



**TOOWOOMBA
REGION**



WASTE

INFRASTRUCTURE PLAN 2020



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1. INTRODUCTION

The Waste Infrastructure Plan (WIP 2017) has focussed on a well-researched and evidence-based network approach to infrastructure provision within the region including an ambitious program of providing sixteen (16) new facilities over eight years.

Since the development of the WIP 2017, Council has enjoyed success in the implementation of a number of the identified actions. Council has also learned more about existing assets, capacity to deliver, and the opportunities or constraints that either help or hinder the implementation of the WIP.

In the three (3) years of its implementation Council has also seen changes to legislation and procedural matters, and influences on decision making.

The core goal of the review of the WIP 2017 is the alignment of opportunities and constraints identified through its implementation to date with the continued delivery of the infrastructure objectives identified in Council's Waste Management Strategy.

The current corporate plan action is included under Goal 3 - Sustainability:

Action 3.2.4: Plan, deliver and manage efficient, integrated and sustainable waste and resource recovery services and reduction of emissions from landfill.

This action is addressed by Council's Waste Management Strategy, a separate policy document required by the State Government and adopted by Council.

The Strategy identifies a number of key objectives to satisfy the Corporate Plan, including the following objective relating to infrastructure provision:

"The delivery of infrastructure to provide cost effective and user-friendly waste management and resource recovery opportunities to the whole community".

In turn Council's WIP 2017 had identified actions to satisfy this objective. This linkage will continue in the reviews of the Strategy as well as the WIP.

Importantly it is imperative in all strategic and operational actions, to embrace the principles of a Circular Economy and the Waste Hierarchy as referenced in the Queensland State Waste Strategy and legislation over landfill disposal.

2. WIP REVIEW DRIVERS

2.1 Legislative Framework

2.1.1 Diversion Targets

At a state level, the following targets have been set:

Stream	Baseline (2018)	2025	2030	2040	2050
Municipal Solid Waste	32.4%	55%	70%	90%	95%
Commercial & Industrial Waste	47.3%	65%	80%	90%	95%
Construction & Demolition Waste	50.9%	75%	85%	85%	85%
Overall	45.4%	65%	80%	85%	90%

Table 1 - Waste Diversion from landfill targets (recovery rate % of all waste generated)

The new network of Waste Management Facilities (WMFs) must have the capability in design and operation to meet these targets.

2.1.2 Waste Levy Design

New state waste levy legislation commenced in July 2019, obligating Council to provide weighbridges at all landfill facilities, with implementation deadlines subject to volumes of waste received. Key dates are:

Key Dates	Obligations
1 July 2019	Landfills receiving greater than 10,000 tonnes per annum must be equipped with an operating weighbridge.
1 July 2021	Landfills receiving between 5,000 and 9,999 tonnes per annum must be equipped with an operating weighbridge.
1 July 2024	Landfills receiving less than 5,000 tonnes per annum must be equipped with an operational weighbridge.
1 July 2029	Small sites receiving up to 1,000 tonnes per annum must be equipped with an operational weighbridge.

Table 2 - Waste Levy Weighbridge Obligations

These requirements add a layer of complexity to WMF upgrades as the timeframe for weighbridges may not be consistent with proposed timing for upgrade of those facilities.

2.1.3 Infrastructure

In addition to addressing the Corporate Plan goals and action, State legislation requires Council to develop, implement and review a Waste Reduction and Recycling Plan (Waste Management Strategy).

The reach of the Strategy must include amongst other things, the **details of current and proposed waste infrastructure**.

As the WIP serves as the source of this information, it is important that it be kept relevant and up to date through regular WIP reviews.



2.2 Strategic Priorities

The Toowoomba Region population is approximately 165,000 and is expected to grow to 235,851 by 2051.

The Waste Management Strategy provides guidance to navigate the challenges of populations, waste generation and statutory obligations, and within the Strategy there are:

- Strategic Priorities,
- Objectives, and
- Action Plans

that guide an integrated approach for managing waste in the region.

