3 The Need for the Proposed Development

3.1 Introduction

3.1.1 The purpose of this chapter is to establish the need case for the construction by MVV Umwelt (MVV) of an Energy from Waste Combined Heat and Power (EfW CHP) facility to handle 245,000 tonnes of waste per annum (tpa), at Her Majesty's Naval Base (HMNB) Devonport.

3.1.2 The proposed EfW CHP facility is designed to serve a contract with the South West Devon Waste Partnership (SWDWP) for the treatment of residual municipal waste collected in the administrative areas of Plymouth City Council, Torbay Council and the South Hams, Teignbridge and West Devon Waste Collection Authority areas of Devon County (the Partnership Area).

3.2 Current Situation

3.2.1 Details of current arrangements for the collection and disposal of municipal waste from the Partnership Area are set out in various documents, including The Plymouth, Devon and Torbay Joint Municipal Waste Management Strategy Statement[1] (JMWMSS) and the SWDWP Soft Market Testing Brief[2], both of which form the part of the Outline Business Case[3] for the SWDWP residual waste treatment contract and which is based on achieving a recycling rate of 51.3% by 2019/20 for the SWDWP as a whole. This is in line with the current recycling target for England of 50% by this date, as set out in the Waste Strategy for England (published in 2007). The Outline Business Case has recently been updated, and the Final Business Case is based on the SWDWP as a whole achieving a recycling rate of 54.2% by 2019/20[4].

3.2.2 According to Defra data for 2009/10[5], currently landfill is the only significant means of managing residual municipal waste in the Partnership Area (i.e. waste collected by local authorities and which is not recycled or composted), and landfill capacity in Devon and Cornwall is limited to a permitted life of 2023. Although landfill extensions or new landfill sites may be viable, the JMWMSS states that 'enhanced diversion [of waste from landfill] is critical' and each council has identified a need to divert significant tonnages of waste from landfill, with Plymouth City Council anticipating exceeding its Landfill Allowance Trading Scheme (LATS) (see Section 3.6) allowance from 2012/13; Torbay Council exceeding its LATS allowance from 2015/14; and Devon County Council exceeding its allowance from 2016/17 in the absence of any new facilities[6].

3.2.3 Plymouth City Council has historically disposed of residual municipal waste to landfill and in 2006 awarded a 7-year landfill disposal contact (with the option to extend for a further 5 years) to Viridor Waste Management Ltd., which will utilise landfill void at the Lean Quarry landfill site in Cornwall, which is a 42 mile round trip from Plymouth.

[1] South West Devon Waste Partnership, Plymouth, Devon and Torbay Joint Municipal Waste Management Strategy Statement (Appendix 3D of SWDWP Procurement of Waste Treatment Services Outline Business Case).
[2] SWDWP Soft Market Testing Brief (Appendix 3D of SWDWP Procurement of Waste Treatment Services Outline Business Case)
[3] Procurement of Waste Treatment Services. Outline Business Case. April 2008. Version 15. (SWDWP)
[4] SWDWP Final Business Case, Table 1.5
[5] http://www.defra.gov.uk/statistics/files/mwb200910a.xls
[6] SWDWP Final Business Case, Tables A3.7. A3.9 and A3.11

3.2.4 Currently, both Torbay Council and Teignbridge District Council dispose all of their residual municipal waste to Heathfield landfill site near Newton Abbot, in Teignbridge. Heathfield landfill site is due to reach capacity in 2016.

3.2.5 It is noted that Devon County Council has obtained planning permission for an EfW in Exeter and was investigating the feasibility of building a similar plant in Barnstaple (North Devon, outside the SWDWP area). However, it is understood that the capacity of the permitted facility in Exeter is only 60,000 tpa and the potential Barnstable facility was approximately 50-60,000 tpa and therefore they would not either separately or together have sufficient capacity to treat waste from the SWDWP area. The Exeter EfW is being developed to replace an incinerator which ceased operation in 1996. It is understood that the proposed Barnstaple EfW is not being progressed further.

3.3 Targets for Landfill Diversion

3.3.1 Construction of new municipal waste management facilities is ultimately driven by European and national policy, as expressed in a series of targets which are also prepared at regional and local authority level. The relevant targets for landfill diversion and for recovery and recycling of municipal waste for the SWDWP authorities are shown in Table 3-1.

Table 3-1: Summary of Waste Recovery and Recycling Targets

National Targets	Regional Targets	Sub-Regional Targets
WSE 2007 Targets: - Recycle or compost 40% of household waste by 2010; 45% by 2015 and 50% by 2020 (WSE 2007 p.11) - Recover 53% of municipal waste by 2010, 67% by 2015 and 75% by 2020 (WSE 2007 p.11) **EU Landfill Directive Targets:** - Reduce the amount of biodegradable municipal waste going to landfill to 75% of the total amount (by weight) of such waste produced in 1995, by 2010. - Reduce the amount of biodegradable municipal waste going to landfill to 50% of the total amount (by weight) of such waste produced in 1995, by 2013. - Reduce the amount of biodegradable municipal waste going to landfill to 35% of the total amount (by weight) of such waste produced in 1995, by 2020.	**Draft Regional Spatial Strategy:** Minimum 45% recycling and composting by 2020 Maximum of 55% managed through energy from waste or Mechanical Biological Treatment Landfill only 20% of the Region's waste by 2020	**Devon MSWMS:** - Recycle or compost 40% of municipal waste by 2009/10, 50% of municipal waste by 2014/15, 60% of municipal waste by 2019/20 and 65% of municipal waste by 2025/26. - Recover value from at least 40% of municipal waste by 2005/06, 45% in 2010/11 and 67% in 2015/16. **Plymouth Waste DPD:** - 30% recycling and composting by 2009/10 and 33% by 2014/15. **Municipal Waste Management Strategy for Torbay 2008 – 2025:** - Torbay will endeavour to achieve Waste Strategy 2007 targets of 40% recycling and composting rate for household waste by 2010, 45% by 2015 and 50% by 2020.

