12 WASTE

Introduction

12.1 This chapter provides a qualitative assessment of the likely significant environmental effects of solid waste generation, associated with the construction and operation of the proposed Jersey Future Hospital (JFH) in the context of Jersey waste and environmental legislation. Mitigation measures are proposed to reduce any identified likely significant environment effects and to achieve sustainable resource and waste management.

Review of proposed development

12.2 The key phases of the proposed development and the types of likely waste generated, with regards to waste generation are:

- Demolition of the existing buildings – to include St Elmo's substation, Block A, Block G, Gwyneth Huelin Block, Peter Crill House, Stafford Hotel, Revere Hotel, 36-40 and 44 Kensington Place;
- Demolition of Westaway Court;
- Construction - including earthworks activities; and
- The operational phase of the proposed JFH.

12.3 Each of the development phases would generate materials that may be re-used or recycled both on-site and off-site. 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, during all phases of the development.

12.4 The waste streams identified for each of the development phases, are likely to consist of:

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

- **Operation Phase:** Commercial waste and hazardous waste would arise from the proposed development during operation.

Legislation, policy context and guidance

Legislation

Waste Management Law 2005[1]

12.5 The Waste Management Law was introduced to control waste management operations in Jersey and to reduce the risk of environmental pollution from their activities. The law includes the following controls:

- Procedures for the transportation of hazardous or healthcare waste, for which the Minister for the Environment must be notified;
- International Waste Shipments, any organisation exporting or importing waste in Jersey's territorial waters must pre-notify the Minister for the Environment;
- Licensing of waste operations;
- Prohibition of unlicensed or harmful activities involving waste; and
- Waste carriers including transporters of hazardous and healthcare waste must be registered with the Minister for the Environment.

Policy context

States of Jersey Island Plan Waste[2]

12.6 The waste section of the Island Plan identifies policies relating to waste management in Jersey. The policies were established using the 'Reduce, Manage, and Invest' and identifies that efforts must be made to:

- Minimise the amount of waste generated;
- Consider waste in design and construction;
- Promote and enhance recycling; and

[1] Waste Management Law (Jersey) 2005 Revised Edition 22.950
[2] States of Jersey (2014) Revised 2011 Island Plan, Waste Management. Available from: http://consult.gov.je/portal/adopted/pd/ip2011?pointId=1405696218002

- Reduce expenditure on disposal infrastructure.

States of Jersey Revised Island Plan

12.7 The waste section of the Revised Island Plan aims to:

- Deliver the States Strategic Plan and the Solid Waste Strategy;
- Secure a sustainable balance between the need for waste management operations, local community's requirements and sensitive local environments; and
- Provide clarity in relation to the location and scale of future waste management facilities.

12.8 The waste related objectives are to:

- Minimise the amount of solid waste generation through land use policies that facilitate waste reduction;
- Encourage recycling, composting and energy recovery facilities and placing less reliance on disposal;
- Implement the 'Waste Hierarchy';
- Promote designers of new development to consider sustainable waste management;
- Provide future inert solid waste disposal for when the site at La Collette II reaches the end of its life;
- Deliver other necessary solid waste management facilities; and
- Protect and enhance the overall quality of the environment at disposal sites once landfill has ceased, by promoting the highest standards of restoration and aftercare and ensuring appropriate after-use.

Relevant guidance

Asbestos Approved Code of Practice[3]

12.9 The Asbestos Approved Code of Practice (ACoP) has been produced by the Minister for Social Security in order to provide practical guidance to persons who have duties under the Health and Safety at Work (Jersey) Law, 1989, and who have responsibility for workplaces or are involved with working with asbestos.

Jersey is changing how it deals with Healthcare Waste[4]

12.10 In order to prolong the life of the Bellozane clinical waste incinerator and achieve cost efficiencies the States of Jersey government introduced a requirement to segregate healthcare waste into hazardous and non-hazardous in 2016.

12.11 Non-hazardous waste is now required to be separated into white 'Offensive waste bags' and the hazardous healthcare waste is to be separated into yellow bags labelled 'Hazardous Clinical Waste'.

Consultation

12.12 A number of stakeholders were consulted in relation to waste management on the Island of Jersey as displayed in Table 12.1.

