LITCHFIELD COUNCIL

Waste Strategy 2018 – 2023
Background and Discussion Paper

Contents

PART 1 Introduction

1.1 The need for a waste strategy

"Waste is a significant environmental issue. Disposal of waste consumes land, produces pollution to the atmosphere, soil and groundwater, and represents a loss of potential resources including embodied energy and materials." – Northern Territory Waste Strategy, 2015.

In 2016, Litchfield Council embarked on the development of a waste strategy for the Litchfield municipality, as identified in its 2016-17 Municipal Plan. A number of key local issues highlight the need for improved and more sustainable waste management practices in Litchfield, and to properly manage the long-term viability of sustainable waste practices in the municipality, these issues need to be addressed.

This Background and Discussion Paper outlines Council's existing services and new opportunities, while identifying plans for how Council can better manage waste. It identifies targets and strategies to achieve our goals within the broader regional context, and deliver Council's overall strategy for an efficient service to our community. The Paper provides a considerable body of background information that sets the basis for Council's Waste Strategy, which is provided under separate cover and available on Council's website www.litchfield.nt.gov.au

Cost pressures from increasing fees for waste disposal at the Shoal Bay Landfill	The Shoal Bay landfill is the only such waste disposal facility in the Top End.
Community expectations for a clean, efficient and cost-effective waste service	Revenues from waste management does not generate income for Council; the waste charge paid by households balances the ongoing costs associated with operation, recycling and disposal.
Low landfill diversion rates of household dry recyclables and food organics	Diversion of waste from landfill, at 33%, significantly outperforms the NT average of 9%. However, other jurisdictions such as the ACT, NSW, SA and VIC all average over 60%. This gap is primarily a result of low collection of household dry recyclables in Litchfield (such as paper, cardboard, glass, plastic, etc) and no viable destination for food organics.
The need to gather more data to complete the picture	We need to gain a greater understanding of the composition of loads that enter the transfer stations to identify where our efforts are best targeted.
Growth of smaller 'urban style' lots	Future urban residential development at Holtze and expansion of residential development at Coolalinga and other Rural Activity Centres may require a different service level than rural lots.

1.2 Scope

The primary purpose of this Discussion Paper is to present the existing and historical performance of Council's management of waste, address gaps and identify opportunities that will benefit Council, the community and the environment. The Paper focuses itself primarily on the household waste stream, where Council has the ability and responsibility to make decisions on behalf of the community. The Waste Strategy emerges from this paper.

It sets a five year horizon and contains concrete actions for Council. The results of the first five years of actions will guide Council towards a new set of actions for the next five years. Council anticipates that the Strategy will be reviewed periodically.

In preparing this Discussion Paper, the Litchfield community was included in several ways: a community reference group (CRG) was formed from interested local persons and this group was briefed regularly throughout the work to provide feedback from a community perspective; Council also conducted a wide-reaching community survey regarding Council's waste management approach.

Council acknowledges the significant work of environmental consultant Impact Environmental Pty Ltd, who provided considerable guidance and technical expertise throughout the development of this Discussion paper. The engagement of Impact Environmental was in response to one of Council's New Initiatives outlined in the 2016-17 Municipal Plan.

1.3 Council's strategic role

Council carries out its important functions by doing six key things related to waste management:

Service Delivery	We employ and subcontract capable staff who are responsible for the daily operation of the the waste transfer stations. We review services regularly to ensure they deliver what the community wants in the most cost-effective way.
Advocate	We advocate for the interests of our community at Northern Territory and Commonwealth level and also with various industry and sector groups.
Fund	We provide funding for a number of activities and events run by members of the local community through a community grant program.
Regulate	Within our mandates, we are in a position to regulate, at a local level, many areas that contribute to a high quality of life for Litchfield residents and visitors.
Work with community	Community support and involvement is essential, so we need the community to champion our waste objectives.
Partner	The amenities that make Litchfield a great place to live are not solely provided by Council. Partnerships with schools, the NT EPA and local businesses assist Council in it's goal of providing a desirable place to live.

1.4 The Litchfield municipality

Located in the Top End of the Northern Territory, Litchfield municipality covers an area of 3,100 square kilometres and includes coastal and riverine areas, rainforests and lagoons. It borders the cities of Darwin and Palmerston and its other boundaries are Van Diemen Gulf to the north, the Adelaide River to the east, and the Coomalie Community Government Council to the south.

Source: Google Maps

Litchfield municipality boundary

Litchfield will play an important role in accommodating urban growth in the Darwin Region over the next 40 to 50 years. Its rural activity centres are Berry Springs, Howard Springs, Humpty Doo and Coolalinga and future major urban development zones are in the areas of Holtze, Noonamah, Weddell and Murrumujuk.

Early development of the locality was shaped by 'broad acre' subdivision and ventures into agriculture. The formalisation of access roads and reticulation of electricity gave rise to re-subdivision into smaller rural parcels, particularly two and eight hectare lots. The population began increasing and continues to do so.

The initial interest in semi-commercial hobby farms gave way to growing demand for the rural lifestyle; predominantly on the two hectare lots. Developing as an alternative to suburban living, Litchfield has emerged with a distinct identity and its own constraints and opportunities.

1.5 Litchfield in five years

Priority Areas, Litchfield Strategic Plan 2016-2020

Council's goal is to provide the community with a cost-effective waste management service. Council desires to achieve waste minimisation and recycling targets in line with national averages. Promoting environmental awareness throughout Litchfield and developing a 'we can' attitude within the community will enable Litchfield to move towards achievable waste management outcomes and highlight the ability to implement the Litchfield Strategic Plan 2016-2020, which maps out how Litchfield can become "***the best place to live in the Top End***." The Strategic Plan maps out the priority areas and the priority areas guide the development of five overarching Waste Management goals.

Waste management goals

	Focus area	Description	Measured by
1	**Improve the cost efficiency of the waste disposal service**	Council provides waste services on a user-pays basis. That is, the cost of the service is paid by ratepayers through an annual charge. Council aims to control costs while maintaining a consistent level of service.	The cost per tonne of waste throughput via the annual waste charge is static or lower year on year[1]
2	**Reduce waste to landfill**	Recycling is an opportunity to: 1 avoid the environmental hazards of landfill 2 relieve pressure on extraction of raw materials and energy 3 preserve our environment 4 promote employment opportunities in the waste industry	The amount of dry recyclables collected is >15% of the total waste collected[2]
3	**Reduce incidence of dumped rubbish and litter**	The Litchfield municipality is renowned for its natural beauty. The presence of litter and illegal dumping affects the visual amenity for residents and visitors.	Baseline established of the incidence of illegal dumping
4	**Maintain overall customer satisfaction of the waste service**	Our community was broadly satisfied with the waste transfer stations in the 2017 survey, so the challenge lies ahead to continuously improve and lift the user experience, especially as our population grows and changes.	> 95% of residents think the service at the transfer stations is satisfactory or better
5	**Advocate on behalf of the community**	Council is committed to advocating to government and stakeholders on a broad range of waste issues on behalf of the community.	Council drives change and support through other levels of government.

1. taking into account CPI increases
2. Assumes level of service remains unchanged

PART 2 The Litchfield waste management system

2.1 Overview

Council's waste management system includes three waste transfer stations located at Berry Springs, Howard Springs and Humpty Doo. Residents are responsible for the delivery of their mixed waste and recyclable material to these facilities.

Mixed waste is deposited into skip bins which are then transported via a contractor to the Shoal Bay landfill site, a facility owned by the City of Darwin and which is the only landfill servicing the Top End.

Recyclables are collected in front lift bins and processed at a privately owned and managed materials recovery facility in Berrimah, Darwin. Bulky materials such as concrete, green waste, wood waste and scrap steel are stockpiled and recycled or reused offsite.

The first table displays the most recent 12 month aggregated tonnes of material received by Council's three transfer stations and the following table breaks down the tonnes between each WTS.

