

WASTE MANAGEMENT PLAN



@ShireofQuairading



@QuairadingCaravanPark



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1. INTRODUCTION

IW Projects was commissioned to undertake a review of the Shire of Quairading current waste management services and to develop a conceptual waste strategy to form that basis of a workshop with Elected Members and Shire Officers in order to develop a future waste strategy for the Shire.

The scope of work included the following activities:

1. Site visit to discuss current Shire waste management activities and to inspect waste management infrastructure.
2. Review of available documentation.
3. Develop a list of possible future waste management activities
 - a) Description of the waste management activities;
 - b) Pros and cons of the waste management activities;
 - c) Recommendation on possible implementation of the waste management activities;
 - d) Grant funding opportunities; and
 - e) Summary of the proposed way forward.
4. Following the development of the conceptual waste strategy, a workshop with elected members and Shire Officers would be held to determine the preferred way forward for the Shire.
5. The concept waste strategy would then be updated to reflect the outcome of the workshop and form the basis for the Shire waste strategy into the future.

On 28 April 2021, Ian Watkins of IW Projects undertook a site visit to the Shire, at which discussions were held with the Shire Officers and a visit was undertaken to the Shire Waste and Recycling Facility.

Subsequent to the site visit, the Shire provide additional information on its current waste management activities.

2. STRATEGIC WASTE PLANNING

Strategic waste planning is about developing future waste management strategies that provide the community with adequate services, at an affordable cost, while providing sustainable environmental protection.

There is also the bigger picture state-wide strategic planning direction; however, for a small, relatively remote Local Government, achieving the initial community service delivery in a cost effective and environmentally sustainable manner is the priority. State strategic direction provides a level of guidance, but at this stage of waste management development, should be a secondary consideration for the Shire.

The State Waste Strategy includes the following targets for waste avoidance, resource recovery and environmental protection, including the diversion of waste disposed to landfill:

2.1 Avoid

2025: 10% reduction in waste generation per/cap from 2014/15 national levels.

2030: 20% reduction in waste generation per/cap from 2014/15 national levels.

Community

2025: Reduction in municipal solid waste (MSW) generation per/cap by 5%.

2030: Reduction in MSW generation per/cap by 10%.

Government & Industry

2025: Reduction in C&D waste generation per/cap by 15%.

2030: Reduction in C&D waste generation per/cap by 30%.

2025: Reduction in C&I waste generation per/cap by 5%.

2030: Reduction in C&I waste generation per/cap by 10%.

Waste Industry

All waste is managed and/or disposed using better practice approaches.

2.2 Recover

2025: Increase material recovery to 70%.

2025: All local governments in the Perth and Peel regions to provide consistent three-bin kerb-side collection systems that include separation of FOGO from other waste categories.

2030: Increase material recovery to 75%.

From 2020: Recover energy only from residual waste.

Community

2020: Increase MSW material recovery to 65% in the Perth and Peel regions and 50% in major regional centres.

2025: Increase MSW material recovery to 67% in the Perth and Peel regions and 55% in major regional centres.

2030: Increase MSW material recovery to 70% in the Perth and Peel regions and 60% in major regional centres.

Government & Industry

2020: Increase material recovery to 70%.

2025: Increase material recovery to 75%.

2030: Increase material recovery to 80%.

Waste Industry

2030: All waste facilities adopt resource recovery better practice.

2.3 Protect

2030: No more than 15% of waste generated in Perth and Peel regions is landfilled.

2030: All waste is managed and/or disposed to better practice facilities.

Community

2030: Move towards zero illegal dumping.

2030: Move towards zero littering.

Government & Industry

2030: Move towards zero illegal dumping.

Waste Industry

2030: No more than 15% of Perth and Peel Regions' waste is disposed to landfill.

2030: All waste facilities adopt environmental protection better practice.