Table 12.1: Response to representation from stakeholders on scope of waste assessment

Stakeholder	Comment	Response
SoJ Department of the Environment Head of Waste)	Confirmation given that the proposed methodology for the waste assessment was appropriate. Contact details within the Department for Infrastructure were provided in order to identify waste infrastructure in Jersey.	Assessment carried out as agreed and consultation carried out with DfI (see below).
SoJ Department for Infrastructure	Information was provided in relation to the Jersey Energy from Waste (EfW) facility such as hourly, daily and annual capacity. In addition the SoJ Department for Infrastructure was approached for the revised 2018 EIS to check if there were any changes to the capacities at the waste	Data used in assessment

[3] Minister for Social Security (2015) Asbestos Approved Code of Practice Management of Exposure to Asbestos in Workplace Buildings and Structures Health and Safety at Work (Jersey Law), 1989 ACop 8 Revised 2015

[4] Government of Jersey (2016) Jersey is changing how it deals with Healthcare Waste

Stakeholder	Comment	Response
	management facilities. Ian Williams confirmed there are no changes to the capacity at the EfW facility.	
	A request was made to be provided with a programme for when potential waste generated from construction and demolition would be delivered to the EfW facility along with the estimated quantities.	High level estimates of construction waste to be treated by EfW together with a programme for waste generation is included in Table 12.: assessment of effects. The program and quantities will be refined during detail design and details will be provided to SoJ Department for Infrastructure.
	Following confirmation of the demolition programme the Preferred Construction Contractor to provide the estimated volume of demolition waste that would be delivered to the Jersey EfW for recovery along with the associated schedule to ensure the facility can plan appropriately.	Noted
SoJ Department for Infrastructure, Business Development & Change Manager	Information was provided relating to the methods for managing Clinical Waste in Jersey. A guidance note was provided on the process for the segregation of clinical waste on the island. In addition the SoJ Department for Infrastructure was approached for the revised 2018 EIS Update to check if there were any changes to the capacity at the Clinical Waste facilities in Jersey. Hugh Wilson confirmed there are no changes to the capacity at the clinical waste facilities.	Information has been included within the baseline

Methodology

Overview

12.13 Quantities of waste that are likely to be generated during the demolition, construction and operational stages of the proposed JFH have been identified and compared against the existing and planned waste management capacity for Jersey. Significance of effects have been based on a comparison of the Island-wide waste management capacity with the expected waste generated by the proposed JFH. Mitigation measures are proposed for all phases of the development.

Methodology for establishing baseline conditions

12.14 The types of waste and capacities of waste management infrastructure and services in Jersey have been identified from existing literature, in addition to the consultation that is listed in Table 12.1. Data sources are listed in Table 12.2

Table 12.2: Data sources for information related to waste

Data source	Data/information
States of Jersey Island Plan 2011, Waste Management chapter[2]	Baseline data including: • The recycling capacity for Construction, Demolition and Excavation (CD&E) waste at the inert recycling facility at La Collette; • The recovery capacity for non-hazardous CD&E waste at Jersey EfW facility at La Collette; • The disposal capacity for inert CD&E waste at La Collette reclamation site; • The recovery capacity of non-hazardous waste at Jersey EfW facility at La Collette during operation of the proposed JFH; and • The recovery of non-hazardous offensive waste at Jersey EfW facility at La Collette.
Jersey General Hospital[5]	Operational waste data 2016
States of Jersey[6]	Number of inpatients using the Jersey General Hospital 2016
Fichtner Consulting Engineers[7]	The capacity of the Clinical Waste incinerator at Bellozane

Methodology for assessing demolition effects

12.15 Likely quantities, types and management of demolition waste, including storage, collection, treatment and disposal have been assessed.

12.16 The assessment has been carried out in the context of relevant local waste legislation and guidance and baseline waste quantities estimated based on similar development projects. It is assumed that demolition waste would be generated during 2018, 2019, 2022 and 2026.

12.17 Demolition waste would be generated as a result of the clearance of a number of buildings (as listed in paragraph 12.2). In line with policy objectives, materials would be re-used and/or recycled onsite and offsite where possible in order to reduce the amount of waste generated.

12.18 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].

[5] Jersey General Hospital (2016) Weekly schedule of estimated waste. Provided by the Future Hospital Project on 24 March 2017.
[6] EY (2017) Demand Analysis. Provided by the Future Hospital Project on 08 February 2017.
[7] Fichtner Consulting Engineers Limited (2014) Jersey TTS La Collette Clinical Waste Treatment Project Variation to Waste Management Licence
[8] States of Jersey (2016) Existing Ground Floor Plan

12.19 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)[9] Net Waste Tool (nwtool.wrap.org.uk) to estimate the mass (in tonnes) of demolition waste.

12.20 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[10].

12.21 It is known that asbestos containing materials (ACM) are present in the existing buildings which would be demolished, these are detailed in the hospital's asbestos registers. A suitably detailed asbestos survey must be completed as part of the early works to determine the presence of ACM's, which would need to be undertaken by a licenced specialist and their advice taken upon survey conclusion. The presence of ACM could potentially restrict some demolition materials from being recycled.

