Appendix 4.3

CONSTRUCTION WASTE MANAGEMENT STRATEGY (EIA APPENDIX)

BURO HAPPOLD

The People's Project

Construction Waste Management Strategy

BMD01-BHE-ZX-XX-RP-YZ-0301

0040026

12 August 2020

Revision P05

Revision	Description	Issued by	Date	Checked
P01	Draft for Planning	EW	04.10.2019	JH
P02	Final for Planning	EW	10.12.2019	JH
P03	Final with Minor Amendments	EW	13.12.2019	JH
P04	Final with Minor Amendments	EW	18.12.2019	JH
P05	Planning Re-submission	EW	12.08.2020	JH

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Glossary

Term	Definition
BMD	Bramley-Moore Dock
BRE	Building Research Establishment
CD&E	Construction, Demolition and Excavation
CWMS	Construction Waste Management Strategy
Defra	Department for Environment, Food and Rural Affairs
EA	Environment Agency
EIA	Environmental Impact Assessment
EWC	European Waste Catalogue
GIFA	Gross Internal Floor Area
LCC	Liverpool City Council
LDF	Local Development Framework
MMP	Materials Management Plan
MRF	Materials Recovery Facility
MSW	Municipal Solid Waste
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
RMP	Resource Management Plan
SWMP	Site Waste Management Plan
UDP	Unitary Development Plan
WRAP	Waste and Resources Action Programme

1 Introduction

1.1 Preamble

Everton Stadium Development Limited (hereafter referred to as Everton / The Club) are seeking to relocate from Goodison Park, Goodison Road, Liverpool L4 4EL to a proposed new stadium (52,888 seated capacity) with associated infrastructure and facilities at Bramley-Moore Dock (BMD), Regent Road, Liverpool L3 0AP (hereafter referred to as the application site). The site is located within the administrative area of Liverpool City Council (LCC).

This Construction Waste Management Strategy (CWMS) has been prepared by Buro Happold on behalf of The Club to accompany a full planning application for the proposed development. It aims to ensure that construction, demolition and excavation (CD&E) waste from the development is minimised and handled in an environmentally sustainable manner.

The document should not be viewed as one standalone report, but rather as the initial step in the Resource Management Plan (RMP) process, documenting early actions to design out waste and making recommendations on how waste can be reduced at the construction stage. These recommendations will be further developed by the principal contractor and designated waste management company over subsequent design and construction phases, with an RMP kept as a working document on-site.

1.2 Duty of Care

The contractor will take reasonable steps to ensure that all waste from the site is dealt with in accordance with the Environmental Protection (Duty of Care) Regulations. In line with this, all site materials will be handled efficiently to minimise wastage and all waste arising from the site will be managed appropriately.

The site operator will ensure a registered waste carrier is used to convey any waste material off-site to a suitably permitted facility.

1.3 Purpose of Document

The government removed the statutory requirement for Site Waste Management Plans (SWMPs) in England in October 2013. However, this document has been prepared in line with good industry practice. The document will inform the Environmental Impact Assessment (EIA) that will be submitted in support of the planning application. Its main aims are as follows:

- To document any initial waste reduction recommendations and to provide information on how waste management initiatives will be implemented throughout the construction of the project in order to minimise waste generation, increase the recovery of construction waste and ensure compliance with relevant national, regional and local waste management policy requirements (see Appendix A); and
- To enable the waste management recommendations within this report to be incorporated into a site-specific plan. The responsibility for developing the RMP will fall with the principal contractor, who should appoint a waste champion to ensure the commitments in the plan are met.

The following tasks have been completed to enable the production of this document:

- Creation of a framework RMP at design stage;
- Estimation of baseline waste generation rates;
- Review of actions which have been or will be considered at design stage in order to design out waste; and
- Review of actions which can be taken at construction stage to reduce waste generation and increase segregation.

1.4 2020 ES Update

Due to the relevance and scale of the proposed development amendments (including amendments to the construction methodology), limited technical assessment has been undertaken relating to construction waste management to confirm the validity of the previous conclusions. The relevant assessment information is presented/discussed within this appendix and this report has been revised to reflect these updates.

The following sections have been updated:

- Section 2 Waste Types and Quantities; and
- Section 5 CD&E Waste Recovery and Savings.

This ES technical appendix relating to construction waste management has also been reviewed against the following aspects and for each it has been confirmed that there are no substantial amendments required to the content of the appendix:

- Baseline data validity: there have been no relevant changes to the baseline data and it remains valid;
- Legislation/policy revisions: there have been no related updates to legislation/policy that have affected either the methodology or findings of this assessment; and
- There were no statutory consultee comments received in relation to the information presented in this appendix that required a response.

2 Waste Types and Quantities

2.1 Introduction

One purpose of the CWMS is to identify the types and quantities of waste that will be generated during the proposed development's construction phase. The expected site waste quantities are presented in the section that follows. These have been determined based on the information available at the planning application stage.

It is important to note that further development of the design and construction methodology through subsequent stages may lead to construction waste implications that are not possible to identify at this stage.

