

12 Traffic and Transport

12.1 Introduction

- 12.1.1 This Chapter considers the proposed development of the EfW CHP facility in terms of the associated transport operation, from an environmental perspective.
- 12.1.2 A Transport Assessment (TA) and Framework Travel Plan (FTP) have been prepared (see Appendix 12.1) and this chapter presents the findings of those reports in an environmental context.
- 12.1.3 The following documents have been referred to as part of the production of both the TA and therefore, this chapter:
- PPG 13: Transport (2001)
 - DfT Guidance on Transport Assessments (2007)
 - DfT Circular 02/2007: Planning and the Strategic Road Network (2007)
 - Plymouth Local Development Framework (2006)
 - Plymouth Waste Development Plan Document (2008)
 - Plymouth Municipal Waste Management Strategy (2007)
 - Plymouth Local Transport Plan 2 (2006)
 - Plymouth Sustainable Distribution Strategy (2005)
 - Plymouth Local Transport Plan 3 (2011)

12.2 Methodology

Scope of Assessment

- 12.2.1 A Scoping Report for the TA was prepared and subsequently agreed with Plymouth City Council (PCC), as the local highway authority, and the Highways Agency (HA). The scoping document outlined the extent of the assessment in terms of transportation, including the study area, which also applies to this chapter, and is illustrated at **FIGURE 5.1** of the TA which is located in **Appendix 12.1**). The study area includes the following junctions:
- Wolseley Road / Saltash Road
 - Wolseley Road / Weston Mill Drive
 - Weston Mill Drive / Carlton Terrace
 - Weston Mill Drive / A38

Sources of Information

- 12.2.2 Traffic data was obtained for each of the junctions located within the study area for the 12 hour period 0700-1900, on Tuesday 12th October 2010. In addition Automatic Traffic Counter (ATC) link information was collected on the Weston Mill By-Pass and Wolseley Road.

- 12.2.3 Discussions with PCC and the HA identified that there were no committed developments located within the study area which needed to be taken into account as part of the associated assessments. For information, two ‘potential’ developments (Landing Craft Co-location Facility and a Local Centre) were identified and these have been considered as part of a sensitivity analysis. Further information is provided concerning this analysis at **ANNEX G** of the TA.
- 12.2.4 The TA has considered a ‘with development’ scenario, for the proposed opening year of the EfW CHP facility (2014), which includes the forecast traffic generation for the proposed facility. A detailed trip generation Technical Note was prepared and submitted to PCC and the HA, in advance of the TA being completed (**ANNEX D** of the TA). The Technical Note presents the assumptions and calculations which have been employed to estimate the likely traffic generation associated with the proposed EfW CHP, based on information provided by the South West Devon Waste Partnership (SWDWP) and MVV.

12.3 Environmental Effects of Traffic

- 12.3.1 Guidance for the assessment of the environmental effects of traffic is provided in the Institute of Environmental Assessment (IEA) (1993), Guidelines for the Environmental Assessment of Road Traffic.
- 12.3.2 That document suggests that the scale and extent of an assessment should be limited to highway links subject to traffic flow increases of more than 30% (10% if affecting a sensitive area) or the number of Heavy Goods Vehicles (HGV's) increasing by more than 30%.
- 12.3.3 Sensitive areas are defined by the presence of sensitive receptors, such as congested junctions, hospitals, community centres, conservation areas, schools, colleges or accident black spots.
- 12.3.4 The IEA Guidelines advise that the assessment of transport effects of a development should include any mitigation measures that are proposed to be implemented.
- 12.3.5 In terms of assessment criteria, the IEA Guidelines recommend that a number of potentially important items are considered. A summary of these items is shown below in **TABLE 12.1** together with a comment as to their relevance within this assessment.

TABLE 12.1 Assessment Items

Item	Comment
Night time noise	N/A. The EfW CHP facility will not generate vehicle traffic at night time
Vibration	N/A. No significant vibration sources (CHAPTER 14 of the ES)
Driver severance ¹ and delay	Included
Pedestrian severance ¹ and delay	Included
Pedestrian amenity ²	Included

¹ According to the IEA guidelines, severance is “the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. Severance effects could equally be applied to residents, motorists or pedestrians.”

² According to the IEA guidelines, pedestrian amenity “can be broadly defined as the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/ separation from traffic.”

Item	Comment
Accidents and safety	Included
Hazardous and dangerous loads	Included
Dust and dirt	Dealt with in dust assessment within ES CHAPTER 13

Sensitivity of Receptors

- 12.3.6 The sensitivity of receptors are graded into High, Medium and Low categories based on the criteria shown below in **TABLE 12.2**, which shows the relationship between magnitude category and the assessment criteria. This is determined by the quantity of residential properties which could be affected by the development and whether alternative transport routes are available, in accordance with the associated guidance.

