

# Waste Management Strategy

A submission to Liverpool Plains Shire Council

09 January 2018



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**Document history**

<b>Title</b>	<b>Version no.</b>	<b>Status</b>	<b>Date</b>
Liverpool Plains Waste Management Strategy	2	Final	09/01/2018

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## Strategy at a glance

### Where are we today?

Liverpool Plains Shire Council (LPSC) is an LGA in the New England region of NSW and home to an estimated population of just over 7,000 people, consisting of just over 3,300 households. The population is projected to remain quite steady over the next 10 years. Waste generation is projected to grow from 5,751 tonnes per annum in FY 2017 to 9,427 tonnes per annum by FY27. The LGA's resource recovery performance was at an above average level, compared to similar regions in NSW, at the last state-wide review. An estimated recycling rate of 41% was achieved in FY17 and it is projected to improve to 45% by FY27.

Current waste services include domestic and commercial kerbside collection of general waste, recycling and bulky waste for approximately 88% of households in the LGA. Furthermore, all residents have access to seven landfills and two transfer stations throughout the LGA. Waste service contracts for processing and collection are due to expire soon, with some room for improvement in price and contract management.

Council's waste facilities are performing at a below average level, particularly in terms of financial, environmental and operational performance. Council has waste initiatives and programs in place to promote improved waste management performance however there is scope to improve the operation of Council's landfills.

### Where do we want to go to?

The vision for the 10-year period considered under this strategy is to: maintain and improve on a reliable, independent and sustainable waste management system for LPSC's residents. Specifically, four themes are envisioned: maintaining the LGA's independence and self-sufficiency, optimising waste management costs, improving amenity and environmental management and increasing the accessibility of waste facilities for residents.

### How do we get there?

To establish an action plan for achieving the strategy's vision and themes, a review and consultation process was conducted with Council. An action plan was created for the next 10 years to achieve LPSC's immediate strategy objectives. These actions include: establish Willow Tree landfill as the LGA's primary landfill, thus replacing Quirindi landfill; conduct a competitive tender process for new collection and processing contracts; review Council's waste charge and landfill fees to optimise waste costs and secure funds for undertaking the proposed actions; introduce a waste transfer system to improve accessibility and ease of use of waste facilities and restrict public access to the tip-face; Rehabilitate the landfills; and introduce practical measures to improve resource recovery, beginning with bulky waste when the other system changes have been successfully implemented and received.

### How will the strategy be implemented?

The strategy will be implemented in a staged manner, beginning with the most urgent actions. The need to allow the community to 'settle into' changes and plan for funding arrangements, also informed the staged implementation of the strategy.

### How to measure success

Success will be measured to ensure that the action plan is achieving the strategic objectives. A bi-annual summary will report on delays, waste performance, community concerns and spending efficiency.

## Glossary

Term or abbreviation	Description
ABS	Australian Bureau of Statistics
CAGR	Compound Annual Growth Rate
CDS	Container Deposit Scheme
DP&E	Department of Planning and Environment
EPA	Environmental Protection Licence
Hhlds	Households
IBC	Intermediate bulk containers
LGA	Local Government Area
LPSC	Liverpool Plains Shire Council
MGB	Mobile garbage bin
MRF	Materials recovery facility. "A materials recovery facility handles a range of recyclables which typically have already been separated from other waste streams (e.g. by householders or businesses at the collection stage). At the MRF the materials are sorted into individual streams before being sent for recycling. Any components of the incoming material not suitable for recycling will be separated as 'contaminants' at the MRF." (NSW EPA, 2014)
NIRW	Northern Inland Regional Waste
POEO Act	Protection of the Environment Operations Act (NSW)
RID	Report Illegal Dumping
Transfer Station	A transfer station is a facility at which waste is temporarily stored while it is consolidated for transport to disposal or processing.
WLRM	Waste Less, Recycling More

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# 1 Where are we today?

## 1.1 Population and demographic information

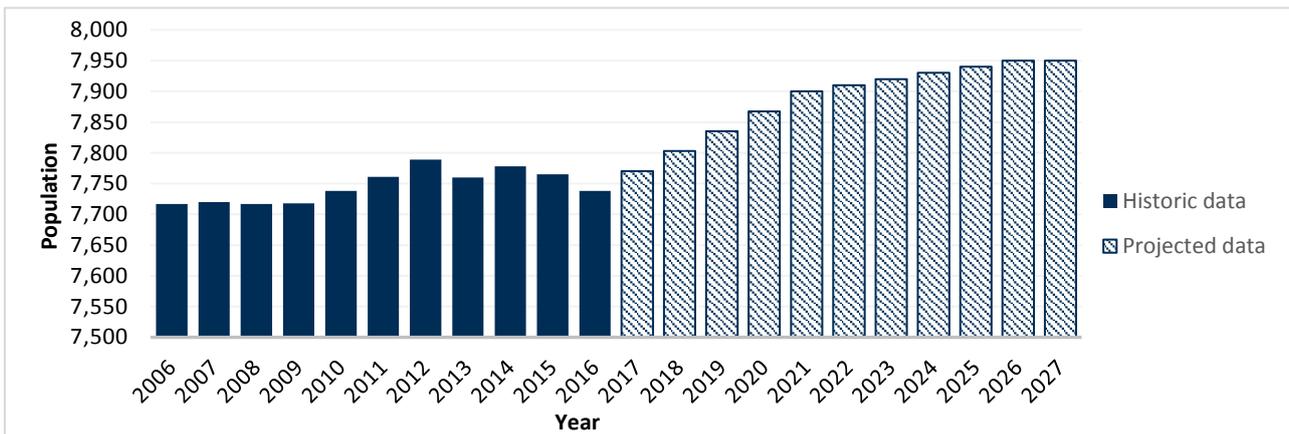
Liverpool Plains Shire Council (“LPSC”) is a Local Government Area (“LGA”) covering approximately 5,000 square kilometres of the New England region of NSW.

The Australian Bureau of Statistics (“ABS”) estimated LPSC’s resident population at 7,738 in 2016, an increase of only 21 people since 2006 (Figure 2) (ABS, 2017). With an average household size of 2.31 persons (DP&E, 2016), households in LPSC numbered 3,350 in 2016. According to the 2011 Census, the Aboriginal and Torres Strait Islander population totaled 816 in 2011, with a median age of 24 years (ABS, 2011). 11% of LPSC’s residents are of A&TSI background.

Figure 1 Location of LPSC in NSW



Figure 2 LPSC population forecast 2006-2027 (ABS, 2017 and DP&E, 2016)

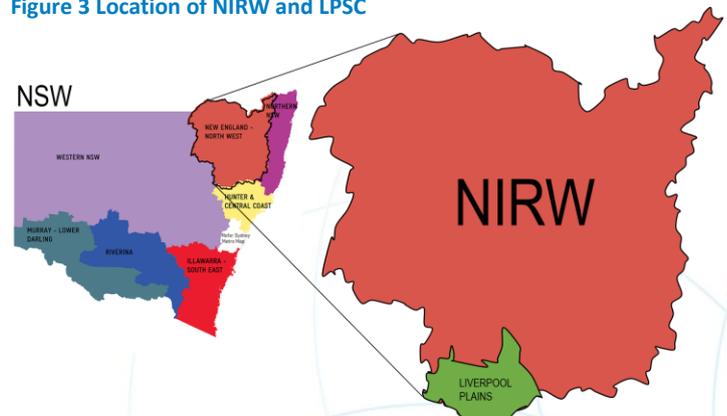


LPSC is a member of Northern Inland Regional Waste (NIRW). NIRW is a voluntary group of councils covering nearly 100,000 square kilometres of the New England and North-West Region of NSW (Figure 3) with a combined population of around 180,000 people.

The other member councils of NIRW are:

- Armidale Dumaresq Council;
- Glen Innes Severn Council;
- Gunnedah Shire Council;
- Guyra Shire Council;
- Gwydir Shire Council;
- Inverell Shire Council;
- Moree Plains Shire Council;
- Narrabri Shire Council;
- Tamworth Regional Council;

Figure 3 Location of NIRW and LPSC



- Tenterfield Shire Council;
- Uralla Shire Council and
- Walcha Council.

## 1.2 Waste and resource recovery collection and processing systems

LPSC provides a kerbside collection service to all major townships in the LGA. In 2017, this amounted to 2,827 households, or approximately 88% of all households in the LGA. In addition, all residents have access to a self-haul and drop-off service at nine waste facilities. Table 1 summarises the domestic waste collection services provided by LPSC.

**Table 1 Summary of the waste services provided by LPSC**

Collection Service	Tonnes collected (2016) <sup>1</sup>	Bin (size)	Bin-lid colour	Service Frequency	Service coverage (% hhlds)	Operator
<b>Residual</b>	1,589	240 L	Red	Weekly	88%	JR Richards & Sons
<b>Recycling</b>	508	240 L	Yellow	Fortnightly	87%	JR Richards & Sons
<b>Clean-up</b>	3,522	N/A	N/A	Twice per year	88%	JR Richards & Sons
<b>Self-haul and drop off</b>		N/A	N/A	24/7 for small amounts	100%	Merinda Recycling and LPSC

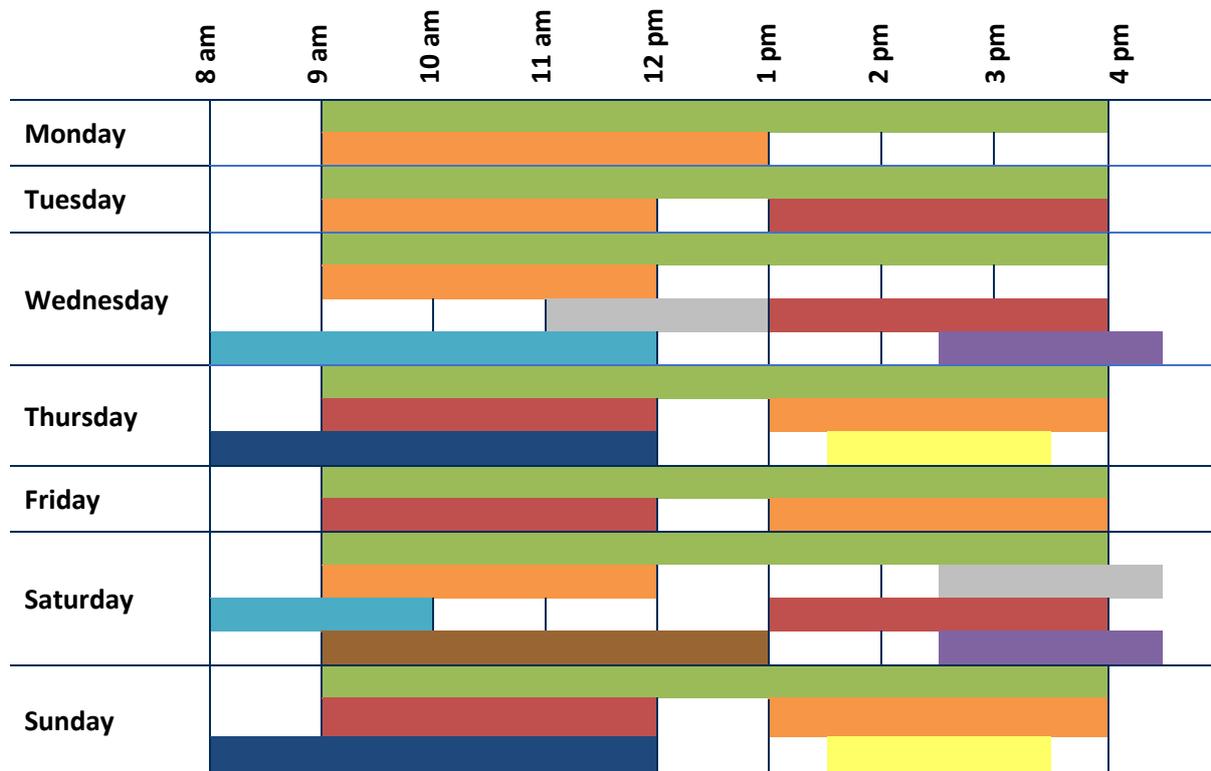
The opening hours of LPSC's waste facilities vary (Figure 5), although all facilities, except for Wallabadah Transfer Station, provide 24/7 access to a recycling station. Each recycling station receives small amounts of non-organic general waste, paper and cardboard and other recyclables. Figure 4 presents an image of the recycling station at Blackville Transfer Station; the design is standard across all nine waste facilities.

**Figure 4 Recycling station at Blackville Transfer Station**



<sup>1</sup> 2016 kerbside collection data from JR Richards. Self-Haul data is modelled.

Figure 5 Opening hours' schedule of LPSC waste facilities



<b>Key</b>	Quirindi Waste Management Facility	Green	Spring Ridge Landfill	Dark Blue
	Willow Tree Landfill	Red	Carroona Landfill	Purple
	Werris Creek Landfill	Orange	Premer Landfill	Yellow
	Blackville Transfer Stn.	Blue	Pine Ridge Landfill	Grey
	Wallabadah Transfer Stn.	Brown		

### 1.3 Waste and resource recovery data, composition and performance

#### Waste and Resource Recovery Data

In 2013/14, LPSC received approximately 5,000 tonnes of waste through its rural landfills, major landfills and transfer stations, of which 1,800 tonnes was recycled and the remainder sent to landfill for disposal. Waste generation has been projected for LPSC using:

- The rate of population growth in LPSC; and
- The rate of growth of consumption in the Extended Regulated Area<sup>2</sup>.

These projections estimate that waste generation in LPSC in Financial Year 2017 (1<sup>st</sup> July 2016 – 30 June 2017) was 5,751 tonnes per annum, and will reach 9,427 tonnes per annum by FY27 (Figure 6).

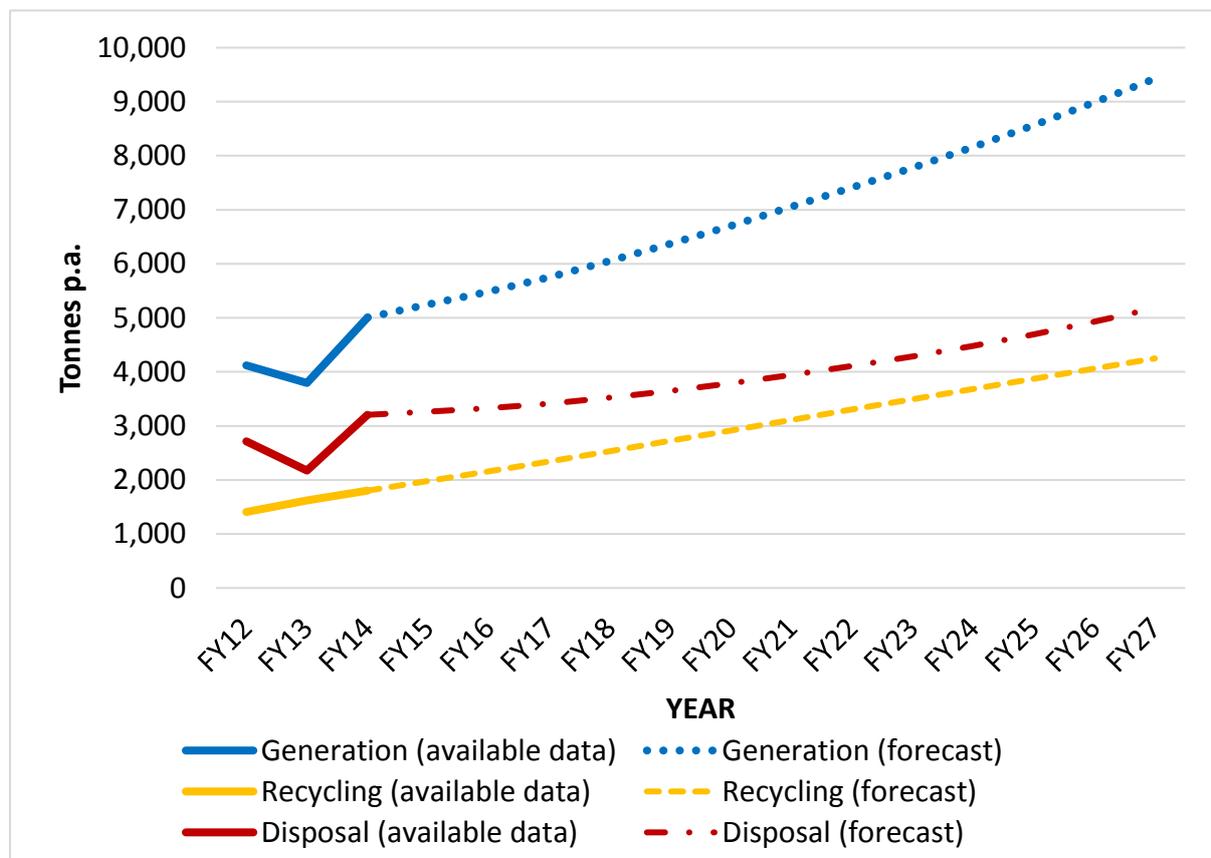
<sup>2</sup> The Extended Regulated Area (ERA) is comprised of the Hunter, Illawarra and Central Coast regions. While LPSC is not located within the ERA, the quality of waste and resource recovery data for LPSC required the use of the next best available regional data.

Please note the limitations to this estimate, the data for FY12 to FY14, which comprises the basis of the projections:

- Was collected by visual inspection, incurring a large margin of error; and
- Was measured at the three major landfills, and therefore is exclusive of the four rural landfills.

It should be noted that the impact of the NSW Government’s Container Deposit Scheme (CDS) for drink containers has not been included in this projection as the impacts are difficult to predict and are likely to lie within the margin of error for this analysis. Detail regarding the waste data projections are available in Appendix B.

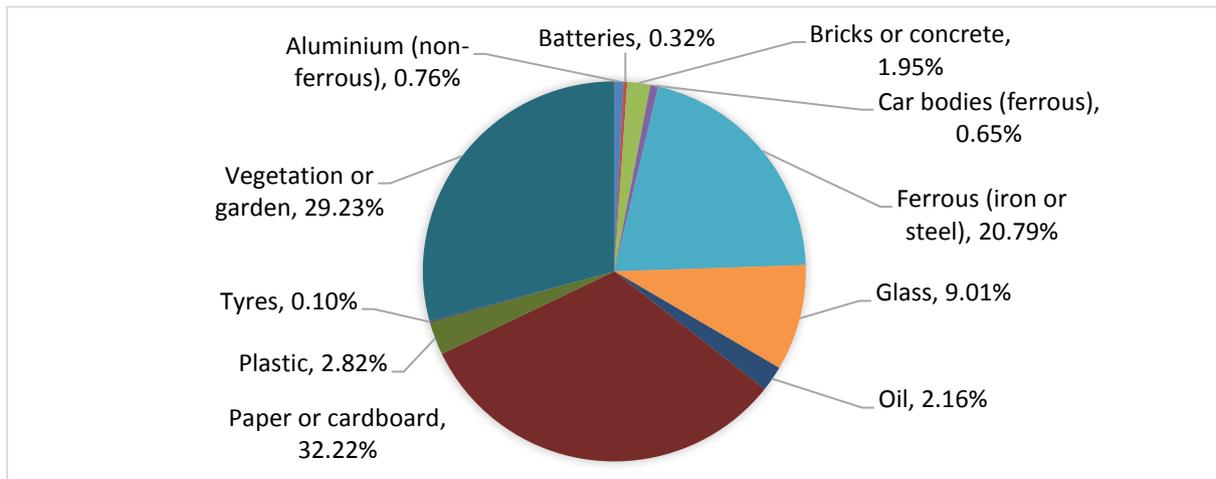
**Figure 6 LPSC waste generation, recycling and disposal forecast (FY12-FY27)**



### Waste and Resource Recovery Composition

The waste recycled in 2013/14 was comprised mainly of paper and cardboard (32%), vegetation or garden (29%) and ferrous metal (21%). An approximate composition of the waste-to-recycling stream is presented in Figure 7. This breakdown is derived from the records of material delivered to Quirindi MRF for recycling in 2013/14. Please note that these figures are subject to the same limitations that apply to the waste generation figures.

Figure 7 Composition of waste recycled in Liverpool Plains Shire Council (2013/14 data)



### Waste and Resource Recovery Performance

Based on the available data and when compared against the average performance of the non-regulated area<sup>3</sup> in NSW, LPSC's resource recovery is performing at an above average level (Table 2).

Table 2 LPSC waste and resource recovery performance (2013/14)

Key performance indicator	LPSC performance	Comparable average	Performance	Comments
Recycling rate	36%	34.9% (NSW EPA, 2016)	Average	LPSC is recycling approximately the same amount of waste, for every tonne of waste generated, compared to its peers in the non-regulated area of NSW.
Yield of residual waste (per household, per week)	2.76 kg	12.5 kg (NSW EPA, 2016)	Above average	LPSC is generating less residual waste that is delivered to landfill, compared to its peers in the non-regulated area of NSW. This suggests that LPSC is performing at an above average level in limiting waste generation, or that some residents may be disposing of wastes by other means.

<sup>3</sup> Non-regulated area refers to LGAs that are not subject to the NSW waste levy on waste disposed in landfills. Liverpool Plains LGA is a non-regulated area and is comparable to that in other non-regulated areas, for the purposes of performance evaluation.

## 1.4 Waste and resource recovery collection, processing and disposal contracts

LPSC administers two contracts for its waste management services. Table 3 provides a summary of both contracts. A thorough review of these contracts is presented in Appendix B.