2.2 Demolition and Site Clearance

Following pre-demolition works, all existing buildings on-site will be demolished (see Figure 2.1), with the exception of the listed Hydraulic Engine House, which is to be retained.

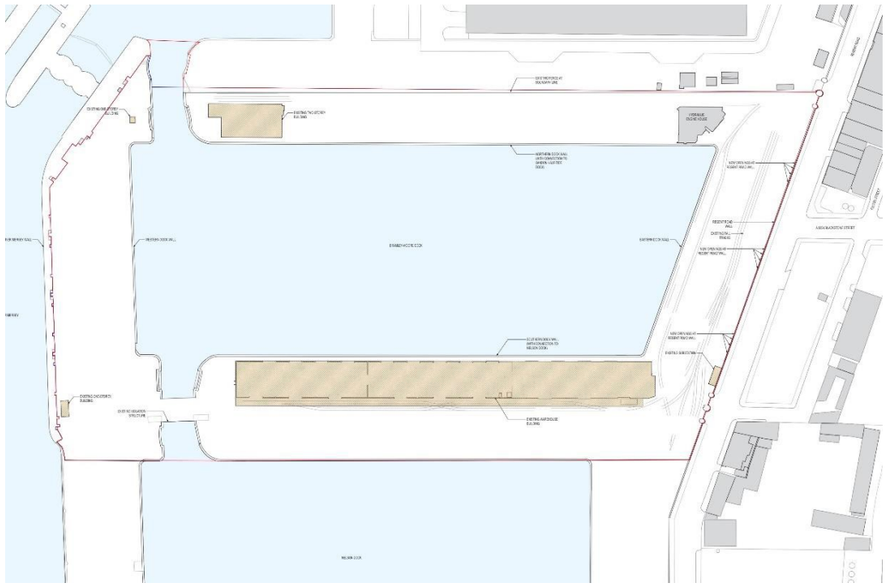

Figure 2.1 Extent of existing buildings to be demolished

All the concrete and brickwork from demolition activities will be crushed on-site to produce graded 6F2 suitable for the piling platform, with only metal and unsuitable material disposed of off-site.

2.3 Dock Clearance and Infill

The proposed development at the application site requires Bramley-Moore Dock to be infilled for the following purposes:

- Providing a construction working platform;
- Infilling the western water channel from the dock basin level (approximately -4.5mOD) to the top of the western water channel bed (+2.9mOD); and
- Providing external zones including the western plaza and eastern fan zone.

It is necessary to rake the dock deposits in advance of the dock infilling. The raking procedure will aim to recover metallic objects or obstructions that would otherwise disrupt the piling operations. The recovered objects will be lifted ashore and appropriately disposed of depending on what is encountered. If debris is encountered that cannot be moved by the raking procedure, these will be marked for removal with other equipment.

Following the dock closure, the dock will be infilled. It should be noted that the design team have undertaken research to establish a dock filling strategy that removes the need to dredge the deposits that were encountered at the bottom of the dock basin during the Phase 1 and Phase 2 site specific ground investigation.

In addition to programme savings, by not dredging, the dock deposits will not require off-site disposal (excluding pile spoil). This is evidently a more sustainable approach. There are also subsequent reductions in the volume of imported material as BMD is effectively partially filled.

2.4 Stadium Substructure

There is an overarching aspiration to minimise waste generated during the proposed development's construction phase, with excavation waste of particular interest. Excavated materials will be stockpiled on-site immediately after excavation, where they will be appropriately graded and separated. All excavated materials that meet the engineering specification will be separated for re-use.

Based on the application submission, it is understood that there will be 2,347 no. 600mm diameter piles, with pile depths ranging between 10m and 17.5m. Including a 10% allowance for bulking, it is anticipated that approximately 10,000m^3 of sands and existing fill/made ground will be generated from the piling works.

Using the Waste and Resources Action Programme (WRAP) waste volume to mass conversion factor[1] for excavation waste of 1.25 tonnes/m^3, it is estimated that approximately 12,500 tonnes of sands and existing fill/made ground will be generated from the stadium substructure works.

As superstructure design progresses, more specific information will be generated regarding the actual distribution and plan-density of the piling and pile caps, and the waste generation estimates should be updated accordingly by the principal contractor to reflect this.

2.5 Stadium Superstructure

Construction waste will be generated during all stages of the construction programme. However, this will be carefully managed to prevent nuisances such as litter, dust, odour and pests, and to maintain a 'clean' working and site environment. The construction materials, site waste and spoil/arisings will be transported to and from the site by road.

The possible range of wastes associated with building construction and site preparation works are described in Table 2.1, along with the associated codes for each waste stream. The classification of materials has been taken from the European Waste Catalogue (EWC).

The stadium superstructure will be formed of generally conventional structural materials of steel, reinforced concrete and pre-cast concrete for the terrace units. The roof structure will be formed of steel. Non-hazardous wastes, such as plastic, plasterboard, insulation, packaging, etc. are also likely to arise from the fit-out stage.