TABLE 12.2 Transport Related Sensitivity of Receptors

Sensitivity	Criteria
High	Over 200 properties per day affected by increased traffic flow Over 45% increase in traffic flow past properties on single carriageways
Moderate	100-200 properties per day affected by increased traffic flow 30% increase in traffic flow past properties on single carriageways
Low	Under 100 properties per day affected by increased traffic flow 10%-15% increase in traffic flow past properties on single carriageways
Negligible	No discernible change in conditions or circumstances

Magnitude of Impact

- 12.3.7 According to the relevant guidelines, the magnitude of impact has been assessed on the following basis:
- High: considerable improvement / deterioration in local conditions or circumstances
 - High / Moderate:
 - Moderate: readily apparent change in local conditions or circumstances
 - Low: perceptible change in local conditions or circumstances

Assessment of Significance

- 12.3.8 The assessment of the significance of transport effects of the development is guided by impact criteria relating to the sensitivity of the identified receptor points. As such, the significance of an effect depends on both the sensitivity of the receptor (e.g. junction, transport route or transport user) and the degree to which the receptor would be affected (i.e. magnitude of impact).
- 12.3.9 In order to quantify the significance of an effect, the receptor sensitivity and impact magnitude are cross-tabulated within the guidance, as illustrated below at **TABLE 12.3**.

TABLE 12.3 Level of Significance

Significance		Sensitivity of Receptor			
		High	Moderate	Low	Negligible
Magnitude of impact	High	<i>High</i>	<i>High / Moderate</i>	Moderate	-
	High/Moderate	<i>High / Moderate</i>	Moderate	Low / Moderate	-
	Moderate	Moderate	Moderate / Low	Low / Negligible	-
	Low	Low	Low / Negligible	Negligible	-

12.3.10 A 'significant' effect, according to the EIA Regulations 1999, is defined here as one that would have a High or a High / Moderate effect, as shown in italics in **TABLE 12.3** above.

12.4 Baseline Conditions

12.4.1 Analysis of the traffic data which has been obtained as part of the TA, and following discussions with PCC and the HA, confirmed that the peak hours to be used for the purposes of the TA were 0800-0900 and 1600-1700. The observed traffic flows for the AM and PM peak hours are presented in the TA.

12.4.2 Junction capacity assessments were subsequently undertaken, using standard industry software programmes, such that a robust platform for the future year assessments could be established.

12.4.3 The operational results of the assessments undertaken for each of the junctions located within the study area are presented within the TA and were validated against observed data, including queue information.

12.5 Impact Assessment

Quantitative Assessment

12.5.1 Some of the processes which will be undertaken at the EfW CHP facility will occur over 24 hours per day. However, the site will not be 'open' 24 hours a day and as such, vehicle movements will only be associated with the site between the hours of 0800 and 1900, in most cases.

12.5.2 A detailed breakdown of the operational characteristics is provided in ES Chapter 6 and the TA, Appendix 12.1. The site opening hours are shown in **TABLE 12.4**.

TABLE 12.4 Site Opening Times

Day	Opening Times
Monday to Friday	08.00 – 19.00
Saturdays	08.00 – 18.00
Sundays	08.00 – 16.00
Bank Holidays (Except Christmas and Boxing Day)	08.00 – 18.00
Christmas Day	Closed
Boxing Day	08.00 – 16.00

- 12.5.3 For the purposes of the TA the hours for waste delivery and the collection of materials produced by the facility are assumed as:
- Municipal Solid Waste (MSW): As presented in **TABLE 12.4**, according to the site opening times
 - Commercial and Industrial Waste (C&I): Monday – Friday, between 0800 and 1900
 - Incinerator Bottom Ash (IBA) and Air Pollution Control Residues (IBA & APCR): Monday – Friday, between 0800 and 1900
- 12.5.4 The analysis presented within the TA indicates that there will be up to 70 staff vehicle movements associated with the operation of the EfW CHP facility over the course of a typical day. In terms of HGV movements, which will be used to deliver waste to the site and remove residues, it has been estimated that the site will generate up to 264 typical daily movements.
- 12.5.5 As set out within the TA, typical daily movements have been based on Monday – Thursday conditions, as these were observed as tending to be busier than Fridays and weekend situations. It should also be noted that a small number of staff vehicle movements are expected to occur outside of the opening times of the plant, such that they are on site before and leave site after their shift starts or ends, respectively.
- 12.5.6 A summary of the forecast trip generation which is expected to be associated with the site, as presented within the TA, is provided below at **TABLE 12.5**.

