Appendix I -1

Demolition Waste Estimates

Appendix I-1: Estimated demolition waste generated from the proposed JFH

Demolition work	Year	Waste Mass (tonnes)
St Elmo's Substation	2018	626
Westaway Court	2019	11,684
Stafford Hotel	2019	5,740
Hotel Revere	2019	5,467
36-40 Kensington place (incl. Sutherland Court)	2019	1,450
44 Kensington Place (Aromas Building)	2019	367
Block G	2019	4,099
Peter Crill House	2022	6,900
Gwyneth Huelin Block, Block E	2022	12,463
Day Care Extension	2022	1,444
Block F Laboratory/Pathology	2022	10,908
Parking Structure	2022	955
Block A	2026	22,323
TOTAL		**84,426**

1.1 These demolition wastes have been calculated using the volume of the existing structures. This volume was input into the Demolition Waste Calculator in the WRAP Net Waste Tool (nwtool.wrap.org.uk) to estimate the quantity and composition of demolition waste.

1.2 Floor areas of existing buildings which will be cleared from the Site have been provided by the States of Jersey[1] .

1.3 The estimated density of demolition waste has been converted to volume using a conversion factor of 0.87 tonnes per cubic metre developed by WRAP[2].

[1] States of Jersey (2016) Existing Ground Floor Plan
[2] WRAP (2014) *Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools*

1.4 As demolition planning is ongoing, the quantities provided are indicative only, and will be subject to change but represent a worst case basis for environmental assessment.

Appendix I-2

Site Waste Management Plan
Guidance Document

States of Jersey Property Holdings

Jersey Future Hospital Project

Outline Site Waste Management Plan (SWMP) Guidance Document

Issue | 29 March 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 234639-04

Admiral House Rose Wharf
78 East Street
Leeds LS9 8EE
United Kingdom

ARUP

Document Verification

ARUP

Job title		Jersey Future Hospital Project			**Job number** 234639-04
Document title		Outline Site Waste Management Plan (SWMP) Guidance Document			**File reference**
Document ref					
Revision	**Date**	**Filename**			
Draft 1	03 June 2017	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	Max Rooksby	Bob Hudson	
		Signature			
Issue	29 March 2018	**Filename**	Jersey Future Hospital Project SWMP Guidance Note.docx		
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

Appendices

Appendix A

The Site Waste Management Plan Template

Appendix B

Demolition Waste

Appendix C

Excavation Waste

Appendix D

Construction Waste

1 Introduction

1.1 Overview

This Outline Site Waste Management Plan (SWMP) guidance document and accompanying SWMP template has been prepared by Ove Arup and Partners Ltd (Arup) for and on behalf of Jersey Property Holdings for the proposed Jersey Future Hospital (JFH).

In line with the environmental aspirations of the Proposed Development, this SWMP and accompanying template constitutes the design stage SWMP for the Jersey Future Hospital Project Development (referred to as the Proposed Development). The SWMP will be refined when:

a) future design details enable waste streams to be quantified more accurately; and

b) the Preferred Principal Contractor (PPC) is appointed.

The SWMP will be submitted to the States of Jersey as part of the planning application documents to demonstrate how resources and waste have been considered during the design stage of the Proposed Development and how effective and sustainable waste management would be delivered during the project. Implementation of the SWMP will ensure that significant adverse effects do not arise as a result of the construction phase.

1.2 Site summary

The Site forms part of the wider Jersey General Hospital site in St Helier. There are a number of sites associated with the Jersey Future Hospital proposals, including;

- Parts of the General Hospital site (to provide cleared site for redevelopment);
- Acquired properties along Kensington Place (Stafford and Revere Hotels, 36-40 (including Sutherland Court) and 44 Kensington Place;
- Patriotic Street Car-Park; and
- Newgate Street, Patriotic Street and Patriotic Place, Kensington Place (highways works).

1.3 The Proposed Development

At this stage in the design process, the proposed development is anticipated as a number of phases that will include outline planning application for the demolition of Stafford Hotel, Revere Hotel, 36-40 and 44 Kensington Place including Sutherland Court, and parts of the General Hospital including: Peter Crill House, Gwyneth Huelin Wing, link block, engineering block and chimney, 1960s and 1980s blocks on the Parade, temporary theatre block and Westaway Court. Phased construction of new hospital buildings at the General Hospital site and at Westaway Court, refurbishment of the Granite Block for continued non-clinical hospital use, improvements and construction of one half-deck of parking to Patriotic

Street Car Park, and all associated landscaping and public realm, highways and access, plant and infrastructure works.

