse rely upon early planning, identification of clear responsibility and provision of space within a compound for segregation and storage.

Discussions are required between the Client and Principal Contractor to identify space requirements within the compounds to accommodate skips and storage of reusable materials.

Waste management options will be supported by the identification of appropriately permitted waste treatment and recycling facilities in close proximity to the sites.

3.1.1 Colour Coding

The use of different coloured skips (or sufficiently clear labelling) to ensure that construction workers can understand where to put each type of waste will aid to reduce the level of contamination in the skips. This also increases the likelihood that a load will not be rejected once the waste stream has been sent off-site for reprocessing. In cases where the load is rejected, the likely destination will be landfill (which will increase the costs to the Scheme).

3.2 Reuse of Construction Materials

Excavation and site clearance activities generate a significant quantity of potential waste arisings. The classification of waste material from the site would be undertaken in accordance with Annex II of the EU Directive on the landfill of waste (1999/31/EC) (the Landfill Directive). Uncontaminated material, where identified, will be reused where possible within the proposed works for site levelling and fill.

If applicable, surplus inert excavated materials with some engineering strength (e.g. stone, bricks, clay, rubble, rock) could be suitable for beneficial use in land reclamation projects, if these were proceeding locally at the same time as the proposed scheme. This may require compliance with the criteria and thresholds of certain exemptions (e.g. U1 or U11 may be applicable) or permits under the Environmental Permitting Regulations 2016. The CL:AIRE Development Industry Definition of Waste Code of Practice (DoWCoP) may also be applicable for the reuse of this material. Any chosen option would need to meet current legislative requirements. The material could be reused in other schemes in the surrounding area, if one were proceeding at the same time, to avoid disposal at landfill and its associated impacts and costs but will need to meet current legislative requirements.

3.3 Waste Disposal Characterisation

Under Article 4 of the Landfill Directive, waste is classified as either inert, non-hazardous, or hazardous. Hazardous waste cannot be re-used on site under an exemption and may require additional treatment prior to disposal. The exception is contaminated soil re-used in accordance with an approved Materials Management Plan produced under the CL:AIRE DoWCoP.

Furthermore, there is a statutory requirement under the Article 6 (a) of the Landfill Directive (1999/31/EC as amended) to pre-treat any waste (including hazardous waste) prior to disposal off-site. Pre-treatment may reduce the cost of disposal by rendering the waste non-hazardous. Responsibility for the basic classification of waste rests with the Producer and Landfill Operator.

3.4 Estimating and Planning for the Reduction and Reuse of Waste

The following section details expected waste arisings from the proposed development. Table 3.1 and Table 3.2 detail those types of waste expected to arise from enabling, demolition and construction works and segregate the approximate amounts of waste into different waste streams. The overall aim is to prevent cross-contamination of waste types and to maximise reuse and recycling opportunities.

Material quantities, where provided, are intended to provide an approximate guide for efficient waste management best practice; the contractor should independently verify the quantities of waste materials likely to be produced during the works. Waste quantities specified within the SWMP are also subject to programme and design change.

It should be noted that at this stage, limited information is held regarding the Scheme and the likely construction activities. The quantities of waste material from demolition, excavation and construction activities will be determined at a later date by the demolition and/or main contractor. The information in this SWMP is based on information from other documents, publicly available data and professional judgement relating to predicted construction and operational effects.

Table 3.1: Estimation of Waste, Enabling and Demolition Works (including excavation)

Type	Materials	Forecast Estimated Quantities (m³)	On-site Reuse/recycling (%)	Recovery (%)	Disposal (%)
Inert	Concrete	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Rubble	TBC	TBC	TBC	TBC
	Topsoil/Subsoils	TBC	TBC	TBC	TBC
	Sand and gravel (made ground)	TBC	TBC	TBC	TBC
	Boulder clay	TBC	TBC	TBC	TBC
Non-hazardous	Soils (moderate contamination-suitable for reuse onsite)	TBC	TBC	TBC	TBC
	Bricks and blocks	TBC	TBC	TBC	TBC
	Mixed waste	TBC	TBC	TBC	TBC
	Metal	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Packaging	TBC	TBC	TBC	TBC
	Cable & wiring	TBC	TBC	TBC	TBC
	Glass	TBC	TBC	TBC	TBC
	Green waste/vegetation	TBC	TBC	TBC	TBC
	Other	TBC	TBC	TBC	TBC
Hazardous	Asbestos	TBC	TBC	TBC	TBC
	Contaminated soils- unsuitable for reuse	TBC	TBC	TBC	TBC
	Other	TBC	TBC	TBC	TBC

Note: Table to be completed following detailed design stage and prior to construction commencement. This table should be duplicated for updating during construction and upon completion to record and compare the actuals vs forecasted quantities.

