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Report
ACT NOWaste 2015
Landfill and Transfer Station Waste Audits

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EXECUTIVE SUMMARY

Following audits of domestic kerbside and MRF residual waste in 2014, A Prince Consulting (APC) undertook an audit of waste received at Mugga Lane Landfill and Transfer Station and the Mitchell Transfer Station in June 2015.

Mugga Lane landfill is the only operating putrescible waste landfill facility in the ACT. Although the present active landfill cells are reaching capacity, ACT NOWaste recently constructed new cells on an accelerated schedule to ensure landfill availability to approximately 2018. At the present rate of consumption, the site has the capacity to provide landfill cells to at least 2035. This audit aimed to provide a better understanding of waste composition, volume and weights, and to identify opportunities for further diversion from landfill.

This Report details the results of the visual assessments of all delivered loads and physical audits of plastic bags over 21 days from 10 to 23 June 2015 where a total of 3,360 loads were assessed over five days at the landfill and eight days at each of the transfer stations.

The results of the audit are summarised below:

Loads and vehicle entry times

- **Mugga Lane Landfill** – total vehicles assessed – 368 with an average of 74 vehicles per day with the busiest days on Thursday, Friday and Monday. Volume and weight peak on Friday at 2,211m^3 and 438t. Vehicle movements peak between 7 to 8am and 12 to 1pm. Saturdays have a more consistent vehicle entry pattern.
- **Mugga Lane Transfer Station** - total vehicles assessed – 2213 with a peak of Saturday with 744 vehicles, 907m^3 and 159t received. Peak vehicle entry times are between 11am and 4pm on both days of the weekend, reaching 108 vehicles between 3pm and 4pm on Sunday.
- **Mitchell Transfer Station** - is quiet Tuesday to Friday, and busier on weekends, peaking on Sundays with 247 vehicles, 247m3 and 40 tonnes delivered. Weekends are consistently busy between 10am and 5pm, peaking at 40 vehicles per hour between 11am and 1pm on Saturday.

Vehicle types

- **Mugga Lane Landfill** - almost a third of vehicles are tipper trucks, followed by frontlift trucks and roll on roll off trucks.
- **Mugga Lane Transfer Station** - 85% of all vehicles are cars or utes. Vans and trucks make up the remaining 15%. Utes represent over 40% of all vehicle entries.
- **Mitchell Transfer Station** - cars, utes and vans are the most common vehicle types. Trucks make up only 11% of vehicles using the facility.
- Municipal waste arrives mainly in cars and utes. Commercial and Industrial (C&I) waste in frontlifts, tipper trucks and utes. Construction and Demolition (C&D) waste arrives mainly in tipper trucks and utes.

Overall waste composition

- **By volume -** over three quarters (76%) is from C&I sources, Municipal Solid Waste (MSW) represents 12% and C&D waste 12%. The waste received at the three facilities is dominated by wood, garbage bags and other material (this was mainly dirt/soil).
- **By weight -** the overall waste types received, by weight, are similar to their proportions by volume, with C&I and C&D slightly higher, and MSW slightly lower. The waste composition is similar to volume, except that building materials make up a much larger proportion of the waste.
- **Garbage bags** - on average contain 24% food, 23% recyclables and 31% other organic material (mainly non-recyclable paper). If the contents of the garbage bags are distributed into each category, the proportion of food waste reaches 11% of all waste by weight, and recyclables 16% (mostly cardboard).

Overall annual waste received

- **Volume** – it is estimated that a total of almost 850,000m^3 is received annually, of which 647,000m^3 is C&I, 98,000m^3 is C&D, and 105,000m^3 is MSW.
- **Weight** - it is estimated that 18,000t of MSW, 131,000t of C&I and 22,000 tonnes of C&D enter the facilities. Garbage bags and recyclables are the largest categories by weight, with almost 20,000 tonnes of recyclables received, mainly in the C&I stream.
- **Polystyrene** - an estimated 24,000m^3 (1.1 tonnes) of enters the facilities each year.

Overall waste received by business sector

- **C&I waste** - the main sources of at the three facilities are mixed small businesses (19% of all waste), shopping centres and retail (18%) and trades (16%).

Overall potential for landfill diversion

- A total of 44% (by weight) of the waste received at all facilities could be diverted from landfill using existing systems. An estimated 75,000 tonnes per year is recoverable.
- C&I has the most recovery potential, at 47%, C&D (35%) and MSW (34%).
- Overall, the greatest opportunity for recovery of waste is rock and soil from C&I waste (42,000 tonnes). There is also a significant amount of cardboard available (13,000 tonnes), again mainly from C&I waste.

The audit has highlighted several opportunities for improved diversion from waste disposal facilities within the ACT. The following opportunities should be considered for increased recovery:

Mugga Lane Landfill

- Target C&D loads for recovery, particularly loads of rock, soil, concrete and bricks.
- Target C&I loads with a lot of cardboard, and loads with a lot of vegetation, for recovery of these materials.

Mugga Lane Transfer Station

- Target loads with a lot of cardboard in MSW and C&I deliveries, for recovery of cardboard.
- All three streams have C&D materials (tiles, bricks, concrete) available for recovery. Utilise the existing C&D facility for these materials.

Mitchell Transfer Station

- Identify loads high in cardboard and target these for recovery.
- Identify covered furniture from MSW and C&I streams that can be diverted to the Green Shed.
- Identify loads high in C&D materials from MSW and C&I streams.
- Make extra effort to recover metals, as there are valuable steel and non-ferrous metals available for recovery and sale at this Transfer Station.

1 INTRODUCTION

In April 2104, A.Prince Consulting (APC) tendered to undertake waste composition audits for waste to landfill, waste to transfer stations, domestic waste and recycling, and Material Recovery Facility (MRF) residual waste for ACT NOWaste.

The purpose of the audits is to obtain updated data on the current composition of waste and recycling in Canberra, in order to:

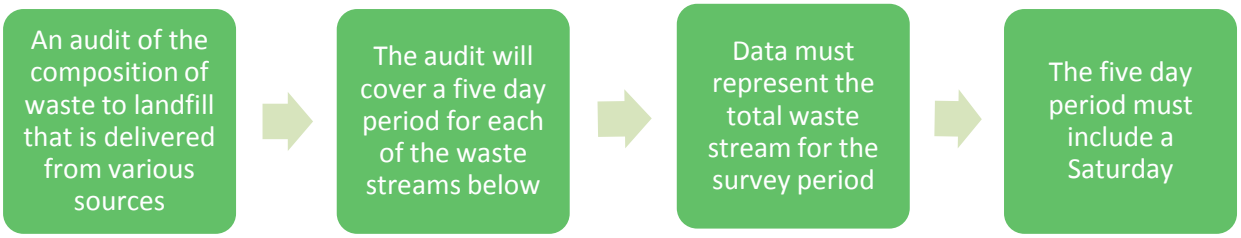
- provide information to assist in the development of waste avoidance, recycling strategies and policies;
- identify sectors that are producing large quantities of waste disposal to landfill;
- identify wastes that could potentially be recycled or reduced;
- to improve waste and recycling operations in the ACT and to assist with community education programs conducted by ACT NOWaste;
- better understand current recycling and waste disposal needs of the ACT and Queanbeyan; and
- assist with planning for future waste and resource recovery services and infrastructure.

A separate detailed report on each of the following audits was specified:

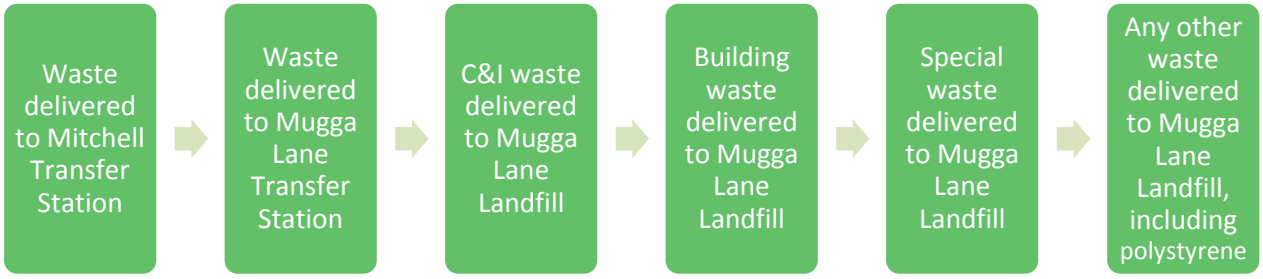
1. Domestic Waste and Recycling Audit – ACT;
2. Material Recovery Facility (MRF) residual waste audit; and
3. Waste to Landfill Composition Study.

The audits of domestic kerbside and MRF residual waste were undertaken in October and November 2014 respectively. The audit of the Mugga Lane Landfill and Transfer Station and the Mitchell Transfer Station was postponed until 2015.

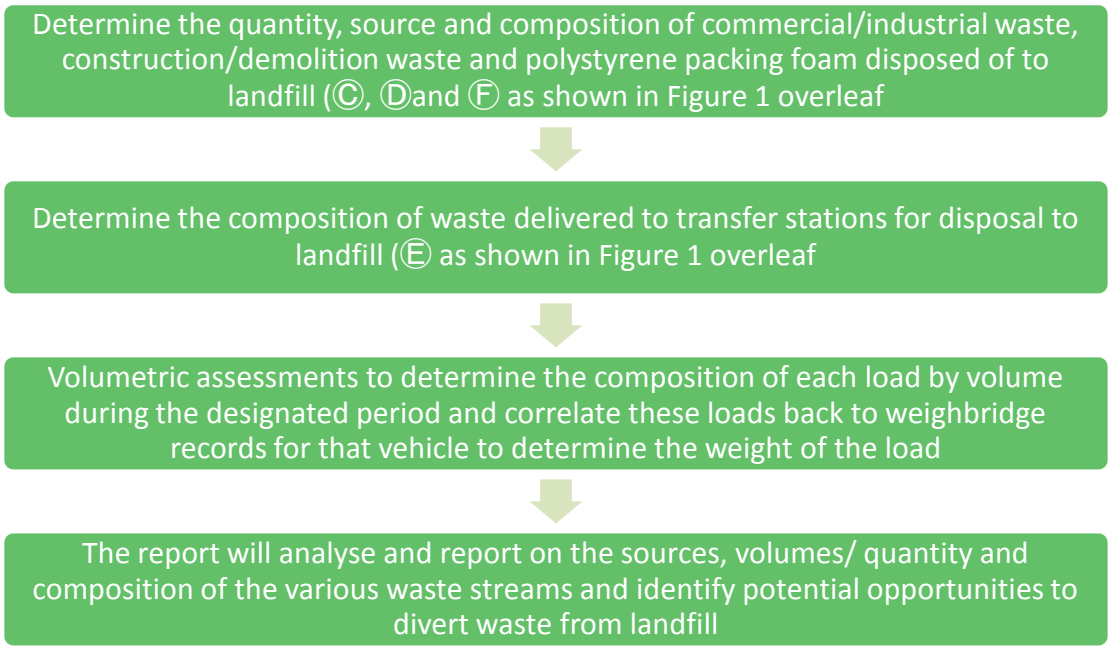
The project scope for the landfill and transfer station audit specified the following:



The audit must include an assessment of each of the following waste streams:

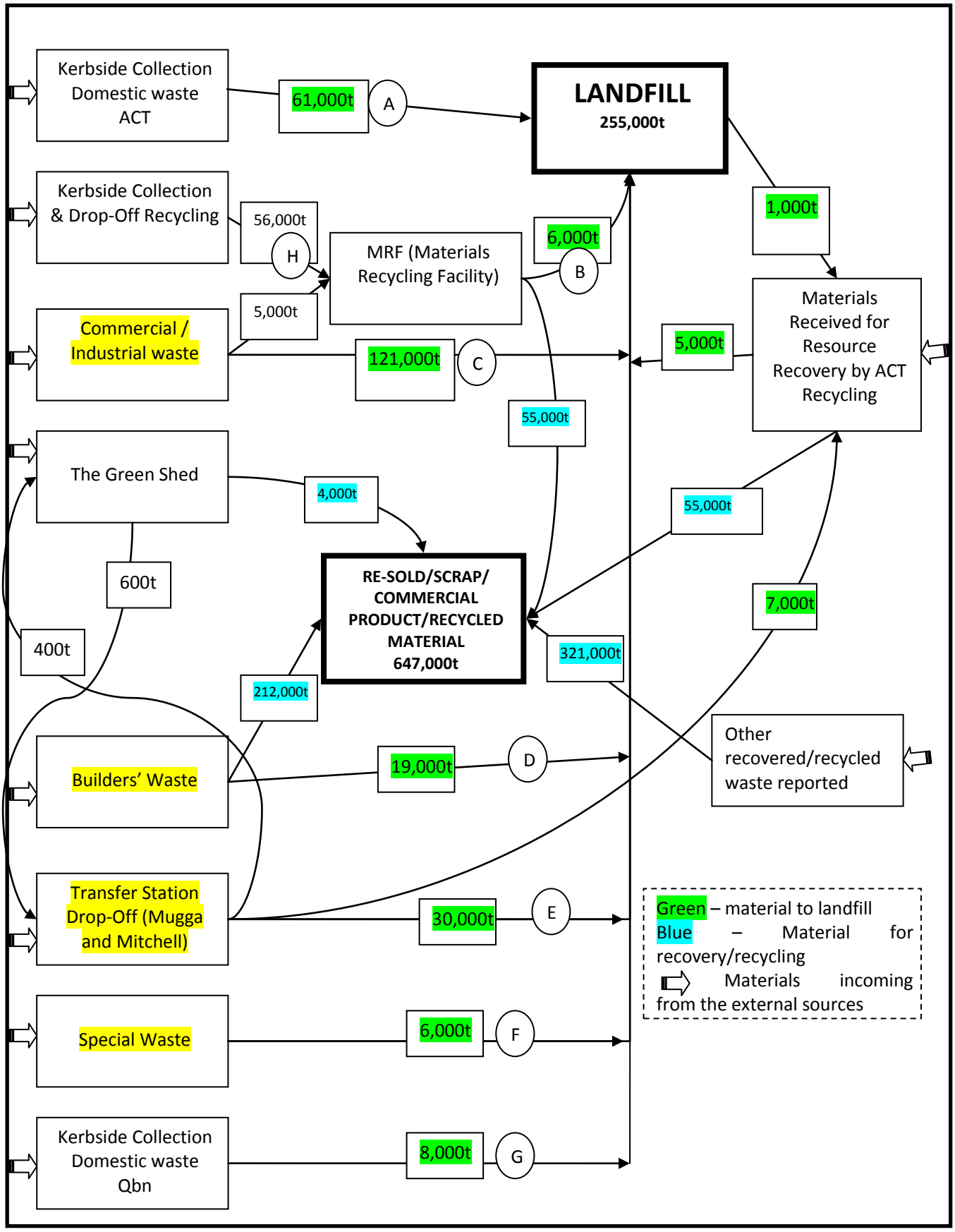


The audit will:



This Report details the results of the visual assessments of 3,360 loads and physical audits of plastic bags from delivered loads over 21 day period at the Mugga Lane Landfill and Transfer Station and the Mitchell Transfer Station from 10 to 23 June 2015.

Figure 1: Act Waste / Recycling Flows (Source ACT NOWaste based on 2012-13 FY data)



2 BACKGROUND

Mugga Lane is the only operating putrescible waste landfill facility in the ACT. Although the present active landfill cells are reaching capacity, ACT NOWaste recently constructed new cells on an accelerated schedule to ensure landfill availability to approximately 2018. At the present rate of consumption, the site has the capacity to provide landfill cells to at least 2035.

ACT NoWaste operates the following resource management centres, which were part of this project.

Mitchell Resource Management Centre	• Located on Flemington Road, Mitchell. • Open 7.30 am to 5 pm, seven days a week (except Good Friday and Christmas Day). • Free recycling drop off area is provided for paints, cooking and motor oils, heater oils, sharps, mobile phones, car batteries, gas bottles, fire extinguishers, fluorescent lamps, E-Waste - TVs and computers, drumMuster, paper and cardboard, glass jars and bottles, rigid plastic containers, milk and juice cartons, aluminium cans and steel cans (including aerosols). Limits apply. Paper and cardboard cages and hoppers for excess container recycling - glass jars and bottles, rigid plastic containers, milk and juice cartons, aluminium cans and steel cans (including aerosols).at home or work. • Greenwaste drop-off is contracted to Canberra Sand and Gravel (CSG) who accepts prunings, leaves and grass clippings. Branches must be smaller than 1.5 metres in length and 100 milimetres in diameter. Not accepted: bamboo, flax, pampass grass, tree roots, dirt, demolition material, plastic pots and plastic bags. • Re-use centre contracted to The Green Shed – accepts items that have saleable value. • Any large, long and oversized materials i.e. mattresses, lounges or large amounts of C&D materials are delivered to an area where staff recover recyclables prior to shredding for volume reduction and transfer to Mugga Lane landfill. • All other mixed and general waste including small amount of C&D are delivered to the transfer station.
Mugga Lane Resource Management Centre	• Located on Mugga Lane, Symonston. • Open 7.30 am to 5 pm, seven days a week (except Good Friday and Christmas Day). • At this site a landfill for large vehicles and a Transfer Station is provided for small vehicles delivering mixed and general waste. • Recycling drop off area for paints, cooking and motor oils, heater oils, sharps, mobile phones, car batteries, gas bottles, fire extinguishers, fluorescent lamps/tubes, , E-Waste - TVs and computers, drumMuster containers, household chemicals. Limits apply. Paper and cardboard cages and hoppers for excess container recycling - glass jars and bottles, rigid plastic containers, milk and juice cartons, aluminium cans and steel cans (including aerosols).at home or work. • Free greenwaste drop-off, contracted to Corkhill Brothers who accept prunings, leaves and grass clippings, bamboo and flax. Branches must be smaller than two metres in length and less than 200 milimetres in diameter. Corkhill Bros will accept tree stumps over 200 milimetres but at 70% of landfill charge.

	• Re-use centre contracted to The Green Shed – accepts items with a saleable value

3 METHODOLOGY

The methodology used for the audit was the NSW EPA *Disposal based C&I Waste Audit Methodology 2008* (*The Guidelines*).

The audits included a visual assessment of all loads deposited at the transfer stations and landfill tip face with the exception of the domestic kerbside waste stream, MRF residue and TAMS operations. Any recyclables brought to the waste facilities for the purposes of recycling or reuse were also excluded from this audit. Below are the load types included and excluded from the audit in accordance with the project scope:

Included load types	Excluded load types
• All commercial and industrial waste • All construction and demolition waste • All self haul loads	• Domestic waste delivered by contactor (general waste and bulky waste collections) • Any waste not delivered to the landfill • Transfer station waste delivered specifically for recycling or extracted by transfer station staff for recycling. • Municipal waste from parks and gardens, council clean-up, public litter bins, roadside litter, council depot waste and private vehicles. • MRF residue waste

3.1 Site visit and induction

The two waste facility sites included in this audit are both operated by Remondis Australia and are open seven days per week from 7.30 am-5.00 pm. APC's Project Manager attended at project inception meeting on Tuesday 2 June, 2015 with ACT NOWaste and Remondis staff at each of the audit sites. The meeting provided further information and details on the purpose of the audit, logistics, methodology and Work Health and Safety requirements. APC staff were inducted on Tuesday 9th June.

3.2 Timeframe

The landfill audit was conducted over five days from Wednesday 10 June to Monday 15 June and the transfer station audits were conducted over 8 days from Tuesday 16 June through to Tuesday 23 June. In total 21 audit days were included of which 5 were at the landfill and 16 at the transfer stations.

Table 1: Audit Timeline

Jun-15																
Day	**T**	**W**	**T**	**F**	**S**	**S**	**M**	**T**	**W**	**T**	**F**	**S**	**S**	**M**	**T**
Date	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
Travel and induction															
Landill audit	Visual and bags														
Mugga Lane - visual and bags		1	2	3	4		5								
Transfer station audit								Visual and bags							
Mitchell TS - visual and bags								6	7	8	9	10	11	12	13
Mugga TS - visual and bags								14	15	16	17	18	19	20	21

The weather was typical for this time of year however, rainfall totalling 80mm was experienced over four of the five audit days planned for the transfer stations audit as shown in the table below.

Table 2: Weather Conditions during the audit period

Date	Day	Temperature		Rain (mm)
		Min °C	Max °C	
16	Tuesday	7.1	11.9	16.4
17	Wednesday	10.5	12.3	28.2
18	Thursday	7.5	11.2	28.8
19	Friday	4.6	10.4	6.2
20	Saturday	0.4	11.8	0.4
Total				**79.6**

The rainfall impacted on both the sorting site (marquee) and on the amount of self-haul domestic loads delivered during the planned transfer station audit. On Thursday 18 June the marquee had to be removed for safety reasons and sorting activities re-allocated to a shed adjacent to the Mugga Lane Transfer Station push pit. The weather also necessitated an extension of the transfer station audits to ensure typical self-haul domestic loads were included in the audit and additional 3 audit days from Sunday 21 July up to and including Tuesday 23 June were undertaken. On these additional days the following was undertaken:

- Sunday - visually assess **all** loads
- Monday and Tuesday – assess **only domestic loads** to increase the midweek sample at both transfer stations.

3.3 Sample size

The methodology recommends that the visual assessment be conducted on each load being discharged at the landfill face or transfer station and that such observations are recorded on approved data recording sheets. APC's auditors aimed to assess all loads delivered during opening hours, within safe and practical limitations.

3.4 Visual assessment

APC provided audit supervisors who were stationed at the landfill or transfer station tipping area to visually assess all loads. APC staff were in attendance from opening to closing time (7.30am to 5pm) each audit day at each site.

It was revealed by our staff that at the Mitchell TS, a number of loads were directed to the oversize and processing area, which was not highlighted during the site inspection. As a result of our on-site observations we stationed an auditor at this area in addition to the transfer station area from Saturday to Tuesday, to capture data from all loads directed to this area. When the transfer station compactor had a mechanical breakdown on Tuesday all loads were directed to this area.

All auditors recorded the following information:

- Date and time of the vehicle arrival
- Registration number
- Vehicle type
- Vehicle volume
- C&I industry sector based on the ANZSIC codes (as advised by the driver)
- Composition of the load
- Degree of compaction

A copy of the data sheet is provided in **Appendix A**. Definitions of each material category are provided in **Appendix B**. Industry sector definitions are provided in **Appendix J.**

Visually assesssing loads at both the transfer station and landfill.

3.5 Physical bag sort

Bagged waste was extracted from all loads where bags comprised more than 20% of the load at the landfill and transfer stations. A sample of 10 bags per load was removed for physical sorting. The results from the bagged waste audit have been analysed separately and then integrated into the analysis to represent the bagged waste component of the visual audit data.

Typical load containing large numbers of bags and collecting plastic bag samples.

3.6 Data entry and analysis

The data for these audits has been entered into a Microsoft Excel based data analysis tool specifically designed for the NSW methodology. Volume data has been converted to weight using the agreed conversion factors provided by the NSW EPA **Appendix C**.

