

**Carlyon Bay  
Environmental  
Statement (2011)**

Chapter L

Waste

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## L1.0 **Introduction**

- L1.1 This chapter considers the environmental effects associated with solid waste material generated by the proposed development and its subsequent management. The effects have been assessed in terms of the expected quantities, their composition and the local/regional capacity to treat it. Relevant national, regional and local legislation on waste management is reviewed in the chapter and forms the basis of assessment criteria and the approach to mitigation.
- L1.2 Within this section, the proposed measures for the reduction, re-use and recycling of waste materials are given and make up part of the recommendations for mitigating the potential effects. Furthermore, the chapter also discusses the possible disposal routes for waste and opportunities to minimise residual waste going to landfill during construction and operation. A brief assessment of the effect of the scheme in comparison with the extant scheme will also be provided.
- L1.3 The chapter will focus on construction and demolition (C&D) and commercial and industrial (C&I) waste only as no municipal solid waste (MSW) will be produced on the site. MSW waste is typically classified as household waste which is collected by the local council. Although there will be residential accommodation on site, any waste produced from here will not be classed as MSW, as it will be collected by a private waste company and handled with the C&I waste generated from the rest of the development.

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## L2.0 Policy Context

### National Policy and Guidance

- L2.1 **The Waste Framework Directive (2008/98/EC)** – This revised Directive sets out the position regarding waste and how to dispose of it. It introduced the waste hierarchy (see Figure L2.1), which is widely used as the basis of development for sustainable waste management strategies.
- L2.2 **The Landfill Directive (1999/31/EC)** - The Directive’s overall aim is *“to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health, from the landfilling of waste, during the whole lifecycle of the landfill”*.
- L2.3 **The Waste Strategy for England 2007 (WS2007)** - The Department of Environment Food and Rural Affairs (Defra) in May 2007 adopted and published WS2007. There is a focus primarily on MSW, as well as making provision for the future creation of recycling/recovery targets for C&I waste. The government is also setting a target to halve the amount of C&D waste going to landfill by 2012 through waste prevention, reduction, re-use and recycling methods.
- L2.4 **The Aggregates Levy Sustainability Fund (ALSF)** - The ALSF was introduced on the 1 April 2002 to primarily promote more environmentally friendly aggregates extraction and transport methods. Additionally the fund takes steps towards improving the management of C&D waste. This is achieved through funding of new recovery and recycling initiatives that target C&D waste. Currently the levy charged is at £2.00 per tonne.
- L2.5 **Planning Policy Statement 10 (PPS10): Planning for Sustainable Waste Management** - PPS 10 (2005) concerns the planning system’s involvement in working towards the core Government policies for delivering sustainable waste management.
- L2.6 **Environmental Permitting Regulations (England and Wales) 2007** – The Environmental Permitting Regulations introduce a single environmental permitting and compliance regime to apply in England and Wales. This regime streamlines and combines Waste Management Licensing Regulations 1994 (as amended) and The Control of Pollution (Amendment Act) 1989 to create a single environmental permit with a common approach to permit applications, maintenance, surrender and enforcement.
- L2.7 **The Site Waste Management Plans Regulations 2008** - Site Waste Management Plans (SWMP) become a legal requirement in England for all construction and demolition projects that have a construction value of more than £300,000.

L2.7.1 **Hazardous Waste (England and Wales) (Amendment) Regulations 2009 SI 507** – The Hazardous Waste Regulations, which came into force in 2005, provide requirements for controlling and tracking the movement of hazardous waste and bans mixing different types of hazardous waste.

L2.7.2 **Making Space for Waste, A Practical Guide for Developers and Local Authorities (ADEPT), June 2010** – This document has been designed to allow developers to follow a step by step process when considering the design of waste facilities in new developments. A Developer’s Checklist has been provided to ensure that waste management is an integral part of the design.

### **Regional Policy and Guidance**

L2.8 **The Regional Waste Management Strategy (RWMS) “From Rubbish to Resource”, 2004** – This non-statutory document was created to set out in detail the regional approach to waste management. A principle objective of the RWMS is to ensure that by 2020, 45% of waste in the region is recycled or reused, and the total amount of waste landfilled is less than 20% of waste produced.

### **Local Policy and Guidance**

L2.9 From the 1st April 2009, the six District Councils and County Council became a unitary authority. Work is underway to produce a Local Development Framework for the new authority, and until this is produced the existing local policies will be used to determine applications.

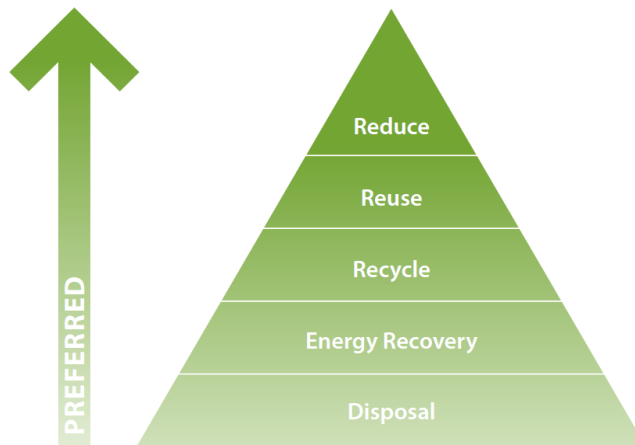
L2.10 **Restormel Local Plan, 2001 – 2011** – This Local Plan covers the period from 2001 – 2011, and until the Local Development Framework for Cornwall Council is prepared it will continue to have some weight. Policy 41, which has been saved as relevant, indicates that facilities for collection of recyclable material should be considered as beneficial within housing developments and community facilities.