Overall waste amounts 2016/2017

Material	Destination	Unit
Mixed waste	Landfill at Shoal Bay	8683 t
Scrap metal	Sold to recycler	1207 t
Mulch	Sold for reuse	4313 t
Crushed concrete	Sold for reuse	616 t
Wood mulch	Sold for reuse	271 t
Cardboard (Combines as dry recyclables)	Collected by recycler	142 t
Paper, glass, cans and plastics (Combines as dry recyclables)	Collected by recycler	129 t
Batteries	Collected by recycler	109 t
Used oil	Collected by recycler	54 kL
Tyres	Collected by recycler	23 t

WTS comparison 2016/2017

Waste Transfer Centre	Humpty Doo	Howard Springs	Berry Springs	Combined
Total waste to landfill	4952 t	2029 t	1709 t	8683 t
Total waste recycled	2732 t	1046 t	437 t	4215 t
Vehicles (trips per annum)	69 750	64 568	Data not available	-

^ estimate only as assumptions made to convert some volumes to tonnes

Humpty Doo has the highest proportion of waste to landfill. This figure is somewhat distorted, as roughly 60% of the waste received is delivered by private waste hauler trucks that provide a kerbside collection to residents and businesses. Due to this, Humpty Doo draws in waste from across the municipality, whereas Berry Springs and Howard Springs only serve residents in their immediate vicinity. The recycling tonnages are also varied. Concrete is only accepted at Humpy Doo where it is crushed and sold. Berry Springs does not offer the scrap metal and wood waste mulching that is available at the other two transfer stations.

2.2 Humpty Doo

Humpty Doo has a high service level, this being defined as the service quality for a given activity. It is the largest and most recently constructed WTS. Residents enter the site via a weighbridge and gatehouse and have a large amount of recycling options available. The general waste disposal area is undercover; waste is unloaded onto the tipping floor rather than being dropped directly into a skip bin, as this provides improved safety for residents.

Humpty Doo service level

Service	Level
Operators	1 gatekeeper 1 operator
Plant	1 front-end loader 1 skid steer loader
Waste Disposal	Covered waste disposal area Low tip height
Resource Recovery	Cardboard, dry recyclables, green waste, wood waste, concrete, car batteries, scrap metal, waste oil, tyres

It must be noted that roughly 60% of waste delivered to the WTS is by commercial collection trucks. These collectors provide a kerbside collection service to households and businesses in the Municipality. As a result, fewer vehicles need to use Humpty Doo and the other WTSs than would otherwise do so.

The Humpty Doo WTS is capable of meeting future waste needs generated by growth in the surrounding area. The disposal area can handle significantly more vehicles, as evidenced by only half of the disposal bays being frequently used at present. However, planned changes to how commercial operators are charged will affect vehicle numbers. The WTS has a large footprint for bulky waste, which will enable scrap metal, green waste and concrete stockpiles to upscale with population growth. The site can accommodate the relocation of the mobile work force, which will offer opportunities for plant and resource sharing.

2.3 Howard Springs

Howard Springs has a medium service level due to its older, uncovered disposal area and the lack of a weighbridge. Wastes such as concrete, bricks and tyres are not accepted.

Howard Springs service level

Service	Level
Operators	1 gatekeeper 1 operator
Plant	1 backhoe loader
Waste Disposal	Open air disposal into skips
Resource Recovery	Cardboard, dry recyclables, green waste, wood waste, car batteries, scrap metal, waste oil

The Howard Springs WTS sees only 40% of the tonnages delivered to Humpty Doo, yet it is used by 5,000 vehicles per month which is comparable to the 6,000 vehicles per month that use Humpty Doo. The tonnage discrepancy is due to the fact that commercial collection trucks are required to deliver their waste to Humpty Doo – when this is accounted for, both sites have similar resident usage and tonnages.

Over the course of the waste strategy, expansion of residential development at Coolalinga and future residential development at Holtze will lead to sustained increases in the number of residents that use the Howard Springs WTS. It is expected that such development will result in increased tonnages to landfill, although the rate of increase is unclear, as it was found that while the Litchfield population grew 20% from 2011 to 2016, the waste to landfill figures remained relatively unchanged. It is not known whether this trend will continue into the future, as preliminary figures for 2017 indicate that there has been a significant drop in waste tonnages across the three transfer stations. The driver for change to the Howard Springs WTS site will primary be based around ensuring the site can handle increased vehicle movements associated with an increased population.

2.4 Berry Springs

Berry Springs WTS has a similar configuration to Howard Springs although it also has a lower service level due to its lower level of supervision, absence of a gatehouse and fewer recycling options for residents. Wastes such as wood waste, concrete, bricks and tyres are not accepted at this WTS.

Berry Springs service level

Service	Level
Operators	1 gatekeeper 1 operator
Plant	1 backhoe loader
Waste Disposal	Open air disposal into skips
Resource Recovery	Cardboard, dry recyclables, wood waste

Expected population growth in the Berry Springs area will eventually necessitate changes to the WTS configuration. At present the Berry Springs WTS receives a comparable amount of material to the Howard Springs WTS. The lack of a gatehouse and site supervision means that loads are unable to be inspected and there is no record of vehicles entering and exiting the site. A charge is unable to be levied on loads of green waste to cover the cost of shredding, unlike the process at the Humpty Doo and Howard Springs facilities.

The lack of supervision during the middle of the day has led to occasional incidents of illegal dumping of waste, such as chemical containers and truck loads of farm waste. The illegal dumping reduces the amenity of the site and can pose a risk for residents, staff and the environment.

Sustained growth in the Berry Springs area may result in an expectation for a service level similar to Howard Springs, such as a manned gatehouse and access to recycling, particularly as Berry Springs is the most distant WTS. Balancing the expectations and needs of existing residents with new arrivals will be best achieved by monitoring the satisfaction of WTS users via surveys.

2.5 Seasonal variations

Operating the transfer stations at Berry Springs and Howard Springs in the wet season presents additional challenges as the tipping/unloading area is open to the weather. The tonnage data was examined to investigate whether rainfall into the open skip bins was increasing the weight and, in turn, the amount payable at Shoal Bay landfill. The table below displays the average difference between the wet season (November-April) and dry season (May-October).

Wet and dry season comparison 2012-2016

WTS	Average difference between wet and dry season tonnages	Difference to Humpty Doo
Berry Springs	2.9%	0.5%
Howard Springs	3.2%	0.8%
Humpty Doo	2.4%	-

Differences in waste composition between the wet and dry seasons could be attributed to a range of factors, such as the dry season seeing more tourists visit the area, and the wet season having Christmas holidays. The data indicates that there is very little difference that can be attributed to rainfall between covered and uncovered tipping areas, thus the Humpty Doo everage difference can be used as a benchmark.

2.6 Recycling

When all materials are considered, the diversion from landfill is around 33%. This is largely due to mulch and wood waste sales, concrete crushing and the collection of scrap metal and due less to household recyclable material.

The following table shows the proportions of total waste generation received at the transfer stations that is recycled. The tonnages used for recyclable material below are not exact figures, as only Humpty Doo has a weighbridge.

Additionally, there are a number of materials measured in cubic metres when they leave the site, making comparison of data approximate. Total recovery is considered all recyclables as a portion of the total generation, whereas household diversion is restricted to dry recyclables such as paper, cardboard, plastics and cans.

Recycling comparison 2016/2017

WASTE TRANSFER CENTRE	Humpty Doo	Howard Springs	Berry Springs	Combined
Total Generation^	8067 t	3139 t	2188 t	13 394 t
Total Recovery^	2732 t	1046 t	437 t	4215 t
Total Recovery %	34%	33%	20%	31%
Dry Recyclables Diversion^	181 t	105 t	86 t	372 t
Dry Recycables Diversion Rate %	2%	3%	4%	-

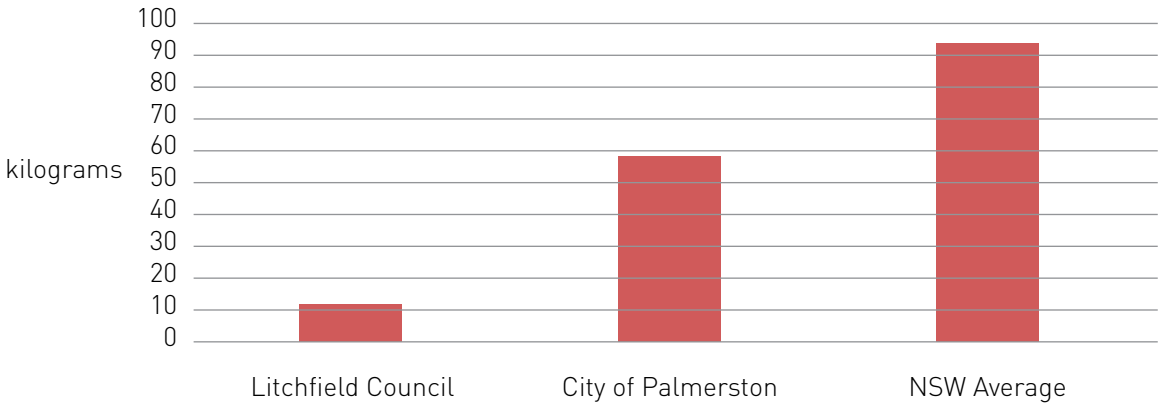
^ Estimate only as assumptions have made to convert volumes to tonnes.