The weight for all loads was then scaled to the actual weighbridge data for each load. In as far as it is possible to do so APC has matched each individual audited load with the corresponding weighbridge record. This was done using registration numbers, entry time and vehicle type.

It has not been possible to scale the self-haul loads at the transfer stations as these loads include recyclables that have not been included in the visual audit assessments and private delivery by householders are not weighed and are charged by the volume of load sizes (small, medium and large) not weighed.

Material categories have been aggregated into the consolidated categories to depict in graphs and tables and the determination as to where any material is deemed recoverable now into an existing recovery system as advised by ACT NOWaste is provided in **Appendix D**.

Annual extrapolations were undertaken of the C&I, C&D and transfer station waste. ACT NOWaste defined “special waste” as any waste for which a special burial pit is required eg kangaroo cull, road accident with perished livestock or deceased large animal ie horse. As these events occur spasmodically no extrapolations were made from our 5 days observations as weighbridge data collected over the year is more reliable.

3.7 Data limitations

The data for this study was collected and analysed using the best and most accurate methods available within the constraints of available time and budget. This study is a survey, which means that a relatively small amount of data has been collected and then treated as representative of the total.

As in any survey there are limitations to the accuracy of the data, as described below:

Limitations of sample size: All surveys carry an element of sampling error which is the mathematical error associated with using a sample to represent a total population. Sampling error can be reduced by taking larger samples. The sampling error involved in waste audits is usually small and can be tabulated by producing estimates augmented by upper and lower confidence intervals.

Timeframe: This audit was carried out over eighteen days with both weekend and weekdays assessed. The data collected was then used as being representative of the entire year. It should be noted that seasonal trends, seasonal celebrations and the impact of weather events may change waste generation over time. Thus, the results of this audit should be treated with due caution when analysing this report or comparing it to reports based on data taken at different times of year.

Representative sample: The sample for this audit is necessarily small due to the high per capita cost and resource-intensive nature of waste auditing. There is always a small probability of inadvertently collecting waste from atypical loads, resulting in non-representative data. APC audits are carried out using strict sampling so every vehicle delivery loads over the audit period is included.

Volume based assessments: The collection of data for this audit was recorded by volume and is subjective by the assessor but is a standard procedure and the most accurate way to collect data on a number of different types of materials at the point of disposal. APC staff have conducted an extensive number of visual assessments and all staff undertake training to ensure the observations are calibrated as much as possible. All volumes were converted to weight using standard weight densities. The volume-to-weight conversion factors are based on compaction rates used in the largest landfill audit in Australia conducted by A.Prince Consulting on behalf of the NSW EPA in 2014.

Information provided: It is possible that some vehicles that may have been delivering C&I or C&D loads were recorded as self-haul domestic loads as our assessors relied upon the advice provided by drivers and domestic loads have a cheaper disposal rate then commercial vehicles.

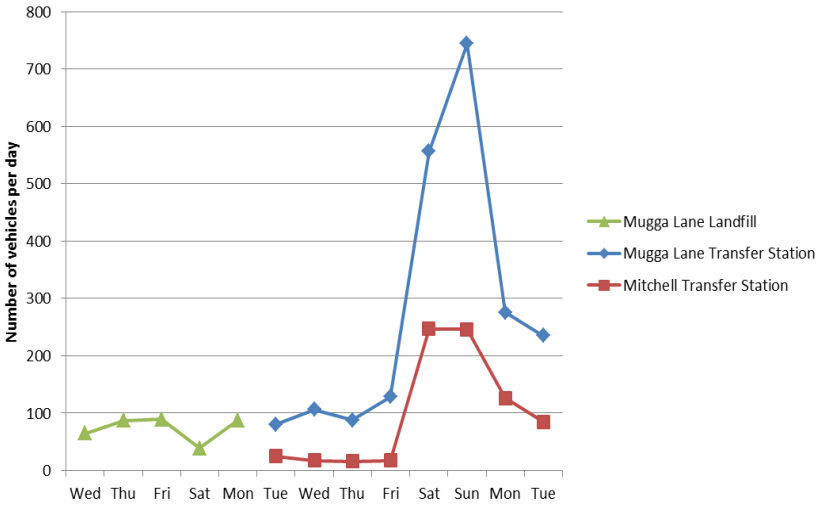
4 RESULTS

Data has been presented by volume and weight. The results of the audit have been graphically represented in charts and tables, which show the various characteristics of the waste stream with explanations. Some percentages have been rounded to the nearest whole number and therefore some figures and descriptions may not add up to 100%.

Typical mixed C&I loads

4.1 Waste received by day of the week

Figure 2: Number of vehicles per day

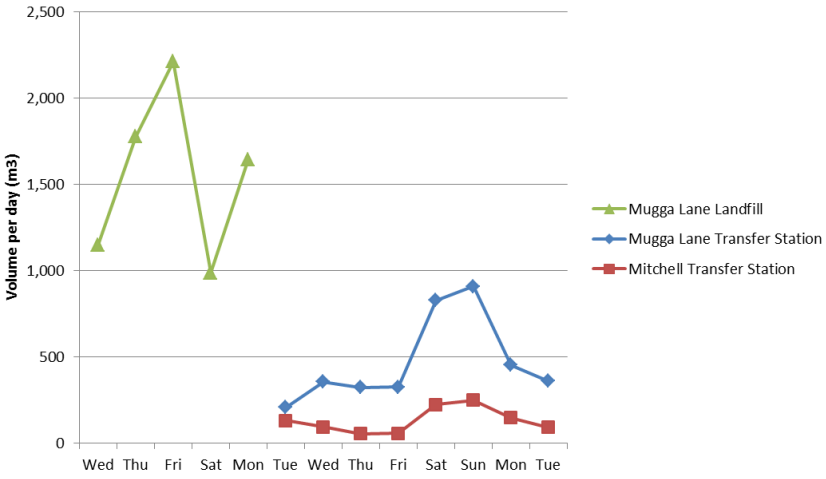


Mugga Lane Landfill averages 74 vehicles per day. Saturday is the quietest day (39 vehicles). Thursday, Friday and Monday are busiest, with 87 to 89 vehicles per day.

Mugga Lane Transfer Station is busy on weekends, peaking at 744 vehicles on Sunday, with a low of 80 vehicles on Wednesday.

Mitchell Transfer Station is quiet Tuesday to Friday, and busier on weekends (246 vehicles on Saturday and 247 on Sunday). Detailed results are in **Appendix E.**

Figure 3: Volume of waste received per day

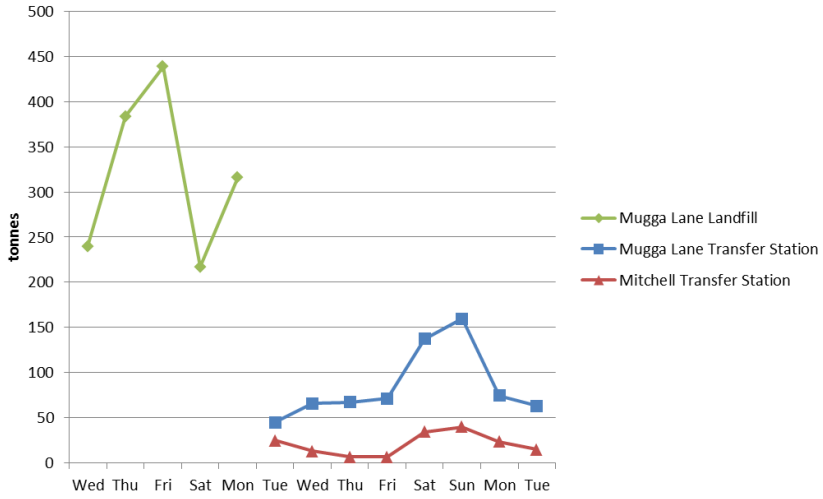


The volume of waste received at Mugga Lane Landfill peaks on Friday at 2,211m^3. Saturday is the quietest day (987m^3).

The Transfer Stations' volumes follow the vehicle number patterns, with busy weekends, peaking on Sundays (907m^3 at Mugga Transfer Station and 247m^3 at Mitchell Transfer Station).

Detailed results are in **Appendix F.**

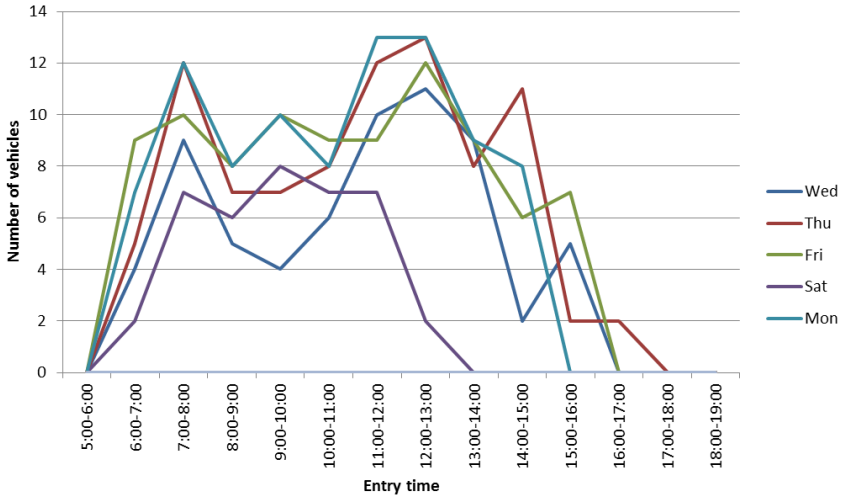
Figure 4: Weight of waste received per day



Waste tonnage patterns are similar to volume patterns, with Mugga Lane Landfill peaking at 438 tonnes on Friday, and the Transfer Stations peaking on Sunday (159t at Mugga TS and 40 t at Mitchell TS). Detailed results are in **Appendix F.**

4.2 Waste received per hour of the day

Figure 5: Mugga Lane Landfill: Number of vehicles per hour



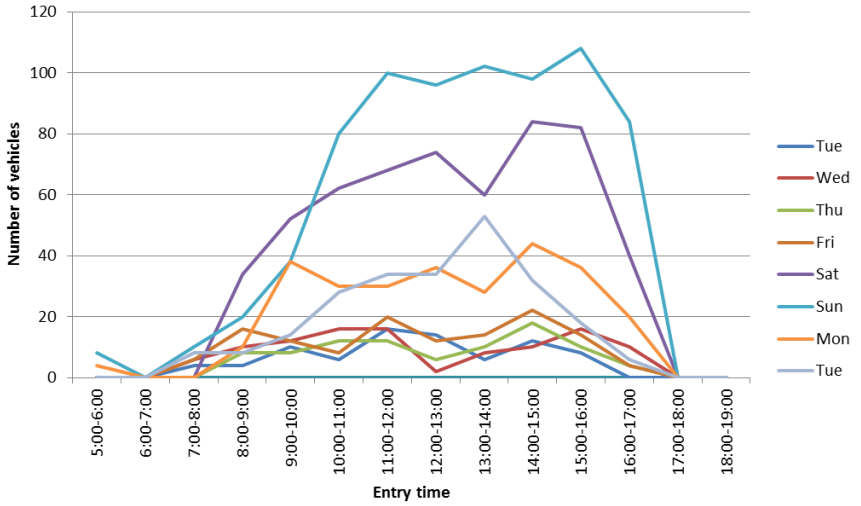
Vehicle movements at Mugga Lane Landfill generally show a morning peak (7 to 8am) and an afternoon peak (12 to 1pm).

Saturdays are more consistent, with similar vehicle numbers each hour between 7am and 12pm.

Peak vehicle numbers are 13 per hour around lunchtime on Monday and Wednesday.

Detailed results are in **Appendix E.**

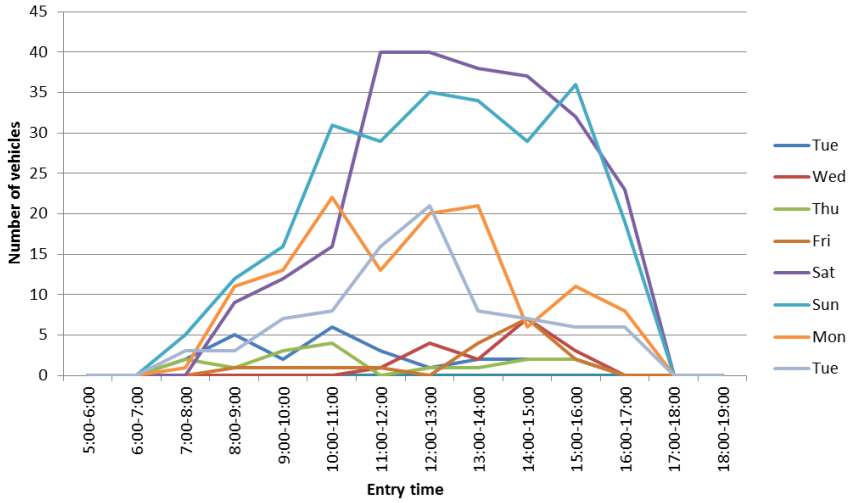
Figure 6: Mugga Lane Transfer Station: Number of vehicles per hour



At Mugga Lane Transfer Station, vehicles arrive more consistently over the day. Peak times are between 11am and 4pm on both days of the weekend, reaching 108 vehicles between 3pm and 4pm on Sunday.

Detailed results are in **Appendix E.**

Figure 7: Mitchell Transfer Station: Number of vehicles per hour



Mitchell Transfer Station shows a similar pattern to Mugga Lane, albeit with much lower vehicle numbers.

Weekends are consistently busy between 10am and 5pm, peaking at 40 vehicles per hour between 11am and 1pm on Saturday.

Detailed results are in **Appendix E.**

4.3 Vehicle types using the facilities

As shown in Table 3, almost a third of vehicles using Mugga Lane Landfill are tipper trucks, followed by frontlift trucks and roll on roll off trucks.

At Mugga Lane Transfer Station, 85% of all vehicles are cars or utes. Vans and trucks make up the remaining 15%. Utes represent over 40% of all vehicle entries.

At Mitchell Transfer Station, cars, utes and vans are the most common vehicle types. Trucks make up only 11% of vehicles using the facility.

Vehicle numbers for each vehicle type are in **Appendix H.**

Table 3: Vehicle types using the facilities, by number of vehicles

VehicleType	Mugga Lane Landfill	Mugga Lane Transfer Station	Mitchell Transfer Station	Overall
4WD	0.0%	1.3%	5.0%	2.0%
4WD with trailer	0.0%	6.6%	7.6%	6.1%
Car	0.0%	6.1%	10.9%	6.5%
Car with trailer	0.0%	11.0%	16.7%	11.1%
Flat bed	1.9%	1.7%	2.1%	1.8%
Front lift truck	20.7%	0.0%	0.0%	2.3%
Pantech	1.9%	2.0%	4.0%	2.4%
Rear lift truck	11.7%	0.0%	0.0%	1.3%
Roll on Roll off	20.9%	0.0%	0.0%	2.3%
Station wagon	0.0%	7.0%	3.2%	5.4%
Skip	10.1%	0.0%	0.8%	1.3%
Station wagon with trailer	0.0%	11.0%	4.4%	8.3%
Tipper	31.3%	5.4%	3.9%	7.9%
Ute	0.3%	26.5%	13.6%	20.7%
Ute with box trailer	0.0%	0.5%	0.0%	0.4%
Ute with trailer	0.8%	14.5%	9.8%	11.9%
Van	0.0%	4.5%	13.1%	6.0%
Van with box trailer	0.0%	0.1%	0.0%	0.1%
Van with trailer	0.5%	1.7%	5.1%	2.4%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 4 shows which vehicles bring which types of waste. Municipal waste arrives mainly in cars and utes. Commercial and Industrial (C&I) waste in frontlifts, tipper trucks and utes. Construction and Demolition (C&D) waste arrives mainly in tipper trucks and utes.

Vehicle numbers for each waste type are in **Appendix H.**

Table 4: Vehicles types by waste type

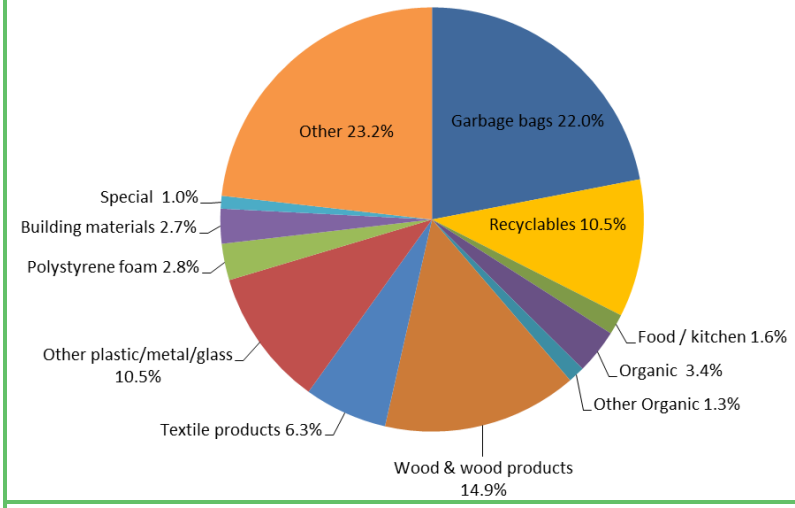
VehicleType	MSW	C&I	C&D	Overall
4WD	2.7%	0.0%	0.9%	2.0%
4WD with trailer	8.0%	0.3%	5.5%	6.1%
Car	9.2%	0.0%	0.0%	6.5%
Car with trailer	15.0%	1.4%	2.3%	11.1%
Flat bed	0.9%	3.8%	4.6%	1.8%
Front lift truck	0.0%	10.0%	0.0%	2.3%
Pantech	0.8%	7.8%	2.3%	2.4%
Rear lift truck	0.0%	5.5%	0.5%	1.3%
Roll on Roll off	0.0%	5.7%	15.7%	2.3%
Station wagon	7.5%	0.3%	0.0%	5.4%
Skip	0.0%	2.8%	10.1%	1.3%
Station wagon with trailer	11.3%	1.1%	0.0%	8.3%
Tipper	1.2%	24.2%	24.0%	7.9%
Ute	23.7%	13.3%	13.4%	20.7%
Ute with box trailer	0.0%	1.6%	0.0%	0.4%
Ute with trailer	12.0%	11.1%	13.4%	11.9%
Van	5.3%	8.7%	4.1%	6.0%
Van with box trailer	0.0%	0.3%	0.0%	0.1%
Van with trailer	2.3%	2.2%	3.2%	2.4%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Trailer delivery at Transfer station

4.4 All facilities

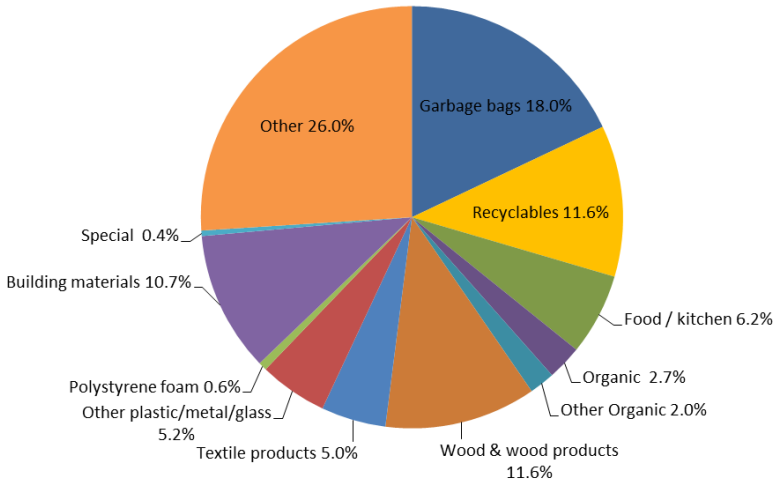
4.4.1 All facilities: waste composition

Figure 8: Overall waste composition, by volume



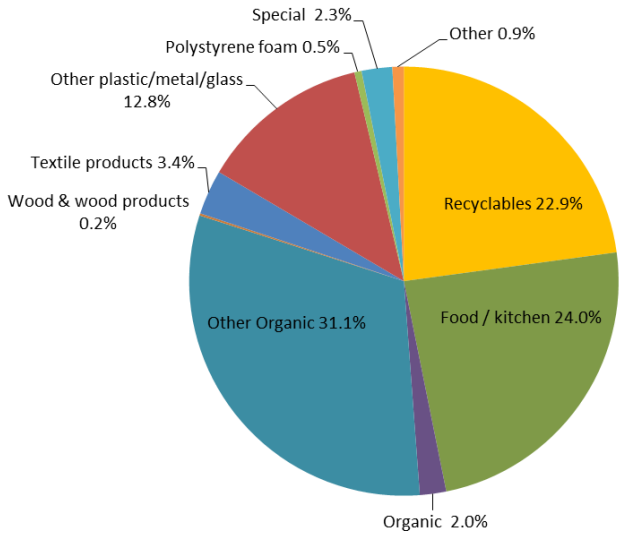
By volume, the waste received at the three facilities is dominated by wood, garbage bags and other material (this was mainly dirt/soil). These 3 categories make up over half of all waste received. Other significant categories include recyclables (mainly cardboard), textiles, and non-recyclable plastic, metal and glass. Detailed results showing individual waste materials are in **Appendix G**.

Figure 9: Overall waste composition, by weight, bags separate



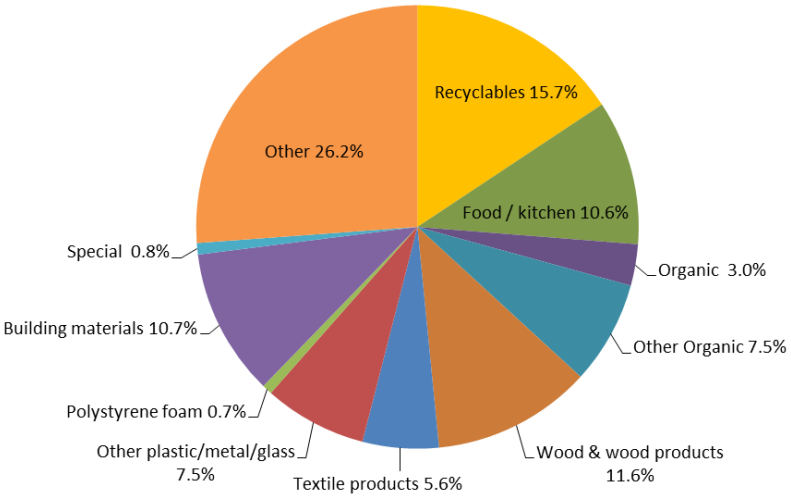
By weight, the waste composition is similar to volume, except that building materials make up a much larger proportion of the waste (11% by weight, compared to 3% by volume). Most of the building materials were plasterboard, with smaller amounts of bricks, concrete and tiles. Detailed results showing individual waste materials are in **Appendix G**.