L2.11 **The Cornwall Waste Local Plan, March 2003** – This document provides a broad overall strategy for the management of future waste arisings in Cornwall, and provides the context for the land-use policies against which applications for future waste management facilities will be assessed.

L2.12 **Draft Supplementary Planning Document, Managing Waste in New Developments, December 2010** – This draft SPD provides guidance for reducing waste generation during both construction and operation. It provides guidance on how to provide a Site Waste Management Plan and outlines the Building Regulation requirements. The focus is on the waste hierarchy, with measures on minimising waste being the priority.

Figure L2.1 Waste Hierarchy

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## L3.0 **Assessment Methodology & Significance Criteria**

### **Assessment Methodology**

#### **Scope**

L3.1 This assessment considers waste generated within the site boundary and the waste management issues at local and regional levels. Waste that is generated offsite, but is linked to the proposed development, such as waste from the manufacturing process of materials used onsite, is outside the scope of this assessment.

L3.2 The temporal scope of this assessment is the period from when site preparation begins, during construction and through to site occupation (year one of full operational capacity).

L3.3 In technical terms, waste is defined in Section 75(2) of the Environmental Protection Act 1990 as “...any substance or object...which the holder discards or is required to discard”. The technical scope of this assessment includes the assessment of C&D and C&I waste.

#### **Assessment Method**

L3.4 The assessment of waste effects associated with Carlyon Bay is based on various sources of information including:

- 1 The planned development size and composition (floor areas and landuse type have been used to estimate construction and operational waste generation rates)
- 2 Waste estimation tools (e.g. internationally recognised methods such as the British Standard BS 5906 2005).

L3.5 Both construction and operational waste estimations given in this chapter make use of benchmarking models and generation tables. Actual quantities and compositions may differ from estimated quantities and compositions because of changes in the variables that influence actual waste quantities and composition. These variables include:

- 1 Recycling systems and waste infrastructure available
- 2 Individual contractor, resident or worker behaviour
- 3 Changes to local laws and policies.

#### **Significance Criteria**

L3.6 There are currently no fixed or recommended criteria for assessing the significance of effects arising from the management of waste. Therefore, the development proposal is evaluated according to its individual characteristics

and how it interacts with the surrounding environment. Overall the fundamental proposal for evaluating effects from waste is to predict and characterise waste types and arisings and view them against existing waste generation baseline conditions in the Cornwall area. This assessment is then used to identify opportunities to respond to policy via means that reduce any adverse effects, and increase the likelihood of beneficial effects.

### **Magnitude of effects**

- L3.7 The quantity of waste produced by the development proposal alone will not determine significance. As part of the assessment of effect significance, the type of waste generated and the way it will be managed is assessed to determine the magnitude of effect on the identified receptors. Refer to Table L3.1.

Table L3.1 Magnitude of Effects

<b>Magnitude of effects</b>	<b>Criteria</b>
High	Significant change in the amount of waste generated (increase of 50 percent of existing level) that cannot be managed sustainably in the Cornwall area and requires transport to other areas outside Cornwall.
Medium	Moderate change in the amount of waste generated (increase of 25 percent of existing levels) that cannot be managed in the Cornwall area and requires transport to other areas outside Cornwall.
Low	Minor change in the amount of waste generated (increase of 5 percent of existing levels) that cannot be managed in the Cornwall area and requires transport to other areas outside of Cornwall.
Negligible	No noticeable change in the amount of waste generated; and/or waste does not require to be transported outside the Cornwall area.

### **Receptor Sensitivity**

- L3.8 The significance of waste effects is also determined by the type, location and capacity of local and regional waste management facilities and their ability to manage waste in an environmentally and sustainably proficient manner. A qualitative assessment of receptor (waste management infrastructure) sensitivity is described in Table L3.2.

Table L3.2 Criteria for assessing effect sensitivity

<b>Sensitivity</b>	<b>Criteria</b>
High	Cornwall waste management infrastructure and/or services operating at full capacity, thus any increase in demand will affect its operation.
Medium	Cornwall waste management infrastructure and/or services which have minimal spare capacity but could be affected by large changes and/or demand.
Low	Cornwall waste management infrastructure and/or services which have sufficient spare capacity but could be affected by large changes and/or demand.

### Significance Evaluation

L3.9 The assessment of magnitude of change and sensitivity of the receptor is used to qualitatively assess the effect significance of waste from the construction and operation of the proposed development, as shown in Table L3.3. Effects can be adverse or beneficial.

Table L3.3 Assessment criteria for effect significance

<b>Receptor sensitivity</b>	<b>Magnitude of effects</b>			
	<b>High</b>	<b>Medium</b>	<b>Low</b>	<b>Negligible</b>
<b>High</b>	Substantial	Substantial	Moderate	Minor
<b>Medium</b>	Substantial	Moderate	Minor	Negligible
<b>Low</b>	Moderate	Minor	Negligible	Negligible

### Consultation

L3.10 In order to understand how private waste collection in Cornwall is undertaken, telephone conversations were held with SITA, Viridor and Cory waste management contractors on 12 August 2010. A telephone call was also undertaken with Ester O'Bearagh, Waste Projects and Awareness Officer at Cornwall Council to discuss Cornwall Council's requirements for new developments.