It is worth noting that Humpty Doo WTS did not significantly outperform Howard Springs WTS on a percentage basis. This is despite the fact that significant upgrades totalling $3.3 million were completed at the Humpty Doo WTS in 2012. This suggests that infrastructure improvements at the WTSs must be complemented by programs to encourage a change in recycling efforts.

Household recyclables

There is minimal diversion of household dry recyclables delivered to the transfer stations. In all, just 372 tonnes were diverted from landfill in 2016/2017, a small amount when compared to the roughly 8700 tonnes of waste disposed at Shoal Bay. On average, Litchfield Council collects substantially less recycling per person than the City of Palmerston, which in turn is outperformed by the average for NSW.

Annual Dry Recyclables Collected per Person



\Palmerston provides residents with access to a similar WTS that is free for residents - the key difference being the availability of kerbside recycling which reduces the amount of recyclable waste taken to the facility by residents. The NSW performance reflects a waste levy that penalises landfill and takes into account the widespread provision of kerbside recycling, along with decades of sustained investment in recycling education.

Bulky materials

The recovery of bulky materials, such as green waste, wood waste, concrete and steel, contributes the most to Council's diversion of waste from landfill. Residents are charged a nominal fee, which partially covers mulching or crushing of the material by contractors.

In November 2016, Council waived the fee for disposal of green waste to encourage community clean up in preparation for the approaching cyclone season. It was a successful initiative, with a doubling of the number of vehicles delivering green waste to the transfer stations. This initiative was repeated in November 2017.

Mulching of green waste costs Council $40 to $50 per tonne; increased tonnages result in an increased cost to Council. It could not be determined whether the spike was caused by additional green waste that would normally remain on the property or whether residents simply took the opportunity to deliver waste that may have been delivered at another time of the year.

2.7 Cost

After infrastructure (roads, reserves, drainage, buildings, etc) Council spends the highest amount of money on waste management, representing nearly 20% of Council's budget. In 2016-2017, the total budget for waste management was $3,149,048. The top four expense categories were:

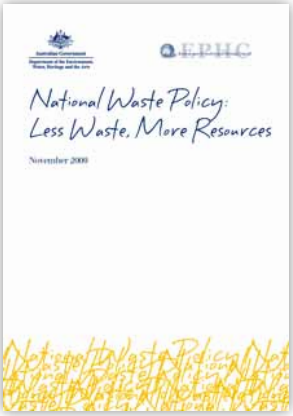
- Employment 34%
- Fees for Disposal at Shoal Bay 24%
- Transport fee to Shoal Bay 15%
- Materials and Contracts 12%

Council recovers (via a waste charge on each rateable lot) the full cost of its waste management services each year. Therefore, any reduction in operational cost is a reduction in the waste charge to the ratepayer.

PART 3 The strategic context

3.1 Overview

The strategic context for waste management is important to understand. Every level of government has a role to play in working with the community to see waste managed in an economic and sustainable manner.



Strategic context for waste management in Litchfield

3.2 Litchfield Strategic Plan 2016-2020

Council's Strategic Plan 2016 – 2020 comprises four priorities for our community, and within those, we work on 20 outcomes that we know matter to our communities. This is underpinned by actions taken to ensure an effective and sustainable Council. The Waste Strategy is a key element to delivering the Litchfield Council Strategic Plan 2016 – 2020, and Council's vision of making Litchfield the best place to live in the Top End.

Everything you need	The transfer stations represent essential infrastructure required by the community.
A great place to live	Residents use the transfer stations weekly, so with an increased focus on site layout and amenity, the stations can offer an improved user experience and become more than just a place to enter and exit as quickly as possible.
A beautiful natural environment	Efforts to increase resource recovery will lead to a more sustainable community in Litchfield. Reduced litter and illegal dumping will improve the amenity and protect the renowned natural environment.
A Vibrant Economy	Reuse and recycling creates employment opportunities inside the Litchfield municipality rather than sending waste outside the Council area.

Within Priority #1 – Everything you need, Council's goals for waste management as outlined in the 2016-2020 Strategic Plan are:

- Landfill is minimised via a combination of incentives, redesigned WTS processes, and community education.
- Revenue is maximised from glass, steel, crushed concrete, green waste and wood waste.
- Littering and dumping enforcement methods are investigated.
- The location and function of the proposed regional waste facility meets Litchfield's regional needs.

3.3 Northern Territory context

National data on waste is limited. The most recent useful data dates to 2010-11[1] where the Federal Government published an Australia wide dataset of waste tonnages displayed below. It shows the tonnage generation per person and diversion rate for each state/territory in Australia, the diversion rate being the process of diverting waste from landfills for recycling.

Table 9 - Waste generation Australia 2015/2016

State/ Territory	Generation	Disposal	Recycling	Diversion rate
	Units: Tonnes/ person/ year			
ACT	2.56	0.54	1.93	79%
NSW	2.38	0.83	1.49	65%
NT	**1.32**	**1.2**	**0.06**	**9%**
Qld	1.68	0.8	0.8	52%
SA	2.36	0.54	1.74	77%
Tas	1.18	0.8	0.31	33%
Vic	2.18	0.83	1.3	62%
WA	2.56	1.57	0.92	39%

Disposal of waste in the NT as a whole was almost exclusively to landfill, with a diversion rate away from landfill of only 9%. The low diversion rate for the NT is largely due to two factors: scattered and sparsely populated remote communities and a lack of incentives to recycle and avoid landfill. Though the data is over 6 years old, it is useful to show relative performance and still provides a useful indicator in 2017. The intervening years have seen states such as NSW, Victoria, SA and WA introduce and steadily increase their landfill levies to drive higher levels of recycling. The levy is a price tool that is only paid on waste actually landfilled – wastes that are recycled do not attract a levy. NSW charges a levy of $133.10/t of waste (metro), Victoria $60.52, South Australia $57.00 and Western Australia $55.00. A portion of the funds raised by waste levies are returned to councils and businesses via grants programs. In this way, it is both a carrot and stick approach to drive recycling. It is likely that other states have further increased their lead over the NT since the above dataset was compiled.

Northern Territory Government

The *Northern Territory Environment Protection Authority Act, 2012* commenced on 1 January 2013. The Act established the Northern Territory Environment Protection Authority (NT EPA) as an independent regulatory authority.

The NT EPA draws its powers from the *Waste Management and Pollution Control Act, 1998* under which environmental protection approvals and licences are issued. Humpty Doo and Howard Springs transfer stations operate under environmental protection licences. Annual inspections are carried out on each of Council's transfer stations; to date there have been no issues raised by the NT EPA.

The Berry Springs waste transfer station is not required to be licensed due to the fact that there are no listed wastes stored on site (batteries, tyres, waste oil etc.).

[1] Department of Environment and Energy, (2013), National Waste Report.

In July 2015, the NT EPA published the Waste Management Strategy for the Northern Territory 2015-2022, detailing the key aspects for understanding and improving waste management and recycling performance throughout the NT. Actions are grouped into the following categories shown below.

NT EPA Waste Management Strategy Actions

NT EPA goal	Litchfield's contribution
Engagement and education: Engage and educate on reducing waste generation and minimising the impacts of waste disposal	Poor – At present, Council has no resources allocated for community waste education.
Improve waste management: Promote waste reduction and resource recovery in the Territory	Average/Good – Council recycles at a rate above the Territory average; that being said, it is the lowest jurisdiction average in Australia. Council provides residents with the opportunity to recycle at each of the transfer stations. More effort needs to be made to discover why the facility is not being effectively utilised and to encourage residents to do so.
Improve waste data collection, monitoring and analysis	Average – Two of the three transfer stations have a gatehouse that record the incoming waste. Council has not conducted an audit of loads that enter the site to document the waste composition.
Improve the regulatory framework: Bring Territory landfills towards best practice management	Good – Council's transfer stations are regularly inspected and meet the requirements of the NT EPA.
Reporting and Public Reviews: Maintain transparency and ongoing improvements in waste management outcomes in the Territory	Good – Council has involved the community throughout the strategy development, with a reference group and surveys.