The identified Strategic Priorities to be applied to the WIP are:

OUR STRATEGIC APPROACH



Optimise Service Levels

- ✓ Make using Council waste services more convenient for customers
- ✓ Provide customers with better choices for streaming their waste
- ✓ Encourage customers to use Council services as their first choice for disposing their waste



Increase Diversion

- ✓ Increase the amount of resources recovered and put them back into the productive economy
- ✓ Reduce the amount of waste sent to landfill for disposal
- ✓ Lower the medium to long term risks to the community, the Council and to the environment associated with landfills



Balance Cost

- ✓ Balance the cost of managing waste
- ✓ Improve the economics of recovering resources
- ✓ Make using Council services and facilities attractive to customers



3. PROGRESS AND LEARNINGS

Council has developed and is now operating the award-winning Greater Toowoomba Waste Management Facility (GTWMF) at Wellcamp, as a major hub facility in the West Toowoomba growth corridor.

Council has also successfully delivered three (3) Tier 5 rural facilities at Cooyar, Cecil Plains and Evergreen, and designed a Tier 2 facility at Kleinton that is scheduled for completion and commencement of operations in early 2021. Learnings from the implementation of the WIP since its adoption have created the opportunity for its review against the strategic priorities, including:

- facility design, siting and construction experience,
- detailed capacity and capability and costing analysis,
- developing market intelligence,
- understanding community expectations,
- legislative and strategy influences (including at state and national level), and
- operational advantages and limitations.

3.1 Facility Design, Siting and Construction Experience

Significant financial, timing and community disruption risks are apparent in endeavouring to locate a WMF on a new site.

Important environmental, stakeholder and community concerns have been left too late in the development of a greenfield project resulting in unnecessary expenditure on site selection. This dictates the need to do all due diligence assessment before committing to detailed designs.

Conversely additional design works have been required around establishment of new WMFs on prior landfill sites where no or little prior knowledge of waste extents are known, and in some areas, design has been constrained.

On the positive side, development of closed landfills for WMFs:

- effectively addresses Council's ongoing liability to rehabilitate the closed site,
- negates additional state licencing and approval processes, time delays and costs,
- addresses community acceptance due to "no change",
- provides significant advantages by potentially using the legacy landfill footprint as stockpile area for bulk materials recycling and
- addresses cultural heritage issues more simply.

The WIP 2020 will include as a principle:

Use of existing waste management sites will be considered for the establishment of identified new facilities. This includes Greenmount, Yarraman, Pittsworth, Clifton, Millmerran and Goombungee.

Arrangements for the upgrading of the Emu Creek facility will be an exception to this principle due to inherent site problems.

A number of WMFs already operate on legacy landfill sites as transfer stations, and therefore there is no need to replace those with new WMFs, however it is likely some minor modification may be required to existing transfer stations to maximise diversion opportunities and align with the WIP 2020 design philosophies.

The WIP 2020 will include as a principle:

Existing facilities that operate as transfer stations previously earmarked for upgrading will be removed from the major upgrading program. This includes Crows Nest, Oakey and Ravensbourne.