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## L4.0 **Baseline Conditions**

L4.1 The definition of a baseline with regard to waste management is set in relation to the latest estimated waste generation amounts in Cornwall. In addition to the waste generated, a summary of the current infrastructure and its lifespan is also provided.

L4.2 Information is also provided on the extant scheme. Brief details will be given on the composition of the development for which planning permission was originally granted in 1990 and renewed in 1996. Please refer to Chapter A of the ES for further information.

### **Current Baseline**

L4.3 This section will outline the current waste management practices within the region. Information on C&D and C&I waste treatment has been outlined for Cornwall, along with information on the waste treatment infrastructure and its capacity. In 2006, SITA Cornwall Ltd was awarded a 30 year contract to manage waste in Cornwall.

### **Construction and Demolition Waste Arisings**

L4.4 C&D waste comprises, in varying degrees, quantities of building materials, asphalt, topsoil and subsoil and arisings from building schemes and demolition sites. Precise quantities of C&D waste are difficult to estimate with any degree of certainty due to lack of data. However, the Draft Cornwall Local Development Framework Core Strategy on Waste, states that approximately 170,768 tonnes of C&D waste was managed at licensed sites in Cornwall during 2008.

L4.5 Several waste management facilities have permission to recycle, treat or dispose of C&D waste in Cornwall. The total licensed capacity of inert treatment/transfer facilities amounts to 349,000 tonnes.

### **Commercial and Industrial Waste Arisings**

L4.6 C&I waste includes arisings from industrial premises and businesses. The Draft Cornwall Local Development Framework Core Strategy on Waste has taken data from the Environment Agency, which states that a total of 516,000 tonnes of C&I waste was produced in Cornwall (in 2004/05). Of this, approximately 40% was recovered or recycled, with the remaining disposed of to landfill.

L4.7 Currently, three landfills are in operation in Cornwall which accept C&I waste. Two of these, United Mines in Redruth and Connon Bridge in Liskeard, are operated by SITA. United Mines is due to close in October 2010 and so, in order to use the space available efficiently, Connon Bridge landfill is temporarily closed and all waste will be diverted to United Mines until its closure. The development at Carlyon Bay will not be operational until after the closure of

United Mines, and so C&I waste requiring landfilling will be disposed of in Connon Bridge, which has consent until December 2014. The Cornwall Annual Minerals and Waste Monitoring Report states that in 2008, Connon Bridge had a remaining capacity of 2,750,000m<sup>3</sup>.

- L4.8 The third landfill, Lean Quarry in Liskeard, is operated by Viridor and was opened in August 2005 with a 27 year lifespan (resulting in closure in 2032). Following the closure of Plymouth's Chelson Meadow landfill in March 2008, Lean Quarry is currently being used of to dispose of Plymouth's residual waste as a temporary arrangement until 2014. Once Connon Bridge landfill is closed in 2014, it is thought that Cornwall's waste will be sent to Lean Quarry, although it is unclear if this will happen in the published literature.
- L4.9 With only one operational landfill in Cornwall after October 2010, SITA has stated that there is a pressing need to develop an alternative method of disposal. Therefore, in March 2008 SITA submitted a planning application for the Cornwall Energy Recovery Centre (CERC), to be located near St Dennis (approximately 15km to the north west of Carlyon Bay). The CERC will incinerate waste, and has been designed to accept 240,000 tonnes of MSW a year generating enough electricity for the needs of 15,000 households. Although MSW has priority, the plant could accept C&I waste if there is a shortfall in the municipal waste stream.
- L4.10 In March 2009 Cornwall Council refused the planning application for the CERC. SITA submitted an appeal in September 2009, and the inquiry has now finished with closing statements being heard from 5 – 7 October 2010. The planning inspector will then submit a report to the Secretary of State who will make the final decision on the appeal.
- L4.11 Recyclable C&I waste streams are treated at Materials Recycling Facilities (MRFs). Here, recyclable waste including cans, plastic bottles, paper, aluminium, cardboard, textiles and glass are segregated into individual waste streams before being baled and sent to reprocessors where they are used to make new material. Currently there are two SITA owned MRFs in operation in Cornwall, one in Bodmin and one in Pool. The Bodmin MRF currently process around 24,000 tonnes of recyclables per annum, and accepts a split of 70% household waste and 30% C&I waste. The Pool MRF processes around 21,000 tonnes of recyclables per annum, and also accepts both household and C&I waste (the precise split is unknown). Both MRF facilities recycle 99% of the material they process. Other, smaller MRFs exist in Cornwall which recycle C&I waste only. The Draft Cornwall Local Development Framework Core Strategy on Waste states that the total licensed annual recycling capacity in Cornwall is approximately 280,000 tonnes, although the majority of these are scrap metal recycling sites.

### **Future Baseline**

- L4.12 As part of the contract with SITA, an integrated waste management approach has been planned for the future of Cornwall's waste management. As part of

this a number of additional waste infrastructure elements are planned for Cornwall. Some of these are already underway, and they include:

- 1 Two waste transfer stations will be redeveloped, with one new site, one replacement site and the creation of a temporary site
- 2 Four composting sites will be taken over
- 3 The development of the CERC near St Dennis.

