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# 1. Wagga Wagga Campus Analysis

## 1.1. CAMPUS SUMMARY

For the purposes of this document, the Wagga Wagga Campus of Charles Sturt University is defined as the main Boorooma St. Campus, as well as South Campus, the Small Animal Clinic and the Riverina Playhouse.

Electricity gas and water consumption increased in 2012 when compared with the previous year of 2011. This increase was associated with the connection of the new National Life Sciences Hub (NaLSH) was connected to services and operating.

The NaLSH Building has alone be responsible for an approximately 10% increase in all three of these utilities. However, the normalised consumption of these utilities is reasonably stable when compared when 2011. This indicates that the new buildings being constructed at CSU are being constructed with efficiency in mind, and that the energy/water saving projects that are being implemented by CSU Green are having an impact on the overall efficiency of CSU Campuses.

The breakdown of waste output from CSU Wagga is reasonably consistent with the previous year, 2011. However, the output of general waste to landfill is starting to trend downwards, while the Campus recycling rate is starting to trend upwards.

## 1.2. ELECTRICITY ANALYSIS

In 2012, Wagga Campus recorded a normalised electricity intensity of 100kWh/m<sup>2</sup> (Figure 1-1). This is a decrease in energy intensity of 9kWh/m<sup>2</sup> from 2006 to 2012.

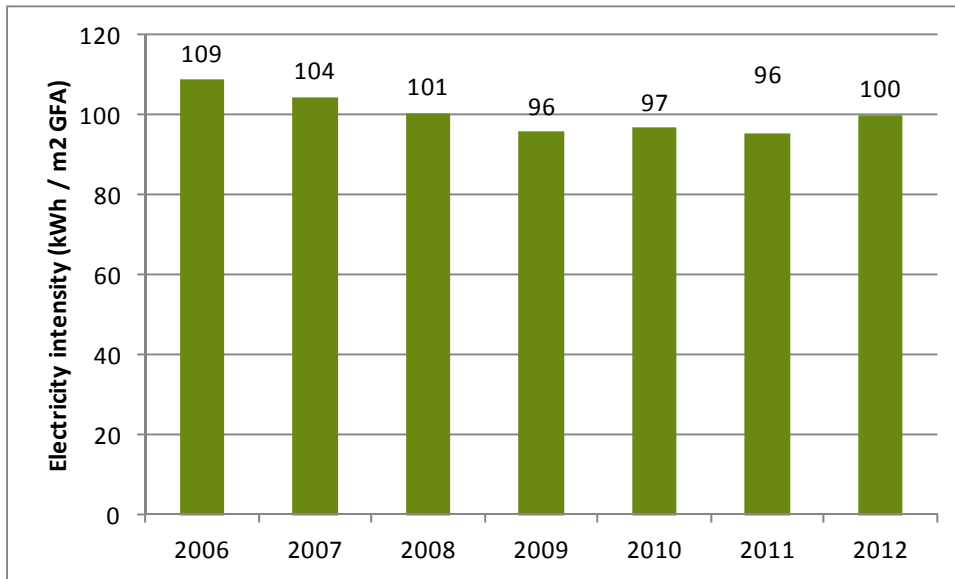


Figure 1-1 – Normalised electricity consumption at Wagga Wagga Campus for the period 2006 to 2012

In 2012, there was a 9% increase in electricity usage at Wagga Wagga Campus compared with 2011 (Figure 1-2). This is 12% increase on consumption compared to 2006.

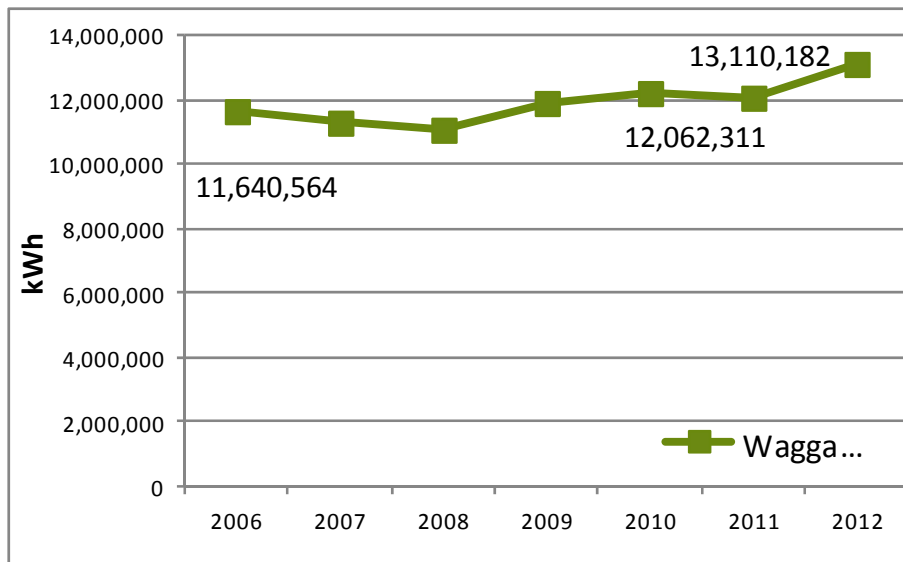


Figure 1-2 – Absolute electricity consumption at Wagga Wagga Campus for the period 2006 to 2012

### 1.3. GAS ANALYSIS

Wagga Campus recorded a normalised natural gas intensity of 431MJ/m<sup>2</sup> (Figure 1-3). This is a decrease in natural gas intensity of 89MJ/m<sup>2</sup> from 2006 to 2012.

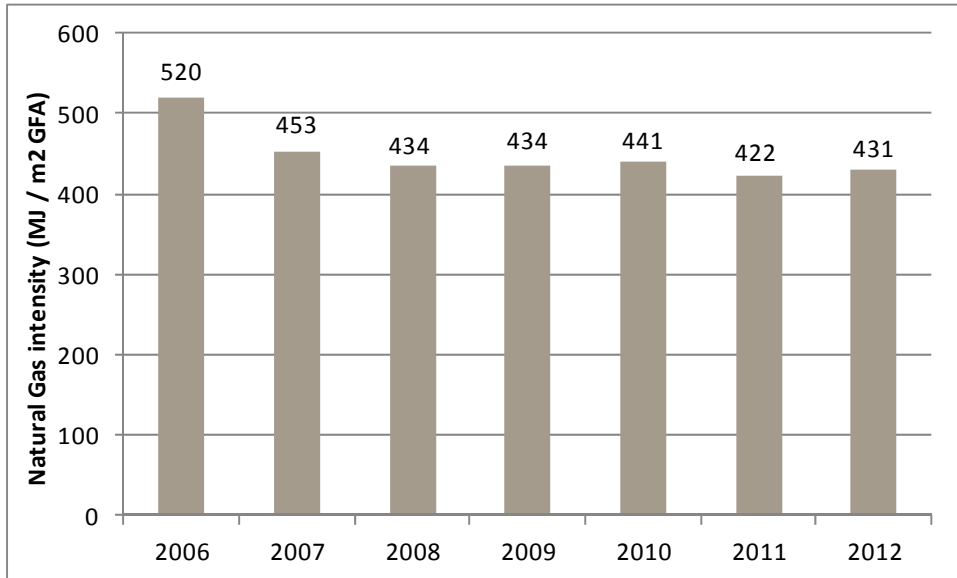


Figure 1-3 – Normalised natural gas consumption at Wagga Wagga Campus for the period 2006 to 2012

In 2012, there was a 6% increase in the consumption of natural gas at the Wagga Wagga Campus compared to 2011 (Figure 1-4). This change represents a 2% increase from the baseline year 2006.

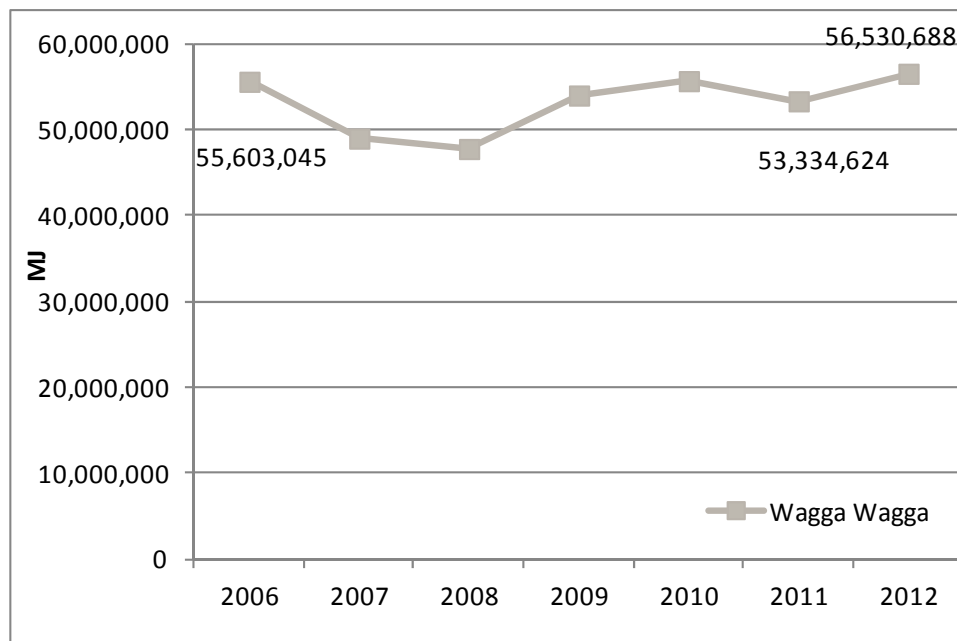


Figure 1-4 – Absolute natural gas consumption at Wagga Wagga Campus for the period 2006 to 2012

The Veterinary Clinical Centre (Building 130) Wagga Wagga Campus utilises LPG supplied from on-site LPG Tanks. Total consumption in 2012 was slightly reduced compared to that in 2015 (Figure 1-5).

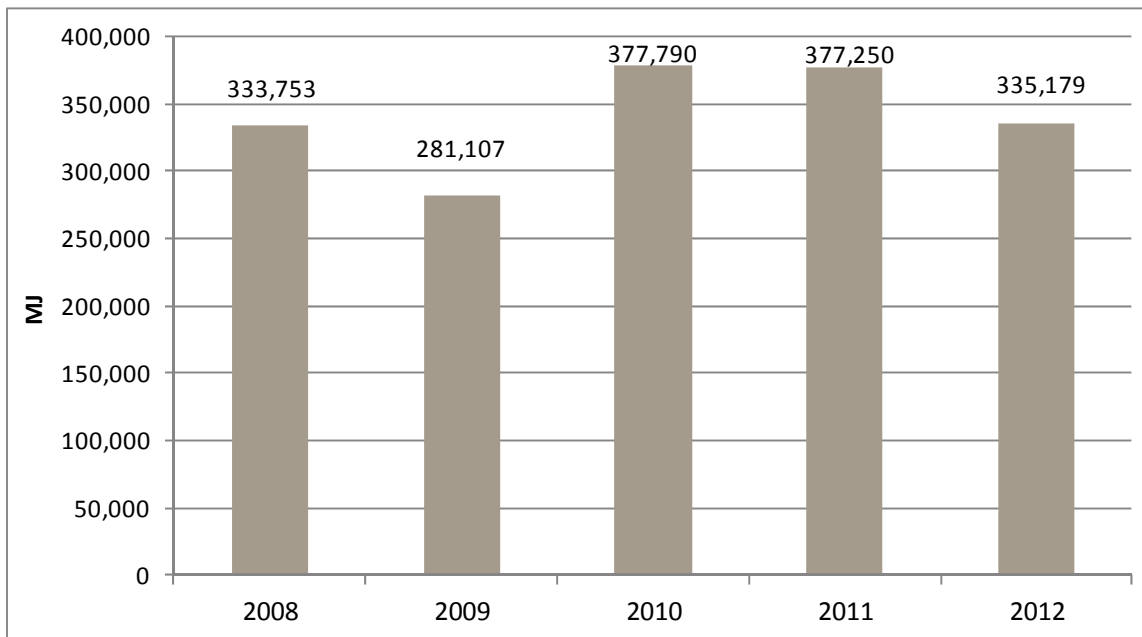


Figure 1-5 – Absolute LPG consumption at Wagga Wagga Campus for the period 2008 to 2012

#### 1.4. WATER ANALYSIS

Wagga Campus recorded a normalised mains water intensity of 2.1kL/m<sup>2</sup> (Figure 1-6). This is a reduction in mains water intensity of 2.1kL/m<sup>2</sup> from 2006 to 2012.

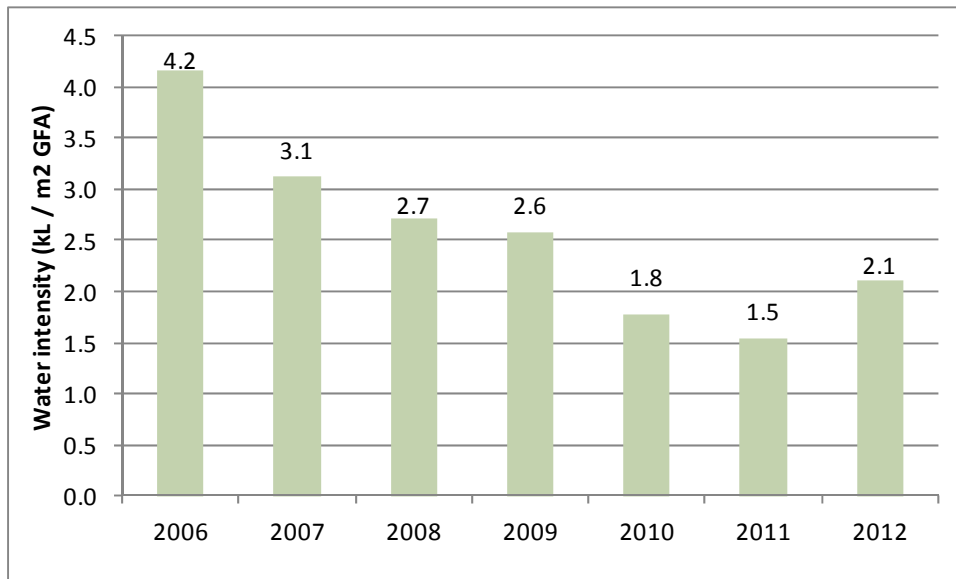


Figure 1-6 – Normalised mains supplied water consumption at Wagga Wagga Campus for the period 2006 to 2012

In 2012, there was 38% reduction in the consumption of potable water at Wagga Wagga Campus compared to 2006 (Figure 1-7). This change represents a 42% increase in consumption as compared to 2012.



Figure 1-7 – Absolute mains supplied water consumption at Wagga Wagga Campus for the period 2006 to 2012

### 1.5. WASTE ANALYSIS

General waste comprised 64% of Wagga Wagga Campuses waste output (Figure 1-8). The remaining 36% was recycled. Wagga Wagga Campus will need to divert an additional 34% of material from the General Waste stream if it is to achieve its target of a 70% reduction of general waste to landfill by 2014.

General waste output was reduced in 2012, with a 4% decrease measured compared to 2011, while recycling rates increased 4% as compared to 2011.