**Table 3 Waste and resource recovery collection, processing and disposal to landfill contracts**

Item	Collection contract	Processing and disposal contract
<b>Services covered</b>	<ul style="list-style-type: none"> <li>Collect kerbside general waste, recycling and hard waste.</li> <li>Collect commercial general waste and recycling for council-owned buildings and commercial properties.</li> <li>Service public place litter bins and special events.</li> <li>Transport waste from Wallabadah Transfer Station to Quirindi Waste Management Facility.</li> <li>Provide MGBs.</li> </ul>	<ul style="list-style-type: none"> <li>Manage recycling, processing and disposal services at:               <ul style="list-style-type: none"> <li>Quirindi Waste Management Facility</li> <li>Werris Creek Landfill</li> <li>Willow Tree Landfill</li> <li>Wallabadah Transfer Station</li> </ul> </li> </ul>
<b>Service provider</b>	JR Richards & Sons	Merinda Recycling
<b>Material</b>	Recycling, general waste and bulky waste	
<b>Contract duration</b>	10 years + 1 year extension (at the discretion of LPSC) ending at the end of financial year	5-years + 5-years extension (at the discretion of LPSC)
<b>Contract expiry date</b>	30 <sup>th</sup> June 2019 (without extension)	11 <sup>th</sup> September 2019 (with extension)
<b>Min./max. tonnage/year</b>	Not specified	Not specified
<b>Summary of review</b>	<ul style="list-style-type: none"> <li>Overall, the contract provides the framework for a high-quality service for LPSC.</li> <li>The contract may be improved by reverting to a simple annual fee increase by CPI.</li> <li>Enforcement of contractual obligations relating to contamination management and reporting would result in greater value to LPSC.</li> </ul>	<ul style="list-style-type: none"> <li>Enforcement of contractual obligations could be better managed, such as litter management on-site, and regular reporting.</li> <li>The contract could be improved by introducing performance indicators relating to management of the landfills.</li> </ul>



Facility	Type of facility	Operator	Projected remaining capacity (as of 2016/17) <sup>4</sup>
Caroona Landfill	Landfill	LPSC	Not available
Spring Ridge Landfill	Landfill	LPSC	Not available
Premer Landfill	Landfill	LPSC	Not available
Blackville Transfer Station	Transfer station	LPSC	Not applicable
Wallabadah Transfer Station	Transfer station	Merinda Recycling	Not applicable

Table 5 provides an outline of the waste accepted at LPSC and their fate upon arrival at the facilities. LPSC's waste facilities accept a wide range of wastes, including construction and demolition (C&D) waste, scrap metal and special wastes (i.e. household hazardous wastes, sump oil and empty gas bottles). This waste is often stored in the long-term at each facility, and transported for recycling when a sufficient amount has been stockpiled to justify the relevant transportation and processing costs. Quirindi landfill currently accepts small amounts of asbestos (see 1.7 Service compliance).

**Table 5 Summary of waste accepted, stored and transported from LPSC's waste facilities**

Facility Type	Facility	Landfilled at site	Short-term storage	Long-term storage (several months or longer)
Landfill	Quirindi Waste Management Facility	General Waste	Paper and cardboard Glass Mixed plastic, aluminium, steel and liquid paperboard	Oil
	Werris Creek Landfill			Soil, VENM and masonry
	Willow Tree Landfill			Tyres
	Pine Ridge Landfill			
	Caroona Landfill			Empty paint tins
	Spring Ridge Landfill			Empty gas bottles
	Premer Landfill			Scrap Metal (incl. electrical equipment)
Transfer Station	Blackville Transfer Station	N/A	General Waste	Green Waste
			Paper and cardboard	

	Wallabadah Transfer Station		Glass Mixed plastic, aluminium, steel and liquid paperboard	
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### Waste and Recycling Infrastructure Financial Performance

LPSC's waste and recycling infrastructure are performing below average (Table 6).

Table 6 LPSC waste and resource recovery infrastructure performance

LPSC				
Infrastructure	performance	Recommended	Performance	Comments
<i>Financial performance</i>				
Rural landfills	Net loss	Net profit, or at least break-even	<b>Below average</b>	The rural sites generate an estimated \$100 to \$160 a fortnight <sup>6</sup> . Considering the cost of managing these landfills (primarily, a full-time worker and a light truck) the rural facilities are likely operating at a net loss.

### Operational and environmental performance

MRA reviewed the operational and environmental performance of all nine of LPSC's waste facilities during a site visit on the 19th and 20th of April 2017. The following issues were noted:

- The rural facilities manager does not have machinery available to aid in management of the rural facilities (Caroona, Premer, Pine Ridge, Spring Ridge and Blackville). This results in poor compaction and no application of daily cover at the rural landfills.
- Quirindi, Werris Creek and Pine Ridge are located within 500 m of a watercourse, thus posing a potential for environmental damage via run-off from the landfill.
- Daily compaction and cover was not performed on any of the landfills and none were lined.
- Bulky goods, mattresses and recyclables were observed in all landfills.

These issues will be addressed in this waste strategy. Please refer to Appendix A for further details regarding the site visit.

<sup>6</sup> Estimate quoted to MRA by Council staff during site visit in April 2017.

## 1.6 Review of programs, initiatives and community expectations

### Programs

Education campaigns are carried out by LPSC and an external consultant. Such activities include:

- A collection calendar and how-to-recycle brochure for households distributed by mail and available via the LPSC website; and
- How-to-recycle banners displayed at community events.

Waste audit data was not available to provide an indication of the performance of these programs. However, recyclable material was observed in all landfills during MRA's site visit, indicating that households are disposing of recycling with general waste. Further actions to improve recycling are necessary to increase the recycling rate in the long term.

A review of the regulatory framework pertaining to waste management in LPSC was prepared by MRA. It is attached to this report at Appendix C.

### Initiatives

LPSC has instigated an illegal dumping initiative, funded by the NSW EPA Waste Less, Recycle More ("WLRM") grants for Regional Illegal Dumping ("RID") Squads. Signage to deter illegal dumping was established at several facilities with elevated levels of illegal dumping reported. MRA has reviewed the grant opportunities currently available to LPSC, please refer to Appendix D for an overview report.

### Community expectations

Direct community consultation was not undertaken in the process of developing this strategy. However, LPSC staff outlined that the community expects its future waste service to offer the same, or a higher, degree of accessibility.

## 1.7 Service compliance

### Landfills

- LPSC's landfills do not hold an Environment Protection License ("EPL") as they receive less than 12,000 tonnes per annum, the threshold for requiring an EPL under the Protection of Environment Operations Act NSW ("POEO Act").
- Quirindi landfill currently receives and buries small amounts (less than 15 tonnes per annum) of asbestos, although the landfill is not licensed to accept asbestos. Asbestos should either be rejected or received and transported to a landfill licensed to receive asbestos, such as Gunnedah's Waste Management Facility or the Tamworth Waste Management Centre.

### Collection

- MRA's review of LPSC's collection contract with JR Richards & Sons did not reveal any compliance issues, although a thorough review and inspection of the equipment and handling procedures would be required to make a more comprehensive determination.

## 2 Where do we want to get to?

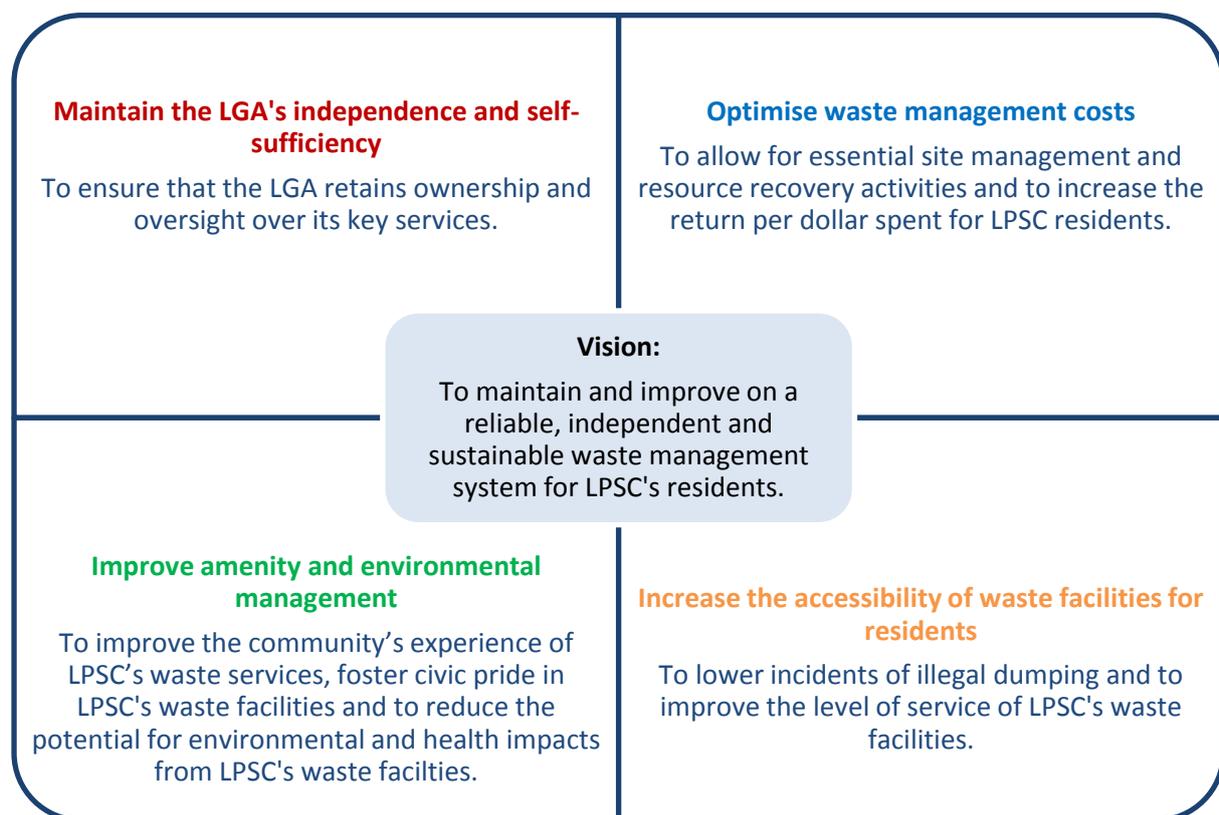
### 2.1 Vision and themes

To enable decisions to be made, regarding the direction of Council's efforts in waste management over the next ten years, the strategy process involved developing an overall vision for LPSC's waste management system and translating this vision into a set of themes and strategic objectives. The strategy's vision promotes a single, long-term goal for waste management in LPSC. The themes describe the vision and what it would mean for four key areas of the waste management system:

1. Governance and management;
2. Costs and finances;
3. Health, amenity and environment; and
4. Access and use.

Figure 9 presents the vision and the themes developed for LPSC's waste strategy.

Figure 9 LPSC waste strategy vision and themes



### 2.2 Strategic objectives

Table 7 presents a list of strategic objectives developed to translate each theme into specific, measurable goals. The strategic objectives were then used to develop a set of options, comprised of tasks or actions that Council could undertake over the next ten years to achieve the objectives of this strategy.

Table 7 LPSC waste strategy strategic objectives

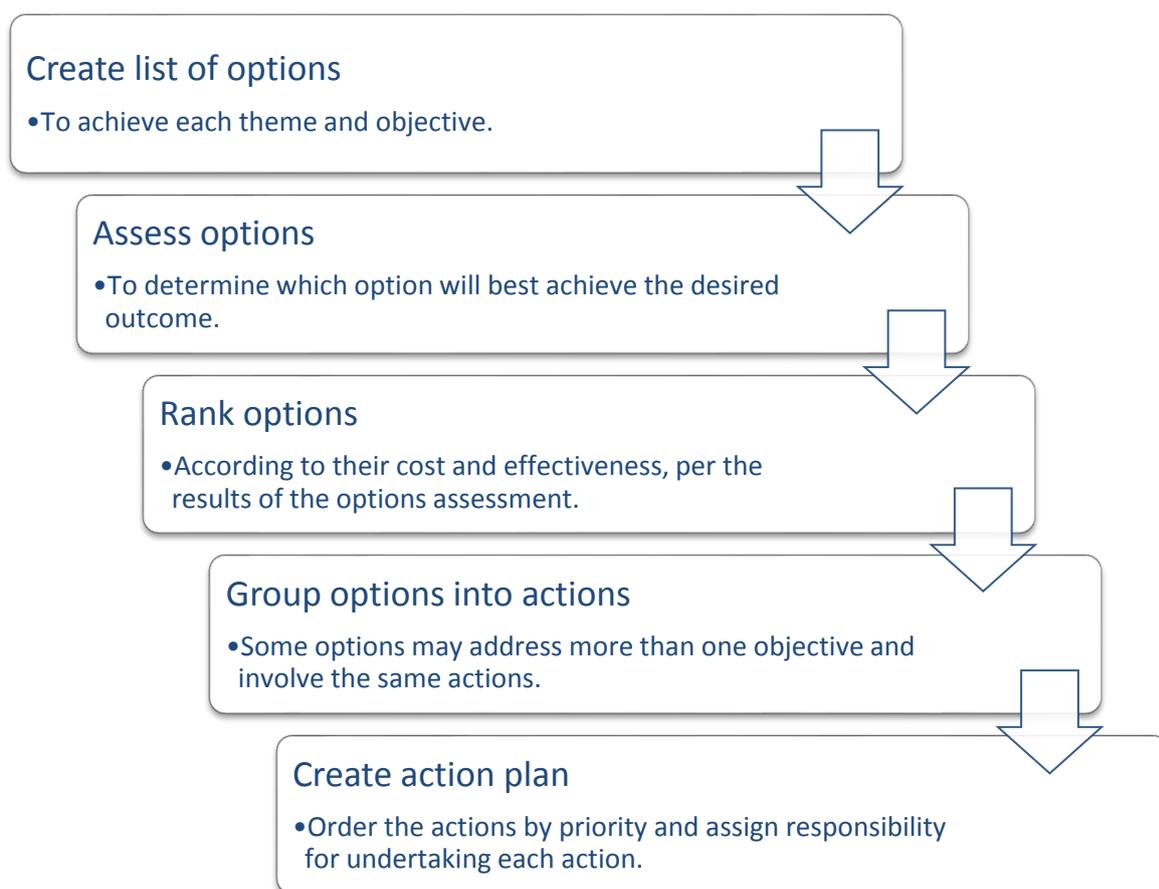
<b>Theme 1. Maintain the LGA's independence and self-sufficiency</b>		
<b>Objectives</b>		<b>Description</b>
1.1	Maintain use of waste facilities	Ensure waste management services continue to utilise LPSC waste facilities.
1.2	Rationalise the management and use of existing waste facilities	Identify potential improvements to the management and use of existing waste facilities that may prolong the longevity of LPSC's waste facilities.
<b>Theme 2. Optimise waste management costs</b>		
<b>Objectives</b>		<b>Description</b>
2.1	Increase the return per dollar spend on waste management costs	Improve the efficiency of spending on waste management services, including reviewing contracts, to generate more value from every dollar spent on waste management.
<b>Theme 3. Improve amenity and environmental management</b>		
<b>Objectives</b>		<b>Description</b>
3.1	Reduce the environmental and health risks at waste facilities	Establish procedures and undertake activities to reduce major environmental or health risks identified at LPSC's waste facilities.
3.2	Improve the tidiness of waste facilities	Establish procedures and undertake activities to minimise instances of illegal dumping or littering at LPSC's waste facilities.
3.3	Improve resource recovery	Cost savings can be used to improve the LGA's resource recovery performance.
<b>Theme 4. Increase the accessibility of waste facilities for residents</b>		
<b>Objectives</b>		<b>Description</b>
4.1	Increase the total accessible hours across the waste facilities	Increase residents' access to LPSC's waste services by making services at waste facilities available for a greater number of hours in a week.
4.2	Improve the ease of use of waste facilities	Improve the ease of disposing waste or recycling via LPSC's waste facilities.

## 3 How will we get there?

### 3.1 Steps to develop action plan

A plan of action to achieve the strategy's vision, themes and objectives was developed by MRA. To do so, an options assessment was undertaken. This allowed for the consideration of possible actions, and the selection of the best action for achieving each objective and the strategy's overall vision. However, as some options ranked highest were common across more than one objective, the final options selected were then grouped by actions. The actions were ordered by priority and scheduling considerations, to present a plan for the staged implementation of this strategy over the next ten years. The full procedure for developing the action plan is summarised in Figure 10.

**Figure 10 Procedure applied to assess options and develop action plan**



The following Sections present the information and results from the process outlined above, including the final action plan which was developed.

### 3.2 Summary of options considered

A list of options to address the themes and objectives was prepared by MRA. Each option was then assessed according to their cost, effectiveness and alignment with other objectives and ranked according to the results of the options assessment. The list of ranked options, with (1) being the most preferred option per objective, is presented in Table 8.

Table 8 List of ranked options for achieving the strategy's themes and objectives

Theme		<b>1. Maintain the LGA's independence and self-sufficiency</b>	
Objectives		Options	
1.1	Maintain use of waste facilities	<ol style="list-style-type: none"> <li>1. Develop Willow Tree landfill as the LGA's primary landfill, due to the small remaining lifespan of Quirindi.</li> <li>2. Develop Werris Creek landfill as the LGA's primary landfill, due to the small remaining lifespan of Quirindi.</li> <li>3. Expand Quirindi landfill into surrounding area, due to the small remaining lifespan of Quirindi.</li> <li>4. Develop one of the rural landfills as the LGA's primary landfill, due to the small remaining lifespan of Quirindi.</li> </ol>	
1.2	Rationalise the management and use of existing waste facilities	<ol style="list-style-type: none"> <li>1. Develop waste transfer system at all landfills, potentially aligning the two transfer stations with the new system.</li> <li>2. Close rural landfills, directing residents to one of the major landfills or the two transfer stations.</li> <li>3. Close rural landfills and Quirindi landfill, directing residents to one of other two major landfills or the two transfer stations.</li> </ol>	
Theme		<b>2. Optimise waste management costs</b>	
Objectives		Options	
2.1	Increase the return per dollar spend on waste management costs	<ol style="list-style-type: none"> <li>1. Conduct competitive tender process for upcoming collection and processing contract renewals, install weighbridge at LGA's primary landfill for more accurate charging and review Council's domestic and commercial waste charge and landfill disposal fees.</li> <li>2. Close rural landfills.</li> <li>3. Direct collector to transport kerbside collected general waste to a landfill in a major city of a surrounding LGA (e.g. Gunnedah or Tamworth).</li> </ol>	
Theme		<b>3. Improve amenity and environmental management</b>	
Objectives		Options	
3.1	Reduce the environmental and health risks at waste facilities	<ol style="list-style-type: none"> <li>1. Rehabilitate landfills and dis-incentivise use by introducing transfer system for disposing of waste and recycling.</li> <li>2. Rehabilitate all landfills and introduce procedures, including daily cover, to improve site maintenance.</li> </ol>	

		3. Rehabilitate all landfills and close rural landfills.
3.2	Improve the tidiness of waste facilities	<ol style="list-style-type: none"> <li>1. Provide convenient, 24/7 service via transfer system to dis-incentivise illegal dumping and public access to the tip face of all landfills. Use of landfills without daily cover can result in loose waste and recycling being littered via wind bursts.</li> <li>2. Employ staff to pick up litter at rural landfills.</li> <li>3. Install cameras at all landfills and adopt procedures to provide daily cover to all landfills.</li> <li>4. Install taller fencing with barbed wire at all landfills and adopt procedures to provide daily cover to all landfills.</li> </ol>
3.3	Improve resource recovery	<ol style="list-style-type: none"> <li>1. First target bulky goods that can be separated by site staff at the LGA's major landfill.</li> <li>2. Create financial incentives for the community to source separate, targeting the largest volume of recyclables.</li> <li>3. Hand sort all recyclables at the landfill before delivering waste to the tip face.</li> </ol>
<b>Theme</b>	<b>4. Increase the accessibility of waste facilities for residents</b>	
<b>Objectives</b>		<b>Options</b>
4.1	Increase the total accessible hours across the waste facilities	<ol style="list-style-type: none"> <li>1. Establish convenient transfer system for all waste facilities to increase the opening hours of all sites to 24/7 access.</li> <li>2. Hire additional staff to increase the opening hours of the rural landfills.</li> <li>3. Close rural landfills and allocate those opening hours, and the rural manager, to the major landfills and the two transfer stations, thus increasing the opening hours of those sites.</li> </ol>
4.2	Improve the ease of use of waste facilities	<ol style="list-style-type: none"> <li>1. Install a weighbridge at Willow Tree landfill and a convenient transfer system for all other waste facilities to replace direct disposal at the tip face.</li> <li>2. Upgrade all rural landfills to include parking to enhance safety measures at the tip face.</li> </ol>

### 3.3 Final list of actions

Table 9 presents the final list of actions selected for the ten-year period covered by the strategy, Actions common to more than one objective are grouped under the one action, while multiple actions for one objective are listed separately as discrete actions.

**Table 9 List of actions selected for the strategy period**

Action	Objectives satisfied
Develop Willow Tree landfill as the LGA's primary landfill	1.1. Maintain use of waste facilities
Develop waste transfer system at all landfills, potentially aligning the two transfer stations with the new system	1.1. Rationalise the management and use of existing waste facilities 3.1. Reduce the environmental and health risks at waste facilities 3.2. Improve the tidiness of waste facilities 4.1. Increase the accessible hours of all waste facilities 4.2. Improve the ease of use of waste facilities
Conduct competitive tender process for upcoming collection and processing contract renewals	2.1. Increase the return per dollar spend on waste management costs
Install weighbridge at Willow Tree landfill	2.1. Increase the return per dollar spend on waste management costs 4.2. Improve the ease of use of waste facilities
Review Council's domestic and commercial waste charge and landfill disposal fees	2.1. Increase the return per dollar spend on waste management costs
Rehabilitate landfills	3.1. Reduce the environmental and health risks at waste facilities
Target bulky goods that can be easily separated by site staff at Willow Tree landfill	3.3. Improve resource recovery

### 3.4 Options assessment outputs

The results from the options assessment of the actions selected are presented in Table 10 to provide the reader with the assessed benefits of the selected actions.

**Table 10 Summary of costs for undertaking the proposed actions**

Action	Capital costs (\$ FY18)	Ongoing costs (\$/annum)	Comments
Develop Willow Tree landfill as the LGA's primary landfill	\$1,143,600	\$0	Capital costs include landfill design, establishing a landfill new landfill cell, with lining and drainage, and shifting the waste currently disposed at the landfill. No additional ongoing costs as Willow Tree landfill will replace Quirindi thus costs will be shifted rather than introduced. See to Appendix E for more detail.
Develop waste transfer system at all landfills, potentially aligning the two transfer stations with the new system	\$581,400	\$136,700	Capital costs include purchase of equipment and on-going costs include salary and overheads for rural site manager. Cost presented for roll-out at all sites. See Appendix G for more detail.
Conduct competitive tender process for upcoming collection and processing contract renewals	\$0	\$0	The tendering process will cost approximately \$50,000. However, this is not an additional cost as the contracts will expire soon and are due for renewal in the normal course of business. No additional ongoing costs associated with the tendering process.
Install weighbridge at Willow Tree landfill	\$70,000	\$0	Council has budgeted funds to install a weighbridge at one of its facilities. Capital costs are approximately \$100,000 <sup>7</sup> . Assuming a \$30,000 contribution from the grant, Council contributes \$60,000
Review Council's domestic and commercial waste charge and landfill disposal fees	\$50,000	\$0	Capital costs cover the cost of education, marketing and collateral for communicating changes to residents. See Appendix C for more detail.

<sup>7</sup> This figure references a 2016 quote for a weighbridge, auxiliary equipment, delivery, installation and capital works in a nearby LGA.