The State's Waste Strategy includes an Action Plan setting out the short-term actions and identifying how the Waste Strategy is to be achieved. This Action Plan includes the following Priority Actions:

- 2.3.1 Planning for the roll-out of FOGO systems and updating the Better Bins funding program to support the roll out;
- 2.3.2 Review of the State Supply Commission's Sustainable Procurement Policy and Disposal of Goods Policy to reduce waste generation and improve waste management;
- 2.3.3 Pilot the use of recycled construction and demolition material as road base;
- 2.3.4 Local governments to develop Waste Plans;

- 2.3.5 Maintain, update and review the Own Your Impact initiative relating to improved household behaviour;
- 2.3.6 Review the scope of the application of the waste levy to ensure it meets the objectives of the Waste Strategy;
- 2.3.7 Establish a schedule of future waste levy rate increases;
- 2.3.8 Audit existing waste management infrastructure to determine future requirements;
- 2.3.9 Develop a waste data strategy;
- 2.3.10 Implement new waste data reporting requirements;
- 2.3.11 Establish a recycling infrastructure support program; and
- 2.3.12 Identify, communicate and support better practice approaches to avoidance, recovery and disposal covering all waste generators and streams.

As you can see from the above, the vast majority of these are either not relevant to the Shire or significantly further up the waste management hierarchy from where the Shire is currently. The Shire needs to do the basics better, then progress along a path of continuous improvement.

3. AIM

The aim of the waste strategy is to provide guidance to the Elected Members and officers in the ongoing management and future development of waste management services and infrastructure within the Shire.

Setting out the main aims of the waste strategy and the relevant priority ranking provides a clear indication for future direction and decision-making.

Table 1 – Priority Ranking

Sets out the aims of the Shire Waste Strategy in order of significance and assigns a relative ranking to each aim.

Waste Strategy Aims
Provide a clear direction to the Shire on what waste management activities to prioritise in the future.
To increase waste diversion from landfill.
To provide improved waste management solutions to the community.
To provide cost-effective waste management solutions to the community.
Improved waste management facility operation.
Promote local employment.
Reuse recyclable materials locally - circular economy.
To increase recycling in accordance with Waste Authority Waste Hierarchy.
Follow the waste Authority strategic direction, as appropriate to the Shire's needs and financial capacity.

Following discussion at the Elected Member workshop, the above Waste Strategy Aims are to be ranked in order of importance to the Shire. This will then assist in determining the best way forward for future strategic waste management decision-making.

4. EXISTING SERVICES

4.1 Kerb-side Waste Collection

Kerb-side waste collection, within the townsite, is an essential service that the Shire is required to provide under Local Government legislation and, hence, it is not a discretionary service and needs to be continued.

Kerb-side waste collection is an effective waste management service that provides an efficient and cost-effective mechanism for the collection and disposal of general waste to the Shire landfill facility. With the Shire tendering this service, it regularly tests the collection industry to ensure that it receives the best value for money.

There is no need to change anything relating to this service.

4.2 Kerb-side Recycling Collection and Sorting

Kerb-side recycling collection is not an essential service that the Shire is required to provide within the townsite. Kerb-side recycling collection is an effective mechanism to divert substantial amounts of recyclable materials from landfill and should be maintained. This is a discretionary service; however, it is generally accepted as the norm within most Local Government townsites and some rural properties

The objective is to ensure that there is maximum uptake of this service by the community and that the maximum range and quantity of recyclable materials are placed into the recycling bin. The range is typically determined by the downstream sorting facility, which is a function of the downstream market to receive and process the sorted recyclable materials.

In recent times, the restrictions imposed by China and subsequently other countries on accepting recycled material has resulted in the industry having a greater focus on the range and quality of materials being placed in the recycling bin. This has led to either a decrease in acceptable material range or an increase in collection cost.

The Shire is to ensure that adequate information is available to the community on the range of materials that can be placed in the recycling bin. The more recyclable material placed in the kerb-side recycling bin the better, as more recyclable material is removed from landfill, which equates to less waste to landfill and improved recycling percentage.

Contamination within the recycling bin is always an ongoing issue for the downstream sorting facility, as it increases sorting costs and residue disposal costs, which in the Metropolitan Area also includes a \$70/t waste levy charge. Reducing the amount of waste residue in the recycling bin will improve the

recycling potential of the material within the bin and reduce the amount of residue generated at the sorting facility; however, will increase the quantity of waste going to the Shire landfill (minor consideration). It is preferable to minimise the amount of waste residue within the recycling bin.

Due to aggregation of the recyclable material with other shires prior to being sorted, there is no Shire-specific information available on the precise material breakdown or contamination rate, hence, it is unlikely that there will be any direct saving in collection and recycling costs if the Shire was to dramatically increase the quality and quantity of acceptable recyclables and/or decrease contamination.

The Shire should regularly consult with the recycling collection contractor to ensure that the full range of recyclable materials are known to the community so that the maximum benefit can be achieved from this service.