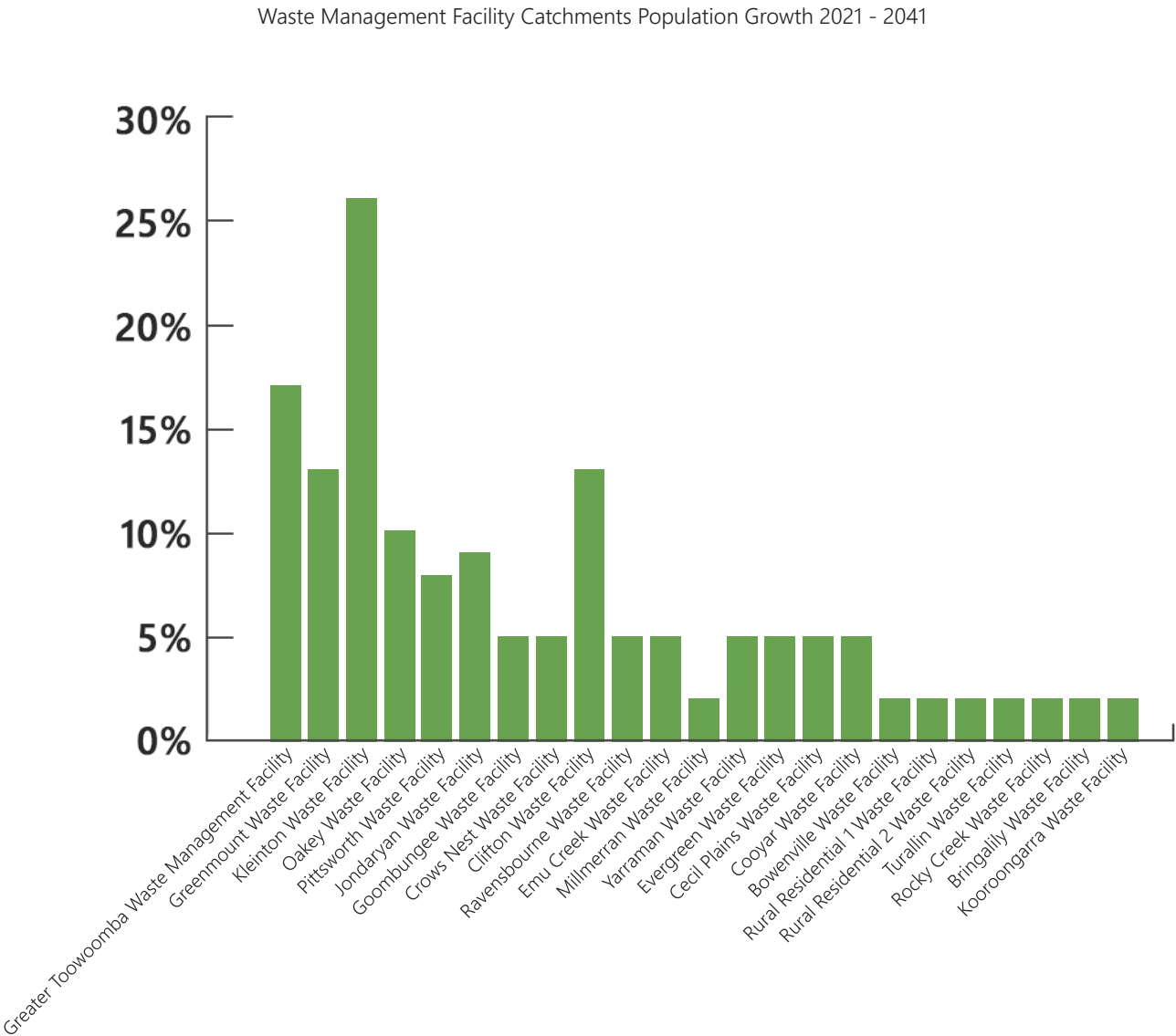
Significant advances have been made in gaining market knowledge of costs with increasing confidence in costs estimation from previous projects. This experience provides a base for future cost savings through the design process.

3.2 Capacity and Capability Analysis

3.2.1 Population Growth

Based on most recent population growth projections the most pressing needs in terms of growth have been addressed, where facilities proposed for North and West Toowoomba have been completed or are under construction. (Greater Toowoomba Waste Management Facility and Kleinton Waste Management Facility).

With the exception of the Greenmount and Clifton catchments, remaining facility catchments are projected to experience relatively low growth rates and therefore do not require upgrades to manage capacity in the near future.



3.2.2 Remaining Capacity and Maximising Current Assets

A recent study has identified that due to lack of remaining capacity some facilities not previously scheduled for upgrading urgently require this to occur, and other facilities previously scheduled for upgrading have remaining capacity available.

Therefore, the WIP 2020 will include a reassessment of the time-based roll out:

Existing landfill facilities will continue to be operated where they offer an acceptable level of service with manageable risk and have the capacity to continue. This includes facilities at Pittsworth, Clifton, Goombungee, Jondaryan and Emu Creek.

Existing landfill facilities that have no opportunity to continue to operate due to capacity constraints will be fast tracked. This includes Yarraman, Greenmount and Millmerran.

3.3 Community Expectations

Community expectations for WMFs have been recognised as:

- Suitable accessibility, location, capacity and configuration.
- Reasonable opening hours.
- User friendly design.
- Economical operating costs.
- Low environmental impact.
- Design that maximises waste diversion in line with the Circular Economy principles and achieve waste targets.

The 2019 Customer Satisfaction Survey indicated a strengthening of community support for functionality of facilities of the standard recently produced and now operating.