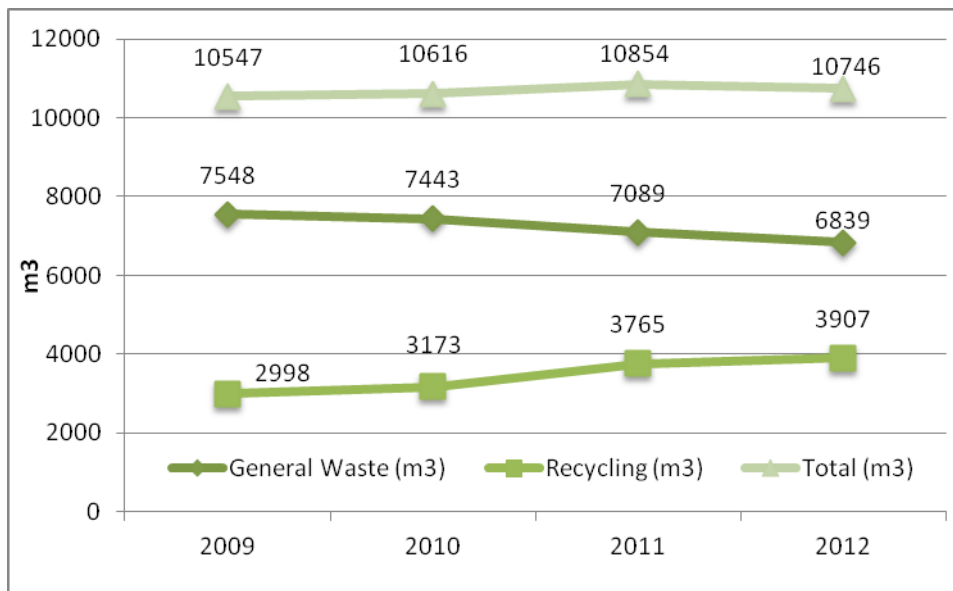


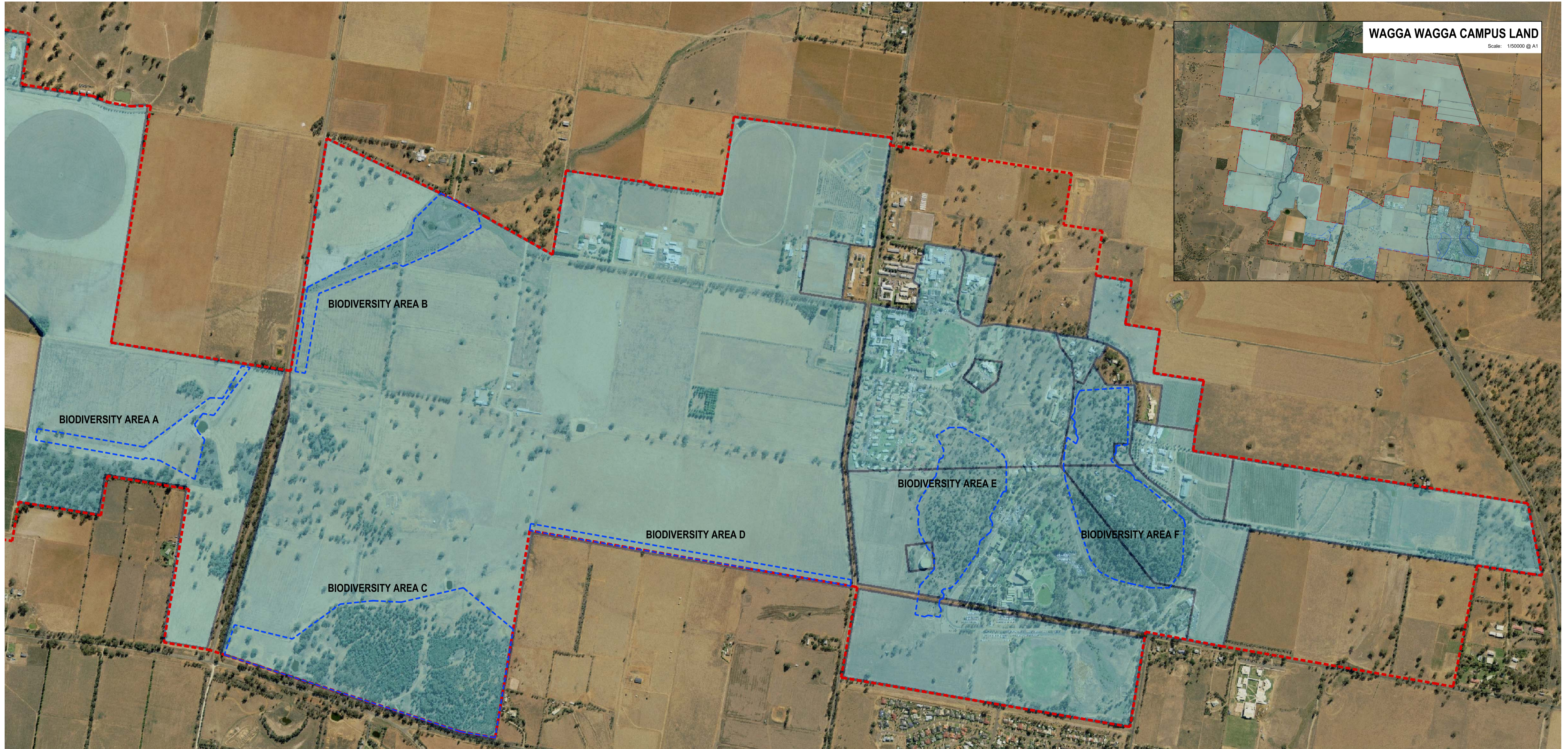
Figure 1-8 - Waste output from Wagga Wagga Campus in 2012

### 1.6. BIODIVERSITY MAP

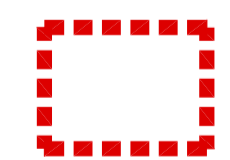
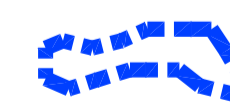
**Note: this Biodiversity Map, and maps in the following sections, are draft maps only.**

**CSU Green will be seeking endorsement of these biodiversity areas in 2014**

**following a suitable formal consultation process. It is possible that exact boundaries may be adjusted as a result of this additional consultation.**



LEGEND:

-  CSU BOUNDARY : 2087.9 HA
-  BIODIVERSITY AREA: 89.5 HA
  - AREA A: 6.1 HA
  - AREA B: 8.0 HA
  - AREA C: 36.3 HA
  - AREA D: 3.1 HA
  - AREA E: 14.7 HA
  - AREA F: 21.3 HA

WAGGA WAGGA CAMPUS  
 BIODIVERSITY AREA PROPOSAL

## 2. Bathurst Campus Analysis

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### 2.1. CAMPUS SUMMARY

In 2012, electricity consumption remained reasonably consistent with the previous year 2011, while natural gas consumption increased slightly by 4%. The reason for this slight increase in natural gas is due to the inclusion of gas consumption from off-site facilities, including MTG, Hargraves House & beyond Medical.

Water consumption increased by 18% in 2012, compared to 2011, however, this figures still remains significantly below the baseline water consumption recorded in 2006. The reason for this increased consumption is likely due to the large quantities of water that were required to establish the re-turfed sporting ovals in early 2012. In addition, the significantly hotter 12/13 summer contributed to the need for additional watering to maintain grounds and ovals.

In terms of waste, Bathurst Campus implemented a major change in the way that waste was collected and managed on the Campus. Through the implementation of a new University-wide waste collection contract, Bathurst Campus was able to take advantage of a fully-contracted kerb-side waste collection service. This provides some significant advantages, when compared to the previous labour-intensive 'in-house' waste collection system, in terms of being able to integrate a proper commingled recycling service and improvements in the quality of waste data that is received by Campus operations. In addition, the move to the fully-contracted service allows the labour that was previously tied-up in waste collection to be re-distributed to other general maintenance duties around the Campus.



## 2.2. ELECTRICITY ANALYSIS

Bathurst Campus has recorded a normalised electricity intensity of 95kWh/m<sup>2</sup> (Figure 2-1). This is a decrease in energy intensity of 7kWh/m<sup>2</sup> from 2006 to 2012.

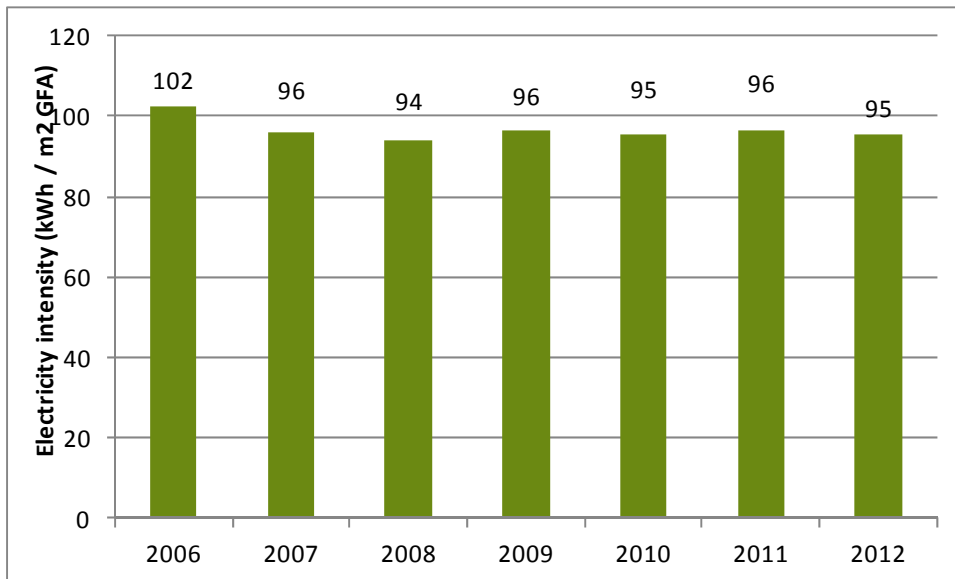


Figure 2-1 – Normalised electricity consumption at Bathurst Campus for the period 2006 to 2012

In 2012, there was 1% decrease in the consumption of electricity at Bathurst Campus compared to 2006 (Figure 2-2). This change represents a 1% decrease from the previous year 2011.

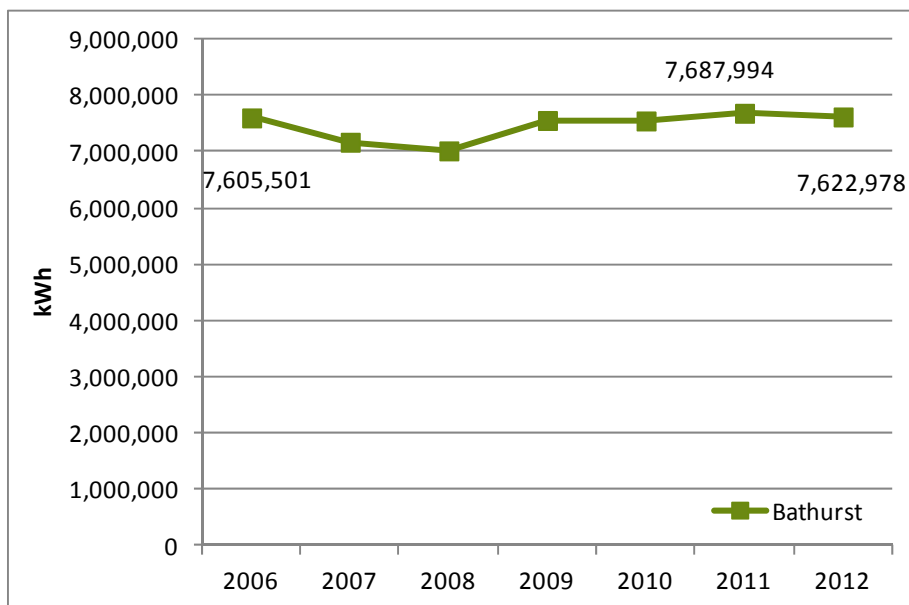


Figure 2-2 – Absolute electricity consumption at Bathurst Campus for the period 2006 to 2012

### 2.3. GAS ANALYSIS

Bathurst Campus has recorded a normalised natural gas intensity of 680MJ/m<sup>2</sup> (Figure 2-3), 22MJ/m<sup>2</sup> greater than that recorded in 2011. This is an increase in natural gas intensity of 68MJ/m<sup>2</sup> from 2006 to 2012.

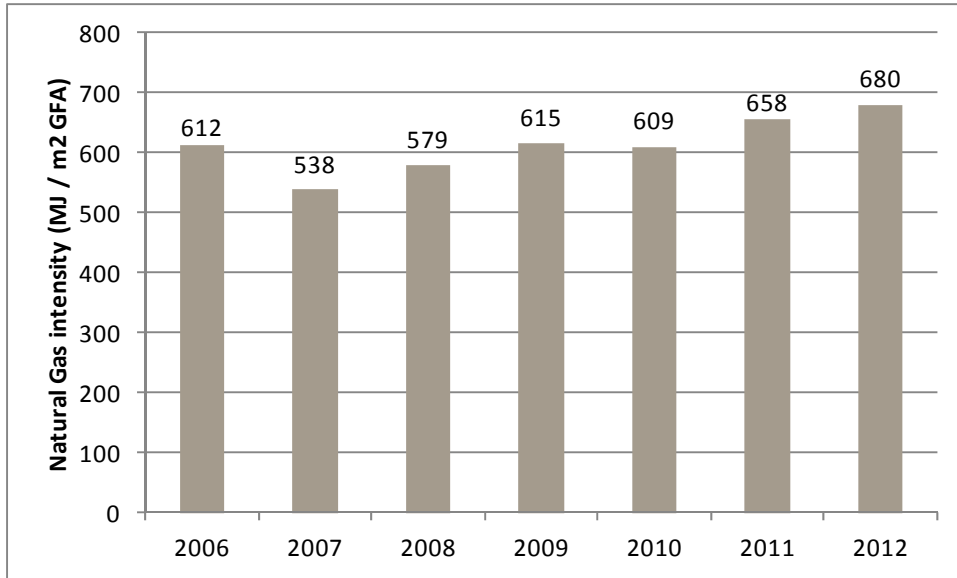


Figure 2-3 – Normalised natural gas consumption at Bathurst Campus for the period 2006 to 2012

In 2012, there was 4% increase in the consumption of natural gas at Bathurst Campus compared to the previous year 2011 (Figure 2-4). Due to this increase, overall natural gas use at Bathurst in 2011 was 20% higher than that used in the 2006 baseline year.

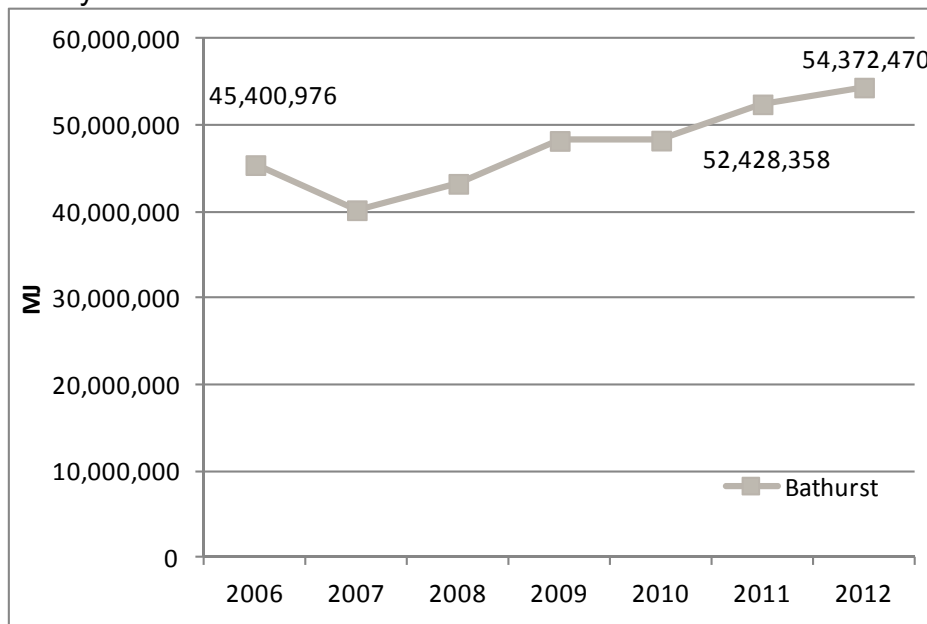


Figure 2-4 – Absolute natural gas consumption at Bathurst Campus for the period 2006 to 2012

## 2.4. WATER ANALYSIS

Despite this absolute increase in water consumption, Bathurst Campus recorded a normalised mains water intensity of 1.3kL/m<sup>2</sup> (Figure 2-5). This is a reduction in water intensity of 1.6kL/m<sup>2</sup> from 2006 to 2012.

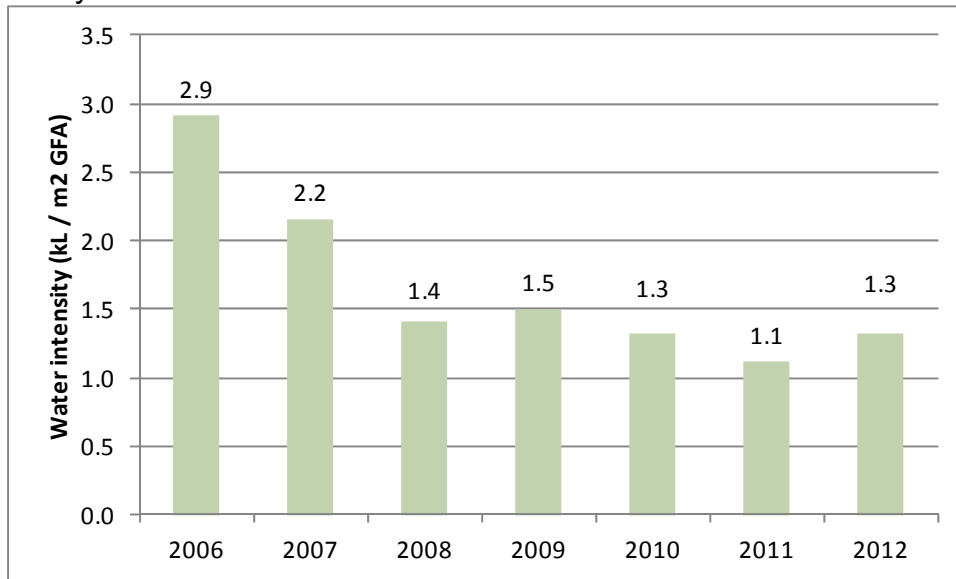


Figure 2-5 – Normalised mains water consumption at Bathurst Campus for the period 2006 to 2012

In 2012, there was 51% reduction in the consumption of mains supplied water at Bathurst Campus compared to 2006 (Figure 2-6). This change represents an increase of 18% from 2011 to 2012.