L4.13 Cornwall County Council has prepared a paper on the future landfill provision in Cornwall for MSW and C&I waste, which was published in December 2008. Two scenarios were used, Scenario A looked at the best case scenario (household waste remained constant) and Scenario B examined the worst case scenario (household waste increases at a rate of 1.9% per year). Both scenarios used the following assumptions:

- 1 The CERC receives planning permission and is operational by 2012/2013
- 2 More recovery facilities are online for the treatment of C&I waste.

L4.14 Based on these assumptions, Scenario A indicated that there would be sufficient landfill space until 2024/2025 while Scenario B indicated that landfill capacity would run out in 2018/2019. The report concluded that the need to look for additional landfill capacity is likely to arise in the medium to long term.

L4.15 However, it should be noted that this is dependant on the CERC being given permission, which cannot be guaranteed given its current status of appeal. Should the appeal be refused, then Cornwall's waste may need to be transported outside of the area for disposal in another County.

L4.16 No mention of planned inert landfill void space for C&D waste is detailed in any local publication and its prediction is difficult as the types of facilities that offer inert void space are operated by private parties, with little reporting obligations. This factor also applies to other forms of waste management facility, such as materials recycling facilities and composting plants.

### **Extant Baseline**

L4.17 In 1990, planning permission was granted for a mixed-use development of 511 units, a sea wall and over 10,000 m<sup>2</sup> of leisure/commercial space. The permission was renewed in 1995. The scheme has been implemented.

L4.18 Separately, a planning application with accompanying Environmental Statement (ES) was submitted in January 2005 seeking permission for *“Placement of beach replenishment material on Crinnis, Shorthorn and Polgaver Beaches; Revised Design of Seawall, as Approved under Extant Planning Permission”*.

L4.19 Waste management was not assessed in either the 1990 (or subsequent renewal application) planning documentation, or the 2005 application and ES.

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## L5.0 **Potential Effects**

### **Introduction**

L5.1 This section will examine the potential effects that the development will have on the surrounding waste infrastructure, both as a result of solid waste produced during construction and once it is fully operational. Mitigation measures will be discussed in Section L6.

### **During construction**

L5.2 The range of wastes associated with ground preparation (clearance and levelling) includes materials such as rubble from buildings, vegetation, sand and low amounts of soft strip materials from the demolition of the Cornwall Coliseum. During construction a further assortment of wastes are likely to be generated. These will be outlined in the sections below. A Site Waste Management Plan (SWMP) has been prepared for the site, which is attached in Appendix L1.

### **Demolition waste**

L5.3 In order to prepare the site for construction, the Cornwall Coliseum located on Crinnis will need to be demolished (shown in Figure L5.1). A full demolition survey has not yet been completed; therefore aerial photography and information from a site visit has been used to estimate the likely demolition waste arising from the site. This information has been taken from the SWMP (contained in Appendix L1).

L5.4 The SWMP used WRAP's (Waste and Resources Action Programme) conversion factor for undefined demolition waste to estimate the anticipated tonnage. This basic calculation estimates that in total 2,700 tonnes of demolition waste is expected to be produced. The majority of this waste is expected to be concrete and steel from the roof frames.

Figure L5.1 The Cornwall Coliseum on Crinnis



### Construction waste

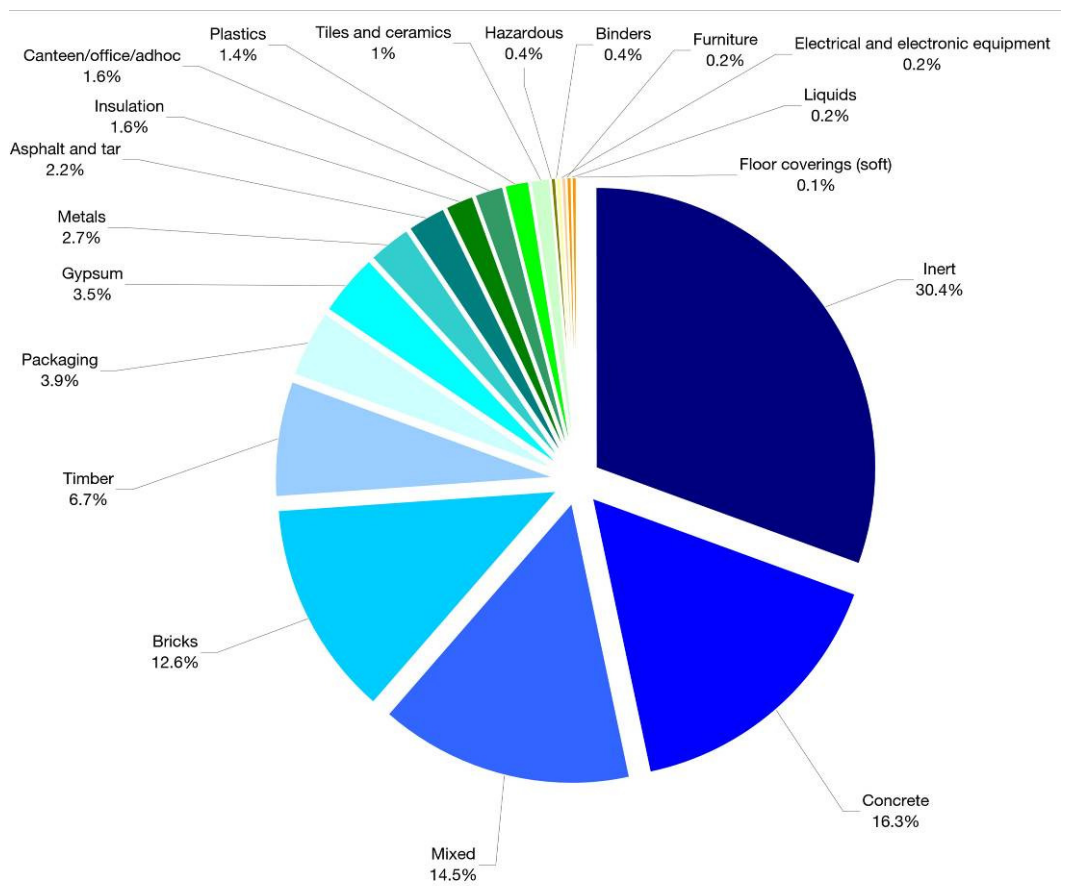
L5.5 The SWMP has calculated construction waste using information gained from Defra (Department of Environment, Food and Rural Affairs)/BRE Waste Benchmarking Data (updated in February 2010). This report provides useful up to date guidance on expected compositions and generation rates for waste materials during the construction phase of residential, retail and leisure developments such as Carlyon Bay. Table L5.1 shows that 6,880 tonnes of construction waste is likely to be generated by the proposed development.