3.4 South West Devon Waste Partnership Approach to Joint Procurement

3.4.1 The geographical proximity of Plymouth, Devon and Torbay means that close working relationships between all the councils have been in place for a number of years. Plymouth and Torbay were districts within Devon prior to the 1996 Local Government Reform and the award of unitary status in 1998. Each Council has for some time considered how the potential implications of the EU Landfill Directive can best be mitigated and all the Councils recognise the significant benefits which can arise from a single shared residual waste treatment solution, including:

- Economies of scale;
- Increased purchasing power;
- Reduced environmental impact;
- Enhance carbon management;
- Sharing of information, knowledge and procurement costs;
- Larger project enhancing market appetite in a competitive environment, and
- Optimisation of use of limited available sites.

3.4.2 This policy of providing a sub-regional solution is in accordance with the South West Region Waste Management Strategy, which advocates larger scale treatment plants close to the larger centres of population.

3.4.3 One of the key drivers to pursuing a joint procurement is market capacity. Circumstances have conspired to align the procurement needs of Devon, Torbay and Plymouth, individually, each has a relatively small tonnage of non-recyclable waste for treatment; each Council would advertise a tender at roughly the same time; and the market would need to be convinced about submitting three separate tenders. A combined approach makes the contract more attractive to the market and reduces Council costs and bidders cost. A combined contract also reduces technology and provider risk to the Councils.

3.4.4 In April 2008, Plymouth City Council, Torbay Council and Devon County Council obtained approval from their respective administrations to enter a joint procurement for a single EfW facility located in, or close to, Plymouth. In addition, each Council agreed to submit a joint Outline Business Case to DEFRA for Private Finance Initiative support for the facility.

3.4.5 The Authorities recognised the benefits of joint working at an early stage of the project's development and identified at least four reasons why co-operation between them would be desirable and mutually beneficial. Firstly, it was acknowledged that a joint procurement would increase the scale of the project and attract a stronger market interest - an important factor in achieving value for money. Secondly, suitable sites for waste treatment are limited across the sub-region (none within the Torbay area) hence minimising site usage would reduce site development costs and help with timely project delivery. Thirdly, transport and logistics dictate co-operation across Authority boundaries particularly as Plymouth is the largest urban area west of Bristol with good transport infrastructure and an influence extending well beyond its Authority boundary. Finally, significant economies of scale, in terms of procurement, capital and

operational costs, would be realised by procuring a single shared solution and help to maximise value for money for the Authorities. Within this context, a separate bid by each authority for PFI support would have been unlikely to have succeeded.

3.4.6 This adopted approach is considered by the Councils to deliver their municipal waste management objectives, provides the most cost effective solution for the treatment of municipal waste in south west Devon and fully aligns with the Waste Strategy for England 2007 (WSE2007), the regional Municipal Waste Management Strategy (MWMS) and each individual strategy.

3.5 Sources of Evidence

Municipal Waste

3.5.1 As waste disposal authorities, Plymouth City Council, Torbay Council and Devon County Council are responsible for the disposal of municipal waste i.e. waste from households, civic amenity sites, education facilities, street sweeping and gully emptying, parks and gardens, fly-tipping, bring facility recyclables and any commercial or industrial waste collected by the council.

Waste Strategy for England 2007

3.5.2 The Government introduced a revised national waste strategy, Waste Strategy for England, in May 2007. The revised strategy introduced both new and revised targets for England as follows:

- recycling and composting of household waste – at least 40% by 2010, 45% by 2015 and 50% by 2020; and
- recovery of municipal waste – 53% by 2010, 67% by 2015 and 75% by 2020[7].

3.5.3 Defra is currently carrying out a comprehensive review of waste policy for England. The new policy has not been published as of the time of writing (April 2011).

Landfill Allowance Trading Scheme (LATS)

3.5.4 The Waste and Emissions Trading Act 2003 places a duty on waste disposal authorities to reduce the amount of BMW disposed of to landfill in line with the requirements of the EU Landfill Directive, but also provides the legal framework for the trading scheme. The scheme allocates tradable landfill allowances to each authority in England. Landfill allowances have been allocated to the authorities at a level that will allow England to meet its contribution to the UK targets under the Landfill Directive.

3.5.5 Within each scheme year (1 April – 31 March), authorities are able to landfill BMW up to the level of allowances held. A single landfill allowance permits an authority to landfill one tonne of BMW.

3.5.6 Authorities need to ensure that they hold sufficient allowances to cover the actual amount of BMW they intend to landfill over a given period. Should an authority not need or expect not to need all of its allowances in one or more scheme years, because of actual or planned diversion

[7] Waste Strategy for England 2007 – page 11

of waste away from landfill, the authority can sell them, or bank (save) them into the following year (subject to certain restrictions).