Action	Capital costs (\$ FY18)	Ongoing costs (\$/annum)	Comments
Rehabilitate all landfills other than Willow Tree landfill	\$245,600	\$0	See Appendix H for more detail.
Target bulky goods that can be easily separated by site staff at Willow Tree landfill	\$0	\$90,000	Ongoing costs salary and overheads for staff to sort, store and handle bulky goods at Willow Tree landfill. No capital costs as no equipment or infrastructure upgrades necessary to handle or store bulky goods, they can be stored in the open. See Appendix I for more detail.

### 3.5 Action plan

Table 11 presents the action plan for implementing LPSC’s waste management vision and strategic objectives over the ten-year period (2018-2027).

**Table 11 Action plan for Liverpool Plains Waste Strategy**

Liverpool Plains Waste Strategy (2018-27)		Version/Date:	Approved by:
Month/Year to commence	Action	Details	
Jan 2018	Develop Willow Tree landfill as the LGA’s primary landfill	<ul style="list-style-type: none"> <li>Willow Tree landfill operations are to be moved to the far side of the quarry where a new cell will be established. Waste which is already in place will be moved to the new cell to permit further gravel mining.</li> <li>The new cell at Willow Tree landfill will be designed to maximise the useful life of the landfill. Furthermore, a landfill cell lining and leachate drainage system will be introduced to reflect NSW EPA Solid Waste Landfill Guidelines.</li> <li>Landfill disposal is to be rationalised to conserve void space, optimise costs to Council and the overall amenity of the sites. Operations at the landfill are to include some form of daily cover, under the new processing contract.</li> <li>Kerbside waste collections will be disposed of at Willow Tree landfill under the new collection contract.</li> <li>Details of the Willow Tree landfill upgrade are provided in Appendix E.</li> </ul>	
Apr 2018	Conduct competitive tender process for upcoming collection and processing contract renewals	<ul style="list-style-type: none"> <li>Council’s processing contract expires in September 2019 (with extension applied) and the collection contract expires in June 2020 (with extension applied).</li> <li>The recycling processing and waste disposal services to be employed form part of the specification for waste collection services. A staged tender process in which collection services are procured last will ensure a robust specification is developed.</li> </ul>	

Liverpool Plains Waste Strategy (2018-27)		Version/Date:	Approved by:
Month/Year to commence	Action	Details	
		<ul style="list-style-type: none"> <li>Existing contracts with collector and processor are to be thoroughly reviewed and a list of changes for the new contracts prepared. Tender returns will be analysed, including costs, with negotiation taking place with shortlisted tenderers to ensure a competitive price is achieved.</li> <li>The preparation of a tender and contract for processing services will begin in October 2018, with the tender released by February 2019, tender returns expected by May 2019 and the contract signed by July 2019 for a commencement in September 2019.</li> <li>The preparation of a tender and contract for collection services will begin in September 2019 and follow a similar schedule to the processing contract.</li> </ul>	
Apr 2018	Install weighbridge at Willow Tree landfill	<ul style="list-style-type: none"> <li>A weighbridge is to be established at Willow Tree adjacent to an area set aside for resident drop-off. No public access to the tip face will be allowed after the installation of the weighbridge.</li> <li>The weighbridge is expected to improve: the ease of use of the landfill for residents, charging at the landfill for self-haul loads, and the accuracy of the LGA's waste data.</li> <li>Coinciding with the commencement of the new collection contract, the weighbridge also allows Council to independently measure the weight collected by the collection contractor, to corroborate data reports provided by the collection contractor.</li> </ul>	
Jul 2018	Develop waste transfer system at all landfills, potentially aligning the two transfer stations with the new system	<ul style="list-style-type: none"> <li>After the review of Council's waste charge and landfill fees, a transfer system will be implemented at the landfill sites, barring Willow Tree landfill, for removal of recyclables and residual waste on a regular basis. Refer to Appendix C for details of the proposed waste transfer system.</li> </ul>	

Liverpool Plains Waste Strategy (2018-27)		Version/Date:	Approved by:
Month/Year to commence	Action	Details	
		<ul style="list-style-type: none"> <li>The rural landfills will be prioritised for the waste transfer system’s implementation. Minimal continued waste disposal at Caroonna, Pine Ridge, Premer, Spring Ridge will be allowed, but residents will be incentivised to utilise the 24/7 transfer station.</li> <li>The system will be extended to Werris Creek and Quirindi landfills after the successful implementation of the system at the rural landfills. Resident access to the tip face will be restricted.</li> <li>Current operations at the Blackville and Wallabadah Transfer Stations will be maintained throughout the implementation process. After a successful implementation at other sites, the possibility of upgrading the two transfer stations to bring them into line with the new system will be evaluated.</li> </ul>	
Jan 2019 (commencing)	Rehabilitate landfills	<ul style="list-style-type: none"> <li>As Willow Tree landfill could be rehabilitated and upgraded during 2018, this action applies to the other landfills (i.e. the rural landfills and the two major landfills, at Werris Creek and Quirindi).</li> <li>The rehabilitation will be carried out in the order of the degree of risk to human health and environment determined for each site. Higher risk sites will be prioritised for rehabilitation.</li> <li>Details regarding the rehabilitation process are provided in Appendix H.</li> </ul>	
Oct 2019	Review Council’s domestic and commercial waste charge and landfill disposal fees	<ul style="list-style-type: none"> <li>After the commencement of the new collection and processing contracts and a ‘settling-in’ period for the weighbridge at Willow Tree landfill, a review of Council’s domestic and commercial waste charge and landfill disposal fees will determine whether changes to their amount or form are necessary. Detail of the proposed review is provided in Appendix C.</li> <li>This review will commence alongside the rehabilitation of Council’s rural sites.</li> </ul>	

Liverpool Plains Waste Strategy (2018-27)		Version/Date:	Approved by:
Month/Year to commence	Action	Details	
		<ul style="list-style-type: none"> <li>The waste charges review will ensure that Council has planned for funding the actions outlined in this strategy and is positioned to maintain a reasonable cash flow while implementing this strategy.</li> </ul>	
Jul 2019	Target bulky goods that can be easily separated by site staff at Willow Tree landfill	<ul style="list-style-type: none"> <li>After the rehabilitation of the landfills and when other system changes are well established within the community, practical and feasible measures for the recovery and diversion from landfill of mattresses, e-waste and organics will be implemented at Willow Tree landfill.</li> <li>Some practical and feasible measures for resource recovery are suggested in Appendix I.</li> </ul>	

## 4 How will the strategy be implemented?

The timeline for implementation proposed under the action plan is summarised in Table 12 in the form of a Gantt chart. N.B: community education will run throughout the strategy period.

Table 12 Gantt chart for strategy action plan

Year and Quarter	2018				2019				2020				2021				2022				2023				2024				2025				2026				2027			
Actions	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Willow Tree upgrade	█	█	█	█																																				
Tender		█	█	█	█	█	█																																	
Weigh-bridge		█	█	█																																				
Transfer system			█	█																																				
Landfills					█	█	█	█	█	█																														
Charges review								█																																
Bulky goods									█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█

## 5 How progress will be measured

Progress toward implementing the proposed action plan will be measured to establish a consistent and reliable source of information regarding the LGA's waste performance over time. Furthermore, it will enable informed, evidence-based judgements to be made regarding the performance of the LGA's waste services and the effectiveness of the actions undertaken.

It is proposed that progress reports be prepared on a six-monthly basis in the first two years, followed by annually, to summarise the progress made towards implementing the action plan. The key metrics assessed in each progress report should include: the timeliness of implementation, measurable changes in waste performance, community response to implementation and the efficiency of spending. As such, the report should provide:

- Detail of any delays to the proposed implementation timeline or necessary restructures to the timeline due to practical or unforeseen circumstances;
- Waste generation, recycling and disposal performance data from the last financial year (i.e. biannual reporting of waste data rather than annual reporting) and comparisons to the benchmark established in this strategy for FY17 levels;
- Commentary on the community's reception of various changes implemented under the strategy;
- Details regarding actual financial spend on implementing the proposed action/s, with comparison to the initial budget proposed for the action/s.

The annual report will be issued to Council's executive within 1 month of the end of the assessment period.

## 6 References

Australian Bureau of Statistics, 2017, 3218.0 – Regional Population Growth, Australia, 2015-16

Australian Bureau of Statistics, 2011, 2011 Census QuickStats – Liverpool Plains

Department of Planning and Environment, 2016, 2016 NSW Projections – Regional NSW LGA Data G-N

NSW EPA, 2014, Regional waste avoidance and resource recovery strategy guidance

NSW EPA, 2015, State of the Environment 2015

NSW EPA, 2016, NSW Local Government Waste and Resource Recovery Data Report 2013-14

NSW EPA, 2017, NSW Local Government Waste and Resource Recovery Data Report 2014-15

## Appendix A Report: Review of existing facilities and operations

Please see page over. Note: report attached as PDF, the page numbers do not align with this report.

# Review of existing facilities and operations

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A submission to Liverpool Plains Shire Council

24 July 2017



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**Document History**

Title	Version Number	Status	Date
Review of existing facilities and operations	1	Draft	17/07/2017
Review of existing facilities and operations	2	Final	24/07/2017

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## 2. Processing and disposal operations

General waste is landfilled at LPSC's seven landfills and stored in the short term at LPSC's two transfer stations. At all facilities, recyclables are stored in the short term and oil, tyres, empty paint tins, empty gas bottles, scrap metal and green waste are stored in the long term. Soil, masonry and virgin excavated natural material (VENM) is stored on-site at some landfills, subject to availability, for use as landfill daily cover.

It should be noted that the Yearly Waste Data Reports ("the Reports") for Quirindi, Werris Creek and Willow Tree for the years FY12 to FY14 indicate that green waste, empty paint tins, empty gas bottles and tyres were not transported to processors in those years. Visual inspections and discussion with staff during the site visit further reinforced the sense that these streams had been stored on-site for several years. Green waste was shredded periodically by a contractor every four to five years; however, this service terminated and no fixed arrangement has been established in the intervening years since. The Northern Inland Regional Waste (NIRW) group is considering a solution. The Reports reveal that asbestos is received at Quirindi, although the landfill is not licenced for asbestos disposal. The treatment of key waste streams across all the facilities is summarised in Table 1.

**Table 1 Summary of the treatment of waste streams across facilities**

Facility Type	Facility	Landfilled at site	Short-term storage	Long-term storage (several months or longer)
Landfill	Quirindi Waste Management Facility	<b>General Waste</b>	<b>Paper and cardboard Glass Mixed plastic, aluminium, steel and liquid paperboard</b>	Oil
	Werris Creek Landfill			Soil, VENM and masonry
	Willow Tree Landfill			Tyres
	Pine Ridge Landfill			Empty paint tins
	Caroona Landfill			Empty gas bottles
	Spring Ridge Landfill			Scrap Metal (incl. electrical equipment)
	Premer Landfill			
Transfer Station	Blackville Transfer Station	N/A	<b>General Waste</b>	Green Waste
	Wallabadah Transfer Station		<b>Paper and cardboard Glass Mixed plastic, aluminium, steel and liquid paperboard</b>	

The rural facilities manager does not have machinery available to him to aid in his management of the rural facilities (Caroona, Premer, Pine Ridge, Spring Ridge and Blackville). This results in poor performance in compaction and daily cover at the rural landfills. In terms of financial performance, all of the rural sites combined generate an estimated \$100 to \$160 a fortnight. Considering the cost of managing these landfills (primarily, a full-time worker and a light truck) the rural facilities are likely operating at a net loss.

Most facilities are open for only 4 to 8 hours per week, although all facilities provide 24/7 access to a recycling station (see Figure 2, the design is standard across all nine facilities). The recycling station provides residents with a drop off service for small amounts of waste. Recycling is received in three separate streams:

- Glass containers;
- Plastic, metal and paper containers; and
- Cardboard and paper.

See Figure 3 for a transcript of the signs at a recycling station.

Figure 2 Recycling station at Blackville Transfer Station

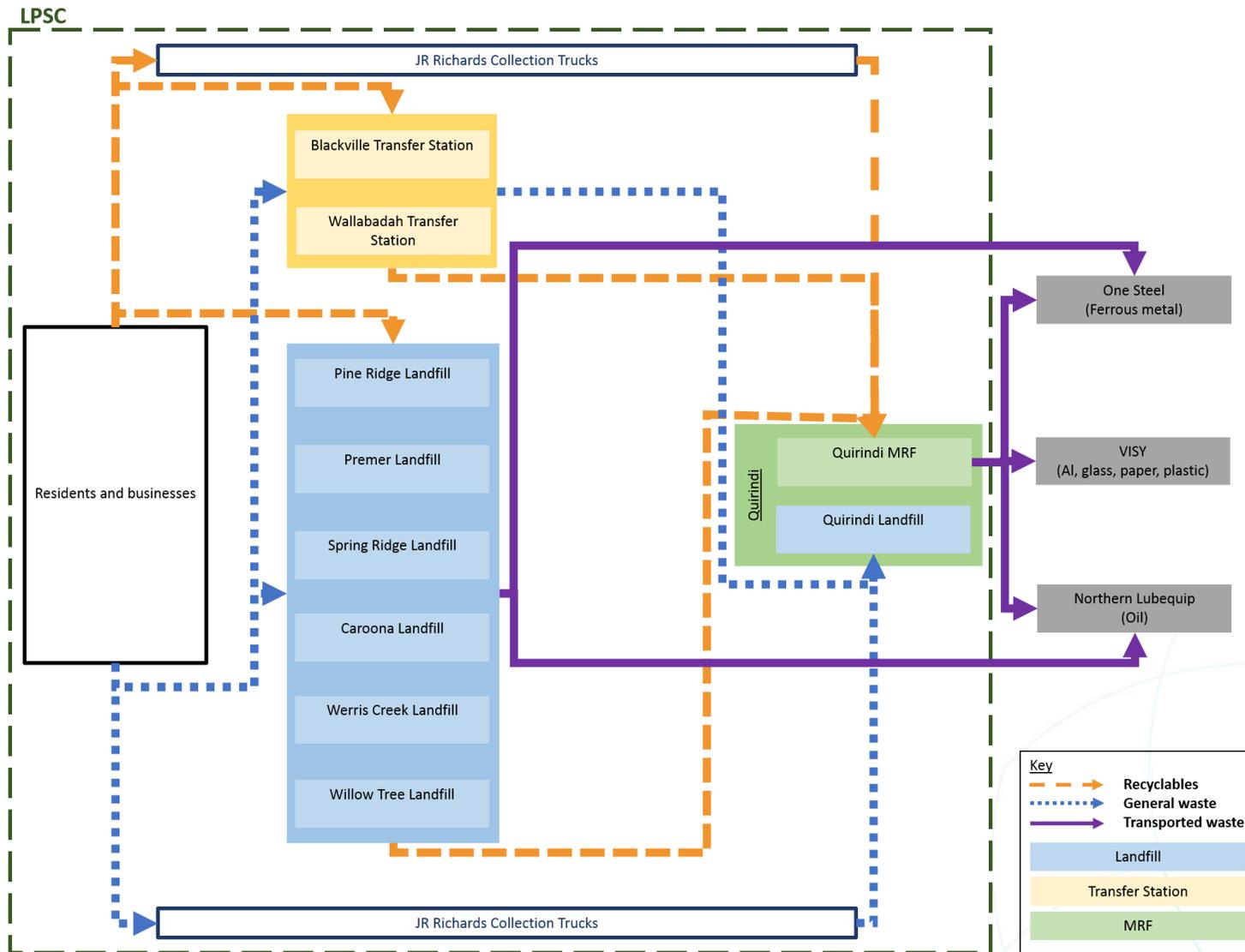


Figure 3 Transcript of signs on the Recycling Station at Blackville Transfer Station

Help council to help you by using this facility thoughtfully and keeping the area tidy at all times.	Local recycling facility for your convenience	Please report any problems with this facility to 6746 4523	
<p style="text-align: center;">Small quantities <u>only</u></p> <p>YES</p> <ul style="list-style-type: none"> <li>- Litter</li> <li>- Packaging</li> <li>- Plastic bags</li> </ul> <p>NO</p> <ul style="list-style-type: none"> <li>- Food waste</li> <li>- Nappies</li> <li>- Garden waste</li> </ul> <p>(Please dispose of these items during opening hours)</p> <p>Thank you for your co-operation</p>	<p style="text-align: center;">No window</p> <p style="text-align: center;">glass</p> <p style="text-align: center;">Glass</p> <p style="text-align: center;">bottles &amp;</p> <p style="text-align: center;">jars</p>	<p style="text-align: center;">Plastics</p> <p style="text-align: center;">aluminium</p> <p style="text-align: center;">&amp; steel cans</p> <p style="text-align: center;">milk &amp; juice</p> <p style="text-align: center;">cartons</p>	<p style="text-align: center;">Cardboard</p> <p style="text-align: center;">&amp; paper</p>

Figure 4 provides an overview of the flow of waste through the LPSC waste facilities and to end processors. Recyclables from the Material Recovery Facility at Quirindi are transported to and recycled by VISY (as indicated in grey). Furthermore, oil and ferrous metal from all landfills is recycled by Northern Lubequip and One Steel respectively as indicated in grey).

Figure 4 Material flow diagram for waste generated in LPSC



### 3. Quirindi Landfill and Waste Management Facility

Quirindi Landfill and Waste Management Facility is located at Merinda Rd, Quirindi NSW 2343. The facility is open for a total of 49 hours across the 7-day week (see Table 2 for the opening hours schedule).

**Table 2 Opening hours at Quirindi Landfill and Waste Management Facility**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Quirindi	9:00 am - 4:00 pm						

Comments from the site visit:

- Quirindi hosts the sole Material Recovery Facility (MRF) and one of three major landfills in LPSC.

Landfill:

- It was noted that daily compaction and cover was not performed on the day of the site visit. The landfill is also not lined.
- A watercourse was observed in approximately 500 m proximity to the landfill cell.
- A tailings dam is located approximately 10 m from the landfill cell. It is lined and fenced with signage (see right side of Figure 5). It was noted that the dam has had stormwater issues in the past.
- Potential for leachate run-off into the nearby watercourse.
- Quite a few mattresses and sofas observed in the landfill (see centre of Figure 6). These occupy valuable landfill space and can be taken apart to recover recyclable material.
- Recyclables were observed in the landfill (see cardboard at centre of Figure 6) and residents were observed tipping loads containing recyclables into the landfill.
- Parking blocks are arranged along the tip face to enhance user safety.

MRF:

- Masonry, pavers and tiles, soil and timber, processed into forms suitable for landscaping and construction, are stored in open-air bays at the MRF entrance.
- Recyclables are baled in separate streams and stored at the MRF for transport.

**Figure 5 Current landfill cell at Quirindi Landfill**



**Figure 6 Mattresses and recyclables in Quirindi's disposal trench**



## 4. Werris Creek Landfill

Werris Creek Landfill is located at Werris Creek Tip Road (off Werriston Rd), Werris Creek NSW 2341. The facility is open for a total of 22 hours across the 7-day week (see Table 3 for the opening hours schedule).

**Table 3 Opening hours at Werris Creek Landfill**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Werris Creek	9:00 am - 1:00 pm	9:00 am - 12:00 pm	9:00 am - 12:00 pm	1:00 pm - 4:00 pm	1:00 pm - 4:00 pm	9:00 am - 12:00 pm	1:00 pm - 4:00 pm

Comments from the site visit:

- One of the three major landfills in LPSC.
- Werris Creek (the watercourse) is approximately 500 m from the landfill site, with tributaries in even closer proximity.
- It was noted that daily compaction and cover was not performed on the day of the site visit. The landfill is also not lined.
- Older cells are layered with soil (see profile of the landfill at the left side of Figure 7).
- Recyclables were visible in the pit (e.g. see cardboard at bottom of Figure 7).
- Parking blocks are arranged along the tip face to enhance user safety.
- Metal, green waste and masonry are stored in piles at the site in the long term.

**Figure 7 Photo of Werris Creek Landfill depicting composition of landfilled material**



## 5. Willow Tree Landfill

Willow Tree Landfill is located at Merriwa Road, Warrah NSW 2339. The facility is open for a total of 18 hours across the 7-day week (see Table 4 for the opening hours schedule).

**Table 4 Opening hours at Willow Tree Landfill**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Willow Tree	Closed	1:00 pm - 4:00 pm	1:00 pm - 4:00 pm	9:00 am - 12:00 pm	9:00 am - 12:00 pm	1:00 pm - 4:00 pm	9:00 am - 12:00 pm

Comments from the site visit:

- One of the three major landfills in LPSC.
- It was noted that daily compaction and cover was not performed on the day of the site visit. The landfill is also not lined.
- Recyclables were observed in the landfill.
- Gravel quarry operated by the Engineering Services department of Council for producing road base.
- Opportunity for securing long-term landfill capacity for LPSC.
- Bullet shells were observed on the ground near the tip face, site may be used as shooting range.
- As the waste currently deposited at the site must be moved to accommodate further gravel extraction, this is an opportunity to implement a greater number of landfill design elements and a weighbridge, thus improving the economic and environmental outcomes.

**Figure 8 Existing landfill cell at Willow Tree Landfill**



## 6. Caroona Landfill

Caroona Landfill is located at 4d Rd, Caroona NSW 2343. The facility is open for a total of 4 hours across the 7-day week (see Table 5 for the opening hours schedule).

**Table 5 Opening hours at Caroona Landfill**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Caroona	Closed	Closed	2:30 pm - 4:30 pm	Closed	Closed	2:30 pm - 4:30 pm	Closed

Comments from the site visit:

- Rural facility.
- The leachate dam is not lined or aerated (see right side of Figure 9).
- The site's fencing has been compromised on several occasions, with the fence line being cut to facilitate unauthorised access or entirely removed.
- Masonry is stored in a pile at the site and is used to cap the landfill.
- The waste 'spills out' of the landfill cell, either due to the way that the material is deposited by residents or the lack of daily compaction resulting in 'loose' material. As such, a large amount of litter was observed at the site.
- Recyclables were observed in the landfilled material (see cardboard at bottom of Figure 10).
- Electrical equipment was observed in an unallocated area (see fridge on the left side of Figure 10).

**Figure 9 Tip face and leachate dam at Caroona Landfill**



**Figure 10 Litter and recyclables spilling out of landfill cell**



## 7. Spring Ridge Landfill

Spring Ridge Landfill is located at Silo Rd, Spring Ridge NSW 2343. The facility is open for a total of 8 hours across the 7-day week (see Table 6 for the opening hours schedule).

**Table 6 Opening hours at Spring Ridge Landfill**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Spring Ridge	Closed	Closed	Closed	8:00 am - 12:00 pm	Closed	Closed	8:00 am - 12:00 pm

Comments from the site visit:

- Rural facility.
- It was noted that daily compaction and cover was not performed on the day of the site visit. The landfill is also not lined.
- Recyclables were observed in the landfill.
- The landfill cell's topography is such that surface water run-off will be directed through the waste.
- The landfill cell is shaped well, with slanted walls and a flat bed. However, it is not lined and landfilled material is not compacted or covered. These results stem from the lack of machinery available to the rural facilities manager.
- A high percentage of furniture and electronics were noted (see right side of Figure 11), perhaps indicating that the LPSC hard waste collection, serviced by JR Richards & Sons, is not being taken up by residents.