There is no need to change anything relating to this service.

4.3 Verge-side Bulk Waste Collection

This is a historical service that has not been undertaken in the past three years. This service appears not to be a high priority for the community (due to the lack of service being provided). If the community has not been questioning the lack of service over the past few years, the Shire should consider permanently discontinuing the service and rely on the community to drop-off waste at the Waste and Recycling Facility, as this is the most cost-effective solution to the Shire in delivering material to the facility. Whether the Shire collects the waste, or it is delivered to the Waste and Recycling Facility by the community will not significantly influence the quantity of material ending up at the Waste and Recycling Facility. It is my understanding that this service has not been provided for the past three years, hence, the community has been managing without the service. This would be something that the Shire could discuss with the community to assess the community need for the service in relation to the cost of providing the service. There could be an on-demand option for those in the community that do not have access to cars.

By not having the verge-side collection, there may be some missed opportunity for the community to “scavenge” reusable materials from the verge-side during the bulk collection exercise. However, if the same reusable materials are extracted from the waste stream on arrival at the Waste and Recycling Facility, a similar opportunity will exist for the community to reuse the materials. The more reusable materials that are available at the facility, the more of the community that will visit the site and hence, the more opportunity to increase recycling on-site. There is generally high community interest in a “tip/reuse shop” at landfill sites. With this comes more opportunity to encourage recyclable material

drop-off as opposed to the community simply disposing of the materials in the kerb-side general waste bin. The lack of transport is an issue that needs to be considered within the context of the overall community and the cost that they incur in having the various waste management solutions. If this is a significant issue, then this will drive the Shire strategic decision making, whereby efficiency is based on service provision and to a lesser degree around financial efficiency. Not being able to “scavenge” at the landfill versus the ease of “scavenging” off the verge-side would be a consideration.

One potential disadvantage of not providing the verge-side bulk waste collection service is that there may be an increase in illegal tipping of waste into the surrounding bushland. With there not having been a service provided in the past three years, this illegal tipping is already likely occurring. The Shire should assess its historical records to see if there has been a noticeable increase in illegal disposal clean-up costs since the verge-side service has not been undertaken, this will however be dependent on the degree of detail within the Shire waste management records. Potentially anecdotal evidence from long-serving staff members may provide a degree of insight into this aspect of waste management. This all gets down to cost. Is it cheaper to clean up illegal dumping or provide the bulk waste service? That is why the Shire should assess the extent of the illegal dumping to see if it is a major issue or not.

If possible, the Shire should compare the cost of operating the verge-side bulk waste collection service against the cost of illegal tipping clean-up to see if there is financial justification in recommencing this service. It is pointed out that even if the service is recommenced, there will likely still be some illegal tipping; however, at a reduced level.

With the Waste and Recycling Facility only being 2.5 km from the town centre, it is not unreasonable to expect the community to drop-off bulk waste at the facility. Making disposal easier will also improve community participation in this drop-off activity. Extending the facility operating hours would provide more flexibility to the community; however, this comes at increased staffing costs. The Shire could consider providing afterhours waste and recycling drop-off bins immediately outside of the facility gate.

So long as illegal tipping is not a major issue within the community, the Shire should consider permanently discontinuing this service and spend the saved finances and effort in better managing the Waste and Recycling Facility. At this stage, I am not sure if there is much illegal dumping. At my site visit, it was simply mentioned that there was some illegal dumping. Once the extent and the associate cost is known, then the Shire can consider the best way forward based on an informed decision.

4.4 Verge-side Bulk Greenwaste Collection

Considerations for a greenwaste verge-side collection service are similar to that of the bulk waste service; however, there is no benefit of scavenging from the verge and also, this is unlikely to cause much of an illegal tipping issue with this material type. Hence, there is more motivation to no longer offer this service.

The decision on the continuation of this service is simply a comparison between the community expectation and the associated cost. It is little to do with improved recycling or decreased waste to landfill.

When greenwaste is delivered to the Waste and Recycling Facility, the Shire staff need to encourage the community to segregate the greenwaste from mixed waste so that it can be disposed of separately and not end up in the landfill.