The NT EPA Waste Strategy does not commit to any hard targets as seen in other states and territories, such as a percentage diversion from landfill or reduction in littering – most states in Australia have set targets of between 60-90% landfill diversion by 2020. This provides an incentive for state and territory governments to create economic or policy conditions to help achieve these targets. These targets are often adopted in the local government strategies in order to secure funding for projects that drive recycling.

Emergency Waste Management

The Top End of the Northern Territory is naturally prone to tropical cyclone events, with two to three cyclones affecting the region between November and April each year. In the event of an emergency, the Department of Infrastructure, Planning and Logistics (Engineering Group) will be responsible for coordinating the operation of waste management facilities while also managing the clean-up.

3.4 Federal Government

The Federal Government developed a National Waste Policy in 2009 that sets a 10-year framework of priorities and guiding principles for managing resource recovery issues and relevant stakeholder relationships. This initiative includes extended producer responsibility and related initiatives to concentrate attention on problematic waste streams such as electronic waste (e-waste) and hazardous materials.

The National Television and Computer Recycling Scheme was established in 2011 to provide Australian householders and small business with access to industry-funded collection and recycling services for televisions and computers. However, the NT is considered 'remote', which has seen the implementation not progress as quickly as in other parts of Australia.

As a result, residents of Litchfield do not have access to free e-waste disposal. This is likely to be the case for most other product stewardship schemes driven by the Federal Government; if they eventually do make it to the NT, it is likely that the collection points will be in Darwin and not in the Litchfield Municipality. Council will advocate on behalf of residents for the widening of product stewardship schemes.

3.5 Top End Regional Organisation of Councils

Litchfield Council is a member of the Top End Regional Organisation of Councils (TOPROC), which is committed to the sustainable development of the Greater Darwin Region and meets regularly to explore common issues and generate potential solutions. TOPROC membership is made up of Mayors and CEOs from the following Councils:

- Belyuen Community Government Council
- Coomalie Community Government Council
- Darwin City Council
- Litchfield Council
- Palmerston City Council
- Wagait Shire Council.

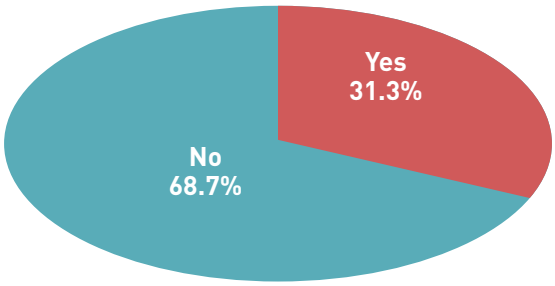
TOPROC has been advocating for a regional waste landfill to be developed in the Litchfield Municipality, initially as an emergency waste management site and, in the longer term, as a future alternative to Shoal Bay. If this facility transitions from only emergency-derived waste management (such as a cyclone or major flood) to become an alternative landfill to the Shoal Bay facility, then it would provide local employment opportunities and reduce the haulage cost to Litchfield Council for waste disposal. It is anticipated that the emergency waste facility will be established within the next three to four years.

PART 4 Community involvement

To guide the strategy development, Council formed a community reference group (CRG). The CRG is comprised of eight residents who volunteered to bring community perspectives to the strategy development.

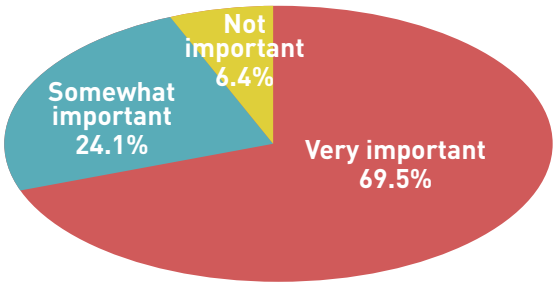
Survey Question 13

Q13: Do you believe Council should consider a kerbside waste and recycling collection service or some other waste collection service, even if it means increasing the rates?



Survey Question 7

Q7: How important is it to you for Council to offer the opportunity to recycle various wastes?



In addition, Council engaged directly with Litchfield residents through a community survey. The CRG assisted by reviewing the questionnaire and suggesting changes.

Feedback was sought on Council's waste management service from Wednesday 1 February to Friday 10 February 2017. On five of the days, Council staff were on site at the three transfer stations to assist residents in completing surveys. Residents were provided with multiple avenues to complete the survey, including online, on an iPad and paper surveys.

Survey results

The survey received 937 responses - representing nearly 8% of the voting age population of the Litchfield municipality[2]. This sample size is considered to provide statistically strong data. Key feedback included:

- 97% of residents thought the waste management service at the transfer stations was either great or average, with only 3% saying it was poor.
- Nearly half of residents use the transfer stations once per week. A quarter use it multiple times per week and the other quarter less than weekly. Any home recycling schemes will need to take this into consideration.
- Over 90% of residents sort their recycling at home. For Council to promote recycling rates, it may need to provide a means of assisting residents at their homes.
- 70% of residents thought recycling was important.
- 69% of residents thought Council should not offer a kerbside waste collection service, thus demonstrating that the community supports the existing transfer station model. The strategy should reflect this support.

[2] Profile i.e. (2011), Census data.

PART 5 Why the current system needs to evolve

5.1 The effect of low recycling rates

The continuation of a 'business as usual' approach to waste management will probably result in the majority of Litchfield's waste continuing to be landfilled at Shoal Bay. This represents a missed opportunity to:

- Avoid the environmental hazard of waste transport and landfill operations
- Reduce the need for the extraction of raw materials and energy,
- Reduce the cost of transportation of waste to landfill, and
- Preserve our world class natural environment.

Across Australia, the NT has the lowest diversion of waste from landfill. This low mark presents a leadership opportunity for Litchfield Council. If Council can successfully increase the diversion of waste from landfill, it will provide a template for other regional councils that do not offer kerbside collection of waste.

5.2 Growth and the waste haulage contract

Tonnages to landfill have steadily declined from 2011-2016; yet during this period it is estimated that the Litchfield population grew around 20%[3]. The tonnage decline goes against the conventional wisdom that population growth and waste are linked. Since the recycling of bulky waste has been steady and the capture of household dry recyclables low, there are several possible reasons why the tonnes to landfill have been declining:

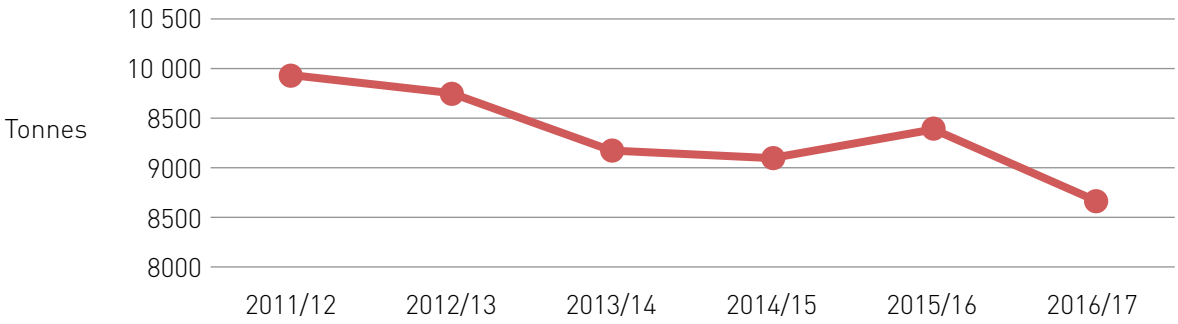
- Litchfield households are consuming less over time than the typical Australian household.
- Waste is being disposed at other facilities, or
- Residents manage their waste at home via burning or other methods.

It must be noted that Council does not have an accurate way to measure population in the municipality. There have been a number of large construction projects, such as the Inpex LNG gas plant, that have drawn workers to the NT. Litchfield in particular has been a popular destination, as the large lots can accommodate multiple dwellings, some temporary and some more permanent, constructed on land that would normally have only one house. This results in a large but unquantified transient population that won't necessarily be living in Litchfield after the construction phase[3] of these projects winds down.