[1] Waste and Resources Action Programme (2014) *Guidelines for measuring and reporting CD&E waste.*

Table 2.1 Possible waste types arising from construction

EWC code	EWC description	EWC code	EWC description
15 01 01	Paper and cardboard packaging	17 09 04	Mixed construction and demolition wastes (non-hazardous)
15 01 02	Plastic packaging	17 02 01	Wood
15 01 03	Wooden packaging	17 02 02	Glass
15 01 04	Metallic packaging	17 02 03	Plastic
15 01 05	Composite packaging	17 03 02	Bituminous mixtures
17 01 01	Concrete	17 04 01	Copper, bronze, brass
17 01 02	Bricks	17 04 02	Aluminium
17 01 03	Tiles and ceramic	17 04 05	Iron and steel
17 01 07	Mixture of concrete, bricks, tiles and ceramics (non-hazardous)	17 04 07	Mixed metals
17 05 03*	Soils and stones (containing some dangerous substances)	17 04 11	Cables (non-hazardous)
17 05 04	Soils and stones (non-hazardous)	17 06 04	Insulation materials (non-hazardous)

Construction Waste Generation

In line with industry good practice, the proposed development will aim to generate less than 6.5 tonnes of construction waste per 100m^2 gross internal floor area (GIFA), with a stretch target of 3.2 tonnes per 100m^2 GIFA. This target has been derived from Building Research Establishment (BRE) benchmarking data.

Assuming that the initial target is achieved, it is estimated that no more than approximately 4,000 tonnes of waste will be generated during the proposed development construction stage, as is shown in Table 2.2.

Table 2.2 Estimated construction waste quantities

Total GIFA (m^2)	Targeted generation rate (tonnes/100m^2 GIFA)	Estimated construction waste (tonnes)
60,882	6.5	3,957

It should be noted that the current proposed scheme may be subject to minor changes in future design stages, although alterations to the area schedule are unlikely to result in significant changes to construction waste generation quantities.

Construction Waste Composition

In addition to the construction waste generated, information on waste composition is required to fully ascertain the impacts of construction waste and any opportunities for mitigation.

The construction waste composition split has been estimated based on BRE (2009) waste benchmarking data[2]. Table 2.3 shows the potential material breakdown and approximate quantities of construction waste that will arise from the proposed development.

Table 2.3 Breakdown of estimated waste materials and quantities from the proposed development

Material group	% of total	Estimated construction waste (tonnes)
Inert (e.g. concrete, bricks, etc.)	53.23%	2,107
Insulation	1.72%	68
Metals	3.41%	135
Packaging	3.84%	152
Gypsum	4.71%	186
Binders	0.62%	24
Plastics	1.09%	43
Timber	10.00%	396
Floor coverings (soft)	0.33%	13
WEEE	0.34%	14
Furniture	0.15%	6
Canteen / Office / Ad hoc	0.96%	38
Liquids	1.15%	45
Oils	0.00%	0
Asphalt and tar	1.74%	69
Hazardous	0.55%	22
Other	0.00%	0
Mixed	16.17%	640
Total	**100%**	3,957

Construction waste is likely to contain significant quantities of re-usable and recyclable materials (i.e. concrete and metals). Effective segregation of these materials is an important step to help achieve a high recycling rate.

2.6 Cut to Dock and Quay Areas Following Filling and Construction Works

Some further adjustment of site areas will be required following the infilling of the existing dock in order to create the western channel and achieve the required formation levels for pavements and buildings.

The volumes of cut material required to achieve this are summarised in Table 2.4. It should be noted that these volumes do not account for settlement of the fill over time and are presented as a worst case. The volumes will be subject to change as the detailed design progresses, although any changes will be unlikely to result in significant differences to the numbers shown.

Based on discussions with the design team, it is also anticipated that some underground obstructions will be encountered during the cut works which will require disposing off-site. There is also potential for some contaminated ground to be encountered during these works. This material will need to be remediated before being safely disposed of off-site.

An initial assessment indicates that approximately 21,600m^3 of marine-won sand will be generated from the cut to the western channel and fan zone, with 14,300m^3 of material generated from the works needed to achieve the new pavement

[2] Building Research Establishment (2009) *Benchmarks and Baselines 2009*.

formation levels. This material will consist of existing pavement materials (asphalt, concrete and cobbles) and the made ground layers beneath. This volume includes existing cobbles that will be re-used, where possible, on-site.

Table 2.4 Cut volumes following main construction phase

Zone	Volume (m^3)
Cut to channel and fan zone following dock filling	21,600
Cut to existing quay areas to achieve new pavement formation level	14,300

Including a 10% allowance for bulking, as a worst case, it is estimated that approximately 39,500m^3 of material will be generated from these works.

Using the WRAP waste volume to mass conversion factor[3] for excavation waste of 1.25 tonnes/m^3, it is estimated that approximately 49,400 tonnes of sand, asphalt, concrete, cobbles and made ground will be generated from these works.