Ultimately, this material is burnt as opposed to being placed in landfill (if segregated effectively). This is not a recycling activity, simply reducing waste to landfill. Once the Shire has investigated the extent and type of waste illegally dumped, then weed infestation can be assessed. Generally, the community will drop off the greenwaste at the waste management facility if it is closer than the nearest bushland, so there should only be the potential for weed infestation within the nature areas in close proximity to the townsite. Again, this can only be assessed once the extent of the problem is known. That being the strategic approach or data collection to assist in decision making. Improved data collection systems is one of the State Waste Strategy Priority Actions.

4.5 Townsite Bulk Recycling Bins

Readily available recycling bins are an effective means of encouraging the community to increase recycling. 24/7 recycling bins are available at the Shire Works Depot within the townsite. These bins are for the disposal of newspaper, glass and aluminum cans.

Additional recycling bins are located at community focal points around the townsite for the disposal of recyclable materials generated at these focal points. The current level of service includes bins located at the bowls/footy club, tennis/golf/club.

Typically, the collection method and sorting location is critical to the success of this type of service. If the source-separated material is collected by the same vehicle and simply blended in the rear of the vehicle (e.g. front lift vehicle), then there is little reason to encourage the community to source-separate the materials, but simply dispose of the mixed material types into the same bins.

The Shire should assess utilisation and the material collection mechanism to confirm system efficiency and consider a wider range of materials. This would include discussions with the collection contractor to ensure that any modifications to the service are effective from a collection and downstream processing point of view.

With the cardboard bulk bin being collected at no change, the Shire should increase the focus on cardboard in an attempt to extract as much of this from the waste stream before it ends up in the landfill.

4.6 Townsite Hazardous Household Waste Drop-off

The current range of service includes a number of drop-off location within the townsite for dry-cell batteries, mobile phones and light globes.

These materials have the potential to cause environmental harm when disposed of to landfill; hence, the importance of encouraging the extraction of these items from the general waste stream. There is also an existing state-wide downstream system in place for the disposal of these items.

The Shire should assess the range of materials accepted at these townsite drop-off facilities with the aim of increasing the range of materials accepted and to promote the service to the community.

5. WASTE & RECYCLING FACILITY

The Waste and Recycling Facility is located 2.5 km from the town centre and consists of a front-end recycling drop-off area and a back-end landfill facility. There is also a mothballed sorting and recycling station.

5.1 Drop-off Facility

The existing frontend drop-off facility accepts a range of recyclable materials, including paper, newspaper, cardboard, plastic, aluminium cans, scrap steel, oil and electronic waste, all of which are diverted from landfill. To increase the quantity of material diverted from landfill, the Shire should look to increase the quantity of existing materials being received and to also increase the range of materials accepted.

The Waste Authority has indicated that there will be a ban on landfilling electronic waste by 2024. This policy is currently relevant to Perth Metropolitan Area and Major Regional Centres; however, is an indication of the direction that the Waste Authority is heading and that in time, this may apply to the regional areas.

It is important to only separate recyclable materials that have a downstream disposal location. All other material should be sent to landfill.

The Shire should initially concentrate on improving revenue generating materials, then focus on hazardous materials that cause environmental or health concerns if disposed of to landfill. Thereafter, focus on problematic waste materials that causes operation difficulties when landfilled (wire coils, mattresses). This is about sorting out the “low hanging fruit” first, being the easier and cheaper solutions first, then concentrating on the more difficult and more expensive options next. Asbestos is the primary hazardous material, which is already being managed at the landfill site. The next level of hazardous materials are typically household chemicals, including paints, that the community are already handling, but ideally you want to get out of the landfill so that the groundwater does not get contaminated. With a relatively small landfill and the groundwater flowing away from human receptors, this is not a major issue; however, through continuous improvement, can be managed better at some time in the future.

The Shire should consider starting a small-scale display of reusable items that can be extracted from the drop-off materials. In time, if the service becomes more popular, then the Shire could set up a more formal tip shop where the Shire increases the scale of the activity and generates an income to offset some of the tip shop operating costs. It is unlikely that a tip shop would ever operate at a profit, even if it was totally managed by community volunteers with overarching support from the Shire. The positive aspect of a tip shop is that it diverts some materials from landfill and generates community interest and participation in recycling activities.

It is likely that the Shire would be able to get some grant funding to establish a small-scale tip shop on-site; however, will require Shire co-funding and ongoing operating costs.

The Shire could also consider setting up after-hours bins outside the gate for mixed recyclables and waste. This provides the community with an opportunity to drop-off materials at a time that is convenient to them, which may have a roll-on effect of reducing illegal disposal of waste in surrounding bushland and hence reduce the Shire’s waste management operating costs.