12.22 Demolition planning is ongoing which means that at this stage the quantities provided are only indicative. However, they represent a worst-case basis to capture all significant effects.

12.23 Appendix I-1 includes a breakdown of the estimated quantities of demolition waste likely to be generated from each of the buildings to be demolished. However, overall it is estimated that there will be a total of 84,426 tonnes of waste generated from demolition.

Methodology for assessing construction effects

12.24 Likely quantities, types and management of construction waste, including storage, collection, treatment and disposal has been identified.

12.25 The construction waste quantities have been forecast using the methods below and the assessment has been carried out in the context of relevant local waste legislation and guidance and considers the baseline quantities for similar waste streams, during the assessment years 2019-2026.

Earthworks

12.26 Excavation materials would, wherever possible, be re-used or recycled both onsite and offsite. However, in the absence of the final excavation cut and fill balance and in order to assess the worst-case scenario in terms of construction waste, the total excavation

[9] WRAP is a UK based organisation that works with governments, businesses and communities to deliver practical solutions to deliver sustainable waste management.
[10] WRAP (2014) Construction, demolition and excavation waste volume to mass conversion factors and List of Waste codes used in WRAP's tools

waste quantity has been included in this assessment, without any reuse or recycling being considered.

12.27 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%[11]. 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)[12].

12.28 Earthworks design is ongoing, therefore quantities provided are only indicative and represent a worst-case basis Table 12.3Table 12.3**Error! Reference source not found.** shows that estimated excavation waste quantities likely to be generated from the proposed JFH.

Table 12.3 : Excavation waste estimate

Year	Waste volume (m^3)	Waste mass (tonnes)
2019	33,179	41,474
2022	19,953	24,941
2025	3,251	4,063
Total waste	**56,383**	**70,478**

12.29 A detailed Ground Investigation would be required to determine the physical properties of the soil, sand and rock that makes up the excavation material, and therefore to identify the appropriate handling of it – refer to Chapter 9: Geology, hydrogeology and contamination for further details.

12.30 In order to confirm the ground and ground water conditions beneath the proposed development, a ground investigation (GI) has commenced on site and is partially complete, refer to Chapter 9: Geology, hydrogeology and contamination for full details. The proposed GI contains a number of boreholes to varying depths, groundwater monitoring and a range of geotechnical and geo-environmental in-situ and laboratory testing. The information obtained enables an assessment of the handling of any waste material to be undertaken.

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

Construction

12.31 The quantity of waste likely to be generated from construction has been estimated using BRE SMARTWaste data[13], based on the net 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.

12.32 The generation of construction waste would be across eight years (2019-2026). Table 12.4 shows the total estimated quantities of construction waste predicted over the eight-year construction period.

Table 12.4: Construction waste estimate

Building	Year	Floor Area	BRE Project Type	Average waste tonnes / 100m^2	Waste mass (tonnes)	Average waste m^3/100m^2	Waste Volume (m^3)
Block 1a	2019-2022	12,824	Healthcare	12	1,539	19.1	2,449
Phase 1b	2022 - 2024	16,515	Healthcare	12	1,982	19.1	3,154
Phase 2	2025-2026	3,605	Healthcare	12	433	19.1	689
Total	**N/A**	**32,944**	**N/A**	**N/A**	**3,953**	**N/A**	**6,292**

12.33 The mass of waste likely to be generated from constructing associated roads and infrastructure has not been calculated as there is not sufficient information on these activities at this stage of the project. Hazardous wastes such as oil and diesel wastes have not been assessed quantitatively due to the likelihood that only small quantities would be generated onsite.

Methodology for assessing operation effects

12.34 The quantity of healthcare waste generated during the operation of the proposed JFH has been estimated based on the baseline waste generation rates and the estimated number of inpatients during the first year of full operation in 2025.

12.35 This waste per inpatient benchmark has been established using:

[13] Buildings Research Establishment (BRE) (2012) BRE Waste Benchmark Data 2012. The BRE waste data set included

- The existing healthcare waste data provided by Jersey General Hospital[5];
- The estimated number of inpatients using the existing the Jersey General Hospital provided by the States of Jersey[6]; and
- The estimated number of inpatients using the proposed JFH has been provided by the States of Jersey[6] and uses the demographic growth assumptions based on the +700 inward migration scenario.

12.36 The estimated quantities of operational healthcare waste for 2025 are summarised in Table 12.5.

Table 12.5: Estimated healthcare waste in 2025

Infectious Clinical Waste (tonnes)	Non-infectious Offensive Waste (tonnes)	Municipal Waste (tonnes)	Total Healthcare Waste (tonnes)
69	518	63	650

Significance Criteria

12.37 No industry standard significance criteria have been established for the assessment of waste effects from new developments. The criteria adopted for this assessment have been developed based on professional judgment and experience on previous similar projects. Magnitude of effect, identified in Table 12.6 range from a severe (>10% increase in waste generation) to beneficial (<0% reduction in net waste generation). Where the magnitude of the effect has been identified as being severe, major or moderate this is considered to be a significant effect for the purpose of the EIA.

