

## Plymouth City Council

# Review of Waste Strategy, Future Needs and Sites

### Future Need Assessment



27 August 2014

AMEC Environment & Infrastructure UK Limited

---

## Copyright and Non-Disclosure Notice

The contents and layout of this report are subject to copyright owned by AMEC (©AMEC Environment & Infrastructure UK Limited 2013), save to the extent that copyright has been legally assigned by us to another party or is used by AMEC under licence. To the extent that we own the copyright in this report, it may not be copied or used without our prior written agreement for any purpose other than the purpose indicated in this report.

The methodology (if any) contained in this report is provided to you in confidence and must not be disclosed or copied to third parties without the prior written agreement of AMEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests. Any third party who obtains access to this report by any means will, in any event, be subject to the Third Party Disclaimer set out below.

---

## Third-Party Disclaimer

Any disclosure of this report to a third party is subject to this disclaimer. The report was prepared by AMEC at the instruction of, and for use by, our client named on the front of the report. It does not in any way constitute advice to any third party who is able to access it by any means. AMEC excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage howsoever arising from reliance on the contents of this report. We do not however exclude our liability (if any) for personal injury or death resulting from our negligence, for fraud or any other matter in relation to which we cannot legally exclude liability.

---

## Document Revisions

No.	Details	Date
1	Draft Report	15 May 2014
2	Revised Final Draft	20 June 2014
3	Revised Final Draft	5 August 2014
4	Final	7 August 2014
5	Final – second issue	27 August 2014

---

**Report for**

Oliver Gibbins, Planning Officer  
Planning  
Plymouth City Council  
Civic Centre  
Plymouth  
PL1 2AA

---

**Main Contributors**

Claire Brown  
Viral Desai  
Nienke Pengelly

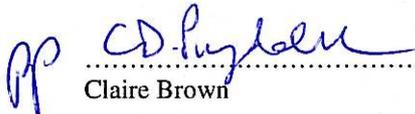
---

**Issued by**

  
.....  
Nienke Pengelly

---

**Approved by**

  
.....  
Claire Brown

---

**AMEC Environment & Infrastructure  
UK Limited**

Canon Court, Abbey Lawn, Abbey Foregate,  
Shrewsbury SY2 5DE, United Kingdom  
Tel +44 (0) 1743 342 000  
Fax +44 (0) 1743 342 010

h:\projects\34138 plymouth need assessment review\docs\rr054i5.docx

## Plymouth City Council

# Review of Waste Strategy, Future Needs and Sites

## Future Need Assessment

27 August 2014

AMEC Environment & Infrastructure  
UK Limited

This document has been produced by AMEC Environment & Infrastructure UK Limited in full compliance with the management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

In accordance with an environmentally responsible approach, this document is printed on recycled paper produced from 100% post-consumer waste, or on ECF (elemental chlorine free) paper.

# Contents

<b>1.</b>	<b>Introduction</b>	<b>1</b>
1.1	Purpose of this Report	1
1.2	Baseline Year	1
1.3	Categorisation of Waste Data	2
1.4	Data Sources	3
<b>2.</b>	<b>Current Levels of Waste Arisings in Plymouth</b>	<b>5</b>
2.1	Introduction	5
2.2	Current Waste Arisings and Disposal/Management	5
2.2.1	Municipal Waste	5
2.2.2	Commercial and Industrial Waste	7
2.2.3	Construction, Demolition and Excavation Waste	9
2.2.4	Hazardous Waste	12
2.2.5	Agricultural Waste	13
2.2.6	Low Grade Radioactive (LGR) Waste	13
2.3	Summary of Arisings in Plymouth	13
<b>3.</b>	<b>Type of Waste Management and Existing Capacity in Plymouth</b>	<b>15</b>
3.1	Introduction	15
3.2	Type of Waste Management/Disposal	15
3.2.1	Municipal Waste/Local Authority Collected Waste	15
3.2.2	Commercial and Industrial Waste	16
3.2.3	Other Waste Streams	16
3.3	Number and Location of Existing Waste Management Facilities	16
3.3.1	Existing Operational Waste Management Facilities in Plymouth	18
3.3.2	Remaining Void Space	18
3.3.3	Throughput Capacity of Non-Landfill Waste Facilities	18
3.4	Conclusions	20
<b>4.</b>	<b>Future Waste Management Requirements</b>	<b>21</b>
4.1	Introduction	21
4.2	Baseline Assumptions	21
4.2.1	Household Growth Assumptions	21

4.2.2	Waste Growth Assumptions	22
4.3	<b>Forecasts</b>	<b>24</b>
<b>5.</b>	<b>Cross Boundary Waste Movements</b>	<b>27</b>
5.1	<b>Introduction</b>	<b>27</b>
5.2	<b>Existing Cross Boundary Waste Movements</b>	<b>27</b>
5.2.1	Imports	27
5.2.2	Exports	28
5.3	<b>Future Cross Boundary Waste Movements</b>	<b>30</b>
<b>6.</b>	<b>Future Needs Assessment</b>	<b>31</b>
6.1	<b>Introduction</b>	<b>31</b>
6.2	<b>Municipal Waste/Local Authority Collected Waste</b>	<b>31</b>
6.3	<b>Commercial and Industrial Waste</b>	<b>33</b>
6.4	<b>Other Waste Streams</b>	<b>35</b>
6.4.1	Construction, Demolition and Excavation Waste	35
6.4.2	Hazardous Waste	36
6.4.3	Agricultural Waste	36
6.4.4	Low Grade Radioactive Waste	36
6.5	<b>Conclusions</b>	<b>37</b>
Table 2.1	Total Municipal Waste Arisings 2009/10 to 2012/13 (tonnes)	5
Table 2.2	Municipal Waste Arisings 2012/13: Quantities per Household and Per Capita	5
Table 2.3	Modelled Composition of Household Waste in Plymouth*	6
Table 2.4	Municipal Waste Managed Within Plymouth in 2012 <sup>1</sup>	7
Table 2.5	Commercial and Industrial Waste Produced in Plymouth 2009	8
Table 2.6	Commercial and Industrial Waste* Management in Plymouth 2012 (Tonnes)	9
Table 2.7	Historic National and Regional CDEW Arisings	11
Table 2.8	Construction, Demolition and Excavation Waste Deposited in Plymouth in 2012 (Tonnes)	12
Table 2.9	Hazardous Waste Arisings and Deposits in Plymouth 2012	12
Table 2.10	Hazardous Waste Management in Plymouth in 2012 (tonnes)	12
Table 2.11	Agricultural Waste* Management in Plymouth 2012 (tonnes)	13
Table 2.12	Summary of Waste Arisings and Disposals in Plymouth (2012)	14
Table 3.1	Municipal Waste Management in Plymouth 2012 <sup>1</sup>	15
Table 3.2	Number of Waste Management Facilities in Plymouth (2012)	17
Table 3.3	Total Throughput Capacity at Other Open Gate Waste Management Facilities in 2012 (Tonnes)	18
Table 3.4	Handling of Waste at Non-Landfill Sites in Plymouth in 2012 (Tonnes)	19
Table 3.5	Comparison of Waste Handled at Non-Landfill Facilities with Licensed/ Permitted Capacity (2012)	19
Table 4.1	Forecasted Waste Arisings in Plymouth 2012 – 2031	25
Table 5.1	Waste Imports into Plymouth in tonnes (2012)	27
Table 5.2	Waste Imports into Plymouth in tonnes: Transfer (2012)	28
Table 5.3	Waste Imports into Plymouth in tonnes: Treatment (2012)	28
Table 5.4	Waste Imports into Plymouth in tonnes: Metal Recycling (2012)	28
Table 5.5	Waste Exports from Plymouth in tonnes (2012)	29
Table 5.6	Waste Exports from Plymouth in tonnes: Transfer (2012)	29
Table 5.7	Waste Exports from Plymouth in tonnes: Treatment (2012)	29

Table 5.8	Waste Exports from Plymouth in tonnes: Metal Recycling (2012)	30
Table 6.1	Future Municipal Waste Arisings, Recycling and Residual Tonnages	31
Table 6.2	North Yard EfW Contract Waste Tonnage Profile (as agreed October 2009)	32

# 1. Introduction

## 1.1 Purpose of this Report

AMEC Environment & Infrastructure UK Limited (AMEC) has been commissioned by Plymouth City Council to establish the necessary baseline information required to assist in the production of waste forecasts, in support of the emerging Plymouth Plan, for the administrative area of Plymouth (also referred to throughout this report as 'the study area'). The purpose of this report is to present:

- Data on current waste arisings and disposal/management;
- Data on existing waste management capacity;
- Waste forecasts that estimate arisings and capacity requirements for the period of the emerging Plymouth Plan; and
- An analysis of need by comparing existing and future arisings against existing and planned waste management capacity.

This report has been concerned with pulling together the most up to date **existing** and comprehensive information, which is in the public domain. However, where this data is inadequate (i.e. out of date or simply lacking), it has, where possible, been supplemented by additional assumptions and data.

Importantly, in preparing this waste needs assessment, cognisance has also been taken of the approach to assessing needs by neighbouring Waste Planning Authorities and other authorities in the wider south-west sub-region. This has sought to ensure that the approach adopted by this assessment and the recommendations around future waste needs in Plymouth aligns well with the wider waste management picture across the south-west.

## 1.2 Baseline Year

2012 is the chosen baseline year for this work, although where appropriate and available data is presented for the financial year 2012/13<sup>1</sup>. For most waste streams, data for the baseline year has been available, although capacity information has looked at earlier data undertaken as part of more comprehensive surveys. However, for some categories (e.g. local authority collected waste), more up to date information has been available and is included in the report.