3 ABS, (2011), census data

Council cannot rely on this unusual trend to continue. The impact of population growth must be considered over the term of the next contract and will require flexibility in both directions. Fewer collections may be needed with successful increases to recycling or population decrease, while more collections may be necessary if the rapid population growth continues.

Howard Springs Transfer Station Waste Disposal – Annual Tonnes to Shoal Bay



[3] ABS, (2011), Census Data.

Waste haulage contract

Council's previous five year transport contract expired in December 2016; an extension is currently being used. Council has the option to seek another one year interim arrangement for a maximum one year for waste disposal in order to prepare for the next multi-year contract, or alternatively Council could proceed with a new multi-year contract now.

It will be important for the next contract to separate out the steel collection from the waste haulage – at present Council earns no revenue from the scrap. A separate steel contract could result in Council earning upwards of $20,000 per year.

In setting the term of the next contract, Council must consider the potential impact of population growth and how this will affect the rate of waste disposal at the transfer stations. It will not be important, however, for Council to make any provision for a landfill destination change, as the regional landfill, if it is developed during the contract's term, will likely only provide airspace for emergency event-related waste such as that generated after a cyclone.

Strategic Action: *In early 2018 Council will need to establish a new contract for waste disposal. The opportunity with the next contract is to separate out the steel collection from the waste haulage – at present Council earns no revenue from the scrap. The potential impact of population growth over the term of the next contract will necessitate flexibility in both directions: fewer collections may be needed with successful increases to recycling, while more collections may be necessary if the rapid population growth continues.*

Urban land, urban mentality

The response to the community survey clearly indicated that there was a minority of support for a Council-run kerbside collection across the Litchfield Municipality. Nevertheless, Litchfield is the fastest growing municipality in the NT and residential development at Coolalinga and other Rural Activity Centres will expand in coming years and an expected new residential suburb at Holtze also in the same timeframe may lead to changing expectations for the service level provided by Council. If subsequent ten year growth, matches recent ten year growth Litchfield will require an additional 500 dwellings within the near term of five to ten years.

Small urban-style lots will become more common as part of this demographic change for several reasons:

- As zoning changes there will be a steady supply of large lots available for subdivision.
- Smaller lots will be more affordable for homeowners and renters.
- New arrivals relocating from Darwin or other cities may prefer smaller lot sizes.

These new households will not have the same space to store waste as the existing properties with acreage. This can already be seen with over half of the small lots in Coolalinga having a kerbside collection of waste provided by private contractors.

The priority for Council is achieving the service level expected by residents. If the existing transfer station model continues to meet the expectations of existing and new residents, then no changes are required. However, if there is a divergence in expectations, Council may need to investigate partnering with other municipalities or private operators to provide waste services, such as kerbside pick-up, to defined areas.

Around 150-200 urban style premises in a defined area would be required before the benefits of a collection partnership could be investigated. Council will need to demonstrate to residents that the benefits offered by a compulsory suburb wide collection are greater than the existing model of engaging private collectors.

Given that waste services are user pays, a special rate could be applied to these suburbs. Across Australia, this is a common practice where farming communities surround a township. Residents who live in the 'town' pay a higher waste charge to reflect the increased service level offered by a kerbside collection. Council may need to introduce new by-laws in order to allow for differential waste charges.

Council should be ready to consider whether and how to introduce such a service to existing and future urban communities.

Strategic action: *Council could monitor the peak flows of traffic to ensure that opening hours remain reasonable, as well as the frequency of removal of full bins from the WTS to landfill. Where it is found that the WTSs are nearing operational capacity, Council could investigate options to expand or reconfigure the sites to maintain service levels following local population increases.*

Council could also work with the NT Government to track the development of any new suburbs and the number of infill urban lots being released and monitor development, to ensure that waste management techniques are sufficient and suitable.

5.3 Understanding the waste composition

Before committing to change, it is important to quantify the potential for diversion of waste from landfill. Council needs a greater understanding of the waste being delivered to the transfer stations, in particular the amount of recyclables and food organics that are being sent to landfill at Shoal Bay. Waste audits are the most common way of determining the composition; they are frequently used in other states where consistent methodologies for undertaking such audits have been in place for long periods. This information will be used to calculate potential benefits and cost-effectiveness of changes to recycling.

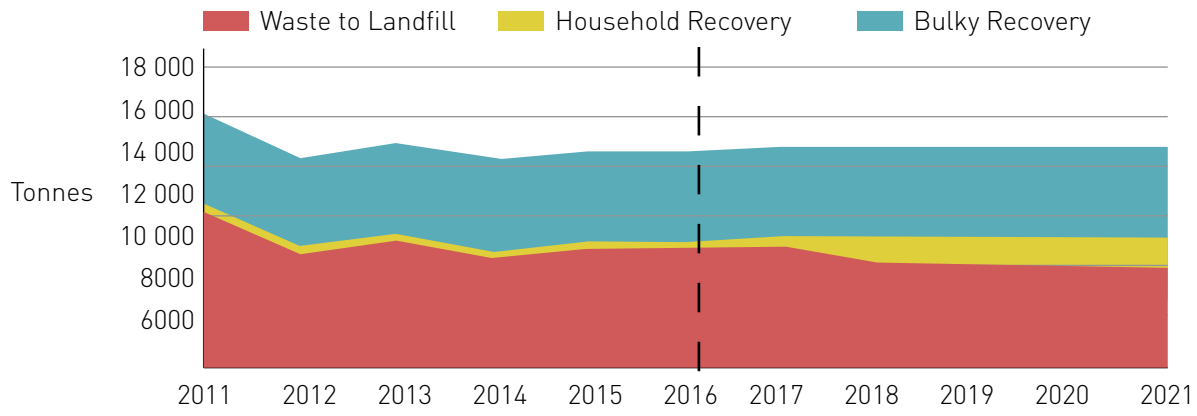
Strategic action: *Waste audits are the first step necessary for Council to quantify the amount of recyclables and food waste being sent to landfill. At Litchfield, this would be achieved by diverting randomly selected vehicles to a separate tipping area where the loads can be visually inspected.*

5.4 Household dry recyclables

The recovery of bulky materials, such as green waste, concrete and steel, contribute the most to Council's diversion of waste from landfill. However, this process is already largely optimised. The greatest increase to recycling rates involves dry recyclables, such as paper, cardboard, plastics, glass and cans. A useful rule of thumb is that dry recyclables form about 20% of the waste collected from households across Australia with a kerbside recycling bin. Council will need to aim for this figure if it wishes to deliver a best practice waste service to residents.

A target dry recyclables diversion rate of greater than 15% within 10 years is achievable with the right incentives in place. Expressed in today's tonnages, it will mean growing the annual tonnes of household dry recyclables from shy of 300 to over 1,500.

A target 15% can be achieved within four years; the thin orange line represents the household recovery of recyclables and it expands within a few years. Left of the black line is the historic performance and to the right is a projection which assumes that from 2018 Council will combination a mix of incentives, support and infrastructure at the transfer stations to encourage greater recycling. Potential incentives to be trialled are located and detailed in Appendix 1.



Howard Springs Transfer Station Waste Disposal

It is important that Council initially try to boost recycling using the current infrastructure, as past upgrades to Humpy Doo WTS did not result in a noticeably better capture of household recycling than Howard Springs or Berry Springs WTS.

Strategic action: *Council could trial a mixture of incentives over a six-month period to see which incentives promote the greatest increase in recycling. Should it be found that recycling is significantly improved by providing covered facilities such as a shed, then the costs and benefits of such a purpose-built structure could be considered at the conclusion of the trial.*

Methodology for Estimating Diversion Rate:

Best practice examples of collecting dry recyclables in Australia typically involve kerbside collection. If Litchfield is to benchmark itself against the top performers, it will need to compare on a like for like basis: this will need to exclude items such as furniture, which are not capable of being collected in a 240L wheelie bin.

For the purpose of this report it was assumed that 85% of the waste delivered to Shoal Bay is comprised of objects that would fit in a wheelie bin; the actual percentage can be determined via the waste audits. Based on 85% of the 2016/2017 tonnages, Litchfield would need to be collecting about 1,500 tonnes of dry recyclables to achieve a diversion of 18%, which would be equivalent to the typical kerbside recycling service.