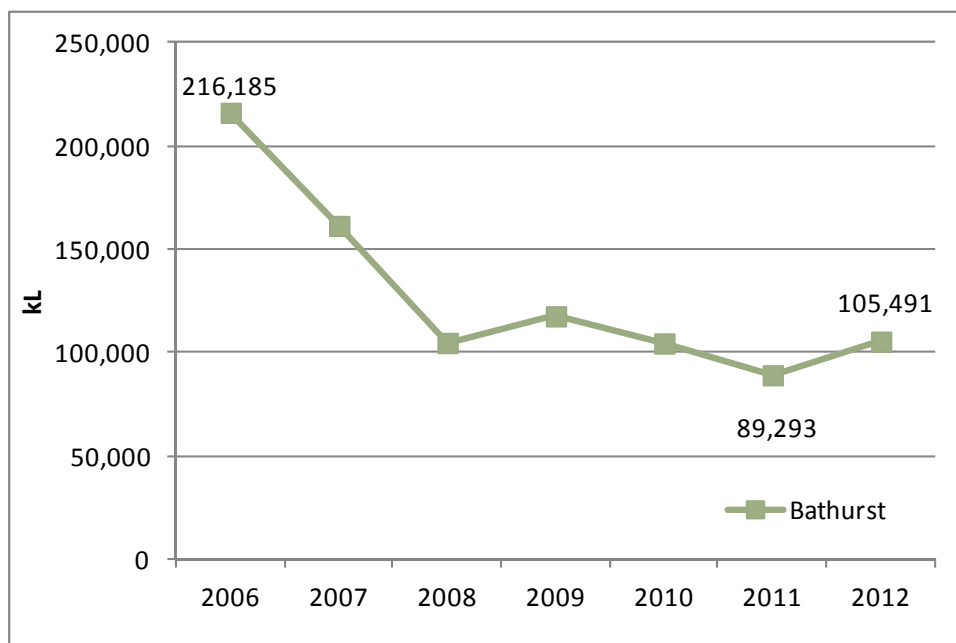


Figure 2-6 – Absolute mains water consumption at Bathurst Campus for the period 2006 to 2012

## 2.5. WASTE ANALYSIS

In 2012, general waste comprised of 74% of Bathurst Campuses total waste output (Figure 2-7), and the remaining 26% was recycled. This is a significant improvement on 2011, when 99% of waste generated at the Bathurst Campus was disposed of as landfill. The turn-around is Campus due to a significant change in the operation to collect and remove waste from the Campus which was implemented in 2012. Prior to that year, waste was collected by the CSU janitors and taken to the local landfill – meaning that the only recycling occurring on Campus was some paper/cardboard recycling at the Printery.

The major change that occurred in 2012 was the out-sourcing of waste collection to waste management company Cleanaway. A series of general waste, commingled recycling and paper & cardboard wheelie bins were placed at each building on Campus and CSU cleaners are responsible for wheeling these to the kerb for collection. The different waste streams (general waste to landfill, mixed recycling and paper & cardboard) are collected on different days throughout a standard week.

Additional waste initiatives will be undertaken by CSU Green across 2013 & 2014 that are designed to improve the Campuses recycling rate, and enable it to achieve CSU's waste target of a 70% reduction in waste to landfill by 2014.

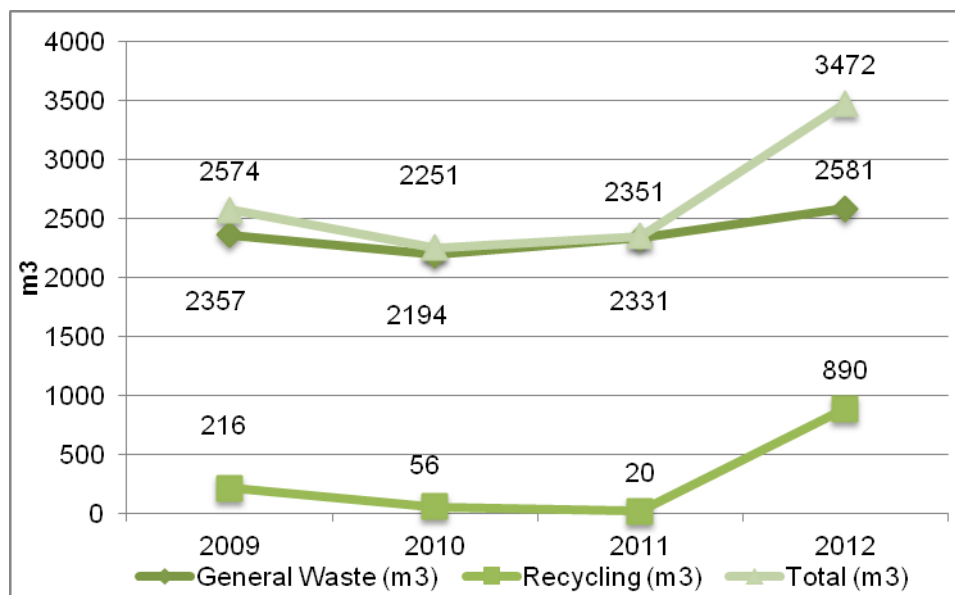
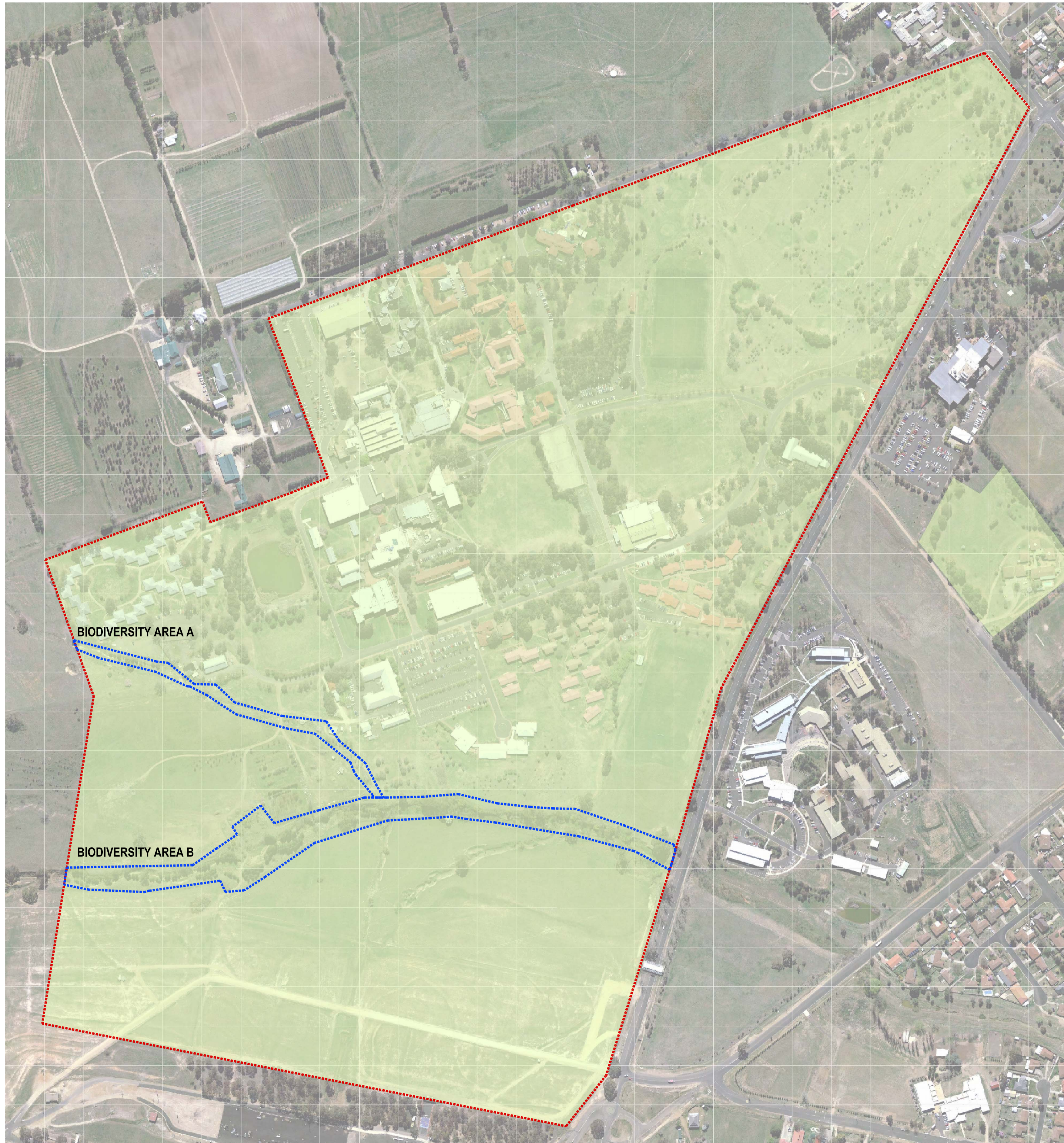



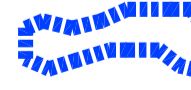
Figure 2-7 - Waste output from Bathurst Campus in 2012

## 2.6. BIODIVERSITY MAP



BIODIVERSITY AREA A

BIODIVERSITY AREA B

- LEGEND:
-  CSU BOUNDARY : 95.7 HA
  -  BIODIVERSITY AREA: 3.6 HA
    - AREA A: 0.6 HA
    - AREA B: 3.0 HA

**BATHURST CAMPUS  
BIODIVERSITY AREA PROPOSAL**

## 3. Orange Campus analysis

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### 3.1. CAMPUS SUMMARY

In 2012, the Orange Campus recorded a minor reduction in electricity consumption of 6% compared to the previous year 2011. It is likely that the replacement of electrically-boosted solar hot water systems in Residences R6-R9 with natural gas-boosted solar hot water systems can account for this change. Natural gas consumption also increased significantly in 2012; 42% when compared to the previous year 2011. The main reason for this increase was the connection of the 80 bed new residences to the Campus natural gas supply for heating and hot water amenity. Previously this was supplied by an LPG tank located adjacent to these buildings, but the on-going cost of this supply was cost-prohibitive.

The Orange Campus was consumption in 2012 remained reasonably consistent with the 2011 figure, with only a minor increase of 5% recorded.

In terms of waste output, in 2012 the Orange Campus recorded for the first time a significant decrease in waste output to landfill and an increase in recycling. A total of 75% of the Campuses waste was sent to landfill, while the remaining 25% was recycled.

### 3.2. ELECTRICITY ANALYSIS

Despite this absolute increase in electricity consumption, Orange Campus has recorded a normalised electricity intensity of 95kWh/m<sup>2</sup> (Figure 3-1). This is an increase in energy intensity of 22kWh/m<sup>2</sup> from 2006 to 2012.

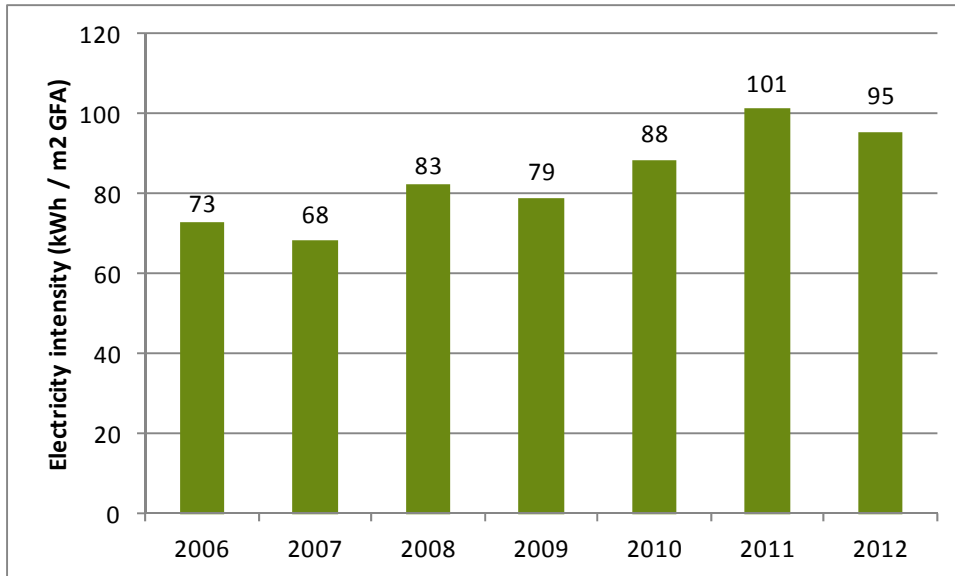


Figure 3-1 –Normalised electricity consumption at Orange Campus for the period 2006 to 2012

In 2012, there was an 83% increase in the consumption of electricity at Orange Campus compared to 2006 (Figure 3-2). This consumption is 6% less than that measured in 2011.

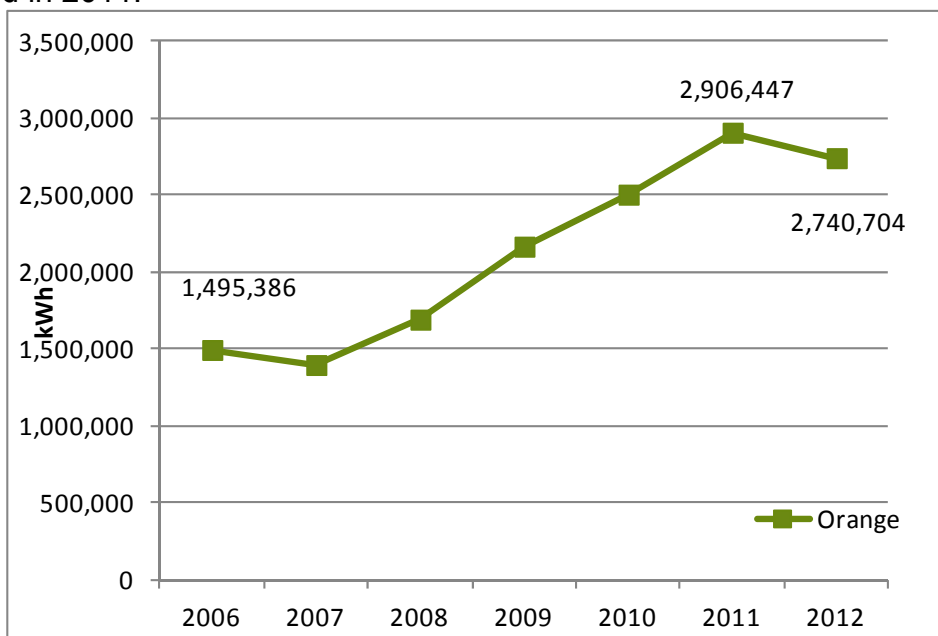


Figure 3-2 – Absolute electricity consumption at Orange Campus for the period 2006 to 2012

### 3.3. GAS ANALYSIS

Orange Campus has recorded a normalised natural gas consumption of 131MJ/m<sup>2</sup> (Figure 3-3). This is an increase in natural gas intensity of 49MJ/m<sup>2</sup> from 2006 to 2012.