**Figure 11 Landfill cell at Spring Ridge Landfill**



## 8. Premer Landfill

Premer Landfill is located at Purlewaugh Rd, Premer NSW 2381. The facility is open for a total of 4 hours across the 7-day week (see Table 7 for the opening hours schedule).

**Table 7 Opening hours at Premer Landfill**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Premer	Closed	Closed	Closed	1:30 pm - 3:30 pm	Closed	Closed	1:30 pm - 3:30 pm

Comments from the site visit:

- Rural facility.
- It was noted that daily compaction and cover was not performed on the day of the site visit. The landfill is also not lined.
- Recyclables were observed in the landfill.
- The landfill has leachate pooling in the landfill cell (see left side of Figure 12).
- The landfill emitted no discernible odour, perhaps indicating that the organics percentage in the waste was quite low, or it is fully aerobic.
- The landfilled material observed was primarily garbage bags.
- Bagged recyclables were observed at the recycling station (see Figure 13).
- Stockpiles of recyclable material were observed (see Figure 14).

**Figure 12 Waste at Premer Landfill**



**Figure 13 Recyclables in plastic bags deposited at the recycling station**



**Figure 14 Stockpiles of waste tyres, metal and organics**



## 9. Pine Ridge Landfill

Pine Ridge Landfill is located at Bundella Rd, Pine Ridge NSW 2343. The facility is open for a total of 4 hours across the 7-day week (see Table 8 for the opening hours schedule).

**Table 8 Opening hours at Premer Landfill**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Pine Ridge	Closed	Closed	11:00 am - 1:00 pm	Closed	Closed	2:30 pm - 4:30 pm	Closed

Comments from the site visit:

- Rural facility.
- It was noted that daily compaction and cover was not performed on the day of the site visit. The landfill is also not lined.
- Recyclables were observed in the landfill.
- Landfill cell very poorly defined. The tipping area faces a wetland or marsh (see upper of Figure 15).
- Mooki River is located approximately 500 m from the landfill site.
- Mattresses, e-waste and recyclables were observed in the landfill (see Figure 17).
- Unclear signage at the recycling station, above the area receiving accepting small amount of general waste (see Figure 18).

**Figure 15 Tip face and wetland at Pine Ridge Landfill**



**Figure 16 Watercourses (dark blue lines) surrounding Pine Ridge Landfill (marked)**



**Figure 17 Mattresses and e-waste at Pine Ridge Landfill**



**Figure 18 'No rubbish' sign at recycling station**



## 10. Wallabadah Transfer Station

Wallabadah Transfer Station is located at Elizabeth St, Wallabadah NSW 2343. The facility is open for a total of 4 hours across the 7-day week (see Table 9 for the opening hours schedule).

**Table 9 Opening hours at Wallabadah Transfer Station**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Wallabadah	Closed	Closed	Closed	Closed	Closed	9:00 am - 1:00 pm	Closed

Comments from the site visit:

- Rural facility.
- Intermediate bulk containers (IBCs) to receive general and recycling waste located at the site.
- No signage to distinguish general waste from recycling.
- IBCs were relatively empty on the day of the site inspection.
- Two cats found in one IBC.
- No litter or illegal dumping observed at the site.

**Figure 19 Intermediate bulk containers (IBCs) at Wallabadah Transfer Station**



## 11. Blackville Transfer Station

Blackville Transfer Station is located at Bartons Ln, Blackville NSW 2343. The facility is open for a total of 4 hours across the 7-day week (see Table 10 for the opening hours schedule).

**Table 10 Opening hours at Blackville Transfer Station**

Facility	Day						
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Blackville	Closed	Closed	8:00 am - 10:00 am	Closed	Closed	8:00 am - 10:00 am	Closed

Comments from the site visit:

- Rural facility.
- 240 L mobile garbage bins (MGBs) for receiving general and recycling waste located at the site.
- Good recycling noted during visual bin inspections on the day of the site visit.
- No litter or illegal dumping observed on day of the site visit.
- Site appeared to be tidy and well managed.

**Figure 20 Recycling and general waste bins at Blackville Transfer Station**



## Appendix B Report: Review of existing information

Please see page over. Note: report attached as PDF, the page numbers do not align with this report.

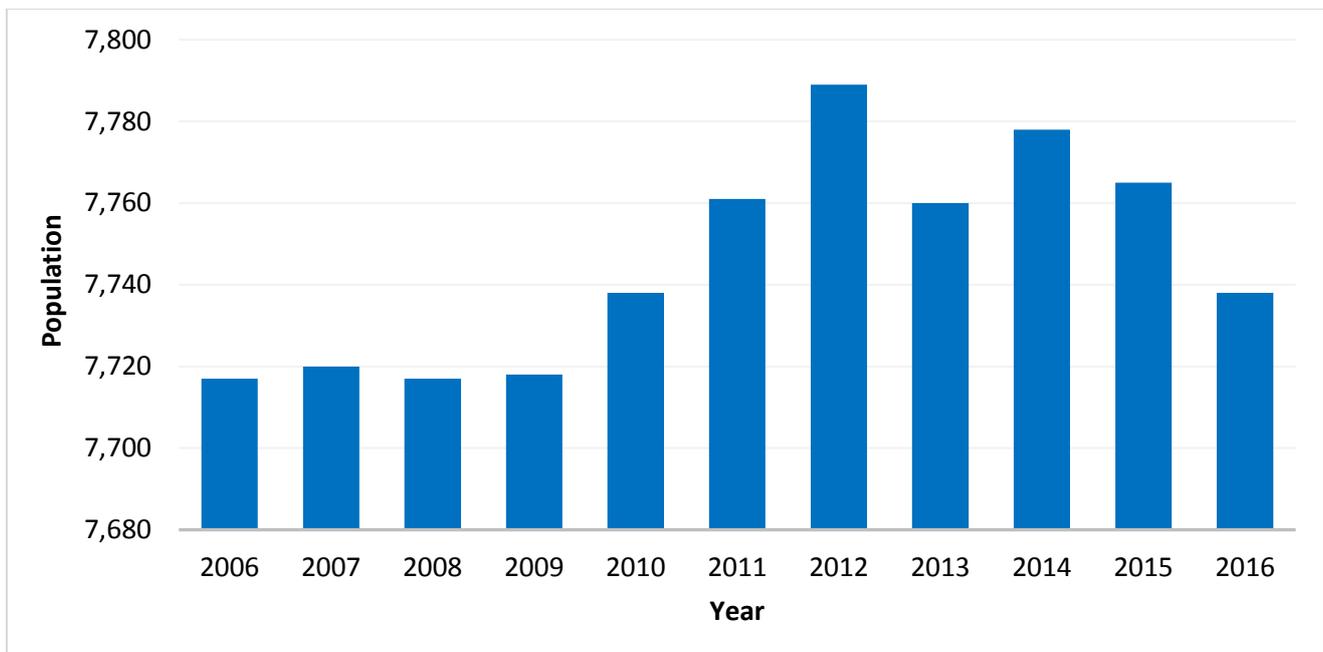
## Liverpool Plains Shire Council - Waste Management Overview

### 1.1 Demographics and geography

Liverpool Plains Shire Council (“LPSC”) is a Local Government Area (LGA) covering approximately 5,000 square kilometres of the New England region of NSW.

The Australian Bureau of Statistics (ABS) estimated the LGA’s resident population at 7,738 in 2016, an increase of only 21 people since 2006 (Figure 1) (ABS, 2017). With an average household size of 2.4 persons, households in LPSC numbered 3,224 in 2016.

Figure 1 Liverpool Plains Shire Council population 2006-2016 (ABS, 2017)

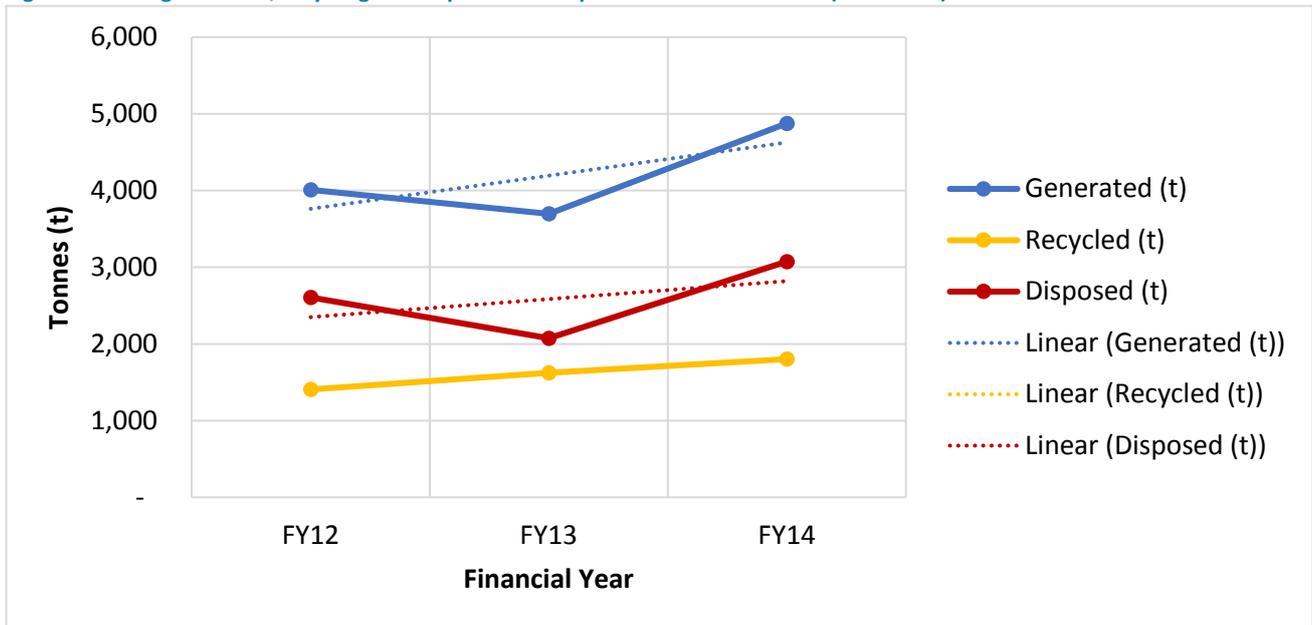


According to the 2011 Census, the Aboriginal and Torres Strait Islander population totalled 816 in 2011, with a median age of 24 years (ABS, 2011). The A&TSI community comprises 11% of the population of LPSC.

### 1.2 Waste generation, recycling and disposal

MRA notes that the NSW Local Government Waste and Resource Recovery Data Report for FY14 and FY15 reported total waste disposal in LPSC at 1,582 tonnes (NSW EPA, 2016) and 1,082 tonnes (NSW EPA, 2017), respectively. These figures can be equated with disposal at the Quirindi Landfill and Waste Management Facility only. As such, MRA has analysed the Yearly Waste Data Reports for Quirindi, Werris Creek and Willow Tree Landfills to present approximate data on waste trends in LPSC. The results of this analysis are summarized in Figure 2.

Figure 2 Waste generation, recycling and disposal in Liverpool Plains Shire Council (FY12-FY14)

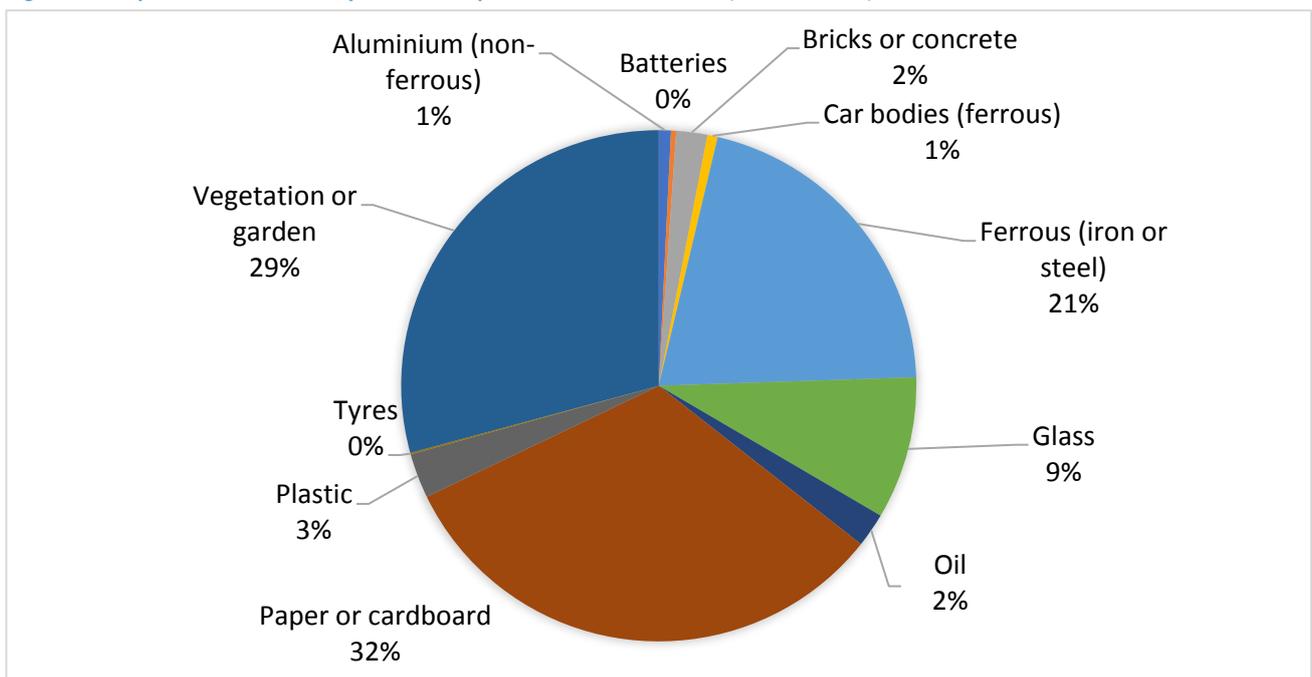


The trendlines in Figure 2 indicate that generation, recycling and disposal are all increasing. Furthermore, on the basis of three data points (FY12-FY14), waste generation in LPSC is growing at a Compound Average Growth Rate (CAGR) of 10.26% p.a. At this rate, waste generation in the year FY27 (1<sup>st</sup> July 2026 – 30 June 2027) is projected to reach 17,360 tonnes per annum for the entire local government area.

### 1.3 Waste composition

Waste audit data is not available to provide an indication of the composition of the kerbside residual and recycling streams. However, an analysis of the Yearly Waste Data Reports can provide a breakdown of the composition of the waste-to-recycling stream, see Figure 3. The major material categories recycled by LPSC are paper and cardboard (32%), vegetation or garden (29%) and ferrous metal (21%).

Figure 3 Composition of waste recycled in Liverpool Plains Shire Council (2013-14 data)



## 1.4 Waste collection

LPSC offers kerbside collection services for residents in its major population centres. The service is provided by JR Richards & Sons. Information provided by JR Richards & Sons through Contract Management Reports has been analysed to provide the following insights.

Table 1 summarises the service uptake among households in LPSC, with 88% of households in LPSC having a residual bin and 87% a recycling bin.

**Table 1 Summary of service uptake among households in Liverpool Plains Shire Council**

	Weekly Residual Bin (240 L)	%	Fortnightly Recycling Bin (240 L)	%
<b>Households with bin service</b>	2,832	88%	2,789	87%
<b>Households without bin service</b>	392	12%	435	13%
<b>Total</b>	<b>3,224</b>	<b>100%</b>	<b>3,224</b>	<b>100%</b>

Figure 4 plots the number of households with a kerbside service over time, illustrating a steady increase in uptake.

**Figure 4 Service base for kerbside recycling and residual waste collection – as reported by JR Richards & Sons**

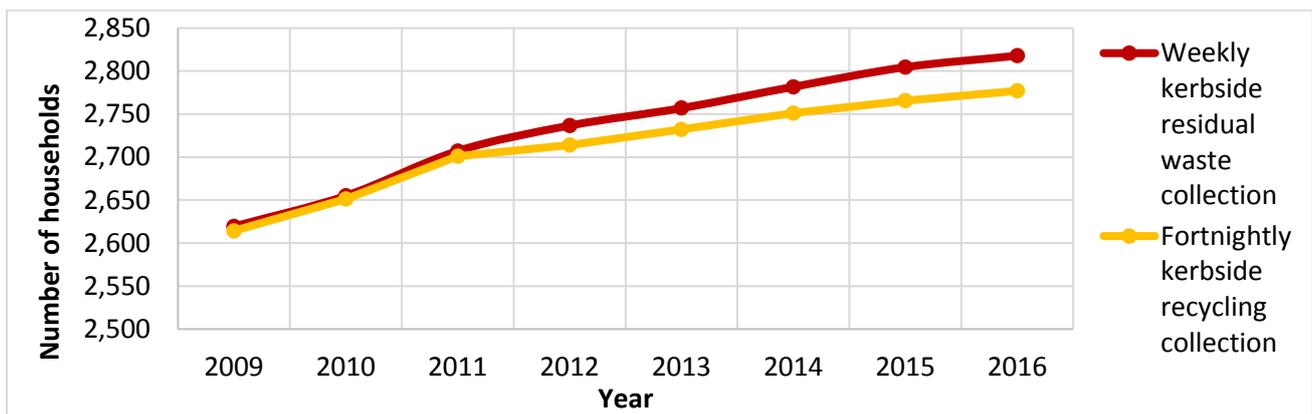
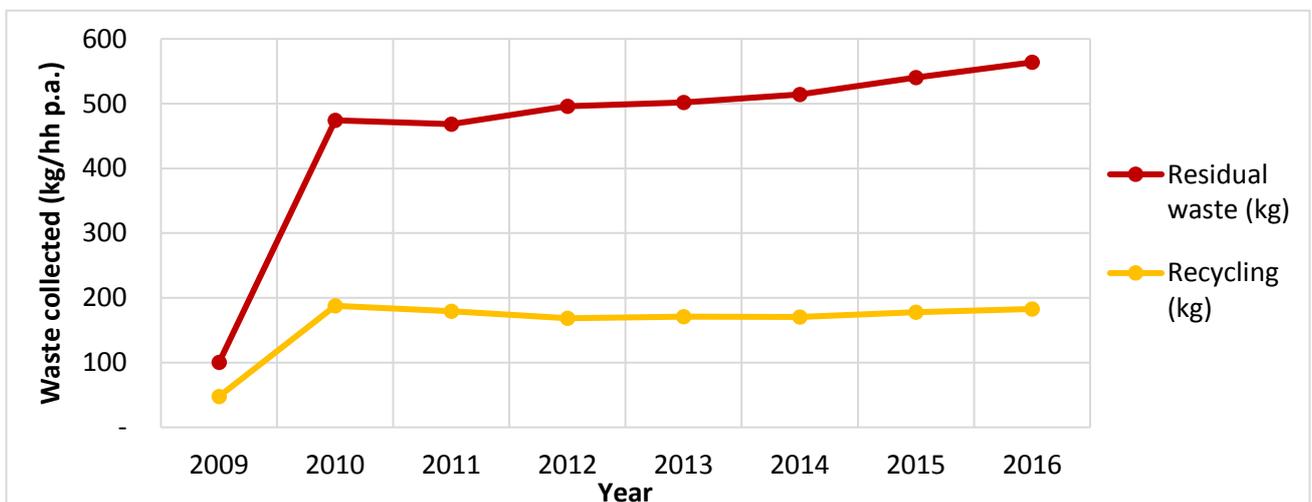


Figure 5 presents the total amount (by weight) of kerbside waste collected at an average household in LPSC in a year. The total amount of residual waste collected is increasing over time, while recycling has been relatively stable. Note: the waste data reported in 2009, under the current JR Richards & Sons collection contract, commenced 5 October 2009 thus accounting for the lower total in 2009.

**Figure 5 Annual kerbside waste collected (per household) – as reported by JR Richards & Sons**



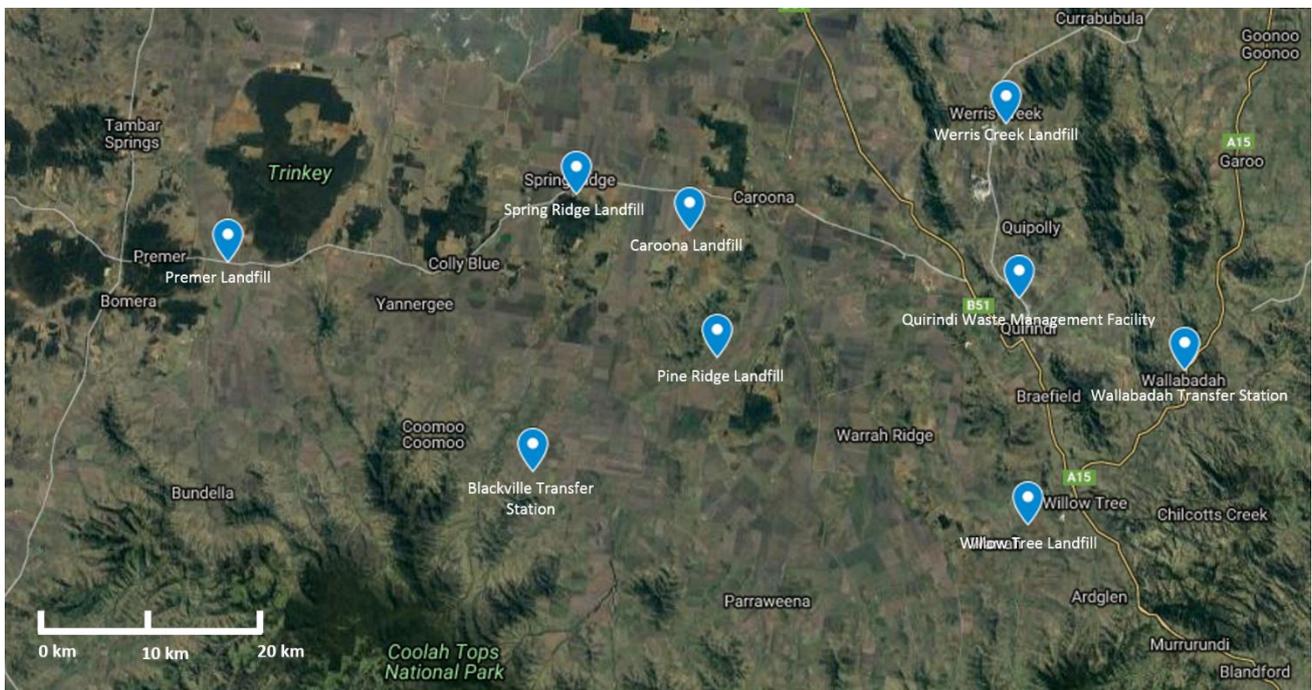
## 1.5 Waste facilities and public drop-off

Seven landfills and two transfer stations<sup>1</sup> are available for residents to drop off both residual waste and recycling. These are:

1. Quirindi Waste Management Facility (and landfill);
2. Werris Creek Landfill;
3. Willow Tree Landfill;
4. Pine Ridge Landfill;
5. Caroona Landfill;
6. Spring Ridge Landfill;
7. Premer Landfill;
8. Blackville Transfer Station; and
9. Wallabadah Transfer Station.