Table 12.6 Definition of Waste Impact Assessment Significance Criteria

% Waste Generation Relative to Island Wide Capacity	Magnitude of effect	Assessment Criteria
>10%	Severe	Permanent reduction in landfill void space capacity on a local and regional scale. Increases in waste generation which exceed 10% of sub-regional waste treatment capacity.
>5-10%	Major	Local-scale reductions in landfill void space capacity. Need for major additional appropriate waste treatment facilities to manage waste.

% Waste Generation Relative to Island Wide Capacity	Magnitude of effect	Assessment Criteria
>2-5%	Moderate	Local-scale reductions in landfill void space capacity. Need for medium-scale additional waste treatment facilities or medium scale increases in existing facilities capacities to manage waste.
>1-2%	Minor	Local scale reductions in landfill void space capacity reversible with time. Need for small-scale additional waste treatment facilities, or increases in existing facilities capacities to manage waste.
<1%	Negligible	No appreciable adverse effects to waste infrastructure
0%	No impact	No impact.
<0%	Beneficial	Reduction in waste generation and diversion of waste from landfill resulting in an environmental improvement. Scale of beneficial effect relates to scale of waste reduction.

Assumptions

12.38 The following assumptions have been made:

- 5% of demolition waste generated by the proposed development would be recycled onsite based on opportunities for recycling of secondary aggregates;
- 80% of net demolition waste would be recycled at CD&E facilities in Jersey, based on current waste management performance in Jersey;
- Demolition / construction waste that is removed off-site would be handled by a waste management contractor and processed through a demolition waste treatment facility capable of managing the demolition waste;
- 15% of net demolition waste would be recovered at the Jersey EfW facility**Error! Bookmark not defined.** based on current waste performance in Jersey;
- Demolition waste would be generated in 2018, 2019, 2022 and 2026;
- Quantities of earthworks waste provided are indicative only, and would be subject to change once the earthworks design has been identified in more detail;
- Construction waste is generated from 2019 to 2026;

- Construction waste generated during the construction of new buildings has been forecast using BRE benchmark data. This is a reasonable assumption as the BRE guidance publishes generation rates based on large-scale projects;
- The quantity of healthcare waste generated during the operation of the proposed JFH has been estimated based on the baseline waste generation rates and the estimated number of inpatients during the first year of full operation in 2025. The total quantity predicted is based on the estimated number of inpatients at any one time, whether within the existing hospital or the proposed JFH;
- 80% of healthcare waste would be recovered at the Jersey EfW facility (existing or future); and
- 11% of healthcare waste would be incinerated at the Clinical Waste Incinerator at Bellozane.

Baseline Environment

Healthcare Waste

12.39 In 2016, the existing Jersey General Hospital generated 651 tonnes of healthcare waste[14] which is categorised as a special waste stream due the potential presence of cytotoxic and pathogenic compounds. As a result, healthcare waste must undergo comprehensive separation to ensure different waste streams are treated appropriately. Table 12.7 displays an estimation of the current healthcare waste streams at Jersey General Hospital. Residual non-recyclable waste is included in the non-infectious offensive waste.

[14] Jersey General Hospital (2016) General Hospital Waste Disposal Data

Table 12.7: Jersey Healthcare Waste[15]

Waste category	Waste description	Mass (tonnes) (2016)
Clinical Waste	Infectious Clinical Waste	69
	Non-infectious Offensive Waste	518
Sub-total		587
Municipal waste	Mixed glass	13
	Plastic Bottles	16
	Metals	35
Sub-total		64
Total Waste		**651**

12.40 Until recently all healthcare waste generated in Jersey was burnt at high temperature at a specialised incinerator at Bellozanne, which was constructed in 1998 and has the capacity to process 200 kilogrammes of clinical waste every hour[16]. Waste treated at the facility is generated from hospitals, doctors, private clinics and dentists.

12.41 In order to prolong the life of the Bellozanne clinical waste incinerator and achieve cost efficiencies the States of Jersey government introduced a requirement to segregate healthcare waste into hazardous[17] and non-hazardous waste in 2016. The hazardous healthcare waste must now be separated into yellow bags labelled 'Hazardous Clinical Waste' and incinerated at the Bellozanne clinical waste incinerator. The non-hazardous waste must now be separated into white offensive waste bags and disposed of through the Jersey EfW facility at La Collete.