Table L5.1 Likely Quantities of Construction Waste

Land use	Floor Area (m <sup>2</sup> )	Estimated time period of construction (months)	Construction waste generated (m <sup>3</sup> )	Construction waste generated (tonnes)
Residential	65,000	42	9,900	5,900
Retail	440	42	100	60
Restaurants	2,600	42	490	290
Leisure	7,369	42	1,100	630
<b>Total</b>	--	--	<b>11,590</b>	<b>6,880</b>

L5.6 In order to fully assess the effect from construction waste, information is also required on the expected waste composition. This has also been calculated using information from the BRE Waste Benchmarking Data which provides a breakdown of construction waste composition. This is outlined in Figure L5.2.

Figure L5.2 Likely construction waste composition from the proposed development



- L5.7 When both demolition and construction waste are combined, in total 9,580 tonnes of waste is likely to be produced. This is the amount of waste that could be generated if standard methods relating to construction are followed. This figure is used in this assessment to represent the unmitigated scheme (i.e. a scheme that uses conventional construction methods and waste management only). It can be observed that C&D waste contains significant quantities of re-usable and recyclable materials that can be segregated, leading to a possible recycling rate of at least 80%.
- L5.8 According to the Environment Agency, the nearest recorded landfill site which accepts inert C&D waste is Tregongeeves Quarry Landfill, located approximately 7km to the west of the site. This landfill accepts concrete, bricks, tiles and ceramic, subsoil and stone.
- L5.9 Not all of the C&D waste will be produced at once, and as such the disposal of material to landfill will take place over a period of around 42 months. The construction can be phased into four stages of development described as structures, construction, services and finishes. In this period much of the waste will be produced in the service stage, where the building is being fitted out.

L5.10 As demonstrated in Table L5.1, the demolition and construction phase of the development is expected to generate approximately 9,580 tonnes of waste, which represents a 6% increase on current C&D waste produced in Cornwall. The construction phase will be spread over a 42 month period. The disposal of construction waste has the potential to have a moderate effect due to the limited future capacity at local landfills, the increased traffic movements and the consumption of raw virgin materials. Table L5.2 summarises the potential effects on the identified receptors.

L5.11 In addition to the effects on receptors outlined in Table L5.2, the increased vehicle movements associated with moving the C&D materials will create noise, transport and air effects. These effects and any mitigation measures are discussed in further detail in Chapter G Transportation, Chapter H Air Quality and Chapter I Noise and Vibration.

Table L5.2 Potential effects on receptors from C&D waste

Receptor	Receptor sensitivity	Effect	Magnitude of effect	Significance of effect
Cornwall C&D waste management infrastructure capabilities and capacity (such as transfer stations, materials recovery facilities (MRFs), skips and refuse collection vehicles).	High	Disposal of large volumes of C&D waste decreasing pre-allocated waste facility void space designated for current region's waste.	Low	Moderate (adverse)
South West region C&D waste management infrastructure capabilities and capacity.	Medium	Disposal of large volumes of C&D waste decreasing pre-allocated waste facility void space designated for current regions' waste.	Negligible	Low (adverse)
National C&D waste management infrastructure capabilities and capacity	Low	Disposal of specific C&D waste materials. Material will have to travel large distances which is unsustainable.	Negligible	Negligible

### After Completion

L5.12 Once fully operational, Carlyon Bay will provide up to 511 residential units, 10,436 m<sup>2</sup> of leisure/commercial space (including 440 m<sup>2</sup> of retail and 2,600 m<sup>2</sup> of bars/restaurants) and sea defences. This assessment has been based

on these figures as a maximum, although it is appreciated that the exact composition of residential units and leisure/commercial space may change in the future, within the defined development parameters. For the purposes of this assessment, only the residential units and leisure/commercial space will be considered, as the sea defences will not produce waste.