3.5.7 Equally, an authority which does not hold enough allowances to cover the amount of BMW it intends to landfill would need either to increase its rate of diversion, purchase additional allowances or borrow forward up to 5% of its following year's allocation. Local authorities do not have to trade allowances provided they do not exceed their limit on the amount of BMW they may send to landfill. Authorities can choose to meet their targets through diversion alone. Similarly, authorities may wish to co-operate to meet their targets. For example, two authorities can pool their allowances in order to invest in a shared waste management facility, but each individual authority would remain responsible for ensuring that its own targets are met.

3.5.8 DEFRA's LATS allowances in tonnes per annum (tpa) for the SWDWP authorities for the target years are shown below. Table 3-2 also shows (on the bottom row) the estimated disposal of BMW to landfill under the "do minimum" scenario option used in the SWDWP Final Business Case – i.e. assuming no investment in any new treatment infrastructure for residual waste.

Table 3-2: Landfill Allowance Trading Scheme Targets[8]

	2012/13 LATS Target (tpa)	2019/20 LATS Target (tpa)
Plymouth City Council	44,225	30,946
Torbay Council	21,463	15,018
Teignbridge, S Hams and W Devon areas of Devon County Council	37,981	26,577
Total	**103,669**	**72,541**
Disposal to Landfill under "do minimum" scenario	*110,598*	*112,358*

3.5.9 The LATS targets and the predicted disposal to landfill under the "do minimum" scenario shows that, in the absence of new investment, the SWDWP authorities are predicted to send significantly more than their allocated totals of BMW to landfill in 2020.

South West Devon Waste Partnership Outline Business Case, April 2008

3.5.10 The SWDWP Joint Municipal Waste Management Statement (JMWMS)[9] evaluates the existing municipal waste management strategies for each authority, puts them into a national and regional perspective and sets out a joint strategy stance to address the key issues and achieve the identified benefits. The JMWMS integrates the existing individual MWMS into a joint statement based on the results of additional modelling, subsequent to the individual authority strategies.

3.5.11 In developing the individual strategies, a number of options were appraised at the regional and local level in order to narrow the options to suit the needs of the local community. The options

[8] SWDWP Final Business Case Tables A3.7, A3.9 and A3.11
[9] South West Devon Waste Partnership, Outline Business Case, April 2008 - Appendix 3d

considered by authorities as part of their individual waste management strategies are summarised in the SWDWP Outline Business Case[10] and comprise a range of technical solutions including advanced thermal treatment, energy-from-waste, mechanical-biological treatment (MBT), anaerobic digestion (AD) and in-vessel composting (IVC).

3.5.12 Each authority produced a detailed analysis of at least six options covering a range of possible solutions. Each identified a slightly different preferred option – although all agreed that there was a need for thermal treatment of the residual waste.

3.5.13 Further options appraisal and modelling was carried out by SWDWP as part of the JMWMS. Six options were short-listed for appraisal under this exercise, based on those options which performed well under the appraisals carried out by the individual authorities as part of their MSMS. These comprised:

- Option 1 – continued reliance on landfill ("do minimum")
- Option 2 – three individually procured EfW facilities (in Plymouth, Torbay and Devon)
- Option 3 – a single joint EfW
- Option 4 – Single joint EfW and a single joint AD facility for source-separated food waste
- Option 5 – three individual MBT facilities producing a refuse-derived fuel (RDF) for use in a single joint EfW
- Option 6 – three individual MBT facilities and reliance on a "merchant" EfW (i.e. a facility provided by an external third-party on a purely commercial basis) located outside the region.

3.5.14 The analysis of these options is described in the OBC "Options Appraisal and Technical Modelling Assumptions" Report (April 2008) and consisted of an initial appraisal which included life-cycle assessment (using the Environment Agency WRATE model), waste flow modelling, transport assessment and cost estimation. More information on the assessment of alternative technology and spatial options is provided in Chapter 5 of this Environmental Statement.

3.5.15 The results of this initial analysis were reviewed at an Options Appraisal Workshop and a weighted scoring system was used to develop the preferred option. Each option was scored under the following criteria:

- Planning;
- Technical;
- Environmental;
- Financial and economic.

3.5.16 Options 3 and 4 scored highest in this stage of the analysis, with their scores being extremely close to one another. An additional detailed financial assessment of these two options was therefore carried out, together with an assessment of the key considerations and risks.

[10] SWDWP Waste PFI OBC – Options Appraisal and Technical Modelling Assumptions, Section 2 (summarised in Figure 2.2)

3.5.17 Amongst the reasons for Options 3 and 4 receiving high scores compared to the other options were:

- No requirement for multiple sites and hence lower landtake;
- High diversion from landfill using well-established technology and low reliance of landfill for disposal of process outputs;
- Financially advantageous on a "whole-life cost" basis.

3.5.18 The detailed comparative analysis of Options 3 and 4 concluded that:

- Option 3 had the lowest cost;
- Merchant AD facilities are already available in the region and using these facilities for any food waste AD treatment would be less risky than procuring a facility directly
- The difference between recycling and composting rates is very small, with Option 4 performing slightly better;
- There are operational difficulties in terms of both collection and storage of waste receptacles that constrain the introduction of food waste collection in Plymouth and hence the need for the AD capacity that Option 4 would provide.

3.5.19 SWDWP therefore concluded that Option 3, a single EfW serving all of the SWDWP authorities, offered the preferred joint option.

South West Devon Waste Partnership Final Business Case (January 2011)

3.5.20 The Final Business Case (FBC) summarises the waste arisings assumptions which have been made by the SWDWP in determining the scale and type of facility that is required. The FBC updates similar information that was included in the Outline Business Case (OBC) in 2008.