The key phases of the proposed development, with regards to this SWMP are:

- Demolition of the existing buildings;
- Earthworks activities; and
- The construction of the proposed development;

Waste generated, that is deemed to have little value or use would require recovery or final disposal. There would be the need to store waste and recyclables, prior to their collection and subsequent treatment.

The waste streams identified during the construction process are likely to consist of:

- Demolition: Demolition waste materials would comprise of concrete, masonry, steel, non-ferrous metals, wood, plastic, glass, plasterboard, asphalt, mixed waste, and hazardous waste (including asbestos);
- Excavation: Waste such as sands and gravels would arise from the excavation works; and
- Construction: Construction waste materials would comprise of concrete, masonry, steel, non-ferrous metals, wood, plastic, glass, plasterboard, asphalt, packaging, excavated soil, mixed waste, canteen waste and hazardous waste.

1.4 Site Waste Management Plan

The SWMP is an important tool to improve the environmental performance of a project. It will be used throughout the design process, to promote ‘designing out waste’ and the development of a waste strategy through the demolition, excavation and construction phase. It will also be used to monitor waste arisings and optimise the strategy going forward.

1.5 SWMP Format

This document together with the SWMP template constitutes the design stage SWMP for the project. It identifies the key wastes that are likely to be produced from the project and appropriate waste management and minimisation options, with an aim to encourage resource efficiency and sustainable waste management.

The SWMP has been developed in draft format, based on the information available at the time of writing it, making it easy to update and finalise as further data becomes available.

The SWMP will be refined as future design details enable waste streams to be quantified more accurately.

The SWMP template is a spreadsheet based on a template developed by the Waste and Resources Action Programme (WRAP) and Zero Waste Scotland (ZWS). It is designed to be used to ensure waste is considered during the design stage of the project, provide information to determine waste management and recovery options and record actual waste related actions and movements during the demolition, excavation and construction phases of project. This

will ensure good practice sustainable resource and waste management is implemented during the construction phase.

2 Construction, Demolition and Excavation (CD&E) Waste Forecast

The forecast of the total quantity of CD&E waste likely to be generated by the proposed JFH has been estimated and is displayed in Table 1 below. The data and assumptions used to estimate this CD&E waste forecast are summarised in Sections 2.1 - 2.3. In addition Appendices B – D include the comprehensive methodology used to estimate the CD&E waste forecast.

Table 1: Construction, Demolition and Excavation (CD&E) Waste Forecast

Demolition Waste (tonnes)	Demolition Waste (m^3)	Excavation Waste (tonnes)	Excavation Waste (m^3)	Construction Waste (tonnes)	Construction Waste (m^3)	Total CD&E Waste (tonnes)	Total CD&E Waste (m^3)
84,426	97,041	70,478	56,383	3,953	6,292	158,858	159,716

2.1 Demolition Waste

The site includes a number of existing structures which will require clearing as part of the proposed JFH. Existing structures on the site that will be demolished include:

- St Elmo's Substation;
- Westaway Court;
- Aromas Building;
- Peter Crill House;
- Gwyneth Huelin Block A, B and C;
- Day Care Extension;
- Block F Laboratory/Pathology;
- Block G;
- Parking Structure;
- Stafford Hotel;
- Revere Hotel;
- 36-40 Kensington Place (including Surtherland Court);
- 44 Kensington Place; and
- Block A.

These demolition wastes have been calculated using the volume of the existing structures which will be cleared from the Site. This volume was input into the Demolition Waste Calculator in the WRAP Net Waste Tool (nwtool.wrap.org.uk) to estimate the quantity and composition of demolition waste.

Floor areas of existing buildings which will be cleared from the Site have been provided by the States of Jersey.

The estimated density of demolition waste has been converted to volume using a conversion factor of 0.87 tonnes per cubic metre developed by WRAP[1].

Appendix B contains the assumptions and estimations used to forecast the demolition waste arising from the Proposed Development and the estimation of the demolition waste streams.

2.2 Excavation Waste

As earthworks design is ongoing, the quantities provided are indicative only, and will be subject to change. An earthworks review will be required to form the final development levels.

Arup have provided the initial estimations for the volume of materials that would be generated for excavation activities.

The excavation volumes have been converted to a tonnage using a conversion factor of 1.25 m^3/tonne developed by WRAP[2]. The conversion factors are based on information from the Environment Agency Wales which is acknowledged to be the most up-to-date available.