Supporting separation at home

In the community survey, over 90% of residents reported that when they do separate recyclables, it's done at home rather than at the transfer station. This presents a challenge as there is limited information on proven ways to increase separation of recyclables without a kerbside collection – most Australian case studies are related to the 92% of households in Australia that have a kerbside recycling system. Council will need two pieces of information from the waste audits in order to best support residents to recycle at home: the types of recyclables that are going to landfill, and how those recyclables are being delivered to the transfer stations (such as in garbage bags mixed in with waste or separated in plastic containers).

Strategic action: *Education material could be developed based on the types of recyclables that are being landfilled and Council could examine if providing dedicated recycling containers is likely to help residents.*

Green waste

The recovery of green waste and wood waste contributes significantly to Council's diversion of waste from landfill, and residents are charged a nominal fee that partially covers contractors mulching of the material. The November 2016 Council trial of waiving the fee for disposal of green waste, to encourage community clean up in preparation for the approaching cyclone season, drove a doubling of the number of vehicles delivering green waste to the transfer stations. This initiative will be repeated in November 2017.

Strategic action: *Council could continue to offer free green waste disposal during the month of November to encourage clean-ups before the cyclone season.*

Council-run recycling shed

Separate recycling drop-off windows at Walcha, NSW

Council spends around $55,000 per year to divert dry recyclables from landfill; this covers collection and separation by the contractor. High level assumptions about material prices put the current value of Council's dry recyclables at around $20,000 - $30,000 once they are separated. Council can potentially capture this value by having residents separate the material into different bins.

This will require several steps:

1. Council must first increase the amount of dry recyclables captured, this is necessary to create an economy of scale around the materials.
2. Council must then identify an incentive so residents are willing to separate plastic, paper and coloured glass into different bins. This will enable Council to negotiate with the collection contractor who will provide a revised price based on collecting the skip bins of higher value separated materials.
3. After demonstrating that the concept is viable, Council can investigate the potential to invest in bailing and storage and whether it is profitable to sell the material directly.

The risk in jumping straight to Step 3 is that labour costs and infrastructure, such as bailers and undercover storage will certainly erode any potential for cost savings, not to mention that residents may not be willing to spend time separating recyclables. Around 600-900 tonnes per year of dry recyclables will need to be captured before the benefits of a Council run system begin to outweigh the risks. Experience from other Councils is that unless established with a strong business case, operational controls and a strong after-market, a recycling shed often does not deliver the desired result. Council should look at this option more carefully before deciding how to proceed.

Container Deposit Scheme

Council currently accepts (at no charge), containers eligible for the deposit and collects the deposit from a third party when Council takes the containers to that facility. The revenue from this amounts to around $10,000-$15,000 per year from the Container Deposit Scheme (CDS) and this money is returned to the community through Council's Community Grants Scheme. Recently, a private enterprise explored establishing a private facility in Humpty Doo and has commenced operation mid-November 2017. Council has several options, including:

- Formalise a drop-off point at the transfer station and offer the CDS to residents, potentially competing with any private operator offering a CDS drop-off facility; or
- Continue to receive eligible containers for free and rely on the convenience to residents of a one-stop drop off for all wastes at the transfer station. The drop-off point could be enhanced with educational material about the benefits to the community of people providing containers to Council for free, rather than using a different facility in return for cash.

In the case of the first option, the revenue for Council's Community Grant Scheme will be compromised. In the case of the second option, Council will see a lower influx of containers, but will be able to retain all the revenue generated. It is anticipated that the second option will be more viable for Council and beneficial for residents wishing to recycle containers eligible for deposit.

Depending on the future potential impact to this revenue, Council will be able to develop branding to be used with the grants to help spread the recycling message and engage the community. The branding will link community efforts with recycling to helping make Litchfield "the best place to live in the Top End."

Strategic action: *Council should investigate whether to:*

- *Formalise a drop-off point at the transfer station and offer the CDS to residents, potentially competing with any private operator offering a CDS drop-off facility, or*
- *Continue to receive eligible containers for free and rely on the convenience to residents of a one-stop drop off for all wastes at the transfer station. In this case, the drop-off point could be enhanced with educational material about the benefits to the community of people providing containers to Council for free, rather than using a different facility in return for cash.*
  Council could develop branding to be used with the grants to help spread the recycling message and engage the community.

5.5 Food organics

The amount of food organics generated and disposed of by households in Litchfield is unknown. It is likely that a large portion ends up in landfill at Shoal Bay, though with the majority of residents living on acreage there is likely to be some proportion that is composted or fed to animals. Anecdotal feedback from the Humpty Doo WTS operators indicate that there are significant amounts of organics present in the rear loader trucks due to the strong odour and wetness of the waste when tipped onto the floor, indicating that those residents who utilise a private kerbside pickup service are putting food organics into the kerbside bin.

In other parts of Australia, food waste has been found to make up to 35%-40% of the total kerbside waste generated by households each year[4]. For this reason, it has been made a high priority by a number of jurisdictions. The most common method for food waste management is a dedicated kerbside bin where the garden organics and food are collected together and taken to a composting facility. It is noted that the high priority status elsewhere is a result of their dry recyclables collection being highly optimised, an area where Litchfield Council will need to focus its efforts first. Council will need to quantify the amount of food present through a waste audit. A centralised infrastructure solution is not possible in Litchfield due to the small population. Council is best placed to support residents at home by running educational workshops and providing information to users of the transfer stations.

Strategic action: *If waste audits find large amounts of food waste then Council could investigate the benefits of providing educational workshops and information about home composting kits.*

[4] Department of Environment, (2009), National-food-waste-assessment

5.6 Waste education

Council's 2017-18 budget does not provide allowance for waste education. The changes that flow from the strategy will likely require resources to engage with the community. Activities such as workshops and brochure design can be subcontracted, but these require coordination effort that existing staff are unlikely to be in a position to deliver. There will also be opportunities for engaging with residents using the Council website and Facebook. Examples could be promoting good behaviour and highlighting the damage of disinterest or non-participation. It could also involve providing regular updates on the initiatives both at the transfer stations and in the wider community.

In delivering a Waste Strategy, Litchfield will be assisting the NT EPA to achieve the goals of the Northern Territory Waste Strategy and may qualify for EPA grants of up to $20,000 related to waste projects which can help fund the actions from our Strategy.

Strategic action: *Council could investigate external funding options such as through the NT EPA to support continuing waste education.*

5.7 Commercial waste costing residents

Example of typical rear loader collection truck

Around 60% of mixed waste tonnages delivered to the Humpty Doo transfer stations is by private collection trucks. Humpty Doo WTS is the only WTS to accept private collection trucks because of the weigh-bridge facilities to measure the amount of waste. These provide kerbside collection services to households and businesses in the municipality. Council's waste service operates on a cost recovery basis where each household contributes, via the waste charge, toward the cost of disposing the community's waste at the Shoal Bay landfill. Businesses do not pay a waste charge, meaning households end up footing the bill each for each tonne of commercial waste that requires disposal.

Council cannot determine what portion of loads are from households as opposed to businesses when the waste is emptied from trucks. Council should therefore pursue an approach whereby any mixed loads of residential and commercial waste entering the Humpty Doo transfer station will be charged at the commercial rate. This will ensure that the waste service is providing value for money for all Litchfield residents. Council should monitor vehicle numbers to ensure that the transfer stations are capable of handling increases in the numbers of households who deliver their waste directly.

Strategic action: *Since private collectors deliver mixed truckloads of household and commercial waste to the Humpty Doo WTS and do not contribute to the cost of Council's waste service (only residential properties), they should be charged for waste disposal service.*

Commercial recycling

The provision of recycling opportunities to the business community of Litchfield is not widespread. This may be because there are not enough businesses to justify a dedicated recycling truck, as well as because the price of landfill at Shoal Bay is cheaper than the cost of sorting collected recyclables from businesses. As more businesses are opened in the Coolalinga area and in the future, Holtze, there may arise a demand for recycling. This will likely be driven by a bottom-up demand and so can be supported by Council through education. Other jurisdictions have used a waste levy to substantially increase the cost of landfill, resulting in the collection of recyclables becoming widespread. The price of landfill at Shoal Bay and the presence of a levy are issues that are outside Council's direct influence which limits Council to an advocacy role.