The Shire should also review the tip pass/token system and revenue that is received at the gate in comparison to the cost and effort required in managing these activities. Ultimately, it is likely that the revenue will be relatively insignificant for the effort required, and it may be financially beneficial for the Shire to simply allow free drop-off and tipping at the Waste and Recycling Facility.

By allowing free drop-off and tipping to all Shire residents, the Shire will encourage the community to deliver the material to the facility, discourage illegal tipping and reduce the Shire verge collection costs (if the service was to be continued). Ultimately, whether the Shire has tip passes and gate revenue or not, will not influence waste generation within the Shire, it will simply influence how the material is delivered to the facility. The more material the community delivers, the less material that the Shire

needs to collect and hence, the Shire will have more resources available to improve the management (separation) of recyclable, hazardous and problematic materials from the incoming materials prior to being disposed of to landfill.

Should the Shire consider allowing free tipping, then there would need to be some level of control to ensure that there is no out-of-Shire waste being delivered to the facility.

5.2 Sorting & Recycling Station

This facility operated for a number of years from 2012, however, was shut down in 2016 due to high operating costs and the retirement of the primary facility operator. The Shire has received quotes to upgrade the facility to improve material handling, however, the cost thereof is substantial in comparison to the overall Shire waste management annual budget, hence, the facility has been mothballed. With the effective, existing kerb-side recycling collection and sorting service, there is no overall recycling benefit to be gained in the Shire operating its own sorting and recycling station. Even if the Shire was to get funding for the facility upgrades, the operating cost of the facility would still be more than the current kerb-side collection and sorting system.

The facility is deemed too expensive to repair and upgrade for a small shire. It is unlikely that, even as a relatively small regional facility, it would be cost effective to upgrade and operate in comparison to available alternatives. It is noted that Avon Waste has also shut down its recyclable sorting facility in York and has opted to transport recyclable materials to the Perth Metropolitan Area to get sorted. The Avon Waste sorting facility is only used as a pre-sorting operation to remove the majority of the contamination before the recyclables are transfer to the Metropolitan sorting facility. Again, a demonstration of the cost of operating small-scale sorting and recycling facilities.

Variability of the downstream market for recyclables has also been a challenge for the recycling industry. Generally, it is the larger sorting facilities that are able to have sufficient market share in order to maximise the return from the sale of recyclable materials, with the smaller facilities typically supplying the larger facilities with input feedstock or sorted product for on-sale.

The recently implemented Container Deposit Scheme has provided a financial boost to the recycling industry, as there is now more revenue available for these selected range of containers, however, would still not justify the recommissioning of the Shire sorting and recycling station.

It is not recommended that the Shire continue to pursue in-house sorting and recycling but rely on commercial recycling collection and sorting contractors to manage this material type.

5.3 Landfill

The landfill is the original activity on site that has generally expanded over time without any formal master planning to optimise the site utilisation or to progressively close off portions of the site. Going forward, the Shire should look at improving the overall landfill operations to provide a more environmentally sustainable outcome, cost-effective operation, and long-term planning for the Shire. This becomes more important as the Shire facility runs out of landfill airspace. Effective landfill management will extend the life of the landfill for many years and hence delay the requirement for the Shire to source an additional waste disposal location.

The landfill is a Registered Facility within the context of the Environmental Protection Act 1986 and as such is required to be managed in accordance with the Environmental Protection (Rural Landfill) Regulations 2002. The Shire should undertake an audit of the landfill facility in comparison to the requirements of the Rural Landfill Regulations to assess the compliance of the current landfill operations. Should the audit identify any shortcomings, the Shire should improve landfill operations to comply with the applicable Regulations.

With regards to general landfill operations, the typical improvement activities should include:

- 5.3.1 Operating the landfill with only one active tipping area, as opposed to three (Avon waste, General waste and inert waste). This saves operational effort and cover material, reduces litter generation and results in a more organised and contained landfilling operation.
- 5.3.2 Develop a site masterplan that includes future landfill development options, available landfill airspace and future lifespan. This should also include the front-end drop-off facility and small tip shop; and,
- 5.3.3 Landfill closure and post-closure activities.