Facilities 1, 2, 3 and 9 are operated by Merinda Recycling and the rest are operated by LPSC. Figure 6 presents the geographic spread of LPSC's waste facilities.

**Figure 6 Map of LPSC waste facilities**



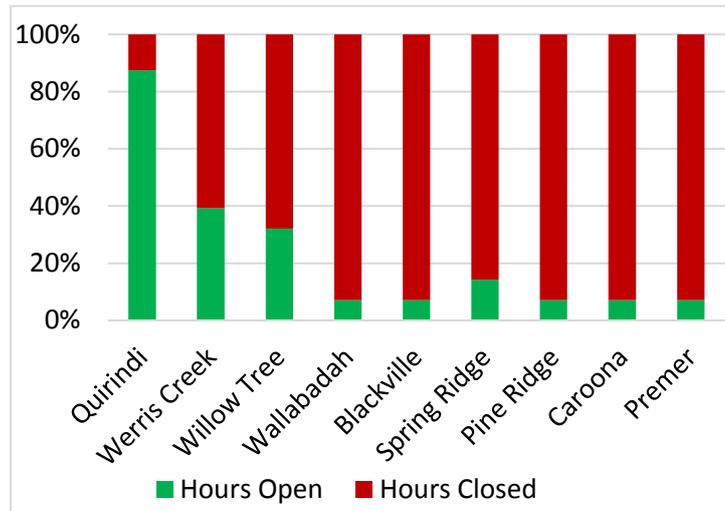
Most facilities are open for only 4 to 8 hours per week, although all facilities provide 24/h access to a recycling station. Figure 7 presents an image of the recycling station at Caroona Landfill; the design is standard across all nine facilities. Figure 8 provides an indication of the split between open hours and closed hours in a 7-day business week.

<sup>1</sup> A transfer station is a facility at which waste is temporarily stored while it is consolidated for transport to disposal or processing.

Figure 7 Recycling station at Carroona Landfill



Figure 8 Hours open vs. hours closed at the Liverpool Plains Shire Council waste facilities, across a 7-day business week

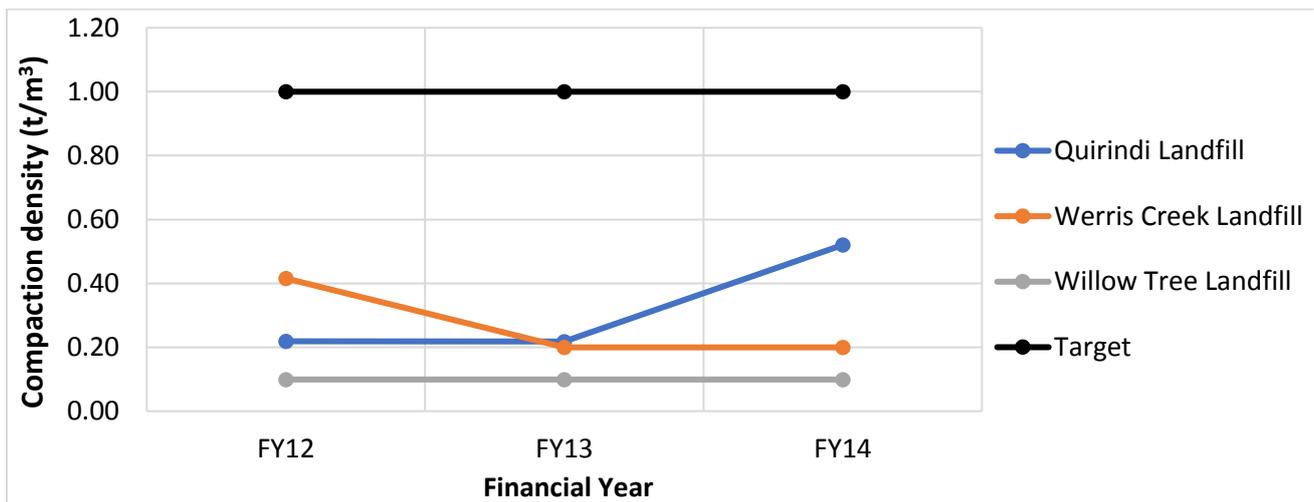


### 1.6 Performance analysis

In 2013-14 LPSC achieved an overall resource recovery rate of 37%. This is less than the state-wide average of 46.8% although greater than the ‘Rest of the State’ average of 34.9% (NSW EPA, 2016).

Yearly volumetric surveys, conducted by Bath, Stewart Associates and the Yearly Waste Data Reports, provide an indication of landfill compaction densities at the three major landfills – Quirindi, Werris Creek and Willow Tree. All three landfills sit well below the recommended density of 1 t/m<sup>3</sup> (VIC EPA, 1996). An increase in daily compaction will result in increased landfill life, as additional capacity will be available for disposal, as well as improved litter and odour control.

Figure 9 Landfill compaction densities (t/m<sup>3</sup>) at major Liverpool Plains Shire Council landfills



### 1.7 Review of current contractual arrangements

The contract (“the Agreement”) between LPSC and Merinda Recycling (“the Contractor”) is dated 11<sup>th</sup> September 2009. By it, the Contractor agrees to provide recycling, processing and operation services at the LPSC-owned sites: Quirindi, Werris Creek, Willow Tree Landfills and Wallabadah Transfer Station. A review of the Agreement is presented in Table 2. Enforcement of contractual obligations could be better managed and the contract could be improved by introducing performance indicators relating to management of the landfills.

**Table 2 Review of contractual arrangements between LPSC and Merinda Recycling**

Matter	Comment																																
Term	5-year + 5-year extension (at LPSC’s discretion)																																
Fees	<p>The contract sets out an annual fee of \$324,980 (ex. GST) for the first year, with annual adjustments by CPI. MRA has calculated the annual fees for each year of the contract to date (Table 3), using the formula supplied in Clause 3b of the Agreement. In addition, an equivalent gate fee (combining recycling and residual waste) has been estimated for the contract term to date (Table 3). A comparison of the fee cannot be made with regional averages, since the fee encompasses the management of landfills, transfer station and MRF. However, to put the estimated gate fee into perspective, in FY17 the typical MRF gate fee in regional NSW was \$60/tonne.</p> <p><b>Table 3 Annual fee (\$ ex. GST) and estimated equivalent gate fee (\$/tonne) paid to Merinda Recycling</b></p> <table border="1"> <thead> <tr> <th>Year (of contract)</th> <th>Annual fee (ex. GST)</th> <th>Estimated equivalent gate fee (/tonne)</th> <th>Dates</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>\$324,980</td> <td>\$112</td> <td>11 Sep 2009 - 10 Sep 2010</td> </tr> <tr> <td>2</td> <td>\$333,286</td> <td>\$103</td> <td>11 Sep 2010 - 10 Sep 2011</td> </tr> <tr> <td>3</td> <td>\$345,745</td> <td>\$96</td> <td>11 Sep 2011 - 10 Sep 2012</td> </tr> <tr> <td>4</td> <td>\$353,706</td> <td>\$88</td> <td>11 Sep 2012 - 10 Sep 2013</td> </tr> <tr> <td>5</td> <td>\$360,974</td> <td>\$98</td> <td>11 Sep 2013 - 10 Sep 2014</td> </tr> <tr> <td>6</td> <td>\$368,934</td> <td>\$76</td> <td>11 Sep 2014 - 10 Sep 2015</td> </tr> <tr> <td>7</td> <td>\$375,855</td> <td>\$70</td> <td>11 Sep 2015 - 10 Sep 2016</td> </tr> </tbody> </table>	Year (of contract)	Annual fee (ex. GST)	Estimated equivalent gate fee (/tonne)	Dates	1	\$324,980	\$112	11 Sep 2009 - 10 Sep 2010	2	\$333,286	\$103	11 Sep 2010 - 10 Sep 2011	3	\$345,745	\$96	11 Sep 2011 - 10 Sep 2012	4	\$353,706	\$88	11 Sep 2012 - 10 Sep 2013	5	\$360,974	\$98	11 Sep 2013 - 10 Sep 2014	6	\$368,934	\$76	11 Sep 2014 - 10 Sep 2015	7	\$375,855	\$70	11 Sep 2015 - 10 Sep 2016
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6	\$368,934	\$76	11 Sep 2014 - 10 Sep 2015																														
7	\$375,855	\$70	11 Sep 2015 - 10 Sep 2016																														
Waste processing	The Agreement stipulates that the Contractor “receive and process all waste materials deposited at other landfill sites/rural depots located within Liverpool Plains Shire” (Schedules 1-4, Clause 2.9). This allows LPSC the flexibility to operate any or all of its facilities as transfer stations and transport waste to the major landfills without requiring an amendment of the Agreement and, in particular, the annual fee.																																
Site maintenance	MRA notes that the contract requires the Contractor to “clean all fencelines of windblown rubbish regularly” at each of the sites (Schedules 1-4, Clause 3.8). The occurrence of litter at all facilities was noted during MRA’s site visit.																																
Reporting	The Contractor is also required to supply a monthly report of “recycling products and waste types for landfill” (Schedules 1-3, Clause 3.12), MRA notes that it has no knowledge of these reports being provided to LPSC.																																
Performance indicators	MRA notes that performance indicators for the maintenance of the landfills (Quirindi, Werris Creek and Willow Tree) are not stipulated in Schedules 1 to 3 of the Agreement. Consequently, the Contractor is not obliged (via the Agreement) to perform essential tasks such as daily cover and compaction.																																
Flexibility to vary the Agreement	The Agreement allows for the variation of works by written notice at any time (Clause 28), with the allowance that the amount payable to the Contractor be varied accordingly by an amount agreed upon between the two parties.																																

The contract (“the Contract”) between LPSC and JR Richards & Sons (“the Contractor”) is dated 2<sup>nd</sup> October 2009. By it, the Contractor agrees to provide waste collection services, including the provision and maintenance of Mobile Garbage Bins (“MGBs”), to LPSC. A review of the Contract is presented in Table 4. Overall, the Contract provides the framework for a high quality service for LPSC. It may be improved by reverting to a simple annual fee increase by CPI, and enforcing contractual obligations relating to contamination management and reporting.

**Table 4 Review of contractual arrangements between LPSC and JR Richards and Sons**

Matter	Comment
Term	10-year (from 5 Oct 2009 to 30 Jun 2019) + 1-year extension (at LPSC’s discretion)
Fees	<ul style="list-style-type: none"> <li>The fees are set as a rate per service, and are listed in Schedule 2 of the Contract.</li> <li>The Contract makes allowance for “Rise and Fall adjustments”, made in writing by the Contractor each quarter (Section C, Clause 10.6). The appendix of Section C sets out a ‘Rise and Fall formula’, which accounts for variations in wages, fuel and oil prices, other materials, management costs and profit return, superannuation, workers compensation and payroll tax. Typically, a collection contract will only make allowance for an annual price adjustment, indexed by labour, materials and fuel.</li> <li>The contract also sets out a performance security fee of \$60,000 (ex. GST), paid by the Contractor to LPSC as a bond for the duration of the Contract.</li> </ul>
Services	<ul style="list-style-type: none"> <li>The Contractor is required to provide the following services:               <ol style="list-style-type: none"> <li>Provision, maintenance and servicing of 240L MGBs for both garbage (Section E) and recycling (Section F), with all collected garbage delivered to approved landfills and all collected recycling delivered to Quirindi MRF. These services are available for domestic, commercial and Council buildings, as well as special events.</li> <li>Provision of two clean up services a year for domestic buildings (Section E, Clause 23.1).</li> </ol> </li> <li>The Contractor is also required to transport waste from Wallabadah Transfer Station to Quirindi Landfill (Clause 21.6).</li> <li>In addition, the Contractor is required to perform education services (Section D, Clause 16.2) and implement a contamination reduction plan, incorporating spot checks using an in-vehicle camera system (Section D, Clause 11.2.2).</li> </ul>
Disposal and recycling	<ul style="list-style-type: none"> <li>Garbage must be disposed at one of LPSC’s three major landfills (Section E, Clause 25.1-25.3). Should LPSC direct the Contractor to dispose of garbage at a landfill farther than the agreed location, LPSC must pay additional fees to the Contractor.</li> <li>Recycling must be delivered to Quirindi MRF during opening times, and LPSC must ensure access between 8 am and 5 pm weekdays. Should LPSC direct the Contractor to transport recyclables to an alternative MRF, additional costs must be paid to the Contractor, calculated at the \$/km rate provided in Schedule 2.</li> </ul>
Reporting	The Contractor is also required to report on customer service (Section D, Clause 6.5), education (Section D, Clause 16.3.2), materials collected, recyclable contamination rates and other metrics on a varying timescale from daily reports to annual reporting (Section D, Clause 18). MRA notes that it has no knowledge of quarterly reports regarding recyclables contamination rates being provided to LPSC.
Flexibility to vary the Contract	The Contract allows for service changes for convenience (Section C, Clause 3.2).

## 1.8 References

Australian Bureau of Statistics, 2017, *3218.0 – Regional Population Growth, Australia, 2015-16*  
 Australian Bureau of Statistics, 2011, *2011 Census QuickStats – Liverpool Plains*  
 NSW EPA, 2016, *NSW Local Government Waste and Resource Recovery Data Report 2013-14*  
 NSW EPA, 2017, *NSW Local Government Waste and Resource Recovery Data Report 2014-15*  
 VIC EPA, 1996, *EPA Information Bulletin, Publication 455*

## Appendix C Report: review of regulatory framework

Please see page over. Note: report attached as PDF, the page numbers do not align with this report.

# Definition of Regulatory Framework

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A submission to Liverpool Plains Shire Council

17 May 2017



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**Document History**

Title	Version Number	Status	Date
Definition of regulatory framework	1	Draft	17/05/2017

**Disclaimer**

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# 1. Strategy framework

## 1.1 National

The Commonwealth Government has limited constitutional powers to engage directly in local waste management issues. This responsibility rests largely with State, Territory and local governments.

Specific waste management legislation in place at the national level is limited to the *Hazardous Waste (Regulation of Imports and Exports) Act 1989*, which aims to regulate the export, import and transit of hazardous waste both within and outside Australia, the *Product Stewardship (Oil) Act 2000*, and the *Product Stewardship Act 2011*.

### 1.1.1 National Waste Policy

The Australian Government released a National Waste Policy (NWP) Statement in November 2009 entitled *National Waste Policy: Less Waste, More Resources*. The aims of the national policy are to:

- Avoid the generation of waste, reduce the amount of waste (including hazardous waste) for disposal;
- Manage waste as a resource;
- Ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner, and
- Contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land.

The initial momentum from the NWP launch in 2009 seems to have waned, and it has been largely dormant since 2013. The only area of real action is in relation to Extended Producer Responsibility Schemes (see section 1.1.2).

### 1.1.2 Extended Producer Responsibility Schemes

Extended Producer Responsibility (EPR) policies engage producers and others involved in the supply chain of a product to take responsibility for the environmental, health and safety footprint of those products.

Following the adoption of the NWP, the Commonwealth *Product Stewardship Act 2011* was introduced to provide the framework for EPR schemes. The Act creates three types of schemes:

- Mandatory schemes;
- Co-regulatory schemes; and
- Voluntary schemes (either accredited or not).

There are no mandatory schemes created under the Act, and one co-regulatory scheme (the National Television and Computer Recycling Scheme). Most EPR schemes are voluntary, and include schemes for:

- Mobile phones (MobileMuster, an accredited scheme);
- Fluorescent lamps (Fluorocycle, an accredited scheme);
- Tyres (Tyre Stewardship Australia);
- Agricultural chemical containers (DrumMuster);
- Paint (Paintback);
- PVC (PVC Stewardship); and
- Newspapers.

The Commonwealth Government establishes a “product list” every year, containing the products that it is considering for some form of EPR scheme. The 2016-17 list is:

- Household batteries;
- Plastic microbeads and products containing them;
- Photovoltaic systems;
- Electrical and electronic products; and
- Plastic oil containers.

The Act is currently under review, including the “product list” process.

### 1.1.3 The Emissions Reduction Fund

The Commonwealth Government purchases lowest cost abatement (in the form of Australian Carbon Credit Units (ACCUs)) from a wide range of sources through the \$2.5 billion Emissions Reduction (ERF). This provides an incentive to businesses, households and landowners to reduce emissions.

In order to participate in the ERF, project proponents must carry out a project in accordance with a methodology determination to appropriately estimate abatement from certain activities.

Approved methods for the waste and recycling sectors include:

- Landfill gas capture and destruction;
- Alternative Waste Treatment; and
- Source Separated Organics.

The waste sector has provided a substantial amount of abatement under the ERF.

## 1.2 State

The NSW Government administers the waste regulatory framework through the State’s primary environment protection legislation, the *Protection of the Environment Operations (POEO) Act 1997*, together with the *Waste Avoidance and Resource Recovery (WARR) Act 2001* and the *Protection of the Environment Operations (Waste) Regulation 2005*. These key statutes contain the requirements for managing, storing, transporting, processing, recovering and disposing of waste.

### 1.2.1 Protection of the Environment Operations (POEO) Act 1997

The *Protection of the Environment Operations (POEO) Act 1997* aims to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote pollution prevention, the elimination of harmful wastes, the reduction in the use of materials and the re-use and recovery or recycling of materials.

All waste facilities utilised by Council need to be appropriately licensed under the POEO Act, and the onus of proof rests with waste generators (ie Council) to ensure that a site receiving its waste is appropriately licensed.

### 1.2.2 The Waste Levy

The Waste Levy applies to the regulated area of NSW, of which Liverpool Plains is not included. Landfills in regulated areas are required to pay a contribution for each tonne of waste received at the facility. This aims to drive a reduction in the amount of waste being landfilled and promote recycling and resource recovery.

The Waste Levy is currently set at \$135.70/tonne, and will increase every year in line with CPI.

**Table 1: Metropolitan Waste Levy**

Period	Metro levy (per tonne)
2009-2010	\$58.80
2010-2011	\$70.30
2011-2012	\$82.20
2012-2013	\$95.20
2013-2014	\$107.80
2014-2015	\$120.90
2015-2016	\$133.10
2016-2017	\$135.70

The idea of a voluntary NIRW Regional Waste Levy was raised in the NIRW Regional Waste Strategy 2014-17. The Regional Waste Levy would introduce a \$10/t levy on waste sent to landfill and the funds would support council waste management programs.

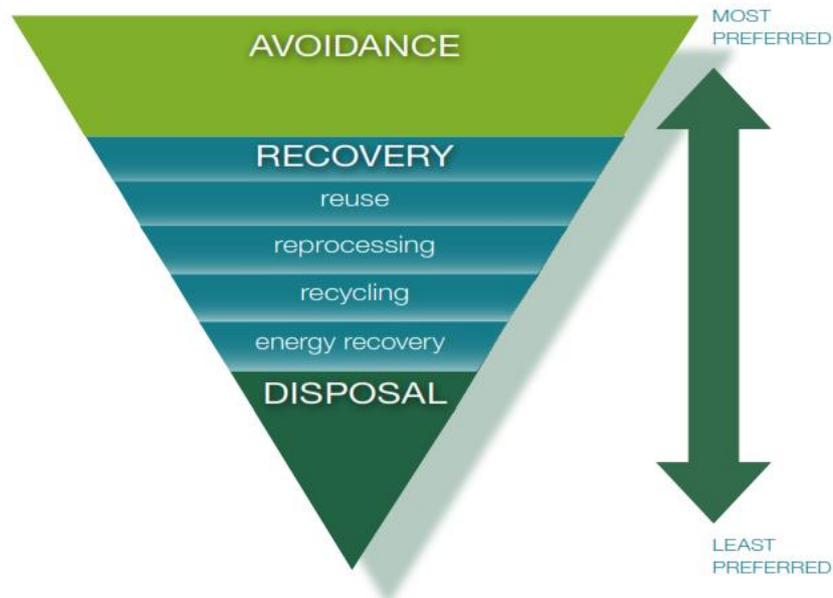
### 1.2.3 Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) is the primary Act governing resource recovery in NSW. The objectives of the WARR Act are to promote:

- The most efficient use of resources, including resource recovery and waste avoidance;
- A reduction in environmental harm, including pollution through waste;
- A consideration of the resource management hierarchy through avoidance of unnecessary resource consumption and disposal; and
- Resource recovery, which includes reuse, reprocessing, recycling and energy recovery.

The WARR Act defines a Waste Hierarchy (Figure 1), which ranks waste management options in order of general environmental desirability. Generally, the higher waste is managed up the hierarchy, the lower the impact and risk to the environment and communities. The waste hierarchy is intended for use alongside other assessment tools, such as cost benefit analysis, to guide decision-making.

Figure 1 WARR Act Waste Hierarchy



Source: Waste Avoidance and Resource Recovery Act 2001

#### 1.2.4 NSW Waste Avoidance and Resource Recovery Strategy 2014–21

The NSW Waste Avoidance and Resource Recovery Strategy 2014–21 (WARR Strategy) provides a framework for waste management in NSW. Development of a WARR Strategy, including targets for waste reduction, resource recovery and the diversion of waste from landfill disposal, is required under the WARR Act.

The following targets have been set for 2021/22:

- Avoiding and reducing the amount of waste generated per person in NSW;
- Increasing recycling rates to 70% for municipal solid waste;
- Increasing recycling rates to 70% for commercial and industrial waste;
- Increasing recycling rates to 80% for construction and demolition waste;
- Increasing waste diverted from landfill to 75%;
- Managing problem waste better, establishing 86 drop-off facilities and services across NSW;
- Reducing litter, with 40% fewer items (compared to 2012) by 2017; and
- Combating illegal dumping, with 30% fewer incidents (compared to 2011) by 2017.

The WARR Strategy guides the development of Councils resource recovery targets. Council will also keep abreast of developments in Waste Less Recycle More (WLRM) funding and will apply for funding to support and augment any of the described actions in order to achieve its objectives more efficiently.

#### 1.2.5 Waste Less Recycle More Initiative

The WLRM grant program provides funding for organisations to improve their management of waste and recovery of resources.