Some centres, such as Coolalinga, have also seen rapid growth in supermarkets and retail outlets. Increasing amounts of product is packed in 'disposable' containers of waxed cardboard or polystyrene, which present recycling challenges.

Strategic action: *Council could work with business owners in the municipality to find out what current limitations exist around recycling. Businesses that are successfully recycling can be promoted to residents.*

5.8 Problem wastes

Some wastes should not be sent to landfill and require special treatment. These problem wastes include paint, oils, e-waste, gas bottles, fire extinguishers, car batteries, household batteries, smoke detectors and fluorescent globes, household cleaners, pool and hobby chemicals and pesticides. Litchfield residents are limited to recycling oil and car batteries at the transfer stations. These services are available because waste oil recycling is funded by the Federal Government's product stewardship scheme and car batteries are a valuable commodity. Providing recycling at the transfer stations for the other materials listed above is not economically viable in Litchfield, as to be received they must be transported to the south east of Australia at high cost. In other jurisdictions, the recycling of problem waste is made available through funding from landfill levies. Council's best action regarding problem wastes will be to advocate for the expansion of the Federal Government's product stewardship schemes to include services to regional Councils.

Strategic action: *Council could advocate for future product stewardship schemes to be made available in regional areas.*

5.9 Illegal dumping

Council does not have any by-laws in place to pursue and prosecute littering and illegal dumping. The majority of illegal dumping occurs on Crown land and the NT Government highway road reserves where Council does not have the authority to act. It will require partnership with these authorities to prevent illegal dumping. Development of fast food restaurants in Coolalinga has resulted in increased littering along roads and this is expected to rise further when additional fast food outlets are opened. Council may need to partner with the owners and operators to tackle this issue should it arise.

Strategic action: *Council could engage with fast food outlets by establishing a stakeholder working group to discuss roadside littering from fast food and identify measures to reduce the incidence of such littering and the role fast food outlets might play.*
Council could work on establishing amenity protection by-laws providing Council with greater enforcement ability.

5.10 Waste transfer station amenity

At present, the transfer stations are typically bare and lack vegetation. Aesthetics and a visually pleasing site can assist in user compliance and help reinforce the resource recovery ethos. The aesthetic appearance of the transfer stations could be improved by vegetation screening and improving signage, however, consideration must be given to line of sight from the gatehouse to ensure the site can be effectively monitored. Consideration may also be given to the establishment of community gardens or other visual enhancements, such as waste to art installations. This could be achieved by partnering with schools and community groups.

Strategic action: *Council could lift transfer station amenity through the use of vegetation and custom artwork created from reused materials.*
There is an opportunity to trial a community purpose garden at Humpty Doo. Feedback from the trial could be adopted into any plan to replicate a garden at other sites.

Rebranding

Another way of promoting recycling is to promote the evolving purpose of Council's waste transfer facilities. While the transfer stations primarily act to transfer waste from the user to Council with eventual disposal to landfill, there is already a considerable amount of recycling occurring with concrete and green waste, for example. These materials are processed on site at Humpty Doo and then on-sold. In this sense, the transfer stations act to recover resources, as much as handling waste.

Strategic action: *Council could seek to re-brand the transfer stations as Resource Recovery Centres, to represent a shift towards a more sustainable future. Branding can assist in influencing community thinking and behaviour.*

5.11 NT EPA compliance

Landfill closure

Council has old landfills adjacent to the transfer stations at Berry Springs and Howard Springs. Under the current legislation, the remediation can remain uncompleted whilst the sites remain in use as a waste facility. Both landfills have been covered with an interim cap of soil, but the final cost of a long-term cap is yet to be determined and has not been budgeted for. Closing a landfill properly involves the construction of a clay cap that prevents water from percolating through the waste. There is ongoing maintenance required, such as filling cracks in the cap and, in some cases, slashing grass that grows on the surface. Council must ensure that it builds a substantial reserve to cover the cost of final capping when it is found to be required. The size of the reserve required will be quantified with the preparation of a landfill closure plan that details the works required by the NT EPA. As the transfer stations at Berry Springs and Howard Springs will be used for the foreseeable future, Council has the opportunity to spread the capital cost of closure across a long timeframe, which will lessen the burden on ratepayers.

Strategic action: *The disused landfills at Berry Springs and Howard Springs have an interim cap of soil in place and, at some point in time, landfill remediation will be needed. Council will need to develop a landfill closure plan that estimates the capital costs associated with remediation and then investigate funding options for implementation.*

Berry Springs Upgrades

The Berry Springs waste transfer station is not required to hold an environment protection licence as there is no listed waste accepted on site – no batteries, tyres, waste oil, etc. As the most distant transfer station from landfill and recycling sites, Council will monitor the changing demands regarding disposal of these wastes as the population of the area increases. If the community desires disposal of tyres and batteries, then Council will need to submit an application for a license with the NT EPA.

In 2016, Council established a community working group for the Berry Springs WTS to guide the implementation of improvements based on a recent audit. Several improvements were completed, including fencing and security cameras. Berry Springs WTS is currently not staffed fulltime, with a presence in the early mornings and the afternoons. Berry Springs WTS is opened longer than Council's other two transfer stations by 7 hours per week; 6am-7pm seven days a week. The opening hours should be brought in line with Council's other transfer stations as part of providing adequate staffing and continuous supervision. Secondly, a gatehouse or some other facility that enables monitoring of vehicle numbers and waste tonnages, as well as provides on-site facilities for staff, should be installed.

Council will also need to determine the feasibility of connecting the gatehouse to utility services, such as power and water, or whether the site is best serviced from off-grid power and water. A power line is located on the northern side of Cox Peninsula Road and there is no mains water nearby. The likelihood of establishing a suitable water bore is low.

Strategic action: *Council should consider matching the opening hours at Berry Springs with Council's other transfer stations as part of providing adequate staffing and continuous supervision.*
Council should consider installing a gatehouse or some other structure that enables monitoring of vehicle numbers and waste tonnages, as well as provides on-site facilities for staff. As part of this, Council will need to determine the feasibility of connecting the gatehouse to utility services, such as power and water or whether the site is best serviced from off-grid power and water.

5.12 New regional landfill

The construction of a regional landfill inside Litchfield Municipality will have the greatest benefit to Council if it is capable of handling putrescible waste. A putrescible landfill provides two strategic opportunities: it would break the monopoly that Shoal Bay holds on landfill and Council will have a shorter haulage distance, resulting in lower costs. The Shoal Bay landfill has considerable capacity to expand and City of Darwin estimates that there are several decades of airspace available. The greatest threat to that airspace is a cyclone event or some other natural disaster that results in widespread generation of green waste and demolition waste. In such a scenario, the Shoal Bay landfill would likely exceed its capacity from one single large event. Therefore, it is anticipated that only an emergency waste disposal site is to be investigated for the short to medium term. An emergency-only waste facility has marginal benefit to Litchfield Council's waste management, that benefit being a reduction in the risk that the transfer stations become overstretched during cleanup after a major natural event. An emergency waste site only provides no option to Council to reduce landfill transport costs, reduce gate fee costs or undertake treatment of different waste streams.

Through TOPROC, Council may pursue options for a smaller scale domestic and general waste landfill cell to complement the emergency landfill, and should this be pursued, there would be landfill cell construction costs that may fall primarily to Litchfield Council and possibly other regional councils.

Even then, Council is unlikely to see appreciable savings on the gate fee at a new landfill over the existing landfill at Shoal Bay, as modern landfills tend to have similar cost structures due to strict requirements surrounding environmental standards and the use of similar operational methods to bury the waste. One option to lower a new landfill gate fee could be for Council to contribute funding towards the landfill development. Essentially, Council would be buying a slice of the landfill which it could fill over time. This approach is common in Sydney where councils lock in a 10 year price for landfill gate fees. Shoal Bay has not needed to offer discounted long term gate fees due to their existing monopoly.

Strategic action: *An emergency waste management site is urgently required for the Top End based on the capacity of the Shoal Bay to manage a natural disaster and TOPROC has expressed interest in pursuing the development of such a site.*
For a new regional landfill facility, Council could use its advocacy role to promote the benefits of a second putrescible landfill servicing the Top End.