3.5.21 The FBC provides the waste arisings assumptions for the SWDWP area based on historic arisings and modelled growth factors (dependent on both growth in number of households and arisings per household). This takes into account the predicted growth in household numbers for the Partnership area, a separate waste growth profile reflecting both waste minimisation activities and actual growth in waste arisings per household, and allowance for waste generated by tourism and other commercial activities. It also takes into account the declines in waste quantities observed in the actual data between 2006/07 (the starting point for the OBC assumptions) and 2009/10 (the latest date for which actual data is available), and the current and future recycling performance of the SWDWP area (43.9% for 2009/10).

3.5.22 The waste growth forecasts in the OBC for the Partnership area for selected years are shown in

Table 3-3 below.

Table 3-3: FBC Forecast of MSW Arisings (SWDWP Area)[11]

Year	MSW Arisings (tpa)
2009/10 (actual data)	354,984
2010/11	354,698
2014/15	370,213
2019/20	391,774
2024/25	414,805
2029/30	437,998
2038/39	482,436

3.5.23 The projected recycling and composting performance of the SWDWP area has been modelled and is summarised in Table 3-4 below. This takes account of improvements in the SWDWP recycling performance and confirms that the SWDWP is predicted to surpass the WSE 2007 targets.

Table 3-4: Partnership Modelled Recycling Performance Compared To WSE2007 Targets[12]

	SWDWP Partnership Recycling Rate	WSE2007
2009/10	43.9%	40%
2014/15	52.5%	45%
2019/20	54.2%	50%
2038/39	55.9%	N/A

3.5.24 The JMWMS is based on, amongst other things, an evaluation of the municipal solid waste (MSW) recycling and composting targets of the Partnership authorities. Achievement of these individual authority recycling and composting targets is dependent upon the successful implementation of existing and proposed systems for the collection and management of recyclable/compostable waste. The JMWMS modelled the recycling and composting performance of the combined Partnership area as being 42% in 2009/10, rising to a rate 51% by 2019/20 which exceeds the Waste Strategy for England 2007 target of 50% by the same date. The SWDWP Final Business Case subsequently updated the forecast recycling and composting performance of the Partnership authorities to 54.2% by 2019/20 and 55.9% by 2038/39, compared with an actual 2009/10 rate of 43.9%.

3.5.25 Taking into account the recycling and composting rate which the Partnership members are predicted to acheive, the quantities of residual waste requiring treatment at the facility have been estimated as shown in Table 3-5 below. The quantities of residual MSW range from approximately 169 thousand tonnes per annum (ktpa) in 2015/16 to 203 ktpa in 2038/39.

[11] SWDWP Final Business Case, Table A2.5
[12] SWDWP Final Business Case, Table 1.5

Table 3-5: Residual MSW Requiring Treatment (SWDWP Area) (tpa)[13]

Year	Plymouth	Torbay	South Hams	Teignbridge	West Devon	Total
2014/15	80,035	29,031	22,305	22,783	14,275	168,428
2015/16	80,326	28,883	22,605	23,076	14,405	169,296
2016/17	80,805	28,843	22,917	23,373	14,143	170,081
2017/18	81,624	28,802	23,233	23,671	14,270	171,600
2018/19	82,337	28,761	23,553	23,973	14,399	173,024
2019/20	81,754	28,719	23,878	23,348	14,530	172,229
2020/21	82,667	28,890	24,207	23,646	14,446	173,856
2021/22	83,591	29,063	24,541	23,947	14,360	175,501
2022/23	84,512	29,236	24,879	24,251	14,272	177,151
2023/24	85,458	29,411	25,222	24,560	14,181	178,833
2024/25	86,416	29,586	24,653	24,345	14,088	179,088
2025/26	87,428	29,763	24,996	24,655	13,977	180,820
2026/27	88,411	29,941	25,246	25,050	13,891	182,538
2027/28	89,405	30,120	25,498	25,294	13,800	184,118
2028/29	90,411	30,301	25,753	25,540	13,707	185,712
2029/30	91,430	30,482	26,011	24,273	13,611	185,806
2030/31	92,462	30,665	26,271	24,508	13,747	187,652
2031/32	93,506	30,849	26,534	24,746	13,884	189,518
2032/33	94,563	31,034	26,799	24,985	14,023	191,404
2033/34	95,633	31,220	27,067	25,228	14,163	193,311
2034/35	96,717	31,407	27,338	25,472	14,305	195,239
2035/36	97,814	31,596	27,611	25,719	14,448	197,188
2036/37	98,925	31,785	27,887	25,968	14,593	199,158
2037/38	100,050	31,977	28,166	26,220	14,738	201,151
2038/39	101,189	32,169	28,448	26,474	14,886	203,165
Average over contract period	89,099	30,101	25,425	24,604	14,206	183,435

[13] SWDWP ISDS Documentation

Defra Waste PFI Initiative

3.5.26 The EU Landfill Directive set targets for each Member State to reduce the amount of Biodegradable Municipal Waste sent to landfill and these targets are reflected in the UK in Waste Strategy for England 2007 (see paragraph 3.5.2). The government, though the Department for Environment, Food and Rural Affairs (Defra) introduced waste private finance initiative (PFI) schemes to help the UK meet EU Landfill Directive diversion and recycling targets. An objective of the PFI schemes was to encourage greater partnership working between authorities resulting in efficiency gains, more integrated waste management solutions and the benefits of economies of scale that flow from this and a more strategic approach to planning and procurement.