The excavation waste estimations are included in Appendix C.

2.3 Construction Waste

The quantity of construction waste likely to be generated from construction has been estimated using BRE SMARTWaste data[3], based on the floor areas of the proposed buildings. The data used has been collected via the SMARTWaste tool since 2008 and provides benchmark waste generation data for completed projects, for a range of different types of projects. This is considered the best data to use for the estimation of construction waste generation.

Construction waste is a complex mixture of different material types such as soil, concrete, other inert materials, wood, metals, plasterboard, packaging, etc. The composition of construction waste has been estimated by using BRE SMARTWaste data[4] to produce a construction waste composition for the Proposed Development.

The expected quantities and the composition of the waste produced during the construction of the proposed development are provided in Appendix D.

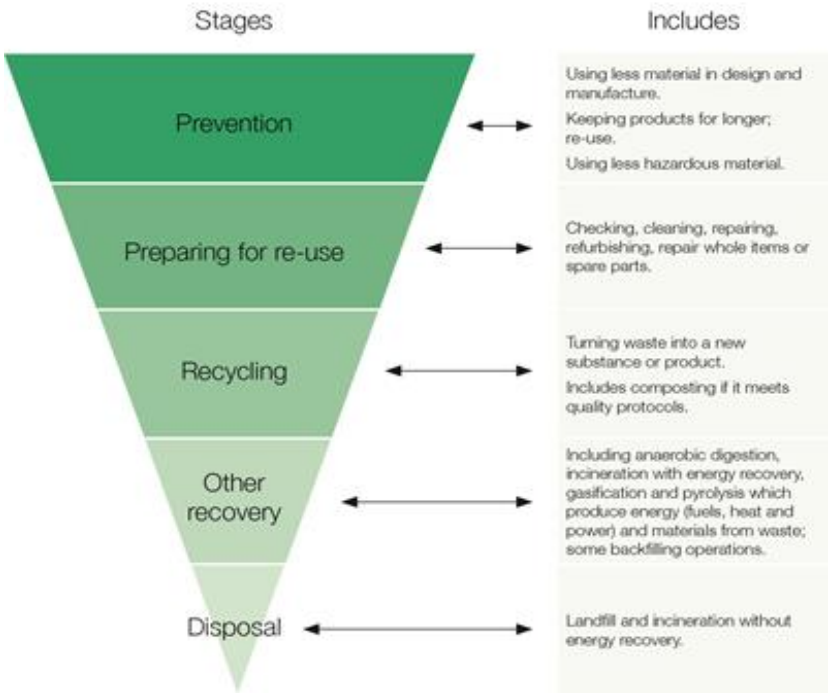
[1] WRAP (2014) *Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools*
[2] WRAP (2010*) A guide to volume to mass conversion factors and List of Waste categories used within WRAP's tools.* Available from http://www.wrap.org.uk/document.rm?id=6932
[3] Buildings Research Establishment (BRE) (2012) BRE Waste Benchmark Data 2012.
[4] Ibid.

3 Waste Management Options

3.1 General

The PPC will appraise waste management options with the aim of moving waste up the waste management hierarchy as displayed in Figure 1.

Figure 1: The Waste Hierarchy



The information below details the actions that will be undertaken by the project team to prevent, re-use, recycle, recover and dispose of waste.

3.2 Demolition

Materials arising from demolition works will be integrated with the future works programme on-site or at least be considered for use in other building projects. The design team for the proposed JFH will aim to follow the principles of the ICE Demolition Protocol, a resource efficiency model that shows how the production of demolition material can be linked to its specification as a high value material in new buildings. The principles of the Demolition Protocol include:

- investigating the opportunities to re-use existing structures, hardstanding, walls, etc;
- where this is not appropriate the PPC will consider crushing demolition materials for recycling as aggregates or fill on-site; and
- if on-site recycling is not feasible, the PPC will identify opportunities for recycling the demolition materials through a recycling contractor or in other external projects.

There is potential for asbestos in the existing buildings, therefore the amount of demolition materials available for recovery is likely to be reduced (and has been taken into account in the calculations of waste arisings). On-site investigation is required to determine the level of contaminated land and to identify the appropriate remediation options.

Any hazardous materials would need to be segregated separately from 'clean' demolition materials to avoid cross contamination before they are sent for appropriate and licensed treatment/recovery/disposal.

3.3 Excavation Phase

On-site investigation is required to determine the level of contaminated land and to identify the appropriate remediation.