It should be noted that whilst some data is reported on a financial year basis, other data is reported according to calendar year. As such, data in this report has been presented in both ways.

---

<sup>1</sup> Prior to 2005, waste data collected and presented by the Environment Agency (EA) was presented based on the financial year. However, in 2005 the way in which waste data was collated and presented changed and the EA waste data is now presented on an annual basis. This change is reflected in this needs assessment report and therefore differs to the way in which waste data was presented and reported on in the previous Plymouth Needs Assessment Report carried out in 2005.

## 1.3 Categorisation of Waste Data

Traditionally, waste data has been collected and presented according to its origins e.g. local authority collected waste (i.e. household/municipal waste), commercial/ industrial etc. The Environment Agency, as the key body responsible for collecting and collating waste data, has in the past present waste data in this format; however, more recently the EA have aggregated data for household and commercial and industrial wastes. For comparative purposes, the following waste categories have been adopted:

- **Municipal Waste<sup>2</sup>:** household waste and any other wastes collected by Plymouth City Council (or their agents) as waste collection authority such as from municipal parks and gardens and commercial or industrial premises and waste resulting from the clearance of fly-tipped materials;
- **Commercial and Industrial Waste:** broadly, *commercial waste* is classified as waste arising from wholesalers, catering establishments, shops and offices (in both the public and private sectors) whilst *industrial waste* is waste arising from factories and industrial premises. Neither of these categories includes consideration of wastes from the construction, demolition and excavation sectors (see below). For the purpose of this study, waste water / sewage treatment which is categorised as commercial and industrial waste (subject to biological treatment) has been presented separately;
- **Inert/ Construction, Demolition and Excavation Waste:** materials consist of debris generated from site construction or refurbishment, demolition or excavation. Includes material such as rubble, metals, wood, glass etc;
- **Hazardous Waste:** previously referred to as special waste. Hazardous waste are those materials defined in European law as those wastes featuring on a list drawn up by the European Commission (the European Waste Catalogue (EWC)<sup>3</sup> because they possess one or more of the hazardous properties<sup>4</sup> set out in the Hazardous Waste Directive<sup>5</sup>. The EWC and its constituent hazardous waste list were updated in 2002. The new list applied in full in England from 16 July 2005. From this date, the term special waste was dropped and wastes such as fluorescent tubes, television and computer monitors with cathode ray tubes, and refrigerators were required to be consigned as hazardous waste;
- **Agricultural Waste:** i.e. waste from farming, forestry, horticulture and similar activities<sup>6</sup>; and
- **Low Grade Radioactive Waste:** in the UK radioactive wastes are classified in terms of the nature and quantity of radioactivity they contain and their heat-generating capacity, as High Level Waste, Intermediate Level Waste and Low Level Waste, where the latter consists of wastes having a radioactive content not exceeding 4GBq (gigabecquerels) per tonne of alpha, or 12GBq per tonne of beta/gamma activity.

<sup>2</sup> Municipal waste has been defined as Local Authority Controlled Waste (LACW); however, to ensure consistency with the Environment Agency's approach to waste data, the term municipal waste is used throughout this report.

<sup>3</sup> Commission Decision 2000/532/EC as amended.

<sup>4</sup> For a full list of hazardous properties and comprehensive guidance on the classification of hazardous waste see: [http://www.environmentagency.gov.uk/subjects/waste/1019330/1217981/1384307/?lang=\\_e](http://www.environmentagency.gov.uk/subjects/waste/1019330/1217981/1384307/?lang=_e)

<sup>5</sup> Council Directive 91/689/EEC.

<sup>6</sup> EPA 90 defines agricultural waste as waste from premises used for agricultural within the meaning of the Agricultural Act 1947. This includes 'horticulture, fruit growing, seed growing, dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land, osier land, market gardens and nursery grounds, and the use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes'.

## 1.4 Data Sources

As noted in Section 1.1, this report is concerned with pulling together available data sources; as such no new survey work has been conducted. Whilst the specific origins of the data referred to in this report are referenced throughout, information has been sourced from the following bodies:

- Plymouth City Council Planning Department;
- Plymouth City Council Waste Management;
- Environment Agency, in particular the most recently available Waste Interrogator Data for the year 2012 released in September 2013;
- Department for Communities and Local Government (CLG) (formerly the Office of the Deputy Prime Minister (ODPM));
- Department for Business, Enterprise and Regulatory Reform (BERR) (formerly Department of Trade and Industry (DTI));
- Department for the Environment, Food and Rural Affairs (DEFRA); and
- The Office of National Statistics (ONS).



## 2. Current Levels of Waste Arisings in Plymouth

### 2.1 Introduction

For key waste streams, the following section sets out details of the amount of waste arising and being managed in Plymouth. Much of the available data relates to the quantities of material disposed managed in the study area, however, some data has been available on an arisings basis. Where this has been the case, it has been highlighted.

### 2.2 Current Waste Arisings and Disposal/Management

#### 2.2.1 Municipal Waste

##### Municipal Waste Arisings

Table 2.1 shows that the total amount of municipal waste arising in Plymouth in 2011/12 stood at approximately 136,000 tonnes but had decreased to around 126,650 tonnes in 2012/13 and to 124,150 tonnes in 2013/14.

Table 2.2 illustrates that using the 2012/13 figure, reflecting the 2012 baseline year for this report, this equates to 491 kg per head and almost 1,160 kg per household.

**Table 2.1 Total Municipal Waste Arisings 2009/10 to 2012/13 (Tonnes)**

	2009/10	2010/11	2011/12	2012/13	2013/2014
<b>Total</b>	134 214	134 214	136 077	126 654	124 153

(Source: Plymouth City Council Waste Management, 2014)

**Table 2.2 Municipal Waste Arisings 2012/13: Quantities per Household and Per Capita**

	(A) Total Municipal Waste Arisings in 2012/13 (tonnes)	(B) Total Population (Mid-2012 Estimate)	(C) Total Quantity of Municipal Waste Arising per Capita (kg/head/year) (A ÷ B x 1 000)	(D) Total Number of Households (2011 Census)	(E) Total Quantity of Municipal Waste Arising per Household (kg/year) (A ÷ D x 1 000)
<b>Total</b>	126 654	258 000	491	109 307	1 159

(Source: 2011 Census, Office of National Statistics)

## Composition of Municipal Waste

Understanding the composition of municipal waste is crucial to understanding how it can be managed most effectively. The most recent municipal waste composition study for Plymouth was undertaken in 2007 by Waste Works. More recent waste flow modelling, undertaken by and on behalf of the Council, used the 2007 Waste Works composition data as a basis but has accounted for any actual increased recycling rates which have been achieved to date. The most recently available modelled municipal waste composition data is set out in Table 2.3 below. As shown, paper and putrescible waste such as garden refuse and food waste form the greater part of the waste produced by Plymouth residents that is collected at the kerbside (26% and 39% respectively).

**Table 2.3 Modelled Composition of Household Waste in Plymouth\***

Material	% of Total
Paper and Cardboard	26
Plastic	9
Textiles	4
Glass	5
Nappies	5
Other Miscellaneous Combustibles	4
Kitchen / Garden / Other Organics	39
<i>Kitchen</i>	29
<i>Garden (including soil)</i>	4
<i>Other Organics</i>	6
Metal	4
WEEE	1
Hazardous Waste	2
Fines	1

(Source: Plymouth City Council Waste Management, 2013)

\* It should be noted the above is based on *modelled* compositional data using data from most recent municipal waste compositional study undertaken in 2007 by Waste Works and the more recent MEL 2012 study of the co-mingled dry recyclates waste stream.

## Municipal Waste Deposits

Environment Agency deposits data indicate that in 2012 Plymouth managed 31,541 tonnes of municipal waste (see Table 5.2), i.e. municipal waste managed within the City boundary (to avoid double counting, this excludes 159,121 tonnes of material handled at waste transfer stations). This is significantly less than the nearly 127,000 tonnes of municipal waste arisings (see Table 2.1) and as such, it is assumed that a large portion of waste arisings in Plymouth is exported from the area.

**Table 2.4 Municipal Waste Managed Within Plymouth in 2012<sup>1</sup>**

Management Type	2012 (Tonnes)	2012 (%)
Materials Recycling Site <sup>2</sup>	4 777	15
Composted	0	0
Energy from Waste	0	0
Landfill <sup>3</sup>	1 998	6
Other Treatment:	24 766	79
<i>Biological treatment</i>	6 850	22
<i>MRF</i>	15 710	50
<i>WEEE treatment</i>	2 206	7
<b>Total</b>	<b>31 541</b>	<b>100</b>

(Source: Environment Agency's Waste Interrogator 2013)

1 – This table excludes material handled at Waste Transfer Stations (159,121 tonnes in 2012).

2 – This figure relates to the amount inputted into recycling and recovery facilities, thus there may be some double counting in respect of residual material.

3 – This figure relates to (inert) material used in the final restoration of the Chelson Meadow landfill site.

## 2.2.2 Commercial and Industrial Waste

### Arisings

In December 2010 the Department for Environment, Food and Rural Affairs (DEFRA) published the final results of the Government's Survey of Commercial and Industrial Waste Arisings, which provided an estimate of the amount of waste that businesses generate and how it is managed in England, for the 2009 calendar year. This is the latest available data on commercial and industrial waste arisings. Table 2.5 sets out the commercial and industrial waste arising in Plymouth for 2009 according to waste type, which amounted to 157,000 tonnes.