3.5.27 The basis of waste PFI schemes is to offer a long term contract to a private sector operator to deliver a specified waste management service. Local authorities wishing to take advantage of government PFI funding were required to submit a business case, which was evaluated by Defra and PFI credits were allocated, broadly on the basis of need for new infrastructure required to meet Waste Strategy for England 2007 targets.

3.5.28 Further information on the approach taken by the SWDWP to the waste PFI process is provided in the Outline Business Case[14].

Spending Review 2010 – Changes to Waste PFI Programme

3.5.29 As part of the 2010 spending review, Defra published supporting analysis[15] to justify the withdrawal of PFI credits from certain municipal waste management projects. This analysis included a consideration of likely waste arisings and treatment capacity by 2020, albeit at a national rather than regional level.

3.5.30 Total waste arisings were modelled for both household and for that portion of commercial and industrial (C&I) waste that will be considered as municipal waste for the purposes of complying with the EU Landfill Directive. Recycling rates were assumed to be 50% (for household waste, based on achieving the targets in the EU Waste Framework Directive for 2020) and 60% (for C&I waste, assumed based on pervious analysis). The biodegradable content of all residual waste was assumed to be 68%, based on existing research.

3.5.31 Four scenarios were developed, based on different assumed growth rates. These scenarios were used to estimate the total required capacity for residual MSW treatment in order to comply with the EU Landfill Directive requirements for diversion of biodegradable municipal waste (BMW) from landfill by 2020. The capacity requirements varied from 5.6 to 8.8 million tonnes per annum (Mtpa).

3.5.32 The analysis then considered the existing and proposed facilities that are being developed to meet this capacity requirement. This included facilities already procured by Local Authorities (both PFI and non-PFI), facilities under procurement by Local Authorities (which includes the SWDWP project), and merchant facilities (i.e. those developed entirely by the private sector). The capacity of facilities was adjusted for delivery risk (i.e. the likelihood of the facility actually coming into operation), to give an overall risk-adjusted estimate of BMW treatment capacity in

[14] http://www.plymouth.gov.uk/swdwp_waste_pfi_obc_final-2.pdf
[15] Spending Review 2010 – Changes to Waste PFI Programme. Supporting Analysis. 6 December 2010. (Defra)

2020 of 7.6 Mtpa, of which 1.2 Mtpa is accounted for by the 18 Local Authority PFI projects that were at that time under procurement.

3.5.33 In order to balance a precautionary approach with cost-effectiveness, Defra considered MSW arisings scenarios falling between Scenario 2 (6.7 Mtpa total capacity requirement) and Scenario 3 (7.9 Mtpa total capacity requirement); and considered the implication of funding only a portion of the 18 possible PFI projects. The analysis concluded that the capacity requirement to meet the 2020 Landfill Directive targets could still be met if only 11 of 18 projects were funded.

3.5.34 The PFI projects under procurement were ranked in order of priority by considering a range of criteria to which different weightings were attached. Criteria comprised deliverability, benefits and timing, and those projects having PFI credits withdrawn were those with the lowest rankings.

3.5.35 The SWDWP project has retained its PFI credit allocation under this exercise. The published analysis does not indicate how the project was rated in relation to the other 17 PFI projects under procurement, although the fact that PFI credits were not removed indicates that it was amongst the 11 highest rated projects which are considered necessary in order to ensure, with confidence, that the UK achieves its landfill diversion targets for 2020 under the EU Landfill Directive.

Plymouth Waste Development Plan Document (Adopted April 2008)

3.5.36 Plymouth's Development Plan Document (DPD) for Waste forms part of the Local Development Framework and was adopted in April 2008. It presents a series of estimates under High, Medium and Low growth scenarios for each main waste type. The estimates for MSW (in ktpa) are shown in Table 3-6.

Table 3-6: Plymouth Waste DPD Waste Arisings Forecasts (MSW)[16]

	2005	2010	2013	2015	2018	2020	2021
Low (tpa)	163,000	174,000	181,000	185,000	191,000	195,000	197,000
Medium (tpa)	163,000	175,000	185,000	192,000	203,000	212,000	216,000
High (tpa)	163,000	183,000	200,000	212,000	232,000	246,000	253,000

3.5.37 The Plymouth Waste DPD estimates that the city will require additional waste recovery capacity of between 67,000 and 87,000 tonnes per annum by 2020[17]. This is broadly consistent with the estimated capacity requirements for Plymouth used in calculating the quantities of "Residual MSW Requiring Treatment" in the ISDS documents – i.e. 82 ktpa in 2020 (Table 3-5).

Municipal Waste Management Strategy for Torbay 2008 – 2025 (adopted February 2008) – Appendix A, Baseline Report

3.5.38 Torbay's Municipal Waste Management Strategy presents three scenarios for future MSW arisings. These are all based on population growth in Torbay which is predicted to rise by approximately 1% year on year up until at least 2020. The three scenarios are:

[16] Plymouth Waste Development Plan Document (Adopted April 2008), Appendix 4
[17] Plymouth Waste Development Plan Document (Adopted April 2008), Section 4.13

- Growth scenario 1: High Growth (2.5%) - the Defra prediction for waste growth of 1.5% per annum is added to the predicted minimum waste growth of 1% from population increase.
- Growth scenario 2: Forecasts total waste growth of 1.5%, declining to 1% by 2010.
- Growth scenario 3: Low Growth - due to population increase, 1% per annum is the potential minimum that municipal waste will grow, even if waste produced per head remains constant.