Table 3.2: Estimation of Waste, Construction Works

Type	Materials	Forecast Estimated Quantities (tonnes/m ³)	On-site Reuse/recycling (%)	Recovery (%)	Disposal (%)
Inert	Concrete	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Rubble	TBC	TBC	TBC	TBC
	Topsoil/Subsoils	TBC	TBC	TBC	TBC
Non-hazardous	Soils (moderate contamination-suitable for reuse onsite)	TBC	TBC	TBC	TBC
	Bricks and blocks	TBC	TBC	TBC	TBC
	Mixed waste	TBC	TBC	TBC	TBC
	Metal	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Packaging	TBC	TBC	TBC	TBC
	Cable & wiring	TBC	TBC	TBC	TBC
	Glass	TBC	TBC	TBC	TBC
	Green waste/vegetation	TBC	TBC	TBC	TBC
	Other	TBC	TBC	TBC	TBC
Hazardous	Toxic chemicals e.g. paint tins, line markers, mastic	TBC	TBC	TBC	TBC
	Contaminated soils- unsuitable for reuse	TBC	TBC	TBC	TBC
	Other	TBC	TBC	TBC	TBC

Note: Table to be completed following detailed design stage and prior to construction commencement. This table should be duplicated for updating during construction and upon completion to record and compare the actuals vs forecasted quantities

3.5 Treatment and Disposal Options

The appointed waste contractor for the site should contact the relevant treatment/transfer facilities or Environment Agency directly to determine the most appropriate waste management facility to handle the waste material being produced. Waste could either be collected from the site or transferred to a treatment or transfer facility by a registered waste carrier. Some waste would be sent for final disposal at an appropriate landfill site.

Article 4 of Landfill Directive 1999/31/EC on the landfill of waste, requires landfills to be classified into one of three categories dependent on the chemical composition of the material; these are hazardous, non-hazardous and inert. EU Waste Acceptance Criteria (WAC) are in place to control the nature of hazardous waste that can be sent to landfill. For hazardous wastes there are numerical limit values covering substances in granular wastes, monolithic wastes, and stable non-reactive hazardous wastes (SNRHW). The limit values are set out in Annex II of the Council Decision of 19th December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II to Directive 1999/31/EC.

Certain waste streams must be analysed prior to disposal to confirm whether they are inert, hazardous or non-hazardous. Then the material may require Waste Acceptance Criteria (WAC) testing prior to disposal. WAC testing is not required for all types of waste and therefore an appropriately qualified person should develop a testing regime as required prior to waste disposal, to prevent abortive work.

For excavated materials that are confirmed to be suitable for re-use within the proposed development without causing harm to human health or the environment, there are a number of reuse and recycling opportunities such as infill, bunding and landscaping or for construction or maintenance of roads, pavements, footings for gates, fences and poles.

If reuse or recycling on site is not possible due to high levels of contamination, soil treatment facilities are available around England that could be used to treat the soil. Due to the limited volume of contamination anticipated this information has not been included in this SWMP, but is available upon request should it be necessary.

Table 3.3 highlights a number of waste transfer stations, treatment facilities and other sites within 10 km of the Scheme (postcode LL29 8AR).

Table 3.3: Waste Sites – Waste Transfer Stations and Other sites

Site name	Operator	Post Code	Category*	Distance (km)**
Llanddulas Quarry Waste Treatment Centre	Hogan Waste Limited	LL22 8HP	A11: Household, Commercial & Industrial Waste Transfer Stn	3.2
Bron Y Nant Road Waste Transfer and Materials Reclamation Facility	Conwy County Borough Council	LL28 4YL	A11: Household, Commercial & Industrial Waste Transfer Stn	4.0
Worldcare Recycling	Worldcare Recycling Limited	LL31 9PN	A16: Physical Treatment Facility	8.0

Source: Natural Resources Wales, Public Registers⁷, Google Maps⁸

⁷ Natural Resources Wales (2020) *Find details of permitted waste sites* [online] Available at <https://naturalresourceswales.gov.uk/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en> Accessed July 2020

⁸ Google (2020) *Google Maps* [online] Available at <https://www.google.co.uk/maps> Accessed July 2020,

Note: * These categories are based upon Natural Resource Wales definitions.