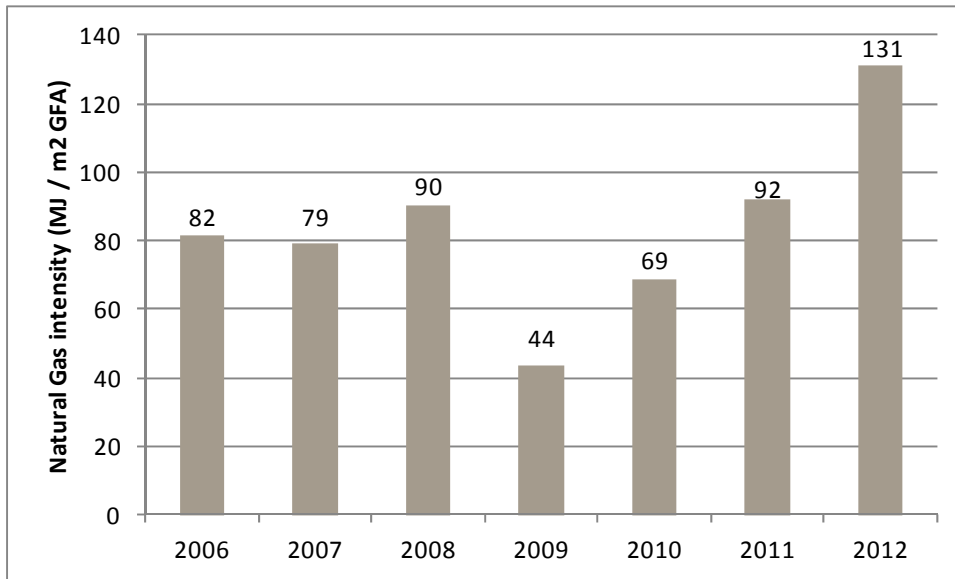


Figure 3-3 – Normalised natural gas consumption at Orange Campus for the period 2006 to 2012

In 2012, there was a 125% increase in the consumption of natural gas at Orange Campus compared to 2006 (Figure 3-4). This is a 42% increase from 2011 and is likely a result of the connection of the New Residences heating to natural gas and the R6-R9 domestic hot water units being replaced with gas-boosted solar hot water units.

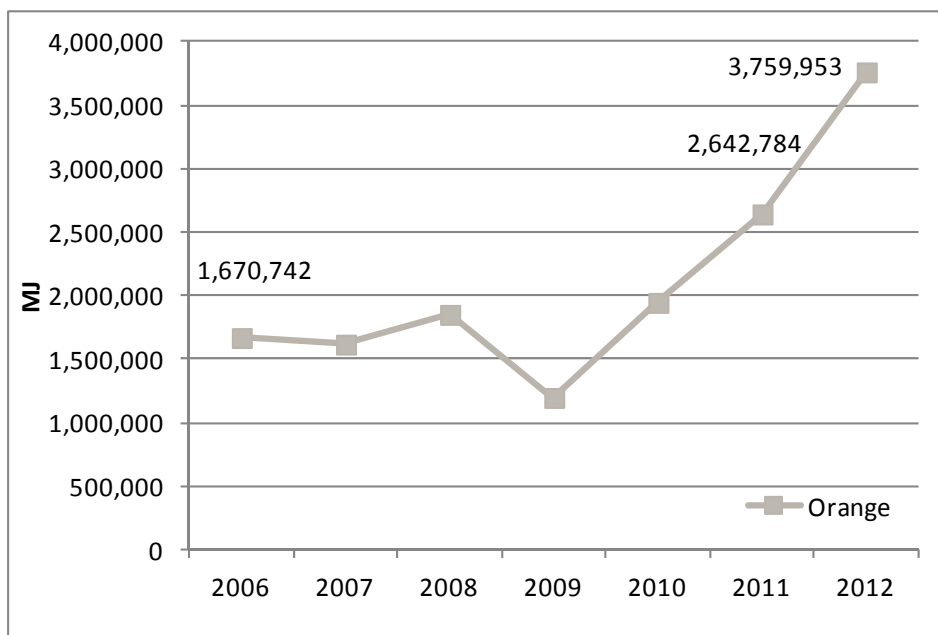


Figure 3-4– Absolute natural gas consumption at Orange Campus for the period 2006 to 2012



The 80 Bed Residences at the Orange Campus utilise LPG supplied from on-site LPG Tanks. Total consumption in 2012 was reduced compared to 2011 (Figure 3-5). This was due to the New Residences being switched over to having their gas supply changed from LPG to natural gas from August 2012. However, the new Cellar Door which opened in late 2012 will continue to rely on bottled LPG for its heating

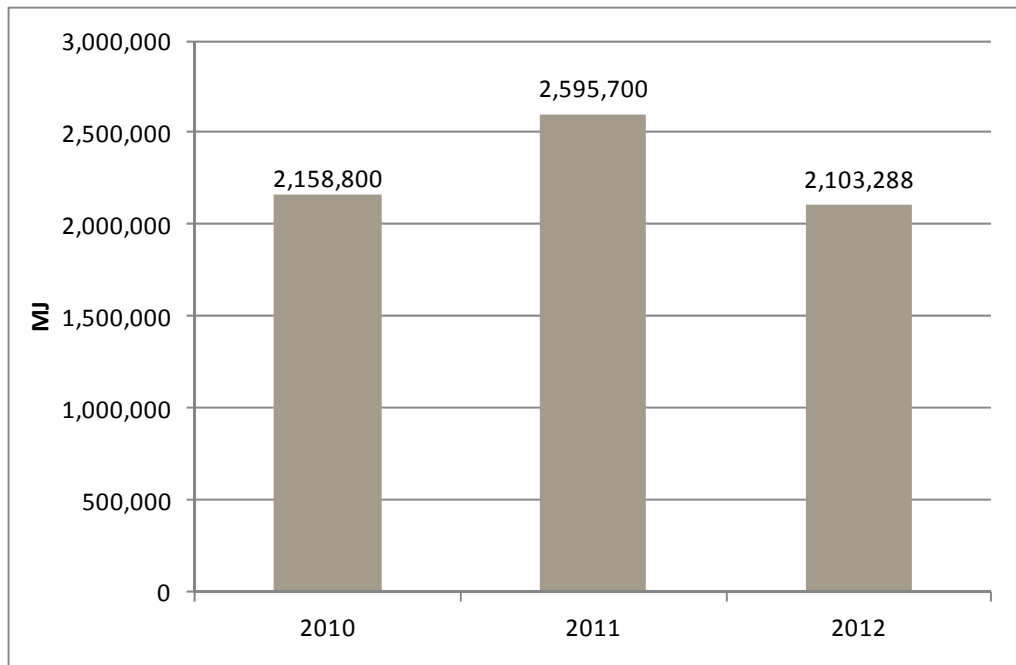


Figure 3-5 – Absolute LPG consumption at Orange Campus for the period 2010 to 2012

### 3.4. WATER ANALYSIS

Orange Campus recorded a normalised mains water intensity of 1.3kL/m<sup>2</sup> (Figure 3-6). This is a reduction in water intensity of 1.1kL/m<sup>2</sup> from 2006 to 2012.

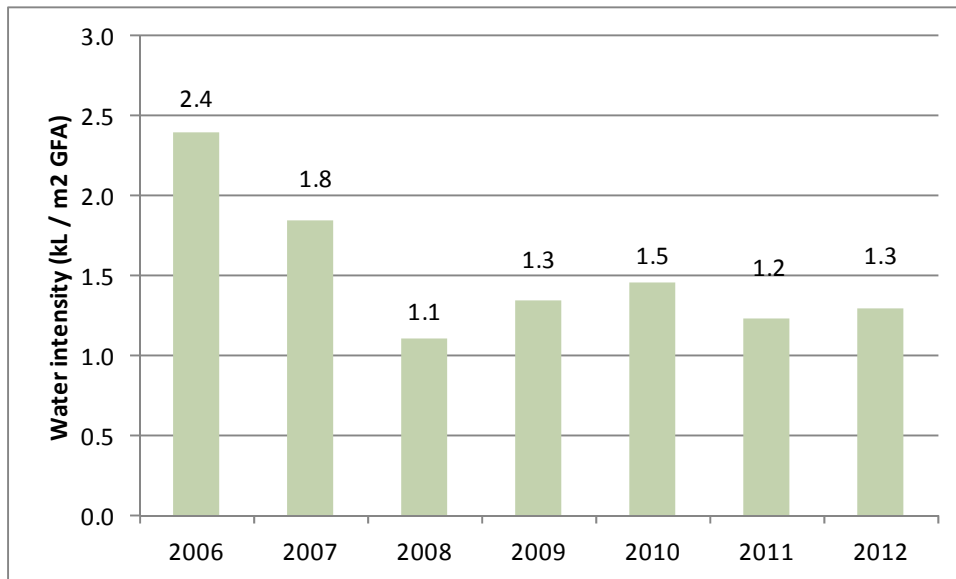


Figure 3-6 – Normalised water consumption at Orange Campus for the period 2006 to 2012

In 2012, there was 24% reduction in the consumption of potable water at Orange Campus compared to 2006 (Figure 3-7). This change represents a 5% increase on the 2011 consumption.

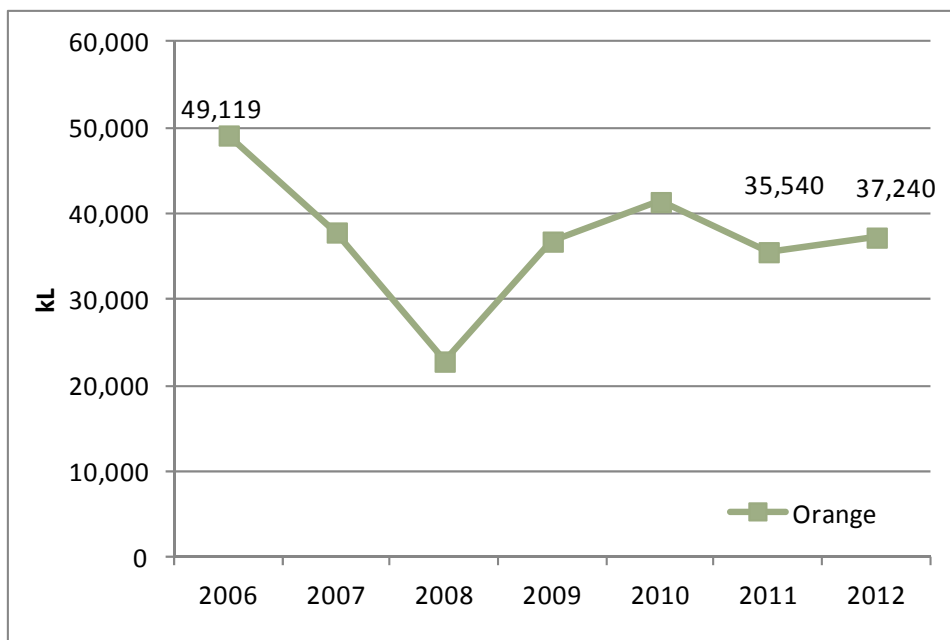


Figure 3-7 – Absolute water consumption at Orange Campus for the period 2006 to 2012

### 3.5. WASTE ANALYSIS

In 2012, general waste comprised a total of 75% of Orange Campuses general waste output (Figure 3-8). The remaining 25% of the Campuses waste output was commingled recycling.

The total waste output of the Campus decreased by 3% between 2011 and 2012.

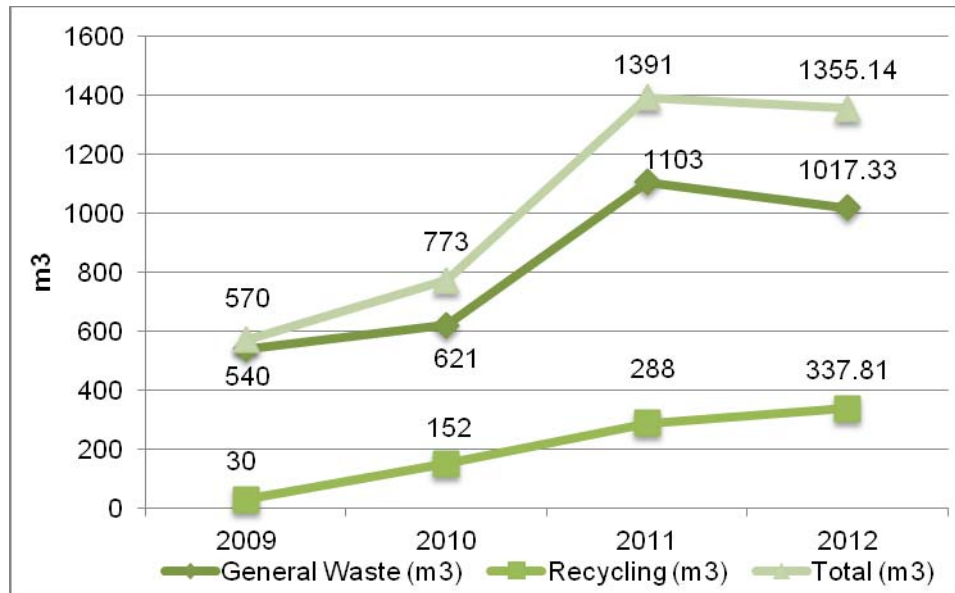
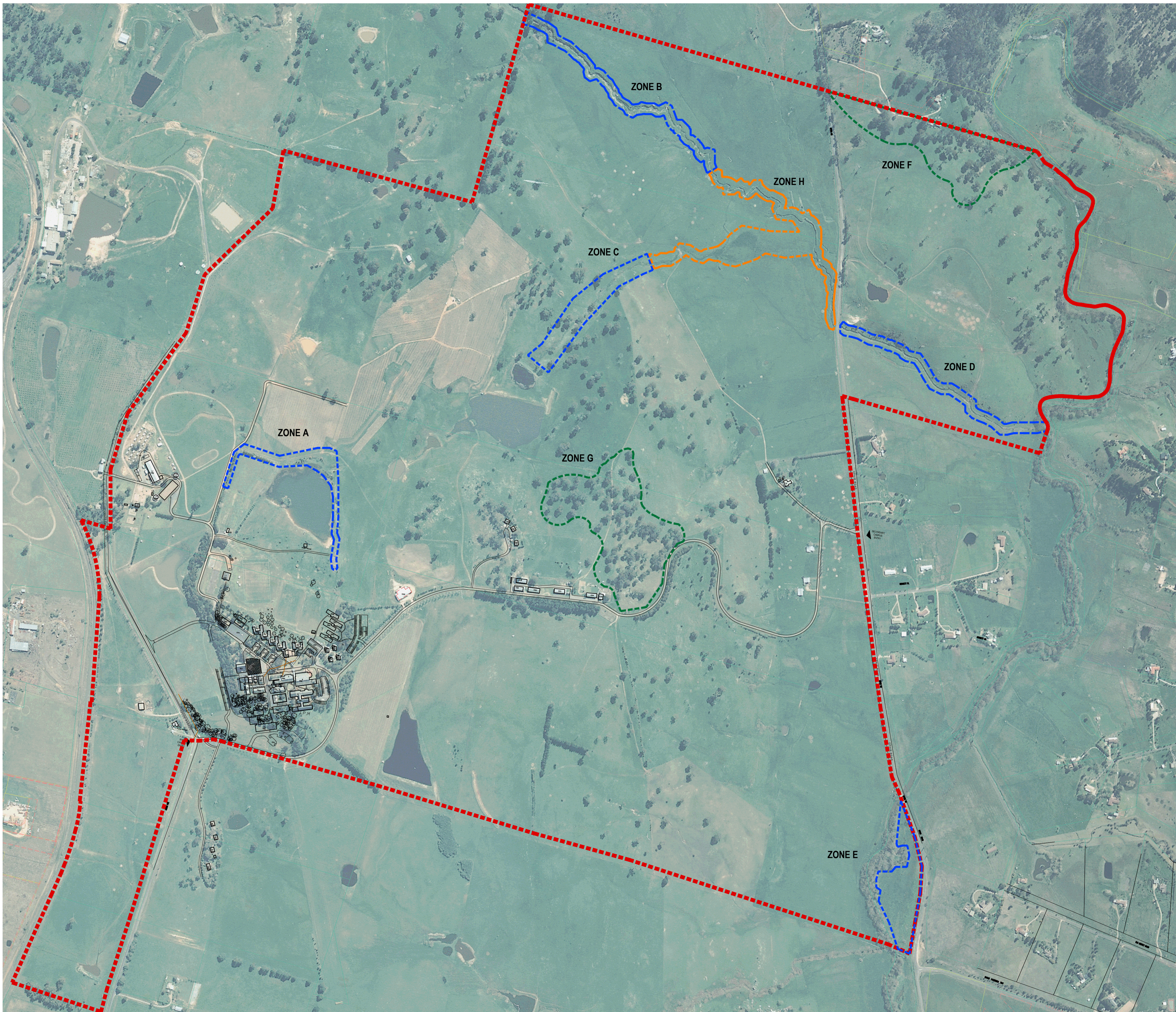
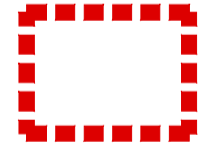

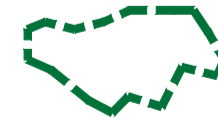



Figure 3-8 - Waste output from Orange Campus in 2012

### 3.6. BIODIVERSITY MAP



LEGEND:

-  CSU BOUNDARY : 473.9 HA
-  BIODIVERSITY ZONE: 11.4 HA
  - ZONE A: 1.8 HA
  - ZONE B: 2.4 HA
  - ZONE C: 2.6 HA
  - ZONE D: 2.0 HA
  - ZONE E: 2.6 HA
-  EPBC ZONE : 14.2 HA
  - ZONE F: 5.7 HA
  - ZONE G: 8.5 HA
-  OTHER AREAS
  - ZONE H: 4.8 HA

ORANGE CAMPUS  
 BIODIVERSITY ZONE PROPOSAL

## 4. Albury-Wodonga (Thurgoona) Campus Analysis

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### 4.1. CAMPUS SUMMARY

The Albury-Wodonga (Thurgoona) Campus recorded minor increases in electricity, natural gas and water consumption. This can be accounted for due to the commencement of operation of the new childcare centre in early 2012 as well as the Community Engagement and Wellness Centre (CEW) in mid-2012.