Figure 10: Overall garbage bag composition, by weight



Garbage bag contents were sorted during the audit, revealing that the average garbage bag contains 24% food, 23% recyclables and 31% other organic material (mainly non-recyclable paper). 13% comprises non-recyclable plastic/metal/glass – most of this is plastic bags and film. Detailed results showing individual waste materials are in **Appendix I.**

Figure 11: Overall waste composition, by weight, bags dispersed

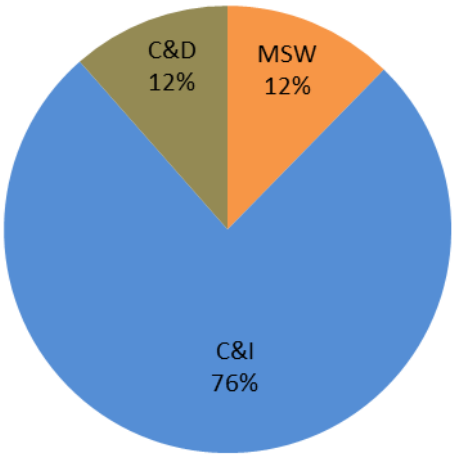


If the contents of the garbage bags are distributed into each category, the proportion of food waste reaches 11% of all waste by weight, and recyclables, mostly cardboard 16%. Other organic material represents 8%.

A lot of the special (hazardous) waste is found in garbage bags. However once bags contents are dispersed, special waste is still low at 0.8%.

Detailed results showing individual waste materials once bag contents are dispersed, are in **Appendix G.**

Figure 12: Overall waste received by volume, by waste type



Of the overall waste volume received, over three quarters (76%) is from C&I sources, MSW represents 12% and C&D waste 12%.

Table 5: Overall waste composition by volume, by waste type

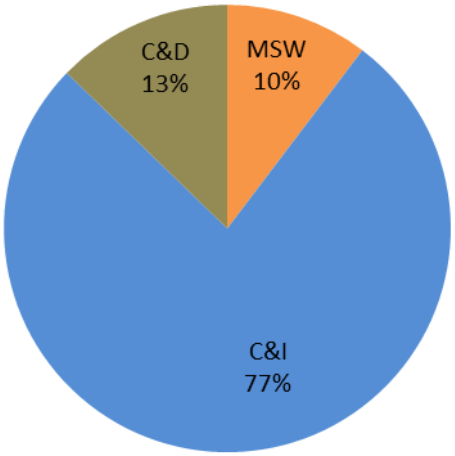
Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags	8.1%	27.3%	1.2%	22.0%
Recyclables	9.6%	9.9%	15.3%	10.5%
Food / kitchen	0.0%	2.0%	0.1%	1.6%
Organic	6.1%	2.7%	5.3%	3.4%
Other Organic	1.5%	1.3%	0.6%	1.3%
Wood & wood products	28.4%	9.0%	39.3%	14.9%
Textile products	23.9%	3.5%	6.2%	6.3%
Other plastic/metal/glass	11.5%	10.2%	11.5%	10.5%
Polystyrene foam	2.1%	3.1%	1.4%	2.8%
Building materials	4.6%	0.9%	12.5%	2.7%
Hazardous	0.3%	1.2%	0.1%	1.0%
Other	3.9%	28.8%	6.6%	23.2%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 5 shows the composition by volume of each waste type received. Over half of MSW comprises wood and textiles. Half of all C&I is garbage bags and other material (this was mainly rock/dirt/soil). C&D waste is dominated by wood, building materials and non-recyclable materials, however 15% is recyclable, mainly cardboard. Polystyrene is 3%.

Detailed volumes of each waste

material are in **Appendix G**.

Figure 13: Overall waste received by weight, by waste type



The overall waste types received, by weight, are similar to their proportions by volume, with C&I and C&D slightly higher, and MSW slightly lower

Table 6: Overall waste composition by weight, by waste type

Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags	3.7%	22.8%	0.6%	18.0%
Recyclables	12.4%	11.2%	13.0%	11.6%
Food / kitchen	0.0%	8.1%	0.2%	6.2%
Organic	3.5%	2.6%	2.5%	2.7%
Other Organic	1.6%	2.3%	0.3%	2.0%
Wood & wood products	22.5%	7.9%	24.9%	11.6%
Textile products	21.2%	2.8%	4.9%	5.0%
Other plastic/metal/glass	8.2%	4.9%	5.1%	5.2%
Polystyrene foam	0.4%	0.7%	0.2%	0.6%
Building materials	21.5%	3.6%	44.9%	10.7%
Hazardous	0.1%	0.5%	0.0%	0.4%
Other	5.0%	32.6%	3.3%	26.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 6 shows the composition by weight of each waste type received. Building materials make up a much larger proportion of MSW by weight (22%) than by volume.

By weight, C&D waste is almost half building materials, and one quarter wood.

Detailed volumes of each waste material are in **Appendix G.**

All facilities: annual amount of waste received

Table 7: Overall annual waste received, by volume, by waste type

Consolidation Category	MSW m^3/yr	C&I m^3/yr	C&D m^3/yr	Overall m^3/yr
Other	4,101	186,615	6,473	197,189
Garbage bags	8,438	176,949	1,148	186,535
Wood & wood products	29,754	58,271	38,352	126,377
Recyclables	10,030	64,204	14,981	89,215
Other plastic/metal/glass	12,012	65,707	11,217	88,936
Textile products	25,046	22,767	6,080	53,893
Organic	6,402	17,405	5,133	28,940
Polystyrene foam	2,208	20,065	1,395	23,668
Building materials	4,804	5,546	12,163	22,514
Food / kitchen	12	13,162	65	13,239
Other Organic	1,545	8,726	540	10,811
Hazardous	264	7,913	55	8,232
Total	**104,615**	**647,330**	**97,603**	**849,548**

Table 7 shows the estimated annual volume of each waste category received by the three ACT facilities, using the volumes audited, the weight audited, and applying standardised density factors to each category (**Appendix C**). It is estimated that a total of almost 850,000m^3 is received annually, of which 647,000m^3 is C&I, 98,000m^3 is C&D, and 105,000m^3 is MSW. During the audit week, two large loads of 'special' waste (medical autoclave waste) were received, leading to high results for C&I volumes of this waste type.

Table 8: Overall annual waste received, by weight, by waste type

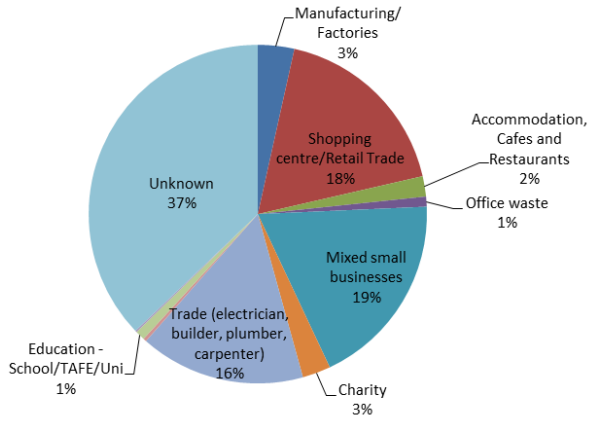
Consolidation Category	MSW t/yr	C&I t/yr	C&D t/yr	Overall t/yr
Garbage bags	641	29,746	138	30,525
Recyclables	2,178	14,709	2,813	19,700
Food / kitchen	4	10,578	38	10,620
Organic	614	3,366	548	4,527
Other Organic	274	2,971	71	3,316
Wood & wood products	3,948	10,387	5,400	19,735
Textile products	3,718	3,640	1,070	8,428
Other plastic/metal/glass	1,433	6,348	1,097	8,878
Polystyrene foam	66	978	47	1,092
Building materials	3,777	4,739	9,738	18,253
Hazardous	23	689	5	717
Other	886	42,599	723	44,208
Total	**17,563**	**130,750**	**21,687**	**170,000**

Table 8 shows the estimated annual weight of each waste category received by the three ACT facilities, using the volumes audited, known annual weights, and applying standardised density factors to each category (**Appendix C**). Garbage bags and recyclables are the largest categories, with almost 20,000 tonnes of recyclables received, mainly in the C&I stream.

4.4.2 All facilities: waste received by business sector

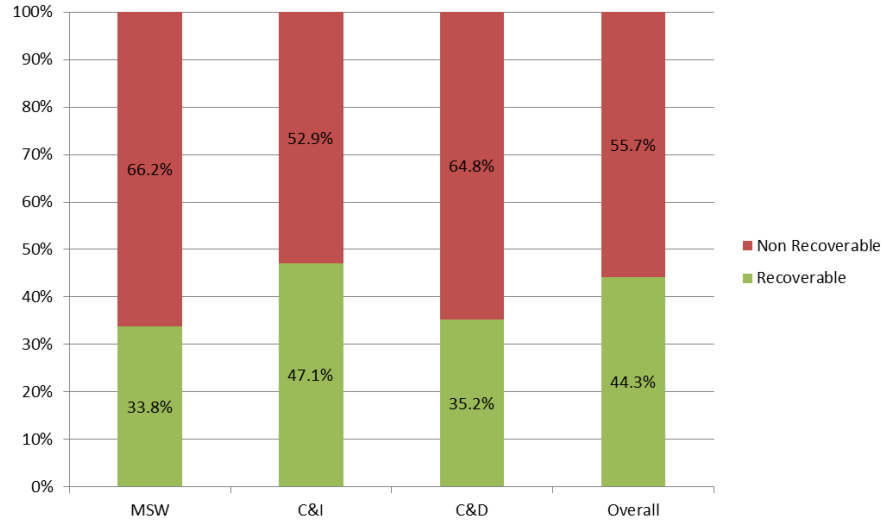
Figure 14: Overall C&I waste received, by business sector, by weight

The main sources of C&I waste at the three facilities are mixed small businesses (19% of all waste), shopping centres and retail (18%) and trades (16%). However almost 40% of waste was from unknown sectors (driver didn't advise or mixed load from many sectors). **Appendix J** contains tonnage details by sector.



4.4.3 All facilities – potential for diversion from landfill

Figure 15: Overall waste: potential diversion



Based on advice from ACT NOWaste (refer **Appendix D**) a total of 44% (by weight) of the waste received at all facilities could be diverted from landfill using existing systems.

The C&I sector has the most recovery potential, at 47%, followed by C&D (35%) and MSW (34%).

Table 9: Overall waste: detail of potential diversion

	Recoverable, tonnes per year			
Material	**MSW**	**C&I**	**C&D**	**Overall**
Rock/dirt/soil	648	41,659	170	42,478
Cardboard	1,910	9,356	1,829	13,095
Vegetation	360	3,323	352	4,035
Concrete / cement	696	295	1,956	2,947
Glass – containers	59	2,537	19	2,615
Tiles	550	330	1,191	2,072
Bricks	411	411	1,024	1,846
Covered furniture	835	464	88	1,386
Paper – recyclable	74	1,053	63	1,190
Plastic – containers	26	874	18	918
Metals - ferrous steel	50	370	374	794
Textiles – clothing/ cloth	262	465	47	775

Table 9 shows the estimated annual tonnages available for recovery at all facilities, for each waste stream and each material.

Overall, the greatest opportunity for recovery of waste is rock and soil from C&I waste (42,000 tonnes). There is also a significant amount of cardboard available (13,000 tonnes), again mainly from C&I waste.

An estimated 75,000 tonnes

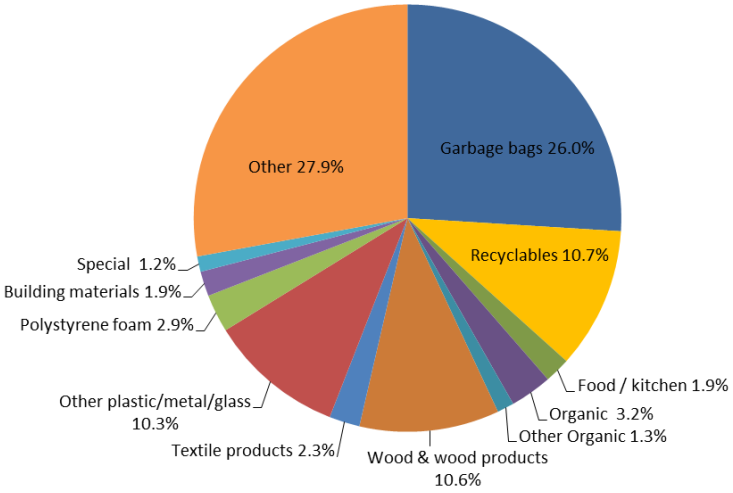
Metals –containers	23	301	316	641
Metals – non-ferrous	21	163	187	371
Rubber - tyres	17	44	8	69
Total	**5,942**	**61,645**	**7,641**	**75,227**

per year is recoverable if all materials can be removed, and assuming all clothing and covered furniture is saleable.

4.5 Mugga Lane Landfill

4.5.1 Mugga Lane Landfill: waste composition

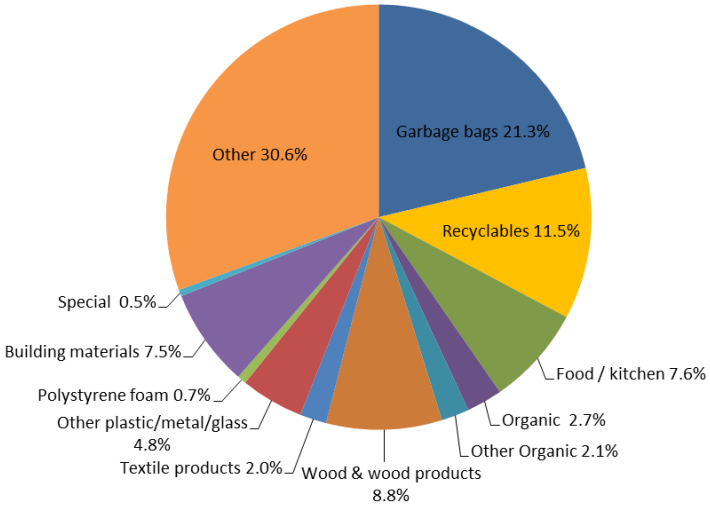
Figure 16: Mugga Lane Landfill waste composition, by volume



By volume, the waste received at Mugga Lane Landfill is dominated by garbage bags and other material (this was mainly dirt/soil). These two categories make up over half of all waste received. Other significant categories include recyclables (this was mainly cardboard), non-recyclable plastic, metal and glass, and wood.

Detailed results showing individual waste materials are in **Appendix G**.

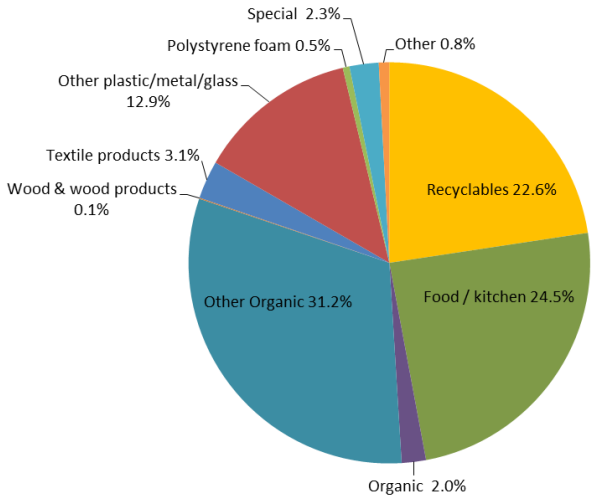
Figure 17: Mugga Lane Landfill waste composition, by weight, bags separate



By weight, the waste composition is similar to volume, except that building materials make up a larger proportion of the waste (8% by weight, compared to 2% by volume), as does food (8% by weight compared to 2% by volume).

Detailed results showing individual waste materials are in **Appendix G**.

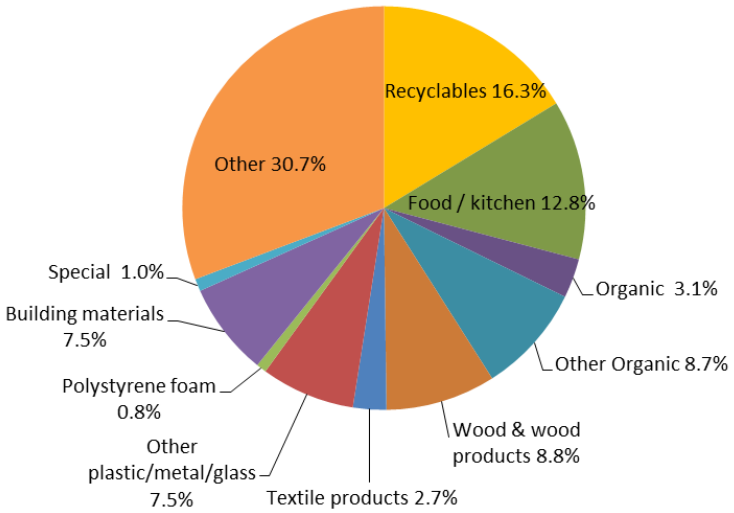
Figure 18: Mugga Lane Landfill garbage bag composition, by weight



Garbage bags received at Mugga Lane Landfill contain, on average, 25% food, 23% recyclables and 31% other organic material (mainly non-recyclable paper). 13% comprises non-recyclable plastic/metal/glass – most of this is plastic bags and film.

Detailed results showing individual waste materials are in **Appendix I.**

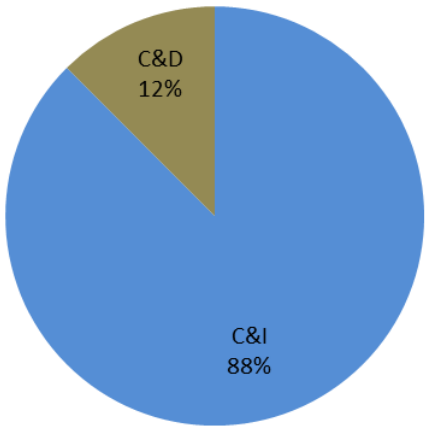
Figure 19: Mugga Lane Landfill waste composition, by weight, bags dispersed



If the contents of the garbage bags are distributed into each category, the proportion of food waste reaches 13% of all waste by weight, and recyclables 16% (still mostly cardboard). Other organic material now represents 9%.

Detailed results showing individual waste materials once bag contents are dispersed, are in **Appendix G**.

Figure 20: Mugga Lane Landfill waste received by volume, by waste type



Of the overall waste volume received at Mugga Lane Landfill, 88% is from C&I sources. The remainder is from C&D sources.

Table 10: Mugga Lane Landfill waste composition by volume, by waste type

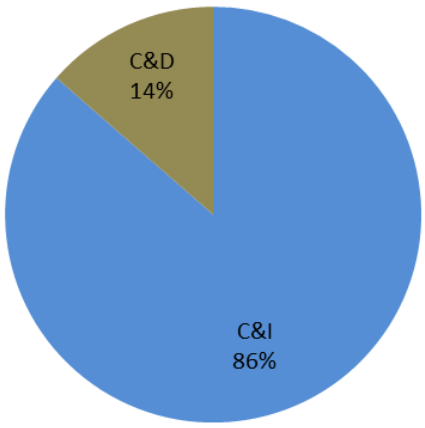
Consolidation Category	C&I	C&D	Overall
Garbage bags	29.5%	1.2%	26.0%
Recyclables	9.9%	16.3%	10.7%
Food / kitchen	2.2%	0.0%	1.9%
Organic	2.8%	5.9%	3.2%
Other Organic	1.4%	0.5%	1.3%
Wood & wood products	6.4%	39.6%	10.6%
Textile products	2.0%	4.8%	2.3%
Other plastic/metal/glass	10.0%	12.0%	10.3%
Polystyrene foam	3.1%	1.3%	2.9%
Building materials	0.4%	12.4%	1.9%
Hazardous	1.3%	0.1%	1.2%
Other	31.0%	5.9%	27.9%
Total	**100.0%**	**100.0%**	**100.0%**

Table 10 shows the composition by volume of each waste type received. 30% of all C&I is garbage bags and 10% is recyclables (mainly cardboard). 31% is other materials (mainly rock/dirt/soil).

C&D waste is dominated by wood, building materials and non-recyclable materials, and 16% is recyclables (this was mainly cardboard).

Detailed volumes of each waste material are in **Appendix G.**

Figure 21: Mugga Lane Landfill waste received by weight, by waste type



The overall waste types received, by weight, are similar to their proportions by volume.

Table 11: Mugga Lane Landfill waste composition by weight, by waste type

Consolidation Category	C&I	C&D	Overall
Garbage bags	24.5%	0.7%	21.3%
Recyclables	11.2%	13.7%	11.5%
Food / kitchen	8.7%	0.1%	7.6%
Organic	2.7%	2.8%	2.7%
Other Organic	2.4%	0.3%	2.1%
Wood & wood products	6.3%	25.0%	8.8%
Textile products	1.6%	4.4%	2.0%
Other plastic/metal/glass	4.7%	5.2%	4.8%
Polystyrene foam	0.8%	0.2%	0.7%
Building materials	1.6%	44.8%	7.5%
Hazardous	0.6%	0.0%	0.5%
Other	34.9%	2.9%	30.6%
Total	**100.0%**	**100.0%**	**100.0%**

Table 11 shows the composition by weight of each waste type received.

C&I proportions are similar to those by volume.

By weight, C&D waste is 45% building materials, and one quarter wood.

Detailed volumes of each waste material are in **Appendix G**.

4.5.2 Mugga Lane Landfill: annual amount of waste received

Table 12: Mugga Lane Landfill annual waste received, by volume

Consolidation Category	C&I (m^3/yr)	C&D (m^3/yr)	Total (m^3/yr)
Garbage bags	175,730	1,040	176,771
Recyclables	58,835	13,846	72,681
Food / kitchen	13,162	22	13,185
Organic	16,541	5,021	21,562
Other Organic	8,302	401	8,704
Wood & wood products	38,309	33,614	71,923
Textile products	11,637	4,081	15,718
Other plastic/metal/glass	59,680	10,227	69,908
Polystyrene foam	18,480	1,099	19,579
Building materials	2,238	10,522	12,760
Hazardous	7,870	53	7,923
Other	184,662	5,008	189,669
Total	**595,447**	**84,935**	**680,381**

Table 12 shows the estimated annual volume of each waste category received at Mugga Lane Landfill. It is estimated that a total of 680,000 m^3 is received annually, of which 595,000m^3 is C&I and 85,000m^3 is C&D.

72,000 m^3 of recyclables, mainly cardboard enter the landfill annually.