** Distance for waste facilities and landfills is a road distance measured from postcode LL29 8AR to the postcode given for the identified facility.

Table 3.4 includes operational disposal facilities within Conwy region.

Table 3.4: Waste Disposal Sites

Site name	Operator	Post Code	Category*	Distance (km)**
Llanddulas Landfill	FCC Environment	LL22 8HP	Non-hazardous landfill	5.1
Ty Mawr Farm Landfill	Wyn Griffiths and Sons	LL22 8AA	Inert Landfill	11.6

Source: Natural Resources Wales, Public Registers⁹, and Google Maps¹⁰

Note: * These categories are based upon Environment Agency definitions.

** Distance for waste facilities and landfills is a road distance measured from postcode LL29 8AR to the postcode given for the identified facility.

3.6 Waste Controls and Handling

3.6.1 Duty of Care Compliance

Section 34 of the Environmental Protection Act 1990 (as amended) lays out a number of duties with respect to the management of waste. Waste must be managed correctly by storing it properly, only transferring it to the appropriate persons and ensuring that when it is transferred it is adequately and appropriately described to enable its safe recovery or disposal without harming the environment.

The Waste (England and Wales) Regulations 2011, as amended, explains the duties which apply to anyone who produces, keeps, imports or manages controlled waste in England and Wales.

One purpose of a SWMP is to incorporate an auditable system that identifies:

- The person responsible for removing the waste from site, and
- Keeping copies of all duty of care documentation (waste transfer notes and hazardous waste consignment notes).

This will be in accordance with the relevant Duty of Care legislation in place and other regulatory requirements.

Table 4.1 and Table 4.3 assist with the information required to meet the duty of care requirements.

Reputable waste contractors should have systems in place to ensure that all the duty of care requirements are met prior to the waste being collected. This should be checked by the site contractor prior to the appointment of waste management organisations.

⁹ Natural Resources Wales (2020) *Find details of permitted waste sites* [online] Available at <https://naturalresourceswales.gov.uk/evidence-and-data/maps/find-details-of-permitted-waste-sites/?lang=en> Accessed July 2020

¹⁰ Google (2020) *Google Maps* [online] Available at <https://www.google.co.uk/maps> Accessed July 2020,

Various information sources are available to enable the Principal Contractor to identify local waste management facilities for both recycling, recovery and disposal and check permit and waste carrier licence information to reinforce the duty of care requirements.

3.6.2 Declaration

The client and Principal Contractor will take all reasonable steps to ensure that:

All waste from the site is dealt with in accordance with the waste Duty of Care in Section 34 of the Environmental Protection Act 1990 and The Waste (England and Wales) Regulations 2011, as amended; and Materials will be handled efficiently, and waste managed appropriately.

Signatures:

Date:

Client:

Principal Contractor:

3.6.3 Responsibility for Waste Management

Table 3.5 identifies the primary waste streams that will arise from the activities at the site and whose responsibility it is to control and monitor the amounts of waste produced.

Table 3.5: Assigned responsibility for waste management (To be completed)

Site Activity/ Sub-contractor Work Package	Primary Waste Stream	Who is Responsible for Waste Management
Excavation and site clearance	TBC	TBC
Groundworks	TBC	TBC
Foundations, Piling	TBC	TBC
Structure	TBC	TBC
Brick & Blockwork	TBC	TBC
Mechanical Electrical	TBC	TBC
Trades- (Joinery, Painting etc)	TBC	TBC
Removal of Site Offices, Temporary Works & Final Clear Away	TBC	TBC

3.7 Waste Storage and Transportation Logistics

An area for onsite storage for excavated waste, construction materials and newly procured materials needs to be identified and appropriately secured. If waste is not to be kept on site, removal may be required on a shift by shift basis.

3.8 Site Security

Both client and Principal Contractor will take reasonable steps to ensure site security measures are in place to prevent illegal disposal of waste at the site.

4 Implementation of the SWMP

4.1 Register of Waste Carrier Licences and Permits

Table 4.1 sets out information regarding the waste management contractors, including their environmental permit, waste carriers' licences and/ or relevant exemptions that will need to be checked and verified for use on this Scheme. This table should be completed by the Principal Contractor once the details are available.