2.7 Summary

In total, it is estimated that approximately 65,900 tonnes of material will be generated from the demolition and site clearance works, the stadium substructure works, the stadium superstructure works (assuming that waste generation targets are met), and the cut to the western channel and the existing quay areas to achieve the new pavement formation levels, as is summarised in Table 2.5.

Table 2.5 Estimated waste generation from demolition, substructure and construction works

Description of works	Estimated construction waste (tonnes)
Stadium substructure	12,500
Stadium superstructure	4,000
Cut to channel, fan zone and existing quay areas following filling and construction works	49,400
Total	**65,900**

The waste from demolition, substructure and construction works will likely contain high proportions of easily excludable, re-usable and recyclable materials that could be diverted from landfill disposal. There is therefore potential to achieve a high recycling rate for the proposed development.

[3] Waste and Resources Action Programme (2014) *Guidelines for measuring and reporting CD&E waste.*

3 Waste Reduction through Design

3.1 Introduction

The proposed development will look to implement the waste hierarchy (see Figure 3.1). In line with this, it will prioritise measures which look to reduce waste generation through the design process. Opportunities to design out waste have been (and will continue to be) investigated and potentially integrated as the project develops, with a number of potential options outlined in the section that follows.

Figure 3.1 The waste hierarchy

3.2 Potential Waste Reduction through Design Measures

The design team have been made aware of the CWMS' aim to reduce the amount of waste arising during construction and consulted to understand which actions have been considered/implemented during the conception and design phases in order to help achieve this. They advised that there is an aspiration to explore and implement the actions presented in Table 3.1, although noted that a number of these will need to be further explored and confirmed in the next stages of design.

Table 3.1 Potential waste minimisation options to be adopted at design stage

Design consideration	Comments from the design team
Off-site fabrication – making components and/or buildings of the development off-site (e.g. pre-cast concrete, timber frames, etc.)	Many of the cladding elements can be fabricated off-site.
Standard sizes – matching design sizes to standard sizes of material supply in an effort to reduce off-cut waste on-site	Through Stage 3, blockwork and brick walls shall be set-out to block and brick dimension modules, where possible (especially for doors and openings). This will reduce cutting, waste and improve health and safety for installers.
Materials suppliers – providing adequate training to materials suppliers	The design team are open to considering this option in future if it helps with the life span and performance of the systems implemented.
Sustainability of materials – considering the sustainability of materials used	The design team are limited in scope based on the site parameters and constraints to meet the marine environment, durability, heritage aspects, cost, etc. Generally, materials will be chosen that support the sustainability objectives of the project, and are in line with good practice (i.e. using materials efficiently, selecting locally-sourced, durable materials that do not require more frequent replacement).
Excavation – re-using any excavated material on-site	The intent is to be as efficient as possible with the material that is excavated. Further work is needed in subsequent design stages to verify where existing materials might be reused on-site. A Materials Management Plan (MMP) will be developed to identify opportunities for re-using CD&E wastes.

3.3 Other Design Considerations

The development of a logistics plan for the project will ensure that due consideration is given to material requirements throughout the construction phase. This will enable efficient management of the delivery and storage of materials and will ensure that the most effective logistic methods are adopted.

In addition, it is recommended that the following measures are considered during subsequent design stages and, where possible, incorporated into the project design:

Logistics

- 'Just-in-time' delivery protocols should be adopted to reduce the space required for storage within the site. This will also minimise the risk of site congestion and material spoiling during bad weather; and
- There is potential to investigate the use of construction consolidation centres that provide effective supply chain management solutions, enabling the safe and efficient flow of construction materials and equipment from supplier to site.

Materials procurement

- When appointing a waste management company to handle the transportation, recovery and disposal of waste, contractual obligations should be implemented to ensure that these sustainable waste management measures are carried out;
- The Club should consider assigning the role of supply chain manager so that relationships and partnerships can be developed with suppliers who are able to implement waste minimisation at source;
- It is recommended that agreements are set up with suppliers to take back surplus materials and packaging;
- The Club should engage with the supply chain to source products and materials that use minimal packaging and segregate packaging for re-use; and
- The use of reclaimed or recycled materials should be maximised where possible.

4 On-site Waste Reduction

4.1 Introduction

Sustainable waste management techniques will be considered throughout the site preparation and construction stages. A nominated waste champion will oversee the implementation plan and will ensure the project adopts the following sustainable waste management principles.

4.2 Materials Management On-site

- The principal contractor will establish a system prior to construction commencing to ensure that the correct quantities of materials are ordered. This will reduce the volume of unused materials going to landfill;
- Dedicated areas will be created that allow for the correct storage of new building materials. This will reduce the risk of contamination/spoiling;
- Timely ordering of materials will reduce the time that materials are stored on site. This will also reduce the risk of spoiling;
- The provision of clearly marked, segregated bins/skips for construction materials will help avoid cross-contamination and facilitate recycling; and
- All waste generated will be stored in designated areas that are isolated from surface drainage. Waste containers will be covered to prevent dust and litter being blown out and rainwater accumulating. Containers will be inspected regularly and replaced when full.