- L5.13 Operational waste effects are assessed on the predictions of quantities and composition of waste arisings and the ability for future waste to be dealt with in a manner that at the least meets fundamental health and environmental criteria.
- L5.14 As outlined in Section L4, landfill capacity for C&I waste disposal is estimated to be sufficient until 2024/25 at a best case scenario, or 2018/19 at a worse case scenario. This figure is dependant on the CERC being given permission which cannot be guaranteed given its current status of appeal.
- L5.15 Estimating operational waste is a difficult task. Operations differ according to the site users and their behaviour, and benchmark data can only provide a broad indication of arisings. As well as using local data on current MSW generation rates to estimate waste produced from the residential units, estimations have been calculated by making use of the following publications:
- 1 *“Planning for Resource Sustainable Communities. A Code of Practice”*. ICE and Forward Scotland 2005
  - 2 *“Reducing Waste and Utility use in Managed Shopping Centres”*. Envirowise, 2002
  - 3 *“Identification of Key Resource Streams in Commercial & Industrial Waste from Small Businesses in the Food Sector”*. The Open University and University of Southampton, 2007.
- L5.16 Table L5.3 outlines the overall predicted breakdown of expected operational waste from the development proposal. In total, 890 tonnes (4,230 m<sup>3</sup>) of waste is expected to be produced each year. It is recognised that some units will be occasionally occupied, but this assessment has assumed that the units will be fully occupied throughout the year.

Table L5.3 Predicted waste generation from the operational activities

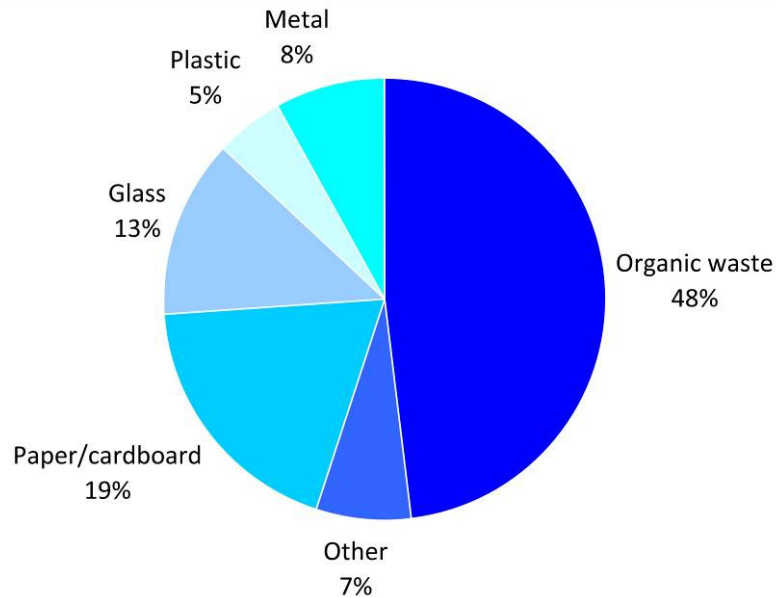
Land use	Units/m <sup>2</sup>	Tonnes produced per year	Volume produced per year (m <sup>3</sup> )
Residential	511 units	380	1,800
Restaurants/bars	2,600 m <sup>2</sup>	400	1,900
Retail	440 m <sup>2</sup>	10	30
Leisure	7,396 m <sup>2</sup>	100	500
<b>Total</b>	--	<b>890</b>	<b>4,230</b>

- L5.17 Figure L5.3 outlines the expected composition of waste for the whole development. The composition of waste is likely to differ slightly between land

uses, however it is thought that organic waste will make up the largest proportion due to the residential and restaurant uses. Cardboard and paper mainly originating from the retail and leisure/commercial uses are also likely to be prevalent. A large proportion of waste is expected to be recyclable.

Figure L5.3 Likely composition of waste produced from the whole site

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L5.18 The total estimated yearly waste generation of 890 tonnes represents a 0.2% increase of C&I waste which is currently produced in Cornwall. This is not a large percentage; however as outlined in Section L4 there is a need for additional waste facilities to cope with recovering C&I waste in the future, and landfill capacity in the region is uncertain. Therefore, any additional waste production may have an effect on the local receptors. Table L5.4 summarises the effects on receptors.

Table L5.4 Potential effect on receptors from operational waste

Receptor	Receptor sensitivity	Effect	Magnitude of effect	Significance of effect
Cornwall C&I waste management infrastructure capabilities and capacity.	High	Disposal of large volumes of C&I waste decreasing pre-allocated waste facility void space designated for current region's waste.	Low	Moderate (adverse)
South West region C&I waste management infrastructure capabilities and capacity.	Medium	Disposal of large volumes of C&I waste decreasing pre-allocated waste facility void space designated for current regions' waste.	Low	Minor (adverse)
National C&I waste management infrastructure capabilities and capacity	Negligible	Disposal of specific C&I waste materials. Material will have to travel large distances which is unsustainable.	Negligible	Negligible

## Extant Scheme

L5.19 Table L5.5 provides a comparison of the extant scheme to the scheme proposed in this assessment. Areas for the retail, restaurant and leisure land uses are broadly similar, but the unit size for the residential units has increased by around 60%, this is due to the proposed podium and undercroft.