Table 13: Mugga Lane Landfill annual waste received, by weight

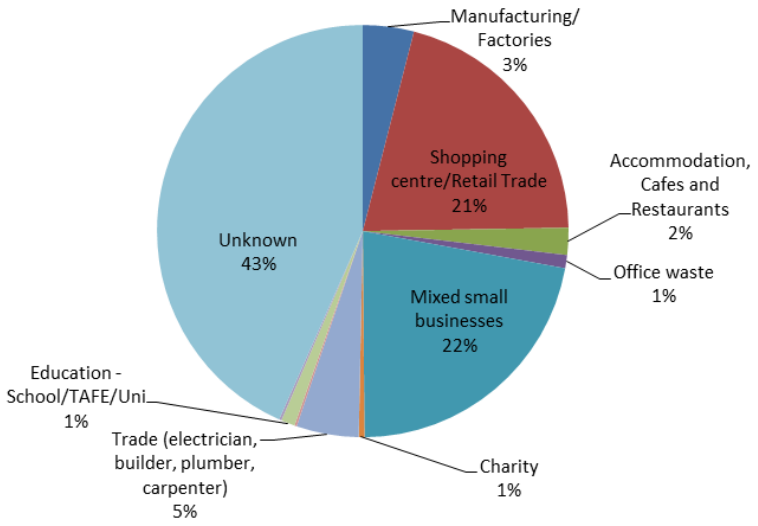
Consolidation Category	C&I (t/yr)	C&D (t/yr)	Overall (t/yr)
Other	42,228	548	42,776
Garbage bags	29,653	130	29,783
Recyclables	13,520	2,594	16,114
Wood & wood products	7,578	4,742	12,321
Food / kitchen	10,578	23	10,601
Building materials	1,938	8,506	10,444
Other plastic/metal/glass	5,710	983	6,693
Organic	3,287	537	3,824
Other Organic	2,902	53	2,955
Textile products	1,989	840	2,829
Polystyrene foam	931	38	969
Special	685	5	690
Total	**121,000**	**19,000**	**140,000**

Table 13 shows the estimated annual weight of each waste category received at Mugga Lane Landfill, out of the known total of 140,000 tonnes per year.

An estimated 16,000 tonnes of recyclables, almost all from C&I waste, enter the landfill annually.

4.5.3 Mugga Lane Landfill: waste received by business sector

Figure 22: Mugga Lane Landfill C&I waste received, by business sector

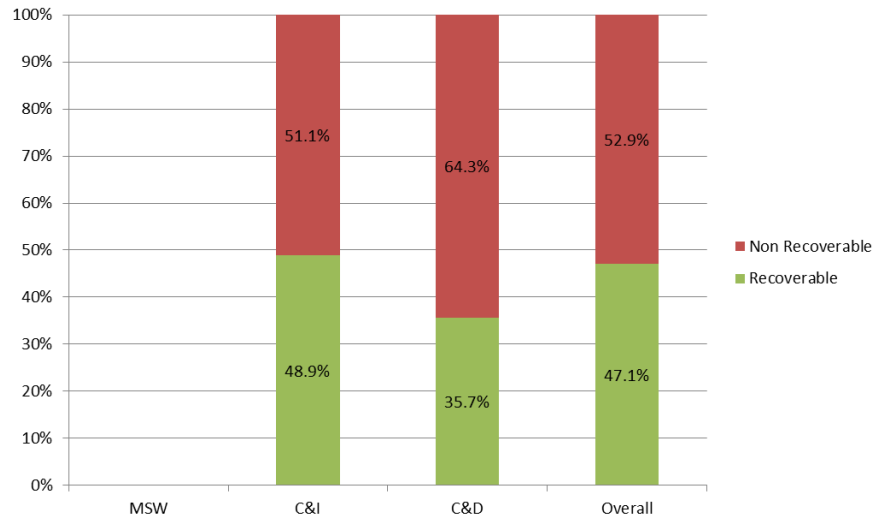


The main sources of C&I waste at Mugga Lane Landfill are mixed small businesses (22% of all waste) and shopping centres and retail (21%). However 43% of waste was from unknown sectors (driver did not know, or mixed load from many sectors).

Detail of tonnages and waste materials from each sector is in **Appendix J**.

4.5.4 Mugga Lane Landfill – potential for diversion from landfill

Figure 23: Mugga Lane Landfill potential diversion



Based on advice from ACT NOWaste a total of 47% of the waste received at Mugga Lane Landfill could be diverted through existing systems.

Almost half of all C&I waste and 36% of C&D waste could be diverted from landfill.

Table 14: Mugga Lane Landfill detail of potential diversion

	Recoverable, tonnes per year		
Material	**C&I**	**C&D**	**Overall**
Rock/dirt/soil	41,511	99	41,610
Cardboard	8,313	1,666	9,979
Vegetation / garden	3,260	352	3,612
Glass – containers	2,512	19	2,531
Concrete / cement	176	1,856	2,032
Paper – recyclable	1,030	63	1,093
Tiles	126	930	1,056
Bricks	50	859	909
Plastic – containers	866	15	881
Metals - ferrous steel	328	335	664
Metals –containers	290	314	604
Textiles – clothing/ cloth	346	14	360
Metals – non-ferrous	156	178	334
Covered furniture	198	68	266
Rubber - tyres	43	8	51
Total	**59,207**	**6,776**	**65,983**

Table 14 shows the estimated annual tonnages available for recovery at Mugga Lane Landfill, for each waste stream and each material.

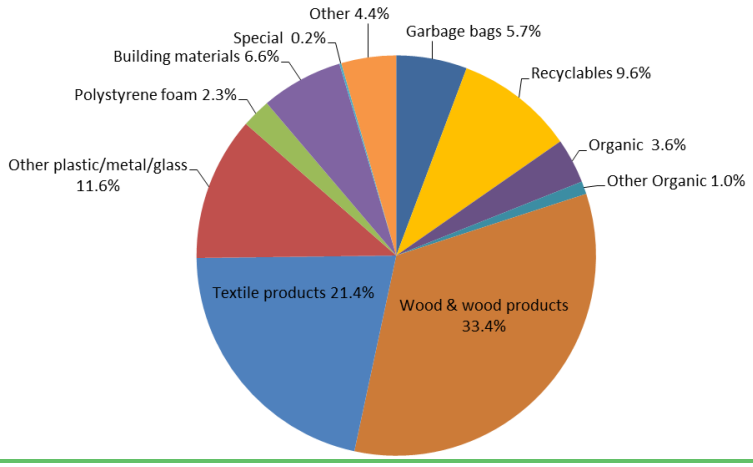
By far the greatest opportunity for recovery of waste is rock/dirt/soil from the C&I stream. Other significant opportunities are recovery of cardboard from C&I and C&D, vegetation and glass from C&I, and concrete/cement from C&D.

An estimated 66,000 tonnes per year is recoverable if all materials can be removed, and assuming all clothing and covered furniture is saleable.

4.6 Mugga Lane Transfer Station

4.6.1 Mugga Lane Transfer Station: waste composition

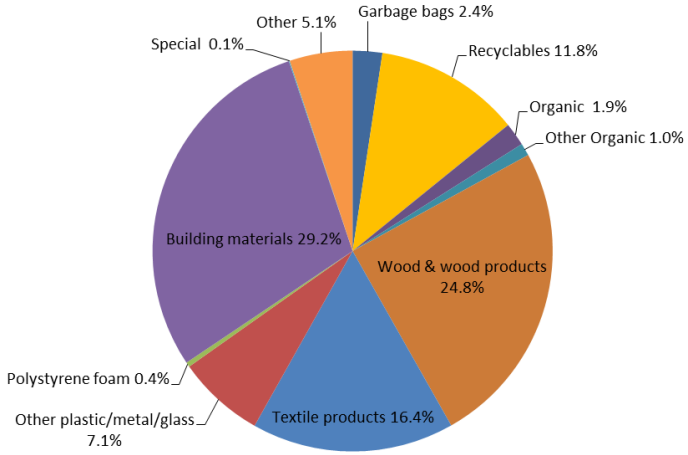
Figure 24: Mugga Lane Transfer Station waste composition, by volume



By volume, the waste received at Mugga Lane TS is dominated by wood and textile products, mainly carpet and covered furniture. These two categories make up over half of all waste received. Other significant categories include recyclables (this was mainly cardboard), and non-recyclable plastic, metal and glass.

Detailed results showing individual waste materials are in **Appendix G**.

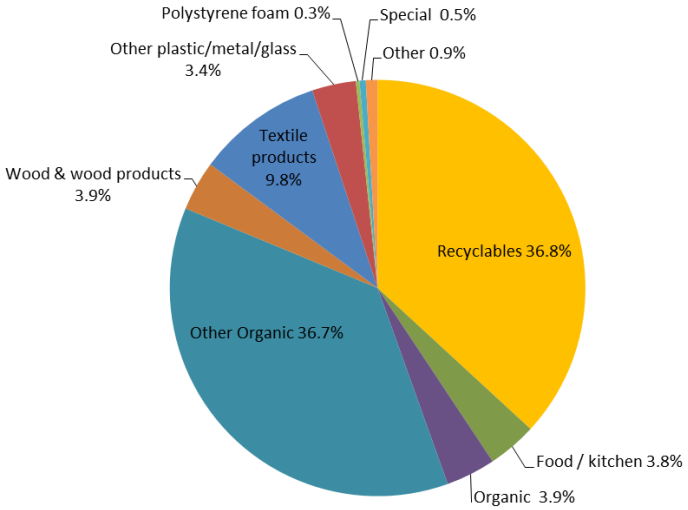
Figure 25: Mugga Lane Transfer Station waste composition, by weight, bags separate



By weight, building materials make up a larger proportion of the waste (29% by weight, compared to 7% by volume). Wood and textile products are the next most significant categories.

Detailed results showing individual waste materials are in **Appendix G.**

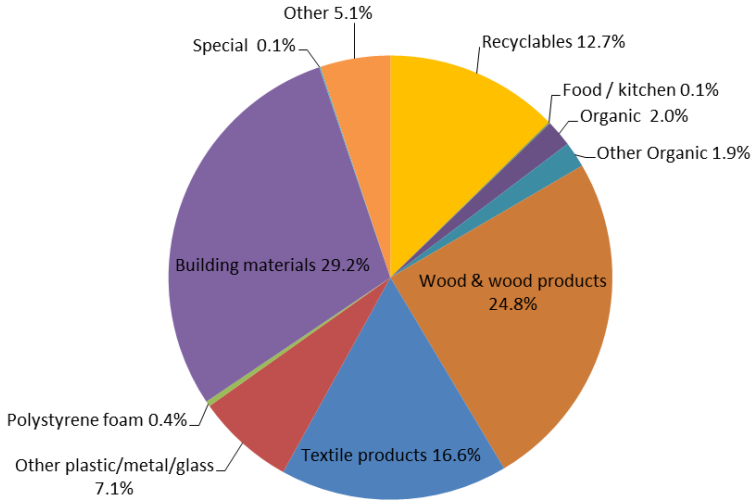
Figure 26: Mugga Lane Transfer Station garbage bag composition, by weight



Garbage bags received at Mugga Lane TS contain, on average, 37% recyclables (mainly cardboard) and 37% other organic material (mainly non-recyclable paper). Textile products (this was all clothing) make up 10%.

Detailed results showing individual waste materials are in **Appendix I**.

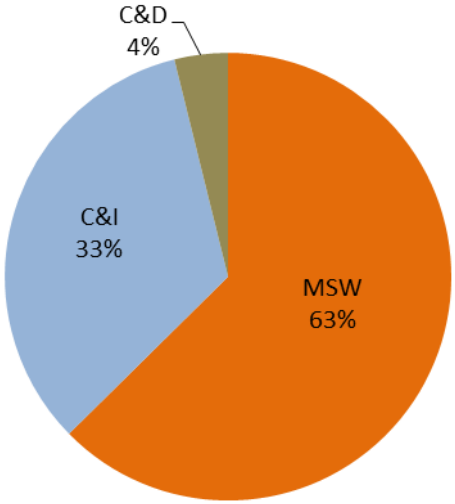
Figure 27: Mugga Lane Transfer Station waste composition, by weight, bags dispersed



If the contents of the garbage bags are distribut each category, the proportions of each categ weight do not change significantly.

Detailed results showing individual waste ma once bag contents are dispersed, are in **Appendix**

Figure 28: Mugga Lane Transfer Station waste received by volume, by waste type



Of the overall waste volume received at Mugga L 63% is from municipal sources, 33% from Com and Industrial (C&I) sources and 4% from Const and Demolition (C&D) sources.

Table 15: Mugga Lane Transfer Station waste composition by volume, by waste type

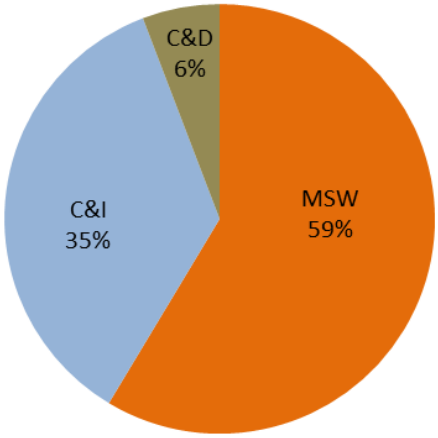
Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags	8.2%	1.5%	0.0%	5.7%
Recyclables	9.7%	10.3%	2.5%	9.6%
Food / kitchen	0.0%	0.0%	0.0%	0.0%
Organic	4.9%	1.6%	0.2%	3.6%
Other Organic	1.2%	0.9%	0.2%	1.0%
Wood & wood products	28.4%	41.5%	46.2%	33.4%
Textile products	23.1%	19.0%	13.4%	21.4%
Other plastic/metal/glass	12.5%	10.6%	5.7%	11.6%
Polystyrene foam	2.1%	3.0%	1.1%	2.3%
Building materials	5.2%	7.4%	23.4%	6.6%
Hazardous	0.2%	0.1%	0.0%	0.2%
Other	4.4%	4.2%	7.2%	4.4%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 15 shows the composition by volume o waste type received. MSW is dominated by textile products and non-recyclable plastic/metal,

42% of all C&I is wood, and 19% is textile product waste is mainly wood, building materials and products.

Detailed volumes of each waste material **Appendix G**.

Figure 29: Mugga Lane Transfer Station waste received by weight, by waste type



The overall waste types received, by weight, are to their proportions by volume, with MSW slightl and C&I and C&D slightly higher by weight t volume.

Table 16: Mugga Lane Transfer Station waste composition by weight, by waste type

Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags	3.7%	0.6%	0.0%	2.4%
Recyclables	12.7%	11.8%	2.3%	11.8%
Food / kitchen	0.0%	0.0%	0.0%	0.0%
Organic	2.7%	0.7%	0.1%	1.9%
Other Organic	1.2%	0.8%	0.1%	1.0%
Wood & wood products	22.0%	29.8%	22.1%	24.8%
Textile products	18.7%	14.4%	4.5%	16.4%
Other plastic/metal/glass	8.6%	5.4%	1.9%	7.1%
Polystyrene foam	0.4%	0.5%	0.1%	0.4%
Building materials	24.3%	31.9%	63.4%	29.2%
Hazardous	0.1%	0.0%	0.0%	0.1%
Other	5.7%	4.1%	5.4%	5.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Polystreyrene packaging

Mugga Lane Transfer Station: annual waste rece
shows the estimated composition by weight o
waste type received at Mugga Lane Transfer Stati

The proportion of building materials in each cate
much higher by weight than volume, and the pro
of wood is lower, though still significant.

Detailed volumes of each waste material
Appendix G.

Polystreyrene packaging

4.6.2 Mugga Lane Transfer Station: annual waste received

Table 17: Mugga Lane Transfer Station annual waste received, by volume

Consolidation Category	MSW	C&I	C&D	Overall
Wood & wood products	23,883	17,986	2,281	44,150
Textile products	19,454	8,256	663	28,373
Other plastic/metal/glass	10,497	4,604	284	15,384
Recyclables	8,136	4,455	126	12,718
Building materials	4,405	3,212	1,157	8,774
Garbage bags	6,921	659	0	7,580
Other	3,709	1,814	358	5,881
Organic	4,115	686	8	4,810
Polystyrene foam	1,763	1,284	55	3,103
Other Organic	971	389	11	1,370
Special	174	34	0	207
Food / kitchen	9	0	0	9
Total	**84,038**	**43,380**	**4,942**	**132,359**

Table 17 shows the estimated annual volume of each waste category received at Mugga Lane Transfer Station. It is estimated that a total of 132,000 m^3 is received annually, of which 84,000m^3 is MSW, 43,000m^3 is C&I, and 5,000m^3 is C&D.

Table 18: Mugga Lane Transfer Station annual waste received, by weight

Consolidation Category	MSW	C&I	C&D	Overall
Building materials	3,476	2,713	874	7,063
Wood & wood products	3,144	2,533	305	5,981
Textile products	2,665	1,225	62	3,953
Recyclables	1,809	1,007	31	2,847
Other plastic/metal/glass	1,224	456	27	1,707
Other	811	345	74	1,230
Garbage bags	526	50	0	576
Organic	385	62	1	449
Other Organic	177	65	1	243
Polystyrene foam	53	39	2	93
Hazardous	15	3	0	18
Food / kitchen	3	0	0	3
Total	**14,289**	**8,498**	**1,378**	**24,164**

Table 18 shows the estimated annual weight of each waste category received at Mugga Lane Transfer Station.

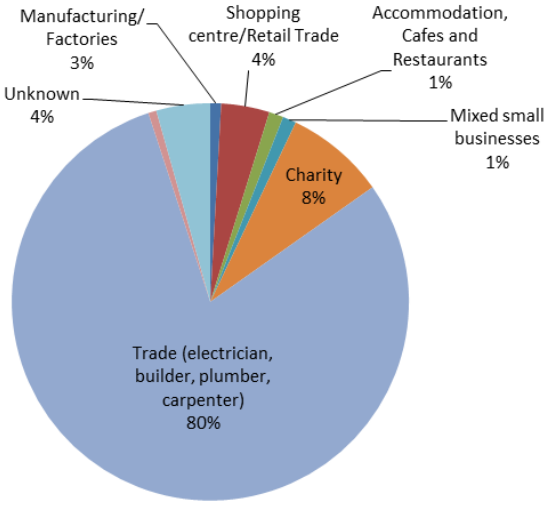
The main category of waste received is building materials (7,000 tonnes per year), followed by almost 6,000 tonnes of wood and wood products.

4.6.3 Mugga Lane Transfer Station: waste received by business sector

Figure 30: Mugga Lane Transfer Station C&I waste received, by business sector

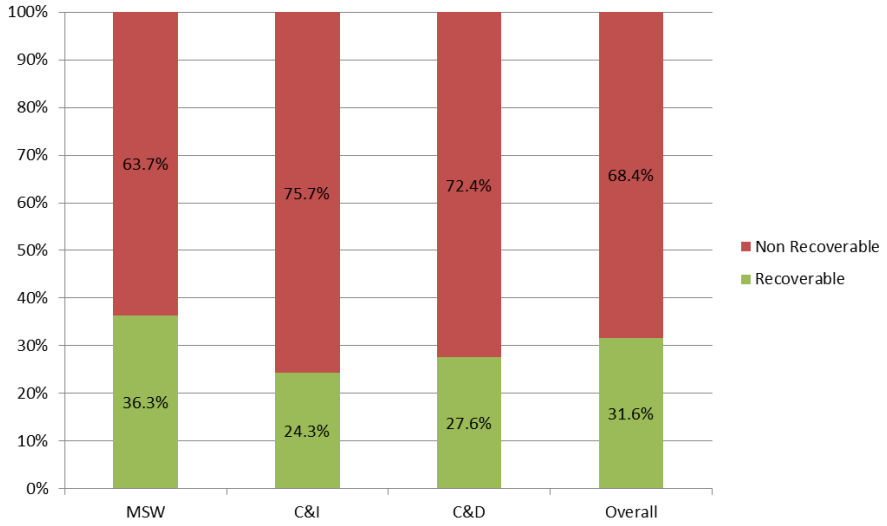
The main sources of C&I waste at Mugga Lane TS are trades (eg electricians, builders, plumbers, carpenters), who deliver 80% of all waste received.

Charities delivered 8% of the transfer station's waste – over half of charity waste was textile products. Detail of tonnages and waste materials from each sector is in **Appendix J**.



4.6.4 Mugga Lane Transfer Station – potential for diversion from landfill

Figure 31: Mugga Lane Transfer Station potential diversion



A total of 32% of the waste received at Mugga Lane Transfer Station could be diverted through existing systems.

36% of MSW, 25% of C&I and 28% of C&D that currently goes to landfill could be diverted.

Table 19: Mugga Lane Transfer Station detail of potential diversion

	Recoverable, tonnes per year			
Material	**MSW**	**C&I**	**C&D**	**Overall**
Cardboard	1,628	893	31	2,552
Tiles	486	204	191	881
Bricks	394	361	82	837
Rock/dirt/soil	622	141	65	828
Covered furniture	634	178	9	821
Concrete / cement	656	104	0	761
Vegetation / garden	360	62	0	422
Textiles – clothing/ cloth	220	36	1	258
Paper – recyclable	64	11	0	75
Glass – containers	47	24	0	71

Table 19 shows the estimated annual tonnages available for recovery at Mugga Lane Transfer Station, for each waste stream and each material.

Overall, the greatest opportunity for recovery of waste is cardboard from the MSW and C&I streams, followed by tiles and bricks from all three streams. Rock/dirt/soil can be recovered, particularly from

Metals - ferrous steel	12	26	0	38
Metals –containers	16	11	1	28
Plastic – containers	19	7	0	27
Rubber - tyres	15	1	0	16
Metals – non-ferrous	10	2	0	13
Total	**5,185**	**2,063**	**380**	**7,627**

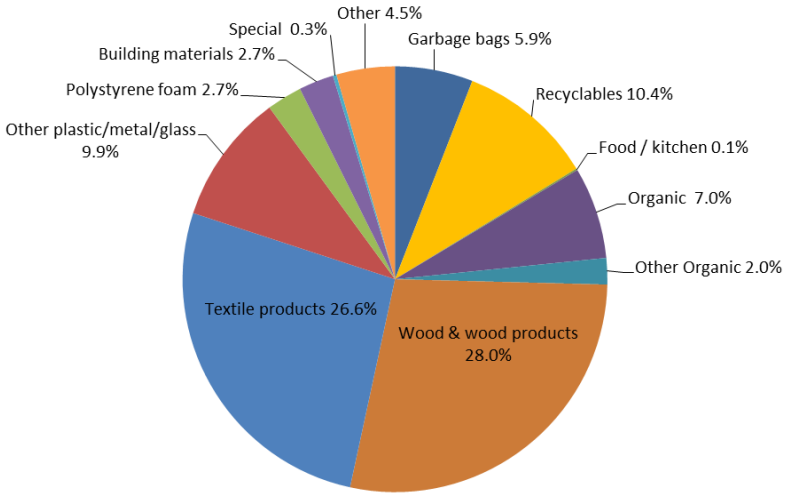
MSW. Covered furniture, concrete/cement and vegetation are also available in the MSW stream and to a lesser extent in the C&I stream.

An estimated 7,600 tonnes per year tonnes is recoverable if all materials can be removed, and assuming all clothing and covered furniture is saleable.