4.3 Waste Segregation On-site

Any waste which cannot be used on-site will be recycled or disposed of off-site, via a registered waste carrier to a licensed landfill site, licensed transfer station or licensed recycling facility. The region has over 60 waste transfer stations with a combined capacity of approximately 1.29 million tonnes. An initial investigation into the nearest local waste infrastructure to the site shows that there are also a number of local waste management facilities capable of recycling CD&E wastes. Inert and non-inert landfill capacity also exists within the area and would provide a disposal route for residual CD&E waste which cannot be recycled. The Joint Waste Local Plan for Merseyside and Halton (Waste Planning Merseyside, 2013) states that the total landfill void space for inert waste in the area is approximately 3.5 million m^3. As of 2013, sites at Cronton Claypit and Bold Heath Quarry had been allocated for the provision of inert waste landfill capacity.

Any waste sent to landfill must be pre-treated first. This is most easily achieved by segregating waste streams into different containers or sending waste to a local Materials Recovery Facility (MRF). The following recommendations should be considered to minimise the amount of waste produced and increase the proportion of waste that is segregated:

- Ideally, a specific area should be allocated and labelled to facilitate the segregation of waste materials for potential re-use, recycling and recovery;
- Efforts should be made to recover and recycle packaging waste in accordance with packaging legislation;
- Different waste streams should be segregated. As a minimum, containers/skips for hazardous/non-hazardous waste and plasterboard waste should be provided on-site. Some examples are shown in Figure 4.1;
- Recycling and waste skips will be kept clean and clearly marked to reduce contamination of materials. The labelling shall use 'Waste Stream Colour Codes';
- Training will be provided for all site personnel, informing them of the correct disposal routes for materials. A site waste champion will be appointed to oversee correct segregation/disposal and keep a record of all resources generated on-site. It is recommended that a designated senior person is appointed as site waste champion; and
- It is recommended that waste produced by workers in site offices and welfare facilities is handled separately to construction waste from site works. It is recommended that this waste is segregated for reuse and recycling.

Figure 4.1 Examples of segregation skips and waste stream segregation by colour-coded signs

4.4 Site Waste Management Responsibilities

The CWMS herein forms the initial step in the RMP process. The principal contractor will be responsible for developing the recommendations in this report further within the RMP. The RMP should be updated by the principal contractor approximately every 6 months or in the event that a major change occurs (e.g. change in material supplier, waste contractor, etc.). All waste transfer notes must be collected and stored on-site. It is strongly recommended that waste generation rates are included in the monthly environmental report to allow the project team to track how the project is progressing against waste targets.

On completion of the development, a report shall be produced by the principal contractor that will detail total waste produced and actual recycling rate achieved.

The full RMP should also include a report from the waste contractor compiling the information recorded when any waste material leaves the site.

The appointed waste management company will be subject to ongoing audits as part of the process to ensure they are still meeting the required standards as the project progresses.

5 CD&E Waste Recovery and Savings

5.1 Introduction

Maximising the recovery of materials and resources from construction works has economic, as well as environmental benefits. This section outlines the potential savings that could be achieved throughout the construction stage if targets for waste recovery and segregation are met.

5.2 Demolition and Site Clearance

All the concrete and brickwork from demolition activities will be crushed on-site to produce graded 6F2 suitable for the piling platform, with only metal and unsuitable material taken off-site. Wherever possible, this material will be re-used or recycled.

Based on best practice guidance published by BRE[4], the proposed development will look to divert over 90% of non-hazardous demolition waste from landfill, with a stretch target of 95% landfill diversion.

5.3 Stadium Substructure

In total, it is estimated that approximately 12,500 tonnes of sands and existing fill/made ground will be generated from the stadium piling works. At this stage, it has been assumed that it will not be possible to reuse any of this material on-site. However, the option of treating this material off-site and reusing it elsewhere should still be explored at the appropriate design stage.

5.4 Stadium Superstructure

The potential savings for construction waste have been extrapolated from WRAP guidelines[5] (see Table 5.1 and Table 5.2). As an absolute minimum, waste should be segregated as standard practice with an aim to achieve good practice diversion rates. In most cases, good practice methods are easily achievable, cost neutral and do not require a fundamental change in working practice.