**Table 2.5 Commercial and Industrial Waste Produced in Plymouth 2009**

Waste Type	Arisings 2009 (Tonnes)	%
Animal and vegetable wastes	6 000	3.82
Chemical wastes	15 000	9.55
Common sludges	1,000	0.64
Discarded equipment	6 000	3.82
Healthcare wastes	3 000	1.91
Mixed wastes	44 000	28.03
Metallic wastes	12 000	7.64
Mineral	23 000	14.65
Non-metallic wastes	47 000	29.94
Non-wastes	0	0
<b>Total</b>	<b>157 000</b>	<b>100</b>

(Source: DEFRA/Jacobs Survey of Commercial and Industrial Waste Arisings – Final Results, 2010)

## Deposits

Environment Agency deposits data indicate that in 2012 Plymouth managed 81,002 tonnes of commercial and industrial waste, as set out in Table 2.6. However, this does not take into account the 717,202 tonnes of commercial and industrial waste sent for biological treatment, predominantly at the Chelson Meadow leachate treatment plant. It has been assumed that this is predominantly related to waste water/sewage treatment.

Disregarding the biologically treated commercial and industrial waste, Plymouth is therefore a significant exporter of commercial and industrial waste, i.e. whilst 157,000 tonnes (2009) of commercial and industrial waste is generated within the City, only some 81,000 tonnes of commercial and industrial waste is managed within the City. As such, it is assumed that Plymouth exports in the order of 76,000 tonnes per annum of commercial and industrial waste.

**Table 2.6 Commercial and Industrial Waste\* Management in Plymouth 2012 (Tonnes)**

Waste Facility Type	2012 (Tonnes)	2012 (%)
CA Site	15	0.02
Car Breaker	5 998	7.40
Materials Recycling Facility	811	1.00
Metal Recycling	14 372	17.75
Non Hazardous Waste Transfer	23 696	29.25
Non Hazardous Waste Transfer/Treatment	1 567	1.93
Physical Treatment	2 665	3.29
Physical-Chemical Treatment	31 778	39.23
WEEE Treatment Facility	100	0.13
<b>Total**</b>	<b>81 002</b>	<b>100</b>

(Source: Environment Agency's Waste Interrogator, 2013)

\* The EWC classification has been used to disaggregate municipal waste and agricultural waste from the Environment Agency's HIC (Household, Industrial and Commercial) data.

\*\* This table excludes material sent for biological treatment (717,202 tonnes in 2012).

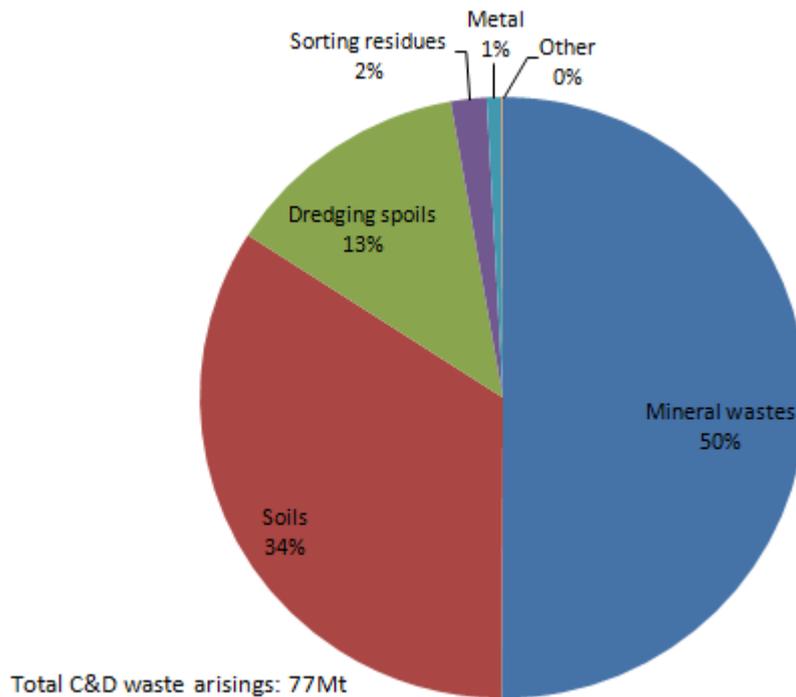
### 2.2.3 Construction, Demolition and Excavation Waste

#### Arisings

Construction, demolition and excavation waste (CDEW) is a further significant waste stream in the Plymouth area. Nationally, CDEW accounts for the largest proportion of the waste stream in England – 77.4 million tonnes in 2010 (down from 81.4 million tonnes in 2008)<sup>7</sup>. In terms of its composition, CDEW comprises materials such as mineral wastes (i.e. inert materials from construction not mining/extractive activities), soils, sorting residues, and metals. By way of illustration, the composition of CDEW in England in 2010 is shown in Figure 2.1.

<sup>7</sup> Defra (December 2013) 'Waste Management Plan for England'

**Figure 2.1 Composition of Construction and Demolition Waste in England in 2010**



Source: Waste Management Plan for England, Defra (December 2013)

The Council does not have access to comprehensive local specific data on CDEW arisings. Instead, figures have been derived from national survey data to establish a local estimate. This approach is consistent with that adopted by neighbouring authorities, notably Cornwall and Devon.

Since 1999 a number of surveys have been conducted for the Department of Communities and Local Government (CLG) on arisings and use of CDEW. These are:

- National Survey of Production, Recycling and Disposal of Construction and Demolition Waste in England and Wales 1999-2000 (Published 2001);
- Survey of arisings and use of construction and demolition waste (Published October 2002) – Survey year 2001;
- Survey of Arisings and Use of Construction, Demolition and Excavation Waste as Aggregate in England in 2003 (Published October 2004);
- Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2205: Construction, Demolition and Excavation Waste (Published 2007); and
- Construction, demolition and excavation waste arisings, use and disposal for England 2008 (Published April 2010).

Table 2.7 sets out the national and South West regional CDEW arisings from each of the above surveys. In contrast to the previous surveys, the 2008 survey did not record regional arisings figures. In this case the regional figure has been derived from using the proportion of national arisings that arose in the South West in 2005 to break CDEW arisings down to the regional level. In 2005 CDEW in the South West amounted to 9,482,424 tonnes, which accounted for 10.6% of CDEW produced in England and Wales. Using that percentage, CDEW arisings in the South West in 2008 amounted to 8,823,440 tonnes, a decrease of some 660,000 tonnes.

**Table 2.7 Historic National and Regional CDEW Arisings**

Year	National CDEW Arisings (Tonnes)	South West CDEW Arisings (Tonnes)	Percentage (%)
1999	69 200 000	6 807 000	9.8
2001	88 890 000	12 615 000	14.2
2003	90 930 000	10 007 000	11.0
2005 <sup>1</sup>	89 630 000	9 482 424	10.6
2008 <sup>2</sup>	83 240 000	8 823 440	10.6*

(Source: 1 – CLG / Capita Symonds (2007) Survey of Arisings and Use of Alternatives to Primary Aggregates in England 2005; 2 – WRAP / Capita Symonds (April 2010) CDEW Arisings, use and Disposal for England 2008)

\* 2008 regional figure derived by using South West percentage of national CDEW arisings in 2005, i.e. 10.6%.

Apportioning subdivisions of regional estimates of arisings is difficult due to the lack of robust data. Nevertheless, an estimate of CDEW arisings for Plymouth can be made using the licensed waste deposit data from the Environment Agency's Waste Interrogator. As set out in Table 2.8 below, using the latest interrogator data the amount of inert material received at permitted waste management facilities in the South West, Devon, Plymouth and Torbay can be established, where Plymouth represents 8.6% of the South West. Applying that percentage to the regional arisings figure set out in Table 2.7 above, it is estimated that CDEW arisings in Plymouth amounted to some 732,346 tonnes in 2008, although it should be noted that there will be a high degree of cross over with Devon and Torbay. Although the calculation is based on 2008 data, a similar amount of CDEW waste arisings has been assumed for the 2012/13 baseline year.

## Deposits

Environment Agency deposits data indicates that in 2012 Plymouth managed 36,041 tonnes of construction, demolition and excavation waste (see Table 2.8). This is significantly less than the CDEW waste arisings as calculated above and as such, it can be concluded that Plymouth is a significant exporter of CDEW.

**Table 2.8 Construction, Demolition and Excavation Waste Deposited in Plymouth in 2012 (Tonnes)**

Waste Facility Type	CDEW Deposits 2012 (Tonnes)	Percentage 2012 (%)
CA Site	3 452	9.58
Materials Recycling Facility	5 556	15.41
Metal Recycling	29	0.08
Non Hazardous Landfill	15 410	42.76
Non Hazardous Waste Transfer	11 594	32.17
<b>Total</b>	<b>36 041</b>	<b>100</b>

(Source: Environment Agency's Waste Interrogator, 2013)

### 2.2.4 Hazardous Waste

Using the Environment Agency data, hazardous waste arisings in Plymouth in 2012 amounted to 5,436 tonnes, whilst hazardous waste deposits for the same year totalled 19,273 tonnes, of which only 3,223 tonnes was from within the Plymouth area. This would appear to indicate that in 2012, Plymouth was a net importer of hazardous waste. The majority of these deposits were those sent for physical-chemical treatment (~71%).