4.7 Mitchell Transfer Station

4.7.1 Mitchell Transfer Station: waste composition

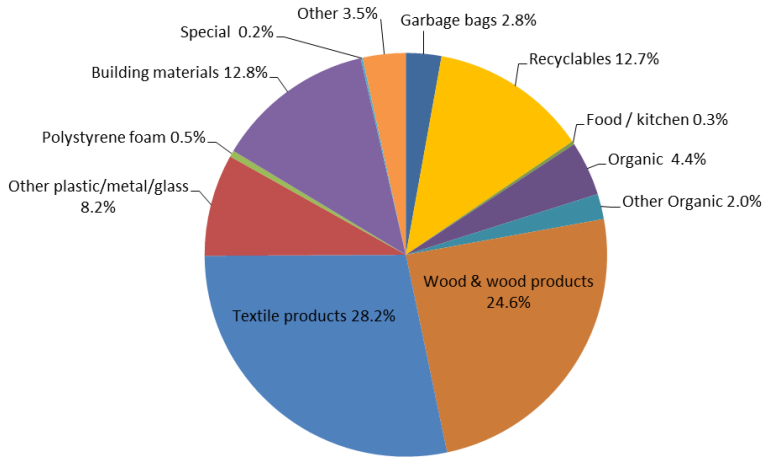
Figure 32: Mitchell Transfer Station waste composition, by volume



By volume, the waste received at Mitchell TS is dominated by wood and textile products, similar to Mugga Lane TS. These two categories make up over half of all waste received. Other significant categories include recyclables (this was mainly cardboard), non-recyclable plastic, metal and glass, and organics (7%, mainly vegetation).

Detailed results showing individual waste materials are in **Appendix G.**

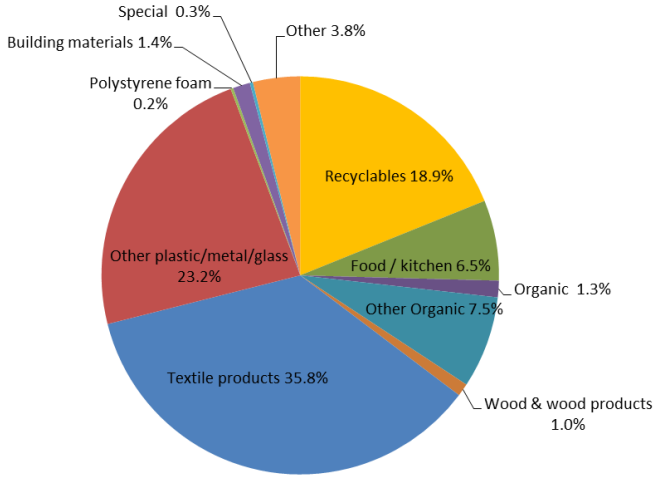
Figure 33: Mitchell Transfer Station waste composition, by weight, bags separate



By weight, building materials make up a larger proportion of the waste (13% by weight, compared to 3% by volume). Wood and textile products are the next most significant categories.

Detailed results showing individual waste materials are in **Appendix G**.

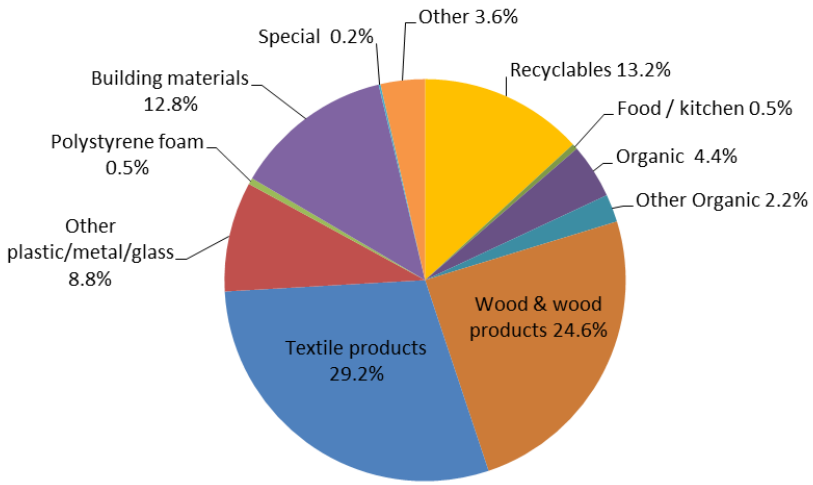
Figure 34: Mitchell Transfer Station garbage bag composition, by weight



Garbage bags received at Mitchell TS contain, on average, 36% textile products (this was all clothing), 23% non-recyclable plastic/metal/glass, and 19% recyclables (mainly paper and cardboard).

Detailed results showing individual waste materials are in **Appendix I**.

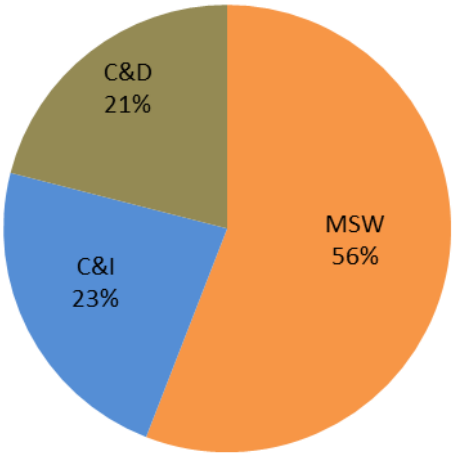
Figure 35: Mitchell Transfer Station waste composition, by weight, bags dispersed



If the contents of the garbage bags are distributed into each category, the proportions of each category by weight do not change significantly.

Detailed results showing individual waste materials once bag contents are dispersed, are in **Appendix G**.

Figure 36: Mitchell Transfer Station waste received by volume, by waste type



Of the overall waste volume received at Mitchell TS, 56% is from municipal sources, 23% from C&I sources and 21% from C&D sources.

Table 20: Mitchell Transfer Station waste composition by volume, by waste type

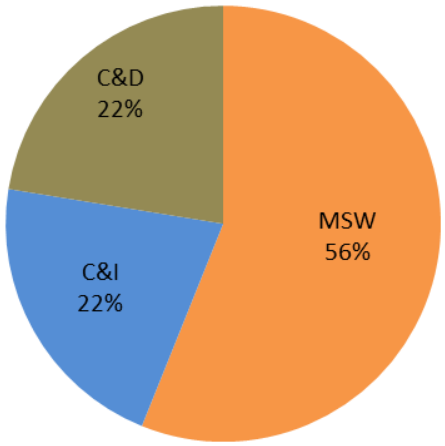
Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags	7.4%	6.6%	1.4%	5.9%
Recyclables	9.2%	10.7%	13.1%	10.4%
Food / kitchen	0.0%	0.0%	0.5%	0.1%
Organic	11.1%	2.1%	1.3%	7.0%
Other Organic	2.8%	0.4%	1.7%	2.0%
Wood & wood products	28.5%	23.2%	31.8%	28.0%
Textile products	27.2%	33.8%	17.3%	26.6%
Other plastic/metal/glass	7.4%	16.7%	9.1%	9.9%
Polystyrene foam	2.2%	3.5%	3.1%	2.7%
Building materials	1.9%	1.1%	6.3%	2.7%
Hazardous	0.4%	0.1%	0.0%	0.3%
Other	1.9%	1.6%	14.3%	4.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 20 shows the composition by volume of each waste type received. Over half of MSW is wood and textile products, and 11% is organics (almost all this is vegetation).

Over a third of all C&I is textile products, mainly covered furniture and clothing. 23% is wood. C&D waste is mainly wood, building materials and textile products.

Detailed volumes of each waste material are in **Appendix G**.

Figure 37: Mitchell Transfer Station waste received by weight, by waste type



The overall waste types received, by weight, are similar to their proportions by volume, C&I slightly lower and C&D slightly higher by weight than by volume.

Table 21: Mitchell Transfer Station waste composition by weight, by waste type

Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags	3.5%	3.4%	0.6%	2.8%
Recyclables	11.3%	14.5%	14.3%	12.7%
Food / kitchen	0.0%	0.0%	1.1%	0.3%
Organic	7.0%	1.3%	0.7%	4.4%
Other Organic	3.0%	0.4%	1.3%	2.0%
Wood & wood products	24.6%	22.1%	26.9%	24.6%
Textile products	32.2%	34.0%	12.8%	28.2%
Other plastic/metal/glass	6.4%	14.6%	6.6%	8.2%
Polystyrene foam	0.4%	0.7%	0.6%	0.5%
Building materials	9.2%	7.0%	27.4%	12.8%
Special	0.2%	0.1%	0.0%	0.2%
Other	2.3%	2.0%	7.7%	3.5%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Table 21 shows the composition by weight of each waste type received.

The proportion of building materials in each category is much higher by weight than volume.

Detailed volumes of each waste material are in **Appendix G**.

Carpet is consolidated as textile

4.7.2 Mitchell Transfer Station: annual waste received

Table 22: Mitchell Transfer Station annual waste received, by volume

Consolidation Category	MSW (m^3/yr)	C&I (m^3/yr)	C&D (m^3/yr)	Overall (m^3/yr)
Wood & wood products	5,872	1,976	2,457	10,305
Textile products	5,592	2,874	1,337	9,803
Recyclables	1,893	914	1,010	3,817
Other plastic/metal/glass	1,515	1,423	706	3,644
Organic	2,286	179	104	2,568
Garbage bags	1,517	559	107	2,183
Other	391	140	1,107	1,638
Polystyrene foam	445	301	241	987
Building materials	400	96	484	980
Other Organic	573	35	128	736
Special	90	8	2	101
Food / kitchen	3	0	42	45
Total	**20,578**	**8,504**	**7,726**	**36,808**

Table 22 shows the estimated annual volume of each waste category received at Mitchell Transfer Station. It is estimated that a total of 37,000 m^3 is received annually, of which 21,000m^3 is MSW, 9,000m^3 is C&I, and 8,000m^3 is C&D.

Table 23: Mitchell Transfer Station annual waste received, by weight

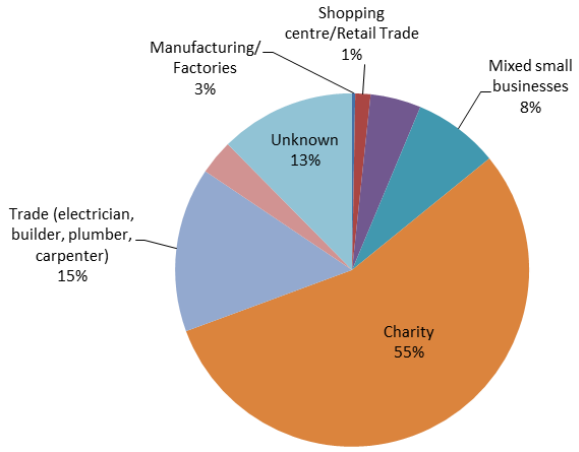
Consolidation Category	MSW (t/yr)	C&I (t/yr)	C&D (t/yr)	Overall (t/yr)
Textile products	1,053	426	167	1,646
Wood & wood products	804	276	353	1,433
Building materials	300	87	358	746
Recyclables	370	182	188	739
Other plastic/metal/glass	208	182	87	477
Organic	229	16	10	255
Other	76	26	100	202
Garbage bags	115	42	8	166
Other Organic	97	4	17	118
Polystyrene foam	13	9	7	30
Food / kitchen	1	0	15	15
Special	8	1	0	9
Total	**3,274**	**1,252**	**1,310**	**5,836**

Table 23 shows the estimated annual weight of each waste category received at Mitchell Transfer Station.

Of the estimated 6,000 tonnes per year, 1,600 tonnes is textile products and 1,400 tonnes is wood products, mainly from MSW.

4.7.3 Mitchell Transfer Station: waste received by business sector

Figure 38: Mitchell Transfer Station C&I waste received, by business sector



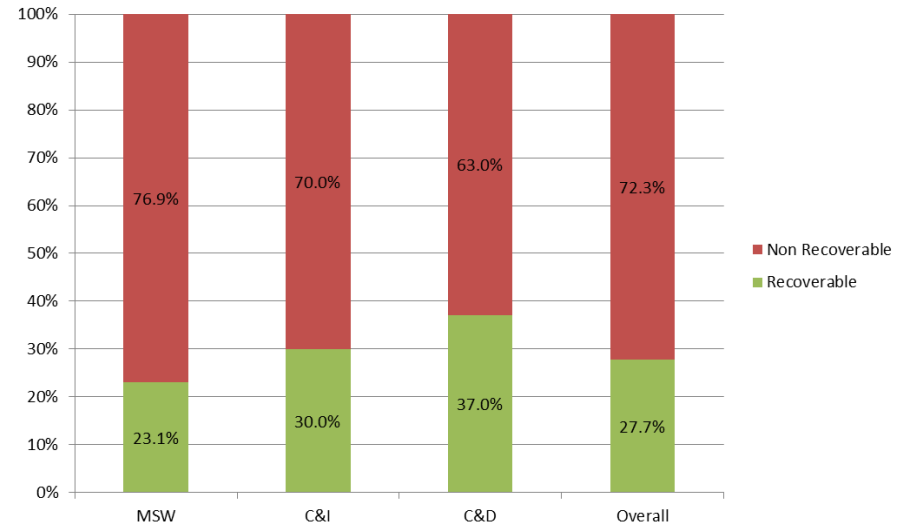
Over half of all C&I waste at Mitchell TS is delivered by charities. Most is textile products.

Trades are the next higher contributor of waste (15% of all waste by weight).

Detail of tonnages and waste materials from each sector is in **Appendix J.**

4.7.4 Mitchell Transfer Station – potential for diversion from landfill

Figure 39: Mitchell Transfer Station potential diversion



Based on advice from ACT NOWaste a total of 28% of the waste received at Mitchell Transfer Station could be diverted through existing systems.

23% of MSW, 30% of C&I and 37% of C&D that currently goes to landfill could be diverted.

Table 24: Mitchell Transfer Station detail of potential diversion

	Recoverable, tonnes per year			
Material	**MSW**	**C&I**	**C&D**	**Overall**
Cardboard	282	150	132	564
Covered furniture	201	87	11	298
Textiles – clothing/ cloth	42	84	31	157
Concrete / cement	40	15	99	154
Tiles	64	0	70	134
Bricks	17	0	83	100
Metals - ferrous steel	38	15	39	92
Rock/dirt/soil	26	8	6	40
Metals – non-ferrous	11	4	9	24
Paper – recyclable	10	11	0	22
Glass – containers	12	0	0	12
Plastic – containers	6	1	3	10
Metals –containers	7	0	1	9
Rubber - tyres	1	0	0	1
Total	**757**	**375**	**485**	**1,617**

Table 24 shows the estimated annual tonnages available for recovery at Mitchell Transfer Station, for each waste stream and each material.

Overall, the greatest opportunity for recovery of waste is cardboard from all streams, followed by covered furniture and clothing from the MSW and C&I streams. Concrete, tiles, bricks and soil are available for recovery, mainly from the MSW and C&D streams. There are more metals available for recovery at Mitchell than Mugga, even though overall waste volumes are lower at Mitchell compared to Mugga.

An estimated 1,600 tonnes per year is recoverable if all materials can be removed, and assuming all clothing and covered furniture is saleable.

5 KEY FINDINGS

5.1 Loads and vehicle entry times

- **Mugga Lane Landfill** – total vehicles assessed – 368 with an average of 74 vehicles per day with the busiest days on Thursday, Friday and Monday. Volume and weight peak on Friday at 2,211m3 and 438t. Vehicle movements peak between 7 to 8am and 12 to 1pm. Saturdays have a more consistent vehicle entry pattern.

- **Mugga Lane Transfer Station** - total vehicles assessed – 2213 with a peak of Saturday with 744 vehicles, 907m3 and 159t received. Peak vehicle entry times are between 11am and 4pm on both days of the weekend, reaching 108 vehicles between 3pm and 4pm on Sunday.

- **Mitchell Transfer Station** - is quiet Tuesday to Friday, and busier on weekends, peaking on Sundays with 247 vehicles, 247m3 and 40 tonnes delivered. Weekends are consistently busy between 10am and 5pm, peaking at 40 vehicles per hour between 11am and 1pm on Saturday.

5.2 Vehicle types

- **Mugga Lane Landfill** - Almost a third of vehicles using are tipper trucks, followed by frontlift trucks and roll on roll off trucks.

- **Mugga Lane Transfer Station** - 85% of all vehicles are cars or utes. Vans and trucks make up the remaining 15%. Utes represent over 40% of all vehicle entries.

- **Mitchell Transfer Station** - cars, utes and vans are the most common vehicle types. Trucks make up only 11% of vehicles using the facility.

- **Municipal waste** - arrives mainly in cars and utes.

- **Commercial and Industrial waste** – arrives mainly in frontlifts, tipper trucks and utes.

- **Construction and Demolition waste** - arrives mainly in tipper trucks and utes.

5.3 Overall waste composition

- **By volume** - Of the overall waste volume received, over three quarters (76%) is from C&I sources, MSW represents 12% and C&D waste is 12%. The waste received at the three facilities is dominated by wood, garbage bags and other material (this was mainly dirt/soil).

- **By weight** - Of the overall waste weight received, over three quarters (77%) is from C&I sources, C&D waste is 13% and MSW represents 10%.

- **Garbage bag** - contains on average 24% food, 23% recyclables and 31% other organic material (mainly non-recyclable paper). If the contents of the garbage bags are distributed into each category, the proportion of food waste reaches 11% of all waste by weight, and recyclables 16% (mostly cardboard).

5.4 Overall annual waste projections

- **Volume** - It is estimated that a total of almost 850,000 m^3 is received annually, of which 647,000m^3 is C&I, 98,000m^3 is C&D, and 105,000m^3 is MSW.

- **Weight** - it is estimated that 18,000t of MSW, 131,000t of C&I and 22,000 tonnes of C&D enter the facilities. Garbage bags and recyclables are the largest categories by weight, with almost 20,000 tonnes of recyclables received, mainly in the C&I stream.

- **Polystyrene** - an estimated 24,000m^3 (1.1 tonnes) of polystyrene enters the facilities each year.

5.5 Overall waste received by business sector

- The main sources of C&I waste at the three facilities are mixed small businesses (19% of all waste), shopping centres and retail (18%) and trades (16%).

5.6 Overall potential for landfill diversion

- A total of 44% or 75,000 tonnes per year (by weight) of the waste received at all facilities could be diverted from landfill using existing systems. The C&I stream has the most recovery potential, at 47%, followed by C&D (35%) and MSW (34%).

- Overall, the greatest opportunity for recovery of waste is rock and soil from C&I waste (42,000 tonnes). There is also a significant amount of cardboard available (13,000 tonnes), again mainly from C&I waste.

5.7 Mugga Lane Landfill

- **Waste composition by volume** - the waste received at Mugga Lane Landfill is dominated by garbage bags and other material (this was mainly dirt/soil).

- **Waste composition by weight -** the waste composition is similar to volume, except that building materials make up a larger proportion of the waste (8% by weight, compared to 2% by volume), as does food (8% by weight compared to 2% by volume).

- **Garbage bags** - at Mugga Lane Landfill bags contain, on average, 25% food, 23% recyclables and 31% other organic material (mainly non-recyclable paper). If the contents of the garbage bags are distributed into each category, the proportion of food waste reaches 13% of all waste by weight, and recyclables 16% (mostly cardboard).

- **Sectors** - Of the overall waste volume received at Mugga Lane Landfill, 88% is from C&I sources with the remainder from C&D sources. The proportions are similar by weight.

- **Annual waste projections** - It is estimated that a total of 680,000m^3 is received annually, of which 595,000m^3 is C&I and 85,000m^3 is C&D. 72,000m^3 (16,000 tonnes) of recyclables (mainly cardboard) and almost 20,000m^3 of polystyrene enter the landfill annually.

- **Waste received by business sector -** The main sources of C&I waste at Mugga Lane Landfill are mixed small businesses (22% of all waste) and shopping centres and retail (21%).

- **Potential for landfill diversion -** A total of 47% of the waste received at Mugga Lane Landfill could be diverted through existing systems. Almost half of all C&I waste and 36% of C&D waste could be diverted from landfill. By far the greatest opportunity for recovery of waste is rock/dirt/soil from the C&I stream. Other significant opportunities are recovery of cardboard from C&I and C&D specifically vegetation and glass from C&I, and concrete/cement from C&D. An estimated 66,000 tonnes per year is recoverable if all materials can be removed, and assuming all clothing and covered furniture is saleable.

5.8 Mugga Lane Transfer Station

- **Waste composition by volume** - the waste received at Mugga Lane TS is dominated by wood and textile products, mainly carpet and covered furniture.

- **Waste composition by weight** - building materials make up a larger proportion of the waste (29% by weight, compared to 7% by volume). Wood and textile products are the next most significant categories.

- **Garbage bags** - contain, on average, 37% recyclables (mainly cardboard) and 37% other organic material (mainly non-recyclable paper). If the contents of the garbage bags are distributed into each category, the proportions of each category by weight do not change significantly.

- **Sectors –** of the overall waste volume received 63% is from municipal sources, 33% from C&I sources and 4% from C&D sources. These proportions are similar by weight. By volume, MSW is dominated by wood, textile products and non-recyclable plastic/metal/glass. 42% of all C&I is wood, and 19% is textile products. C&D waste is mainly wood, building materials and textile products.

- **Annual waste projections** - It is estimated that a total of 132,000m^3 is received annually, of which 84,000m3 is MSW, 43,000m^3 is C&I, and 5,000m3 is C&D. An estimated 24,000 tonnes is received annually. By weight, the main category of waste received is building materials (7,000 tonnes per year), followed by almost 6,000 tonnes of wood and wood products.

- **Waste received by business sector -** The main sources of C&I waste at Mugga Lane TS are trades (eg electricians, builders, plumbers, carpenters), who deliver 80% of all waste received. Charities delivered 8% of the transfer station's waste – over half of charity waste was textile products.

- **Potential for landfill diversion -** A total of 32% of the waste received at Mugga Lane Transfer Station could be diverted through existing systems of which 36% of MSW, 25% of C&I and 28% of C&D that currently goes to landfill could be diverted. An estimated 7,600 tonnes per year tonnes is recoverable. The greatest opportunity for recovery of waste is cardboard from the MSW and C&I streams, followed by tiles

and bricks from all three streams. Rock/dirt/soil can be recovered, particularly from MSW. Covered furniture, concrete/cement and vegetation are also available in the MSW stream, and to a lesser extent in the C&I stream.

5.9 Mitchell Transfer Station

- **Waste composition by volume –** dominated by wood and textile products, similar to Mugga Lane TS.

- **Waste composition by weight** - building materials make up a larger proportion of the waste (13% by weight, compared to 3% by volume).

- **Garbage bags** - contain, on average, 36% textile products (all clothing), 23% non-recyclable plastic/metal/glass, and 19% recyclables (mainly paper and cardboard). If the contents of the garbage bags are distributed into each category, the proportions of each category by weight do not change significantly

- **Sectors** - Of the overall waste volume received at Mitchell TS, 56% is from municipal sources, 23% from Commercial and Industrial (C&I) sources and 21% from Construction and Demolition (C&D) sources. These proportions are similar by weight. By volume, over half of MSW is wood and textile products, and 11% is organics (almost all this is vegetation). Over a third of all C&I is textile products, mainly covered furniture and clothing and 23% is wood. C&D waste is mainly wood, building materials and textile products. The proportion of building materials in each category is much higher by weight than volume.

- **Annual waste projections** - It is estimated by volume that a total of 37,000m^3 is received annually, of which 21,000m^3 is MSW, 9,000m^3 is C&I, and 8,000m^3 is C&D. By weight an estimated 6,000 tonnes per year received, 1,600 tonnes is textile products and 1,400 tonnes is wood products, mainly from MSW.