Where on-site re-use or recycling is not feasible the PPC will investigate alternative recovery routes for excess excavated materials, such as:

- use as fill material at other construction-sites close to the site; and
- send for treatment through composting to produce a soil improver.

Early identification of, and communication with, other developments and processors will be undertaken by the PPC to help identify opportunities to recover this material.

Contaminated materials will be segregated separately from the ‘clean’ excavated materials to avoid cross-contamination before they are sent for appropriate and licensed treatment/recovery/disposal.

3.4 Construction Phase

3.4.1 Designing Out Waste

Designers can play a key role in reducing the amount of waste generated in a construction project. By considering materials and waste in the design process there are likely to be more significant opportunities for resource efficiency. The most significant opportunities for designing out waste are in the early stages of the design process. The actions undertaken throughout the evolution of design will determine the levels of materials consumed and waste generated during the construction as well as maintenance and the end of life phase of a project.

Waste is being considered by the design team of the development to ensure that the minimum amount of material is wasted. The design team are also investigating opportunities to avoid, reduce and re-use excavated materials on-site.

3.4.2 Waste Minimisation

Efficient use of materials would make a major contribution to reducing the environmental effects of construction including reducing demand for landfill and the depletion of finite, natural resources through:

- minimising the overall creation of waste resulting from, for example, over ordering or inefficient design;
- reducing the quantity of material sent to landfill during the construction process through effective waste management;
- recycling materials already on the construction-site into the new construction project; and
- using more recycled materials and mainstream products with higher recycled content.

The project team will strive to minimise construction waste. Table 2 below demonstrates good practice which will be considered to further minimise waste arisings during the construction process.

Table 2: Good Practice Waste Minimisation for the Construction Phase

Good Practice	Description
Sustainable procurement	Materials selected will be durable to ensure long life and reduced need for replacement. Over-ordering of materials will be avoided and suppliers that minimise packaging will be used, where possible. Where feasible any packaging will be returned to the supplier for recycling. Construction material specifications will prioritise the procurement and use of recycled/secondary aggregates and other recycled materials e.g. wood for formwork.
Supply chain partners	All members of the supply chain will be aware of the SWMP. The Project Manager will ensure that someone is responsible for the implementation of the SWMP. Workshops will be held throughout the construction period to help reinforce the SWMP and ensure that all partners are kept up to date with developments. Targets will be established for the minimisation of waste and the recycling of materials. These targets would then be communicated to the workforce and performance against them would be measured and used to promote positive PR.
Avoid wasteful working practices	Staff will be given appropriate training both as part of site induction and at intervals throughout the life of the project such as Toolbox Talks.
Materials management	Materials will be appropriately handled and stored throughout their lifecycle from delivery to inclusion, e.g. return surplus materials to storage. Materials will be delivered to the site ‘just-on-time’, this would limit the need for excess on-site storage and would limit the chance of wastage through damage of the stored materials. There will be a designated area for the storage of materials.
Modern Methods of Construction	The introduction of Modern Methods of Construction (MMC) will be investigated during the construction phase of the proposed JFH. MMC entails improvements in the products or processes employed in construction, ranging from innovative components to be used on-site through to whole building systems manufactured off-site will be investigated. Opportunities to introduce MMC on the project will be investigated.

3.4.3 Re-use of materials

The PPC will maximise the re-use of any existing materials and construction elements wherever possible. The PPC will establish a waste storage and recycling area for the safe storage and processing of recovered materials to ensure that opportunities for re-use are maximised.

Table 3 demonstrates good practices which will be investigated to re-use materials during the construction phase.

Table 3: Re-use Good Practice for the Construction Phase

Good Practice	Description
Timber	Wood is a very durable material and can be re-used many times on-site before it needs to be replaced. Timber can also be re-used as formwork and hoarding. Store off cuts for use. Pallets can also be re-used for the storage of on-site unpalletised materials. Uncontaminated wood can be chipped and re-used in landscaping.
Inert	Unused bricks and blocks can be reclaimed and re-used in other buildings or could be stored for use in any paving required for public realm.
Ceramic	High value ceramic materials can be recovered for re-use. Any spare tiles can be re-used on another project or in landscaping.
Insulation	Insulation offcuts can be re-used for other applications across the site.

3.4.4 Recycling of Materials

While reduction of waste will remain the highest priority, waste produced will be segregated for recovery. This will allow materials to be recycled and ultimately reduce the amount of waste that has to be finally disposed of.