**Table 2.9 Hazardous Waste Arisings and Deposits in Plymouth 2012**

Year	Arisings (Tonnes per Annum)	Disposal/ Management (Tonnes per Annum)	Net Import (+) / Net Export (-)
2012	5 436	19 273	+13 837

(Source: Environment Agency's Waste Interrogator, 2013)

**Table 2.10 Hazardous Waste Management in Plymouth in 2012 (tonnes)**

Waste Facility Type	Hazardous Waste Deposits 2012 (Tonnes)	Percentage 2012 (%)
CA Site	455	2.36
Car Breaker	1 262	6.55
Metal Recycling	2 437	12.65
Physical-Chemical Treatment	13 590	70.51
WEEE Treatment Facility	1 529	7.93
<b>Total</b>	<b>19 273</b>	<b>100</b>

(Source: Environment Agency's Waste Interrogator, 2013)

## 2.2.5 Agricultural Waste

Environment Agency deposits data indicate that in 2012 Plymouth managed 11,506 tonnes of agricultural waste, the majority of which was sent for biological treatment, i.e. nearly 96% (see Table 2.11). Data for agricultural waste arisings are not readily available as such, it has been assumed that deposits equate to arisings.

**Table 2.11 Agricultural Waste\* Management in Plymouth 2012 (Tonnes)**

Waste Facility Type	Agricultural Waste Deposits 2012 (Tonnes)	Percentage 2012 (%)
Biological Treatment	11 015	95.73
Metal Recycling	461	4.00
Non Hazardous Waste Transfer	12	0.11
WEEE Treatment Facility	18	0.16
<b>Total</b>	<b>11 506</b>	<b>100</b>

(Source: Environment Agency's Waste Interrogator, 2013)

\* The EWC classification has been used to identify and calculate agricultural waste deposits data.

## 2.2.6 Low Grade Radioactive (LGR) Waste

Low grade radioactive (LGR) waste arisings and deposits are relatively small in comparison with the other types of waste identified above. The major producers of radioactive waste in the UK are the civil nuclear industry, Ministry of Defence (MoD) and its civilian contractors, and GE Healthcare Ltd. Data is available at a national level and the latest available is set out in the report '*The 2010 UK Radioactive Waste Inventory: A Summary of Information for International Reporting*', produced on behalf of the Department of Energy & Climate Change (DECC) and the Nuclear Decommissioning Authority (NDA). It should be noted that the data included in this report, has been included on a voluntary basis. The responsibility for the management of LGR waste lies with the NDA.

Given the relatively small quantities of LGR waste arisings nationally and their specialised treatment/management, it has been considered unrealistic to estimate arisings at a local Plymouth level.

## 2.3 Summary of Arisings in Plymouth

Table 2.12 sets out a summary of the data presented in this chapter of the report. Total waste arisings in Plymouth amount to just over 1 million tonnes; whilst waste deposits amount to just under 180,000 tonnes. As such, it is concluded that the figures indicate Plymouth currently is a net exporter of waste.

**Table 2.12 Summary of Waste Arisings and Disposals in Plymouth (2012)**

<b>Waste Stream</b>	<b>2012 Arisings (Tonnes)</b>	<b>2012 Deposits (Tonnes)</b>
Municipal Waste	126 654	31 541 <sup>1</sup>
Commercial and Industrial Waste	157 000	81 002 <sup>2</sup>
Construction and Demolition Waste	732 346	36 041
Hazardous Waste	5 436	19 273
Agricultural Waste *	11 506	11 506*
Low Grade Radioactive Waste	-	-
<b>TOTAL</b>	<b>1 032 942</b>	<b>179 363</b>

1 – Excludes material handled at waste transfer stations (159,121 tonnes)

2 – Excludes material sent for biological treatment (717,202 tonnes)

\* - Assumes deposits equate to arisings.

### 3. Type of Waste Management and Existing Capacity in Plymouth

#### 3.1 Introduction

Having established the amount of waste arising and/or handled/disposed of in the study area, this sections looks at the following:

- The way in which material is presently managed/ handled in Plymouth;
- The number and type of existing waste management facilities; and
- The capacity of those facilities to handle waste.

#### 3.2 Type of Waste Management/Disposal

##### 3.2.1 Municipal Waste/Local Authority Collected Waste

Table 3.1 illustrates the amount of municipal waste that was managed in the study area in 2012 and the method in which the waste was treated/ disposed. 79% of municipal waste managed in Plymouth was by biological/ chemical/physical treatment. This table does not take account of material sent out of Plymouth for management, which is reported on in the next section, but does include any material that was imported into Plymouth for management.

**Table 3.1 Municipal Waste Management in Plymouth 2012<sup>1</sup>**

	2012 (Tonnes)	2012 (%)
Recycled /Recovered <sup>2</sup>	4 777	15
Composted	0	0
Energy from Waste	0	0
Landfill	1 998	6
Other Chemical / Physical / Biological Treatment	24 766	79
<b>TOTAL</b>	<b>31 541</b>	<b>100</b>

(Source: Environment Agency’s Waste Interrogator 2013)

1 – This table excludes material handled at Waste Transfer Stations (159,121 tonnes in 2012).

2 – This figure relates to the amount inputted into recycling and recovery facilities, thus there may be some double counting in respect of residual material.

### 3.2.2 Commercial and Industrial Waste

As previously shown in Table 2.6, of the 81,002 tonnes of commercial and industrial waste managed in Plymouth in 2012; of this nearly 40% was dealt with by physical-chemical treatment, nearly 30% was sent to non-hazardous waste transfer, and nearly 18% was dealt with by metal recycling. As previously stated, a further 717,202 tonnes was sent for biological treatment, although it is known (from the EA Waste Interrogator data) that this is predominantly related to waste water / sewage treatment and has therefore not been taken into account.

### 3.2.3 Other Waste Streams

#### Construction, Demolition and Excavation Waste/Inert

As set out in Table 2.8, the majority of CDEW deposits in Plymouth in 2012 were sent to non-hazardous landfill (~43%) or non-hazardous transfer (~32%), whilst ~15% and ~10% respectively were managed through MRF or CA sites.

#### Hazardous Waste

As set out in Table 2.10, the largest proportion of hazardous waste managed in Plymouth in 2012 was that sent for physical-chemical treatment (~71%). Hazardous waste was also managed through recycling (metal recycling and car breakers accounted for nearly 13 and 7 percent respectively) and WEEE<sup>8</sup> treatment facilities (nearly 8%), whilst only a small proportion of this waste stream was managed through a civic amenity site (~2%).

#### Agricultural Waste

As set out in Table 2.12, the largest proportion of agricultural waste managed in Plymouth was by means of biological treatment (~96%), which can include anaerobic digestion and/or composting (either open windrow or in-vessel).

#### Low Grade Radioactive Waste

Due to the nature of low grade radioactive (LGR) waste it requires specialised treatment/management, the responsibility for which lies with the Nuclear Decommissioning Authority (NDA). There is no known existing waste management capacity for LGR waste in Plymouth.

## 3.3 Number and Location of Existing Waste Management Facilities

Table 3.2 sets out the number and type of waste management facilities in Plymouth.

<sup>8</sup> WEEE = waste electrical and electronic equipment as defined by the European WEEE Directive 2003 implement in England through the WEEE Regulations 2013.

**Table 3.2 Number of Waste Management Facilities in Plymouth (2012)**

Type of Facility	Number
<b>Landfill</b>	
<i>Non Hazardous*</i>	1
<b>Aggregates Recycling</b>	0
<b>Metal Recycling Sites (including car breakers)</b>	6
<b>Waste Processing:</b>	
<i>Household Waste Recycling Centres / Civic Amenity</i>	3
<b>Transfer and Recycling (excluding HWRC)</b>	
<i>Non Hazardous Waste Transfer</i>	4
<i>Non Hazardous Waste Transfer / Treatment</i>	1
<b>Other Treatment</b>	
<i>Thermal (EfW)</i>	0
<i>Composting</i>	0
<i>Biological</i>	4
<i>Physical</i>	1
<i>Physical-Chemical</i>	1
<i>WEEE</i>	1
<b>Materials Recycling Facility</b>	1
<b>TOTAL</b>	<b>23 facilities (at 19 sites)</b>

(Source: Environment Agency's Waste Interrogator, 2013)

\* Although the Chelson Meadow landfill site closed in March 2008, the site has continued to receive inert materials to enable the final restoration of the site, the last of which received in June 2012 (see Section 3.3.2).

As the table above shows, in respect of facilities that represent a **final** treatment or disposal (i.e. all facilities with the exception of transfer stations), metal recycling sites are the most numerous. The table also shows that there are a number of transfer stations in the study area. This reflects the relatively high levels of export of waste, specifically non hazardous waste, sent to other parts of the South West region and outside the region, for final treatment or disposal.

Although Table 3.2 represents the most up to date position available, other facilities currently exempt from regulation via the Environmental Permitting regime exist, such as sites where inert waste is used for engineering purposes (golf courses or sites engaged in the storage of small quantities of harmless waste material). The Environment Agency maintains a register of exempt sites. This register is by no means complete as the sites must be drawn to the attention of the Agency prior to them being entered on the register. No information has been available on exempt sites for this report.

### 3.3.1 Existing Operational Waste Management Facilities in Plymouth

Having established the number and type of waste management facilities in the study area, the remainder of this section looks at the capacity of those facilities to manage waste. This exercise has been conducted in two parts:

- The first looks at the remaining void space at landfill sites in the study area; and
- The second seeks to establish the throughput capacity of those other facilities that represent a means of final disposal.

In terms of existing capacity, transfer stations and civic amenity sites are not assessed here, as the waste is not normally treated or disposed of at these sites, but simply bulked up for onward transportation to other processing/ management facilities. The throughput capacity of the recycling sites is considered in terms of how much waste is diverted from final disposal, i.e. the recovery rates are assessed and included as contributing to overall capacity. The residual material from recycling sites is not included, as like material passing through transfer stations, it has to be sent elsewhere for final disposal/further treatment.