Table 5.1 Standard, good and best practice recovery rates by material

Material	Possible disposal route	Possible recovery rate with segregation (standard practice)	Possible recovery rate with segregation (good practice)	Possible recovery rate with segregation (best practice)
Inert (e.g. concrete, bricks)	Recycled, disposal	75%	95%	100%
Insulation	Recycled, disposal	12%	50%	75%
Metals	Recycled, disposal	95%	100%	100%
Packaging	Recycled, disposal	60%	85%	95%
Gypsum	Recycled, disposal	100%	100%	100%
Binders	Recycled, disposal	0%	0%	0%
Plastics	Recycled, disposal	60%	80%	95%
Timber	Recycled, disposal	57%	90%	95%
Floor coverings (soft)	Recycled, disposal	0%	0%	0%
WEEE	Recycled, disposal	0%	70%	95%
Furniture	Recycled, disposal	15%	25%	50%
Canteen / office / ad-hoc	Recycled, disposal	12%	50%	75%
Liquids	Recycled, disposal	100%	100%	100%
Asphalt and tar	Recycled, disposal	0%	0%	0%
Mixed	Recycled, disposal	12%	50%	75%

Table 5.2 Potential on-site savings by adopting WRAP best practice guidance

	Possible recovery weight (tonnes)		
Material	**Standard practice**	**Good practice**	**Best practice**
Inert (e.g. concrete, bricks)	1,597	2,023	2,129
Insulation	8	34	52
Metals	130	137	137
Packaging	92	130	146
Gypsum	188	188	188
Binders	0	0	0
Plastics	26	35	41
Timber	228	360	380
Floor coverings (soft)	0	0	0
WEEE	0	10	13
Furniture	1	1	3
Canteen/office/ad hoc	5	19	29
Liquids	46	46	46
Oils	0	0	0
Asphalt and tar	0	0	0
Hazardous	0	0	0
Other	0	0	0
Mixed	78	323	485
Total	**2,398**	**3,307**	**3,649**

If good practice methods are adhered to on-site, a further 3,300 tonnes of construction waste could be diverted from landfill. This figure could rise to 3,600 tonnes diverted from landfill if best practice methods were to be used on-site. Table 5.3 summarises the potential waste savings that could be achieved if good and best practices are followed.

[4] Building Research Establishment (n.d.) *Developing a Strategic Approach to Construction Waste: 20 Year Strategy Draft for Comment.*

[5] WRAP, *Practical solutions for sustainable construction: Achieving goods practice Waste Minimisation and Management. Guidance for construction clients, design teams and contractors.*

Table 5.3 Potential waste savings due to construction waste mitigation measures

Construction waste generated (tonnes)	Waste sent to landfill after segregation measures have been implemented (tonnes)		
	Standard practice	Good practice	Best practice
4,000	1,600	700	400

5.5 Cut to Dock and Quay Areas following Filling and Construction Works

It is estimated that approximately 49,400 tonnes of sands, existing fill/made ground, asphalt, concrete and cobbles will be generated from the excavation of the western channel and the final adjustment of site areas. This volume includes existing cobbles that will be re-used, where possible, on-site.

5.6 Total Potential Waste Savings

In total, it is estimated that approximately 65,900 tonnes of material will be generated from the demolition and site clearance works, substructure works, superstructure works and the cut to existing quay areas to achieve new pavement formation levels. This total assumes that CD&E waste generation targets have been met.

If a best practice approach is taken during the demolition and construction works, then 3,600 tonnes of construction waste could be diverted from landfill through reclamation and recycling.

6 Waste Management Responsibility

Responsibility for the various aspects of construction waste management is set out in Table 6.1. It should be noted that ownership roles are indicative and may vary as the project develops.

Table 6.1 RMP responsibility matrix

Title	Responsible owner
Administration and planning	Applicant
Action log	Applicant
Design measures	Design Coordinator
Responsibility for waste management	Principal Contractor
Forecasting key waste production	Principal Contractor
Planning re-use and recycling	Principal Contractor
Register of licences, permits and movements	Principal Contractor
Comparison of estimated and actual quantities	Principal Contractor
The costing of site waste management	Principal Contractor
Overall recycling rate	Principal Contractor
Implementation	Principal Contractor
Final project declarations	Principal Contractor

This CWMS has highlighted potential design actions that can help to minimise waste generation during the project construction phase and forms the initial step in the RMP process. Going forward, the responsibility to action the recommendations set out in this report will be passed on to the principal contractor.

The principal contractor must update the RMP prior to commencing any site works and as works progress and ensure that workers on-site are aware of the RMP and co-operate with it. This will include providing suitable site inductions, information and training. All contractors will need to go through the site induction process and will need to engage their employees and sub-contractors to ensure that any waste management objectives in the RMP are understood and that steps are taken to achieve the objectives.

Although the principal contractor will be responsible for updating the RMP and ensuring compliance and cooperation amongst workers, The Club will continue to have a role in ensuring its effective implementation. The Club must give any reasonable direction to contractors to ensure compliance, for example, in setting contractual obligations. Both The Club and the principal contractor are responsible for reviewing, revising and refining the RMP as necessary, in particular, to ensure that roles and responsibilities are clear as the project progresses.

All personnel will be made aware of the relevant requirements in the RMP at the initial site induction and in subsequent tool box talks. The RMP will be available in the site office for inspection at any time.

7 Conclusion

This CWMS has described how waste generated during the proposed development's construction phase will be managed in compliance with the relevant national, regional and local policy requirements (see Appendix A). The recommendations in this report will be further developed by the principal contractor and designated waste management company over subsequent design and construction phases, with an RMP kept as a working document on-site.