Table L5.5 Comparison of extant scheme to the 2010 scheme

Land Use	Extant Scheme (m <sup>2</sup> )	2010 Scheme (m <sup>2</sup> )
Residential	38,613 m <sup>2</sup> (511 units)	65,000 m <sup>2</sup> (511 units)
Retail	440 m <sup>2</sup>	440 m <sup>2</sup>
Restaurant/bar	2,600 m <sup>2</sup>	2,600 m <sup>2</sup>
Leisure	7,393 m <sup>2</sup>	7,396 m <sup>2</sup>
<b>Total</b>	<b>49,046 m<sup>2</sup></b>	<b>75,436 m<sup>2</sup></b>

L5.20 If the extant scheme were to be constructed, the amount of construction waste produced would be approximately 4,600 tonnes, around 30% less than for the 2010 scheme. However, due to the high sensitivity of the receptors, this would still likely result in a moderate (adverse) effect without mitigation.

L5.21 Once the development is operational, there is very little change in terms of waste generation. Although the area for the residential land use has increased

for the 2010 scheme, this takes the form of a podium and undercroft, which are not waste generating land uses. Therefore, the potential effect without mitigation would remain at moderate (adverse).

## L6.0 **Mitigation Measures**

### **Introduction**

L6.1 In the following sections, mitigation measures to reduce the effects of waste throughout the life of the development are discussed. These have been taken from the SWMP and the Operational Waste Management Strategy, presented in Appendix L1 and L2 respectively.

### **During construction**

L6.2 Waste management strategies throughout the demolition and construction phases of the proposed development will be considered at a number of stages, including:

- 1 Design/planning stage
- 2 Construction tender phase
- 3 Construction phase.

L6.3 A SWMP for the Carlyon Bay development has been drafted, and this section presents its core features to date. A SWMP is an ongoing, live document, which will be updated throughout the design and construction of the project. As such, the measures described below may change, depending on which are chosen by the design team and principal contractor.

L6.4 Currently, the SWMP has identified a number of areas where waste can be minimised at source and through design. The full list of actions are identified in Section 5 of the SWMP (in Appendix L1), some of which include:

- 1 The potential to reuse as much demolition and excavation waste as possible. Suitable material will be crushed onsite and reused
- 2 Where possible, prefabricated components will be used to reduce off-cut waste onsite and increase efficiency during installation
- 3 Where relevant look to repeat building form to minimise off-cut waste excess waste generation onsite.

L6.5 With these design measures in place, the SWMP estimates that the initial construction waste generation rate will reduce by 10% to a total of around 6,190 tonnes of waste. By reusing the demolition waste by crushing it onsite and using the material as aggregate, the demolition generation rate is estimated to reduce by 80% to 540 tonnes.

L6.6 Once onsite, the plan will be managed and implemented by an appointed site waste management officer. This officer will be responsible for implementing strategic recommendations into the current SWMP. The recommendations are outlined in Section 7 of the SWMP.

L6.7 In addition to reducing waste by design measures, the SWMP will also ensure that, once onsite, good practice recovery rates are achieved. Should a

recycling rate of 85% be achieved (which is easily achievable), 5,620 tonnes of construction waste could be recycled, with only 930 tonnes going to landfill.

- L6.8 Specific obligations for construction waste and the requirements of the SWMP will form part of a Construction Environmental Management Plan (CEMP). The contractor will be required to produce and agree the CEMP, and it will describe how construction will be managed to avoid, minimise and mitigate any construction effects on the environment, existing surrounding communities and residents of Carlyon Bay. It will be produced in accordance with the recommendations of PPG6, which has been prepared by the Environment Agency and is entitled Pollution Prevention Guidelines.
- L6.9 The CEMP will provide the management framework needed for the planning and implementation of construction activities in accordance with environmental commitments identified within the Environmental Statement. Any requirements of planning conditions or Section 106 legal agreements will also be taken into account.
- L6.10 A detailed CEMP will be produced as part of the detailed submission on reserved matters for the development phase. An Outline CEMP is available in the Construction Methodology section of this ES. This describes how the detailed CEMP will work, how it will be produced, how statutory authorities and other interested groups will be able to interact with the process and how the control of construction aspects will be achieved.

### **After Completion**

- L6.11 As can be seen from the expected waste composition for Carlyon Bay, as illustrated in Figure L5.3, over 50% of the waste produced is expected to be recyclable. In order to meet the high aspirations of sustainability as set out by the client, the encouragement and facilitation of segregation methods are crucial to limiting the effect of operational waste and meeting regional and local policy. All mitigation measures below have been taken from the Outline Waste Strategy (Appendix L2).
- L6.12 In order to capture as much recyclable waste as possible from the residential units, it is vital to ensure that sufficient storage is provided to allow segregation of waste. Temporary local neighbourhood refuse stores will be located at convenient points around the development, and this will store separate bins for residents to dispose of the following waste streams:
- 1 Food waste
  - 2 Glass
  - 3 Dry recyclables (including paper, card, aluminium cans, and plastics)
  - 4 Residual waste.
- L6.13 Information packs will be provided to ensure that all visitors to Carlyon Bay are aware of the recycling opportunities available to them. The bins will be colour coded and clearly labelled to ensure that contamination is kept to a minimum.

The size of the temporary refuse store has been calculated based on full occupancy, to ensure that residents will always have space to dispose of their waste.

L6.14 In order to ensure that the temporary refuse stores are used appropriately, the site will be privately managed. During the high season waste will be collected once a day and during the low season once every two days (or when needed). An electric vehicle will be used to travel around the site to collect the waste, which will enable sustainable waste movement through the site.