The Council Decision 2014/955/EU amending Decision 2000/532/EC on establishing a list of waste which requires that waste is described by European Waste Catalogue (EWC) codes on Transfer Notes (and Consignment Notes if waste is hazardous under the Hazardous Waste Regulations 2005, as amended) as required by the Waste Regulations 2011, as amended. The EWC categorises wastes into 20 main groups and approximately 900 codes. The EWC also identifies hazardous wastes, and these wastes are dealt with by the Hazardous Waste Regulations 2005 (as amended). These wastes should be appropriately described on Hazardous Waste Consignment Notes.

Table 4.1: Waste Description Records (to be completed by the Principal Contractor)

EWC Waste Description	EWC ¹¹	Origin	Waste Carrier			Permit	
			Name	Licence number	Expiry date	Name	Licence number
Concrete	17 01 01	From excavation of Made Ground known to be uncontaminated					
Bricks	17 01 02	From construction of structures					
Tiles and ceramics	17 01 03	From construction of structures					
Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances	17 01 06*(M) ¹²	From construction of structures					
Mixtures of concrete, bricks, tiles and ceramics other than those in 17 01 06*	17 01 07	From construction of structures					
Wood	17 02 01	From construction of structures					
Glass	17 02 02	From construction of structures					
Plastic	17 02 03	From construction of structures					
Glass, plastic and wood containing or contaminated with dangerous substances	17 02 04*(M)	From construction of structures					

¹¹ EWC code categorised from the Lists of Wastes pursuant to Article 1(a) of Directive 75/442/EEC on waste and Article 1 (4) of Directive 91/689/EEC on hazardous wastes. Note: EWC codes may vary depending on the actual waste types identified and removed from site.

¹² *(M) after the EWC denotes that the waste is potentially hazardous the (M) means that it is a mirror entry and the waste is only hazardous if the dangerous substance present is above threshold concentrations.

EWC Waste Description	EWC ¹¹	Origin	Waste Carrier	Permit
Bituminous mixtures containing coal tar	17 03 01* (M)	Excavation of Made Ground and potential historical contamination		
Bituminous mixtures other than those mentioned in 17 03 01*	17 03 02	From excavation of Made Ground known to be uncontaminated		
Coal tar and tar products	17 03 03*	From construction of highways		
Iron and steel	17 04 05	From construction of buildings		
Mixed metals	17 04 07	From construction of buildings		
Cables containing oil, coal tar and other dangerous substances	17 04 10* (M)	Installation of replacement cables, including off cuts		
Cables other than those mentioned in 17 04 10	17 04 11	Installation of replacement cables, including off cuts		
Soil and stones containing dangerous substances	17 05 03* (M)	From excavation of Made Ground known to be contaminated		
Soils and stones other than those mentioned in 17 05 03	17 05 04	From excavation of Made Ground known to be uncontaminated		
Other construction and demolition wastes (including mixed wastes) containing dangerous substances	17 09 03* (M)	From excavation of Made Ground known to be contaminated		
Mixed construction and demolition waste other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	17 09 04	Site excavation of Made Ground known to be uncontaminated and construction waste.		

EWC Waste Description	EWC ¹³	Origin	Waste Carrier	Permit
Paper and card	20 01 01	Packaging materials, site office waste		
Mixed municipal waste	20 03 01	General site waste		
Waste of liquid fuels, fuel oil and diesel	13 07 01*(A) ¹³	General leaks from vehicle movements, construction equipment		
Petrol	13 07 02*(A)	General leaks from vehicle movements		
Other fuels including mixtures	13 07 03*(A)	General leaks from vehicle movements		
Waste paint and varnish containing organic solvents or other dangerous substances	08 01 11*(M)	Paint wastage from road marking		
Waste paint and varnish other than those mentioned in 08 01 11	08 01 12	Paint wastage from road marking		
Waste paint or varnish remover	08 01 21*(A)	Paint wastage from road marking		
Septic Tank Waste	20 03 04	Portable toilets and welfare facilities		
Bio-degradable kitchen and canteen waste	20 01 08	Mess room wastes		
Other, as applicable				

¹³ *(A) after the EWC denotes that the waste is hazardous the (A) means that it is an absolute entry and the waste is hazardous regardless of any threshold concentrations.