In line with the National Planning Policy for Waste (Ministry of Housing, Communities and Local Government, 2014) and the Joint Waste Local Plan for Merseyside and Halton (Waste Planning Merseyside, 2013), construction waste from the site will be handled in a way that maximises re-use/recovery opportunities and minimises off-site disposal. For example, all the concrete and brickwork from demolition activities will be crushed on-site to produce graded 6F2 suitable for the piling platform, with cobbles re-used, where possible, in landscaping works.

There are further opportunities to reduce CD&E waste generation once construction works are under way, with the recommendations in this report providing a number of initial options for improving waste management performance.

It should be emphasised, however, that the RMP is a live document and will therefore be updated throughout the design and construction process. The next steps to take are as follows:

- Update the document in response to significant design changes which impact waste management;
- Ensure that ongoing design development refers to this report and integrates measures which look to design out waste;
- When on-site, ensure that the RMP is incorporated into all relevant aspects of site management;
- Retain a copy of this report and any updates to the RMP on-site. All contractors should be made aware of its location. The original should be kept in the client offices. The waste measures stated in this report should be communicated during site inductions;
- A waste summary will be produced and added to the monthly environmental report. Upon completion of works on-site, a report shall be produced by the principal contractor that will detail total waste produced and actual recycling rate achieved;
- On completion, the principal contractor shall summarise all waste reports and compare the figures to the initial estimates in this report; and
- Future recommendations to improve site waste management will be recorded and shared with the client, as well as other design and construction teams working on the development during the design stage.

Appendix A Waste Management Policy and Guidance

A.1 Introduction

This appendix provides an overview of the most relevant national, regional and local policies and guidance relating to the management of CD&E waste generated during the proposed development's construction phase.

A.2 National Context

National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2019)

The National Planning Policy Framework (NPPF) notes that the purpose of the planning system is to contribute to the achievement of sustainable development. In paragraph 8, the document identifies three dimensions to sustainable development: economic, social and environmental. It states that these should be pursued in mutually supportive ways, so that opportunities can be taken to secure net gains across each of the three objectives. As part of its environmental role, the planning system should help to use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

The 2012 NPPF did not contain specific waste policies, since national waste planning policy was published as part of the National Waste Management Plan for England. Similarly, the revised NPPF should be read in conjunction with the government's separate planning policy for waste. Where waste is mentioned, there is little difference between the 2012 and revised versions of the Framework. Both documents note that efforts must be made to minimise waste generation and to facilitate the sustainable use of recycled materials.

National Planning Practice Guidance: Waste (Ministry of Housing, Communities and Local Government, 2015)

The National Planning Practice Guidance (NPPG) for waste provides information further to the NPPF to support local authorities in implementing waste planning policy. For example, it sets out the role of waste planning in meeting the obligations of the European Union Waste Framework Directive (2008/98/EC) and implementing the waste hierarchy, and gives guidance on how to develop and identify waste requirements in Local Plans. It also provides details on determining planning applications, the regulatory regimes controlling waste management planning, and the requirement for inspections and monitoring to be carried out by local authorities to ensure compliance with the Waste Framework Directive.

National Planning Policy for Waste (Ministry of Housing, Communities and Local Government, 2014)

The National Planning Policy for Waste document states that non-waste planning applications should consider the impact on existing and planned waste infrastructure and that suitable provision should be made for managing waste within new developments. It stresses the need to ensure that the handling of waste arising from construction and operation of non-waste developments maximises re-use/recovery opportunities and minimises off-site disposal.

Our Waste, Our Resources: A Strategy for England (Department for Environment, Food and Rural Affairs, 2018)

This strategy sets out plans to double resource productivity and eliminate avoidable wastes of all kinds by 2050. It includes details of how waste will be minimised and managed to reduce damage to the environment. The strategy gives a policy direction in line with the Department for Environment, Food and Rural Affairs' (Defra) (2018) 25 Year Environment Plan, with a particular focus on moving away from a traditional linear economic model towards a more sustainable and efficient circular model.

Relevant targets from this document include the following:

- To work towards achieving a 65% recycling rate for municipal solid waste (MSW) by 2035;
- To work towards sending 10% or less of MSW to landfill by 2035; and
- To eliminate all avoidable waste by 2050.

A.3 Regional Context

Joint Waste Local Plan for Merseyside and Halton (Waste Planning Merseyside, 2013)

The Joint Waste Local Plan for Merseyside and Halton, adopted in 2013, focuses on collaborative waste management planning between Halton, Knowsley, Liverpool, St. Helens, Sefton, and Wirral Councils, all of which form part of the Liverpool City Region. The plan sets the direction for the region's future waste management development for the period between 2013 to 2027, both in terms of site allocations for new waste processing/management sites and the development of detailed management policies. Upon adoption of the Waste Local Plan, its policies and allocations became part of each partnered authority's Local Development Framework (LDF).