Once the Shire has a plan for the future development, operation and closure of the landfill, the Shire should develop a financial model for the anticipated landfill closure and post closure costs. Ideally this model should also include landfill development and operational costs to inform the Shire of the true cost of operating and closing the landfill facility. At present, the Shire has a substantial landfill closure liability due to there being extensive areas of the site that have been filled with landfill waste; however, not adequately capped and closed. Having a financial model that provides an estimate of the anticipated future closure and post-closure costs informs the Shire of the extent of reserves required to cover these landfill liabilities.

6. ADDITIONAL WASTE MANAGEMENT ACTIVITIES

In addition to the above existing waste management activities, there are a number of other waste management activities to be considered by the Shire.

6.1 Reduced Waste Generation

Avoiding the generation of waste is one of the targets within the State Waste Strategy. The Shire has limited influence over the community when it comes to the generation of waste. However, improved community communication may assist in highlighting the importance of reducing the generation of waste.

With the Shire being relatively small, there are only a small number of retail outlets; hence, the Shire may be able to communicate with the retail outlets to limit some of the typical waste items that are generated from each business or encourage the use of more environmentally sustainable waste materials such as compostable items in preference to plastic items.

6.2 Leading by Example

The Shire should lead by setting a positive example of following its own waste management advice, in particular in public areas. This can be achieved by:

- 6.2.1 Reducing waste generation in all Shire activities;
- 6.2.2 Purchasing recycled products and products that have a longer usable lifespan;
- 6.2.3 Where waste is unavoidable, setting up recycling bins at all Shire facilities to optimise the separation of recyclable materials from general waste;
- 6.2.4 Reusing and recycling inert waste from construction projects; and,
- 6.2.5 Improve the operation and management of its waste management facilities.

6.3 Three-Bin System

The Waste Authority has been promoting the introduction of a three-bin system for kerb-side collections for a number of years. The primary focus being in the Perth Metropolitan Area and also Major Regional Centres, the nearest being Northam. At this stage, there is minimal pressure on the smaller, more remote Local Governments to implement this system.

Garden Organics (GO) and Food Organics and Garden Organics (FOGO) are the two options for the third bin. Neither of these are seen as financially or environmentally advantageous for the Shire. There will be the diversion of a substantial portion of the Shire's landfill waste from landfill, however, the cost of collection, transport and processing will be substantially more than the current cost of landfill. The Shire

is better off to improve the management of the landfill to optimise the facility capacity and environmental performance, as opposed to spending significantly more on a three-bin service.

In addition to the substantial cost increase, there is also the negative environmental impact of an additional collection activity and driving the material a significant distance to the downstream processing facility, the nearest being North Bannister.

It is not recommended that the Shire implement a three-bin collection service.

6.4 Local Composting

The Shire is currently allowed to burn greenwaste at the landfill site. This is by far the most cost-effective solution in managing greenwaste and diverts the material from landfill. There is, however, minimal environmental benefit to this activity other than the generation of small quantities of ash, which can be used as a soil improvement additive around the site to promote vegetation growth. There is the negative environmental impact of carbon emissions associated with burning the greenwaste, however, these are deemed minimal.

Due to the small quantity of greenwaste generated within the Shire and the dry climate, it will not be economical to develop a formal composting operation. In addition, there are no local sources of other suitable organic matter that could be added to the input feedstock (charging a gate fee) that would improve the scale of the operation.

6.5 Waste to Energy

There are two waste to energy (WtE) facilities being constructed in the Perth Metropolitan Area; hence, there will soon be downstream processing facilities for general domestic waste. This is seen as an environmental improvement in comparison to landfill, albeit, only one step higher up the waste hierarchy.

With the Shire having its own landfill facility, there is no pressure on the Shire to source an alternative waste disposal location and there will be no cost benefit to the Shire in sending waste to the WtE facilities. In addition, the negative environmental impact of transporting the waste to the Perth Metropolitan Area (Kwinana or Rockingham) will offset some or all of the environmental benefit of the WtE facility.

In addition to the transport and processing cost, the Shire would need to develop a waste transfer station within the townsite, which would again add substantially to the Shire's waste management costs.

Small-scale WtE facilities are being developed; however, the cost of developing and operating this type of facility is significantly more than the cost of running a well-managed small landfill site.

It is not recommended that the Shire consider a WtE facility as an alternative to the Shire's existing landfill facility.

6.6 Regionalisation

The Shire is part of the RoerOC group of councils and as such, has an opportunity to participate in a regionalised waste management structure. A regional landfill has previously been considered in the Corrigin, 65 km from Quairading.