3.5.39 Table 3-7 shows the predictions for MSW arisings in Torbay under these scenarios.

Table 3-7: Torbay MSW Strategy – Forecast Arisings (tpa)[18]

	Scenario 1	Scenario 2	Scenario 3
2005 (actual data)	81,799	81,799	81,799
2010	90,291	86,391	85,120
2015	102,156	90,798	89,462
2020	115,580	95,429	94,026

Devon County Council Waste Core Strategy, Issues and Options Consultation Report (February 2011)

3.5.40 Devon County Council's Waste Core Strategy is currently in the early stages of preparation with the Issues and Options Consultation Report due to be formally issued for consultation on 28 April 2011. The schedule for Devon's Waste Core Strategy is:

- Formal public consultation on the Issues and Options Report in spring 2011.
- Produce a 'Preferred Strategy' document in the summer of 2011 followed by consultation in autumn 2011.
- After further amendments the submission document will be published in the spring of 2012, with the intention to adopt the Waste Core Strategy in early 2013.

3.5.41 The Issues and Options Consultation Report (dated February 2011) was approved by the Development Management Committee on 16 March 2011 and presents estimates of annual MSW arisings in 2031 of between 481 kpta (low growth scenario) and 565 ktpa (high growth scenario) for the whole of Devon Waste Planning Authority Area (i.e. excluding Plymouth and Torbay)[19]. No breakdown is given by individual collection authorities and the supporting Technical Report is yet to be published. Given that Teignbridge, South Hams and West Devon collectively represent 35% of the population of Devon Waste Planning Authority, then it can be calculated that the arisings from these three districts in 2031 would be between 169 and 199 ktpa. The Issues and Options Consultation Report estimates that the additional recovery capacity for both MSW and C&I waste required by 2030/31 in Devon (excluding Plymouth and Torbay) would be between 90 and 219 ktpa[20]. The MVV facility will address a proportion of this capacity gap.

[18] Municipal Waste Management Strategy for Torbay 2008 – 2025 (adopted February 2008) – Appendix A, Baseline Report, Figure 5
[19] Devon County Council Waste Core Strategy, Issues and Options Consultation Report (February 2011), Table 6
[20] Devon County Council Waste Core Strategy, Issues and Options Consultation Report (February 2011), Table 16

Draft Regional Spatial Strategy for the South West 2006 - 2026

3.5.42 The Regional Waste Strategy (RWS) for the South West forms the basis of the waste sections of the Regional Spatial Strategy (RSS). Devon, Torbay and Plymouth contributed to the development of the regional strategy and have been mindful of the policy objectives in developing their joint waste statement. The RWS and RSS predate the WSE2007 and the forecasts of capacity requirements at regional and sub-regional level, (the Devon sub-region comprises Devon County, Torbay and Plymouth) in the RWS (published 2004) are based on waste arisings predictions dating from 2003, which in turn are based on data from 2001/02.

3.5.43 The allocations for Devon in the RSS are summarised in Table 3-8, although the total for Devon is not disaggregated in the RSS to indicate how the totals are apportioned between the respective authorities (Devon County, Torbay and Plymouth). Given that the data on which these estimates were made are now 10 years out of date, they are not considered particularly relevant to this assessment.

Table 3-8: MSW Capacity Allocations for Devon in Draft Regional Spatial Strategy[21]

	Minimum Source Separated (ktpa)	Maximum Secondary Treatment (ktpa)	Maximum Landfill (ktpa)
2010	310,000	210,000	410,000
2013	380,000	300,000	310,000
2020	410,000	500,000	150,000

Defra Waste Statistics – 2009/10

3.5.44 The latest local authority municipal and household waste statistics were published by DEFRA in November 2010[22]. The total amount of municipal waste arising and the amount of this that is residual (i.e. not sent for recycling) in 2009/10 is shown in

[21] Draft Regional Spatial Strategy for the South West 2006-2026, Appendix
[22] http://www.defra.gov.uk/evidence/statistics/environment/wastats/bulletin10.htm

Table 3-9. It should be noted that the DEFRA data for Waste Collection Authorities does not include Civic Amenity site waste and hence will underestimate the total amount of MSW to be managed in the SWDWP area. The FBC data from 2009/10 indicate an additional 44,000 tonnes of MSW collected from Civic Amenity sites from the three Devon Waste Collection Authorities[23] – this would bring the MSW total to 312 + 44 = 356 ktpa, i.e. consistent with the figure of 355 ktpa quoted in the FBC (

[23] SWDWP Final Business Case, Table A2.4

Table 3-3)

Table 3-9: Total and Residual MSW arising in SWDWP Area in 2009/10 (not including Civic Amenity Sites)

Waste Collection Authority Area	Municipal Waste not Recycled	Total Municipal Waste
West Devon Borough Council	10,695	19,068
Torbay Council	44,633	71,978
Teignbridge District Council	21,829	48,725
South Hams District Council	20,006	39,533
Plymouth City Council	90,064	133,393
Total	187,228	312,696

Commercial and Industrial (C&I) Waste

3.5.45 The Regional Waste Strategy for the South West (2004-2020) includes targets for commercial and industrial waste for 2020, which are:

- to recycle or compost a minimum of 44%
- to recover value from an additional 39% by means of mechanical, biological or thermal treatment[24].