- **Sectors** - Over half of all C&I waste at Mitchell TS is delivered by charities. Most is textile products. Trades are the next higher contributor of waste (15% of all waste by weight).

- **Potential for landfill diversion** – based on advice from ACT NOWaste a total of 28% of the waste received at Mitchell TS could be diverted through existing systems including 23% of MSW, 30% of C&I and 37% of C&D this is an estimated total of 1,600 tonnes per year is recoverable. Overall, the greatest opportunity for recovery of waste is cardboard from all streams, followed by covered furniture and clothing from the MSW and C&I streams. Concrete, tiles, bricks and soil are available for recovery, mainly from the MSW and C&D streams. There are more metals available for recovery at Mitchell than Mugga Lane TS, even though overall waste volumes are lower at Mitchell TS compared to Mugga Lane TS.

6 CONCLUSION

Waste audits provide an improved understanding of waste composition, waste profiles by sector, source and facility performance. The need for good data to inform decision making has never been more important with both the private and public sector making significant investments in new technology in the quest to increase diversion from landfill. Advanced Waste Treatment (AWT) planning and contractual reporting all rely on quality data.

Waste feedstock's vary significantly based on a number of factors including socio-demographics, consumption, packaging trends, climatic conditions, seasonality, geographic location and waste collection systems. These influences make predicting waste stream composition and generation rates over 15-20 time span a real challenge.

We understand that ACT Nowaste has appointed Project Director to advise government on how best to achieve the resource recovery targets documented in the ACT Waste Management Strategy. The data contained in this report together with the compositional data from the kerbside audit of the residual stream from both the ACT and Queanbeyan domestic waste audits and the MRF residual stream can be used to inform any future feasibility study, business case development, cost and revenue modelling and ultimately gate pricing.

While traditionally waste audits have been about understanding waste composition increasingly critical for any AWT or waste-to-energy plant is the need for even more granular data in the way of particle size distribution and moisture content of residual waste streams. These indicators inform equipment selection - sizing and selection of trommels and screens, plant configuration to allow more accurate prediction of material recovery. Moisture content predicts the potential volume/weight reduction from a process.

Any investor need confidence in the data today to ensure facility viability is maximised in the years ahead as all parties are seeking to reduce risks of the unknowns in their investment decisions. ACT holds an excellent repository of waste data as historical data that can used to both predict future trends based on likely scenarios and to assist in developing performance benchmarking for contracts.

This audit has highlighted several key opportunities for immediate improved waste diversion from each ACT waste disposal facilities. The following opportunities should be considered as part of the quest for greater resource recovery in line with the current waste strategy:

- For improved diversion at Mugga Lane Landfill that focus should be on C&D loads containing rock, soil, concrete and bricks and C&I loads containing cardboard and vegetation.

- For improved diversion at Mugga Lane Transfer Station loads containing quantities of cardboard from both MSW and C&I deliveries should be targeted as well as all loads containing tiles, bricks and concrete.

- For improved diversion at Mitchell Transfer Station loads high in cardboard, steel and non-ferrous metals need to be targeted given their commercial value along with

C&D materials from MSW and C&I streams and any covered furniture suitable for recovery by the Green Shed.

APPENDIX A - LANDFILL AUDIT VISUAL DATA SHEET

Date: _____ Site: _____ Sheet No: _____ Auditor _____

Entry Time												
Registration Number												
Type of vehicle/container												
Max Load Capacity – m^3												
Load type C&I / Dom / C&D/ Council												
Disposal Point												
Source (M S H O X C T L E U)												
Compaction	H	M	L	H	M	L	H	M	L	H	M	L
Garbage bags of rubbish												
Paper – recyclable*												
Paper - non-recyclable												
Cardboard*												
Food / Kitchen												
Nappies												
Dead animals												
Vegetation / garden*												
Stumps, logs *												
Wood - furniture, painted												
Wood - chipboard, MDF*												
Wood - pallets												
Wood -, untreated*												
Wood - board/pole, treated												
Covered furniture												
Carpet & underlay*												
Textiles – clothing/ cloth*												
Textiles – composite												
Mattresses – spring*												
Rubber - tyres	V	NO.		V	NO.		V	NO.		V	NO.	
Rubber/foam												
Glass – containers*												
Glass – plate/other												
Plastic – containers*												
Plastic – plastic bags & film												
Plastic - polystyrene foam												
Plastic – other												
Metals –containers*												
Metals - ferrous steel*												
Metals – non-ferrous*												
Concrete / cement*												
Bricks*												
Tiles*												
Plasterboard												

Clean fill								
Rock/dirt/soil								
Asphalt								
Sludge								
Toner cartridges*	V	NO.	V	NO.	V	NO.	V	NO.
Electrical large	V	NO.	V	NO.	V	NO.	V	NO.
Electrical	V	NO.	V	NO.	V	NO.	V	NO.
Electrical small	V	NO.	V	NO.	V	NO.	V	NO.
Insulation								
Hazardous / special								
Other –organic								

APPENDIX B - NSW OEH GUIDELINES FOR MATERIAL CATEGORIES

Material Categories	Definitions
Garbage bags of rubbish	Enclosed bags of garbage
Paper - Recyclable	Office paper, magazines, newspapers, brown craft paper,
Paper – Non recyclable	rolls of low-grade paper, hand towels, wet or heavily soiled paper & cardboard
Cardboard	Dry cardboard boxes, cardboard rolls, clean dry cardboard
Food / Kitchen	Pre and post-consumer fruit, vegetable, meat, fat, bone
Nappies	Nappies
Dead animals	Whole or large parts of dead animals such as road kill or abattoir waste
Vegetation / garden	Plant material, leaves, grass, small branches
Stumps/logs (10cm + dia)	Any large stumps and logs
Wood – pallets	Wooden pallets
Wood - furniture, painted	Wardrobes, painted fence posts, varnished furniture, wooden chairs, doors, etc
Wood - chipboard, MDF	Any engineered timber products, old kitchen benches, chipboard
Wood - board/pole,	untreated - timber without signs of treatment. timber off-cuts, pallets, posts
Wood - board/pole,	Treated - solid timber with visible signs of chemical treatment. CCA treated timber
Covered Furniture	Materials / Leather-covered chairs and couches,
Carpet & underlay	Rolls of carpet ,carpet off-cuts, carpet tiles, felt underlay, synthetic underlay
Textiles – clothing. cloth	Clothes, rags, rolls of fabric, fabric off-cuts
Textiles – composites	Shoes, bags, luggage, belts
Mattresses - spring	All spring mattresses bases and tops,
Rubber/ Foam	All tyres and inner-tubes, Rubber mats, tubes, washers, foam rubber, foam mattress
Glass – containers	Recyclable -glass bottles and jars
Glass – plate/other	Window glass, non-recyclable glass such as wine glasses
Plastic - containers	Recyclable - Plastic bottles and jars - food/beverage containers (PET & HDPE)
Plastic – bags & film	Film wrap, plastic bags (not filled)
Plastic - Polystyrene foam	Packaging foam
Plastic - other	All other plastics not elsewhere classified - ie plastic containers, plastic drums
Metals - ferrous steel	Any items that are mainly steel or iron
Metals - non-ferrous	Aluminium Siding, aluminium foil, copper wire
Concrete / cement	Any concrete, bags of cement dust, etc
Bricks	Full-bricks, broken bricks
Tiles	Roof tiles, whole or broken
Plasterboard	Plasterboard, gypsum
Rock/dirt/soil	Stones, uncontaminated soil, Inert material not elsewhere classified
Clean fill	Clean soil that could be used as cover
Asphalt	Asphalt, bitumen
Toner cartridges	Toner cartridges from photocopiers, printers, etc
Electrical – large	Whitegoods, fridges, freezers, washing machines, photocopiers,etc,
Electrical – medium	Televisions, microwaves, CD players, stereos, computers, monitors, printers
Electrical – small	Blenders, hair-dryers, clock radios
Insulation	Roofing insulation
Hazardous / special	Batteries, chemicals, clinical waste, contaminated material
Other organic	Anything that doesn't fit into the other categories that is predominantly made of material that would compost over time

APPENDIX C - VOLUME TO WEIGHT CONVERSION FACTORS (KG/M^3)

Material	Uncompacted	Semi compacted	Compacted
Garbage bags of rubbish	76	152	228
Paper – recyclable	76	152	228
Paper - non-recyclable	130	130	130
Cardboard	260	260	260
Food / Kitchen	343	514	1029
Nappies	55	92	130
Dead animals	156	156	156
Vegetation / garden	91	227	445
Stumps, logs	160	170	400
Wood - furniture, painted	120	160	360
Wood - chipboard, MDF	180	220	260
Wood - pallets	156	156	156
Wood -, untreated	100	150	350
Wood - board/pole, treated	100	150	350
Covered furniture	91	120	240
Carpet & underlay	90	100	450
Textiles – clothing/ cloth	91	91	240
Textiles – composite	200	200	200
Mattresses – spring	400	400	400
Rubber - tyres	260	260	260
Rubber/foam	280	280	280
Glass – containers	411	411	411
Glass – plate/other	72	72	72
Plastic – containers	39	78	156
Plastic – plastic bags & film	14	21	28
Plastic - polystyrene foam	30	30	90
Plastic – other	170	170	360
Metals –containers	120	120	120
Metals - ferrous steel	120	120	120
Metals – non-ferrous	139	139	139
Concrete / cement	830	830	830
Bricks	828	828	828
Tiles	470	550	640
Plasterboard	922	922	922
Clean fill	1048	1048	1048
Rock/dirt/soil	227	227	227
Asphalt	227	227	227
Sludge	680	680	680
Toner cartridges	265	265	265
Electrical large	105	113	120
Electrical medium	227	227	227

Electrical small	170	170	350
Insulation	87	170	348
Hazardous / special	87	170	348
Other –organic	343	514	1029
Other - inert	830	830	830

APPENDIX D - CONSOLIDATED CATEGORIES AND RECOVERABLE MATERIALS

Consolidated category	Material	Can it be diverted from landfill now?
Recyclables	Paper – recyclable	Yes
	Cardboard	Yes
	Glass – containers	Yes
	Plastic – containers	Yes
	Metals –containers	Yes
	Metals - ferrous steel	Yes
	Metals – non-ferrous	Yes
	Toner cartridges	Yes
	Electrical large	Yes
Food/kitchen	Food/kitchen	No
Garbage bags	Garbage bags	No
Polystyrene	Polystyrene	No
Organic	Vegetation / garden	Yes (Mugga only)
	Stumps, logs	No
Other organic	Paper - non-recyclable	No
	Nappies	No
	Dead animals	No
	Sludge	No
	Other –organic	No
Other plastic/metal/glass	Glass – plate/other	No
	Plastic – plastic bags & film	No
	Plastic – other	No
Wood/wood products	Wood - furniture, painted	No
	Wood - chipboard, MDF	No
	Wood - pallets	No
	Wood -, untreated	No
	Wood - board/pole, treated	No
Textile products	Covered furniture	Yes if good condition
	Carpet & underlay	No
	Textiles – clothing/ cloth	Yes if good condition
	Textiles – composite	No
	Mattresses – spring	No
	Rubber - tyres	Yes
	Rubber/foam	No
Building materials	Concrete / cement	Yes
	Bricks	Yes
	Tiles	Yes
	Plasterboard	No
Special	Hazardous/special waste	No
Other	Clean fill	No
	Rock/dirt/soil	Yes
	Asphalt	Yes
	Electrical	No
	Electrical small	No

	Insulation	No
	Other - inert	No

APPENDIX E – DATA – VEHICLE ENTRY TIMES

Vehicle entry times – overall

Entry Time	10/6/15	11/6/15	12/6/15	13/06/15	15/06/15	16/06/15	17/06/15	18/06/15	19/06/15	20/06/15	21/06/15	22/06/15	23/06/15	Overall
5:00-6:00	0	0	0	0	0	0	0	0	0	0	8	4	0	12
6:00-7:00	4	5	9	2	7	0	0	0	0	0	0	0	0	27
7:00-8:00	9	12	10	7	12	6	6	2	6	0	15	1	11	97
8:00-9:00	5	7	8	6	8	9	10	9	17	43	32	21	11	186
9:00-10:00	4	7	10	8	10	12	12	11	13	64	54	51	21	277
10:00-11:00	6	8	9	7	8	12	16	16	9	78	111	52	36	368
11:00-12:00	10	12	9	7	13	19	17	12	21	108	129	43	50	450
12:00-13:00	11	13	12	2	13	15	6	7	12	114	131	56	55	447
13:00-14:00	9	8	9	0	9	8	10	11	18	98	136	49	61	426
14:00-15:00	2	11	6	0	8	14	17	20	29	121	127	50	39	444
15:00-16:00	5	2	7	0	0	10	19	12	16	114	144	47	24	400
16:00-17:00	0	2	0	0	0	0	10	4	4	63	103	28	12	226
17:00-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00-19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**65**	**87**	**89**	**39**	**88**	**105**	**123**	**104**	**145**	**803**	**990**	**402**	**320**	**3360**

Vehicle entry times – Mugga Lane Landfill

Entry Time	10/6/15	11/6/15	12/6/15	13/06/15	15/06/15	16/06/15	17/06/15	18/06/15	19/06/15	20/06/15	21/06/15	22/06/15	23/06/15	Overall
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00-7:00	4	5	9	2	7	0	0	0	0	0	0	0	0	27
7:00-8:00	9	12	10	7	12	0	0	0	0	0	0	0	0	50
8:00-9:00	5	7	8	6	8	0	0	0	0	0	0	0	0	34
9:00-10:00	4	7	10	8	10	0	0	0	0	0	0	0	0	39
10:00-11:00	6	8	9	7	8	0	0	0	0	0	0	0	0	38
11:00-12:00	10	12	9	7	13	0	0	0	0	0	0	0	0	51
12:00-13:00	11	13	12	2	13	0	0	0	0	0	0	0	0	51
13:00-14:00	9	8	9	0	9	0	0	0	0	0	0	0	0	35
14:00-15:00	2	11	6	0	8	0	0	0	0	0	0	0	0	27
15:00-16:00	5	2	7	0	0	0	0	0	0	0	0	0	0	14
16:00-17:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
17:00-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00-19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**65**	**87**	**89**	**39**	**88**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**368**

Vehicle entry times – Mugga Lane Transfer Station

Entry Time	10/6/15	11/6/15	12/6/15	13/06/15	15/06/15	16/06/15	17/06/15	18/06/15	19/06/15	20/06/15	21/06/15	22/06/15	23/06/15	Overall
5:00-6:00	0	0	0	0	0	0	0	0	0	0	8	4	0	12
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00-8:00	0	0	0	0	0	6	4	6	0	0	10	0	8	34
8:00-9:00	0	0	0	0	0	16	4	10	8	34	20	10	8	110
9:00-10:00	0	0	0	0	0	12	10	12	8	52	38	38	14	184
10:00-11:00	0	0	0	0	0	8	6	16	12	62	80	30	28	242
11:00-12:00	0	0	0	0	0	20	16	16	12	68	100	30	34	296
12:00-13:00	0	0	0	0	0	12	14	2	6	74	96	36	34	274
13:00-14:00	0	0	0	0	0	14	6	8	10	60	102	28	53	281
14:00-15:00	0	0	0	0	0	22	12	10	18	84	98	44	32	320
15:00-16:00	0	0	0	0	0	14	8	16	10	82	108	36	18	292
16:00-17:00	0	0	0	0	0	4	0	10	4	40	84	20	6	168
17:00-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00-19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**128**	**80**	**106**	**88**	**556**	**744**	**276**	**235**	**2213**

Vehicle entry times – Mitchell Transfer Station

Entry Time	10/6/15	11/6/15	12/6/15	13/06/15	15/06/15	16/06/15	17/06/15	18/06/15	19/06/15	20/06/15	21/06/15	22/06/15	23/06/15	Overall
5:00-6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00-7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00-8:00	0	0	0	0	0	0	2	0	2	0	5	1	3	13
8:00-9:00	0	0	0	0	0	1	5	0	1	9	12	11	3	42
9:00-10:00	0	0	0	0	0	1	2	0	3	12	16	13	7	54
10:00-11:00	0	0	0	0	0	1	6	0	4	16	31	22	8	88
11:00-12:00	0	0	0	0	0	1	3	1	0	40	29	13	16	103
12:00-13:00	0	0	0	0	0	0	1	4	1	40	35	20	21	122
13:00-14:00	0	0	0	0	0	4	2	2	1	38	34	21	8	110
14:00-15:00	0	0	0	0	0	7	2	7	2	37	29	6	7	97
15:00-16:00	0	0	0	0	0	2	2	3	2	32	36	11	6	94
16:00-17:00	0	0	0	0	0	0	0	0	0	23	19	8	6	56
17:00-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00-19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**17**	**25**	**17**	**16**	**247**	**246**	**126**	**85**	**779**

APPENDIX F – DATA – WASTE RECEIVED BY DATE

Vehicle numbers by date by facility

Date	Mugga LF	Mugga TS	Mitch TS	Overall
10/06/2015	65	0	0	65
11/06/2015	87	0	0	87
12/06/2015	89	0	0	89
13/06/2015	39	0	0	39
15/06/2015	88	0	0	88
19/06/2015	0	128	17	145
16/06/2015	0	80	25	105
17/06/2015	0	106	17	123
18/06/2015	0	88	16	104
20/06/2015	0	556	247	803
21/06/2015	0	744	246	990
22/06/2015	0	276	126	402
23/06/2015	0	235	85	320
Total	**368**	**2,213**	**779**	**3,360**

Volume received by date by facility (m^3)

Date	Mugga LF	Mugga TS	Mitch TS	Overall
10/06/2015	1,149	0	0	1,149
11/06/2015	1,774	0	0	1,774
12/06/2015	2,211	0	0	2,211
13/06/2015	987	0	0	987
15/06/2015	1,643	0	0	1,643
19/06/2015	0	324	55	379
16/06/2015	0	207	131	338
17/06/2015	0	354	94	448
18/06/2015	0	323	55	378
20/06/2015	0	827	222	1,049
21/06/2015	0	907	247	1,155
22/06/2015	0	451	148	599
23/06/2015	0	360	91	450
Total	**7,765**	**3,752**	**1,043**	**12,560**

Weight received by date by facility (tonnes)

Date	Mugga LF	Mugga TS	Mitch TS	Overall
10/06/2015	240	0	0	240
11/06/2015	383	0	0	383
12/06/2015	438	0	0	438
13/06/2015	217	0	0	217
15/06/2015	316	0	0	316
19/06/2015	0	71	7	78
16/06/2015	0	45	25	70
17/06/2015	0	66	13	79
18/06/2015	0	67	7	75
20/06/2015	0	137	35	172
21/06/2015	0	159	40	200
22/06/2015	0	75	23	98
23/06/2015	0	63	15	78

Total	**1,595**	**685**	**165**	**2,445**

APPENDIX G – DATA – WASTE RECEIVED BY DETAILED WASTE CATEGORY

Volume received by detailed waste category, by facility

Material	Consolidation Category	Mugga LF m^3	Mugga TS m^3	Mitch TS m^3	Overall m^3
Garbage bags of rubbish	Garbage bags	2,056	215	62	2,333
Paper – recyclable*	Recyclables	71	28	8	107
Paper - non-recyclable	Other Organic	60	30	6	95
Cardboard*	Recyclables	435	278	61	775
Food / Kitchen	Food / kitchen	153	0	1	155
Nappies	Other Organic	2	1	0	3
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	229	132	70	431
Stumps, logs *	Organic	13	5	3	20
Wood - furniture, painted	Wood & wood products	116	445	101	662
Wood - chipboard, MDF*	Wood & wood products	305	341	107	753
Wood - pallets	Wood & wood products	138	131	14	284
Wood -, untreated*	Wood & wood products	192	239	39	470
Wood - board/pole, treated	Wood & wood products	25	96	30	150
Covered furniture	Textile products	26	256	93	375
Carpet & underlay*	Textile products	96	222	39	356
Textiles – clothing/ cloth*	Textile products	25	80	49	154
Textiles – composite	Textile products	17	146	40	203
Mattresses – spring*	Textile products	1	36	52	89
Rubber - tyres	Textile products	2	2	0	4
Rubber/foam	Textile products	8	62	5	75
Glass – containers*	Recyclables	72	5	1	77
Glass – plate/other	Other plastic/metal/glass	18	19	4	42
Plastic – containers*	Recyclables	101	19	7	128
Plastic – plastic bags & film	Other plastic/metal/glass	508	153	23	685
Plastic - polystyrene foam	Polystyrene foam	226	88	28	342
Plastic – other	Other plastic/metal/glass	269	264	76	608
Metals –containers*	Recyclables	54	7	2	62
Metals - ferrous steel*	Recyclables	59	9	22	90
Metals – non-ferrous*	Recyclables	26	3	5	33
Concrete / cement*	Building materials	24	26	5	56
Bricks*	Building materials	11	29	3	43
Tiles*	Building materials	22	53	8	83
Plasterboard	Building materials	72	141	11	224
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	2,133	103	5	2,242
Asphalt	Other	0	0	0	0
Sludge	Other Organic	39	0	0	39
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	3	12	2	16
Electrical	Other	5	2	2	8
Electrical small	Other	6	1	4	10
Insulation	Other	50	53	36	138
Hazardous / special	Special	92	6	16	114
Other –organic	Other Organic	0	9	2	11

Other - inert	Other	6	7	0	13
Total	**Total**	**7,765**	**3,752**	**1,043**	**12,560**

Weight received by detailed waste category, by facility

Material	Consolidation Category	Mugga LF tonnes	Mugga TS tonnes	Mitch TS tonnes	Overall tonnes
Garbage bags of rubbish	Garbage bags	347	16	5	368
Paper – recyclable*	Recyclables	13	2	1	15
Paper - non-recyclable	Other Organic	8	4	1	12
Cardboard*	Recyclables	113	72	16	201
Food / Kitchen	Food / kitchen	123	0	0	124
Nappies	Other Organic	0	0	0	0
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	41	12	7	60
Stumps, logs *	Organic	2	1	0	3
Wood - furniture, painted	Wood & wood products	16	54	12	82
Wood - chipboard, MDF*	Wood & wood products	66	61	19	146
Wood - pallets	Wood & wood products	22	20	2	44
Wood -, untreated*	Wood & wood products	28	24	4	56
Wood - board/pole, treated	Wood & wood products	4	10	3	17
Covered furniture	Textile products	3	23	8	35
Carpet & underlay*	Textile products	18	20	3	41
Textiles – clothing/ cloth*	Textile products	4	7	4	16
Textiles – composite	Textile products	3	29	8	41
Mattresses – spring*	Textile products	0	14	21	35
Rubber - tyres	Textile products	1	0	0	1
Rubber/foam	Textile products	2	17	1	21
Glass – containers*	Recyclables	29	2	0	32
Glass – plate/other	Other plastic/metal/glass	1	1	0	3
Plastic – containers*	Recyclables	10	1	0	11
Plastic – plastic bags & film	Other plastic/metal/glass	11	2	0	13
Plastic - polystyrene foam	Polystyrene foam	11	3	1	15
Plastic – other	Other plastic/metal/glass	64	45	13	122
Metals –containers*	Recyclables	6	1	0	7
Metals - ferrous steel*	Recyclables	7	1	3	11
Metals – non-ferrous*	Recyclables	4	0	1	5
Concrete / cement*	Building materials	20	22	4	46
Bricks*	Building materials	9	24	3	36
Tiles*	Building materials	11	25	4	39
Plasterboard	Building materials	66	130	10	206
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	484	23	1	509
Asphalt	Other	0	0	0	0
Sludge	Other Organic	26	0	0	26
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	1	0	2
Electrical	Other	1	0	0	2
Electrical small	Other	1	0	1	2
Insulation	Other	6	5	3	13
Hazardous / special	Special	8	1	2	11
Other –organic	Other Organic	0	3	1	4