5.13 Emergency situation waste management

In the event of an emergency, the Department of Infrastructure, Planning and Logistics (Engineering Group) has the power to take control of the transfer stations while managing the clean-up. Council needs to prepare an emergency waste storage plan for the municipality in collaboration with Northern Territory Emergency Services and the Department of Infrastructure, Planning and Logistics. This will designate areas of the transfer stations (preferably hardstands) where waste can be stockpiled in the event of a large influx. It will ensure that the sites are used in a manner that will enable Council to quickly return to normal operations while the emergency waste is progressively removed.

Strategic action: *Council should work with Northern Territory Government to determine how and where waste will be stockpiled in the event of an emergency. This should be documented in a municipality disaster waste plan for each WTS.*

5.14 Site safety

Safety of WTS operators and public users is of paramount importance to Council. Council has identified a number of safety hazards and assessed the risks. The biggest risk to users is falling from a height when unloading into skip bins at Berry Springs and Howard Springs. Humpty Doo has eliminated this risk by using a push pit disposal method. Neither Berry Springs nor Howard Springs have wheel stops or pictorial signage at the disposal area. There are several methods available to Council to control this risk.[5]

- Use of wheel stops and line markings to keep all vehicles a safe distance from edges,
- Install safety signs at all disposal points – pictorial diagrams work best,
- Provide supervision and instruction to everybody using the facility.

The transfer stations are likely to benefit from a WHS audit, which will identify other safety improvements that can be made to the sites. The audit would ideally include an assessment of user practices and the flexibility in methods for transfer of waste from vehicles and trailers.

Strategic action: *Council could conduct regular WHS audits at all three transfer stations for public and staff safety to identify improvement opportunities.*

[4] SafeWorkNSW, (2015), Falling from heights at waste management facilities.

PART 6 Waste strategy formulation

6.1 Approach

Litchfield Council has considered the matters raised in this Discussion Paper and in particular, the suggested strategic actions. Under separate cover, Council has presented a Waste Strategy that summarises some of the information in this Discussion Paper and sets out the selection actions, the timeline and costs involved.

6.2 Options that can be considered into the future

Council researched a wide variety of options to meet the objectives of the Waste Strategy and the background to these were outlined in the previous section of this Paper. In order to set a meaningful strategic direction, some options will need to be set aside as, they are currently unable to deliver the objectives during the term of the strategy. These options are outlined in the following table, to give future readers, in a different strategic environment, an understanding of Council's strategic rationale. This approach will ensure that the Strategy is the best possible one for Litchfield and addresses the needs and desires of the community.

Options not currently meeting strategy objectives

Option	Description
Council run kerbside collection of waste and recycling	The community survey found that the majority of residents were satisfied with the current WTS service level and were not willing to consider a compulsory, council-wide kerbside collection as seen in Palmerston and Darwin. The option to retain the current system and introduce a kerbside collection is not possible without a large increase in the waste charge per property per year; this will not represent a value for money waste service, since private collectors are already providing this service to households in the Litchfield municipality. Despite this, Council will need to consider when and how suburb specific kerbside collections are introduced for future urban areas, such as Holtze.
User-pays waste disposal at the transfer stations	A user-pays system, where people pay for the amount of waste they dispose, is an equitable way to recover the cost of operating the transfer stations from those that use it most. Other councils around Australia often combine a charge on waste with free disposal of recycling; this is an incentive tool for increasing the diversion of waste from landfill. The community reference group believed that most residents would not support this as an option. The concept was not covered in the community survey. A future survey will seek feedback from the community.
Composting food waste at the transfer stations	Council will use waste audits to gain a greater understanding of the amount of food waste that is delivered to the transfer stations. Large scale composing of food waste at the transfer stations is not a viable option, due lack of economies of scale and licencing issues around odour and vermin. Council will support residents to manage their food waste at home.
Council funded recycling of problem wastes	Apart from car batteries, recycling of problem wastes is dependent on external funding either from product stewardship schemes or directly from the state or territory government. Without this funding, it is prohibitively expensive and would not represent value for money considering the small tonnages. Council will advocate for the expansion of product stewardship schemes to service regional areas.
Investment in automation and technology at transfer stations	Some transfer stations in other jurisdictions utilise automated gate entry and other automation systems to reduce reliance on staffing or allow existing staff to devote more time to assisting at disposal and recycling areas rather than at the gatehouse. Council has found that the current arrangement which involves face to face contact with residents at the gatehouse is useful in providing verbal assistance and instructions, and helps to maintain connection between Council and the community. There are some technical challenges associated with automated entry systems such as entry tag failure, loss of entry tags by residents and system failure requiring manual entry and in effect these result in the need for retaining some level of staffing at the gatehouse. These challenges would therefore need to be effectively managed in order to maintain a suitable level of service. Council proposes to revisit automated entry to site at a later stage, once other site improvements have been implemented and the changes in site usage arising from those changes are better understood.

Option	Description
Alternative waste treatment	This includes a broad range of infrastructure technologies such as energy from waste and mechanical biological treatment. These technologies rely upon two factors that are not present in Litchfield or the Northern Territory at present: a large quantity of waste (>100,000 tonnes per year) with small transport distances and a strict regulatory environment that taxes waste sent directly to landfill. Other states that have these factors, such as NSW and VIC, have not been able to adopt Alternative Waste Treatment as a viable alternative to landfill.

6.3 Review and improvement

In any long-term strategy, there is a need to review actions regularly and measure progress in achieving objectives. The Waste Strategy includes agility to respond to changing waste disposal trends, more pronounced population changes and other matters not fully seen or understood at this point.

Council reviews its Strategic Plan regularly and prepares each year its Municipal Plan (annual business plan) each year. Given the Waste Strategy will work in alignment with both the Strategic Plan and the Municipal Plan, any significant changes in Council's strategic direction may trigger a review of our Waste Strategy.

On an annual basis, Council will undertake the following:

- Review the results of the actions undertaken the previous year in the effectiveness against the waste objectives.
- Consider any regional or national waste data that may point to a shift in waste management habits, changes in waste treatment technologies or changes to operational costs and external fee structures.
- Consider community feedback collected as part of Council's Annual Community Survey and later, the Waste Management Survey.
- Consider any changes to external funding programs, or improved alignment of Council's waste management.

Appendix 1 – Recycling trials

Identifying incentives for increasing dry recyclables capture in Litchfield transfer stations

While the majority of councils across Australia collect domestic waste from residences, Litchfield Council charges an annual fee for access to Council's waste transfer facilities. The gate fee for non-household waste at other council waste transfer stations is a price per tonne or per vehicle type, paid at the entrance to the site. It provides a price incentive to recycle: waste attracts a charge while dry recyclables such as paper, cardboard, cans, glass, etc. are free.

Community feedback indicates this is not a supported option in Litchfield. Council must therefore trial other incentives which can encourage residents to separate recyclables at the transfer station. Trialling options for recycling will provide Council with a range of data that will be analysed to determine the optimal conditions and arrangements for Litchfield residents to recycle waste.

Objective: The objective is an increase in the amount of dry recyclables collected.

Length: The trials would occur sequentially over a period of six months.

Method: Initially, two incentives are proposed to be trialled: a reward based incentive and a social incentive.

The reward based incentive will need to offer residents a nominal benefit for recycling. This could be done in the form of vouchers for free trailer loads of mulch when they arrive with separated loads.

The social incentive will trial a recycling operator who will patrol the disposal area and encourage residents to recycle. A local labour hire contractor could be used, as this will be a temporary position. The recycling operator would be needed all day on weekends and during the morning/afternoon weekday peaks.

The reward based incentive will be trialled at Howard Springs, the social incentive at Humpty Doo.

Determining success or failure: The primary measurement for success will be an increase in the number of recycling bins emptied at the transfer stations. At Humpty Doo the weight of the recyclables can be calculated via the weighbridge.

The tonnages to Shoal Bay, while more accurate than the numbers of recycling bins emptied, will not be a reliable indicator as this weight has been declining steadily over the last five years.

Considerations: Council must first use the waste audits to gain a greater understanding of how recyclables are delivered to the transfer stations and whether they are being disposed of along with waste. The results of the audits may reveal another more appropriate incentive that has not been considered here.

This trial as a basis for action: With recyclables collection data and the cost of the trial in hand, Council will be able to make an informed decision on which changes to the operation of the transfer stations will be the most cost effective at increasing recycling.