Table 4 below demonstrates construction site waste management good practices which will be investigated to optimise the amount of materials recovered during the construction process.

Table 4: Recycling Good Practice for the Construction Phase

Good Practice	Description
Timber	Unusable timber waste can be separated in a container so that off-site recycling can occur. The PPC will also consider returning storage pallets where possible.
Concrete	A cost benefit analysis should be undertaken to identify if any concrete waste could be segregated from the general construction waste and be suitably stored for crushing concrete on-site for use as aggregate where it is not possible to use it in their current form.
Inert	A cost benefit analysis should be undertaken to identify if any inert waste from construction works can be stored on-site for crushing on-site for use as aggregate for highways and landscaping where it is not possible to use it in their current form.

Good Practice	Description
Ceramic	Ceramics can be segregated and investigations should be made to identify a recycler.
Insulation	Any insulation can be segregated and investigations should be made to identify a recycler or a take back scheme with a local supplier.
Plastic	Plastics can be segregated and investigations will be made to identify a plastics recycler. It may be possible to recycle a range of plastics including High Density Polyethylene (HDPE), Low Density Polyethylene (LDPE), Polypropylene (PP), Polyvinyl chloride (PVC) and Polystyrene.
Packaging	The PPC will encourage its suppliers to reduce packaging materials and deliver products in returnable transport packaging where possible.
Metals	Metal wastes will be segregated and sent for off-site recycling. It is recommended that high value metals, such as steel, aluminium and copper are stored separately and sold on to merchants and/or material suppliers.
Plasterboard and cement	Uncontaminated plasterboard can be crushed and recycled in landscaping (this would need to be approved by the projects architects and designers). There may also be options for recycling plasterboard off site or establish a take-back scheme with the supplier.
Miscellaneous	Textiles disposed by labourers can be recycled as rags and protecting materials. Glass can be collected, segregated and sent for recycling.
Hazardous Waste	Hazardous waste such as oils and solvents will be recycled where possible.

3.4.5 Recovery Targets

Jersey Property Holdings and the PPC will set targets for waste recovery (both on-site and off-site). The PPC will aim for Good Practice Recovery rates and where this is not achieved will be expected to demonstrate why it is not technically or financially feasible. Rates shown below in Table 5 are from a WRAP report entitled Achieving Good Practice Waste Minimisation and Management[5]. Recovery should be prioritised in line with the waste hierarchy, with waste being recycled before other recovery methods.

Table 5: Waste Recovery Rates

Material	Standard Recovery (%)	Good Practice Quick Win (%)	Best Practice Recovery (%)
Wood	57	90	95
Metals (ferrous and non-ferrous)	95	100	100
Plasterboard	30	90	95
Packaging	60	85	95
Ceramics	75	85	100
Concrete	75	95	100

[5] WRAP (2008) *Achieving Good Practice Waste Minimisation and Management* Available from: http://www.wrap.org.uk/downloads/WMM_guide_Mid_level.abdee80c.4065.pdf

Material	Standard Recovery (%)	Good Practice Quick Win (%)	Best Practice Recovery (%)
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical Equipment	Limited information	70	95
Furniture	0-15	25	50
Insulation	12	50	75
Cement	Limited information	75	95
Liquids and oils	100	100	100
Hazardous	50	Limited information[6]	Limited information

3.4.6 Take-back schemes with suppliers

Wherever possible the PPC will establish take-back schemes with suppliers to accept surplus material not incorporated in the works.

3.5 Other recovery options

The PPC will identify potential off-site recovery options for all remaining residual waste. There are waste management companies can recover residual waste which could help further segregate and divert waste from disposal.

3.6 Energy from Waste

Residual waste that is not suitable for reuse, recycling or composting should be used for energy generation.

3.7 Hazardous Waste

Hazardous waste will be correctly labelled, will not be mixed with non-hazardous waste, securely contained and disposed of by a certified waste carrier for hazardous waste. The Duty of Care (DoC) applies to hazardous wastes.

3.8 Landfill

Where no other waste management option is found to be feasible, wastes will be sent to an appropriately licensed landfill site.

[6] This cannot be 100% as much hazardous waste (e.g. asbestos) must be landfilled.

4 On-site practice

The PPC will introduce good on-site practice to ensure waste is managed effectively. While reduction of waste will remain the highest priority, waste produced will be segregated. This will allow materials to be re-used/recycled and ultimately reduce the amount of waste that has to be finally disposed of. The waste stream colour-coding developed by the Institute of Civil Engineers[7] to raise waste awareness will be considered.