The Albury-Wodonga (Thurgoona) Campus also continues to make tremendous improvements in terms of its waste management. The Campus achieved a recycling rate of 47%, while the remaining 53% of waste generated on-Campus was sent to landfill. The Albury-Wodonga (Thurgoona) Campus is likely to be the first Campus to achieve CSU's waste target of a 70% diversion of general waste to landfill by 2014.

## 4.2. ELECTRICITY ANALYSIS

Albury-Wodonga (Thurgoona) Campus has recorded a normalised electricity intensity of 78kWh/m<sup>2</sup> (Figure 4-1). This is an increase in energy intensity of 1kWh/m<sup>2</sup> from 2006 to 2012.

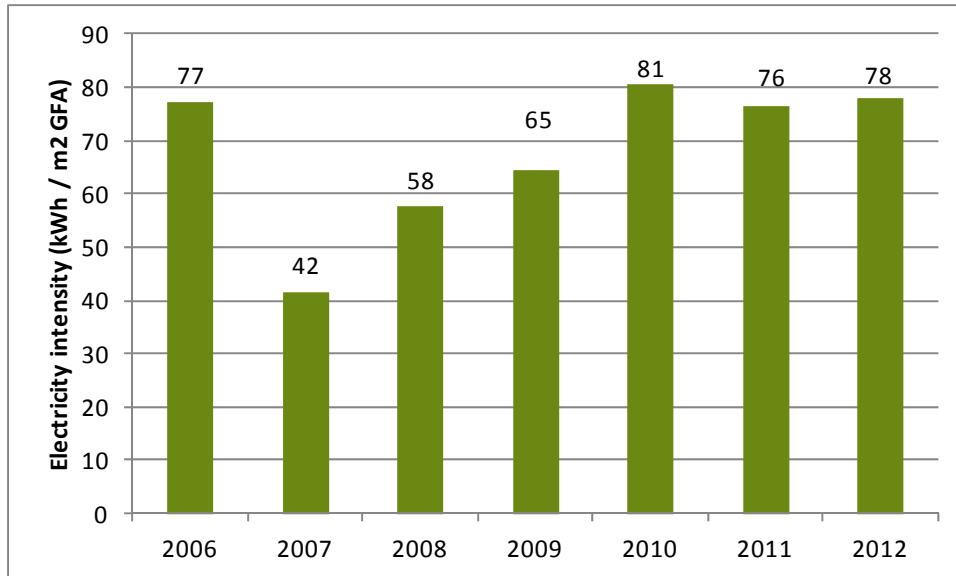


Figure 4-1 – Normalised electricity consumption at Albury-Wodonga (Thurgoona) Campus for the period 2006 to 2012

In 2012, there was a 93% increase in electricity use at Albury-Wodonga (Thurgoona) Campus compared with 2006 (Figure 4-2). This was a slight increase on 9% compared to 2011.

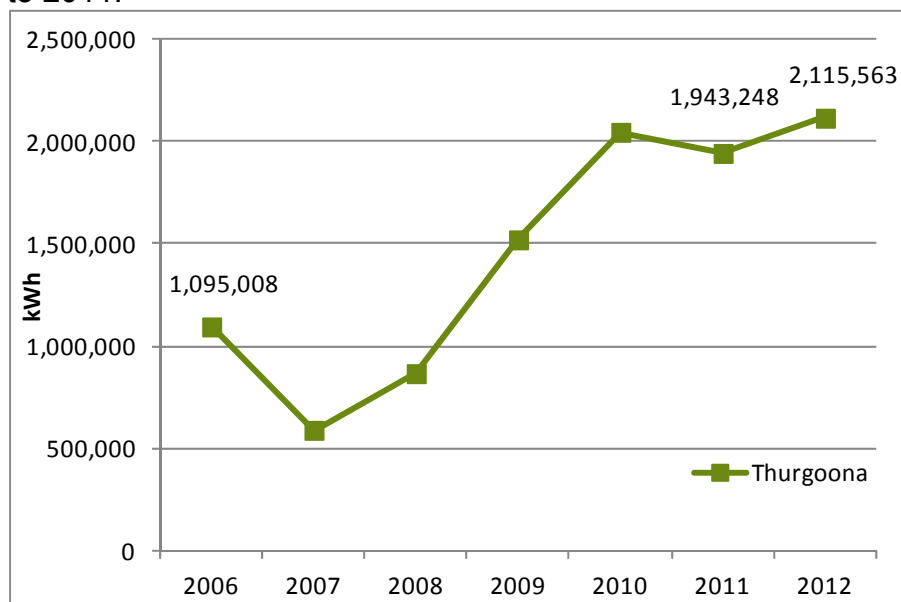


Figure 4-2 – Absolute electricity consumption at Albury-Wodonga (Thurgoona) Campus for the period 2006 to 2012

### 4.3. GAS ANALYSIS

Albury-Wodonga (Thurgoona) Campus has recorded a normalised natural gas intensity of 400MJ/m<sup>2</sup> (Figure 4-3). This is an increase in natural gas intensity of 42MJ/m<sup>2</sup> from 2006 to 2012.

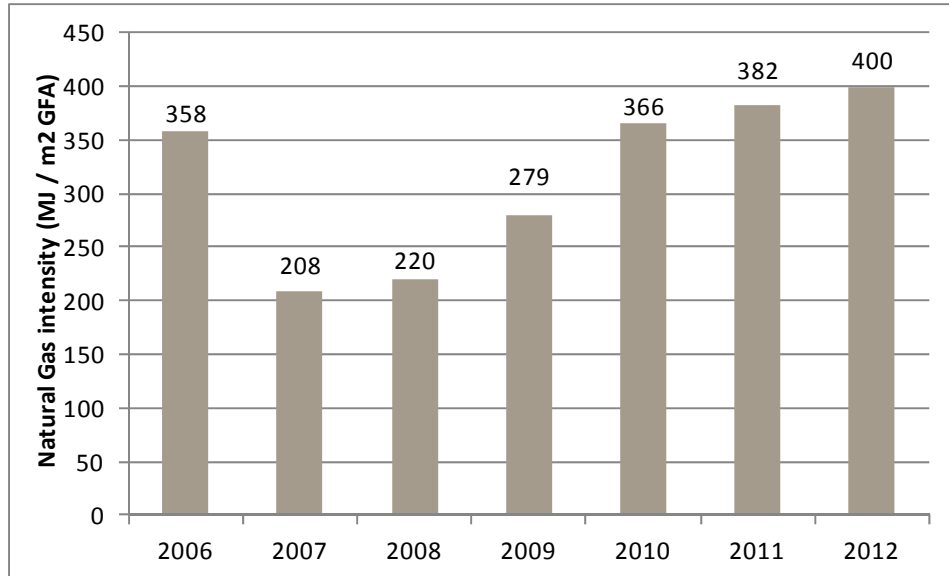


Figure 4-3 – Normalised natural gas consumption at Albury-Wodonga (Thurgoona) Campus for the period 2006 to 2012

In 2012, there was a 114% increase in gas use at Albury-Wodonga (Thurgoona) Campus compared with 2006 (Figure 4-4). This is an increase on 2011 consumption of 12%.

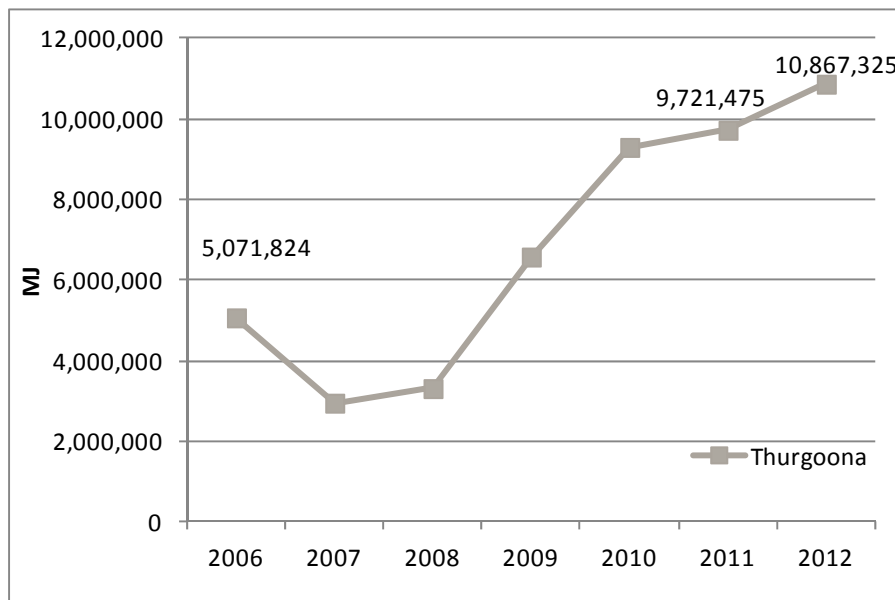


Figure 4-4 – Absolute natural gas consumption at Albury-Wodonga (Thurgoona) Campus for the period 2006 to 2012

#### 4.4. WATER ANALYSIS

Despite this absolute increase in water consumption, Albury-Wodonga (Thurgoona) Campus recorded a normalised mains water intensity of 0.5kL/m<sup>2</sup> (Figure 4-5) in 2012. This is equivalent to the normalised water consumption measured in 2011.

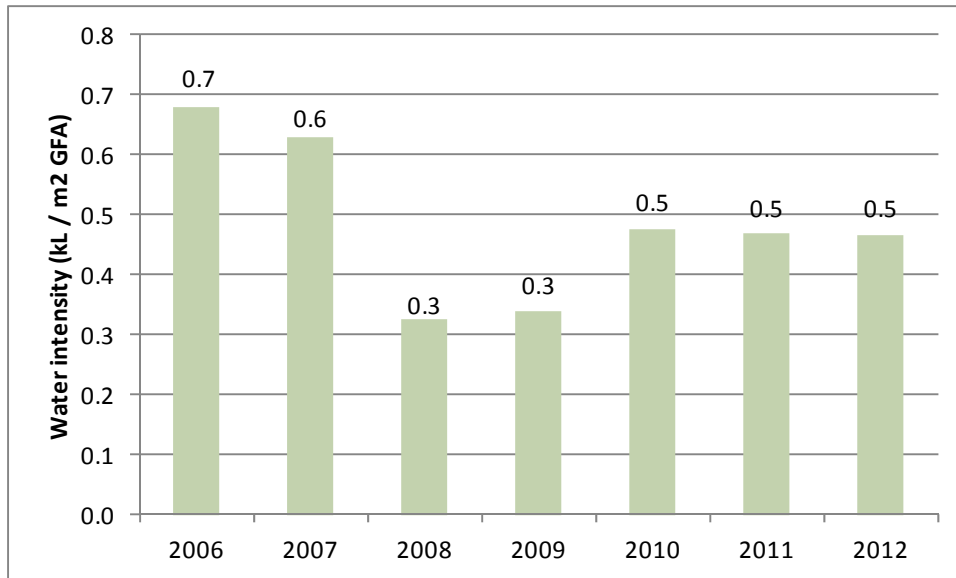


Figure 4-5 – Normalised water consumption at Albury-Wodonga (Thurgoona) Campus for the period 2006 to 2012

In 2012, there was an increase of 32% in the consumption of potable water at Albury-Wodonga (Thurgoona) Campus compared to 2006 (Figure 4-6). This change represents a slight increase of 7% on the 2011 consumption.

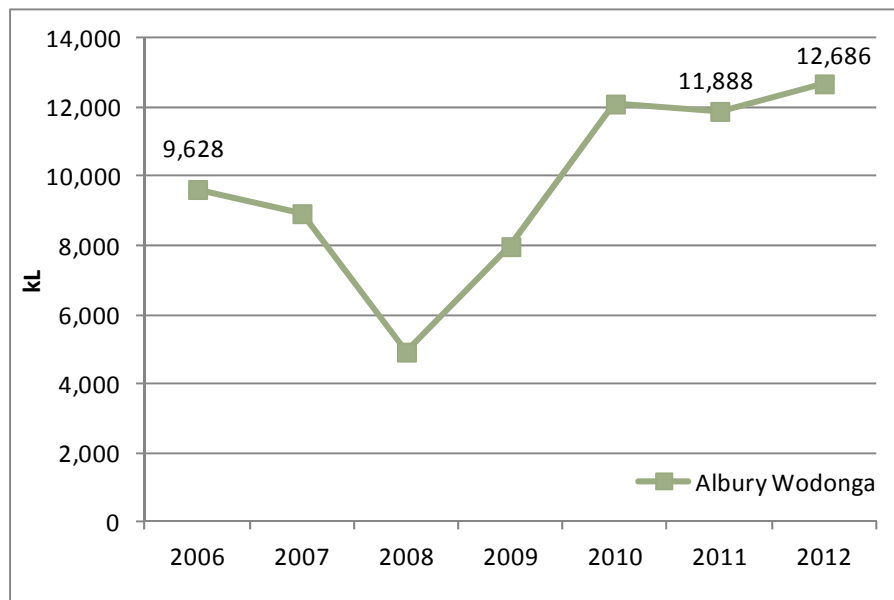


Figure 4-6 – Absolute water consumption at Albury-Wodonga Campus (Thurgoona) Campus for the period 2006 to 2012



#### 4.5. WASTE ANALYSIS

In 2012, general waste comprised of 53% of Albury-Wodonga (City) & Albury-Wodonga (Thurgoona) Campuses waste output (Figure 4-7). The remaining 47% was recycled. This means that Albury-Wodonga (City) & Albury-Wodonga (Thurgoona) Campuses are required to divert only an additional 23% of material from the General Waste to the recycling stream if it is to achieve its target of a 70% reduction of general waste to landfill by 2014.