"The TRC Community Satisfaction Survey indicated a strengthening of community support for waste facilities of the standard recently constructed and now operating. Benchmark ranking increased from 79% in 2017 to 81% in 2019."

A review of access arrangements and operating hours will be undertaken periodically.



4. KEY WASTE INFRASTRUCTURE PLAN REVIEW AREAS

The WIP 2020 responds to the ongoing drivers for change by:

- exploring opportunities in the waste streams for further recovery and reuse,
- designing leading edge facilities in proven locations as a one stop shop for the aggregation of wastes and subsequent segregation of wastes for markets or reuse options, and
- designing facilities accessible now and in the future for a range of customers, processing precincts and transport options.

As the business transforms from a legacy landfill model to a new transport / logistics model, Council will roll out more than just new physical infrastructure; they will also

encompass cultural enhancements.

Facilities will be designed with a common customer facing theme, strongly focussed towards the Circular Economy and Waste Hierarchy, in place of the 'use it and throw it' model, and have regard to the established design principles, including:

- Facility and Network design,
- Tier capacity and Configuration,
- Catchments and Service Level Targets,
- Location and Site Selection,
- Transport Optimisation, and
- Facility Operations.

4.1 Facility and Network Design

It is important to highlight that continuing to rollout new infrastructure to support a new waste management agenda results in a significant change to the pre 2016 business operating model of Council Waste Services, to a stronger recycling and reuse mindset.

The proposed conceptual waste facility arrangement is included in the figure below. This model has been implemented at recent waste facilities and proven effective in maximising waste diversion from landfill.

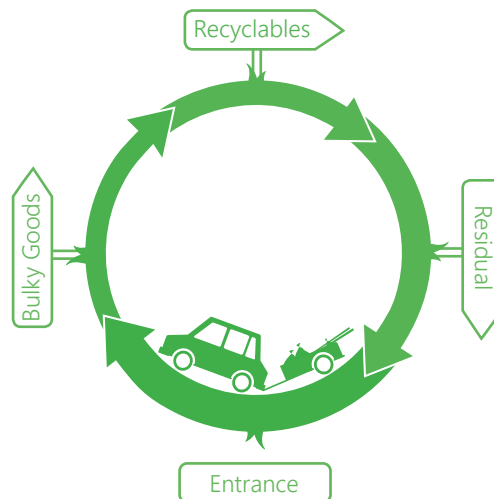


Figure 3 - Waste Management Facility Arrangement



4.2 Tier Capacity and Configuration

Council has determined that each of the twenty-two (22) facilities operated will be of a scale within the range Tier 1 through to Tier 6.

Key design principles have been established as follows:

- The Tier (or scale) of a facility will be determined by projected demand including population, patronage, and waste volumes, and the needs of the integrated logistics network
- Each facility of a specific Tier will where possible, utilise the same facility design and construction,
- The Tier (or scale) of a facility will determine standard opening hours,
- The Tier (or scale) of a facility will determine what processing is undertaken on-site.

The following table outlines a summary of different features found across the six (6) different Tiers of WMFs.

Services	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6
Gatehouse Services	✓	✓	✓	✓		
Administration Building	✓					
Amenities Building	✓	✓	✓	✓		
Weighbridge	✓	✓				
Resource Recovery Area	✓	✓	✓	✓	✓	
Tip Shop	✓	✓				
Trash and Treasure Area			✓	✓		
Perimeter control (fencing and access)	✓	✓	✓	✓	✓	✓
CCTV	✓	✓	✓	✓	✓	✓
Powered Gate	✓	✓	✓	✓	✓	✓
Customer access control					✓	✓
Supervision (staffed site)	✓	✓	✓	✓		

Table 3: Waste Facility Tier Definition



From a demand management perspective, the critical influences of:

- population catchment size and growth,
- transactions, and
- waste volumes received,

have been recognised as fundamental in WMF scope and scale. A correlation of available data for these influences, for each WMF location has enabled a Tier allocation for every existing and proposed WMF.