Phase 1 of WLRM provided \$465.7 million over the period July 2012 to June 2017, focusing on funding new, large-scale waste and recycling infrastructure, recycling facility upgrades, drop off centres, food and garden organics processing and recycling innovations.

Phase 2 of WLRM is scheduled to commence in 1 July 2017 and award \$337 million over 4 years. Priorities have already been outlined with a number of funding areas being potentially relevant to Council:

- local government waste and resource recovery – \$70 million;
- illegal dumping prevention and waste enforcement – \$65 million;
- household problem waste – \$57 million;
- waste and recycling infrastructure – \$48 million;
- organics infrastructure – \$35.5 million;
- litter prevention and enforcement – \$30 million;
- business recycling – \$22.5 million;
- recycling innovation – \$5 million; and
- Heads of Asbestos Co-ordinating Authorities – \$4 million.

### 1.2.6 Waste and Resource Recovery Amendment (Container Deposit Scheme) Act 2016

The *Waste and Resource Recovery Amendment (Container Deposit Scheme) Act 2016* established a Container Deposit Scheme (CDS) to be rolled out across NSW from 1 July 2017. This date has since been extended to 1 December 2017.

The CDS is likely to have the following impacts:

- The weight of the dry recycling bin will decrease (as containers are transported to a depot directly by residents and community organisations). These containers can be defined as responsive containers (i.e. they have responded to the CDS).
- However, some containers will remain in the kerbside bin as the householder may not value the financial incentive to return the containers to a depot. These containers are defined as non-responsive containers.
- The commodity value of the responsive containers (in the form of steel, glass, liquid paperboard and plastic) is lost to the MRF (and ultimately Council).
- However, the deposit value of the non-responsive containers (10c/unit) is retained by the MRF, and greatly outweighs the commodity value lost to the responsive containers.
- The average value of dry recyclables (\$/t) thus increases.

This increase in value of the recyclables in the bin is greater than the drop in tonnes, therefore councils are expected to be financially better off in the long term. It is anticipated that the majority (if not all) of this additional CDS value will flow back to LPSC in a competitive market (subject to appropriate contractual terms).

The introduction of the CDS in NSW will present other opportunities for LPSC, including additional space within the recycling bin, and the potential co-location of a CDS collection point with a local Community Drop-Off Centre.

## 1.3 Regional and Council strategy

### 1.3.1 Northern Inland Regional Waste (NIRW) Regional Waste Strategy 2014-17

Northern Inland Regional Waste (NIRW) is a voluntary regional waste group and consists of Councils in the New England and North West regions of NSW. The focus of NIRW is on achieving collaborative outcomes in waste management and resource recovery, with a distinctive regional approach.

The NIRW Regional Waste Strategy 2014-17 sets out a strategic direction for NIRW, guided by the NSW WARR Strategy. Nevertheless, the strategy recognises the independence of individual councils in carrying out their own waste management and resource recovery activities.

The strategic themes and accompanying initiatives are presented in Table 2.

**Table 2 NIRW Regional Waste Strategy 2014-17 - Strategic themes and initiatives**

Themes	Initiatives
1. Avoid and reduce waste generation	1a. Guide the community in reducing food waste 1b. Promote home composting 1c. Promote reuse of discarded products
2. Increase recycling	2. Develop waste processing facilities at Council or sub-regional level 3. Improve kerbside recycling performance 4. Investigate the merit of establishing sub-regional waste recycling facilities for business and construction waste streams 5. Consider processing residual waste as a long-term regional or sub-regional option
3. Increase community reuse and recycling and improve problem waste collection	6. Establish Drop-off Centres to collect reuse products, recycling materials, and problem wastes
4. Reduce littering and increase public place recycling	7. Upgrade and extend public place litter and recycling bin infrastructure, education and enforcement
5. Reduce illegal waste dumping	8. Develop and regional Illegal Waste Dumping Program with EPA funding
6. Increase regional collaboration	9. Strengthen the capacity of the NIRW secretariat to play a wider, more effective role in coordinating regional action on waste 10. Develop innovative regional solutions for problem & special wastes 11. Develop and implement the NIRW Regional Waste Facility Standard 12. Propose a NIRW voluntary waste levy

### 1.3.2 Liverpool Plains Shire Council Sustainable Development Policy

Liverpool Plains Shire Council (“LPSC” or “Council”) has articulated its objectives for economic and social development within an ecologically sustainable framework in its Sustainable Development Policy.

The policy aims relevant to this Strategy are:

- To protect, restore and preserve natural ecosystems to maintain biodiversity; and

- To promote the recovery and re-use of waste products as resources, thus minimising waste generation.

Furthermore, the policy outlines actions that Council will undertake to achieve these aims:

- Strategic planning and development control;
- Undertaking infrastructure projects;
- Compliance with environmental standards and legislation;
- Engaging the community; and
- Seeking ways to reduce environmental impact.

## 1.4 Conclusion

A strong thread through the National and State initiatives is to reinforce commercial drivers for resource recovery. That is achieved through product stewardship where manufacturers take on some responsibility for their products at the end of life, an emissions reduction fund that has the effect of assisting with waste practices that reduce greenhouse gas emissions, landfill levy and grant funding programs, and a container deposit scheme to create a value on waste containers.

Consequently, other segments of the economy will take on a portion of the waste costs that have previously been exclusively the domain of Councils. Similarly, other segments of the economy are becoming more involved in the waste sector, including in the provision of waste management services for Councils.

Alongside the trend to bolster the market for waste processing is a continuation of targets for waste avoidance and diversion, particularly for local government. The targets form a motivation for Councils, a metric against which they can measure themselves. They make tangible the aspirational principles that Council adopts.

## Appendix D Report: review of grant funding opportunities

Please see page over. Note: report attached as PDF, the page numbers do not align with this report.

# Grants and Funding Review

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A submission to Liverpool Plains Shire Council

24 July 2017



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**Document History**

Title	Version Number	Status	Date
Grants and Funding Review	1	Draft	24/07/17
Grants and Funding Review	2	Final	24/07/17

**Disclaimer**

This report has been prepared by Mike Ritchie and Associates (trading as MRA Consulting Group (MRA)) for Liverpool Plains Shire Council. In accordance with the terms and conditions of appointment. MRA (ABN 13 143 273 812) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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# 1. Introduction

Various funding and grant options are available to Liverpool Plains Shire Council (“LPSC”) with regards to waste management and minimisation. This summary focuses on grants and funding available through State (New South Wales) avenues, as most options present themselves through state initiatives.

Relevant information is detailed for each grant or funding option explored in the following sections, including:

- Potential and likely funding values;
- Status (opening and submission dates);
- Source for further information;
- Eligibility criteria; and
- Application information.

## 1.1 Relevance to the waste strategy

The LPSC Waste Strategy will identify a number of measures which can be taken to both reduce the cost and improve the environmental performance of waste management within the LGA.

The strategy process has thus far identified the following key priority for LPSC:

- Landfill remediation and upgrade;
- Provision of weighbridges;
- Combating illegal dumping; and
- Improving recycling.

Funding is available from the NSW State Government to support the key priorities listed above. The next section provides a summary of funding opportunities for which LPSC may be eligible.

## 2. NSW Grants and Funding

MRA has identified grants and funding opportunities for which LPSC may be eligible. These opportunities are summarised in this section. In addition, Appendix A contains a list of grants that LPSC may not be eligible for, but which provide context to the funding opportunities available to NSW councils and regional waste groups.

### 2.1 Waste Less, Recycle More

#### 2.1.1 Landfill Consolidation and Environmental Improvements Grants Program

**Category:** Landfill Consolidation and Environmental Improvements Grants Program

**Amount:** Total \$7 million; individual grants: up to \$200,000. The grants will cover up to 70 per cent of the total cost with the remainder being met by council contributions.

**Status:** Round 3 opening September 2017

**Government:** State

**Agency:** NSW Environment Protection Authority (EPA) – Grants administered by the Environmental Trust

**More information:** <http://www.epa.nsw.gov.au/wastegrants/landfill.htm>

**Project Eligibility:** Local councils in the Regional regulated area and Non-regulated area

**Details:** The program has been designed to support regional councils address potential liabilities posed by landfill activities, reduce environmental risks, and contribute to the long-term protection of the environment. It aims to address problems that arise when regional and remote landfills are poorly managed, and to support rural councils' move towards improved, benchmark techniques for managing landfills.

The grant program has involved two streams:

- Stream 1 - Landfill consolidation and closure
- Stream 2 - Environmental improvements of landfills.

On-request advisory services can assist council and private grant recipients with advice, guidance, coaching and critical feedback on procurement processes and documents. Advice is available to provide support on a wide range of issues.

<http://www.epa.nsw.gov.au/wastegrants/infrastructure-advice.htm>

**Applications:** 1300 361 967 - [wasteless.councils@epa.nsw.gov.au](mailto:wasteless.councils@epa.nsw.gov.au)

#### 2.1.2 Recycling Innovation

**Category:** Recycling Innovation Fund

**Amount:** Total \$5 million

**Status:** Round 1 opening October

**Government:** State

**Agency:** NSW Environment Trust and the NSW EPA

**More information:** <http://epa.nsw.gov.au/wastegrants/priority-problem-wastes.htm>

**Project Eligibility:** Industry, councils, not-for profit, tertiary/research organisations.

**Details:** Provides opportunities for industry, councils, not-for-profit organisations and charities to though contestable grant funding to further develop projects that provide innovative solutions to targeted waste types in NSW and include infrastructure and research.

These priority problem wastes include:

- Plastic film and other plastics
- Copper chrome arsenic (CCA) timber and other treated timbers
- Tyres and rubber
- Nappies and incontinence pads
- Electronic waste (e-waste)
- Shredder floc

**Applications:** Applicants are required to submit a business case as a key component of their application, detailing their project's feasibility. Application forms and guidelines will be available to download when funding rounds are open.

### 2.1.3 Weighbridge Fund

**Category:** Waste and Recycling Infrastructure Program

**Amount:** Total of \$3 million; individual grants of 50% of the capital cost to install a weighbridge, up to a maximum of \$75,000

**Status:** Round 5 now open (ongoing)

**Government:** State

**Agency:** NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/weighbridge.htm>

**Project Eligibility:** Grants under this program are made available to organisations not individuals. To be successful in gaining funding, your organisation must operate a facility which meets the requirements for either landfills or recycling, processing and waste transfer facilities.

**Details:** The Weighbridge Fund will support recycling facilities and landfills that meet the eligibility criteria to install weighbridges, in order to facilitate the collection and payment of the waste and environment levy. Weighbridge infrastructure will ensure better quantification of waste and support improved environmental performance at waste and recycling facilities.

<http://www.epa.nsw.gov.au/resources/wasteregulation/150109-weighbridges-new-requirements-factsheet.pdf>

**Applications:** <http://www.epa.nsw.gov.au/wastegrants/weighbridge.htm> sent to [infrastructure.grants@epa.nsw.gov.au](mailto:infrastructure.grants@epa.nsw.gov.au)

### 2.1.4 Organics Infrastructure (Large and Small) Program

**Category:** Organics Infrastructure Fund

**Amount:** Total of \$14 million; individual grants of up to \$3 million depending on the type of grant project

**Status:** Round 5 is open until 10 August 2017.

**Government:** State

**Agency:** NSW Environment Trust and the NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/organic-large-small.htm>

**Project Eligibility:** Local councils, business, government institutions, not for profits, and industry, depending on the type of grant project/stream

**Details:** The Waste Less, Recycle More Organics Infrastructure (Large and Small) Program provides \$57 million over nine years to fund infrastructure and equipment to reduce food and garden organics waste going to landfill.

### **Three funding streams**

#### **Stream 1: Food and Garden Organics Processing**

Provides up to \$3 million for new and enhanced infrastructure to process food, garden or combined food and garden organics from households and/or businesses.

#### **Stream 3: Food Donation**

Provides up to \$500,000 for infrastructure to facilitate the collection and redistribution of edible food waste from businesses to people in need, such as fridges, freezers, refrigerated vans and storage equipment like forklifts.

#### **Stream 4: Product Quality**

Provides up to \$500,000 for equipment to improve the quality of recycled organics products to support access to new markets.

**Applications:** Application forms and guidelines and full details on how to apply are available from the [NSW Environmental Trust website](#). A separate application form and guideline has been developed for each grant stream.

## **2.1.5 Organics Collections**

**Category:** Organics Infrastructure Fund

**Amount:** Total of \$27 million; individual grants: up to \$1.3 million

**Status:** Round 5 Closed. Round 6 opens June 2018

**Government:** State

**Agency:** NSW Environment Trust and the NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/local-gov-organics.htm>

**Project Eligibility:** Local councils

**Details:** Grants of up to \$1.3 million are available for bins, kitchen caddies and education for councils (or groups of councils) to introduce new food and garden waste collection services.

Funding is also available for trials and system roll outs for source separated organics collections in multi-unit dwellings.

**Applications:** More information, the application form and guidelines are available from the [NSW Environmental Trust](#) page.

## **2.1.6 Community Recycling Centre Infrastructure**

**Category:** Improved systems for household problem wastes

**Amount:** Total of \$11.35 million in grants infrastructure funding with individual grants of up to \$250,000; and up to \$300,000 to trial innovative solutions

**Status:** Round 4 opens August 2017

**Government:** State

**Agency:** NSW Environment Trust and the NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/local-gov-organics.htm>

**Project Eligibility:** Local councils

**Details:** The four-year \$70 million Improved Systems for Household Problem Wastes program supports the Community Recycling Centre Fund, with grants to establish community recycling centres or similar mobile services for household problem waste.

It aims to establish a network of centres and services to make it easy and convenient for people across NSW to recycle or safely dispose of wastes like paint, gas bottles, fire extinguishers, motor and cooking oils, car and household batteries, fluorescent tubes and globes, and smoke detectors.

Funding is available for upgrades to existing community recycling centres, construction of new facilities or development and trialling of innovative solutions where a fixed facility is not practicable.

The program also aims to increase community awareness of good recycling and disposal practices for household problem wastes and to provide a sustainable solution for managing them.

**Applications:** 1300 361 967 or [recycling.centres@epa.nsw.gov.au](mailto:recycling.centres@epa.nsw.gov.au)

### 2.1.7 Aboriginal Land Clean Up and Prevention Program

**Category:** Illegal dumping grants

**Amount:** Total of \$600,000; \$200,000 available for each round with individual grants of \$5000 to \$50,000

**Status:** Ongoing funding resumes February 2018

**Government:** State

**Agency:** NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/combat-illegal-dump.htm>

**Project Eligibility:** NSW Local Aboriginal Land Councils; and local councils, government agencies, non-governmental organisations, consultants, and other entities working in partnership with a Local Aboriginal Land Council.

**Details:** Under Waste Less Recycle More the EPA has further developed the Aboriginal Land Clean Up and Prevention (ALCUP) funding program to manage illegal dumping on privately owned Aboriginal Land.

Funding of between \$5000 to \$50,000 is available to Local Aboriginal Land Councils for individual projects of one year's duration. All funded activities must be completed within a 12-month period.

The priorities for the funding reflect the EPA's commitment to deliver an integrated approach to combat illegal dumping through active engagement and collaboration between government, land managers and local communities.

**Applications:** [illegaldumping.strategy@epa.nsw.gov.au](mailto:illegaldumping.strategy@epa.nsw.gov.au)

### 2.1.8 Combating Illegal Dumping: Clean-up and Prevention Program

**Category:** Illegal dumping grants

**Amount:** Up to \$50,000

**Status:** Applications are now closed. A new round of offers may be made released from July 2017.

**Government:** State

**Agency:** NSW Environment Protection Authority (EPA)

**More information:** <http://www.epa.nsw.gov.au/wastegrants/combat-illegal-dump.htm>

**Project Eligibility:** Local councils, public land managers and community groups working in partnership with councils and/or public land managers

**Details:** This funding option is available for community groups to partner with their local councils to clean-up illegally dumped waste, including installing and implementing prevention measures. Private industry would not therefore be eligible but may be able to strike a deal with local councils.

**Applications:** Successful applicants will be required to submit a project plan, including monitoring and evaluation, with EPA guidance.

### 2.1.9 Regional Illegal Dumping (RID) Squads

**Category:** Illegal Dumping Management and Prevention

**Amount:**

**Status:** Opening July 2017 (ongoing)

**Government:** State

**Agency:** NSW Environment Protection Authority (EPA)

**More information:** <http://www.epa.nsw.gov.au/illegaldumping/rid-squads.htm>

**Project Eligibility:** Cessnock, Dungog, Gosford, Lake Macquarie, Maitland, Muswellbrook, Newcastle, Singleton, Upper Hunter and Wyong council areas.

The Hunter/Central Coast RID squad was established in 2014 to reduce the costs of illegal dumping and build capacity within the region. The Hunter/Central Coast RID Squad covers a wide geographical area and will work with other public land managers in the region to combat illegal dumping.

Liverpool Plains Shire Council is a bordering Local Government Area to the Central Coast and Hunter Region RID Squad. Liverpool Plains Shire Council may be eligible to enter the consortium of the Hunter/Central Coast RID squad and receive associated financial and other support from the EPA to combat illegal dumping.

**Details:** RID Squads are regionally based teams that specialise in dealing with illegal dumping and illegal landfilling. The squads are funded by the NSW Environment Protection Authority (EPA) and the member local councils who opt to work together and pool resources to tackle illegal dumping.

**Applications:** For more information of the RID Squad program, call the EPA on (02) 9995 5000 or email [IllegalDumping.Strategy@epa.nsw.gov.au](mailto:IllegalDumping.Strategy@epa.nsw.gov.au)

### 2.1.10 Council Litter Grants

**Category:** Litter Prevention Grants Program

**Amount:** Total of \$1.5m for round 4

**Status:** Round 4 opening October 2017

**Government:** State

**Agency:** NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/council-litter.htm>

**Project Eligibility:** NSW local councils

**Details:** The NSW Environment Protection Authority (EPA) has provided grants to local government under the EPA Council Litter Prevention Grants Program since 2014.

Litter grants are funded by the five-year \$465.7 million Waste Less, Recycle More initiative. They support local councils to deliver litter prevention projects that answer their community needs. These projects play an important role in achieving long-term goals for litter reduction in NSW.

Grant projects apply an integrated approach to litter prevention, using education, enforcement, better infrastructure and evaluation tools. Grants use the EPA's Local Litter Check to measure results and *Hey Tosser!* litter campaign materials to educate the community.

**Applications:** [litter.prevention@epa.nsw.gov.au](mailto:litter.prevention@epa.nsw.gov.au)

## 2.2 Office of Environment & Heritage

### 2.2.1 Environmental Restoration and Rehabilitation Grants

**Category:** Restoration and Rehabilitation

**Amount:** \$2m for projects by government entities and \$2m for projects by community organisations (previous round between \$5,000 and \$100,000 were available).

**Status:** Next round anticipated to open in September 2017

**Government:** State

**Agency:** Office of Environment and Heritage

**More information:** <http://www.environment.nsw.gov.au/grants/restoration.htm> and (02) 8837 6093

**Project Eligibility:** Government entities and community organisations

**Details:** The aim of the Restoration and Rehabilitation Program is to facilitate projects run by community organisations and government entities working to prevent or reduce environmental degradation of any kind. Through these projects, we also aim to improve the capacity of communities and organisations to protect, restore and enhance the environment.

**Applications:** See <http://www.environment.nsw.gov.au/grants/restoration.htm> following open of next round (September 2017)

## Appendix A Other funding opportunities

This appendix contains a list of funding opportunities for which LPSC is not eligible. They have been included to provide context to the funding opportunities available for waste management in NSW.

### Better Waste and Recycling Fund

**Comment:** LPSC is not eligible for this fund, as LPSC lies outside of the regulated waste levy area and is not subject to the waste levy.

**Category:** Dedicated funding for local councils and groups of councils

**Amount:** Total of \$39 million over four years from 2017-18 (\$9.75m each financial year)

**Status:** Ongoing process of participation

**Government:** State

**Agency:** NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/better-waste-recycle.htm>

**Project Eligibility:** Local councils and regional groupings of councils in the levy-paying area

**Details:** The Better Waste and Recycling Fund provides funding to local councils and regional groups of councils to make it easier for their communities to recycle more and decrease the amount of waste sent to landfill. Available to local councils and groups of councils that pay the waste levy, the fund supports a broad range of projects to improve recycling, engage communities, reduce waste generation, tackle littering and illegal dumping, and contribute to achieving the NSW recycling targets.

**Applications:** Details available - <http://www.epa.nsw.gov.au/resources/wastegrants/better-waste-recycling-fund-guidelines-170217-print.pdf>

### Funding for Voluntary Regional Waste Groups

**Comment:** LPSC is not eligible for this funding, as it is not a regional waste group. Northern Inland Regional Waste (NIRW) would be eligible for this funding.

**Category:** Dedicated funding for groups of councils

**Amount:** Total funding of \$13 million; individual funding of \$790,000 to \$2.5 million

**Status:** Applications open August 2017

**Government:** State

**Agency:** NSW EPA

**More information:** The Environment Protection Authority (EPA) supports Renew NSW, which represents eight voluntary regional waste management groups covering 96 councils and 1.8 million people in rural and regional NSW.

Working together over the past 12 years, these groups have improved collaboration across their regions, improved waste service delivery in regional and rural areas, developed consistent research methods, shared skills and resources, and negotiated cost-effective contracts.

The EPA provided \$2.5 million in funding to voluntary regional waste groups in 2013–14, and will provide a further \$8.19 million progressively over the three-year period from 2014–15 to 2016–17.

**Project Eligibility:** Voluntary regional waste groups area (Northern Inland Regional Waste (NIRW))

**Details:** <http://www.epa.nsw.gov.au/wastegrants/vol-regional-waste.htm>

**Applications:** [wasteless.recyclemore@epa.nsw.gov.au](mailto:wasteless.recyclemore@epa.nsw.gov.au)

### Resource Recovery Facility Expansion and Enhancement Program

**Comment:** LPSC is not eligible for this program as it applies to organisations that currently operate a waste management facility.

**Category:** Waste and Recycling Infrastructure Program

**Amount:** Individual grants of \$100,000 to \$1 million to cover up to 50% of project capital costs

**Status:** Round 5 now open (ongoing)

**Government:** State

**Agency:** NSW Environment Trust and the NSW EPA

**More information:** <http://www.epa.nsw.gov.au/wastegrants/weighbridge.htm>

**Project Eligibility:** Council, industry, business and not-for-profit organisations who operate licensed waste management facilities in NSW.

**Details:** The Resource Recovery Facility Expansion and Enhancement Program aims to increase recycling of household, industry and business waste.