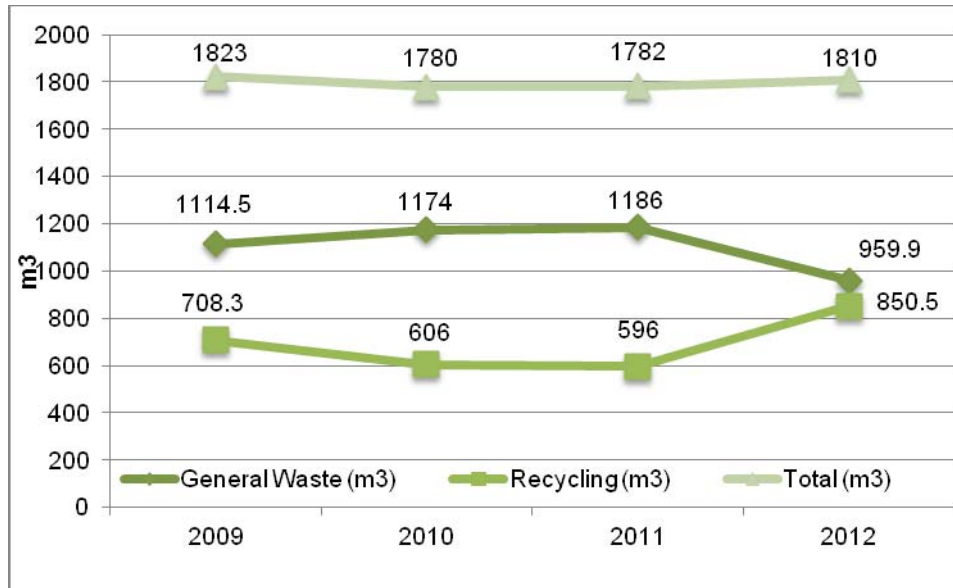
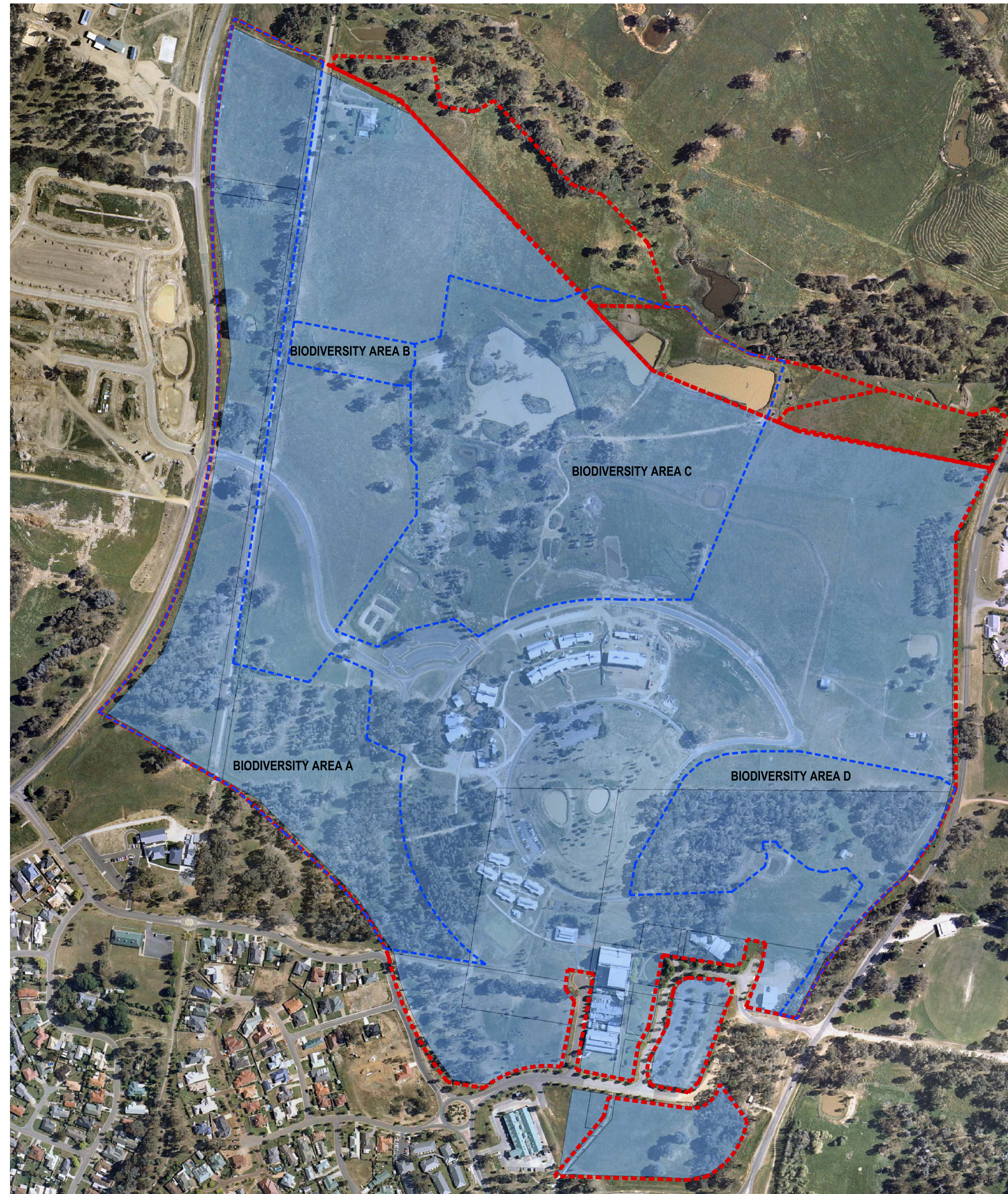
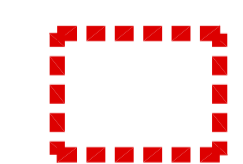
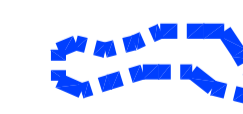


Figure 4-7 - Waste output from Albury-Wodonga (City) & Albury-Wodonga (Thurgoona) Campuses in 2012

#### 4.6. BIODIVERSITY MAP



LEGEND:

-  CSU BOUNDARY : 95.8 HA
-  BIODIVERSITY AREA: 38.4 HA
  - AREA A: 14.8 HA
  - AREA B: 0.9 HA
  - AREA C: 17.0 HA
  - AREA D: 5.7 HA

ALBURY CAMPUS  
BIODIVERSITY AREA PROPOSAL

## 5. Albury-Wodonga (City) Campus Analysis

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### 5.1. CAMPUS SUMMARY

2012 will be the last reporting year for the Albury-Wodonga (City) Campus. This Campus was finally vacated and then sold to a private developer in mid-2012. Utility consumption on this Campus had been declining for several years as a result of the re-location of staff from the City Campus to the Thurgoona Campus and as a result utility consumption was its lowest ever recorded in its final year of operation and ownership by CSU.

## 5.2. ELECTRICITY ANALYSIS

Albury-Wodonga (City) Campus has recorded a normalised electricity intensity of 20kWh/m<sup>2</sup> (Figure 5-1) in 2012. This is a decrease in energy intensity of 47kWh/m<sup>2</sup> from 2006.

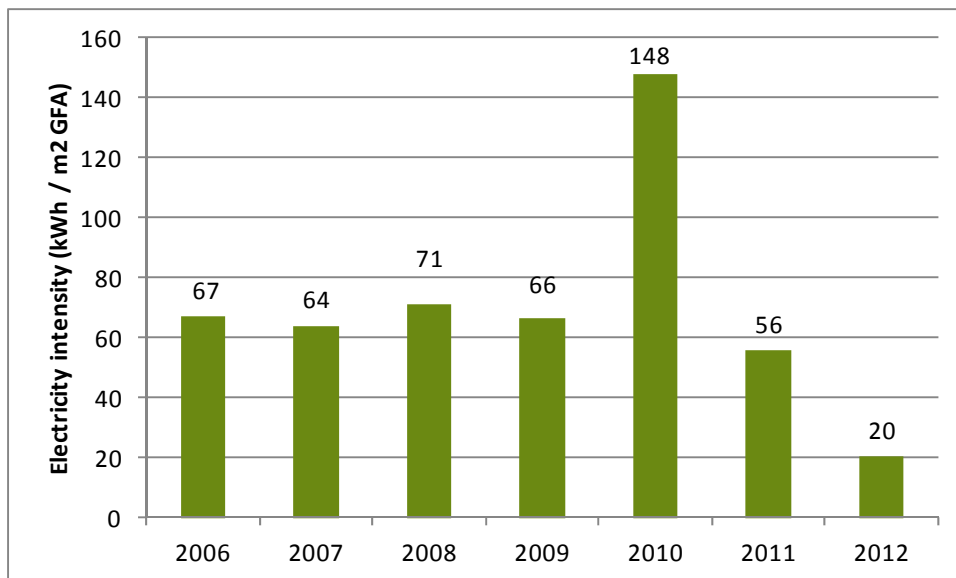


Figure 5-1 – Normalised electricity consumption at Albury-Wodonga (City) Campus for the period 2006 to 2012

In 2012, there was a 94% reduction in electricity use at Albury-Wodonga (City) Campus compared with 2006 (5-2). This represents a 64% decrease on 2011 consumption.

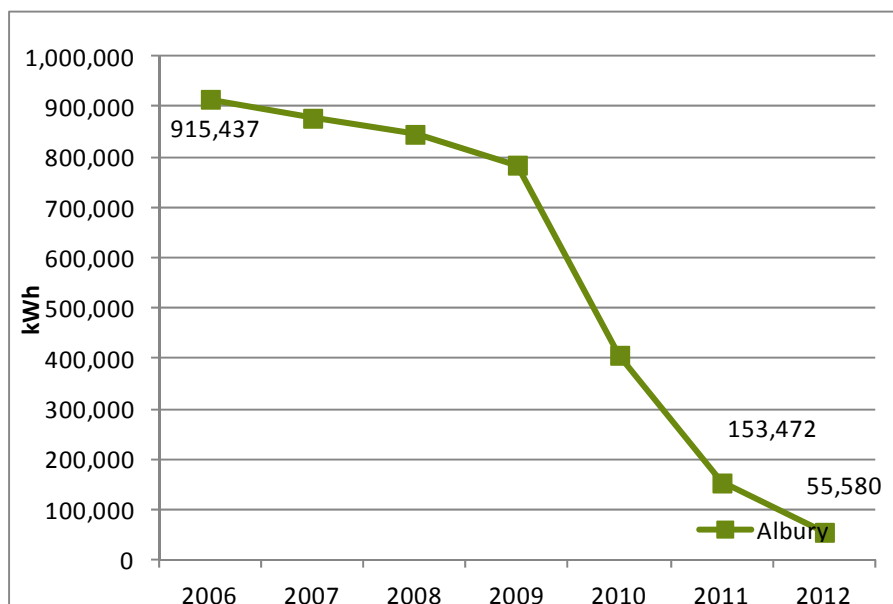


Figure 5-2 – Absolute electricity consumption at Albury-Wodonga (City) Campus for the period 2006 to 2012

### 5.3. GAS ANALYSIS

Due to the absolute decrease in natural gas consumption, Albury-Wodonga (City) Campus has recorded a normalised natural gas intensity of 63MJ/m<sup>2</sup> (Figure 5-3). This is a reduction in natural gas intensity of 303MJ/m<sup>2</sup> from 2006 to 2012.

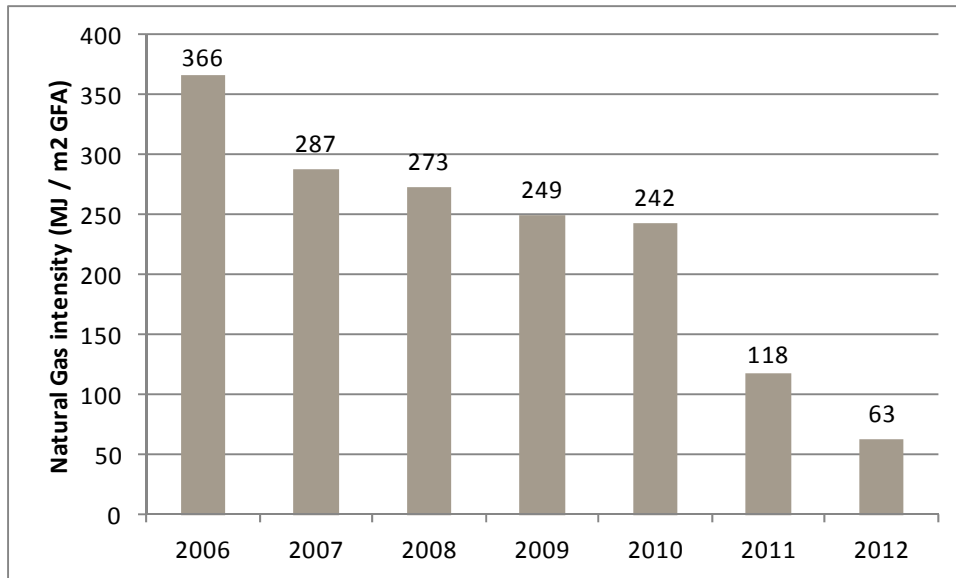


Figure 5-3 – Normalised natural gas consumption at Albury-Wodonga (City) Campus for the period 2006 to 2012

In 2012, there was a 96% reduction in natural gas use at Albury-Wodonga (City) Campus compared with 2006 (Figure 5-4). This represents a 47% decrease on consumption measured in 2011.

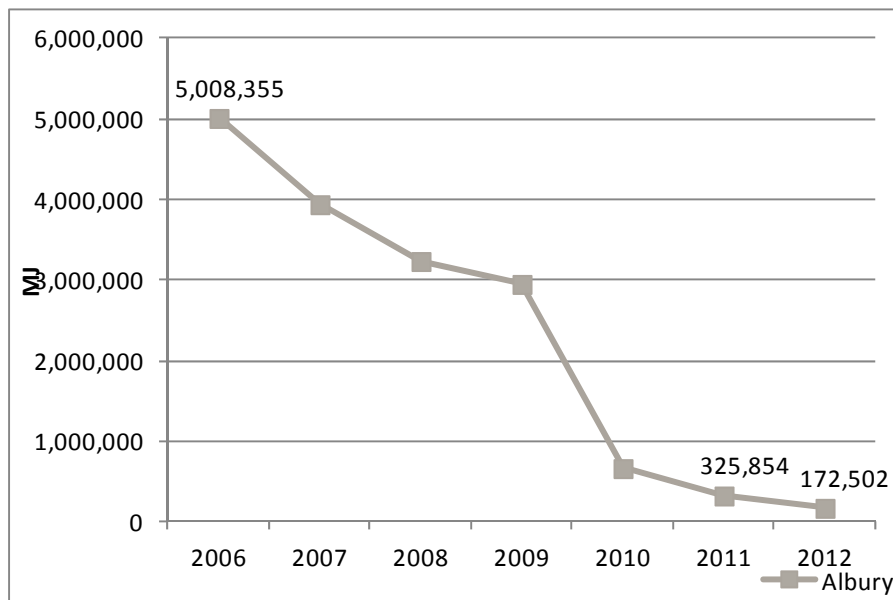


Figure 5-4 – Absolute natural gas consumption at Albury-Wodonga (City) Campus for the period 2006 to 2012

#### 5.4. WATER ANALYSIS

Albury-Wodonga (City) Campus recorded a normalised mains water intensity of 0.4kL/m<sup>2</sup> (Figure 5-5). This is a reduction in water intensity of 0.4kL/m<sup>2</sup> from 2006 to 2012.

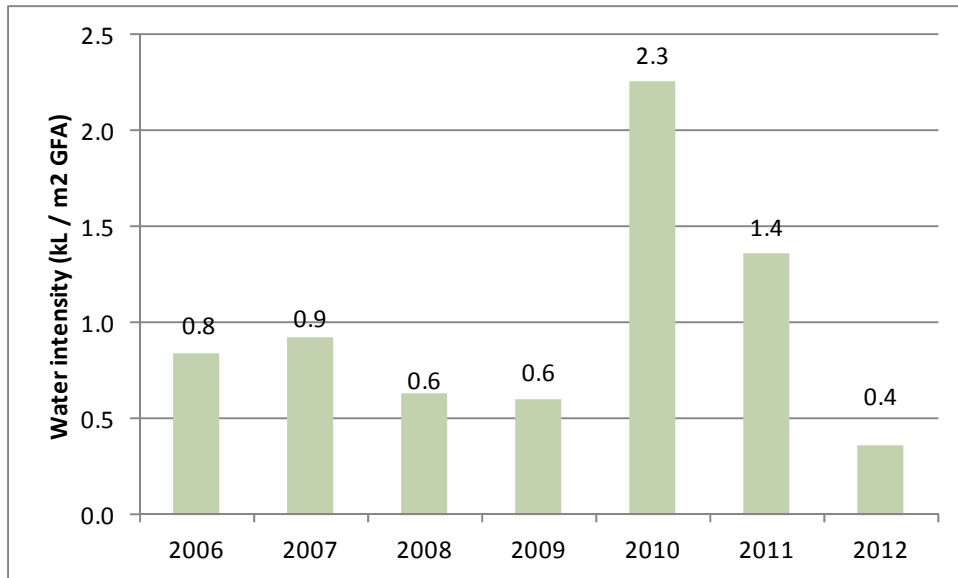


Figure 5-5 – Normalised water consumption at Albury-Wodonga (City) Campus for the period 2006 to 2012

In 2012, there was a 91% decrease in water consumption at Albury-Wodonga (City) Campus compared with 2006 (Figure 5-6). This represents a 74% decrease on 2011 consumption.



Figure 5-6 – Absolute water consumption at Albury-Wodonga (City) Campus for the period 2006 to 2012

## 6. Dubbo Campus Analysis

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### 6.1. CAMPUS SUMMARY

In 2012, Dubbo Campus managed to achieve a modest reduction in electricity consumption and also managed to maintain a level natural gas and water consumption compared to 2011. In terms of electricity, the Campus recorded a 16% decrease compared to 2011. Significant reduction in electricity consumption in 2012 was accounted for through improvements to HVAC controls made through the Building Management System.