Ranking of each WMF catchment in terms of the scope and scale (Tier) required is summarised as:

Waste Management Facilities	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6
Greater Toowoomba Waste Management Facility (GTWMF)	✓					
Kleinton		✓				
Greenmount		✓				
Oakey			✓			
Pittsworth			✓			
Crows Nest			✓			
Clifton				✓		
Millmerran				✓		
Goombungee				✓		
Yarraman				✓		
Jondaryan				✓		
Evergreen					✓	
Ravensbourne					✓	
Cooyar					✓	
Cecil Plains					✓	
Bowenville						✓
Emu Creek						✓
Rural Bin Stations						✓

Table 4: Waste Facility Catchment Tier Allocation



4.3 Catchments and Service Level Targets

The ultimate objective of the waste infrastructure network design is to ensure it can deliver the established service level commitments of:

- 98% of the region's population is within twenty (20) minutes travelling time of a WMF,
- average waiting time for customers will be less than seven (7) minutes to enter a WMF during peak operating hours and less than four (4) minutes during non-peak opening hours.

- optimised waste diversion services are offered so everyone can contribute and participate in reducing the amount of waste sent to landfill.
- sites and services are designed to ensure that safety and security of customers and staff.

The following figure shows 98% of the population of the Toowoomba Region within 20 minutes of a WMF to satisfy the above service level commitments. Also shown is the catchment and population service level for 25 minute and 30-minute journey times.