### 3.3.2 Remaining Void Space

The main landfill site for the study area was the Chelson Meadow site, which closed in March 2008 and has since been fully restored to grassland. As such, there is no permitted landfill capacity/void space remaining in the study area. Nonetheless, the inert materials have needed to be imported to the site to profile, cap and finally restore the land. The last tonnages of inert materials (top soil) for the restoration project were imported in June 2012.

### 3.3.3 Throughput Capacity of Non-Landfill Waste Facilities

Table 3.3 sets out the maximum licensed throughput capacity (in tonnes) of all permitted waste management facilities in Plymouth that are engaged in the final treatment or disposal of waste. It should be noted that licensed capacity and permitted capacity under the planning permission for a facility are different. For the purposes of this report, we have relied on the licensed capacities of facilities.

**Table 3.3 Total Throughput Capacity at Other Open Gate Waste Management Facilities in 2012 (Tonnes)**

Waste Management Facility Type	Total (Tonnes)
Biological Treatment	849 999 <sup>1</sup>
Physical Treatment	54 750
Physical-Chemical Treatment	100 000
WEEE Treatment	74 999
<b>Total</b>	<b>1 079 748</b>

(Source: Environment Agency's Waste Interrogator, 2013)

1 – The majority of the capacity detailed in this table represents capacity at waste water/leachate treatment works.

The amount of waste handled at Plymouth's non-landfill facilities in 2012 is set out in Table 3.4.

**Table 3.4 Handling of Waste at Non-Landfill Sites in Plymouth in 2012 (Tonnes)**

	CDEW	Municipal*	C&I*	Hazardous	TOTAL
Biological Treatment	0	17 866 <sup>1</sup>		0	17 866
Physical Treatment	0	2 665		0	2 665
Physical-Chemical Treatment	0	31 778		13 590	45 368
WEEE Treatment	0	855		1 529	2 384
<b>TOTAL</b>	<b>0</b>	<b>53 164</b>		<b>15 119</b>	<b>68 283</b>

(Source: Environment Agency's Waste Interrogator, 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

1 – This does not include 717,202 tonnes of commercial and industrial waste sent for biological treatment at waste water treatment works.

The disposal/management capacities set out in Table 3.3, when compared against the latest disposal/management rates given in Table 3.4 allows an assessment to be made of the theoretical spare capacity or shortfall in the study area's facilities. This simple calculation is set out in Table 3.5, which illustrates that there is an apparent surplus of capacity in the study area for those types of waste handled in 2012 by means other than landfill.

**Table 3.5 Comparison of Waste Handled at Non-Landfill Facilities with Licensed/ Permitted Capacity (2012)**

	Total Capacity (Tonnes)	Total Handled (Tonnes)	Spare Capacity/ Shortfall
Biological Treatment <sup>1</sup>	849 999	17 866 <sup>2</sup>	+832 133
Physical Treatment	54 750	2 665	+52 085
Physical-Chemical Treatment	100 000	45 368	+54 632
WEEE Treatment	74 999	2 384	+72 615
<b>TOTAL</b>	<b>1 079 748</b>	<b>68 283</b>	<b>+1 011 465</b>

(Source: AMEC calculations)

1 – It is assumed much of the capacity detailed in this table probably represents capacity at waste water treatment works. However, due to the composite manner in which the data is presented, no differentiation between waste water / sewerage capacity and other capacity has been possible.

2 – This does not include 717,202 tonnes of commercial and industrial waste sent for biological treatment at waste water treatment works.

Nevertheless, Plymouth is a significant exporter of some non-hazardous waste streams and this is not accounted for in the broad based assessment outlined above, which would imply that Plymouth currently more than meets its waste management needs. The need for Plymouth to export large tonnages of waste is in part reflective of the type of waste management facilities which currently exist within the City (see Table 3.2), the majority of which is

focussed on the treatment and disposal of (waste) water/liquids and Waste Electrical and Electronic Equipment (WEEE).

A more accurate assessment of the theoretical spare capacity or shortfall in the study area can be obtained by comparing total capacity against existing arisings rather than disposal. As set out in Table 3.3, although total waste management capacity in Plymouth in 2012 amounts to some 1,080,000 tonnes, this reduces to just less than 230,000 tonnes when excluding biological treatment capacity. In contrast, total waste arisings in Plymouth for the same year totalled 1,033,000 tonnes (see Table 2.12). As such, using this comparison it can be established that there is a shortfall in waste management capacity of nearly 803,000 tonnes, although it should be noted that of the total waste arisings in Plymouth in 2012, some 735,000 tonnes was construction, demolition and excavation waste.

It should be noted that the detailed disposal/capacities data set out above relates to the position at the end of 2012. Since that time a number of new facilities have been granted planning permission, some of which are currently under construction, most notably the recently procured Energy from Waste (EfW) facility at North Yard, Devonport which will become operational in 2015. Once operational, this new EfW facility will have a capacity of 245,000 tonnes per annum. Furthermore, Plymouth City Council has recently procured a new strategic Materials Recycling Facility (MRF) to replace the existing MRF at Chelson Meadow, which will become operational in April 2015. Subject to planning approval, the new strategic MRF is expected to have a capacity of between 25,000 and 40,000 tonnes per annum. It is anticipated that the majority of this capacity would be for the management of Plymouth's municipal waste recyclates.

### 3.4 Conclusions

This section of the baseline report has illustrated how waste is managed in Plymouth. Moreover, it sets out information on the number, type, and capacity of the existing waste management facilities in the study area.

Whereas previously for most waste, landfill has been the primary disposal route, it has been shown that as a result of more focus having been placed on recycling and recovery options, most waste treated in Plymouth is by means of biological treatment (predominantly waste water treatment).

In terms of capacity to manage waste, although a simple analysis of existing permitted capacities against annual input rates has seemingly indicated that the study area has an apparent surplus of disposal/ management capacity in all recorded treatment categories, when comparing total permitted capacities against total waste arisings there is an apparent shortfall in waste management capacity in Plymouth. This will have to be re-assessed once the forecasting element of the study is completed (see next section).

## 4. Future Waste Management Requirements

### 4.1 Introduction

This section seeks to establish what the future waste management requirements are for the Plymouth area for the period covered by the Plymouth Plan, i.e. to 2031.

### 4.2 Baseline Assumptions

Prior to any estimate being made of the amount and type of waste requiring management in Plymouth over the life of the Plymouth Plan, i.e. up to 2031, a set of assumptions were agreed with officers at Plymouth City Council. Details of these assumptions are set out in the following sections.

#### 4.2.1 Household Growth Assumptions

Household rather than population growth is used to influence predicted changes in waste arisings. The following baseline figures were agreed with Plymouth City Council and have been used to inform the procurement of the North Yard EfW facility:

- 2012 – 117,915 households;
- 2015 – 121,488 households;
- 2020 – 127,685 households;
- 2025 – 134,199 households; and
- 2031 – 142,568 households.

It is anticipated that there will be an increase of approximately 24,653 households over the period to 2031.

Evidence drawn from the 2012 data demonstrates that on average each household in Plymouth generated 1,159 kg of waste (see Table 2.2). Assuming that this rate of production does not change, the additional amount of municipal waste that will require handling in 2031 as a result of household growth alone is expected to equate to  $24,653 \times 1,159 \text{ kg} = \mathbf{28,573 \text{ tonnes}}$ .

More recently, in July 2013 the Council published their Strategic Housing Market Needs Assessment (SHMNA), which will be used to inform the Plymouth Plan and in particular the level of economic growth that will need to be planned for in Plymouth up to 2031. The SHMNA adopts a high growth scenario based on the underlying employment-led Experian economic forecasts. These forecasts estimate that by 2031 there will be a need for an

additional 22,766 households in the Plymouth area<sup>9</sup>. This would equate to  $22,766 \times 1,156 \text{ kg} = 26,286$  tonnes of additional municipal waste that would require handling in 2031 as a result of household growth alone, which is slightly less than that which has been calculated above.

#### 4.2.2 Waste Growth Assumptions

In considering the waste growth (or otherwise) assumption(s) that would be appropriate to apply over the period of the Plymouth Plan, a steer has been taken from:

- The waste growth assumptions which have underpinned the recently procured Energy from Waste facility at North Yard, Devonport and new strategic Plymouth MRF;
- The waste growth assumptions used to inform the adopted Waste Development Plan Document (DPD);
- Expected development within Plymouth that would affect waste arisings; and
- National and, where appropriate, neighbouring authority waste growth assumptions, particularly for non-municipal wastes.

In contrast to the waste growth assumptions adopted for the non-municipal waste streams, for municipal waste a single waste growth scenario approach has been adopted in order to ensure consistency with the assumptions which have underpinned the procurement of the North Yard EfW in Devonport and the new strategic Plymouth MRF. This equates to a 1% per annum growth rate up to the end of the life of the Plymouth Plan (i.e. 2031).

For the remaining four waste streams, a scenarios based approach has been adopted, i.e. a high, medium and low growth scenarios; not only to ensure consistency with the previously used methodology to inform the adopted Waste DPD but also with the approach adopted by neighbouring authorities, notably Cornwall and Devon in their emerging Local Plans, whilst taking account of updated information available at a national level. The waste growth assumptions from the previous Waste DPD needs assessment work have provided the initial starting point, which have subsequently been reviewed and adjusted accordingly.