TABLE 12.5 Vehicle Trip Generation Summary

Time	HGV Two-Way Movements	Staff	Combined Total
05:00-06:00	-	5	5
06:00-07:00	-	5	5
07:00-08:00	-	9	9
08:00-09:00	18	11	29
09:00-10:00	20	0	20
10:00-11:00	34	0	34
11:00-12:00	32	0	32
12:00-13:00	24	0	24
13:00-14:00	30	5	35
14:00-15:00	46	5	51
15:00-16:00	30	4	34
16:00-17:00	16	9	25
17:00-18:00	12	7	19
18:00-19:00	2	0	2
19:00-20:00	-	0	0
20:00-21:00	-	0	0
21:00-22:00	-	5	5
22:00-23:00	-	5	5
Total	264	70	334

- 12.5.7 The TA has specifically focused on the AM and PM peak hours, which were agreed in advance with PCC and the HA as being 0800-0900 and 1600-1700, respectively. This approach also accords with DfT Guidance on Transport Assessments.
- 12.5.8 In order to consider the implications of these traffic movements on the local highway network located within the study area and trip distribution was derived and the associated trips were subsequently assigned across the network.
- 12.5.9 The TA considered two scenarios, based on the forecast situation in 2014, as the year in which the EfW CHP facility is expected to be completed and commence operation. The first scenario is referred to as the Do Minimum case and represents the situation before the development comes online. As such, observed traffic data for the local network has been projected up to 2014, in accordance with industry practices.
- 12.5.10 The second scenario is referred to as the Do Something case and represents the Do Minimum situation, as referred to above, plus the traffic associated with the proposed EfW CHP development.
- 12.5.11 From the perspective of the TA, capacity assessments of the junctions located within the study area were subsequently undertaken to consider the operational implications of the development.

- 12.5.12 Within the context of this ES Chapter however, the two scenarios allow a relative comparison between the Do Minimum and Do Something situations to be undertaken at each of the receptor points located within the study area.
- 12.5.13 The receptor points have been based on the highway links which form the approaches to each of the junctions located within the TA study area.
- 12.5.14 The results of the comparative analysis are presented below at **TABLE 12.6**.

TABLE 12.6 2014 Do Minimum and Do Something Comparative Analysis

Receptor	2014 Do Minimum		2014 Do Something		Relative Change (%)	
	AM	PM	AM	PM	AM	PM
Weston Mill Drive North <i>North of Carlton Terrace</i>	1961	2453	1982	2471	1.1%	0.7%
Weston Mill Drive South <i>Between Carlton Terrace & Wolseley Road</i>	1922	2449	1943	2467	1.1%	0.7%
Wolseley Road West <i>West of Weston Mill Drive</i>	994	1175	995	1176	0.1%	0.1%
Wolseley Road (Central) <i>Between Weston Mill Drive & Saltash Road</i>	2355	2634	2362	2641	0.3%	0.3%
Wolseley Road East <i>East of Saltash Road</i>	1192	1273	1199	1278	0.6%	0.4%
Saltash Road <i>South of Wolseley Road</i>	1243	1447	1244	1448	0.1%	0.1%
Northern Access Road <i>To the MoD and Site</i>	324	910	352	936	8.6%	2.9%

- 12.5.15 The results of the comparative analysis presented at **TABLE 12.6** confirm that there is expected to be a negligible impact on all of the highway links (receptors) in the vicinity of the proposed EfW CHP.
- 12.5.16 Inherently, the traffic movements which will be associated with the facility will dissipate across the highway network with distance from the site. In light of this, the greatest level of impact is expected to occur along the Northern Access Road, which will form the sole connection between the highway network and the site access.
- 12.5.17 As such, a percentage impact of 8.6% and 2.9% has been calculated, for the AM and PM peak hours respectively. In real terms, this is equivalent to an increase in vehicle movements of 8 and 26 in the morning and evening peaks respectively.
- 12.5.18 In all cases therefore, the impact of the EfW CHP has been identified as being below the 30% threshold of significance, as set out within the IEA guidelines (1993). Furthermore, the impacts are also lower than the 10% threshold which is also set out by the IEA, relating to 'sensitive areas'.

12.5.19 Based on the information presented herein and summarised at **TABLES 12.2** (Sensitivity of Receptors), **12.3** (Magnitude of Impact), and **12.6** (Relative Change (%)), it has been possible to quantify the significance of the transport impacts associated with the EfW CHP facility, in environmental terms. A summary of the quantitative assessment is therefore provided below at **TABLE 12.7**.