Other - inert	Other	5	6	0	11
Total	**Total**	**1,595**	**685**	**165**	**2,445**

Volume received by waste type – all facilities

Material	Consolidation Category	MSW m^3	C&I m^3	C&D m^3	Overall m^3
Garbage bags of rubbish	Garbage bags	239	2,080	13	2,333
Paper – recyclable*	Recyclables	28	76	3	107
Paper - non-recyclable	Other Organic	22	65	8	95
Cardboard*	Recyclables	208	486	81	775
Food / Kitchen	Food / kitchen	0	153	1	155
Nappies	Other Organic	0	3	0	3
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	175	216	41	431
Stumps, logs *	Organic	7	2	12	20
Wood - furniture, painted	Wood & wood products	336	215	110	662
Wood - chipboard, MDF*	Wood & wood products	243	356	153	753
Wood - pallets	Wood & wood products	25	213	45	284
Wood -, untreated*	Wood & wood products	151	193	125	470
Wood - board/pole, treated	Wood & wood products	88	33	29	150
Covered furniture	Textile products	260	102	13	375
Carpet & underlay*	Textile products	139	157	60	356
Textiles – clothing/ cloth*	Textile products	82	61	11	154
Textiles – composite	Textile products	117	76	10	203
Mattresses – spring*	Textile products	59	29	1	89
Rubber - tyres	Textile products	2	2	0	4
Rubber/foam	Textile products	51	23	1	75
Glass – containers*	Recyclables	4	73	0	77
Glass – plate/other	Other plastic/metal/glass	8	19	14	42
Plastic – containers*	Recyclables	19	104	5	128
Plastic – plastic bags & film	Other plastic/metal/glass	106	529	50	685
Plastic - polystyrene foam	Polystyrene foam	63	260	19	342
Plastic – other	Other plastic/metal/glass	227	318	64	608
Metals –containers*	Recyclables	5	31	26	62
Metals - ferrous steel*	Recyclables	12	42	37	90
Metals – non-ferrous*	Recyclables	4	14	14	33
Concrete / cement*	Building materials	24	7	25	56
Bricks*	Building materials	14	13	16	43
Tiles*	Building materials	33	15	35	83
Plasterboard	Building materials	65	85	73	224
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	81	2,148	13	2,242
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	39	0	39
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	4	11	1	16
Electrical	Other	3	4	1	8
Electrical small	Other	4	4	3	10
Insulation	Other	25	40	73	138

Hazardous / special	Special	20	93	1	114
Other –organic	Other Organic	9	2	0	11
Other - inert	Other	4	10	0	13
Total	**Total**	**2,966**	**8,403**	**1,191**	**12,560**

Weight received by waste type, all facilities, garbage bags separate

Material	Consolidation Category	MSW tonnes	C&I tonnes	C&D tonnes	Overall tonnes
Garbage bags of rubbish	Garbage bags	18	348	2	368
Paper – recyclable*	Recyclables	2	13	1	15
Paper - non-recyclable	Other Organic	3	8	1	12
Cardboard*	Recyclables	54	126	21	201
Food / Kitchen	Food / kitchen	0	123	1	124
Nappies	Other Organic	0	0	0	0
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	16	40	4	60
Stumps, logs *	Organic	1	0	2	3
Wood - furniture, painted	Wood & wood products	40	28	13	82
Wood - chipboard, MDF*	Wood & wood products	44	73	29	146
Wood - pallets	Wood & wood products	4	33	7	44
Wood -, untreated*	Wood & wood products	15	28	13	56
Wood - board/pole, treated	Wood & wood products	9	5	3	17
Covered furniture	Textile products	24	10	1	35
Carpet & underlay*	Textile products	13	19	10	41
Textiles – clothing/ cloth*	Textile products	7	7	1	16
Textiles – composite	Textile products	23	15	2	41
Mattresses – spring*	Textile products	24	12	0	35
Rubber - tyres	Textile products	0	1	0	1
Rubber/foam	Textile products	14	6	0	21
Glass – containers*	Recyclables	2	30	0	32
Glass – plate/other	Other plastic/metal/glass	1	1	1	3
Plastic – containers*	Recyclables	1	10	0	11
Plastic – plastic bags & film	Other plastic/metal/glass	1	11	1	13
Plastic - polystyrene foam	Polystyrene foam	2	12	1	15
Plastic – other	Other plastic/metal/glass	39	72	11	122
Metals –containers*	Recyclables	1	4	3	7
Metals - ferrous steel*	Recyclables	1	5	4	11
Metals – non-ferrous*	Recyclables	1	2	2	5
Concrete / cement*	Building materials	20	5	21	46
Bricks*	Building materials	12	11	13	36
Tiles*	Building materials	16	7	17	39
Plasterboard	Building materials	60	78	68	206
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	18	487	3	509
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	26	0	26
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	1	0	2
Electrical	Other	1	1	0	2
Electrical small	Other	1	1	1	2
Insulation	Other	2	5	6	13
Hazardous / special	Special	3	8	0	11
Other –organic	Other Organic	3	1	0	4
Other - inert	Other	3	8	0	11
Total	**Total**	**498**	**1,685**	**262**	**2,445**

Weight received by waste type, all facilities, bag contents dispersed

Material	Consolidation Category	Mugga LF tonnes	Mugga TS tonnes	Mitch TS tonnes	Overall tonnes
Garbage bags of rubbish	Garbage bags	0	0	0	0
Paper – recyclable*	Recyclables	43	2	1	47
Paper - non-recyclable	Other Organic	80	10	1	90
Cardboard*	Recyclables	121	77	16	215
Food / Kitchen	Food / kitchen	208	1	1	210
Nappies	Other Organic	18	0	0	18
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	48	13	7	68
Stumps, logs *	Organic	2	1	0	3
Wood - furniture, painted	Wood & wood products	16	54	12	82
Wood - chipboard, MDF*	Wood & wood products	66	61	19	147
Wood - pallets	Wood & wood products	22	20	2	44
Wood -, untreated*	Wood & wood products	28	24	4	56
Wood - board/pole, treated	Wood & wood products	4	11	3	17
Covered furniture	Textile products	3	23	8	35
Carpet & underlay*	Textile products	18	20	3	41
Textiles – clothing/ cloth*	Textile products	12	8	6	26
Textiles – composite	Textile products	5	30	9	43
Mattresses – spring*	Textile products	0	14	21	35
Rubber - tyres	Textile products	1	0	0	1
Rubber/foam	Textile products	4	17	1	23
Glass – containers*	Recyclables	44	2	0	47
Glass – plate/other	Other plastic/metal/glass	2	1	0	4
Plastic – containers*	Recyclables	28	1	0	29
Plastic – plastic bags & film	Other plastic/metal/glass	47	2	1	50
Plastic - polystyrene foam	Polystyrene foam	13	3	1	17
Plastic – other	Other plastic/metal/glass	72	45	14	130
Metals –containers*	Recyclables	11	1	0	13
Metals - ferrous steel*	Recyclables	7	1	3	11
Metals – non-ferrous*	Recyclables	5	0	1	6
Concrete / cement*	Building materials	20	22	4	46
Bricks*	Building materials	9	24	3	36
Tiles*	Building materials	11	25	4	39
Plasterboard	Building materials	66	130	10	206
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	485	24	1	509
Asphalt	Other	0	0	0	0
Sludge	Other Organic	26	0	0	26
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	1	0	2
Electrical	Other	2	0	0	3
Electrical small	Other	2	0	1	2
Insulation	Other	6	5	3	13
Hazardous / special	Special	16	1	2	19
Other –organic	Other Organic	18	3	1	22
Other - inert	Other	6	6	0	13

Total	**Total**	**1,595**	**685**	**165**	**2,445**

Mugga Lane Landfill: Volume received by detailed waste category, by waste type

Material	Consolidation Category	MSW m^3	C&I m^3	C&D m^3	Overall m^3
Garbage bags of rubbish	Garbage bags	0	2,046	10	2,056
Paper – recyclable*	Recyclables	0	68	3	71
Paper - non-recyclable	Other Organic	0	56	4	60
Cardboard*	Recyclables	0	372	63	435
Food / Kitchen	Food / kitchen	0	153	0	153
Nappies	Other Organic	0	2	0	2
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	0	191	38	229
Stumps, logs *	Organic	0	2	11	13
Wood - furniture, painted	Wood & wood products	0	64	52	116
Wood - chipboard, MDF*	Wood & wood products	0	196	108	305
Wood - pallets	Wood & wood products	0	100	38	138
Wood -, untreated*	Wood & wood products	0	79	113	192
Wood - board/pole, treated	Wood & wood products	0	6	18	25
Covered furniture	Textile products	0	19	7	26
Carpet & underlay*	Textile products	0	65	31	96
Textiles – clothing/ cloth*	Textile products	0	24	1	25
Textiles – composite	Textile products	0	17	0	17
Mattresses – spring*	Textile products	0	1	0	1
Rubber - tyres	Textile products	0	2	0	2
Rubber/foam	Textile products	0	7	0	8
Glass – containers*	Recyclables	0	71	0	72
Glass – plate/other	Other plastic/metal/glass	0	10	8	18
Plastic – containers*	Recyclables	0	98	3	101
Plastic – plastic bags & film	Other plastic/metal/glass	0	464	44	508
Plastic - polystyrene foam	Polystyrene foam	0	215	11	226
Plastic – other	Other plastic/metal/glass	0	220	48	269
Metals –containers*	Recyclables	0	28	26	54
Metals - ferrous steel*	Recyclables	0	32	27	59
Metals – non-ferrous*	Recyclables	0	13	13	26
Concrete / cement*	Building materials	0	2	22	24
Bricks*	Building materials	0	1	10	11
Tiles*	Building materials	0	3	19	22
Plasterboard	Building materials	0	20	52	72
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	0	2,129	4	2,133
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	39	0	39
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	3	0	3
Electrical	Other	0	3	1	5
Electrical small	Other	0	3	3	6
Insulation	Other	0	9	40	50
Hazardous / special	Special	0	92	1	92
Other –organic	Other Organic	0	0	0	0
Other - inert	Other	0	6	0	6
Total	**Total**	**0**	**6,932**	**832**	**7,765**

Mugga Lane Landfill: Weight received by detailed waste category, by waste type

Material	Consolidation Category	MSW	C&I	C&D	Overall
Garbage bags of rubbish	Garbage bags	0	345	1	347
Paper – recyclable*	Recyclables	0	12	1	13
Paper - non-recyclable	Other Organic	0	7	1	8
Cardboard*	Recyclables	0	97	16	113
Food / Kitchen	Food / kitchen	0	123	0	123
Nappies	Other Organic	0	0	0	0
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	0	38	3	41
Stumps, logs *	Organic	0	0	2	2
Wood - furniture, painted	Wood & wood products	0	9	6	16
Wood - chipboard, MDF*	Wood & wood products	0	45	21	66
Wood - pallets	Wood & wood products	0	16	6	22
Wood -, untreated*	Wood & wood products	0	17	11	28
Wood - board/pole, treated	Wood & wood products	0	2	2	4
Covered furniture	Textile products	0	2	1	3
Carpet & underlay*	Textile products	0	11	7	18
Textiles – clothing/ cloth*	Textile products	0	4	0	4
Textiles – composite	Textile products	0	3	0	3
Mattresses – spring*	Textile products	0	0	0	0
Rubber - tyres	Textile products	0	1	0	1
Rubber/foam	Textile products	0	2	0	2
Glass – containers*	Recyclables	0	29	0	29
Glass – plate/other	Other plastic/metal/glass	0	1	1	1
Plastic – containers*	Recyclables	0	10	0	10
Plastic – plastic bags & film	Other plastic/metal/glass	0	10	1	11
Plastic - polystyrene foam	Polystyrene foam	0	11	0	11
Plastic – other	Other plastic/metal/glass	0	56	8	64
Metals –containers*	Recyclables	0	3	3	6
Metals - ferrous steel*	Recyclables	0	4	3	7
Metals – non-ferrous*	Recyclables	0	2	2	4
Concrete / cement*	Building materials	0	2	18	20
Bricks*	Building materials	0	1	8	9
Tiles*	Building materials	0	1	9	11
Plasterboard	Building materials	0	18	48	66
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	0	483	1	484
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	26	0	26
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	0	0	0
Electrical	Other	0	1	0	1
Electrical small	Other	0	1	0	1
Insulation	Other	0	2	4	6
Hazardous / special	Special	0	8	0	8
Other –organic	Other Organic	0	0	0	0
Other - inert	Other	0	5	0	5

Total	**Total**	**0**	**1,409**	**186**	**1,595**

Mugga Lane Transfer Station: Volume received by detailed waste category, by waste type

Material	Consolidation Category	MSW m^3	C&I m^3	C&D m^3	Overall m^3
Garbage bags of rubbish	Garbage bags	196	19	0	215
Paper – recyclable*	Recyclables	24	4	0	28
Paper - non-recyclable	Other Organic	21	9	0	30
Cardboard*	Recyclables	177	97	3	278
Food / Kitchen	Food / kitchen	0	0	0	0
Nappies	Other Organic	0	0	0	1
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	112	19	0	132
Stumps, logs *	Organic	5	0	0	5
Wood - furniture, painted	Wood & wood products	287	124	34	445
Wood - chipboard, MDF*	Wood & wood products	183	140	19	341
Wood - pallets	Wood & wood products	19	112	0	131
Wood -, untreated*	Wood & wood products	120	112	6	239
Wood - board/pole, treated	Wood & wood products	68	22	6	96
Covered furniture	Textile products	197	56	3	256
Carpet & underlay*	Textile products	118	89	15	222
Textiles – clothing/ cloth*	Textile products	69	11	0	80
Textiles – composite	Textile products	102	44	0	146
Mattresses – spring*	Textile products	17	19	0	36
Rubber - tyres	Textile products	2	0	0	2
Rubber/foam	Textile products	47	15	0	62
Glass – containers*	Recyclables	3	2	0	5
Glass – plate/other	Other plastic/metal/glass	7	9	4	19
Plastic – containers*	Recyclables	14	5	0	19
Plastic – plastic bags & film	Other plastic/metal/glass	97	54	2	153
Plastic - polystyrene foam	Polystyrene foam	50	36	2	88
Plastic – other	Other plastic/metal/glass	193	68	3	264
Metals –containers*	Recyclables	4	3	0	7
Metals - ferrous steel*	Recyclables	3	6	0	9
Metals – non-ferrous*	Recyclables	2	0	0	3
Concrete / cement*	Building materials	22	4	0	26
Bricks*	Building materials	13	12	3	29
Tiles*	Building materials	29	12	12	53
Plasterboard	Building materials	60	63	18	141
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	78	18	8	103
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	3	8	0	12
Electrical	Other	2	0	0	2
Electrical small	Other	1	0	0	1
Insulation	Other	21	30	2	53
Hazardous / special	Special	5	1	0	6
Other –organic	Other Organic	7	2	0	9
Other - inert	Other	3	4	0	7
Total	**Total**	**2,382**	**1,230**	**140**	**3,752**

Mugga Lane Transfer Station: Weight received by detailed waste category, by waste type

Material	Consolidation Category	MSW tonnes	C&I tonnes	C&D tonnes	Overall tonnes
Garbage bags of rubbish	Garbage bags	15	1	0	16
Paper – recyclable*	Recyclables	2	0	0	2
Paper - non-recyclable	Other Organic	3	1	0	4
Cardboard*	Recyclables	46	25	1	72
Food / Kitchen	Food / kitchen	0	0	0	0
Nappies	Other Organic	0	0	0	0
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	10	2	0	12
Stumps, logs *	Organic	1	0	0	1
Wood - furniture, painted	Wood & wood products	34	15	4	54
Wood - chipboard, MDF*	Wood & wood products	33	25	3	61
Wood - pallets	Wood & wood products	3	17	0	20
Wood -, untreated*	Wood & wood products	12	11	1	24
Wood - board/pole, treated	Wood & wood products	7	3	1	10
Covered furniture	Textile products	18	5	0	23
Carpet & underlay*	Textile products	11	8	1	20
Textiles – clothing/ cloth*	Textile products	6	1	0	7
Textiles – composite	Textile products	20	9	0	29
Mattresses – spring*	Textile products	7	8	0	14
Rubber - tyres	Textile products	0	0	0	0
Rubber/foam	Textile products	13	4	0	17
Glass – containers*	Recyclables	1	1	0	2
Glass – plate/other	Other plastic/metal/glass	0	1	0	1
Plastic – containers*	Recyclables	1	0	0	1
Plastic – plastic bags & film	Other plastic/metal/glass	1	1	0	2
Plastic - polystyrene foam	Polystyrene foam	1	1	0	3
Plastic – other	Other plastic/metal/glass	33	12	0	45
Metals –containers*	Recyclables	0	0	0	1
Metals - ferrous steel*	Recyclables	0	1	0	1
Metals – non-ferrous*	Recyclables	0	0	0	0
Concrete / cement*	Building materials	19	3	0	22
Bricks*	Building materials	11	10	2	24
Tiles*	Building materials	14	6	5	25
Plasterboard	Building materials	55	58	17	130
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	18	4	2	23
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	1	0	1
Electrical	Other	0	0	0	0
Electrical small	Other	0	0	0	0
Insulation	Other	2	3	0	5
Hazardous / special	Special	0	0	0	1
Other –organic	Other Organic	2	1	0	3

Other - inert	Other	3	3	0	6
Total	**Total**	**405**	**241**	**39**	**685**

Mitchell Transfer Station: Volume received by detailed waste category, by waste type

Material	Consolidation Category	MSW m^3	C&I m^3	C&D m^3	Overall m^3
Garbage bags of rubbish	Garbage bags	43	16	3	62
Paper – recyclable*	Recyclables	4	4	0	8
Paper - non-recyclable	Other Organic	1	1	4	6
Cardboard*	Recyclables	31	16	14	61
Food / Kitchen	Food / kitchen	0	0	1	1
Nappies	Other Organic	0	0	0	0
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	62	5	3	70
Stumps, logs *	Organic	2	0	0	3
Wood - furniture, painted	Wood & wood products	49	28	24	101
Wood - chipboard, MDF*	Wood & wood products	60	20	27	107
Wood - pallets	Wood & wood products	6	1	7	14
Wood -, untreated*	Wood & wood products	31	2	6	39
Wood - board/pole, treated	Wood & wood products	20	5	5	30
Covered furniture	Textile products	63	27	3	93
Carpet & underlay*	Textile products	21	3	14	39
Textiles – clothing/ cloth*	Textile products	13	26	10	49
Textiles – composite	Textile products	16	15	10	40
Mattresses – spring*	Textile products	42	9	1	52
Rubber - tyres	Textile products	0	0	0	0
Rubber/foam	Textile products	4	1	0	5
Glass – containers*	Recyclables	1	0	0	1
Glass – plate/other	Other plastic/metal/glass	1	0	3	4
Plastic – containers*	Recyclables	5	1	2	7
Plastic – plastic bags & film	Other plastic/metal/glass	8	11	4	23
Plastic - polystyrene foam	Polystyrene foam	13	9	7	28
Plastic – other	Other plastic/metal/glass	34	29	13	76
Metals –containers*	Recyclables	2	0	0	2
Metals - ferrous steel*	Recyclables	9	4	9	22
Metals – non-ferrous*	Recyclables	2	1	2	5
Concrete / cement*	Building materials	1	1	3	5
Bricks*	Building materials	1	0	3	3
Tiles*	Building materials	4	0	4	8
Plasterboard	Building materials	6	2	3	11
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	3	1	1	5
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	1	0	1	2
Electrical	Other	1	1	0	2
Electrical small	Other	3	1	0	4
Insulation	Other	4	2	31	36

Hazardous / special	Special	16	0	0	16
Other –organic	Other Organic	2	0	0	2
Other - inert	Other	0	0	0	0
Total	**Total**	**583**	**241**	**219**	**1,043**

Mitchell Transfer Station: Weight received by detailed waste category, by waste type

Material	Consolidation Category	MSW tonnes	C&I tonnes	C&D tonnes	Overall tonnes
Garbage bags of rubbish	Garbage bags	3	1	0	5
Paper – recyclable*	Recyclables	0	0	0	1
Paper - non-recyclable	Other Organic	0	0	0	1
Cardboard*	Recyclables	8	4	4	16
Food / Kitchen	Food / kitchen	0	0	0	0
Nappies	Other Organic	0	0	0	0
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	6	0	0	7
Stumps, logs *	Organic	0	0	0	0
Wood - furniture, painted	Wood & wood products	6	3	3	12
Wood - chipboard, MDF*	Wood & wood products	11	4	5	19
Wood - pallets	Wood & wood products	1	0	1	2
Wood -, untreated*	Wood & wood products	3	0	1	4
Wood - board/pole, treated	Wood & wood products	2	0	1	3
Covered furniture	Textile products	6	2	0	8
Carpet & underlay*	Textile products	2	0	1	3
Textiles – clothing/ cloth*	Textile products	1	2	1	4
Textiles – composite	Textile products	3	3	2	8
Mattresses – spring*	Textile products	17	4	0	21
Rubber - tyres	Textile products	0	0	0	0
Rubber/foam	Textile products	1	0	0	1
Glass – containers*	Recyclables	0	0	0	0
Glass – plate/other	Other plastic/metal/glass	0	0	0	0
Plastic – containers*	Recyclables	0	0	0	0
Plastic – plastic bags & film	Other plastic/metal/glass	0	0	0	0
Plastic - polystyrene foam	Polystyrene foam	0	0	0	1
Plastic – other	Other plastic/metal/glass	6	5	2	13
Metals –containers*	Recyclables	0	0	0	0
Metals - ferrous steel*	Recyclables	1	0	1	3
Metals – non-ferrous*	Recyclables	0	0	0	1
Concrete / cement*	Building materials	1	0	3	4
Bricks*	Building materials	0	0	2	3
Tiles*	Building materials	2	0	2	4
Plasterboard	Building materials	5	2	3	10
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	1	0	0	1
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	0	0	0
Electrical	Other	0	0	0	0

Electrical small	Other	0	0	0	1
Insulation	Other	0	0	3	3
Hazardous / special	Special	2	0	0	2
Other –organic	Other Organic	1	0	0	1
Other - inert	Other	0	0	0	0
Total	**Total**	**93**	**35**	**37**	**165**

