

Appendix D – Transport Drawings & Layouts

D.6 Traffic Generation Note

Technical Note

Project: Swindon and Wiltshire Waste Sites

To: Jonathan Manning

Subject: Trip Generation Estimates

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Date: 21/01/10

cc:

1. Introduction

The following technical note details the likely traffic generation of a number of the potential uses of the Swindon and Wiltshire waste sites.

Atkins has estimated the traffic to the existing waste facilities in Wiltshire which it is proposed can be used as a proxy for vehicle movements to and from the proposed sites. A movement is defined as one vehicle entering or leaving the site, therefore one vehicle is responsible for two movements. The following figures are given per week.

As a rule of thumb, the traffic inputs are unlikely to be linear and there would be some peak periods. Traffic also depends on different parameters, namely process, technology used, operating hours, etc.

There is often significant variation in traffic generation at sites depending on size, location and catchment, nature of work and mode of collection/transfer. As such traffic generation estimates in this note are intended to provide general guidance only.

1.1 Materials Recycling Facility (MRF)

MRFs are usually designed to process source separated/co mingled dry recyclables. The estimated range of HGV trips for these types of waste facility are listed in **Table 1.1**, with the following information referenced:

- Rejects represent 10.85% of input material (source: Environment Agency guidance for Waste Data Flow);
- Recyclables are brought to the MRF with 6t payload Refuse Collection Vehicles (RCVs); and
- Recyclables and rejects are removed from the site with 6.9t payload 35 yard Roro skips and 9.5t payload Rigid HGVs.

Table 1.1 – Estimated MRF HGV Trips per Week

Tonnes per Annum (tpa)	2-way HGV movements per week
15,000	170
45,000	500

The profile of operational trips depends on whether the local authority vehicles deliver straight to the site through RCVs, or alternatively transfer the waste from the transfer station. If RCVs travel direct to the site the trip generation profile will likely be in batches, likely between 9:30–10:30am and 2:00-3:00pm, which avoids the peak highway periods. However, if vehicles arrive from transfer station the operational trips will be more constant throughout the day.

Staff usually operate on a shift basis which dictates the amount of traffic generated in the AM and PM peak periods. It is likely that staff trips will not have a major impact on both peaks; however

there is a chance that a shift change will occur during either the AM or PM peak period resulting in an impact on the highway network peak hours.

1.2 Waste Transfer Stations (WTS)

Waste transfer stations play an intermediate role between the collection and final disposal of waste. Their purpose is usually to collect together relatively small amounts of waste until sufficient quantities are accumulated to merit transportation to the relevant waste management option.

The estimated range of HGV trips for this type of waste facility are listed in **Table 1.2**, with the following information referenced:

- There is no compaction; therefore the value given represents the worst case scenario;
- Waste is brought to the WTS with 6t and 12t payload RCVs; and
- Waste is removed from the site with 19t payload Artics 44t.

Table 1.2 – Estimated WTS HGV Trips per Week

Tonnes per Annum (tpa)	2-way HGV movements per week
15,000	95
45,000	285

The profile of operational trips depends on whether the local authority vehicles deliver straight to the site through RCVs, or alternatively transfer the waste from the transfer station. If RCVs travel direct to the site the profile will likely be in batches, likely between 9:30–10:30am and 2:00-3:00pm, which avoids the peak highway periods. However, if vehicles arrive from transfer stations the operational trips will be more constant throughout the day.

1.3 Household Recycling Centre (HRC)

Household waste recycling centres are open for public access. Trade waste cannot be taken to household recycling centres these facilities are for householders only. HRC sites generally process between 7,000-12,000 tonnes of waste per year.

Due to their nature as public facilities these sites will generate significant numbers of private car trips in addition to HGV trips. The peak trip generation periods in these developments tend to occur on the weekend and as such do not correspond with the weekday highway network peak periods.

Table 1.3 gives examples of the mean hourly visits (one way movements) at some existing sites in Wiltshire. The traffic to these sites has a degree of seasonal variation with more trips in the Spring than Autumn as such the figures presented below are for Spring to represent a worst case. The sites are of varying sizes and catchments but are representative of the largely rural nature of the county. These examples are given as an indication only and as such no conclusions as to the potential traffic generation of individual sites should be drawn.

Table 1.3 - Mean Hourly Visits and Peak Hours for Visiting HRC: Spring 2003¹

HRC Spring 2003	Weekday Hourly Average	Weekend Hourly Average	Hour Most Frequently Visited
Everleigh	21	42	10 am – 11 am
Melksham	38	68	11 am – 12 noon
Purton	30	72	11 am – 12 noon
Salisbury	77	105	3 p.m. – 4 p.m.
Stanton St Quintin	57	88	10 am – 11 am
Trowbridge	54	93	11 am – 12 noon
Warminster	38	69	11 am – 12 noon
Mean	45	77	11 am – 12 noon

Staff numbers at the HRC sites are likely to be low (typical 8 members of staff for 12 bays) and therefore have a minimal impact on the highway network. The estimated HGV trips for these types of waste facility are listed in **Table 1.4**, with the following information referenced.

- The average HRC waste arising per inhabitant in England is used: 131 kg per inhabitant per year (source: NACAS² report);
- 20% of the Wiltshire County Council population use a HRC;
- A large proportion of visitors made relatively infrequent use of HRCs. 50% or more visitors in Wiltshire stated that they used an HRC monthly or less often;
- The HRCs do not accept any commercial and industrial waste, therefore waste are brought with private vehicles only: cars, vans, 4x4 etc; and
- Waste is removed from the site with 6.9t payload 35 yard Roro skips.