12.42 The demolition of the clinical waste incinerator at Bellozonne has been approved (P/2016/0146) and new clinical waste incinerator is planned at La Collette which could be operational in 2018. However, the Bellozanne facility would not be decommissioned until the new facility was built and therefore for the purpose of this assessment the capacity of the current Bellozanne incinerator has been considered.

[15] Jersey General Hospital (2016) General Hospital Waste Disposal Data
[16] Fichtner Consulting Engineers Limited (2014) Jersey TTS La Collette Clinical Waste Treatment Project Variation to Waste Management Licence
[17] Government of Jersey (2016) Jersey is changing how it deals with Healthcare Waste

Municipal Waste

12.43 La Collette includes a number of waste management facilities including a 105,000 tonnes per annum Energy from Waste (EfW) facility that recovers a significant proportion of Jersey's non-inert waste.

Construction, Demolition and Excavation (CD&E) Waste

12.44 There is a recycling facility at La Collette for inert waste, operated by AAL Recycling, for recycling CD&E waste. The facility has a capacity to treat 350,000 tonnes of waste per annum and produces quality recycled aggregates[18]. In addition, there are other commercially operated inert waste recycling schemes where CD&E is recycled, but capacity data has not been made available.

12.45 In 2010 108,000 tonnes of inert waste was landfilled at La Collette reclamation site. This inert CD&E waste made up 61% of the total waste generated in Jersey[19]. The current landfill at La Collette is reaching the end of its life. During consultation it was identified that there are plans to develop an alternative landfill site. However, there were no details of this site available and no record of any planning progress so the site is not considered further in the baseline.

12.46 Non-inert construction waste is typically recycled or recovered at the Jersey EfW facility at La Collette. There is also an asbestos disposal facility at La Collette. Any asbestos transported to the site will be in accordance to the:

- The Waste Management Law;
- The Asbestos Approved Code of Practice[20]; and
- States of Jersey Asbestos Guidance[21].

12.47 Other hazardous wastes such as used oil and waste chemicals are stored at La Collette before being exported to the UK for disposal in specialist waste management facilities where it can be disposed of appropriately, in compliance with the Basel Convention and the Waste Management Law[22].

[18] States of Jersey (2011) States of Jersey Island Plan 2011 Waste Management
[19] Government of Jersey (2016) Jersey is changing how it deals with Healthcare Waste.
[20] Minister for Social Security (2015) Asbestos Approved Code of Practice Management of Exposure to Asbestos in Workplace Buildings and Structures Health and Safety at Work (Jersey Law), 1989 ACop 8 Revised 2015
[21] States of Jersey (2016) Asbestos Reception and Disposal Facility La Collette
[22] States of Jersey (2017) Revised 2011 Island Plan Waste Management Current Position. Available from: http://consult.gov.je/portal/adopted/pd/ip2011?pointId=1405696218002

Design Mitigation

12.48 The proposed JFH would, where possible, re-use excavated materials onsite and offsite and recycle demolition materials as recycled aggregate or fill material. Where this is not feasible materials would be recycled offsite.

12.49 Healthcare wastes generated during the operation of the proposed development would be segregated to maximise the amount of waste that can be recycled and recovered.

Assessment of effects

Assessment of effects from demolition

12.50 The proposed JFH would require site clearance for construction to take place. Demolition waste and potentially hazardous waste will therefore be generated at the demolition stage of the proposed development.

Forecast of Demolition Waste Quantities

12.51 Demolition works associated with the proposed JFH would directly increase the quantity of waste generated during this phase. The estimated quantities of waste from the demolition phase of the proposed JFH are summarised in Table 12.8.

Table 12.8 Demolition Waste quantities

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

Demolition work	Year	Waste Mass (tonnes)
TOTAL		**84,426**

Recycling Capacity for demolition waste

12.52 The estimated demolition waste to be recycled has been compared against the recycling capacity available in Jersey[17]. The results are displayed in Table 12.9 Table 12.9 below.

Table 12.9 Recycling Capacity within Jersey

Year	Demolition Waste (tonnes)	5% of Demolition Waste Recycled Onsite (tonnes)	Net Demolition Waste Recycled (tonnes)	80% of Net Demolition Waste Recycled Offsite (tonnes)	Annual Recycling Capacity within Jersey (tonnes)	% Recycling Capacity within Jersey
2018	626	31	595	476	350,000	0.1
2019	28,807	1,440	27,367	21,893	350,000	6.3
2022	32,760	1,634	31,037	24,829	350,000	7.1
2026	22,323	1,116	21,207	16,965	350,000	4.8

12.53 The estimated tonnage of demolition waste generated that would sent for offsite recycling is a maximum of 7.1% of the recycling infrastructure capacity in Jersey. This represents an effect of major magnitude which is significant.