APPENDIX H – DATA – LOADS BY VEHICLE TYPE

Vehicle type by facility

VehicleType	Mugga LF	Mugga TS	Mitch TS	Overall
4WD	0	28	39	67
4WD with trailer	0	146	59	205
Car	0	134	85	219
Car with trailer	0	244	130	374
Flat bed	7	38	16	61
Front lift truck	76	0	0	76
Pantech	7	44	31	82
Rear lift truck	43	0	0	43
Roll on Roll off	77	0	0	77
Station wagon	0	156	25	181
Skip	37	0	6	43
Station wagon with trailer	0	244	34	278
Tipper	115	120	30	265
Ute	1	587	106	694
Ute with box trailer	0	12	0	12
Ute with trailer	3	320	76	399
Van	0	100	102	202
Van with box trailer	0	2	0	2
Van with trailer	2	38	40	80
Total	**368**	**2,213**	**779**	**3,360**

Vehicle type by waste type

VehicleType	MSW	C&I	C&D	Overall
4WD	65	0	2	67
4WD with trailer	191	2	12	205
Car	219	0	0	219
Car with trailer	358	11	5	374
Flat bed	22	29	10	61
Front lift truck	0	76	0	76
Pantech	18	59	5	82
Rear lift truck	0	42	1	43
Roll on Roll off	0	43	34	77
Station wagon	179	2	0	181
Skip	0	21	22	43
Station wagon with trailer	270	8	0	278
Tipper	29	184	52	265
Ute	564	101	29	694
Ute with box trailer	0	12	0	12
Ute with trailer	286	84	29	399
Van	127	66	9	202
Van with box trailer	0	2	0	2
Van with trailer	56	17	7	80
Total	**2,384**	**759**	**217**	**3,360**

APPENDIX I – DATA – GARBAGE BAG COMPOSITION

Unit: tonnes

Material	Consolidation Category	Mugga LF	Mugga TS	Mitch TS	Overall
Garbage bags of rubbish	Garbage bags	0	0	0	0
Paper – recyclable*	Recyclables	31	0	0	32
Paper - non-recyclable	Other Organic	72	6	0	78
Cardboard*	Recyclables	8	5	0	14
Food / Kitchen	Food / kitchen	85	1	0	86
Nappies	Other Organic	18	0	0	18
Dead animals	Other Organic	0	0	0	0
Vegetation / garden*	Organic	7	1	0	7
Stumps, logs *	Organic	0	0	0	0
Wood - furniture, painted	Wood & wood products	0	0	0	0
Wood - chipboard, MDF*	Wood & wood products	0	0	0	0
Wood - pallets	Wood & wood products	0	0	0	0
Wood -, untreated*	Wood & wood products	0	0	0	0
Wood - board/pole, treated	Wood & wood products	0	1	0	1
Covered furniture	Textile products	0	0	0	0
Carpet & underlay*	Textile products	0	0	0	0
Textiles – clothing/ cloth*	Textile products	8	1	1	10
Textiles – composite	Textile products	1	0	0	2
Mattresses – spring*	Textile products	0	0	0	0
Rubber - tyres	Textile products	0	0	0	0
Rubber/foam	Textile products	1	0	0	2
Glass – containers*	Recyclables	15	0	0	15
Glass – plate/other	Other plastic/metal/glass	1	0	0	1
Plastic – containers*	Recyclables	18	0	0	18
Plastic – plastic bags & film	Other plastic/metal/glass	36	0	0	37
Plastic - polystyrene foam	Polystyrene foam	2	0	0	2
Plastic – other	Other plastic/metal/glass	8	0	1	9
Metals –containers*	Recyclables	5	0	0	5
Metals - ferrous steel*	Recyclables	0	0	0	0
Metals – non-ferrous*	Recyclables	1	0	0	1
Concrete / cement*	Building materials	0	0	0	0
Bricks*	Building materials	0	0	0	0
Tiles*	Building materials	0	0	0	0
Plasterboard	Building materials	0	0	0	0
Clean fill	Other	0	0	0	0
Rock/dirt/soil	Other	0	0	0	1
Asphalt	Other	0	0	0	0
Sludge	Other Organic	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0
Electrical large	Recyclables	0	0	0	0
Electrical	Other	1	0	0	1
Electrical small	Other	0	0	0	1
Insulation	Other	0	0	0	0
Hazardous / special	Special	8	0	0	8

Other –organic	Other Organic	18	0	0	18
Other - inert	Other	1	0	0	1
Total	**Total**	**347**	**16**	**5**	**368**

APPENDIX J – DATA – C&I WASTE BY BUSINESS SECTOR

M	S	H	O	X	C	T	L	E	G	U
Manufacturing/ Factories	Shopping centre/ Retail Trade	Accommodation, Cafes and Restaurants	Office waste	Mixed small businesses	Charity	Trade (electrician, builder, plumber, carpenter)	Landscaper/ Gardener	Education - School/TAFE/ Uni	Mining	Unknown

C&I waste delivered by business sector - all facilities, by weight, garbage bags separate (tonnes)

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Garbage bags of rubbish	Garbage bags	4	137	12	6	136	5	8	0	2	0	38	348
Paper – recyclable*	Recyclables	1	3	0	0	5	0	2	0	0	0	1	13
Paper - non-recyclable	Other Organic	2	1	0	0	2	0	2	0	0	0	1	8
Cardboard*	Recyclables	2	31	4	1	42	4	31	0	1	0	9	126
Food / Kitchen	Food / kitchen	1	56	5	1	43	0	1	0	2	0	15	123
Nappies	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Dead animals	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Vegetation / garden*	Organic	0	11	1	2	10	1	2	1	1	0	11	40
Stumps, logs *	Organic	0	0	0	0	0	0	0	0	0	0	0	0
Wood - furniture, painted	Wood & wood products	4	3	0	0	2	4	12	0	0	0	2	28
Wood - chipboard, MDF*	Wood & wood products	3	11	0	4	14	3	34	0	1	0	4	73
Wood - pallets	Wood & wood products	4	3	0	1	4	1	18	0	1	0	3	33
Wood -, untreated*	Wood & wood products	4	3	0	0	5	0	13	0	0	0	2	28
Wood - board/pole, treated	Wood & wood products	0	0	0	0	1	0	3	0	0	0	1	5
Covered furniture	Textile products	0	1	0	0	1	3	3	0	0	0	2	10
Carpet & underlay*	Textile products	0	3	0	0	3	0	9	0	1	0	2	19
Textiles – clothing/ cloth*	Textile products	0	1	1	0	1	3	0	0	0	0	1	7
Textiles – composite	Textile products	1	1	0	0	1	7	4	0	0	0	1	15
Mattresses – spring*	Textile products	0	0	2	0	0	5	4	0	0	0	0	12

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Rubber - tyres	Textile products	0	0	0	0	0	0	0	0	0	0	0	1
Rubber/foam	Textile products	0	1	0	0	1	2	2	0	0	0	0	6
Glass – containers*	Recyclables	22	3	0	0	2	0	1	0	1	0	1	30
Glass – plate/other	Other plastic/metal/glass	0	0	0	0	0	0	1	0	0	0	0	1
Plastic – containers*	Recyclables	0	3	0	0	4	0	2	0	0	0	1	10
Plastic – plastic bags & film	Other plastic/metal/glass	1	3	0	0	4	0	1	0	0	0	1	11
Plastic - polystyrene foam	Polystyrene foam	0	4	0	0	5	0	1	0	0	0	1	12
Plastic – other	Other plastic/metal/glass	5	16	1	2	20	6	13	1	2	0	6	72
Metals –containers*	Recyclables	0	1	0	0	1	0	1	0	0	0	0	4
Metals - ferrous steel*	Recyclables	0	0	0	0	1	0	2	0	0	0	1	5
Metals – non-ferrous*	Recyclables	0	0	0	0	1	0	0	0	0	0	0	2
Concrete / cement*	Building materials	0	0	0	0	0	0	2	0	1	0	1	5
Bricks*	Building materials	0	0	0	0	0	0	10	0	0	0	0	11
Tiles*	Building materials	0	0	0	0	1	0	6	0	0	0	1	7
Plasterboard	Building materials	2	0	3	0	2	0	68	0	0	0	3	78
Clean fill	Other	0	0	0	0	0	0	0	0	0	0	0	0
Rock/dirt/soil	Other	0	2	0	0	0	0	3	2	0	3	477	487
Asphalt	Other	0	0	0	0	0	0	0	0	0	0	0	0
Sludge	Other Organic	0	0	0	0	0	0	0	0	0	0	26	26
Toner cartridges*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Electrical large	Recyclables	0	0	0	0	0	0	1	0	0	0	0	1
Electrical	Other	0	0	0	0	0	0	0	0	0	0	0	1
Electrical small	Other	0	0	0	0	0	0	0	0	0	0	0	1
Insulation	Other	0	1	0	0	1	0	3	0	0	0	0	5
Hazardous / special	Special	0	0	0	0	0	0	0	0	0	0	8	8
Other –organic	Other Organic	0	0	0	0	0	0	1	0	0	0	0	1
Other - inert	Other	0	1	0	0	0	0	3	0	0	0	4	8
Total	**Total**	**59**	**302**	**33**	**16**	**315**	**45**	**266**	**5**	**15**	**3**	**625**	**1,685**

C&I waste delivered by business sector - Mugga Lane Landfill, by weight, garbage bags separate (tonnes)

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Garbage bags of rubbish	Garbage bags	4	137	11	6	136	4	8	0	2	0	37	345
Paper – recyclable*	Recyclables	1	3	0	0	5	0	1	0	0	0	1	12
Paper - non-recyclable	Other Organic	2	1	0	0	2	0	1	0	0	0	1	7
Cardboard*	Recyclables	2	27	4	0	41	1	12	0	1	0	8	97
Food / Kitchen	Food / kitchen	1	56	5	1	43	0	1	0	2	0	15	123
Nappies	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Dead animals	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Vegetation / garden*	Organic	0	11	1	2	10	0	1	1	1	0	11	38
Stumps, logs *	Organic	0	0	0	0	0	0	0	0	0	0	0	0
Wood - furniture, painted	Wood & wood products	3	3	0	0	1	0	1	0	0	0	1	9
Wood - chipboard, MDF*	Wood & wood products	2	10	0	3	12	1	14	0	1	0	2	45
Wood - pallets	Wood & wood products	4	1	0	1	3	1	3	0	1	0	2	16
Wood -, untreated*	Wood & wood products	4	3	0	0	5	0	3	0	0	0	2	17
Wood - board/pole, treated	Wood & wood products	0	0	0	0	1	0	1	0	0	0	0	2
Covered furniture	Textile products	0	0	0	0	0	0	0	0	0	0	1	2
Carpet & underlay*	Textile products	0	3	0	0	3	0	2	0	1	0	2	11
Textiles – clothing/ cloth*	Textile products	0	1	1	0	1	0	0	0	0	0	1	4
Textiles – composite	Textile products	1	1	0	0	1	0	0	0	0	0	1	3
Mattresses – spring*	Textile products	0	0	0	0	0	0	0	0	0	0	0	0
Rubber - tyres	Textile products	0	0	0	0	0	0	0	0	0	0	0	1
Rubber/foam	Textile products	0	0	0	0	1	0	0	0	0	0	0	2
Glass – containers*	Recyclables	22	3	0	0	2	0	0	0	1	0	1	29
Glass – plate/other	Other plastic/metal/glass	0	0	0	0	0	0	0	0	0	0	0	1
Plastic – containers*	Recyclables	0	3	0	0	4	0	1	0	0	0	1	10
Plastic – plastic bags & film	Other plastic/metal/glass	1	3	0	0	4	0	1	0	0	0	1	10
Plastic - polystyrene foam	Polystyrene foam	0	3	0	0	5	0	1	0	0	0	1	11
Plastic – other	Other plastic/metal/glass	5	15	1	2	20	0	4	0	2	0	5	56

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Metals –containers*	Recyclables	0	1	0	0	1	0	0	0	0	0	0	3
Metals - ferrous steel*	Recyclables	0	0	0	0	1	0	1	0	0	0	1	4
Metals – non-ferrous*	Recyclables	0	0	0	0	1	0	0	0	0	0	0	2
Concrete / cement*	Building materials	0	0	0	0	0	0	0	0	1	0	0	2
Bricks*	Building materials	0	0	0	0	0	0	0	0	0	0	0	1
Tiles*	Building materials	0	0	0	0	1	0	0	0	0	0	0	1
Plasterboard	Building materials	2	0	3	0	2	0	10	0	0	0	1	18
Clean fill	Other	0	0	0	0	0	0	0	0	0	0	0	0
Rock/dirt/soil	Other	0	2	0	0	0	0	0	2	0	3	476	483
Asphalt	Other	0	0	0	0	0	0	0	0	0	0	0	0
Sludge	Other Organic	0	0	0	0	0	0	0	0	0	0	26	26
Toner cartridges*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Electrical large	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Electrical	Other	0	0	0	0	0	0	0	0	0	0	0	1
Electrical small	Other	0	0	0	0	0	0	0	0	0	0	0	1
Insulation	Other	0	1	0	0	1	0	0	0	0	0	0	2
Hazardous / special	Special	0	0	0	0	0	0	0	0	0	0	8	8
Other –organic	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Other - inert	Other	0	1	0	0	0	0	0	0	0	0	3	5
Total	**Total**	**56**	**292**	**30**	**15**	**310**	**6**	**69**	**2**	**15**	**3**	**610**	**1,409**

C&I waste delivered by business sector - Mugga Lane Transfer Station, by weight, garbage bags separate (tonnes)

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Garbage bags of rubbish	Garbage bags	0	0	0	0	0	0	1	0	0	0	0	1
Paper – recyclable*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Paper - non-recyclable	Other Organic	0	0	0	0	0	0	1	0	0	0	0	1
Cardboard*	Recyclables	0	4	0	0	0	1	18	0	0	0	1	25
Food / Kitchen	Food / kitchen	0	0	0	0	0	0	0	0	0	0	0	0
Nappies	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Dead animals	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Vegetation / garden*	Organic	0	0	0	0	0	1	1	0	0	0	0	2
Stumps, logs *	Organic	0	0	0	0	0	0	0	0	0	0	0	0
Wood - furniture, painted	Wood & wood products	1	0	0	0	0	2	11	0	0	0	1	15
Wood - chipboard, MDF*	Wood & wood products	1	1	0	0	1	2	19	0	0	0	2	25
Wood - pallets	Wood & wood products	0	2	0	0	0	0	15	0	0	0	0	17
Wood -, untreated*	Wood & wood products	0	0	0	0	0	0	10	0	0	0	1	11
Wood - board/pole, treated	Wood & wood products	0	0	0	0	0	0	2	0	0	0	0	3
Covered furniture	Textile products	0	1	0	0	0	2	2	0	0	0	1	5
Carpet & underlay*	Textile products	0	0	0	0	0	0	7	0	0	0	1	8
Textiles – clothing/ cloth*	Textile products	0	0	0	0	0	1	0	0	0	0	0	1
Textiles – composite	Textile products	0	0	0	0	0	4	4	0	0	0	1	9
Mattresses – spring*	Textile products	0	0	2	0	0	2	3	0	0	0	0	8
Rubber - tyres	Textile products	0	0	0	0	0	0	0	0	0	0	0	0
Rubber/foam	Textile products	0	1	0	0	0	2	2	0	0	0	0	4
Glass – containers*	Recyclables	0	0	0	0	0	0	1	0	0	0	0	1
Glass – plate/other	Other plastic/metal/glass	0	0	0	0	0	0	1	0	0	0	0	1
Plastic – containers*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Plastic – plastic bags & film	Other plastic/metal/glass	0	0	0	0	0	0	1	0	0	0	0	1
Plastic - polystyrene foam	Polystyrene foam	0	1	0	0	0	0	0	0	0	0	0	1
Plastic – other	Other plastic/metal/glass	0	0	0	0	0	2	9	0	0	0	1	12
Metals –containers*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Metals - ferrous steel*	Recyclables	0	0	0	0	0	0	1	0	0	0	0	1
Metals – non-ferrous*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Concrete / cement*	Building materials	0	0	0	0	0	0	2	0	0	0	1	3
Bricks*	Building materials	0	0	0	0	0	0	10	0	0	0	0	10
Tiles*	Building materials	0	0	0	0	0	0	5	0	0	0	1	6
Plasterboard	Building materials	0	0	0	0	0	0	58	0	0	0	0	58
Clean fill	Other	0	0	0	0	0	0	0	0	0	0	0	0
Rock/dirt/soil	Other	0	0	0	0	0	0	3	1	0	0	0	4
Asphalt	Other	0	0	0	0	0	0	0	0	0	0	0	0
Sludge	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Electrical large	Recyclables	0	0	0	0	0	0	1	0	0	0	0	1
Electrical	Other	0	0	0	0	0	0	0	0	0	0	0	0
Electrical small	Other	0	0	0	0	0	0	0	0	0	0	0	0
Insulation	Other	0	0	0	0	0	0	2	0	0	0	0	3
Hazardous / special	Special	0	0	0	0	0	0	0	0	0	0	0	0
Other –organic	Other Organic	0	0	0	0	0	0	1	0	0	0	0	1
Other - inert	Other	0	0	0	0	0	0	3	0	0	0	0	3
Total	**Total**	**2**	**9**	**3**	**0**	**3**	**20**	**192**	**2**	**0**	**0**	**11**	**241**

C&I waste delivered by business sector - Mitchell Transfer Station, by weight, garbage bags separate (tonnes)

Material	Consolidation Category	M	S	H	O	X	C	T	L	E	G	U	Overall
Garbage bags of rubbish	Garbage bags	0	0	0	0	0	1	0	0	0	0	0	1
Paper – recyclable*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Paper - non-recyclable	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Cardboard*	Recyclables	0	0	0	0	1	2	1	0	0	0	0	4
Food / Kitchen	Food / kitchen	0	0	0	0	0	0	0	0	0	0	0	0
Nappies	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Dead animals	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Vegetation / garden*	Organic	0	0	0	0	0	0	0	0	0	0	0	0
Stumps, logs *	Organic	0	0	0	0	0	0	0	0	0	0	0	0
Wood - furniture, painted	Wood & wood products	0	0	0	0	0	2	0	0	0	0	1	3
Wood - chipboard, MDF*	Wood & wood products	0	0	0	1	1	0	1	0	0	0	1	4
Wood - pallets	Wood & wood products	0	0	0	0	0	0	0	0	0	0	0	0
Wood -, untreated*	Wood & wood products	0	0	0	0	0	0	0	0	0	0	0	0
Wood - board/pole, treated	Wood & wood products	0	0	0	0	0	0	0	0	0	0	0	0
Covered furniture	Textile products	0	0	0	0	0	2	0	0	0	0	0	2
Carpet & underlay*	Textile products	0	0	0	0	0	0	0	0	0	0	0	0
Textiles – clothing/ cloth*	Textile products	0	0	0	0	0	2	0	0	0	0	0	2
Textiles – composite	Textile products	0	0	0	0	0	3	0	0	0	0	0	3
Mattresses – spring*	Textile products	0	0	0	0	0	3	1	0	0	0	0	4
Rubber - tyres	Textile products	0	0	0	0	0	0	0	0	0	0	0	0
Rubber/foam	Textile products	0	0	0	0	0	0	0	0	0	0	0	0
Glass – containers*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Glass – plate/other	Other plastic/metal/glass	0	0	0	0	0	0	0	0	0	0	0	0
Plastic – containers*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Plastic – plastic bags & film	Other plastic/metal/glass	0	0	0	0	0	0	0	0	0	0	0	0
Plastic - polystyrene foam	Polystyrene foam	0	0	0	0	0	0	0	0	0	0	0	0
Plastic – other	Other plastic/metal/glass	0	0	0	0	0	4	0	1	0	0	0	5
Metals –containers*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0

Metals - ferrous steel*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Metals – non-ferrous*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Concrete / cement*	Building materials	0	0	0	0	0	0	0	0	0	0	0	0
Bricks*	Building materials	0	0	0	0	0	0	0	0	0	0	0	0
Tiles*	Building materials	0	0	0	0	0	0	0	0	0	0	0	0
Plasterboard	Building materials	0	0	0	0	0	0	0	0	0	0	2	2
Clean fill	Other	0	0	0	0	0	0	0	0	0	0	0	0
Rock/dirt/soil	Other	0	0	0	0	0	0	0	0	0	0	0	0
Asphalt	Other	0	0	0	0	0	0	0	0	0	0	0	0
Sludge	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Toner cartridges*	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Electrical large	Recyclables	0	0	0	0	0	0	0	0	0	0	0	0
Electrical	Other	0	0	0	0	0	0	0	0	0	0	0	0
Electrical small	Other	0	0	0	0	0	0	0	0	0	0	0	0
Insulation	Other	0	0	0	0	0	0	0	0	0	0	0	0
Hazardous / special	Special	0	0	0	0	0	0	0	0	0	0	0	0
Other –organic	Other Organic	0	0	0	0	0	0	0	0	0	0	0	0
Other - inert	Other	0	0	0	0	0	0	0	0	0	0	0	0
Total	**Total**	**0**	**0**	**0**	**2**	**3**	**20**	**5**	**1**	**0**	**0**	**4**	**35**

APPENDIX K – INDUSTRY SECTOR DEFINITIONS

Industry sector	Examples of business types within the division
Manufacturing	Manufacturers of: food products, beverage and tobacco products, textile, leather, clothing and footwear, wood products, pulp, paper and converted paper products, printing, petroleum and coal products, chemical and chemical products, polymer products, non-metallic mineral products, metal and metal products, machinery and equipment and furniture.
	Meat and meat product manufacturing, seafood processing, diary product manufacturing, fruit and vegetable processing, oil and fat manufacturing, grain mill and cereal product manufacturing, bakery product manufacturing, sugar and confectionery manufacturing, other food product manufacturing
Retail trade	Food retailing, store and non-store retailing, fuel retailing, motor vehicle and motor vehicle parts retailing
	Supermarket and grocery stores, specialised food retailing, liquor retailing
	Retailing of: furniture, floor coverings, housewares, textile goods, electrical and electronic goods, hardware, building and garden supplies, recreational goods, clothing, footwear, personal accessories, department stores, pharmaceutical, and other store-based.
Accommodation and food services	Hotels, hostels, bed & breakfast, restaurants, cafes, take-away food services, pubs, taverns and clubs
	Accommodation
	Cafes, restaurants and takeaway food services, pubs, taverns and bars, clubs (hospitality)
Wholesale trade	Fuel distribution centres, car distribution centres, agricultural product wholesalers
Education and training	Pre-school, school and tertiary education. Adult, community and other education and associated support services
Arts and recreation services	Museums, parks and gardens, art galleries, sports and recreation facilities, horse and dog racing activities, creative and performing arts activities, gambling activities
Transport, postal and warehousing	Road, rail and water transport and the associated support services. Courier and logistics services. Warehousing and storage services
Healthcare and social assistance	Hospitals, medical and other healthcare services, residential care, social assistance services, childcare services
Mixed small businesses	Any other small business that does not fit above categories
Shopping centres	Groups of shops centrally managed
Offices	Office-based activities
Unknown	
Other	Known but not any of the above