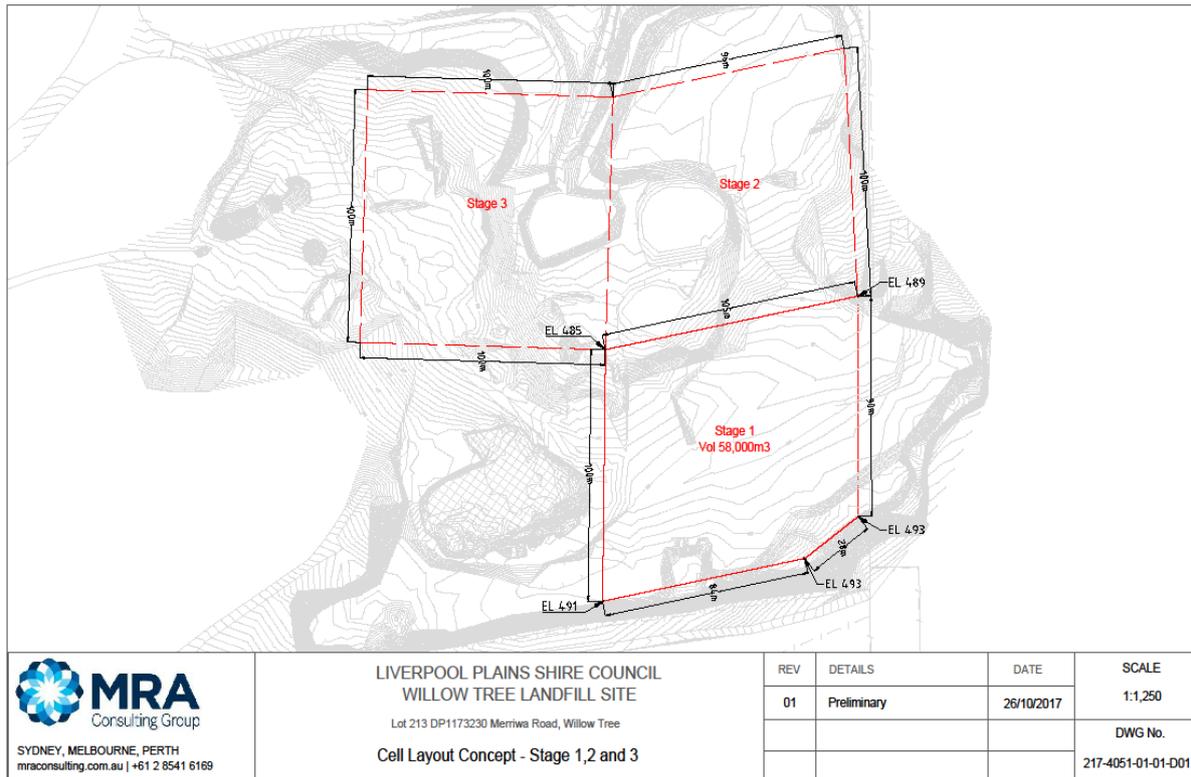
This program is part of the NSW Environment Protection Authority's (EPA) Waste Less, Recycle More initiative and is being delivered through a partnership between the EPA and the NSW Environmental Trust. This program supports projects that stimulate and accelerate investment in new equipment and upgrades that will boost recycling processing capacity in NSW.

**Applications:** Applicants are required to submit a business case as a key component of their application, detailing their project's feasibility. The EPA provides free support to applicants to help prepare their business case.

## Appendix E Detail of Willow Tree landfill upgrade

This appendix details the costs associated with upgrading Willow Tree landfill, specifically establishing the first landfill cell (“stage 1”). Figure 11 presents a conceptual cell layout of Willow Tree Landfill and the location and size of stage 1.

**Figure 11 Conceptual cell layout of Willow Tree Landfill**



### Upgrade tasks

The upgrade of Willow Tree landfill – stage 1 involves:

- Fencing and traffic control for the duration of the upgrade;
- Relocating existing waste buried at the tip face to the location of the stage 1 cell;
- Levelling and compacting the landfill surface for the establishment of engineered landfill cells;
- Laying a Geosynthetic Clay Liner, HDPE liner, cushioning textile, gravel and separation textile on the landfill surface of the stage 1 cell;
- Establishing leachate management infrastructure for the stage 1 cell; and
- Project management and approvals.

## Cost estimate

The costs for each of the above steps has been estimated by MRA based on the preliminary cell layout for Willow Tree and MRA's internal database of common rates for equipment and services for landfill establishment and remediation in NSW (Table 13). Please note that the following is an estimate only. Market rates for the following tasks should be obtained from service providers in the region.

**Table 13 Estimated capital costs for Willow Tree landfill upgrade (stage 1)**

Task	Unit cost	Unit	QTY	Estimated cost (rounded to nearest '00)	Description
Fencing	\$60	Per m	100 m	\$6,000	100 m of fencing at \$60/m for restricting access to the tip face.
Traffic control	\$400	Per day	100 days	\$40,000	Budget one traffic controller for 20 weeks at \$400/day.
Waste relocation earthworks	\$14	Per m <sup>3</sup>	4,200 m <sup>3</sup>	\$58,800	Bulk cut waste currently disposed at the tip face to fill the new location at the further end of the landfill, where gravel excavation will soon end. Council's surveyor, Bath Stewart Associates, estimates 4,171 m <sup>3</sup> of waste has been deposited at this location since 2012. Prior to 2012 the waste was disposed at a different location on the site.
General earthworks	\$2	Per m <sup>3</sup>	10,000 m <sup>2</sup>	\$20,000	Trim and compact the proposed landfilling area for final subgrade profile. The area of the stage 1 cell is approximately 10,000 m <sup>2</sup> . Assume height for trim and compact is no greater than 1 m. Therefore, budget for final earthworks of 10,000 m <sup>3</sup> of soil.
Supply sub-base	\$30	Per tonne	2,000 tonnes	\$60,000	The area of the stage 1 cell is approximately 10,000 m <sup>2</sup> . Sub-base is 200 mm high (0.2 m). Therefore, budget for supply of 2,000 m <sup>3</sup> of road base. Density of road base approximately 2 t/m <sup>3</sup> , therefore purchase 2,000 m <sup>3</sup> of road base.
Preparation earthworks for liner	\$2	Per m <sup>3</sup>	2,000 m <sup>3</sup>	\$4,000	The area of the stage 1 cell is approximately 10,000 m <sup>2</sup> . Sub-base is 200 mm high (0.2 m). Therefore, budget for supply of 2,000 m <sup>3</sup> of road base. Density

Task	Unit cost	Unit	QTY	Estimated cost (rounded to nearest '00)	Description
					of road base approximately 2 t/m <sup>3</sup> , therefore compact 2,000 m <sup>3</sup> of road base to form sub-base.
Landfill cell lining	\$75	Per m <sup>2</sup>	10,000 m <sup>2</sup>	\$750,000	Allows for lining of proposed landfilling area for first cell (10,000 m <sup>2</sup> ) at \$75/m <sup>2</sup> .
Leachate pond lining	\$50	Per m <sup>2</sup>	1,500 m <sup>2</sup>	\$75,000	Allows for lining the leachate pond ('permanent bund') at 50m x 30m in size (1,500 m <sup>2</sup> )
Leachate management	\$50,000	Per cell	1 cell	\$50,000	Establish permanent and temporary bunds + pipework. Budget for first cell only at this stage.
<b>TOTAL (capital expenditure)</b>				<b>\$1,063,800</b>	
Approvals (2.5% of total capital expenditure)				\$26,600	Environmental and site approvals and controls.
Project management (5% of total capital expenditure)				\$53,200	Budget management and scheduling.
<b>GRAND TOTAL</b>				<b>\$1,143,600</b>	

## Appendix F Detail of proposed review of waste charges

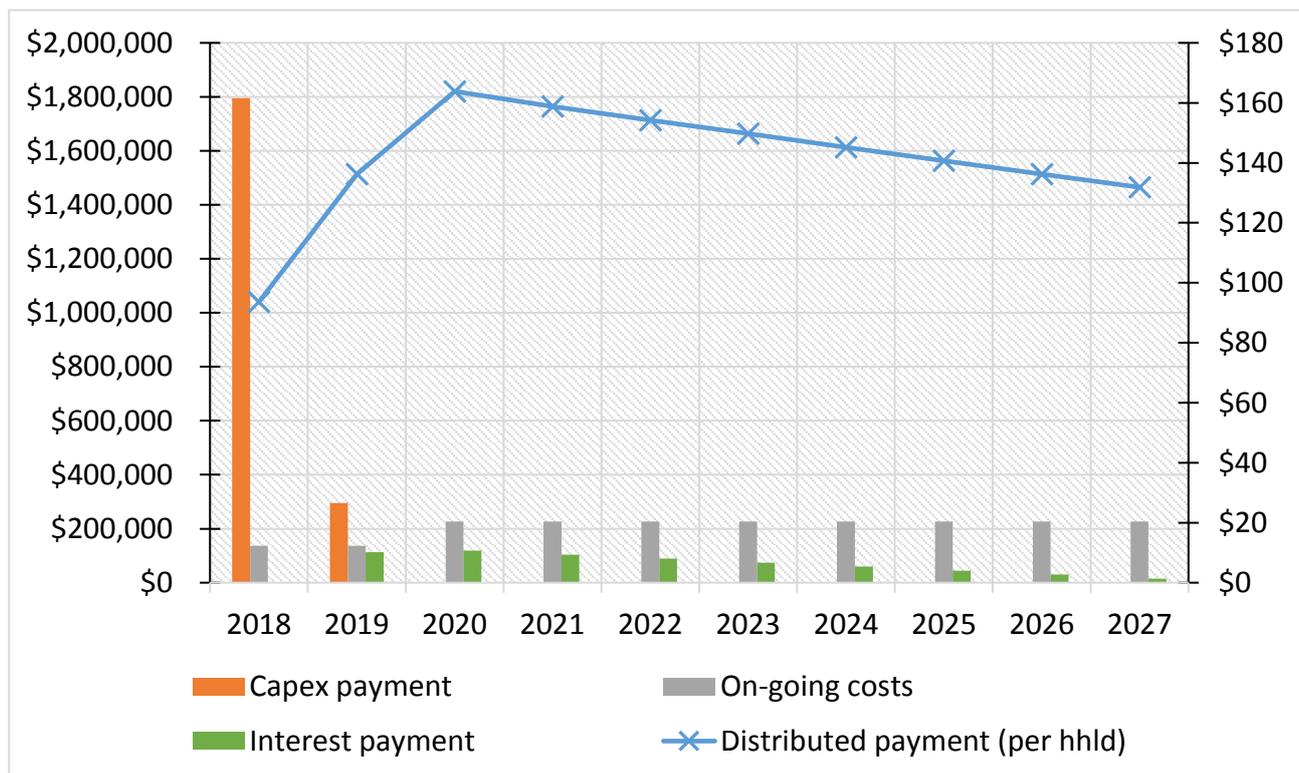
### Aim of the review

The aim of the review of waste charges is to ensure that the amount of LPSC's waste charge is optimised for implementing the strategy's action plan.

### Cost estimation

Using the cost estimates produced for this strategy, and assuming an interest rate of 7%, it is estimated that the changes suggested in this strategy will cost an additional \$90 per household in 2018, rise to approximately \$165 in 2020, then fall over the remaining period of the strategy to around \$130 (see Figure 12). Discontinuation of disposal fees at the regional sites will serve to help alleviate the cost impact on residents in those areas.

Figure 12 Graph of capital, on-going and interest payments with increase in waste charge over 10-year period



### Expected outcomes

The cost of these changes to the waste management system will be equivalent to a maximum of \$165 per household per year.

## Appendix G Proposed waste transfer system

### Aim of the waste transfer system

A waste transfer system is proposed to rationalise use of LPSC's waste facilities, improve amenity and environmental management at waste facilities and improve the ease of use and accessibility of LPSC waste services for residents.

The system envisaged would see all wastes accepted at the current waste facilities on a 24/7 basis. Rather than deposit general waste directly into the landfill, residents would place the wastes into a container which would subsequently be transported by Council to the central landfill or MRF for processing and disposal.

This system would provide residents with greater access for waste disposal, and reduce incentives for illegal dumping.

This system would have the following benefits:

1. **Mobility:** to allow material deposited at the transfer station to be easily transported to a central landfill where waste disposal operations will be consolidated;
2. **Ability to accept general waste:** to improve convenience and access for residents disposing of general waste, also providing additional safety as residents would be prevented from gaining access to the tipping area.
3. **Retention of landfill resources:** Existing landfills can be tidied up, and "mothballed" rather than closed. Should Council require them in the future, they will still be available; and
4. **Mirror kerbside system:** to align the self-haul service with the kerbside collection service in terms of the number and type of waste streams residents will be encouraged to sort wastes before presenting at the site. Currently, the recycling station contains four bays, one for non-putrescible general waste and three for recyclables: 1) paper and cardboard, 2) metal and plastic and 3) glass. It is envisaged that by mirroring the kerbside system, i.e. having only one recycling bay for all streams, residents without a kerbside service will find their service fairer and easier to use. This may require amendment to the MRF processing contract specification when this operation is re-tendered.

Waste deposited at the regional sites could be collected in mobile garbage bins, however in view of the potential number of bins involved, MRA recommends that Council consider adopting metal waste and recycling cages as utilised in other regional areas in Australia (Figure 13) for the larger sites. The smaller-volume sites may suit MGBs or Intermediate Bulking Containers (Figure 14).

The cages would necessitate Council procuring a hook lift truck or similar to transport them to the central landfill facility.

MRA notes that it will also be necessary to provide a cage at Willow Tree. Should this become the consolidate landfill site, public access to the weighbridge will be restricted and so a cage will be required for disposal of resident's self-haul waste.

Figure 13 Image of waste and recycling transfer station used in East Gippsland



Figure 14 IBCs at Wallabadah Transfer Station



### Implementation of the waste transfer system

The waste transfer system can be gradually implemented at appropriate LPSC waste facilities. Cages can be purchased and trialled at the major landfills (Quirindi, Werris Creek and Willow Tree) to handle the large volumes of waste presented at those sites and transport them to Willow Tree landfill. IBCs (or MGBs) can be purchased and trialled at the low-volume rural landfills, Premer and Pine Ridge. See heading *Allocation of cages or IBCs and frequency of collection* below for suggestions regarding the placement and allocation of containers to sites.

It is suggested that the performance and suitability of the cage system be reviewed before it is extended to the second-tier landfills at Spring Ridge and Carroona. A suggested implementation process for the cages is presented in Figure 15.

Figure 15 Suggestion for implementing cages and waste transfer system



### Allocation of cages or IBCs and frequency of collection

MRA has estimated the amount of self-haul waste and recycling received by each LPSC waste facility in FY17. These projections were used to estimate the number of cages or IBCs that would be initially required at each facility. A cage has a capacity of 25 m<sup>3</sup>. IBCs modelled in this study have a capacity of 1 m<sup>3</sup>. The frequency of transporting waste to disposal at the Willow Tree landfill depends on the time taken for the containers to fill up, which will vary between the sites. Quirindi landfill was not assigned recycling cages due to the presence of LPSC's MRF at the site. The same applies to the rural landfills, as they currently have IBCs or MGBs at their recycling station. Table 14 presents the design parameters calculated by MRA for LPSC's landfills. Please note, MRA suggests that these sites be upgraded sequentially and after review.

**Table 14 Design parameters for waste transfer system (FY17 figures)**

Waste facility	Estimated self-haul (tpa in FY17)		# units at site		Frequency of collection	
	General waste	Recycling	General waste	Recycling	General waste	Recycling
Major landfills (cages)						
Quirindi	379	356	1	N/A	Weekly	N/A
Werris Creek	190	34	1	1	Weekly	Every 3 weeks
Willow Tree	173	47	1	1	Weekly	Every 2 weeks
High-volume rural landfills (cages)						
Spring Ridge	88	56	1	N/A	Weekly	N/A
Caroona	63	40	1	N/A	Weekly	N/A
Low-volume rural landfills (IBCs)						
Premer	38	24	7	N/A	Weekly	N/A
Pine Ridge	30	19	5	N/A	Weekly	N/A

### Sample collection schedule – cages

A collection schedule example, based on the collection frequencies in Table 14, is presented below for the facilities with cages:

- Willow Tree – Monday
- Caroona - Tuesday
- Werris Creek – Wednesday

- Spring Ridge – Thursday
- Quirindi – Friday

Werris Creek and Willow Tree have two cages each (one for recycling and one for general waste) according to MRA’s estimates. These cages can be collected on the same day (in the morning and in the afternoon).

### Transport

A transfer system can be established to transport cages to Willow Tree landfill once they reach their capacity. A suitable vehicle, such as a hook-lift truck, operated by the site manager, should be procured to transport the cages.

### Cost estimate

The preliminary design undertaken by MRA requires 8 cages to be procured. Seven are located at the waste sites, with one being available for scheduled swapping. Quotes were obtained from equipment suppliers to prepare a cost estimate of the proposed transfer system. Table 15 presents an estimate of the capital and operating costs associated with the full transfer system design.

**Table 15 Estimated capital and operating costs for the waste transfer system**

Item	Unit cost	QTY	Total (rounded to nearest '00)	Comments
<b>Capital costs (\$ FY17 incl. GST)</b>				
Cages for Quirindi, Werris Creek, Willow Tree, Caroon and Spring Ridge	\$17,000	8	\$136,000	Cost breakdown: <ul style="list-style-type: none"> <li>• Base cost for cage: \$15,000 incl. GST (quoted price),</li> <li>• Transport for two cages to Tamworth: \$3,000 incl. GST (quoted price)</li> <li>• Cost of unloading freight at Tamworth at \$500 incl. GST per cage (assumed)</li> </ul>
IBCs for Premer and Pine Ridge	\$200	12	\$2,400	1000 L IBCs range from \$100 - \$300 in price per unit.
Transport vehicle – hook-lift truck	\$443,000	1	\$443,000	Quote for a 35.5m <sup>3</sup> hook-lift at \$443,000. Assumes \$200,000 for cab chassis (ex. GST). Includes 2 days training, standard features, and the installation of under body load cells.
<b>TOTAL</b>			<b>\$581,400</b>	

Item	Unit cost	QTY	Total (rounded to nearest '00)	Comments
<b>Operating costs (\$ FY17/annum incl. GST)</b>				
Salary – rural site manager	\$100,000	1	\$100,000	Assumption of salary including on-costs to Council
Maintenance cost – truck	\$10,000	1	\$10,000	Industry assumption
Fuel cost – truck	\$335 Fuel cost per fortnight	52 Weeks in a year	\$17,400	Assuming truck has fuel usage of 16.51 L/hr, \$1.30/L fuel rate, travel time is 2 hrs per return trip and 7.8 trips per week (assumes that Premer and Pine Ridge IBCs are collected together).
Replacement costs - cages	\$18,500	0.5	\$9,300	Assuming 1 replacement required every two years.
<b>TOTAL</b>			<b>\$136,700</b>	

### Community engagement

The implementation of the waste transfer system will involve significant community messaging, to ensure that the purpose and benefits of the system, as well as how to use the system, are communicated to residents.

### Expected outcomes

The expected, direct outcome of the waste transfer system is to provide a convenient, reliable and sustainable alternative to landfill disposal at the rural and major landfills.

## Appendix H Detail of proposed rehabilitation of landfills

### Aim of rehabilitation

The landfills will be rehabilitated to reduce, to a reasonable level, the likelihood and degree of risk they may pose to human health or the environment. Following rehabilitation, it is expected that:

- The landfills will be suitably covered;
- Stormwater and leachate management will be instituted; and
- Water quality assurances will be undertaken.

### Rationale for rehabilitation

Landfill rehabilitation was proposed to address environmental and health issues identified during the strategy development process, including:

- The proximity of landfills to watercourses;
- The lack of daily cover and landfill lining; and
- The potential for compliance issues, should the NSW EPA extend the scope of its existing regulations regarding landfills to more regional and rural areas.

### Cost estimate

An estimate of the costs associated with rehabilitating the rural landfills is presented in Table 16.

**Table 16 Estimated capital costs for landfill rehabilitation**

Task	Unit cost	Unit	QTY	Estimated cost (rounded to nearest '00)	Description
Rehabilitate rural landfills (per rural landfill)					
Planning	2.5	%	\$57,100	\$1,400	Environmental and site approvals and controls. Assume 2.5% of capex.
Fencing	\$60	Per m	10 m	\$600	An allowance of 10 m of fencing at \$60/m for restricting access to the tip face.
Import capping soil	\$52	Per m <sup>3</sup>	100	\$5,200	Assume each rural landfill has a 100 m <sup>2</sup> footprint.
Leachate pond lining	\$50	Per m <sup>2</sup>	25 m <sup>2</sup>	\$1,300	Allows for lining the leachate pond ('permanent bund') at 25 m <sup>2</sup> .

Task	Unit cost	Unit	QTY	Estimated cost (rounded to nearest '00)	Description
Leachate management	\$50,000	Per landfill	1	\$50,000	Leachate sump and hydraulic controls.
Project management	5	%	\$55,800	\$2,900	Assume 5% of capex (i.e. fencing, waste relocation, general earthworks, lining and leachate management).
<b>TOTAL (capital expenditure, per rural landfill)</b>				<b>\$55,800</b>	
Approvals (2.5% of total capital expenditure)				\$1,400	Environmental and site approvals and controls.
Project management (5% of total capital expenditure)				\$2,900	Budget management and scheduling.
<b>GRAND TOTAL (per rural landfill)</b>				<b>\$61,400</b>	
<b>GRAND TOTAL (4x rural landfills)</b>				<b>\$245,600</b>	\$61,400 x 4 rural landfills

### Frameworks and guidance for landfill rehabilitation

- A framework for the preparation of a landfill site management plan is provided in Appendix G. This framework provides a structure and guidance for a site management plan to ensure that a wide range of potential risks are identified and mitigated during the rehabilitation process.
- The NSW EPA [Environmental Guidelines: Solid Waste Landfills, 2016](#) provides landfill operators with a regulatory framework for managing solid waste landfills. The guidelines can be consulted to ensure that any rehabilitation undertaken is also in line with the EPA's standards.

### Expected outcomes

It is expected that the rehabilitation process for LPSC's landfills will mitigate the potential for continuing or future environmental damage, including the risks posed by the landfills to water quality or other potential human health impacts.

## Appendix I Suggestions for management of bulky goods

### **Aim of recovering bulky goods and hazardous waste**

The aim of recovering bulky goods from the general waste stream is to produce a stream of recyclable commodities. By separating bulky items, some of the recyclable goods can be on-sold to the market. The removal of large, bulky goods will also extend the useful life of the landfill.

### **Examples of bulky goods and hazardous waste to remove**

The following bulky goods were observed in LPSC landfills during MRA's site visit, these items may be removed for resource recovery at Willow Tree landfill:

- Sofas and upholstered furniture
- Televisions and computers
- Fridges, washing machines and other whitegoods
- Batteries
- Empty gas cylinders
- Tables, chairs, pallets and other wood items.