4.1 Waste Champions

The PPC will nominate a designated Waste Champion at all stages of the development including design. The Waste Champion will have sufficient authority and clear responsibilities.

4.2 Site Induction and Toolbox Talks

The PPC will provide general information on waste and specific information relating to the SWMP in site inductions and toolbox talks. This training will include information on the segregation strategy and recovery targets in place at the site. Any changes to the SWMP will be communicated at toolbox talks.

4.3 Environmental Training for Key Staff

The PPC will implement a programme of environmental training for key staff at the site. This will enable them to train other operatives through toolbox talks and gather feedback from site personnel.

4.4 Sub-Contractors

The PPC will establish agreements with sub-contractors for the management of waste.

4.5 Waste Management Facilities

The PPC will identify waste management facilities for the management of all waste streams arising from the site. The waste management facilities, where feasible, will be as close to the site as possible, in line with the proximity principle for waste treatment.

4.6 Waste Management Contractors

The PPC will engage with waste management contractors early in the design process to identify opportunities for recycling materials generated by the development.

[7] Further information is available on the Institute of Civil Engineers website – www.ice.org.uk

5 Monitoring

Monitoring and measurement of waste will be undertaken on a regular basis by the PPC, with regular interpretations to identify trends and rectify wasteful practices. The results of monitoring will be included in regular site meetings.

6 Review

As often as necessary to ensure that the plan accurately reflects the progress of the project, the PPC will review the plan and record the types and quantities of waste produced along with the associated treatment or disposal method.

6.1 Update prior to hand back

Within three months of the work being completed the PPC will add to the plan along with confirmation that the SWMP has been updated on a regular basis.

7 The Site Waste Management Plan Template

Arup have completed the template using the data provided by States of Jersey Property Holdings.

The SWMP template is a spreadsheet based on a template developed by WRAP and ZWS. It is designed provide the estimated CD&E waste for a project, determine waste management options as well as record actual waste related actions.

7.1 Completing the SWMP

Completing the following steps will encourage improved waste prevention and waste management performance.

The accompanying SWMP template will be completed by Jersey Property Holdings. When the works commence on-site the remaining Steps will be completed by the Preferred Demolition Contractor and PPC.

The PPC may have their own SWMP template which they choose to utilise as the project progresses.

7.1.1 Introduction Worksheet

The Introduction worksheet includes a description of how to complete the SWMP Template.

7.1.2 Estimated Waste Worksheet

The Estimated Waste worksheet includes a breakdown and estimation of the different waste streams generated by the Proposed Development during the Demolition, Excavation and Construction phases.

Project planning is ongoing which means that at this stage the quantities provided in the SWMP are only indicative.

7.1.3 Actual Waste Movements Worksheet

When any waste is removed from the site the Preferred Demolition Contractor and PPC must record these movements in the SWMP.

Appendix A

The Site Waste Management Plan Template

A1 The Site Waste Management Plan Template

Figure A1 below displays an image of The Site Waste Management Plan Template for the Proposed Development. The image features the Introduction worksheet which includes a description of how to complete the SWMP Template.

wrap Working together for a world without waste

ZERO WASTE SCOTLAND

Site Waste Management Plan 'Lite'

Welcome to the Site Waste Management Plan 'Lite' (SWMP) tool. It is a scaled-down version of the main SWMP Template and is intended for use by clients, designers and contractors working on small projects (<£300k). SWMP 'Lite' is not compliant with the Site Waste Management Plan Regulations (2008) in England. Using SWMP 'Lite' early in projects, and working through the tool's stages, can help you to identify opportunities to reduce waste on site, improve waste management and achieve cost savings.

Use the SWMP 'Lite' tool to:

1. estimate waste (and identify waste reduction actions);
2. record actual waste movements and (record if actions have been implemented); and
3. review project performance.

User Notes

You may find it easier to use Excel Full Screen view to navigate around the SWMP 'Lite'.