The following policies set out in the Waste Local Plan are relevant to this CWMS:

- *Policy WM0 – Presumption in Favour of Sustainable Development*

  Planning applications that accord with the policies in this Waste Local Plan (and other relevant Local Plan documents including policies in Neighbourhood Plans) will be approved without delay, unless material considerations indicate otherwise.

- *Policy WM8 – Waste Prevention and Resource Management*

  Any development involving demolition and/or construction must implement measures to achieve the efficient use of resources, taking into account the following:

  - Construction and demolition methods that minimise waste production and encourage re-use and recycling materials, as far as practicable on-site;
  - Designing out waste by using design principles and construction methods that prevent and minimise the use of resources and make provision for the use of high-quality building materials made from recycled and secondary sources; and
  - Use of waste audits or site waste management plans (SWMP), where applicable, to monitor waste minimisation, recycling, management and disposal.

  Evidence demonstrating how this will be achieved must be submitted with development proposals of this type.

- *Policy WM 9 – Sustainable Waste management Design and Layout for New Development*

  The design and layout of new built developments and uses must, where relevant, provide measures as part of their design strategy to address the following:

  - Facilitation of collection and storage of waste, including separated recyclable materials;
  - Provide access to enable waste and recyclable materials to be easily collected and transported for treatment; and
  - Facilitate small scale, low carbon combined heat and power in major new employment and residential schemes, where appropriate.

Joint Recycling and Waste Management Strategy for Merseyside (2011)

This report addresses resource efficiency, a subject that is also promoted by the Local Plan. It aims to provide the headline strategic route map to deliver sustainable waste management on Merseyside, transform the waste agenda and move towards greater resource efficiency.

A.4 Local Context

Liverpool Unitary Development Plan: A Plan for Liverpool (2002)

LCC's Unitary Development Plan (UDP) is a statutory document that forms part of the city's Local Plan framework, the aim of which is to help the local authority in their decision-making capacity and to provide guidance on development and how to best protect/enhance the city's environment. It provides authorities with information on a wide range of land use issues which have the potential to arise over the plan period, which in turn provides a basis for development control decisions.

With the adoption of the Merseyside and Halton Joint Waste Local Plan, a number of waste related policies within Liverpool's UDP were superseded and replaced. The UDP policies replaced by the Waste Local Plan relate specifically to landfill gas (Policy EP3), landfill (Policy EP4), waste related uses (Policy EP5), waste reception centres (Policy EP6), recycling (Policy EP7) and fly-tipping (Policy EP8).

The UDP policy relevant to the proposed development that has been saved following the adoption of the Joint Waste Local Plan is set out below:

- *Policy EP9 – Waste Storage*

  Planning permission will only be granted for development generating commercial waste where there is:

  - Adequate provision for the on-site storage of all waste arising from the operation of the premises; and
  - Adequate access to enable waste to be transferred effectively to a licensed waste disposal contractor.

The Draft Liverpool Local Plan (2019)

LCC is currently preparing a new Local Plan which, once adopted, will replace the UDP. The Pre-Submission Draft of the Local Plan has undergone numerous consultations in 2013, 2014, 2016, and most recently in 2018. It has now been submitted for to the Planning Inspectorate for independent examination. As of October 2019, no examination hearings had been scheduled. As such, it is unclear when the new Local Plan will be formally adopted. In accordance with NPPF paragraph 48, the current submission draft has substantive, but not full, weight in decision-making given that it remains under examination and so there may remain 'unresolved' objections to the strategy.

The Local Plan will help guide the long-term spatial vision, strategic priorities and policies for future development in Liverpool over the next 15 to 20 years. The Plan will focus specifically on the quantity and location of new homes, employment, retail and commercial services, transport and other infrastructure provision, climate change mitigation and adaptation, and conservation/enhancement of the natural and historic environment.

The Local Plan does not contain any detailed policies relating to waste as these are all set out in the Joint Waste Local Plan for Merseyside and Halton (2013). However, some policies outlined in the draft Local Plan are of relevance to waste management. For example:

- *Policy H13 (New Housing – Physical and Design Requirements outside the City Centre)*

  Sufficient provision for waste management should be made and the proposal should promote good design to secure the integration of waste management facilities with the rest of the development including waste storage facilities. All proposals will be expected to have regard to the City Council's latest Recycling and Waste Management guidance.

- *Part J of Policy UDP 2 (Development Layout and Form)*

  Requires that waste and recycling storage are designed in a positive manner and are integrated into the development.

- *Part E of Policy SP4 (Food and Drink Uses and Hot Food Take-aways)*

  Requires that an appropriate location for commercial trade waste, including recycling facilities, has been identified. Bins must be contained within the curtilage of the premises and should be stored so to not cause odour nuisance, be convenient for refuse collection and be screened to protect visual amenity. Any bin provision should be retained in perpetuity.

Planning advice note on refuse storage and recycling facilities in new developments (2005)

This note provides advice on the Council's recommended standards for refuse storage and recycling in all new developments. The guidance will ensure that the right number and size of refuse containers are provided for particular developments and are located externally where possible. Larger schemes will be required to provide a storage area for the recycling of materials too.

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