The Dubbo Campus also managed to achieve an impressive recycling rate of 32% in 2012; however, the total quantity of waste being generated on the Campus did increase by 24% from 2011 to 2012 predominantly due to the operationalisation of the Dentistry building.

## 6.2. ELECTRICITY ANALYSIS

Dubbo Campus has recorded a normalised electricity intensity of 77kWh/m<sup>2</sup> (Figure 6-1). This is a decrease in energy intensity of 23kWh/m<sup>2</sup> from the baseline year 2006 to 2012.

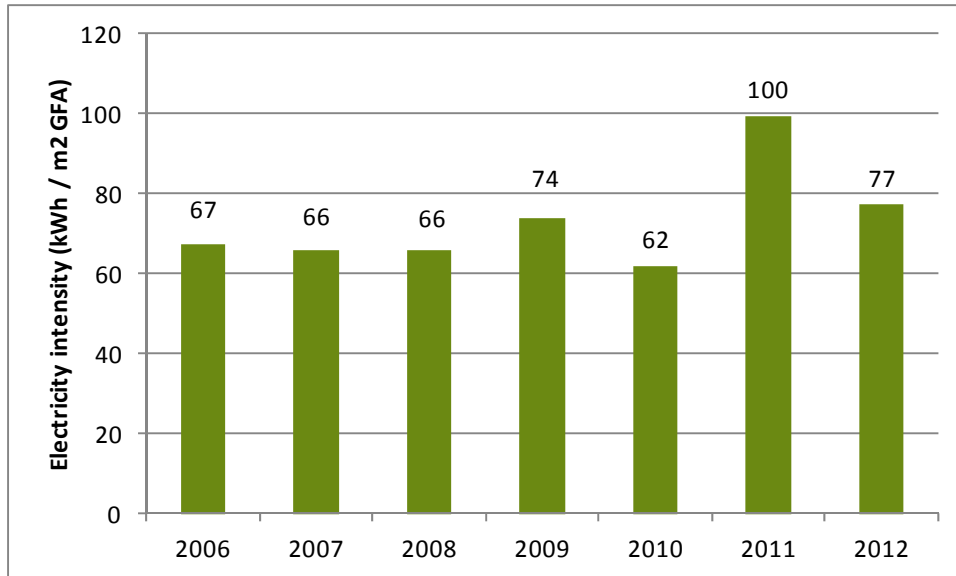


Figure 6-1 – Normalised electricity consumption at Dubbo Campus for the period 2006 to 2012

In 2012, there was a 51% increase in electricity use at Dubbo Campus compared with 2006 (Figure 6-2). This represents a 16% decrease on electricity consumption in 2011.

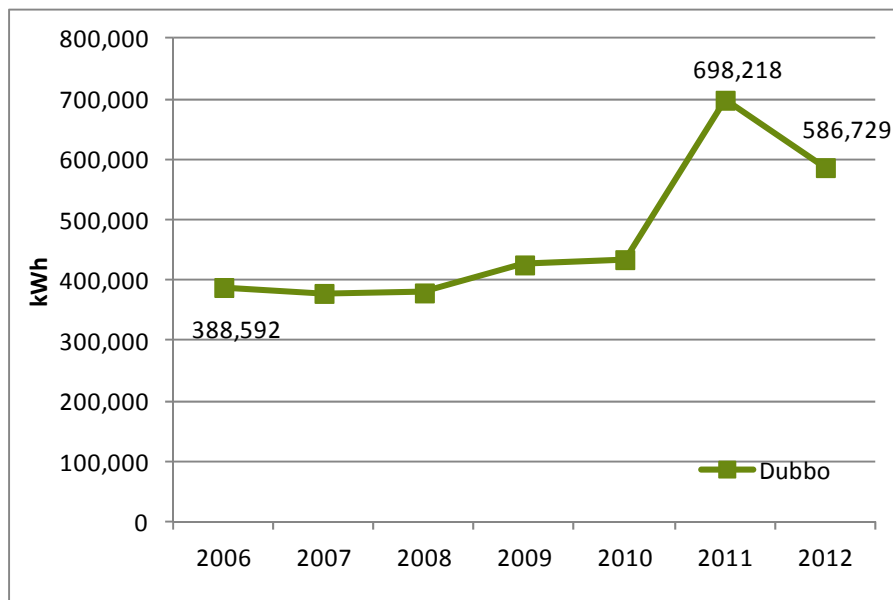


Figure 6-2 – Absolute electricity consumption at Dubbo Campus for the period 2006 to 2012



### 6.3. GAS ANALYSIS

Dubbo Campus has recorded a normalised natural gas consumption of 226MJ/m<sup>2</sup> (Figure 6-3). This is a reduction in natural gas intensity of 66MJ/m<sup>2</sup> from 2006 to 2012.

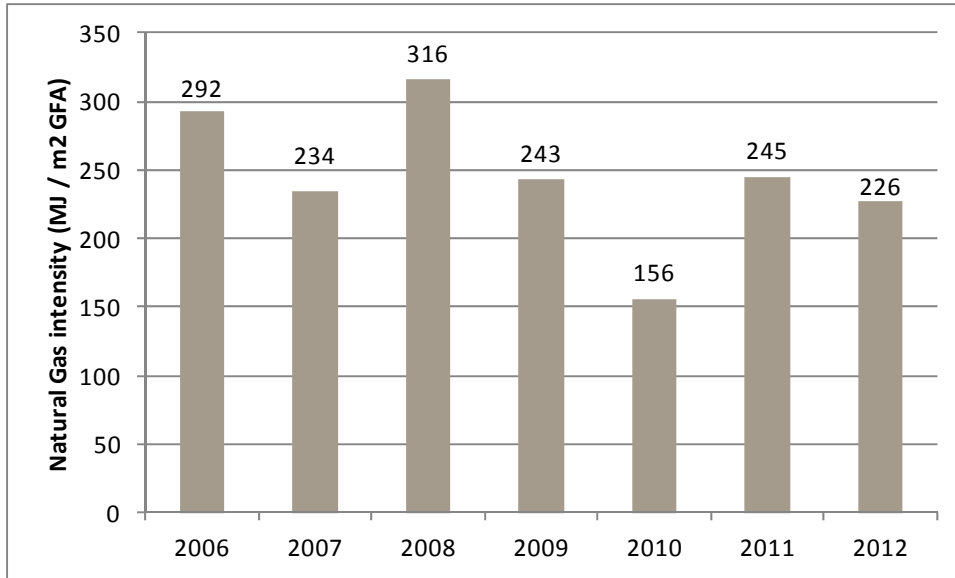


Figure 6-3 – Normalised natural gas consumption at Dubbo Campus for the period 2006 to 2012

In 2012, natural gas consumption remained level with consumption measured in 2011 (Figure 6-4). This equates to an increase of 2% compared to the baseline year of 2006.

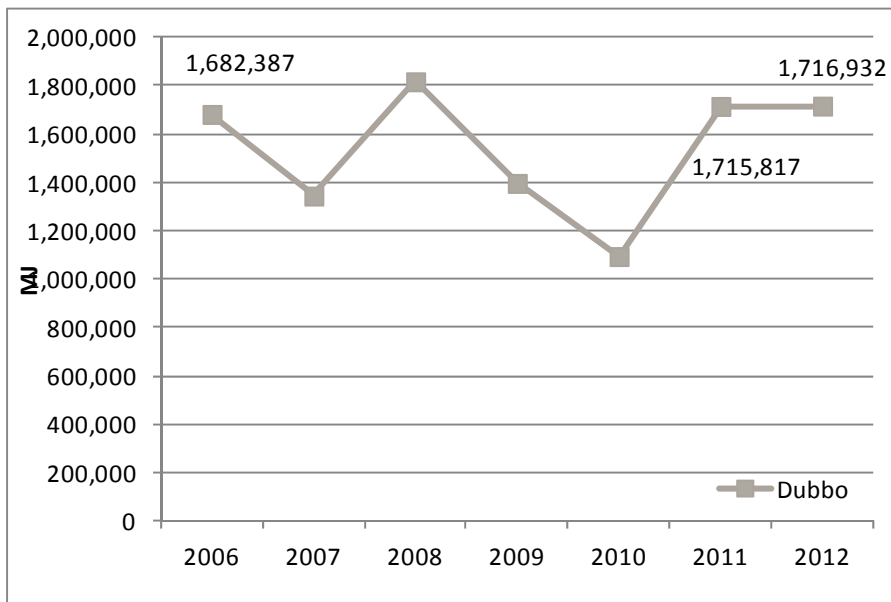


Figure 6-4 – Absolute natural gas consumption at Dubbo Campus for the period 2006 to 2012

The River St Dentistry Clinic at the Dubbo Campus utilise LPG supplied from on-site LPG Tanks. 2012 was the first operational year for this facility, and as a result, recorded a significantly increased consumption of 113,645 MJ (Figure 6-5).

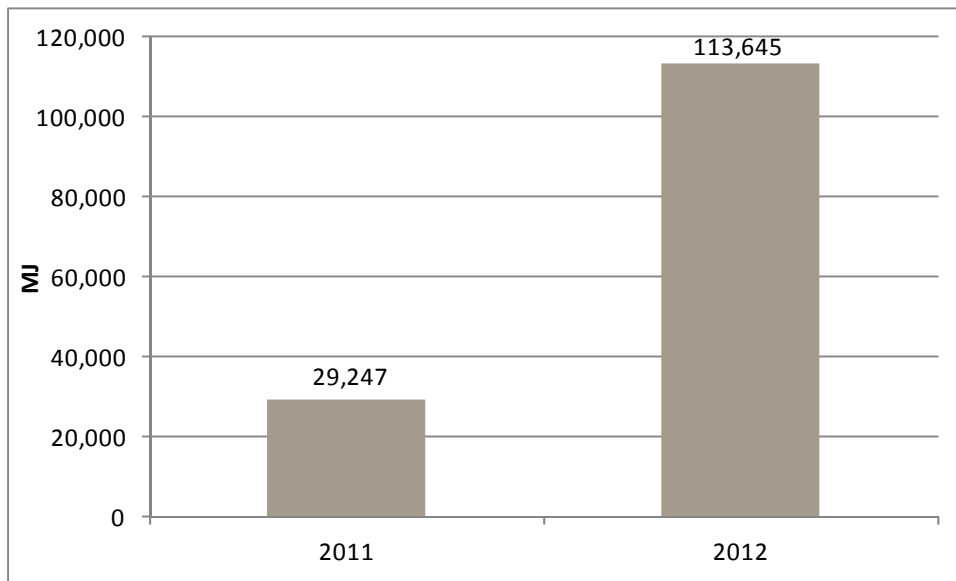


Figure 6-5 – Absolute LPG consumption at Dubbo Campus during 2012

#### 6.4. WATER ANALYSIS

Dubbo Campus recorded a normalised mains water intensity of 0.8kL/m<sup>2</sup> (Figure 6-6). This is a reduction in water intensity of 1.5kL/m<sup>2</sup> from 2006 to 2012.

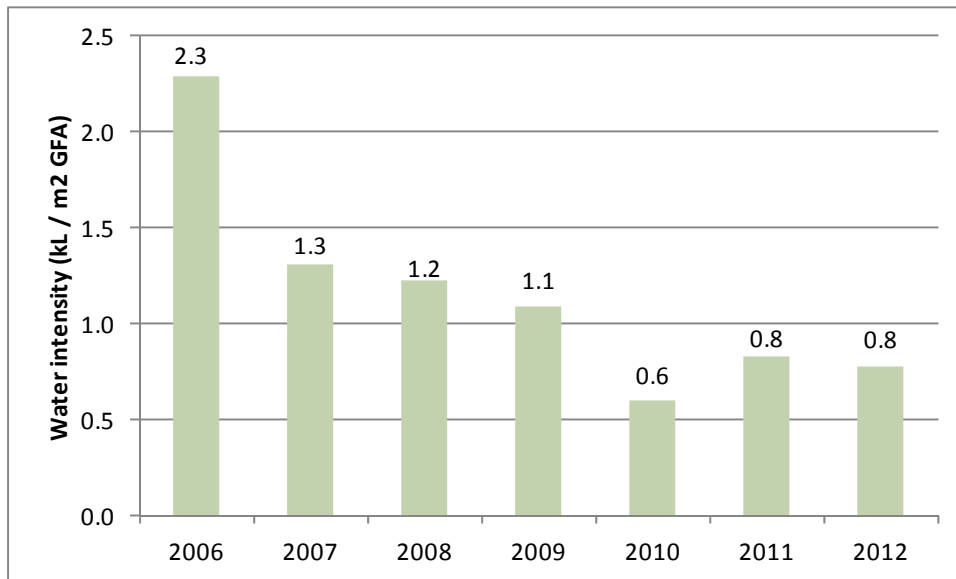


Figure 6-6 – Normalised water consumption at Dubbo Campus for the period 2006 to 2012

In 2012, there was a 55% reduction in water use at Dubbo Campus compared with 2006 (Figure 6-7). This is an increase of 2% compared to consumption in 2011.

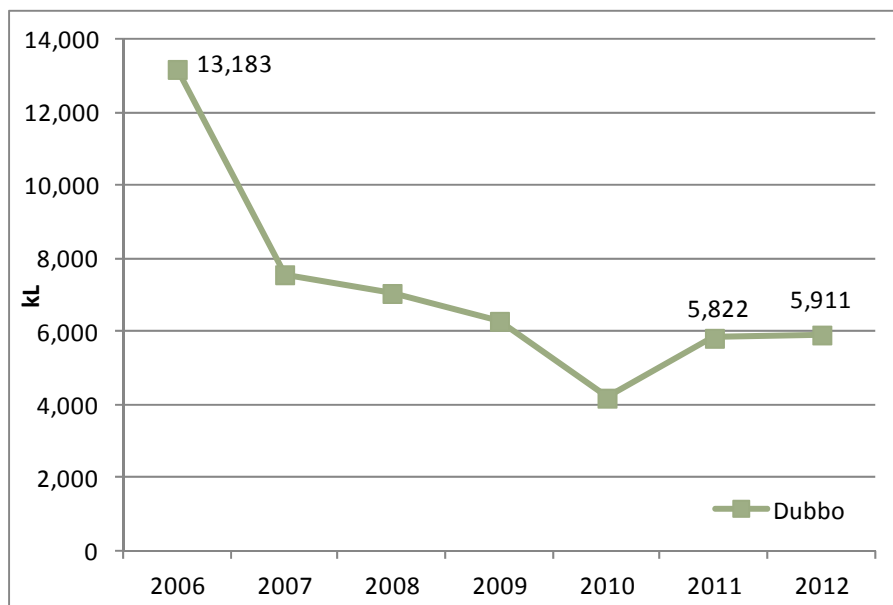


Figure 6-7 – Absolute water consumption at Dubbo Campus for the period 2006 to 2012

### 6.5. WASTE ANALYSIS

In 2012, general waste comprised of 68% of Dubbo Campuses waste output (Figure 6-8). The remaining 32% was recycled. This means that Dubbo Campus is required to divert an additional 38% of material from the General Waste to the recycling stream if it is to achieve its target of a 70% reduction of general waste to landfill by 2014.

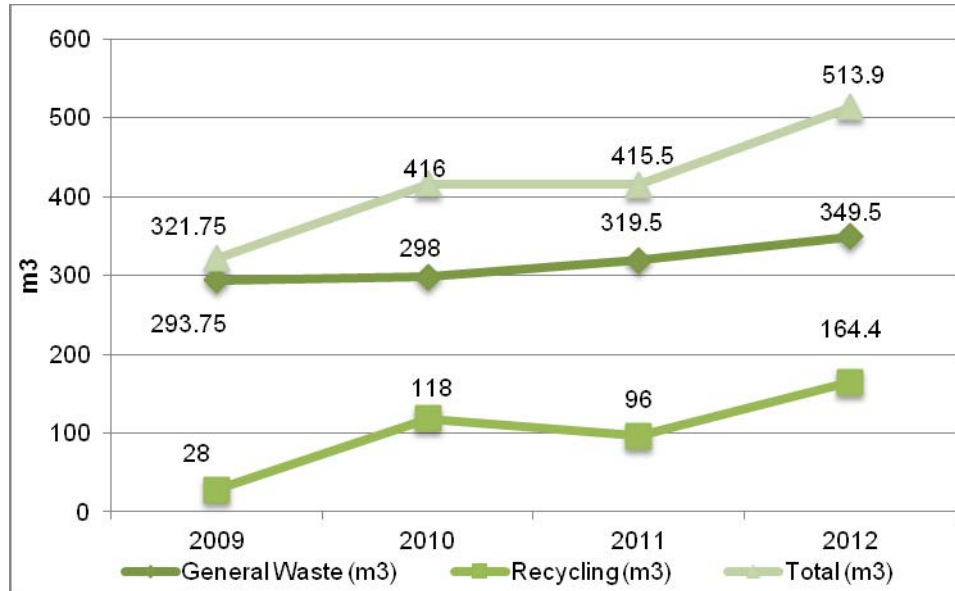
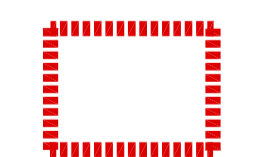
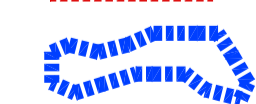


Figure 8-8 – Waste output from Dubbo Campus in 2012

### 6.6. BIODIVERSITY MAP



LEGEND:

-  CSU BOUNDARY : 46.6 HA
-  BIODIVERSITY AREA: 10.9 HA

DUBBO CAMPUS  
BIODIVERSITY AREA PROPOSAL

## 7. Canberra Campus Analysis

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### 7.1. CAMPUS SUMMARY

2012 was a year in which the Campus achieved significant reduction in electricity consumption (12%), natural gas consumption (31%) and water consumption (14%). The reduction in natural gas can most likely be attributed to the replacement of the controller for the boiler in the Chapel, which allowed for more efficient boiler operation. The improvements in water consumption can be attributed to the identification and repair of some leaks in the Campus irrigation system and some repairs to the controller that prevented the irrigation from switching on during or immediately after wet weather.