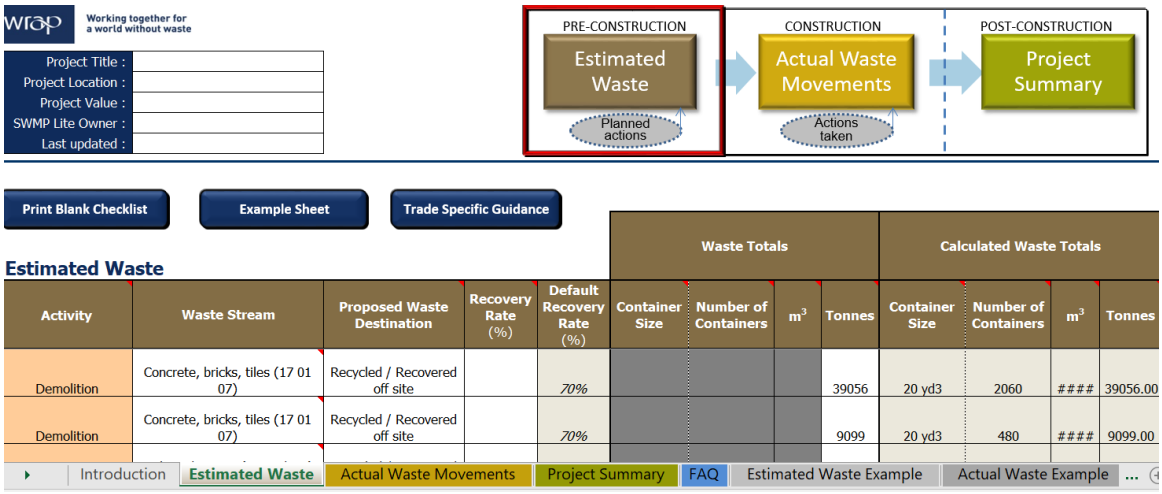
Getting Started

The top left corner of the Estimated Waste worksheet contains text boxes for the basic project details. You can enter the Project Title, Project Location and Project Value details as well as the name of the owner of the tool and when the spreadsheet was last updated. These details will be carried through to all the other construction stages.

To move between the different construction stages, select the appropriate stage from the brown/yellow/green header image (shown below). The header image will display a helpful red box circling the stage you are working on to assist you to navigate between the main spreadsheets.

Figure A1: The Site Waste Management Plan Template for the Future Jersey Hospital Project

Figure A2 below displays an image of the Estimated Waste worksheet which includes a breakdown and estimation of the different waste streams generated by the Proposed Development during the Demolition, Excavation and Construction phases.



wrap Working together for a world without waste

Project Title :	
Project Location :	
Project Value :	
SWMP Lite Owner :	
Last updated :	

PRE-CONSTRUCTION: Estimated Waste (Planned actions)
CONSTRUCTION: Actual Waste Movements (Actions taken)
POST-CONSTRUCTION: Project Summary

Print Blank Checklist | Example Sheet | Trade Specific Guidance

Estimated Waste

Activity	Waste Stream	Proposed Waste Destination	Recovery Rate (%)	Default Recovery Rate (%)	Waste Totals: Container Size	Waste Totals: Number of Containers	Waste Totals: m^3	Waste Totals: Tonnes	Calculated Waste Totals: Container Size	Calculated Waste Totals: Number of Containers	Calculated Waste Totals: m^3	Calculated Waste Totals: Tonnes
Demolition	Concrete, bricks, tiles (17 01 07)	Recycled / Recovered off site		70%				39056	20 yd3	2060	####	39056.00
Demolition	Concrete, bricks, tiles (17 01 07)	Recycled / Recovered off site		70%				9099	20 yd3	480	####	9099.00

Introduction | Estimated Waste | Actual Waste Movements | Project Summary | FAQ | Estimated Waste Example | Actual Waste Example ...

Figure A2: The Site Waste Management Plan Template for the Future Jersey Hospital Project

Appendix B

Demolition Waste

Appendix B contains the assumptions and estimations used to calculate the demolition waste arising from the proposed Jersey Future Hospital (JFH).

Table B1 below displays the estimated demolition waste generated associated with the demolition works associated with the proposed JFH.

Demolition waste has been estimated based on measurements of existing buildings, which are scheduled to be demolished. The floor areas of these buildings were provided by the States of Jersey[8].

The structural dimensions of the buildings to be demolished have been entered into the Demolition Waste Calculator of the Waste & Resources Action Programme's (WRAP's) Net Waste Tool (nwtool.wrap.org.uk) to estimate the mass (in tonnes) of demolition waste.

The estimated density of demolition waste has been converted to volume using a conversion factor of 0.87 tonnes per cubic metre developed by WRAP[9].