3.5.46 National targets for C&I waste recycling were not set out in WSE 2007. Defra consulted in 2010 on a planned change in the definition of municipal waste to include much waste currently classed as commercial and industrial, for the purposes of measuring national performance against the municipal waste recycling and recovery targets set out in the European Waste Framework Directive[25].

3.5.47 The Plymouth Waste DPD adopts the Regional Waste Strategy targets for C&I waste and presents forecasts of total C&I waste arisings as shown in Table 3-10.

Table 3-10: Plymouth Waste DPD Waste Arisings Forecasts (C&I Waste)[26]

	2005	2010	2013	2015	2018	2020	2021
Low (tpa)	173,000	164,000	159,000	156,000	152,000	149,000	147,000
Medium (tpa)	195,000	207,000	213,000	217,000	217,000	217,000	217,000
High (tpa)	199,000	225,000	242,000	254,000	274,000	288,000	295,000

[24] Regional Waste Strategy (RWS) for the South West "From Rubbish to Resource" (2004), Page 44 Policies P7.4 and P7.5
[25] http://archive.defra.gov.uk/corporate/consult/landfill-diversion/index.htm
[26] Plymouth Waste Development Plan Document (Adopted April 2008), Appendix 4

Commercial and Industrial Waste Survey 2009 – Final Report (December 2010)

3.5.48 The most up-to-date information on C&I waste arisings comes from a report published in December 2010, the Commercial and Industrial Waste Survey 2009. This information supersedes previous estimates based on earlier surveys dating back to 2002 or earlier.

3.5.49 Defra commissioned a detailed survey of C&I waste arisings for each of the UK regions. The survey assessed arisings for the calendar year 2009, and reported in late 2010. The survey comprised a series of face-to-face and telephone questionnaires and was designed to be representative of different business sectors and size across each of the English regions. Additional surveys were carried out in London and the South West to characterise waste arising to the sub-regional level. The survey information was used in conjunction with detailed statistics on the regional population of different business categories and sizes to develop estimates for each region.

3.5.50 On the basis of the survey, the total C&I waste arisings for the South West region in 2009 were estimated at 3,819,000 tonnes[27]. Of this total, the estimated total arisings in the Defra report for each Waste Planning Area forming part of the SWDWP are shown in Table 3-11.

Table 3-11: Total and Residual C&IW arising in SWDWP Area[28]

Authority	Total C&I Waste Arisings (ktpa)	C&I Waste Reused, Recycled or Composted (ktpa)	Residual C&I Waste (ktpa)	C&I Waste to Landfill (ktpa)
Devon	474	246	228	116
Teignbridge, S Hams and W Devon WCA[29]	*166*	*86*	*80*	*41*
Torbay	69	32	37	19
Plymouth	158	83	75	49
SWDWP	**392**	**201**	**191**	**109**

3.5.51 The survey reported that in 65% of cases, waste was sent for treatment, recovery or disposal at a facility outside of the region of origin[30].

Other Waste Facilities in the Region

3.5.52 There are predicted to be only a limited number of landfills within the catchment which are likely to remain in operation in 2015 and which will be competing for C&I waste with MVV's facility. By

[27] Commercial and Industrial Waste Survey 2009 Final Report (December 2010), Appendix N Table N4
[28] Commercial and Industrial Waste Survey 2009 Final Report (December 2010), Appendix N Table N4
[29] The data in the survey is not broken down by WCA for Devon, and hence for the purposes of this assessment we have made assumptions based on the relative split of working age population between Devon's constituent authorities. The Office of National Statistics Mid-Year Population Estimates for 2009 show that the three WCAs forming part of the SWDWP account for 35% of the working-age population of the Devon WPA, and this ratio is used to estimate the proportion of Devon WPA's C&I waste generated with the SWDWP area.
[30] Commercial and Industrial Waste Survey 2009 Final Report (December 2010), Appendix N Figure N5

2015 landfill capacity in the catchment will be concentrated at Lean Quarry, Connon Bridge, and Heathfield, of which only Heathfield is in the SWDWP area.

3.5.53 A review of existing or planned waste recovery facilities within or close to the catchment of MVV's facility has identified the following facilities which are currently in the planning system. This does not include those proposed which have yet to submit planning applications and focuses on recovery facilities for treating residual waste only (i.e. excluding specific waste streams such as food waste and source-separated recyclables).

Table 3-12: Other Potential Facilities in the Region

Facilities	Capacity (ktpa)	Status	Type of Facility	Location
Exeter EfW	60	Planning permission approved	EfW (incineration)	Devon (Exeter)
Hill Barton Gasification Facility	72	Planning permission approved	EfW (gasification)	Devon (nr. Exeter)
Devonport EfW (subject of this application)	245	Planning application pending	EfW (incineration)	Devon (SWDWP)
New England EfW	275	Planning application submitted	EfW (incineration)	Devon (SWDWP)
St Dennis EfW	240	Planning appeal underway	EfW (incineration)	Cornwall
Heathfield IWMF	105	Planned permission approved	Materials recycling facility	Devon (SWDWP)

3.5.54 The Devonport, St Dennis and Exeter EfW facilities would primarily treat MSW from local authority contracts. The remaining facilities would treat both C&I waste secured on a "merchant" basis and also (in the case of Heathfield) some construction waste.