#### Previous Waste DPD Needs Assessment Assumptions

The methodology adopted for the waste needs assessment work underpinning the adopted Waste DPD was based on the approach adopted by the then South West Regional Assembly in their Regional Waste Strategy, i.e. high, medium and low growth scenarios. The rates adopted were as follows:

##### *High Scenario*

For the high scenario, rates exceeded those used in the Regional Waste Strategy as well as the expected effects of planned house building. The assumptions adopted were:

<sup>9</sup> GVA and Edge Analytics (July 2013) *Strategic Housing Market Needs Assessment (SHMNA): Main Report – Plymouth City Council, South Hams District Council, West Devon Borough Council, Cornwall Council and Dartmoor National Park Authority*

- Commercial and industrial waste – a compounded linear growth rate of 2.5% per annum up to the end of the life of the Waste DPD (2026);
- Hazardous waste – same as commercial and industrial waste; and
- Construction, demolition and excavation waste – a compounded linear growth rate of 2% per annum up to the end of the life of the Waste DPD (2026).

### Medium Scenario

The assumptions adopted were:

- Commercial and industrial waste – a compounded linear growth rate of 2% per annum growth up to 2006; then reducing to a growth rate of 1% per annum up to 2016; then reducing further to a neutral growth rate of 0% per annum up to the end of the life of the Waste DPD (2026);
- Hazardous waste – same as commercial and industrial waste; and
- Construction, demolition and excavation waste – a 0% growth rate up to the end of the life of the Waste DPD (2026).

### Low Scenario

The assumptions adopted were:

- Commercial and industrial waste – a compounded linear growth rate of -1% per annum growth up to the end of the life of the Waste DPD (2026);
- Hazardous waste – same as commercial and industrial waste; and
- Construction, demolition and excavation waste – a reduction in waste arisings at a linear rate of 2% per annum up to the end of the life of the Waste DPD (2026).

## Revised Waste Growth Assumptions

The following revised waste growth assumptions have been developed taken into account national waste planning policy as well as to ensure some degree of consistency with Plymouth's neighbouring authorities (Devon and Cornwall), both of whom have adopted a scenario based approach. In terms of municipal waste, the approach seeks to reflect the municipal waste growth assumptions which have underpinned the procurement of the North Yard EfW facility and new strategic MRF as well as taking account of the most up to date actual municipal waste arisings available at the time of publishing this report. For commercial and industrial waste, a 2011 Defra study<sup>10</sup> has shown that overall C&I waste arising are declining. Although national waste planning policy acknowledges the correlation between economic growth and C&I waste arisings, it recognises the uncertainties associated with C&I waste arising projections and therefore the need to retain flexibility in planning for the management of this waste stream. The national waste strategy sets a target to recover at least 70% of all construction and demolition waste by 2020. For hazardous waste, it has been considered appropriate to reflect C&I

<sup>10</sup> Defra (June 2011) 'The Economics of Waste and Waste Policy – Declining trend in overall C&I waste arisings

growth rates. Given that Plymouth is a predominantly urban area, it has been assumed that there would be little or no growth in agricultural waste over the period of the Plymouth Plan.

Based on the approaches adopted at both the national and regional level, the waste growth scenarios outlined below have been adopted. No growth assumptions have been included for low grade radioactive waste, in that it has not been possible to provide an estimate for LGR waste arisings at a Plymouth level (see Section 2.2.6).

### *High Scenario*

- Commercial and industrial waste – a compounded linear growth rate of 1.5% per annum up to the end of the life of the Plymouth Plan (i.e. 2031);
- Hazardous waste – same as commercial and industrial waste;
- Construction, demolition and excavation waste – a compounded linear growth rate of 2% per annum up to the end of the life of the Plymouth Plan (i.e. 2031); and
- Agricultural waste – 0% growth rate up to the end of the life of the Plymouth Plan (i.e. 2031).

### *Medium Scenario*

- Commercial and industrial waste – a compounded linear growth rate of 1% per annum up to the end of the life of the Plymouth Plan (i.e. 2031);
- Hazardous waste – same as commercial and industrial waste;
- Construction, demolition and excavation waste – a 0% per annum growth rate up to the end of the life of the Plymouth Plan (i.e. 2031); and
- Agricultural waste – a 0% growth rate up to the end of the life of the Plymouth Plan (i.e. 2031).

### *Low Scenario*

- Commercial and industrial waste – a compounded linear growth rate of 0.5% per annum up to the end of the life of the Plymouth Plan (i.e. 2031);
- Hazardous waste – same as commercial and industrial waste;
- Construction, demolition and excavation waste – a reduction in waste arisings at a linear rate of 2% per annum up to the end of the life of the Plymouth Plan (i.e. 2031); and
- Agricultural waste – 0% growth rate up to the end of the life of the Plymouth Plan (i.e. 2031).

## 4.3 Forecasts

Using 2012/13 as the baseline year and the assumptions agreed and outlined above, calculations have been made as to how much waste is likely to arise up to the end of the life of the Plymouth Plan, i.e. 2031. These calculations (for key years) are set out in Table 4.1.

**Table 4.1 Forecasted Waste Arisings in Plymouth 2012 – 2031**

<b>Waste Stream</b>	<b>2012</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2031</b>
Municipal Waste	126 654	128 408	135 739	142 663	149 940
Commercial and Industrial Waste					
<i>High Growth Scenario</i>	157 000	164 980	177 731	191 466	209 358
<i>Medium Growth Scenario</i>	157 000	161 757	170 009	178 681	189 673
<i>Low Growth Scenario</i>	157 000	155 402	159 327	163 350	168 312
Construction and Demolition					
<i>High Growth Scenario</i>	732 346	765 798	824 982	888 740	971 787
<i>Medium Growth Scenario</i>	732 346	732 346	732 346	732 346	732 346
<i>Low Growth Scenario</i>	732 346	689 278	623 053	563 190	498 898
Hazardous Waste					
<i>High Growth Scenario</i>	5 436	5 684	6 124	6 597	7 213
<i>Medium Growth Scenario</i>	5 436	5 601	5 886	6 187	6 567
<i>Low Growth Scenario</i>	5 436	5 518	5 657	5 800	5 976
Agricultural Waste					
<i>High Growth Scenario</i>	11 506	11 506	11 506	11 506	11 506
<i>Medium Growth Scenario</i>	11 506	11 506	11 506	11 506	11 506
<i>Low Growth Scenario</i>	11 506	11 506	11 506	11 506	11 506
Low Grade Radioactive Waste	-	-	-	-	-
<b>TOTAL</b>					
<b><i>High Growth Scenario</i></b>	<b>1 031 581</b>	<b>1 076 377</b>	<b>1 156 082</b>	<b>1 240 973</b>	<b>1 351 304</b>
<b><i>Medium Growth Scenario</i></b>	<b>1 031 581</b>	<b>1 039 618</b>	<b>1 055 486</b>	<b>1 071 382</b>	<b>1 091 532</b>
<b><i>Low Growth Scenario</i></b>	<b>1 031 581</b>	<b>990 113</b>	<b>935 282</b>	<b>886 509</b>	<b>836 132</b>



## 5. Cross Boundary Waste Movements

### 5.1 Introduction

This section seeks to set out existing cross boundary waste movements between Plymouth and surrounding authorities, notably Cornwall and Devon and to ascertain whether those movements are likely to change in the future, and if so how, and what factors may have a bearing on those movements.

### 5.2 Existing Cross Boundary Waste Movements

#### 5.2.1 Imports

Table 5.1 provides an overview of the wastes imported into Plymouth from neighbouring authorities in 2012, whilst Tables 5.2 to 5.4 provide a breakdown of these imported wastes for each waste management type by waste type. These figures show that Plymouth imports around 184,000 tonnes of waste, the majority of which for treatment (52%) or transfer (42%). Household, commercial and industrial wastes make up the majority of the wastes imported, predominantly from Devon. Given that the majority of Plymouth's waste treatment capacity is focussed on water and WEEE treatment, it is not unreasonable to assume that most of these imports are related to the management of these waste streams.

**Table 5.1 Waste Imports into Plymouth in Tonnes (2012)**

Waste Management Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
Transfer	71 226	4 569	0	2 295	78 089
Treatment	69 975	21 625	0	3 226	94 826
MRS	2 381	2 701	1	6 071	11 154
<b>TOTAL</b>	<b>143 582</b>	<b>28 895</b>	<b>1</b>	<b>11 592</b>	<b>184 070</b>

(Source: Environment Agency's Waste Interrogator 2013)

**Table 5.2 Waste Imports into Plymouth in Tonnes: Transfer (2012)**

Waste Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
HIC*	61 825	2 940	0	1 781	66 545
CDEW	9 401	1 629	0	514	11 544
Hazardous	0	0	0	0	455
<b>TOTAL</b>	<b>71 226</b>	<b>4 569</b>	<b>0</b>	<b>2 295</b>	<b>78 089</b>

(Source: Environment Agency's Waste Interrogator 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

**Table 5.3 Waste Imports into Plymouth in Tonnes: Treatment (2012)**

Waste Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
HIC*	60 120	15 175	0	2 372	77 666
CDEW	2 464	0	0	0	2 465
Hazardous	7 390	6 450	0	854	14 694
<b>TOTAL</b>	<b>69 974</b>	<b>21 625</b>	<b>0</b>	<b>3 226</b>	<b>94 826</b>

(Source: Environment Agency's Waste Interrogator 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

**Table 5.4 Waste Imports into Plymouth in Tonnes: Metal Recycling (2012)**

Waste Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
HIC*	1 875	2 671	1	5 244	9 791
CDEW	2	0	0	6	8
Hazardous	504	30	0	821	1 356
<b>TOTAL</b>	<b>2 381</b>	<b>2 701</b>	<b>1</b>	<b>6 071</b>	<b>11 154</b>

(Source: Environment Agency's Waste Interrogator 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

## 5.2.2 Exports

Table 5.5 provides an overview of the wastes exported from Plymouth to neighbouring authorities in 2012, whilst Tables 5.6 to 5.8 provide a breakdown of these exported wastes for each waste management type by waste type. These figures show that Plymouth exports around 220,000 tonnes of waste, the majority of which is for transfer (76%), with much smaller percentages exported for treatment (14%) and metal recycling (10%). Household,

commercial and industrial wastes similarly make up the majority of the exported wastes, the majority being exported to Devon.