The pros and cons of a regional landfill site include (similar consideration apply to regional waste processing facilities):

Pros:

- 6.6.1 Reduced number of landfill sites for the Region or individual shires to manage.
- 6.6.2 Easier compliance with DWER requirements.
- 6.6.3 More cost effective to run one larger site than numerous smaller sites, provided that the regional landfill site was not required to be engineered significantly differently to the smaller sites (landfill related costs only). If the regional site environmental approval required an engineered (lined) landfill, the facility development, operation, closure and post-closure costs will be substantially more than the cost of running numerous small landfill sites.
- 6.6.4 Regionalisation may make additional recycling activities more cost effective due to increased quantities of recyclable materials (economies of scale).
- 6.6.5 Regionalisation may open up other waste management synergies between the regionalised Local Governments.
- 6.6.6 There would be funding available to improve the operations of the landfill and recycling activities; however, along with the funding would be the expectation that the landfill would need to be developed, operated, and closed to best practice standards (which all cost money).

Cons:

- 6.6.7 Increased waste quantities at a single, regional site will attract more attention from the environmental regulator and possibly result in increased landfill operational conditions, which would result in increased landfill operating costs.
- 6.6.8 Significantly increased transport distance for the majority of the shires in the Regional structure.

- 6.6.9 There will need to be waste transfer stations established throughout the Region to accumulate the waste for transfer into larger vehicles for transport to the regional facility. This will significantly increase the waste handling costs within the Region.
- 6.6.10 There will be a concentration of waste in a single landfill site as opposed to the same quantity of waste being spread around the smaller landfill sites; hence, the potential for increase contamination of the single site. Landfill design, operation and closure can mitigate this concern, but best practise needs to be ensured (which will add to the costs).
- 6.6.12 If the regional facility relies on a certain annual quantity of waste input to maintain its desired cost structure, the withdrawal of a Local Government from the regional facility or the regional grouping could impact negatively on the remaining group members (the opposite applies if the tonnage increases as a result of a new member, so long as the facility has the capacity to accept the waste).

With the Shire having its own landfill site in close proximity to the townsite, it is preferable that the Shire optimise the available landfill airspace to enable the Shire to operate autonomously for as long as possible before there is a need to be involved in a regional structure.

7. AGREED WASTE MANAGEMENT INITIATIVES

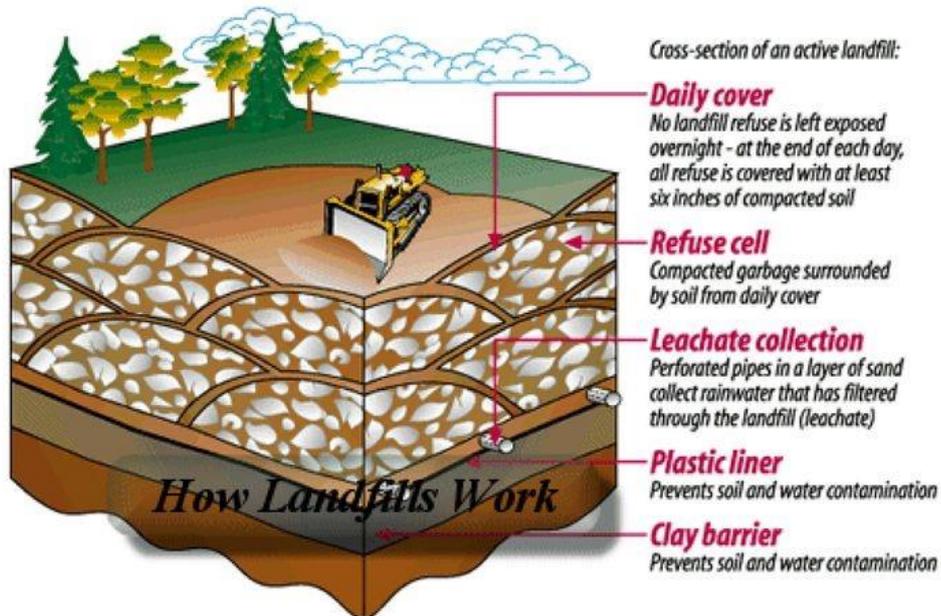
Waste Management Initiatives		
Initiative	Reasoning	Additional Actions
Continue kerb-side waste collection	<ul style="list-style-type: none"> - Legal requirement under the Local Government Act 1995. - Effective and efficient compared to other options. 	Nil
Continue kerb-side recycling collection	<ul style="list-style-type: none"> - Not a legal requirement under the Local Government Act 1995 but is a community expectation. - Diverts substantial recyclable material from landfill; extends the life of the landfill; delays the transition from landfill to transfer station. 	Nil
Permanently discontinue verge-side bulk waste collection	<ul style="list-style-type: none"> - Service is expensive compared to the option of self-service. - Workplace Health & Safety risk to employees is high. - Landfill limits per house per annum have been permanently lifted so deter people from illegal dumping of waste. - Service was discontinued three years ago with no complaints from rate-payers. 	Nil
Permanently discontinue verge-side bulk greenwaste collection	<ul style="list-style-type: none"> - Service is expensive compared to the option of self-service. - Workplace Health & Safety risk to employees is high. - Landfill limits per house per annum have been permanently lifted and so deter people from illegal dumping of waste. - Service was discontinued three years ago with no complaints from rate-payers. 	Nil
Continue townsite bulk recycling bins	<ul style="list-style-type: none"> - Not a legal requirement under the Local Government Act 1995 but is a community expectation. - Diverts substantial recyclable material from landfill; extends the life of the landfill; delays transition from landfill to transfer station. 	
Continue townsite hazardous household waste drop-off	<ul style="list-style-type: none"> - Infrastructure is established (number of drop-off location within townsite for dry-cell batteries, mobile phones and light globes). - Environmentally responsible. 	
Continue drop-off facility	<ul style="list-style-type: none"> - Infrastructure is established (existing drop-off facility accepts paper, newspaper, cardboard, 	