3.6 Discussion and Conclusions

3.6.1 MVV will provide a single line Energy from Waste (EfW) plant designed to treat 245,000 tonnes of waste per annum at the thermal design point of 82.1 MW (hourly throughput of 31.1 tph with Calorific Value (CV) = 9.5 MJ/kg) and an availability of 90%. The capacity of an EfW is not fixed and is dependent on both the CV of the waste and the availability of the plant. If the availability is higher than 90% (e.g. the maintenance downtime is less than envisaged), then it may be possible for the plant to treat more waste. If the waste received has a lower CV, then a higher quantity of waste can be treated without exceeding the thermal design point (i.e. the maximum amount of thermal power that the facility is designed to operate under). Under these conditions, it may be feasible for the EfW to treat up to 265,000 tpa. However, for the purposes of assessing need, the design throughput of 245,000 tpa is used, as this is based on the calorific value of the waste composition provided by SWDWP and is therefore the best estimate of actual capacity.

3.6.2 Table 3-13 summarises the latest data on waste arisings and residual waste in Devon and Cornwall as a whole, and within the SWDWP area. The data for C&I waste is taken from the Defra Commercial and Industrial Waste Survey 2009, and the data for MSW from Defra

WasteDataFlow statistics[31] (using data from the FBC for calculating recycling and composting in SWDWP).

Table 3-13: Summary of Current Waste Arisings in the Region (2009/10)

		Waste Arisings (ktpa)	Recycled, Reused and Composted (ktpa)	Residual (ktpa)	of which landfilled (ktpa)
Devon & Cornwall	C&I Waste	1,064	558	507	269
	MSW	912	401	511	509
	Total	**1,977**	**959**	**1,018**	**778**
Devon (incl. Plymouth & Torbay)	C&I Waste	700	360	339	185
	MSW	613	289	324	321
	Total	**1,313**	**650**	**663**	**506**
SWDWP	C&I Waste	392	201	191	109
	MSW	354[32]	136[33]	218	191
	Total	**746**	**337**	**409**	**300**

3.6.3 It is apparent that the municipal waste arisings forecasts in the original Outline Business Case and in the adopted waste strategies for the SWDWP authorities are higher than the actual arisings as shown in the most recent Defra data, and the Final Business Case has been updated to reflect this. There are a variety of possible reasons for the decline in waste arisings when compared to earlier predictions. To some extent the decline may be due to behavioural changes by the public and commercial waste generators in response to waste minimisation initiatives; and there is also likely to be some impact from the recent recession which has reduced both business activity and major purchases by consumers. It is not currently clear whether these trends will persist or reverse over time.

3.6.4 SWDWP have revised the quantities of waste requiring treatment downwards, reflecting this reduction in actual waste arisings; from a range of 187 – 224 ktpa in the OBC (for 2014/15 and 2038/39 respectively[34]) to a range of 168 – 203 ktpa (see Table 3-5).

3.6.5 This is consistent with actual data for 2009/10 showing the total amount of SWDWP MSW not recycled is approximately 187 ktpa (excluding Civic Amenity site waste from the three Devon WCAs, see

[31] http://www.defra.gov.uk/statistics/files/mwb200910a.xls
[32] SWDWP Final Business Case Table 1.1
[33] SWDWP Final Business Case, Table 1.2
[34] SWDWP Outline Business Case, Table 4.2

Table 3-9). The SWDWP Final Business Case reports the combined SWDWP recycling rate for 2009/10 as 43.9%[35].

3.6.6 If it is assumed for the purposes of this assessment that total MSW arisings remain at their current low rates but that the recycling rate increases to 52.5% by 2014/15 (in accordance with the assumptions in the FBC[36]), then the amount of MSW not recycled in 2014/15 (i.e. residual MSW) will be approximately 168 ktpa, i.e. consistent with the residual waste quantity of 168 ktpa quoted in the ISDS (see Table 3-5). The growth factors assumed by SWDWP will result in a total of 203 ktpa of residual MSW requiring treatment in 2038/39 (see Table 3-5).

3.6.7 The most recent Defra waste arisings data are therefore consistent with the baseline used in the SWDWP Final Business Case, which anticipates a need for approximately 200 ktpa of capacity for treating residual MSW collected by the SWDWP authorities by 2038/39.

3.6.8 MVV have signed a contract with SWDWP for treatment of residual MSW from the SWDWP area, with an estimated quantity of 200 ktpa of MSW requiring treatment in 2038/39.

3.6.9 In order to fully utilise the 245 ktpa capacity of the facility, MVV may seek to source an additional 45 ktpa of C&I waste in 2038/39, the majority of which is likely to come from the SWDWP area.

3.6.10 Defra data indicates that there is currently 191 ktpa of residual C&I waste generated in the SWDWP area which is not recycled, composted or reused (see Table 3-13). MVV's objective to source an additional 45 ktpa of C&I waste in 2038/39 would comprise approximately 24% of the current total, which is a reasonable commercial expectation, given the proximity of the facility to the main sources of commercial waste generation in Plymouth. Considering the whole of Devon, residual C&I waste arisings are 339 ktpa (see Table 3-13) and MVV's target of treating 45 ktpa of C&I waste represents 13% of the county's residual C&I waste arisings.

3.6.11 MVV's facility provides an alternative to landfill disposal as a means of treating MSW and C&I wastes in the SWDWP area up to 2038/39. The capacity of the facility is consistent with the forecasts of required capacity included in the waste strategies of the SWDWP members.

[35] SWDWP Final Business Case, Table 1.2
[36] SWDWP Final Business Case, Table 1.5