**Table 5.5 Waste Exports from Plymouth in Tonnes (2012)**

Waste Management Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
Transfer	107 657	43 557	0	15 355	166 568
Treatment	7 146	395	0	22 913	30 455
MRS	3 295	149	82	19 730	23 256
<b>TOTAL</b>	<b>118 098</b>	<b>44 102</b>	<b>82</b>	<b>57 997</b>	<b>220 279</b>

(Source: Environment Agency's Waste Interrogator 2013)

**Table 5.6 Waste Exports from Plymouth in Tonnes: Transfer (2012)**

Waste Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
HIC*	103 366	41 130	0	5 867	150 363
CDEW	4 291	2 304	0	8 839	15 434
Hazardous	0	123	0	649	772
<b>TOTAL</b>	<b>107 657</b>	<b>43 557</b>	<b>0</b>	<b>15 355</b>	<b>166 568</b>

(Source: Environment Agency's Waste Interrogator 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

**Table 5.7 Waste Exports from Plymouth in Tonnes: Treatment (2012)**

Waste Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
HIC*	7 032	395	0	19 106	26 533
CDEW	0	0	0	259	259
Hazardous	114	0	0	3 548	3 662
<b>TOTAL</b>	<b>7 146</b>	<b>395</b>	<b>0</b>	<b>22 913</b>	<b>30 455</b>

(Source: Environment Agency's Waste Interrogator 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

**Table 5.8 Waste Exports from Plymouth in Tonnes: Metal Recycling (2012)**

Waste Type	Devon	Cornwall	Torbay	Other Authorities	TOTAL
HIC*	3 237	116	82	19 376	22 811
CDEW	0	0	0	0	0
Hazardous	59	33	0	353	445
<b>TOTAL</b>	<b>3 295</b>	<b>149</b>	<b>82</b>	<b>19 730</b>	<b>23 256</b>

(Source: Environment Agency's Waste Interrogator 2013)

\* EA Waste Interrogator data classifies deposits data as Household, Industrial and Commercial (HIC). This may include an element of construction, demolition and excavation waste.

### 5.3 Future Cross Boundary Waste Movements

Future cross boundary waste movements to and from Plymouth, in particularly the movement of municipal wastes to and from Devon, will be impacted by the development of the North Yard EfW at Devonport following its procurement by the South West Waste Partnership which comprises Devon County Council, Plymouth City Council, and Torbay Council. When it becomes operational in 2015, the North Yard facility will manage all non-recycled municipal waste arisings from the Partnership area.

## 6. Future Needs Assessment

### 6.1 Introduction

This chapter attempts to pull together the data presented in earlier sections of this report and sets out the capacity that may be required during the life of the Plymouth Plan, i.e. up to 2031.

### 6.2 Municipal Waste/Local Authority Collected Waste

Municipal waste in Plymouth is expected to amount to some 149 940 tonnes by 2031. Following the procurement of the North Yard EfW facility jointly with Devon and Torbay Councils as part of the South West Waste Partnership, it is not anticipated that any additional waste management capacity will need to be provided for municipal waste during the life of the Plymouth Plan, as evidenced below.

Table 4.1 of this report has demonstrated that municipal waste across Plymouth will increase from 1128 500 tonnes per annum in 2015 to 150 000 tonnes per annum in 2031. However, not all of this waste will require final disposal, as a significant portion will be recycled. Current recycling assumptions are that 33% will be recycled by 2015 (indeed, this is already being achieved), rising to 40% by 2018/19 with the rolling out of separate glass collections (source: Plymouth City Council Waste Management). Based on these recycling assumptions, Table 6.1 below sets out the amount of residual municipal waste which will require treatment over the life of the Plymouth Plan. Please note, it is considered that a flat 40% recycling rate from 2020 onwards is **very** conservative as over time, it is expected that as local communities become more accustomed to recycling their municipal waste and as Plymouth Council introduce additional initiatives/carry out further awareness raising, rates achieved will increase. In terms of residual municipal waste, the figures presented in Table 6.1 below are therefore considered to be 'worst case'.

**Table 6.1 Future Municipal Waste Arisings, Recycling and Residual Tonnages**

	2012/2013 (actual)	2013/2014 (actual)	2015	2020	2025	2031
Total municipal arisings (rounded to nearest 500 t from Table 4.1)	125 293	124 153	128 500	136 000	142 500	150 000
Recycling / Composting %	37.7	36.8	40.0	40.0	40.0	40.0
Tonnage Recycled / Composted	47 262	45 688	51 500	54 500	57 000	60 000
Residual Requiring Final Disposal	78 031	78 465	77 000	81 500	85 500	90 000

(Source: Plymouth City Council Waste Management, 2014)

In terms of managing the assumed levels of recycling, Viridor has been awarded a 10-year contract to upgrade and operate a materials recycling facility (MRF) at Chelson Meadow on behalf of Plymouth City Council. Permission is presently being sought to develop a previously mothballed MRF at Chelson Meadows into a facility capable of

managing up to 40 000 tonnes per annum. Assuming permission is forthcoming, it is anticipated that the facility would become operational in April 2015. This emerging facility, coupled with the existing arrangements surrounding the small remainder of the recycled / composted elements of the municipal waste stream, i.e.

- Recyclable materials segregated at the two household waste recycling centres being despatched out of Plymouth for onward re-processing at specialist regional facilities; and
- Source segregated / HWRC green waste being despatched to existing composting facilities;

Means that the Council's facility requirements for municipal waste recycling capacity (as outlined in Table 6.1 above) are fulfilled. On this basis, it is considered that the Plymouth Plan does not need to make any additional municipal waste recycling capacity provision.

In terms of managing the residual municipal waste, the North Yard EfW facility has a permitted capacity of 245,000 tonnes per annum. It has been profiled that Plymouth's municipal waste will account for 47% of the total contract waste, rising to 49% towards the end of the life of the Plymouth Plan. Total contract waste from the Partnership area is expected to be nearly 168,500 tonnes at the start of the contract, increasing to just over 203,000 tonnes by the end of the contract period in 2038. It is anticipated that the balance would be made up of third party waste to 245,000 tonnes. Table 6.2 provides an overview of the North Yard contract waste tonnage profiles for key years.

**Table 6.2 North Yard EfW Contract Waste Tonnage Profile (as agreed October 2009)**

	2014/2015	2020	2025	2031	2038
Total EfW Feed:					
Plymouth	80 035	82 667	87 428	93 506	101 189
<i>% of total contract</i>	<i>47.5</i>	<i>47.6</i>	<i>48.4</i>	<i>49.3</i>	<i>49.8</i>
Torbay	29 031	28 890	29 763	30 849	32 169
<i>% of total contract</i>	<i>17.2</i>	<i>16.6</i>	<i>16.4</i>	<i>16.3</i>	<i>15.8</i>
Devon Total	59 363	62 299	63 628	65 163	69 807
<i>% of total contract</i>	<i>35.3</i>	<i>35.8</i>	<i>35.2</i>	<i>34.4</i>	<i>34.4</i>
Total Contact Waste as per MVV Contract	168 428	173 856	180 820	189 518	203 165
Third party waste capacity	76 572	71 144	64 180	55 482	41 835
Total Capacity	245 000	245 000	245 000	245 000	245 000

(Source: Plymouth City Council Waste Management, 2014)

As can be seen, the anticipated residual municipal waste requirements set out in Table 6.1 broadly equate to the tonnages of Plymouth's municipal waste which is contracted to be disposed of at the North Yard EfW. On this basis, it is anticipated that no further municipal waste management capacity will be required during the life of the Plymouth Plan. Whilst it is recognised that for each year the contracted amount of municipal waste that Plymouth can send to the EfW falls between approximately 2 000 tonnes and 7 000 tonnes short of the predicted residual municipal waste requiring final disposal, these amounts are not large enough to justify further plan provision.

Moreover, as the predictions are based upon very conservative recycling rates, it is quite probable that greater recycling levels will be achieved and less residual municipal waste will require final disposal (and no shortfall, however small, would therefore arise).

Although it is anticipated that no additional municipal waste management capacity will be required during the life of the Plymouth Plan, nevertheless, due consideration will need to be given to the management and treatment of any residues from the EfW process at North Yard, most notably the incinerator bottom ash (IBA) which is estimated to be 60,000 tonnes per annum. Although contractual arrangements will be in place for the management of the IBA residues, the planning permission for the North Yard facility specifically stipulates that the IBA must be reprocessed for reuse and not sent to landfill. In addition, there is an aspiration that, where practicable, the reprocessed IBA could be (re)used as a building aggregate to facilitate the Plymouth growth agenda.

Currently, there are no IBA processing/treatment facilities in either Plymouth or the South West Waste Partnership area and in the interests of adherence to the proximity principle and managing wastes as close as possible to their point of generation, it is recommended that consideration should be given as to whether such a facility could be accommodated within Plymouth or the wider partnership area.

A typical IBA processing plant would comprise of two elements, namely a storage area and a processing area. These can either be housed in a single building, either closed or partially open depending on its locality, or the IBA storage area may be open to the elements, where the IBA would be stored to enable it to weather, after which it would be graded, depending on its intended end use, in the IBA processing building. Inevitably, the size of the facility would be dependent on its intended throughput, although any associated building is unlikely to be any larger than a typical industrial/warehousing unit. As a non-hazardous waste management facility, subject to securing appropriate planning permission, environmental permitting, and the provision of any necessary mitigation measures, a typical IBA processing plant could be accommodated within an existing industrial estate and/or be (co-) located within an existing or former mineral working.