Recovery Capacity for demolition waste

12.54 A proportion of demolition waste that cannot be recycled would be recovered[23]. This combustible waste has been compared against the recovery capacity in Jersey. The results are displayed in Table 12.10.

Table 12.10: Recovery Capacity within Jersey

Year	Net Demolition Waste (tonnes)	15% of Net Demolition Waste Recovered (tonnes)	Annual Recovery Capacity within Jersey (tonnes)	% Recovery Capacity within Jersey
2018	595	1,013	105,000	0.1

[23] This process refers to a resource being 'recovered' from disposal. An example of a recovery process could relate to an Energy from Waste facility which 'recovers' waste through processes that generates energy.

Year	Net Demolition Waste (tonnes)	15% of Net Demolition Waste Recovered (tonnes)	Annual Recovery Capacity within Jersey (tonnes)	% Recovery Capacity within Jersey
2019	27,367	4,718	105,000	4.5
2022	31,037	5,351	105,000	5.1
2026	21,207	3,656	105,000	3.5

12.55 The estimated tonnage of demolition waste generated that would be sent for offsite for recovery is a maximum of 5.1% of the recovery infrastructure capacity in Jersey. This represents an effect of major magnitude which is considered significant.

Disposal Capacity for demolition waste

12.56 There would be a proportion of demolition waste that could not be recycled or recovered. This residual waste has been compared to the La Collette reclamation site capacity in Jersey[Error! Bookmark not defined.]. The results are displayed in Table 12.11. It is assumed that 5% of net demolition waste would be disposed at the La Collete facility.

Table 12.11: Disposal Capacity within Jersey

Year	Net Demolition Waste (tonnes)	5% of Demolition Waste Disposed (tonnes)	Disposal Capacity within Jersey (tonnes)	% Disposal Capacity within Jersey
2018	595	30	108,000	0.03
2019	27,367	1,368	108,000	1.3
2022	31,037	1,552	108,000	1.4
2026	21,207	1,060	108,000	1

12.57 The estimated tonnage of demolition waste generated that would be sent for disposal is a maximum of 1.4% of the disposal capacity in Jersey. This represents an effect of minor magnitude which is not considered significant.

Demolition waste: assessment conclusion

12.58 In the absence of mitigation, the overall magnitude of the predicted effects of demolition waste generated by the proposed JFH is assessed to be major and temporary. This represents a significant effect. This is based on insufficient capacity to recycle the demolition waste. Mitigation is discussed in paragraph 12.74.

Assessment of effects from construction

Forecast of Construction Waste Quantities

12.59 The expected quantities of waste from the excavation and construction phases of the proposed JFH are summarised in Table 12.12and cover the construction period.

Table 12.12: Construction Waste quantities

Year	Excavation Waste (tonnes)	Excavation Waste (m^3)	Construction Waste (tonnes)	Construction Waste (m^3)	Total Waste (tonnes)	Total Waste (m^3)
2019	41,474	33,179	385	612	41,859	33,791
2020			385	612	385	612
2021			385	612	385	612
2022	24,941	19,953	1,045	1,664	25,986	21,617
2023			661	1,051	661	1,051
2024			661	1,051	661	1,051
2025	4,063	3,251	216	344	4,279	3,595
2026			216	344	216	344
Total	**70,478**	**56,383**	**3,953**	**6,292**	**74,431**	**62,675**

12.60 The significance of the likely environmental effects of the additional waste arisings has been considered in the context of the available treatment and disposal capacity within Jersey and assessed against the criteria in Table 12.6.

Recycling Capacity

12.61 The estimated construction waste to be recycled has been compared to the mass of recycling capacity in Jersey**Error! Bookmark not defined.**. The results are displayed in Table 12.13 below.

Table 12.13: Recycling Capacity within Jersey

Year	Total Construction and Excavation Waste (tonnes)	Waste Recycled Offsite (tonnes)	Annual Recycling Capacity within Jersey (tonnes)	% Recycling Capacity within Jersey
2019	41,859	39,670	350,000	11.3
2020	385	269	350,000	0.1

Year	Total Construction and Excavation Waste (tonnes)	Waste Recycled Offsite (tonnes)	Annual Recycling Capacity within Jersey (tonnes)	% Recycling Capacity within Jersey
2021	385	269	350,000	0.1
2022	25,986	24,426	350,000	7
2023	661	462	350,000	0.1
2024	661	462	350,000	0.1
2025	4,279	4,011	350,000	1.1
2026	216	151	350,000	0.1

12.62 The maximum estimated tonnage of construction waste generated that is sent for offsite recycling is 11.3% of the recycling infrastructure capacity in Jersey. This represents an effect of severe magnitude and is therefore significant. This would occur during the 2019 and 2022 of the construction phase.