TABLE 12.7 Significance of Effects

Receptor	Sensitivity	Magnitude	Significance
Weston Mill Drive North <i>North of Carlton Terrace</i>	Low	Negligible	Negligible
Weston Mill Drive South <i>Between Carlton Terrace & Wolseley Road</i>	High	Negligible	Low
Wolseley Road West <i>West of Weston Mill Drive</i>	Low	Negligible	Negligible
Wolseley Road (Central) <i>Between Weston Mill Drive & Saltash Road</i>	Low	Negligible	Negligible
Wolseley Road East <i>East of Saltash Road</i>	Low	Negligible	Negligible
Saltash Road <i>South of Wolseley Road</i>	Low	Negligible	Negligible
Northern Access Road <i>To the MoD and Site</i>	Low	Negligible	Negligible

12.5.20 The quantitative appraisal confirms that all of the receptors located within the study area are expected to experience a negligible level of effect, as a result of the proposed EfW CHP facility, with the exception of Weston Mill Drive (between Carlton Terrace and Wolseley Road) where a significance level of 'low' is predicted.

12.5.21 Whilst this level of significance is not a material consideration, according to the IEA guidelines, the presence of the school adjacent to this link meant that the sensitivity of the receptor was identified as being 'high', hence the slight increase in significance.

12.5.22 Given that the school is set back from the highway and that fencing is provided along the entire frontage which forms a boundary with the receptor, this low level of impact is not considered to be significant, as previously discussed.

Qualitative Assessment

12.5.23 A qualitative assessment has also been undertaken, again based on the criteria set out with the IEA Guidelines, as discussed previously. The results of the assessment are summarised below in **TABLE 12.8** and are discussed in the following paragraphs.

TABLE 12.8 Summary of Qualitative Assessment

Criteria	Impact	Effect
Road Safety	No predicted increase in accidents (see TA)	Negligible
Junction Capacity	Minimal impact at junctions (see TA)	Negligible
Driver Delay	Minimal impact at junctions (see TA)	Negligible

Severance	No alterations to public highway network proposed	Negligible
Intimidation / Fear	Slight increases in HGV movements (see TA)	Negligible
Pedestrian Amenity	Slight increases in HGV movements (see TA)	Negligible
Hazardous Loads	Hazardous loads not anticipated. Any such movements will be safely managed by the respective contractors.	Negligible

- 12.5.24 The analysis of road safety within the TA has indicated that there are no particular trends in causality or clustering of incidents. It is anticipated that the development proposals will not adversely impact road safety and thus mitigation measures are not required.
- 12.5.25 As highlighted by the quantitative assessment, the capacity and delay impacts of the traffic associated with the development are expected to be minimal. Further information is provided within the TA, but from an environmental perspective, the additional vehicle movements are expected to lead to a negligible effect.
- 12.5.26 The change in severance experienced by the public and residents of the local area will be minimal, for both pedestrians and drivers, as no changes to the external highway network are required to deliver the EfW CHP.
- 12.5.27 The increase in HGV traffic along the receptor links is expected to have a minimal effect with regards to 'fear and intimidation' as on site observations have shown that there are a number of provisions made for pedestrians in the form of crossing points and guard railings. In real terms development related traffic has been shown to be of the order of 1% on all external links to the site access. The Northern Access Road has an increase of 8.6% in the AM and 2.9 in the PM (see **TABLE 12.6**), this is not considered to increase 'fear and intimidation' given the industrial nature of the site access.
- 12.5.28 It is recognised that there may be a small number of hazardous loads and these will be managed by the respective contractors, as part of the operational policies of the EfW CHP facility.

12.6 Construction Traffic

- 12.6.1 To accompany the Transport Assessment, a Framework Construction Travel Plan has been prepared (see **ANNEX E**). Within that document an assessment of the associated construction traffic movements has been presented including vehicle movements associated with both HGV deliveries as well as staff movements.
- 12.6.2 The number of construction staff will fluctuate over the construction period (as shown in **ANNEX E** of the TA) and in order to minimise traffic congestion, a specific off site parking area has been identified at Goschen Yard. This is located off Saltash Road, approximately 1.4km from the EfW CHP facility. Free buses will be provided to transport staff to the site at the beginning of the day and from the site at the end of the day.
- 12.6.3 It is intended that parking will be provided on site for supervising staff, who are less likely to be on site everyday and may not stay for the whole day, as they may also visit other sites. All vehicles entering (and exiting) the site will be required to pass through a security control point. Notwithstanding this, parking on site will be provided within a defined area which unauthorised vehicles will not be permitted to use.

12.7 Conclusion

- 12.7.1 The quantitative element of the assessment has identified that the proposals are expected to have a negligible effect from a transport perspective, in environmental terms.
- 12.7.2 Similarly, the qualitative element of the assessment has also confirmed that the increase in traffic movements has been judged to have a negligible effect on the surrounding highway network and its users, within the context of the environmental assessment guidelines.

12.8 References

IEA (1993) Guidelines for the Environmental Assessment of Road Traffic.