The traffic inputs are unlikely to be linear there would be some peak periods especially during weekends.

Table 1.4 - Estimated HRC HGV Trips per Week

Tonnes per Annum (tpa)	2-way HGV movements per week
7,000	40
12,000	70

1.4 Local Recycling (LR)

Local recycling sites are likely to take the form of small scale recycling facilities such as Waste Electronic and Electrical Equipment (WEEE) recycling, car de-pollution centres, scrap yards or operations similar to a MRF, but on a much smaller scale.

Data on trip generation for LR sites is minimal; however, such sites are likely to have a similar profile to MRF sites but on a much smaller scale, with waste collection vehicles arriving in the

¹ Household Recycling Centres In Wiltshire, Visitor Survey Report

² National Assessment of Civic Amenity Sites Report

week typically outside of network peak hours. The estimated HGV trips for this type of waste facility are listed in **Table 1.5**, with the following information referenced.

- As this category gathers many facility types, it is assumed that the traffic of a local recycling plant is equivalent to a MRF on a smaller scale; and
- Assumptions made for the calculations of the traffic movements for a MRF are applied.

Table 1.5 – Estimated LR HGV Trips per Week

Tonnes per Annum (tpa)	2-way HGV movements per week
500	10
10,000	115

1.5 Inert Waste Recycling / Transfer (IWR/T)

An IWR/T is likely to be used to break down certain types of waste, for example concrete or other construction materials. An IWR/T would typically generate a maximum tonnage of 50,000 tpa. The majority of the time IWR/T occurs on landfill inputs before they are deposited, so there are no additional transport movements. Where sites are stand alone HGVs will be used to deliver the materials to site and will likely occur on a constant basis throughout the day, with no particular peak periods. Staffing levels at the site are likely to be low, with most of the processes being machine operated. Therefore there is unlikely to be a major traffic impact on the highway network during the highway peak periods.

A typical stand alone 50,000 tonnes per year facility generates 20 – 30 waste collection vehicles per day in and 10 – 20 bulk transport vehicles per day out.

1.6 Waste Treatment (WT)

Waste Treatment sites are used to process the residual wastes. These can take the form of Mechanical Biological Treatment (MBT) centres or Energy from Waste (EfW) sites. MBT sites mechanically break down the waste (e.g. shredding) then during the biological process the waste is either composted or digested. Other facilities include Anaerobic Digestion Plants, In-vessel Composting Facilities, Incinerators and Thermal Treatment to create power. The estimated HGV trips for this type of waste facility are listed in **Table 1.6**, with the following information referenced.

- The traffic has been estimated for an EfW facility using the Onyx process (source: WRATE³) and an MBT plant using a generic process. Other treatment facilities might have different vehicle movements;
- Estimates are based on a 60,000 tpa facility;
- Waste is brought to the site with 12t and 19t payload HGVs; and
- Waste is removed from the site with 6.9t payload 35 yard Roro skips, 9.5t payload Rigid HGVs and 19t payload Artics 44t.

Table 1.6 - Estimated WT HGV Trips per Week

³ Waste and Resources Assessment Tool for the Environment

Type of site	2-way HGV movements per week
EfW	220
MBT	320

RCVs may be used to bring waste directly to site, meaning operation vehicles may arrive in batches. This is likely to be outside the highway AM and PM peak periods. The development will generate a number of staff trips; however, staff are likely to operate in shifts which means it is unlikely that trips will be generated in both peak periods. However one highway peak period may possibly be impacted upon.

1.7 Landfill

Landfill sites are locations where waste is deposited. Landfill is considered the least favored option but it still has a recognized role in the management of waste providing a final deposition for residual wastes. Waste is brought to site via RCVs and would be fairly constant throughout the day.

According to the TRICS database, a database which contains trip generation information on a number of different site uses the peak period for vehicle trips is between 1:00pm and 3:00pm. TRICS estimates that a total of 1.28 trips per hectare will be generated during a sites busiest period.

During the AM and PM peak the site is estimated to generate 0.916 trips (AM) and 0.154 trips (PM) per hectare. A typical 250,000 tonnes per year landfill site on a 5 – 50 ha site generates approx 50 waste deliveries per day (100 movements).

1.8 Composting

Composting sites are made up of two types, green waste and mixed food waste. RCVs will generally bring waste to the site, meaning larger vehicles will arrive in peaks throughout the day rather than being constant. Generally these peaks will be outside the normal highway AM and PM peak periods. The composting considered here is outdoor windrow composting and not in-vessel composting. The estimated HGV trips for this type of waste facility are listed in **Table 1.7**, with the following information referenced.

- The traffic has been estimated for an in vessel composting facility using the TEG process (source: WRATE);
- Waste are brought to the site with 6t payload RCVs;
- Compost is removed from the site with 19t payload Artics 44t; and
- Rejects are removed from the site with 9.5t payload Rigid HGVs.

Table 1.7 - Estimated Composting HGV Trips per Week

Tonnes per Annum (tpa)	2-way HGV movements per week
10,000	80
22,000	170

Composting sites are generally small in size and have a minimal amount of staff working on site, therefore the impact they have on the highway network in terms of additional trips is minimal.

A typical 25,000 tonnes per year plant on a 2 -3 ha site generates 20 – 40 HGV trips per day.