Table B1 : Buildings to be demolished

Building Name	**Number of storeys**	**Ground Floor Area (m^2)**	**Estimated Demolition Waste (tonnes)**
St Elmo's Substation	3	161	626
Westaway Court	Various	4,370	11,684
Peter Crill House	6	680	6,900
Gwyneth Huelin Block E A	3	326	1,649
Gwyneth Huelin Block E B	1	969	1,640
Gwyneth Huelin Block E C	5	1,087	9,174
Day Care Extension	3	320	1,444
Block F Laboratory/Pathology	2.5	2,150	10,908
Parking Structure	1	563	955
Stafford Hotel	4	990	5,740
Hotel Revere A	4	108	598
Hotel Revere B	3	242	978
Hotel Revere C	3	364	1,487
Hotel Revere D	2	433	1,182
Hotel Revere E	3	299	1,222
Block G	2	1,010	4,099
Sutherland Court	3	399	1,450
Aromas Building A	3	73	306

[8] States of Jersey (2016) Existing Ground Floor Plan

[9] WRAP (2014) *Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools*

Building Name	Number of storeys	Ground Floor Area (m^2)	Estimated Demolition Waste (tonnes)
Aromas Building B	1	43	61
Block A Plinth	2	2,500	10,147
Block A Tower	7	1,000	12,176
Total Demolition Waste			**84,426**

Table B2 below displays the estimated waste streams that will be generated from the demolition of the existing buildings.

Table B2: The demolition waste estimated by the WRAP Net Waste Tool

Material	Quantity (tonnes)
Concrete	45,893
Masonry	10,530
Asphalt	0
Aggregates	7,912
Ferrous	13,581
Non-Ferrous	429
Timber	3,317
Glass	96
Plasterboard	2,185
Slates	381
Miscellaneous	100
Total	**84,426**

Appendix C

Excavation Waste

This Appendix C contains the assumptions and estimations used to calculate the excavation waste arising from the proposed Jersey Future Hospital (JFH). Table C1 below displays the estimated excavation waste generated from the proposed JFH.

Table C 1 : Estimated excavation waste

Activity	Waste Volume (m3)	Waste Mass (tonnes)
Excavation	56,383	70,478
Total	56,383	70,478

Initial estimations for the volume of excavated materials have been made based on the volume of the proposed basement and the required cut and fill activities. As a worst case scenario the volume of materials generated from the excavation of the basement has been increased by 10%[10].

The cut and fill volumes have been converted to tonnage using a conversion factor of 1.25 tonnes per cubic metre developed by Waste and Resources Action Programme (WRAP)[11].

[10] This is based on a professional judgement contingency added to the calculations to obtain a 'worst case'.
[11] WRAP (2014) Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools

Appendix D

Construction Waste

Appendix D contains the assumptions and estimations used to calculate the construction waste arising from the proposed Jersey Future Hospital (JFH).

D1.1 Construction waste quantity

Table D1 below displays the estimated waste generated during the construction of the proposed JFH.

The mass of waste likely to be generated from constructing the proposed development has been estimated using BRE SMARTWaste data[12].

Table D1 Estimated construction waste for the proposed JFH

Use	Net Footprint (m^2)	BRE Project Type	Mass (Tonnes)	Average $M^3/100m^2$	Mass (m^3)
Hospital	32,944	Healthcare	3,953	19.1	6,292
Total	**32,944**		**3,953**		6,292

D1.2 Construction waste composition

Table D2 below displays the estimated waste streams that will be generated from the construction of the proposed JFH. The construction waste composition has been estimated using benchmarking data for healthcare developments developed by WRAP and BRE[13].

Table D2: Construction waste composition for the proposed JFH

Waste Product	% of total	Mass (tonnes)
Asphalt	2	84
Binders	0.1	7
Bricks	5	196
Canteen/office/adhoc waste	1	43
Concrete	2	79
Electrical and electronic equipment	0.02	1
Floor coverings - soft	0.1	12
Furniture	0.1	4
Gypsum	3	101
Hazardous	0.05	2
Inert	54	2,139
Insulation	0.6	24
Liquids	0	0
Metals	0.9	34

[12] Buildings Research Establishment (BRE) (2012) BRE Waste Benchmark Data 2012
[13] WRAP and BRE (2015) SMARTWaste Data and Reporting

Waste Product	% of total	Mass (tonnes)
Mixed	16	629
Oils	0.04	2
Other	6.7	266
Packaging	3	129
Plastics	1	40
Soils	0	0
Tiles and Ceramics	0	0
Timber	4	161
Total	**100**	**3,953**