### 6.3 Commercial and Industrial Waste

It has been established that Plymouth is currently a significant exporter of commercial and industrial waste, in the order of 76,000 tonnes per annum based on the 2012 data (see section 2.2.2). Existing non-hazardous waste management capacity in Plymouth (excluding biological treatment, which it has been assumed is all waste water treatment) is in the order of 230,000 tonnes per annum. However, of this capacity, 75,000 tonnes is Waste Electrical and Electronic Equipment (WEEE) disposal capacity and the remainder is physical/physical-chemical treatment, predominantly handling hazardous and non-hazardous waste water and oils. As such, Plymouth would appear not to have sufficient capacity to cater for all its commercial and industrial waste disposal needs on the basis that it currently exports commercial and industrial waste, and as a consequence of its commercial and industrial waste capacity being very WEEE and water/liquids focussed. Consideration should therefore be given as to whether the Plymouth area needs to accommodate additional commercial and industrial waste management capacity.

Based on the growth assumptions outlined, commercial and industrial waste in Plymouth is expected to increase over the life of the Plymouth Plan, ranging from 168,000 to 209,000 tonnes per annum (excluding waste water)

by 2031. Of this total, it would be reasonable to assume that existing patterns of management/disposal would be maintained, i.e. Plymouth would manage approximately 52% of its commercial and industrial waste arisings and export approximately 48%. On this basis, in 2031, Plymouth would be exporting between 80,500 and 100,000 tonnes of commercial and industrial waste (compared to the 76,000 tonnes presently exported). In the context of this need assessment, consideration must therefore be given as to the extent to which Plymouth needs to make provision for the portion of their commercial and industrial waste stream which is presently exported.

Prior to concluding on whether additional capacity for commercial and industrial waste needs to be provided however, a closer analysis is required of committed and planned capacity.

Firstly, as outlined in Table 6.2 above, there will be an element of spare capacity for some of the forecasted commercial and industrial waste to be handled at the North Yard EfW facility. This is particularly the case in the early years after the facility becomes operational when there will be more spare capacity, although this will decrease with time (i.e. 77,000 tonnes per annum in 2015 falling to 55,000 tonnes per annum in 2031). This would mean that by 2031, Plymouth would only be potentially exporting between 25 000 and 45 000 tonnes of C&I waste each year. The question must therefore be asked, does additional provision need to be made in the Plymouth Plan to accommodate anticipated future exports of C&I waste?

However, there is additional committed capacity which must be considered prior to concluding on whether there is a need for additional commercial and industrial waste management facilities within Plymouth. Most notably, the capacity data presented in this report excludes the following secured capacity:

- Belliver waste wood CHP facility – a 40 000 tonnes per annum facility located within Plymouth, which has been constructed and is now being commissioned.
- Lee Moor Advanced Thermal Treatment facility – a 75 000 tonnes per annum advanced thermal treatment facility managing organic waste located just outside the administrative boundary of Plymouth, in Devon, which was given planning consent in 2011, but has yet to be constructed; and
- Langage Anaerobic Digestion facility – a 20 000 tonnes per annum anaerobic digestion facility treating organic waste located just outside the administrative boundary of Plymouth, in Devon, which became operational in July 2011.

Even discounting the out of area AD facility, the permitted capacity at Belliver would allow Plymouth to achieve net self-sufficiency in C&I provision terms under the low and medium growth scenarios (and would only fall very marginally short under the high growth scenario i.e. by ~5 000 tonnes per annum). When the Lee Moor facility is also considered, although it is in Devon, its very close proximity to Plymouth means that it would not be unreasonable to assume that a large portion of its feedstock would come from the city (aligning with the principle of managing waste as close as possible to its point of arising). Consequently, it is concluded that sufficient permitted capacity exists for the management of commercial and industrial waste within Plymouth and just on its boundaries. As such, it is recommended that the Plymouth Plan does not need to identify any additional sites for the treatment / disposal of commercial and industrial waste.

## 6.4 Other Waste Streams

### 6.4.1 Construction, Demolition and Excavation Waste

Planning for the future management of CDEW is very difficult given the uncertainties surrounding the validity of available arisings and capacity data. Whilst CDEW data limitations are discussed in detail in section 2.2.3 of this report, the primary concern relates to the lack of regional/Planning Authority specific data. Allied to this, the fact that large portions of such material never get recorded as ‘waste’ further challenges the reliability of the available data, i.e. many building / demolition sites manage CDEW on-site; or where it is taken off-site, it may be used as engineering material on sites not regulated under a waste management permit e.g. golf course etc.

Notwithstanding these data limitations, planning for the future management of CDEW can only be carried out on the basis of available data.

Dependent upon the growth scenario adopted, CDEW arisings by 2031 in Plymouth could range from around 500 000 tonnes to 970 000 tonnes. Taking the national composition data expressed in Figure 2.1, such arisings are likely to comprise:

- Mineral wastes – 250 000 tonnes to 485 000 tonnes per annum;
- Soils – 170 000 tonnes to 330 000 tonnes per annum;
- Dredging spoils – 65 000 tonnes to 126 000 tonnes per annum;
- Sorting residues – 10 000 tonnes to 19 000 tonnes per annum; and
- Metals – 5 000 tonnes to 10 000 tonnes per annum.

This breakdown of future CDEW arisings indicates that the vast majority of material are likely to be mineral wastes and soils – material that can readily be re-processed/recycled and consequently re-used.

The evidence in this report indicates that only a small amount of CDEW is actually managed within Plymouth (approximately 36 000 tonnes per annum, of which almost a third (12 000 tonnes) is simply ‘transferred’ rather than treated / disposed). Additionally, Tables 5.6 and 5.7 indicate that only approximately 16 000 tonnes per annum of CDEW is exported from Plymouth (which could include all or part of the 12 000 tonnes recorded as being managed at transfer sites within Plymouth). Not allowing for any double counting therefore, the maximum amount of CDEW recorded as being managed within or exported from Plymouth is approximately 52 000 tonnes per annum (36 000 tonnes + 16 000 tonnes). This means that of the current estimated 732 000 tonnes per annum of CDEW arisings, 680 000 tonnes is going unrecorded. Given the way in which CDEW is generally managed, this is unsurprising. As recognised in the variety of national surveys of CDEW carried out by government in the past, large quantities of material are managed via mobile crushers and screeners on building/demolition sites and/or are taken off site as used as engineering fill on non-licensed sites. Consequently, the vast majority of CDEW never enters the waste market.

It must therefore be assumed that the vast majority of Plymouth's CDEW (680 000 tonnes per annum), never enters the waste market, but instead is being managed on-site and at unlicensed sites. This assumption is further supported by the fact that there are no strategic CDEW recycling/management facilities in Plymouth; there have been no planning applications for such facilities in the recent past and the existing plan allocation for a CDEW recycling/reprocessing facility at Moorcroft Quarry has never been taken up.

Notwithstanding this, given the European and national commitment to maximising the recycling of this waste (a minimum of 70% by weight) and against the background of there being no strategic recycling facilities in Plymouth, in preparing the Plymouth Plan, consideration should be given to as to whether there should be a continued level of plan provision for new construction, demolition and excavation waste facilities (either via the retention of the allocation at Moorcroft Quarry or via the adoption of a positive criteria based policy relating to the types of site where permission for CDEW recycling facilities would be permitted).

The accompanying site search report provides further guidance on the type of sites which would be suitable for such waste management facilities. However, more generally, given the synergies that such facilities have with existing quarries (i.e. the production of a substitute building/aggregate material) and existing landfills and other waste management sites, both of these types of site often make ideal locations for construction, demolition and excavation waste recycling facilities. Moreover, temporary facilities located on large building sites or areas of regeneration often provide a suitable solution for the management of this waste stream as it allows materials to be effectively managed 'in-situ'.

#### 6.4.2 Hazardous Waste

This waste stream is expected to increase to between just under 6,000 and 7,200 tonnes by 2031. Data has shown that although hazardous waste arisings in Plymouth are only small (in the region of 5,000 tonnes per annum), Plymouth was a net importer of hazardous waste in 2012 (managing a total of approximately 19,000 tonnes per annum). The need for specialist facilities to deal with this waste stream, coupled with the small quantities of hazardous waste generated in Plymouth, would suggest it is unlikely that new facilities would be required in Plymouth in the short and medium term.

#### 6.4.3 Agricultural Waste

Agricultural waste arisings are anticipated to remain constant throughout the Plymouth Plan period to 2031. As such, it is not anticipated that any additional waste management capacity would be required for this waste stream.

#### 6.4.4 Low Grade Radioactive Waste

Given the small quantities of LGR waste arisings in Plymouth and its specialist treatment/management requirements, it is not anticipated that any specific provision for this waste stream will need to be made in the Plymouth area.

## 6.5 Conclusions

The overall assessment of waste management requirements has indicated that to ensure Plymouth can become more self-sufficient in managing its waste additional new waste management infrastructure is required as follows:

- Consideration should be given as to whether an IBA processing facility, to complement the existing North Yard EfW, could be accommodated within Plymouth area; and
- Consideration should be given to as to whether there should be a continued level of plan provision for new construction, demolition and excavation waste facilities (either via the retention of the allocation at Moorcroft Quarry or via the adoption of a positive criteria based policy relating to the types of site where permission for CDEW recycling facilities would be permitted).

The extent of requirements is always difficult to predict, but by using different scenarios the implications of different levels of growth can be assessed. Growth levels will need to be monitored during the course of the Plymouth Plan as even small variations can have significant implications for management requirements.