Recovery Capacity

12.63 A proportion of construction waste that cannot be recycled would be recovered. This combustible waste has been compared to the mass of recovery capacity in Jersey**Error! Bookmark not defined.**. The results are displayed in Table 12.14 below.

Table 12.14: Recovery Capacity within Jersey

Year	Total Construction and Excavation Waste (tonnes)	Waste Recovered Offsite (tonnes)	Annual Recovery Capacity within Jersey (tonnes)	% Recovery Capacity within Jersey
2019	41,859	96	105,000	0.1
2020	385	96	105,000	0.1
2021	385	96	105,000	0.1
2022	25,986	261	105,000	0.2
2023	661	165	105,000	0.2
2024	661	165	105,000	0.2
2025	4,279	54	105,000	0.1
2026	216	54	105,000	0.1

12.64 The estimated tonnage of construction waste generated that is sent for offsite recovery is a maximum of 0.2% of the recycling infrastructure capacity in Jersey. This is an effect of negligible magnitude and is not significant.

Disposal Capacity

12.65 A proportion of construction waste cannot be recycled or recovered. This residual waste has been compared to the La Collette reclamation site capacity in Jersey[17]. The results are shown in Table 12.15 below.

Table 12.25: Disposal Capacity within Jersey

Year	Total Construction and Excavation Waste (tonnes)	Construction Waste Disposed (tonnes)	Disposal Capacity within Jersey (tonnes)	% Disposal Capacity within Jersey
2019	41,859	2,093	108,000	1.9
2020	385	19	108,000	0.02
2021	385	19	108,000	0.02
2022	25,986	1,299	108,000	1.2
2023	661	33	108,000	0.03
2024	661	33	108,000	0.03
2025	4,279	214	108,000	0.2
2026	216	11	108,000	0.01

12.66 The maximum estimated tonnage of construction waste generated that is sent for offsite disposal is a maximum of 1.9% of the disposal capacity in Jersey. This represents an effect of negligible magnitude and is not significant.

Construction waste: assessment conclusion

12.67 In the absence of mitigation, the overall magnitude of the predicted effects of construction waste generated by the proposed JFH is assessed to be severe and temporary. This represents a significant effect. This is based on insufficient capacity to recycle the excavation waste during 2019 and 2022 of construction. Mitigation is discussed in paragraph 12.78.

Assessment of effects from operation

12.68 Operational healthcare waste would generally comprise of:

- Hazardous Infectious Clinical Waste;
- Non-hazardous Non-infectious Offensive Waste; and
- Non-hazardous Municipal Waste.

12.69 The estimated quantities of operational healthcare waste generated from the proposed JFH in 2025 are summarised in Table 12.5.

Non-hazardous Healthcare Waste Capacity

12.70 Non-hazardous healthcare waste would be sent to the Jersey EfW for recovery[Error! Bookmark not defined.]. The non-hazardous waste forecast to be recovered has been compared to the recovery capacity arising in Jersey forecasted by the States of Jersey. The results are shown in Table 12.16 below.

Table 12.16: Recovery Capacity within Jersey

Net Non-infectious Offensive Waste (tonnes)	Annual Recovery Capacity within Jersey (tonnes)	% Recovery Capacity within Jersey
319	105,000	0.3

12.71 The estimated annual tonnage of the non-hazardous healthcare waste generated from the proposed development is approximately 0.3% of the recovery capacity in Jersey. This is an effect of negligible magnitude and is not significant.

Hazardous Healthcare Waste Capacity

12.72 Hazardous healthcare waste would be segregated as Hazardous Infectious Clinical Waste and sent to the Jersey Clinical Waste Facility to be incinerated at high temperature. The hazardous healthcare waste forecast to be incinerated has been compared to the capacity arising in Jersey forecasted by the States of Jersey. The results are shown in Table 12.17 Table 12.below. Based on existing performance it is estimated that 11% of healthcare waste would be incinerated at the Clinical Waste Incinerator at Bellozane.

Table 12.17: Clinical Waste Capacity within Jersey

Hazardous Healthcare Waste Incinerated Offsite (tonnes)	Net Hazardous Healthcare Waste Incinerated Offsite (tonnes)	Annual Clinical Waste Incinerator Capacity within Jersey (tonnes)	% Incineration Capacity within Jersey
69	34	759	4.6

12.73 The estimated annual tonnage of hazardous healthcare waste generated from the proposed development is approximately 4.6% of the clinical waste incineration capacity in Jersey. This is an effect of moderate magnitude and is significant.