	plastic, aluminium cans, scrap steel, oil and electronic waste).	
Permanently close the sorting & recycling station	<ul style="list-style-type: none"> - Extreme operating costs. - International multi-national competition. - It may be possible to lease the building on an on-going basis to generate income. 	
Continue to exploit the Landfill Site to Maximum Capacity	<ul style="list-style-type: none"> - Current landfill is a Registered Facility and compliant with Environmental Protection Act 1986 and Environmental Protection (Rural Landfill) Regulations 2002. - The Shire will operate the landfill with only one active tipping area (as opposed to three) to reduce operational effort, cover material and litter. - Approximately 10 years left of the current landfill site before 'end-of-life.' 	
Re-dig the current landfill site OR deposit over existing cells	<p><i>Re-dig Current Landfill</i></p> <ul style="list-style-type: none"> - Alternate arrangements for waste management will be required after the landfill's 10-year 'end-of-life.' - Current landfill is a Registered Facility and compliant with Environmental Protection Act 1986 and Environmental Protection (Rural Landfill) Regulations 2002. - Now common practice to re-dig used cells (commencing with the oldest) by: <ul style="list-style-type: none"> - Digging up the decomposed matter of an old cell <ul style="list-style-type: none"> • Putting the decomposed matter aside; • Digging deeper to create a new cell; • Depositing the new waste into the new cell; and • Covering the new cell with the old matter. - Will extend the current landfill site by 50 years. - Hydrological report will confirm the re-dig will comply with Section 9 of the Environmental Protection (Rural Landfill) Regulations 2002 (i.e. no waste within 35 metres from the fence; 100 metres of any surface water body at the site; three metres of the highest level of the water table aquifer at the site). <p><i>Deposit over top of current landfill</i></p> <ul style="list-style-type: none"> - An alternate option is to simply deposit waste over the top of existing cells, commencing with the oldest of these cells and moving forwards. 	Hydrologist report

<p>Promote reduced waste generation</p>	<ul style="list-style-type: none"> - Not a legal requirement under the Local Government Act 1995 but is a community expectation. - Diverts substantial recyclable material from landfill; extends the life of the landfill; delays transition from landfill to transfer station. 	<p>Marketing & communications</p>
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7.1 Depiction of Re-Dig: Note the double layer of cells

REFUSE CELL



8. EXIT & CLOSURE STRATEGY

Given that both the “re-dig the current landfill site” and the “deposit over existing cells” options for extending the life of the landfill site offer an extension of 30 – 40 years, the exit and closure strategy will be deferred to the next generation who will be subject to:

- A changing and uncertain regulatory environment; and
- An uncertain population size.

The defined options that the next generation may want to explore include:

- Rehabilitation of the site into a nature reserve; and/or
- Rehabilitation of the site for recreational purposes.