4.2 Training and Communication

To develop a culture of promoting best practice and increase knowledge and awareness of waste management issues at the site. The SWMP, as well as the procedures to be followed, should be given to all contractors and subcontractors at site induction and key measures reinforced in 'tool box' talks. 'Tool box' talks should be carried out every month on waste issues and all subcontractors should be expected to attend. Attendance will be recorded in the relevant training logs. It is hoped that these values can be transferred from this site to the next, promoting adoption of sustainable waste management practices on a wider scale.

4.3 Monitoring and Waste Records

The Principal Contractor should receive a waste transfer note from the waste disposal company showing the exact amount of waste materials removed from site. This sheet should also identify how much material went to landfill and how much went for recycling (Table 4.2).

All skips need to be monitored to ensure that cross-contamination of segregated skips does not occur. The 'tool box' talks should focus on how the waste management system is working and identify the extra costs associated with contamination.

The Principal Contractor should continually review the type of surplus materials being produced and change the site set up to maximise on site reuse or recycling; landfill will be the last option.

This SWMP should be included as an agenda item at the weekly construction meetings. In addition, the SWMP should be communicated to the whole team (including the client) at the monthly meetings. This should include any updates from the last version.

Table 4.2: Waste Management Records (to be updated by Principal Contractor)¹⁴

[illegible]

¹⁴ *Evidence of waste carrier registration and waste transfer or hazardous waste consignment notes for each removal of waste are filed and cross-referenced.

4.4 SWMP Implementation Checklist

Table 4.3 is a checklist which should be filled out by the Principal Contractor to ensure the SWMP is fully implemented from the outset of the Scheme. Further actions required to accompany the checklist should be identified in Table 4.4.

Table 4.3: Implementation Checklist (to be completed)

Checks (please tick)	Y	N
Have terms and commercial rates been agreed with the waste management contractor(s)?		
Have data reporting procedures been agreed with waste management contractor(s)?		
For offsite waste management or disposal- Are all the waste destination details correct?		
Has a waste segregation/ collection area been prepared?		
Has the waste management area been adequately sign posted?		
Has the SWMP planning meeting been set?		
Has the waste management document control/ filing system been set up?		
Have all necessary staff and contractors read and signed the SWMP?		
Have all the SWMP training/briefing requirements for staff been met?		
Have all the SWMP training/briefing requirements for contractor(s) been met?		
Have all the waste management targets been set?		
Has the SWMP been approved by the Project Manager?		

Table 4.4: Further Actions (to be updated as applicable)

Comments/ Further Actions:
1. Excavated material to be tested for contamination prior to re-use and/or disposal
2. Waste Contractor to be assigned
3. Storage areas for excavated material to be decided upon
4. Frequency of waste removal from the site to external storage areas or waste transfer station to be decided upon
5.
6.
7.

4.5 Updating the SWMP

It is recommended that the SWMP is updated as often as necessary, to record accurate information on progress and whenever changes occur on site or relating to materials, or at least every six months if there is little change during the Scheme.

Updates to the SWMP should give a current picture of how work is progressing against the waste estimates contained in the plan. Therefore, for waste that is reused or recycled on site, the SWMP should be updated to describe how much of the estimated volume or tonnage has been processed. For waste that is removed from the site, the SWMP must be updated to record the identity of the person removing the waste, the type (and quantity) of waste and the site to which it has been taken.

Whenever waste is removed from the site the Principal Contractor should record the actions in Table 4.2. Revisions to the SWMP should be recorded in Table 4.5.

Table 4.5: SWMP Revisions Record (to be updated)

Nature of revision	Date of revision	Author of revision

5 Review and Audit of SWMP

5.1 Post-Construction Review

It is important that a post construction review of the SWMP takes place, designed to identify that the SWMP has been monitored throughout the lifetime of the Scheme and then signed off at its closure (see Table 5.1).

At the end of the Scheme, it is recommended that both the Client and Principal Contractor review, revise and refine the SWMP as necessary within three months of completion to ensure compliance with relevant legislation and to identify if lessons could be learned for the next time a similar project is undertaken. This review should identify and may conclude the following:

- An explanation of any deviation from the original plan;
- A comparison of the estimated quantities of each waste type against the actual quantities generated;
- An action plan to address the lessons that have been learnt from the Scheme that could be implemented for the next Scheme; and
- An estimation of the cost savings (if any) that have been achieved through the measures undertaken to minimise, reuse, recycle or recover waste arisings rather than just sending it to landfill.