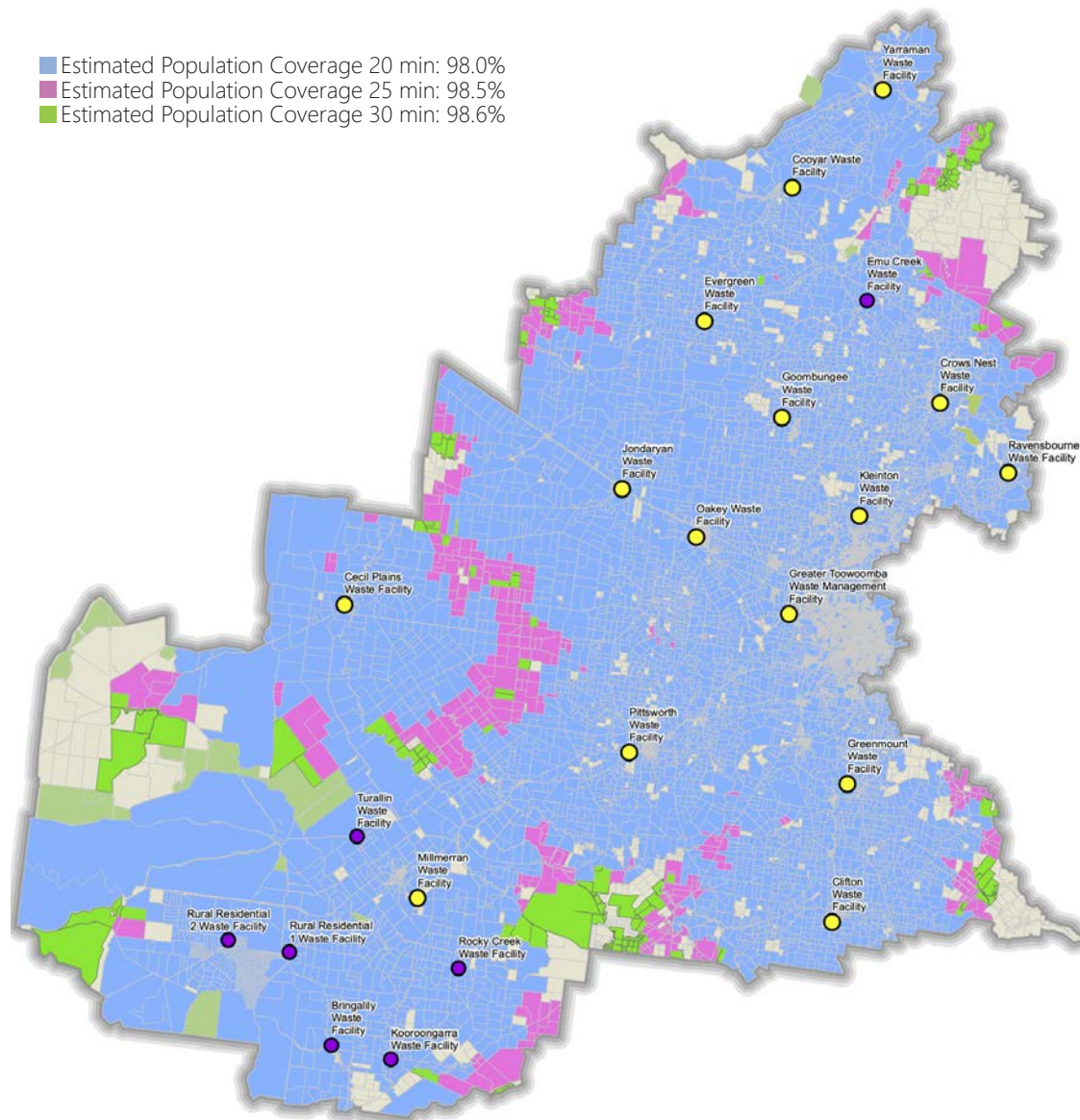


Figure 3: Catchment and Service Levels



4.4 Location and Site Selection

The following key principles have been established in relation to site selection.

- The primary consideration is that Individual sites accommodate the strategic priorities, service level standards of the network, and facility design principles;
- Sites will be identified on need, with preference given to existing sites where viable;
- Council must own the land and must obtain the appropriate planning approvals for selected sites;
- Sites will be selected for long term requirements (25 to 50 years);
- Facilities will be designed for long term requirements (25 to 50 years);
- Facilities will be built for medium term requirements (25 years);
- Site selection must evaluate multiple criteria including strategic planning, transport and logistics, environment, engineering, community and social (including cultural heritage) acceptance, and financial considerations.

4.5 Transport Optimisation

Because of the large geographical area covering the waste management network the cost of transporting materials has become a significant factor. The following key principles have been established in relation to transport optimisation:

- Where possible location of WMFs will be close to major transport routes;
- Design of WMFs and transport vehicles will be tailored to minimise the number of trips required and to maximise payload;
- Alternative destinations for disposal of residual wastes may need to be evaluated in partnership with adjacent regions to minimise transport distances.

4.6 Facility Operations

The following operational principles have been defined to provide a foundation for operational management.

- Storage and processing opportunities on site will be catered for, including where practicable processing precincts,
- Storage and processing opportunities off site to resource the supply chain will be catered for,
- Opening hours will be set within an affordable cost structure to ratepayers,
- Adaptable signage will be established so localised messages can be presented to customers,
- Mobile plant and fleet will where possible be provided, assigned and shared to the network (rather than to a specific facility);
- Operational policies, processes and procedures will be adaptable and flexible and enabled by leading edge technology and data systems;
- Resourcing will be based on training and competency development of staff and recruitment of new skills;
- Resourcing will consist of an efficient base level usage which can scale up for peak demand;
- Development of a more entrepreneurial mind set and partnership approach will be encouraged internally with other areas of Council and externally.



4.7 Opening hours

A review of the opening hours in 2019 was necessitated by the commencement of the state's landfill levy collection and the need to exercise cost control. A further review may be required based on the findings of the WIP 2020.

The following table outlines the current opening hours.

Waste Management Facilities	Mon - Fri	Sat - Sun	Access
Greater Toowoomba Waste Management Facility (GTWMF)	7am - 5pm	8am - 5pm	Gatehouse
Kleinton	7am - 5pm	8am - 5pm	Gatehouse
Greenmount	7am - 5pm	8am - 5pm	Gatehouse
Oakey	7am - 5pm	10am - 5pm	Gatehouse
Pittsworth	7am - 5pm	10am - 5pm	Gatehouse
Crows Nest	7am - 5pm	10am - 5pm	Gatehouse
Clifton	Mon & Fri: 1pm - 5pm Wed: 8am - 12 noon	10am - 3pm	Gatehouse
Millmerran	Mon & Fri: 1pm - 5pm Wed: 8am - 12 noon	10am - 3pm	Gatehouse
Goombungee	Mon & Fri: 1pm - 5pm Wed: 8am - 12 noon	10am - 3pm	Gatehouse
Yarraman	Mon & Fri: 1pm - 5pm Wed: 8am - 12 noon	10am - 3pm	Gatehouse
Jondaryan	8:30am - 4pm	8:30am - 4pm	Gatehouse
Evergreen	8:30am - 4pm	8:30am - 4pm	PIN Code
Ravensbourne	8:30am - 4pm	8:30am - 4pm	PIN Code
Cooyar	8:30am - 4pm	8:30am - 4pm	PIN Code
Cecil Plains	8:30am - 4pm	8:30am - 4pm	PIN Code
Bowenville	7am - 5pm	7am - 5pm	Unrestricted Access
Emu Creek	7am - 5pm	7am - 5pm	Key Access
Rural Bin Stations	7am - 5pm	7am - 5pm	Unrestricted Access

Table 5: Waste Management Facility Opening Hours

With the possible exception of Tier 5 WMFs, the current opening hours optimise service levels to the community.