In terms of electricity consumption, the only project which could be identified that may account for this minor reduction was a replacement of high-wattage 'up-lights' outside the Chapel building with significantly lower wattage lamps.

The Campus managed to achieve an impressive recycling rate of 37%, and will be looking to improve this figure in 2013 through the implementation of a number of CSU Green waste initiatives.

## 7.2. ELECTRICITY ANALYSIS

Canberra Campus has recorded a normalised electricity intensity of 32kWh/m<sup>2</sup> (Figure 7-1). This is a decrease in energy consumption of 2kWh/m<sup>2</sup> from 2006 to 2012.

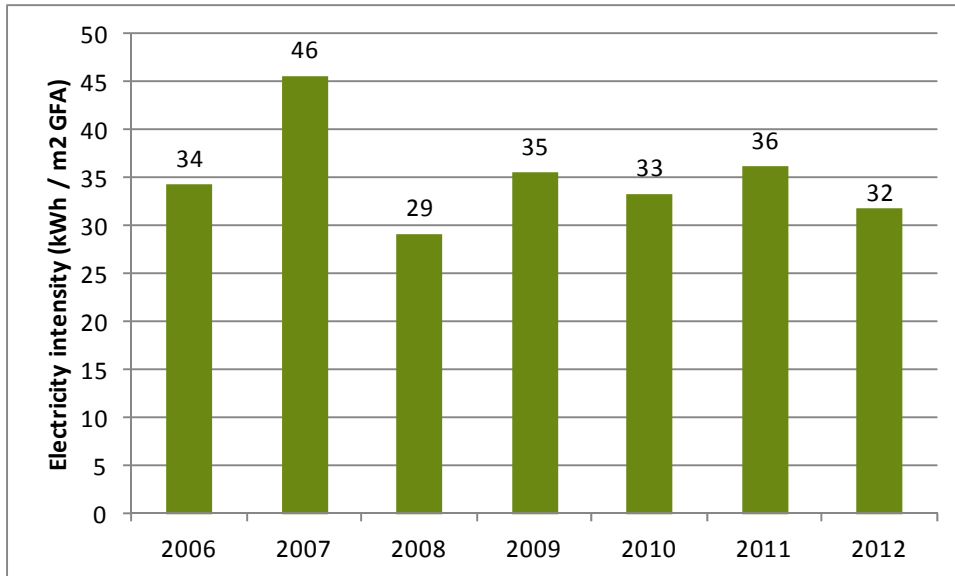


Figure 7-1 – Normalised electricity consumption at Canberra Campus for the period 2006 to 2012

In 2012, there was a 76% increase in electricity use at Canberra Campus compared with 2006 (Figure 7-2). This represents a 12% decrease on 2011 figures.

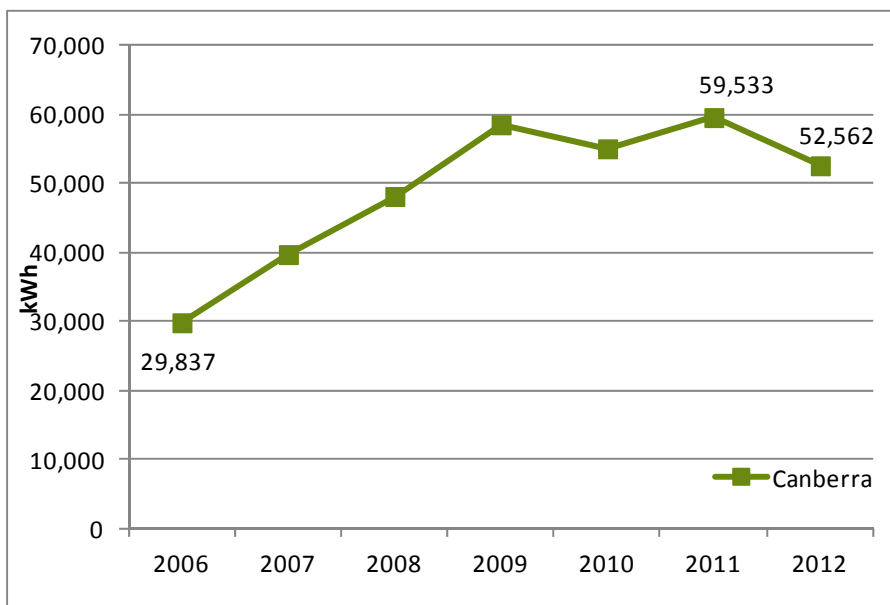


Figure 7-2 – Absolute electricity consumption at Canberra Campus for the period 2006 to 2012

### 7.3. GAS ANALYSIS

Canberra Campus has recorded a normalised natural gas intensity of 101MJ/m<sup>2</sup> (Figure 7-3). This is a decrease in natural gas intensity of 45MJ/m<sup>2</sup> from 2006 to 2012.

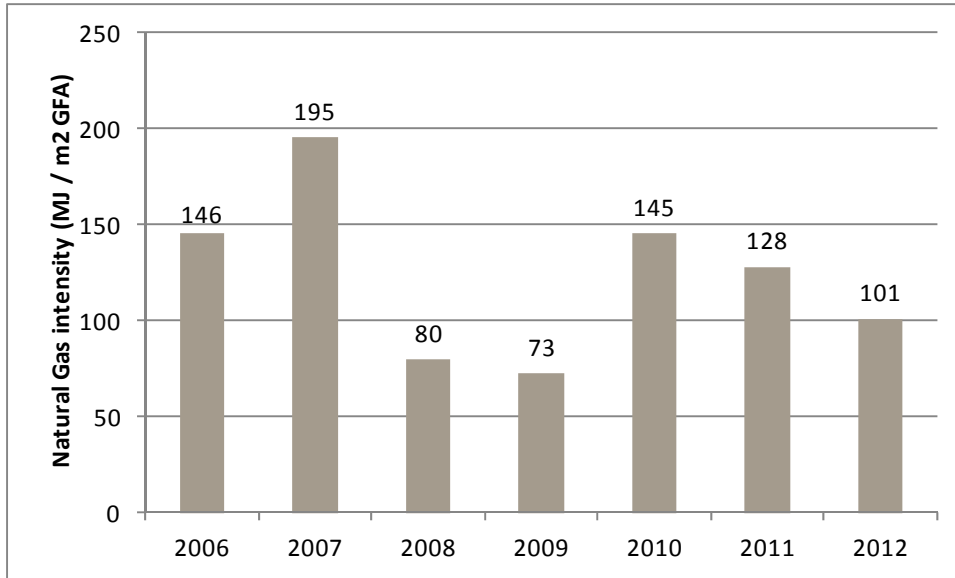


Figure 7-3 – Normalised natural gas consumption at Canberra Campus for the period 2006 to 2012

In 2012, there was a 31% decrease in natural gas consumption at Canberra Campus compared with 2006 (Figure 7-4). This is a 21% decrease on the previous year's consumption.

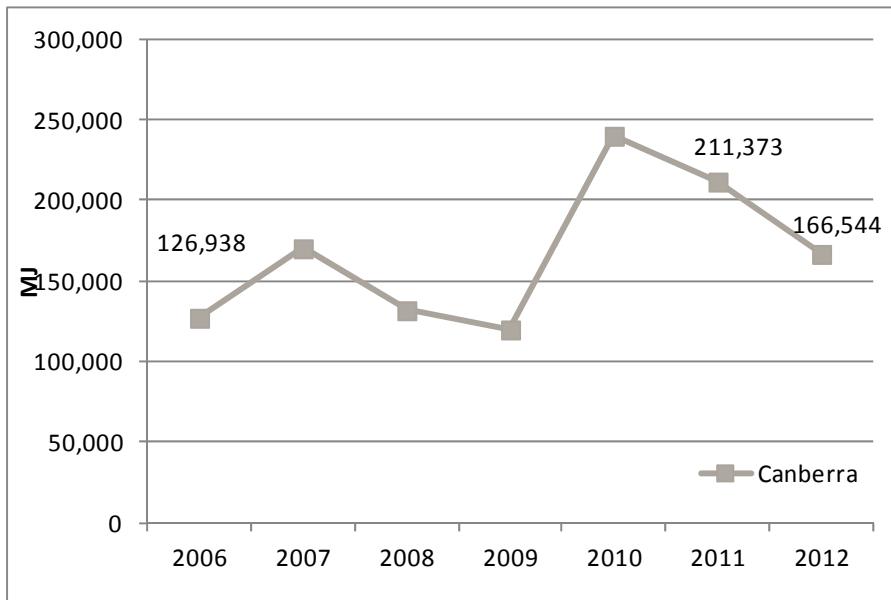


Figure 7-4 – Absolute natural gas consumption at Canberra Campus for the period 2006 to 2012



#### 7.4. WATER ANALYSIS

Canberra Campus recorded a normalised mains water intensity of 1.2kL/m<sup>2</sup> (Figure 7-5). This is a reduction of 1.0kL/m<sup>2</sup> in normalised waster consumption from the baseline year 2006.

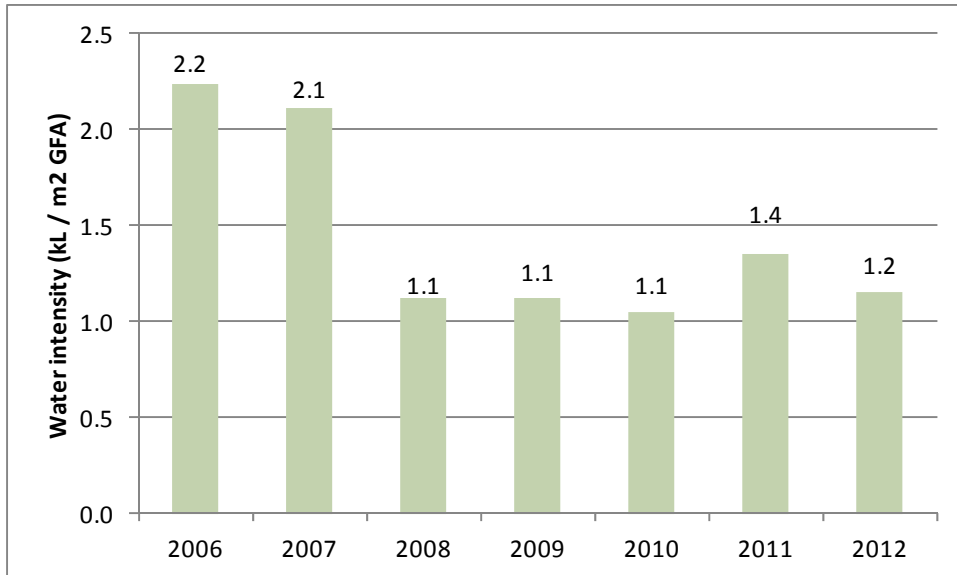


Figure 7-5 – Normalised water consumption at Canberra Campus for the period 2006 to 2012

In 2012, there was a decrease in the volume of water consumed by the Campus, with a 14% decrease on the previous year (2011) consumption. This equates to a decrease of 2% on the baseline year of 2006 (Figure 7-6).

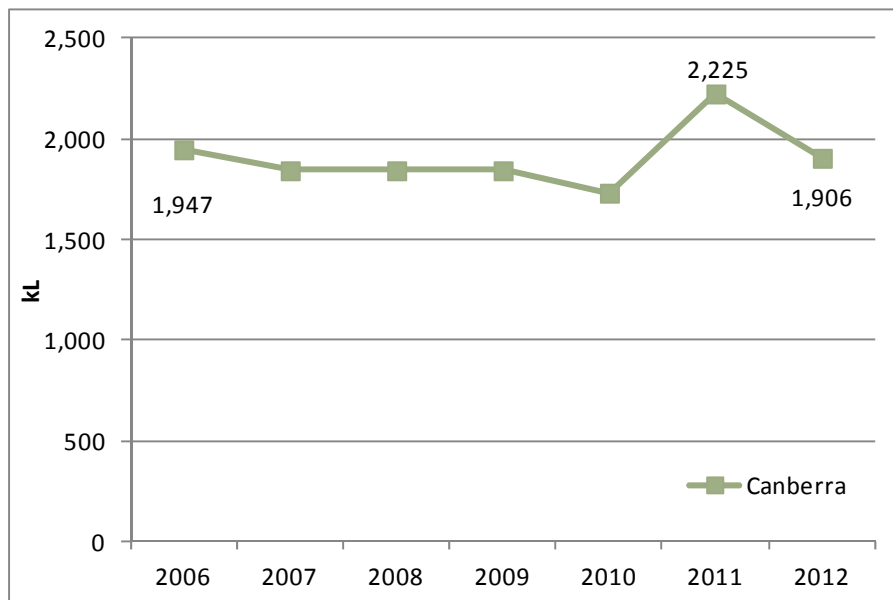


Figure 7-6 – Absolute water consumption at Canberra Campus for the period 2006 to 2012

### 7.5. WASTE ANALYSIS

In 2012, Canberra Campus disposed of 32m<sup>3</sup> (63%) of general waste and recycled 18.75m<sup>3</sup> (37%) of waste (Figure 7-7). This means that an additional 33% of Canberra Campuses total waste output needs to be diverted from general waste if it is to achieve its waste target.

Recycling at Canberra Campus increased by 13% while general waste output decreased by 3%.

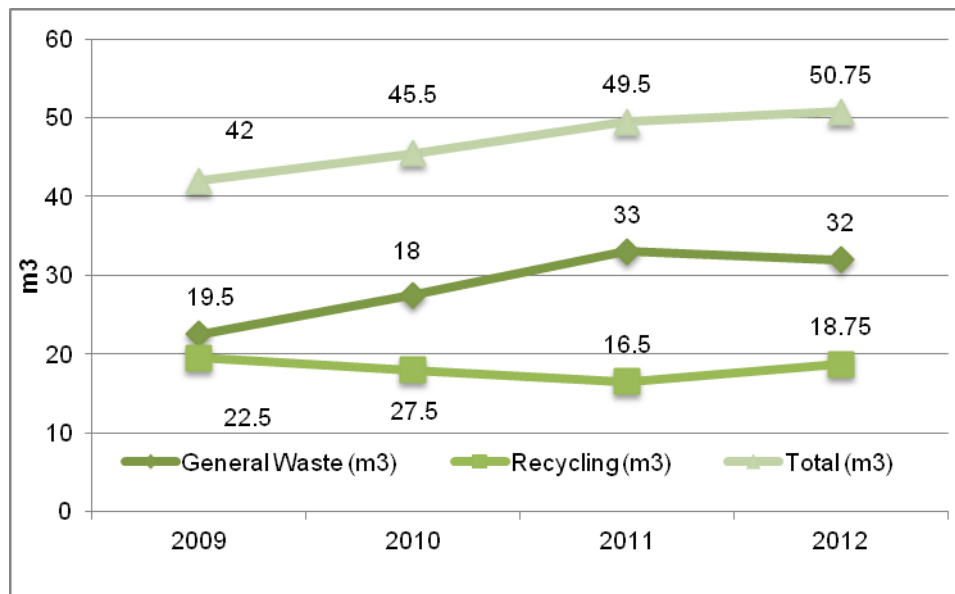


Figure 7-7 – Waste output from Canberra Campus in 2012