Table 5.1: Post Construction Confirmation (to be completed)

This plan has been monitored on a regular basis to ensure that work is progressing according to the plan and has been updated to record details of the actual waste management actions and waste transfers that have taken place.

Signatures:

Date:

Client:

Principal Contractor:

5.2 Audit of Plan

A waste audit should be undertaken at all stages of the Scheme. This will identify the amount, nature and composition of the waste generated on site. The waste audit will examine the manner in which the waste is produced and will provide opportunity for a commentary to highlight how the management and practices inherently contribute to the production of construction and demolition waste. The measured waste quantities will be used to quantify the costs of waste management and disposal.

The audit plan should be updated as the Scheme progresses, as this will help to identify which waste streams are not achieving their anticipated recycling potential so that alternative methods to handle that waste stream can be explored for the remainder of the Scheme.

5.3 Audit of Plan – Estimated Versus Actual Quantities

Table 5.2 and Table 5.3 detail the actual enabling and construction waste streams and quantities resulting from the proposed development and how they were treated i.e. on-site/off-site recycling/reuse, final disposal etc.

Table 5.4 records the deviation between those waste quantities estimated and actual. An estimate of cost savings is also made here.

Table 5.2: Enabling/Demolition Waste (actuals) (to be completed)

Type	Materials	Actual quantities (tonnes/m ³)	On-site reuse/recycling (%)	Recovery (%)	Disposal (%)
Inert	Concrete	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Rubble	TBC	TBC	TBC	TBC
	Topsoil/Subsoils	TBC	TBC	TBC	TBC
	Sand and gravel	TBC	TBC	TBC	TBC
	Boulder clay	TBC	TBC	TBC	TBC
Non-hazardous	Soils (moderate contamination-suitable for reuse onsite)	TBC	TBC	TBC	TBC
	Bricks and blocks	TBC	TBC	TBC	TBC
	Mixed waste	TBC	TBC	TBC	TBC
	Metal	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Packaging	TBC	TBC	TBC	TBC
	Cable & wiring	TBC	TBC	TBC	TBC
	Glass	TBC	TBC	TBC	TBC
	Green waste/vegetation	TBC	TBC	TBC	TBC
	Other	TBC	TBC	TBC	TBC
Hazardous	Asbestos	TBC	TBC	TBC	TBC
	Contaminated soils- unsuitable for reuse	TBC	TBC	TBC	TBC
	Other	TBC	TBC	TBC	TBC

Table 5.3: Construction Waste (actuals) (to be completed)

Type	Materials	Actual quantities (m³)	On-site reuse/recycling (%)	Recovery (%)	Disposal (%)
Inert	Concrete	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Rubble	TBC	TBC	TBC	TBC
	Topsoil/Subsoils	TBC	TBC	TBC	TBC
Non-hazardous	Soils (moderate contamination- suitable for reuse onsite)	TBC	TBC	TBC	TBC
	Bricks and blocks	TBC	TBC	TBC	TBC
	Screed	TBC	TBC	TBC	TBC
	Mixed waste	TBC	TBC	TBC	TBC
	Metal	TBC	TBC	TBC	TBC
	Timber	TBC	TBC	TBC	TBC
	Packaging	TBC	TBC	TBC	TBC
	Cable & wiring	TBC	TBC	TBC	TBC
	Glass	TBC	TBC	TBC	TBC
	Green waste/vegetation	TBC	TBC	TBC	TBC
	her (List, identified by type, name, EWC)	TBC	TBC	TBC	TBC
Hazardous	Toxic chemicals e.g. paint tins, line markers, mastic	TBC	TBC	TBC	TBC
	Contaminated soils- unsuitable for reuse	TBC	TBC	TBC	TBC
	Other (List, identified by type, name, EWC)	TBC	TBC	TBC	TBC

Table 5.4 records the deviation between those waste quantities estimated and actual. An estimate of cost savings is also made here.

Table 5.4: Deviations

Issue	Details
[Waste forecasts- exceeded]	TBC – reasons
[Waste forecasts- not met]	TBC – reasons

5.4 Estimate of Cost Savings

[Enter]

5.5 Relevant Signatures

Principal Contractor: [Enter]

Date: [Enter]

Client: Conwy County Borough Council

Date: [Enter]

SWMP Author: Shannon Stone

Date: 24/07/2020