Tier 5 WMFs have presented with:

- resource hungry administrative processes,
- technology issues,
- illegal dumping due to inability to access the facilities,

- behaviours such as scavenging and theft due to lack of supervision.

A review of options to modify current and future arrangements for Tier 5 WMFs will be included as part of the design and development of these facilities. Options may include, staffing and limiting opening hours, or unlimited opening hours.

The WIP 2020 also recognises that:

Operational resources will be provided where Council is obliged by legislation to install and operate weighbridges at landfill sites ahead of scheduled WMF upgrading. This will apply to Pittsworth, Clifton and Goombungee landfills.

5. TIME-PHASED ROLL OUT

5.1 Priority

Identifying the need and order for introducing the new waste management infrastructure will involve testing against a suite of criteria that aims to establish the priority for each. Typically, the criteria would include issues such as:

- Current service levels including facility locations for customers in each region,
- Current landfills capacity,
- The immediacy for decommissioning existing facilities – for example due to concerns for environmental damage in the locality, amenity impacts on neighbours, site security, illegal use/dumping, imminent costs for repairs/upgrades, etc.
- The forecast growth in demand in each region both for population growth and waste volumes received growth,
- The availability of suitable sites for new WMFs in each region or location, including existing facilities,
- The availability of budgeted cash flow to fund the roll-out of new WMFs,
- Current functionality of the existing facility in each region.
- Requirement of the Waste Reduction and Recycling (Waste Levy) and Other Legislation Amendment Act 2019 (WRR Act 2019) for provision and operation of weighbridges at landfills

5.2 Roll Out

Roll out of our new infrastructure has substantially changed as a result of the WIP review and includes separate actions in some cases for weighbridge installation and operation where sites remain as landfills.

In some cases the obligation to provide and operate a weighbridge is planned to be avoided by upgrading from Landfill to WMF prior to the legislative timeframes.

WASTE INFRASTRUCTURE PLAN 2020 TIME-PHASED ROLL OUT





6. CONCLUSION

In 2017 Council adopted a Waste Infrastructure Plan (WIP 2017) to guide the development of new waste management facilities identified.

Three (3) Tier 5 WMFs have been commissioned and one (1) Tier 2 WMF designed under the guidance of the WIP 2017.

Council has learned from the implementation of the WIP, and the approach to the design and delivery of the WIP requirements has now matured to the point that the settings outlined in the WIP 2017 require review.

The outcome of the review is a replacement Waste Infrastructure Plan 2020 (WIP 2020).

THE SIGNIFICANT CHANGES REFLECTED IN THE WIP 2020 ARE:

Use of existing waste management sites will be considered for the establishment of identified new facilities. This will save significant acquisition costs and minimise uncertainty over community acceptance and planning approvals and includes Greenmount, Yarraman, Pittsworth, Clifton, Millmerran and Goombungee.

Existing facilities that operate as transfer stations previously earmarked for upgrading will be removed from the major upgrading program. This includes Crows Nest, Oakey and Ravensbourne.

Existing landfill facilities will continue to be operated where they offer an acceptable level of service with manageable risk and have the capacity to continue. This includes facilities at Pittsworth, Clifton, Goombungee, Jondaryan and Emu Creek.

Existing landfill facilities that have no opportunity to continue to operate due to capacity constraints will be fast tracked. This includes Greenmount, Yarraman and Millmerran.

Operational resources will be provided where Council is obliged by legislation to install and operate weighbridges at landfill sites ahead of scheduled WMF upgrading. This will apply to Pittsworth, Clifton and Goombungee landfills.

A review will be made of operating strategies for Tier 5 sites to critically evaluate operating functionality.

Operation hours will be periodically reviewed at all sites to meet service delivery targets while maintaining cost effective operation.