L6.15 The commercial, leisure and restaurant/bar areas will also concentrate on ensuring that waste can be segregated at source. All bins in the leisure areas and offices will ensure that materials can be separated, as illustrated in Figure L6.1. Restaurants and bars will also be provided with sufficient bin storage space to make sure that separation can take place. These bins will also be collected by an electric vehicle once a day.

Figure L6.1 Bins which allow segregation at source



L6.16 In order to ensure that waste from the development is stored hygienically and efficiently, a central refuse store will be provided at Crinnis. This will provide space for the following equipment:

- 1 An in-vessel composter. This will treat all organic waste (food and landscaping waste) from the development, not only reducing waste to landfill but also providing the development with compost which can be used in the landscaping around the site
- 2 A cardboard baler. This will target cardboard from the deliveries to the commercial and retail land uses ensuring a high capture rate
- 3 Wheelie bins for the storage of glass and dry recyclables
- 4 A compactor for the storage of residual waste.

L6.17 The provision of an in-vessel composter will ensure that food waste from the site (which makes up almost 50% of all waste produced) is targeted, both in

the residential units and from restaurants and bars. All legal requirements with regards to composting food waste will be met.

L7.0

## Residual Effects

### Introduction

L7.1

It is likely that there may be some residual effects remaining after the proposed mitigation measures have been implemented. These are not significant, and this section summarises what these effects are likely to be.

### During construction

L7.2

By implementing a SWMP at the design stage, it is hoped that the total waste generated by demolition and construction can be reduced from 9,580 to 6,730 tonnes, achieving a reduction of 2,850 tonnes of C&D waste by design measures alone. Once construction begins, by following an on-site SWMP and by achieving good practice recovery rates, the SWMP has estimated that it is possible to recover 5,620 tonnes of waste, with only 930 tonnes of construction waste being disposed of to landfill (an 85% recovery rate). This waste will not be disposed of in one period, but is expected to be produced over a period of around 42 months. The mitigated effects are outlined in Table L7.1 below.

Table L7.1 Mitigated construction effects

Receptor	Receptor sensitivity	Effect	Magnitude of effect	Significance of effect
Cornwall C&D waste management infrastructure capabilities and capacity (such as transfer stations, materials recovery facilities (MRFs), skips and refuse collection vehicles).	High	Disposal of large volumes of C&D waste decreasing pre-allocated waste facility void space designated for current region's waste.	Negligible	Minor (adverse)
South West region C&D waste management infrastructure capabilities and capacity.	Medium	Disposal of large volumes of C&D waste decreasing pre-allocated waste facility void space designated for current regions' waste	Negligible	Negligible
National C&D waste management infrastructure capabilities and capacity	Low	Disposal of specific C&D waste materials. Material will have to travel large distances	Negligible	Negligible

Receptor	Receptor sensitivity	Effect	Magnitude of effect	Significance of effect
		which is unsustainable.		

### After Completion

L7.3

The key aim of mitigation measures during operation is to ensure that waste can be segregated easily from the point of disposal, to ensure a high capture rate of recyclable waste streams. Table L7.2 outlines the mitigated effects of the operational development.

Table L7.2 Mitigated operational effects

Receptor	Receptor sensitivity	Effect	Magnitude of effect	Significance of effect
Cornwall C&I waste management infrastructure capabilities and capacity.	High	Disposal of large volumes of C&I waste decreasing pre-allocated waste facility void space designated for current region's waste.	Negligible	Minor (adverse)
South West region C&I waste management infrastructure capabilities and capacity.	Medium	Disposal of large volumes of C&I waste decreasing pre-allocated waste facility void space designated for current regions' waste.	Negligible	Negligible
National C&I waste management infrastructure capabilities and capacity.	Negligible	Disposal of specific C&I waste materials. Material will have to travel large distances which is unsustainable.	Negligible	Negligible

## L8.0 **Summary & Conclusions**

- L8.1 This chapter has outlined the effects of waste generation during the site preparation, construction and operation of the Carlyon Bay development. During the construction period, in order to ensure that pressure on local waste infrastructure is minimised and effects reduced, mitigation measures in the form of a SWMP will be employed. The SWMP aims to firstly minimise the amount of waste generated via design measures, and secondly to segregate the high proportions of recyclables in the waste onsite once construction begins. Mitigation measures set out in this chapter are intended to ensure that waste is managed in a sustainable manner that complies with national, regional and local policy. If this is achieved, the proposals should have a reduced effect on receptors.
- L8.2 With regard to operational waste, opportunities to minimise waste sent to landfill will be maximised by facilitating a system of waste management that aims to ensure a high recycling rate by segregating waste at source, and providing sufficient storage to do so. Carlyon Bay will embrace recycling, and will incorporate a large central refuse store which will provide space for recycling, bulking of cardboard and treatment of food waste.
- L8.3 Bins which allow segregation will be provided for all residential units, office space and public areas, and sufficient space has been provided in all building uses to allow for the store of both recyclable and residual waste streams. The use of an in-vessel composter onsite will not only provide an outlet for organic waste, but will provide a source of compost which can be used for all landscaped space in the development.

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## Abbreviations

- 1 C&D – Construction and Demolition
- 2 C&I – Commercial and Industrial
- 3 CERC – Cornwall Energy Recovery Centre
- 4 ES – Environmental Statement
- 5 MSW – Municipal Solid Waste
- 6 SWMP – Site Waste Management Plan
- 7 WRAP – Waste and Resources Action Programme

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L10.0

## References

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