Operational waste: assessment conclusion

12.74 In the absence of mitigation, the overall magnitude of the predicted effects of operational waste generated by the proposed JFH is assessed to be moderate. This represents a significant effect and is based on the limited clinical waste incineration capacity. Mitigation is discussed in paragraph 12.81. There will be no significant effects related to off-site removal of healthcare waste for recovery.

Mitigation and enhancement

Mitigation of effects from demolition

12.75 The design team for the proposed development would 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 Preferred Demolition Contractor would consider crushing demolition materials for recycling as aggregates on-site; and
- If on-site recycling is not feasible, the Preferred Demolition Contractor would identify opportunities for recycling the demolition materials through a recycling contractor or in other external projects.

12.76 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. Refer to Chapter 9: Geology, hydrogeology and contamination for further details.

12.77 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.

12.78 Early contact with other waste management contractors and facilities would be made to notify them of the quantities and timings of demolition waste that would be generated to ensure they can plan and manage the waste appropriately.

Mitigation of effects from construction

Excavation

12.79 On-site investigation is required to determine the level of contaminated land and to identify the appropriate remediation. Refer to Chapter 9: Geology, hydrogeology and contamination for further details.

12.80 Where on-site re-use or recycling is not feasible the Preferred Construction Contractor would identify opportunities through a recycling contractor or in other external projects.

Construction

12.81 A draft Site Waste Management Plan (SWMP) has been prepared to support the planning application (Appendix I-2). It will be developed during the next phases of the project, as the design detail progresses, and will define methods to reduce construction waste and promote the recovery of site-gained materials.

Mitigation of effects from operation

12.82 Healthcare waste would be managed by the proposed JFH operator and would be segregated appropriately across the hospital.

12.83 Adequate waste storage facilities would be provided throughout the building to consolidate and store waste appropriately. The storage facilities would provide:

- Adequate space for the different waste streams;
- Appropriate containers to ensure safe storage of all source segregated waste; and
- Adequate access for waste collection vehicles.

12.84 Recycling facilities would be provided in public spaces such as receptions, waiting areas and cafeterias.

12.85 Early contact would be made with waste management facilities to notify them of the additional quantities of healthcare waste that would be generated to ensure they can plan and manage the waste appropriately**.**

Residual effects

12.86 Residual effects of those that remain following the application of mitigation measures. The residual effects for each of the stages of the proposed JFH are set out below and summarised in Table 12.18.

Residual effects from demolition

12.87 Residual effects are assessed to be of moderate magnitude and therefore significant and short term. This is based on insufficient capacity to recycle the demolition waste.

Residual effects from construction

12.88 During the first year of construction the residual effects are assessed to be of major magnitude and therefore significant and short term. This is based on insufficient capacity to recycle the excavation waste in 2019 and 2022.

Residual effects from operation

12.89 Once operational, it is assessed that there is sufficient waste management capacity on Jersey and that there are no significant residual effects.

Table 12.18 Assessment summary matrix

Potential Effect	Receptor (s)	Sensitivity of Receptor	Magnitude (prior to mitigation)	Significance (prior to mitigation)	Mitigation	Magnitude (following mitigation)	Significance (following mitigation)	Comments
Demolition waste	Waste management infrastructure in Jersey	Moderate as there is limited waste infrastructure in Jersey	Major	Significant	The Preferred Demolition Contractor would consider crushing demolition materials for recycling as aggregates on-site. The Preferred Demolition Contractor would identify opportunities for recycling the demolition materials through a recycling contractor or in other external projects. Any hazardous materials such as asbestos 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. Early contact with other waste management contractors and facilities to notify them of the quantities and timings of	Moderate	Significant	Temporary

Potential Effect	Receptor (s)	Sensitivity of Receptor	Magnitude (prior to mitigation)	Significance (prior to mitigation)	Mitigation	Magnitude (following mitigation)	Significance (following mitigation)	Comments
					demolition waste that would be generated to ensure they can plan and manage the waste appropriately.			
Construction waste	Waste management infrastructure in Jersey	Moderate as there is limited waste infrastructure in Jersey	Severe	Significant	Where on-site re-use or recycling of excavation materials are not feasible the Preferred Construction Contractor (PCC) would identify opportunities through a recycling contractor or in other external projects.	Major	Significant	Temporary
Operational waste	Waste management infrastructure in Jersey	Moderate as there is limited waste infrastructure in Jersey	Moderate	Significant	Healthcare waste would be segregated appropriately ross the hospital therefore adequate space needs to be provided to enable the separation of different types of healthcare waste. Early contact with waste management facilities to notify them of the additional quantities of healthcare waste that would be generated to ensure they can plan and manage the waste appropriately.	Minor	Insignificant	