### **Handling bulky goods and hazardous waste**

Recyclable bulky goods can be stored in piles at Willow Tree landfill. Once a large enough volume of goods is available, items can be transported to an appropriate recycler in a regional centre, e.g. Gunnedah or Tamworth. Some recyclers may also pick up the goods at no cost to Council. Depending on the material, recyclers may pay a rebate to Council to receive the goods.

### **Services for recycling bulky goods or hazardous wastes**

Some of the bulky goods and hazardous wastes identified above can be recycled via existing services in the region. Table 17 presents a summary of processor and service providers that can offer services to LPSC for the recycling of certain bulky goods. The list provided is non-exhaustive and is intended to provide Council with an overview of the opportunities and solutions available for bulky waste. Residents can recycle household quantities of household hazardous wastes, such as batteries, empty gas cylinders at Tamworth Community Recycling Centre. Furthermore, tables, chairs and other wood items can be repaired for re-use or disassembled and recycled via mulching. Council can explore the possibility of engaging with local metal recyclers, who may accept and aggregate e-waste for on-sale, while also observing any developments in the local market toward e-waste recycling.

**Table 17 Summary of processors and service providers for recycling bulky goods**

Good	Service provider	Services available	Closest location	Distance from Willow Tree	Notes
Mattresses	Soft Landing	Drop-off and recycling	Redhead, NSW	216 km	Collection only available for Newcastle, Lake Macquarie and Hunter region <a href="http://www.softlanding.com.au">www.softlanding.com.au</a>
Tyres	C&R Tyre Recycling Australia	Collect and recycle	West Wallsend, NSW	195 km	They currently collect tyres from Gunnedah and Tamworth <a href="http://www.cnrtyrerecycling.com.au">www.cnrtyrerecycling.com.au</a>
agVet chemical containers	DrumMUSTER	Collect and recycle	Quirindi, NSW	N/A	Continue collections already implemented at the Quirindi landfill by DrumMUSTER <a href="http://www.drummuster.org.au">www.drummuster.org.au</a>

### Expected outcomes

It is expected that recovering bulky goods from landfill will result in:

- A higher resource recovery rate;
- A potential income stream to Council; and
- The extension of the lifespan of Willow Tree landfill.

## Appendix J Report: Framework for site management plan

Please see page over. Note: report attached as PDF, the page numbers do not align with this report.

# Landfill Environmental Management Plan (LEMP) Framework

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A submission to Liverpool Plains Shire Council

30 October 2017



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**Document History**

Title	Version Number	Status	Date
Landfill Environmental Management Plan (LEMP) Framework	1	Draft	30/10/2017

**Disclaimer**

This report has been prepared by Mike Ritchie and Associates (trading as MRA Consulting Group (MRA)) for Liverpool Plains Shire Council in accordance with the terms and conditions of appointment. MRA (ABN 13 143 273 812) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

## Foreword

This Framework was prepared to aid the Liverpool Plain Shire Council (LPSC) and their preferred waste management advisor in the preparation of effective Landfill Environmental Management Plans (LEMPs), to be applied to existing and future Landfill sites in the LPSC area.

There is a reliance on the LEMP to ensure that a landfill's actual environmental impacts are consistent with those evaluated in the environmental impact assessment (EIA) process. The LEMP is therefore fundamental to the EIA process and should ensure that commitments given at the planning and assessment stage are carried through to the construction and/or operation stage.

This framework takes guidance from the following key documentation regarding preparation of environmental management and minimum landfill:

- Guide for the Preparation of Environmental Management Plans by the Department of Infrastructure, Planning and Natural Resources; and
- Environmental Guidelines: Solid Waste Landfills by the NSW Environmental Protection Authority.

The preparation of a LEMP for LPSC should adhere to that specified in this framework however, the documents outlined above should be consulted in close correlation with the LEMP design to ensure all minimum management and landfill standards are implemented and maintained. This framework has also been produced in close consultation with existing environmental management plans (both landfill specific and alternative uses ) for reference.

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## Glossary of Terms

Acronym	Description
<b>DIPNR</b>	Department of Infrastructure, Planning and Natural Resources
<b>EIA</b>	Environmental Impact Assessment
<b>EIS</b>	Environmental Impact Statement
<b>EMP</b>	Environmental Management Plan
<b>EMS</b>	Environmental Management System
<b>EPA</b>	Environment Protection Authority (NSW)
<b>LEMP</b>	Landfill Environmental Management Plan
<b>LGA</b>	Local Government Area
<b>LPSC</b>	Liverpool Plains Shire Council
<b>MRA</b>	MRA Consulting Group
<b>REF</b>	Review of Environmental Factors
<b>SEE</b>	Statement of Environmental Effects

# Part A Introduction

## 1. Background

Project proponents, including government agencies, are often required to prepare a project specific Environmental Management Plan (EMP) as a condition of approval or consent. An EMP exists to ensure that the environmental impacts defined during the environmental impact assessment (EIA) process of a project are managed according to commitments also defined during the EIA process, for the construction and/or operational stage of a project.

An EMP is a valuable to for:

- Defining details of who, what, where and when environmental management and mitigation measures are to be implemented;
- Provide better on-site environmental management control over the life of a project;
- Allow proponents to ensure their contractors fulfil environmental obligations on their behalf; and
- Demonstrate due diligence.

This framework is specifically designed for application to landfills and should therefore result in the production of a Landfill Environmental Management Plan (LEMP), inclusive of relevant information and management of landfill processes.

The primary purpose of this framework is to ensure a minimum standard and consistent approach in the preparation of LEMPs across landfills in the Liverpool Plains Shire Council (LPSC) Local Government Area (LGA). The use of this framework as a guide for the development of LEMPs for sites across LPSC can contribute to the effectiveness of the EIA process and assist in ensuring that commitments made in a project's EIA are implemented and maintained.

## 2. What is a LEMP?

An LEMP is a site or project specific plan developed to ensure that appropriate environmental management practices are followed during the construction and/or operational phases of a landfill.

An effective LEMP should ensure:

- The application of best practice environmental management according to the following supplementary New South Wales documentation:
  - Guide for the Preparation of Environmental Management Plans by the Department of Infrastructure, Planning and Natural Resources.
  - Environmental Guidelines: Solid Waste Landfills by the NSW Environmental Protection Authority.
  - Any other documents utilised in the preparation of the above documentation.
- The implementation of site EIA, including conditions of approval or consent;
- Compliance with environmental legislation; and
- That environmental risk associated with a site are properly managed.

### 3. Other Related Documents and Requirements

EMPs generally form one component of a project's environmental management documentation. EMPs should be prepared in isolation but be consistent and integrated with existing environmental documentation including:

- An organisation's environmental management system (EMS); and
- A project's EIA and approval or consent documentation such as:
  - Environmental Impact Statement (EIS).
  - Statement of Environmental Effects (SEE).
  - Review of Environmental Factors (REF).

### 4. LEMP Preparation

The preparation of a LEMP should conform to the relevant standards and guidelines set out by the NSW EPA's *'Environmental Guidelines: Solid Waste Landfills'* (hereafter referred to as *'Landfill Guidelines'*). The minimum standards in these guidelines reflect the following broad goals for landfilling in NSW:

- Landfills should be sited, designed, constructed and operated to cause minimum impacts to the environment, human health and amenity
- The waste mass should be stabilised, the site progressively rehabilitated, and the land returned to productive use as soon as practicable.
- Wherever feasible, resources should be extracted from the waste and beneficially reused
- Adequate data and other information should be available about any impacts from the site, and remedial strategies should be put in place when necessary
- All stakeholders should have confidence that appropriately qualified and experienced personnel are involved in the planning, design and construction of landfills to high standards.

#### Consultation

During the preparation of any EMP, all relevant authorities and communities should be consulted as early as possible to facilitate a reasoned response.

#### Preparation, Certification and Approval

The landfill operator (LPSC) retains primary responsibility for the environmental performance of its landfill(s) and associated activities. As such, LPSC is responsible for ensuring the preparation, certification, approval and implementation of an acceptable LEMP for the appropriate stage of the site (construction and/or operational).

LPSC may pass the preparation of any LEMPs onto a contractor however, the responsibility for implementing and maintaining the conditions of approval or consent lies with LPSC.

The certification and approval requirements for an EMP should be met before commencing construction and operation. Therefore, certification and approval requirements should be recognised before the preparation phase of the document and sufficient time should be allowed for the completion of this processes.

#### Review

Environmental management planning documents exist as working documents that require review and amendment across the life of a project. Frequency and scale of review are dependent on the nature and scale of a project or site. A review of an EMP document should be undertaken following:

- A change in the scope of the project or use of the landfill;

- Significant environmental incidents;
- A need to improve performance in an area of environmental impact;
- Completion of environmental audits; and
- Completion of a project/closure of a site (to facilitate improvements LEMPs)

## 5. Types of LEMP

LEMPs can be prepared at different times in the life of a landfill. Usually these are prepared as the following:

- Construction LEMP; and
- Operation LEMP.

Construction LEMPs are generally developed in parallel with an Operation LEMP as a consolidated document addressing the appropriate environmental management practices during the construction and operation of a landfill. An operational management plan may be developed for an existing landfill which does not have an existing management plan for operational procedures or existing management documentation has become outdated.

## 6. LEMP Structure

The Scope and content of a LEMP will be a function of both the significance of a landfills potential environmental impacts and the size of a landfill. Consequently, this framework acts only as a guide for the preparation of a LEMP, outlining common elements necessary for the inclusion in all LEMPs. A LEMP should be prepared on a case basis, applying appropriate standards according to that outlined above.

All LEMPs should include information covering the four elements outlined in Table 1 and depicted in Figure 1. A description of information and issues that may need to be addressed under each element is provided in Part B of this framework.

**Table 1 Users of the LEMP Document**

LEMP Element	Main End User
<b>Background</b>	All stakeholders – internal and external Community groups Approval or Consent Authority
<b>Environmental Management</b>	Proponent’s management and supervisory staff Approval or Consent Authority
<b>Implementation</b>	Proponent’s management and supervisory staff Construction staff and site staff Community groups Operations staff Approval or Consent Authority
<b>Monitor and Review</b>	Proponent’s management and supervisory staff Approval or Consent Authority

Figure 1 Information to be included in a LEMP



## Part B LEMP Document Description

Preparation of a Landfill Environmental Management Plan should conform to standards established by the NSW EPA's Landfill guideline and the DIPNR Guideline for the preparation of EMPs as outlined in section A.5.

This section provides details of information and issues that may need addressing in a LEMP produced for landfills in LPSC. The EMP format outlined by the following sections should be viewed as a guideline and may require some alteration depending on the scope/scale of a given landfill. Additionally, the level of reporting may differ depending on the scale of the site or environmental issue - smaller landfills/environmental issues may be sufficient to tabulate results, while larger landfills with more complex environmental issues may require more detailed reporting.

The level of reporting required for a project/site should be determined before the preparation of a LEMP commences, between LPSC and the contractor responsible for the preparing the document.

### 1. Background

#### 1.1. Introduction

Used to provide a brief description of the project/site including its objectives, the steps that led to selected project/site and key stakeholders.

#### 1.2. Project Description

A project description should provide details of the nature and scope of the project/site including the following:

##### **Location**

The site location should be described and include a plan indicating the location of current/proposed site activities.

Site history, neighboring land use and zoning should be outlined and the site should be identified on a plan or map in relation to the site surrounds.

##### **Environmental Context**

The local context should be described and include local environment conditions such as climate, surface water, groundwater, geology and flora & fauna.

##### **Construction/Operation Activities**

A description of the construction and/or operation activities to be undertaken should be provided, including the following:

- Description of the construction/operation process;
- Hours of construction/operation (including details of any activities to occur outside of specified times);
- Employment number and type;
- Equipment to be used on site;
- Location of site facilities and work compounds; and
- Site access and security.

##### **Timing and Scheduling**

Anticipated commencement and completion dates for construction/operation should be listed. If it is to be completed in stages, separate dates should be provided for each stage.

### 1.3. LEMP Context

Relationship between the LEMP and the overall planning process, including any relevant planning or approval documents (EIS/REF/SEE).

Any stakeholder consultation undertaken during the preparation of the LEMP and relevant outcomes should be summarised.

Outline any existing documentation as an EMS maintained by LPSC and the relationship of the LEMP with such documents

### 1.4. LEMP Objectives

Outline what the LEMP is trying to achieve. This may include any number of details, examples of objectives might be related to site management, special site features and best practice environmental management as an example.

### 1.5. Environmental Policy

LPSC environmental policy should be provided (if applicable).

## 2. Site Management

### 2.1. Environmental Management Structure and Responsibility

An EMP should provide a clear organizational structure for the project/site, including the names and positions of personnel responsible for environmental management. A description should be provided of the roles and responsibilities of each person identified. Generally, a project manager or an organisation's environmental manager will be nominated for the specific task of ensure that an environmental management planning document is enforced and maintained.

### 2.2. Approval and Licensing Requirements

A project's regulatory framework must be identified. LEMPs should include relevant requirements to ensure they are considered, including:

- Conditions of approval or consent. May include this as a matrix indicating where in the LEMP each condition of approval or consent is addressed;
- Tabulation of legislation relevant to the project and any licences, approvals or permits required to be obtained under the legislation. This should identify the relevant section(s) of the legislation and triggers;
- Identify the persons (or roles) responsible for obtaining any relevant licences, approvals and permits and timeframes for obtaining and renewing them; and
- Description of any other requirements that apply to the project e.g. voluntary agreements, stakeholder agreements, EMS requirements, etc.

### 2.3. Reporting and Quality Assurance

A description of reporting requirements for the project/site should be provided and include the following:

- A list of reports required, for example:
  - Construction monitoring;
  - Non-compliance;
  - Corrective action;
  - Complaints management;
  - Auditing;
  - Pre-construction and pre-operation compliance; and
  - Any reports required by LPSC or other government agency.
- A description of typical report content;
- Personnel responsible for the preparation of reports and indicative timeframes;
- Communications protocols establishing who is responsible for distributing information, what is to be distributed to whom and the frequency of communication; and
- Document control procedures

With reference to quality assurance, the following are required outcomes outlined in the NSW EPA's 'Landfill Guidelines':

- Quality assurance measures must be implemented to make sure that all critical features of the landfill are constructed according to the approved designs and specifications.
- Before major construction works, the occupier must prepare a Construction Quality Assurance Plan. This must set out the proposed testing, inspection and other verification procedures to be implemented during construction of the landfill works.
- Following construction, the occupier must prepare a Construction Quality Assurance Report on the quality assurance that was implemented to ensure that the works comply with the approved designs and specifications.
- In the case of a new landfill or cell, a satisfactory Construction Quality Assurance Report must be submitted to the EPA before the EPA can issue an approval to dispose of waste in the new landfill or cell.
- In the case of final capping works under a Closure Plan, a satisfactory Construction Quality Assurance Report must be submitted to the EPA before the EPA can approve the surrender of the licence.

## 2.4. Environmental and Site Training

All site staff should undergo site and environmental awareness training, including training about the specific roles and responsibilities under the LEMP.

Environmental training should include:

- A site induction;
- Outline of requirements of the LEMP;
- Environmental and site emergency response;
- Site environmental controls; and personnel specific training.

A training record for staff should also be maintained on site to include trainee, trainer, date of training and description of training content.

## 2.5. Emergency Contacts and Response

The LEMP should have an emergency response plan which nominates contact person(s) for emergencies. Person(s) listed should be available 24 hours a day, seven days a week and have the authority to cease or direct works. Details of documentation should also be maintained on site regarding procedures in the event of an environmental emergency (an environmental emergency being any event that has the potential to cause material harm to the environment). These procedures need to include:

- Details and contact information of emergency response personnel;
- Response personnel responsibilities;
- Emergency services details;
- Details of location on site for hazardous material information (including safety data sheets and spill containment materials);
- Steps to minimize impacts and control an environmental emergency; and
- Instructions for notifying relevant government agencies, LPSC and, if necessary, nearby residents.

## 3. Environmental Management

### 3.1. Introduction

The performance of the site should be managed against environmental goals related to potential environmental issues and may include any of the following:

- Water Pollution;
- Air Pollution;
- Land Management and conservation; and
- Hazards and Loss of Amenity.

A list of primary environmental goals and NSW EPA's '*Landfill Guidelines*' should be designed to achieve general site goal. It should also list whether or not the minimum standard is adopted at the site and which operational control incorporates the standard.

### 3.2. Environmental Issues

This section should include subsections for any relevant environmental issues identified for the project/site, in line with any environmental assessment completed for the project/site. Examples of potential environmental issues could include any of the following:

- Stormwater Water Management;
  - Erosion Control.
  - Sediment Control.
- Water Management;
  - Leachate Monitoring.
  - Storm water Monitoring.
  - Surface Water Monitoring.
  - Groundwater Monitoring.
- Air Quality Management;
  - Landfill Gas Control.
  - Landfill gas Monitoring.
  - Emissions Treatment.
  - Gas Control Measures at the Receptor.
- Amenity Issues such as:
  - Odour Control.
  - Noise Control.
  - Litter Control.
  - Pest, Vermin and Noxious Weed Control.
  - Fire Prevention.

### 3.3. Landfill Specific Issues

This section should include landfill specific issues and their associated management strategies for the project/site. Following are the issues identified under the NSW EPA's 'Landfill Guidelines' and should be addressed according to that outlined in the relevant sub-sections of said document:

- Waste Acceptance;
- Leachate Barrier System;
- Covering of Waste;
- Final Capping and Revegetation.

In the NSW EPA's 'Landfill Guidelines', for each issue there is a set of required outcomes followed by a description of acceptable measures for addressing the issue. These acceptable measures are well-established and reliable techniques for meeting the required outcomes. Management strategies should have been identified in any EIA conducted for the project/site and be further explored in this section of the LEMP.

Alternative approaches may be proposed if it can be demonstrated that the alternative can meet the required outcomes. Proposals for alternatives will need more careful justification and evidence, which may include site-specific risk assessment, evidence of successful use of the approach elsewhere, academic or industry research, recognised industry standards adopting the alternative approach, modelling and trials.

### 3.4. Risk Assessment

The Environmental assessment undertaken for the project/site should contain information pertaining to risk assessment for activities and environmental issues. Documentation that may contain such information include:

- EIA documents (EIS/SEE/REF);
- Environmental issue specific management plans (e.g. leachate management plan, odour management plan);
- Assessment, decision or representations report;
- Conditions of approval or consent;
- Detailed design; and
- Construction methodology.

Their relevance to the LEMP risk assessment would vary according to the stage of the project. There are also several Australian standards that discuss risk assessment.

This section of the LEMP should be prepared as follows:

- 1) Provide a list of activities to be carried out at the site, to include all activities undertaken by subcontractors or suppliers, ancillary works such as materials transport and activities related to site establishment;
- 2) Identify the actual and potential environmental impacts associated with each activity;
- 3) Identify which environmental impacts are significant. Methods for risk assessment should be selected that are appropriate to the project and the existing EIA;
- 4) Use available information to design the environmental management activities, controls and monitoring to prevent or minimize environmental impacts appropriately; and
- 5) Outline how often, and when risk assessment will be carried out.

The risk assessment should be accompanied by a risk matrix identifying the following key features:

- Description of potential environmental issue/incident;
- Likelihood (scaled);
- Impact (scaled);

- Contributing factors/comments.

The following tables (Table 2 to Table 4) and associated information outline the details provided in an appropriate risk matrix.

**Table 2 Risk analysis categories and criteria for risk rating**

		Consequence				
		Not significant 1	Minor 2	Moderate 3	Major 4	Severe 5
Likelihood						
Rare	A	L	L	M	H	H
Unlikely	B	L	L	M	H	V
Possible	C	L	M	H	V	V
Likely	D	M	H	H	V	V
Almost certain	E	H	H	V	V	V

*(Risk Rating = Likelihood x Consequences)*

**LEGEND:**

- L - LOW risk                      Responsible Managers need to develop or modify policy or procedure to address the risk. A simple action plan can also be developed.
- M – MODERATE risk            Action timeframe determined and Risk Action Plan developed by responsible manager with relevant Director informed of progress.
- H - HIGH risk                     Action timeframe to be determined in conjunction with the Emergency Management Team (EMT) and Risk Action Plan to be developed by the responsible manager.
- V – VERY HIGH risk             Immediate action to be initiated in conjunction with EMT and Risk Action Plans to be developed by responsible manager and implemented immediately.

**Table 3 Criteria for evaluating likelihood**

Level	Descriptor	Example of Description	Example Frequency of Occurrence
A	Rare	Only ever occurs under exceptional circumstances	Once in more than 20 years
B	Unlikely	Conceivable but not likely to occur under normal operations; no evidence of previous incidents	Between once in 5 years and once in 20 years
C	Possible	Not generally expected to occur but may under specific circumstances	Between once a year and once in 5 years
D	Likely	Will probably occur at some stage based on previous incidents	Between once a month and once a year
E	Almost certain	Event expected to occur most times during normal operations	Once per month

**Table 4 Criteria for evaluating consequence**

Level	Descriptor	Safety	Financial	Operational	Environmental
1	Not significant	No medical control required	Low financial cost	< 6 hours facility closure or disruption of operations	No environmental harm
2	Minor	First aid only	Medium financial loss	> 6 hours but < 24 hours facility closure or disruption of operations	Release to environment immediately contained
3	Moderate	Medical treatment, lost time to injury or temporary reversible illness	Moderate financial loss	> 24 hours but < 48 hours facility closure or disruption of operations	Release to environment contained with internal assistance
4	Major	Extensive injuries – permanent partial disability or severe lost time to injury	Major financial loss	> 2 days but < 5 days facility closure or disruption of operations	Release to environment contained with external assistance
5	Severe	Death or irreversible disability	Huge financial loss (> \$5m)	> 5 days facility closure or disruption of operations	Pollution event with detrimental effect

## Part C References

Geolyse Pty Ltd 2016, *'Daroobalgie Waste Depot: Landfill Environmental Management Plan'*, Forbes Shire Council, NSW.

Impact Environmental Consulting Pty Limited 2014, *'Bellingen Shire Council: Raleigh Landfill Environmental Management Plan'*, Bellingen Shire Council, NSW.

NSW DIPNR 2004, *'Guideline for the Preparation of Environmental Management Plans'*, NSW Department of Infrastructure, Planning and Natural Resources, Sydney

NSW EPA 2016, *'Environmental Guidelines: Solid Waste Landfills'*, NSW Environment Protection Authority, Sydney.

SOILCO Pty Ltd 2016, *'Site Specific Management Plan: Storage & Distribution Facility'*, Soilco, NSW