

Strategic Waste Management Plan 2022 - 2032

Shire of Kent



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Acknowledgements

ASK Waste Management acknowledges the Traditional Owners of the land in which we work and live, and pays respects to Elders past, present, and emerging.

ASK also gratefully acknowledge the cooperation of the Shire of Kent staff that provided information and assistance in the development of this report.

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Report produced by:

Alison Edmunds BSc

ASK Waste Management

PO BOX 401
Brunswick Heads
NSW. 2483
AUSTRALIA

0447 393363
admin@askwm.com
www.askwm.com



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EXECUTIVE SUMMARY

The Shire of Kent (the Shire) engaged ASK Waste Management (ASK) to produce its Strategic Waste Management Plan (the Plan or SWMP) for 2022 - 2032. ASK developed the Plan in line with regulatory requirements and the Shire's needs and objectives.

This SWMP sets the future direction for management of the Shire's waste infrastructure and services to 2033 and provides a series of actions for implementation to:

- Keep pace with better practice
- Minimise waste to landfill
- Increase resource recovery
- Minimise impacts on health and the environment
- Strengthen the financial sustainability of the services provided.

The Plan will align with the Shire's Integrated Planning and Reporting framework as an issue-specific informing strategy.

Existing Services and Infrastructure

The SWMP outlines the existing services, infrastructure and activities used to manage waste in the Shire and outlines baseline waste performance and profiles.

Review and analysis

To inform the actions of the SWMP, review and analysis was undertaken of the Shire's operations including:

- existing performance against State waste targets and better practice
- waste facility compliance audit outcomes
- facility usage patterns
- existing costs and service levels and predicted costs to deliver service upgrades
- potential recycling options
- kerbside contract delivery mechanisms
- future waste facility development options

- regionalisation options and viability.

Actions for 2023-2033

The plan provides a series of actions for implementation. The key action areas include:

Waste Infrastructure and Operations:

Implement site layout upgrades at Pingrup and Nyabing waste facilities; cease landfilling at Pingrup waste facility; optimise operational life and improve legislative compliance at Nyabing landfill; develop operational management plans; review management options to address unstaffed site risks; and review services provided to align with better practices.

Waste Services: Review options to increase resource recovery; an audit of kerbside bins MGBs to inform Shire records; and a review of resource recovery streams and the addition of CDS collection point.

Data, Information and Economics: Improve data collection activities to better inform decision-making; introduction of new waste local laws; and reviewing waste fees and charges.

Behaviour Change Programs: Develop and implement community engagement and education programs on waste and recycling.

Regional Efficiencies: Establish a regional waste officers' group and consider joining the Southern Link Voluntary Regional Organisation of Councils to increase regional collaboration on waste issues.

Implementation and Review

An implementation schedule with basic budget costs is included, which provides input into annual operational business planning and budget processes.

Plan Review

The Plan should be treated as a dynamic document that is updated, reviewed, or amended by the Shire in accordance with emerging waste management issues and legislation.

1 INTRODUCTION

The Shire of Kent (the Shire) engaged ASK Waste Management (ASK) to prepare its Strategic Waste Management Plan (SWMP) to set the future for contemporary waste management within the Shire. The Strategy was produced in line with the State's Waste Avoidance and Resource Recovery Strategy 2030 (WARR Strategy), relevant legislation, the DWER Waste Plan Resource Kit and relevant Shire strategic documents.

1.1 PURPOSE OF THE WASTE STRATEGY

The purpose of the Strategic Waste Management Plan is to provide a framework for effective, efficient, and sustainable management of waste within the Shire from 2022- 2032. The SWMP provides the baseline information about waste quantities and services and provides an implementation plan for the Shire to achieve its objectives that are listed in **Section 1.2**.

1.2 OBJECTIVES

In line with the purpose of the SWMP the overarching objectives are as follows:

- Ensure waste is managed in a strategic, sustainable manner and is regulatory compliant
- Maximise operational life of Nyabing landfill
- Maximise cost effective waste diversion from landfill
- Improve the economies of scale for waste services through collaboration with surrounding local governments

1.3 SHIRE OF KENT

The Shire of Kent is a small rural community in the Great Southern Region of Western Australia. The Shire covers an area of 6,534 square kilometres and is predominantly an agricultural area. With an average rainfall of 375mm the area produces wheat, barley and canola as well as other grains and legumes. The Shire area is also involved in the sheep industry, which produces a wool clip of around 2 million kilograms (ABS 2006).

The Shire is located approximately 320 kilometres south east of Perth, 187 kilometres north, north east of Albany and 60 kilometres east of Katanning. The district is bordered by the Shires of Dumbleyung, Gnowangerup, Jerramungup, Lake Grace and Katanning to the west. The principal centres in the Shire are the towns of Nyabing (Pop approx. 296) and Pingrup (Pop approx. 264).

2 DRIVERS AND INFLUENCERS

An important function of this Strategic Waste Management Plan (SWMP) is to interpret and incorporate relevant legislation and policy that may affect waste management within the Shire. The following section discusses the relevant state, regional and local policy frameworks and issues that may impact waste management services delivered by the Shire within the timeframe of the Plan.

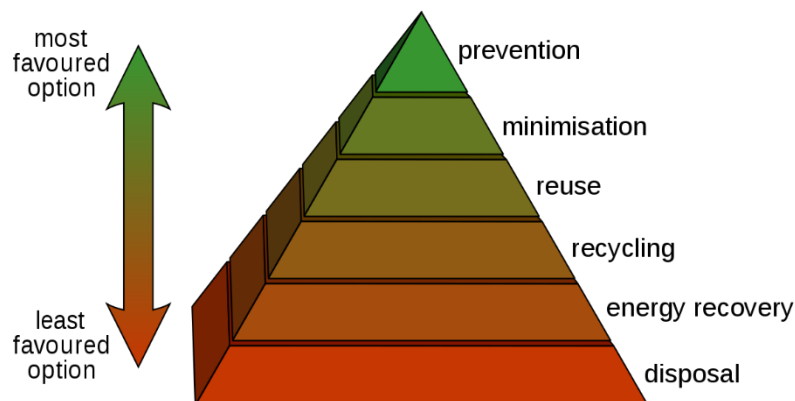
2.1 OVERSEAS AND FEDERAL POLICY AND TARGETS

The Australian Government's role in waste is focused on ensuring international obligations are met, supporting global environmental outcomes through cooperation and international engagement, and providing effective national leadership and coordination.

The regulation and management of waste and resource recovery in Australia is primarily the responsibility of state and territory governments. Local governments play an important role in providing household waste collection and recycling services, managing and operating landfill sites, delivering education and awareness programs, and providing and maintaining litter infrastructure.

The waste hierarchy is a policy approach which rates waste management strategies in ascending order of their general environmental desirability. The waste hierarchy is used alongside other tools (including economic, social and environmental assessment tools) to inform decision making. The waste hierarchy is embedded in legislation and policy across Australia.

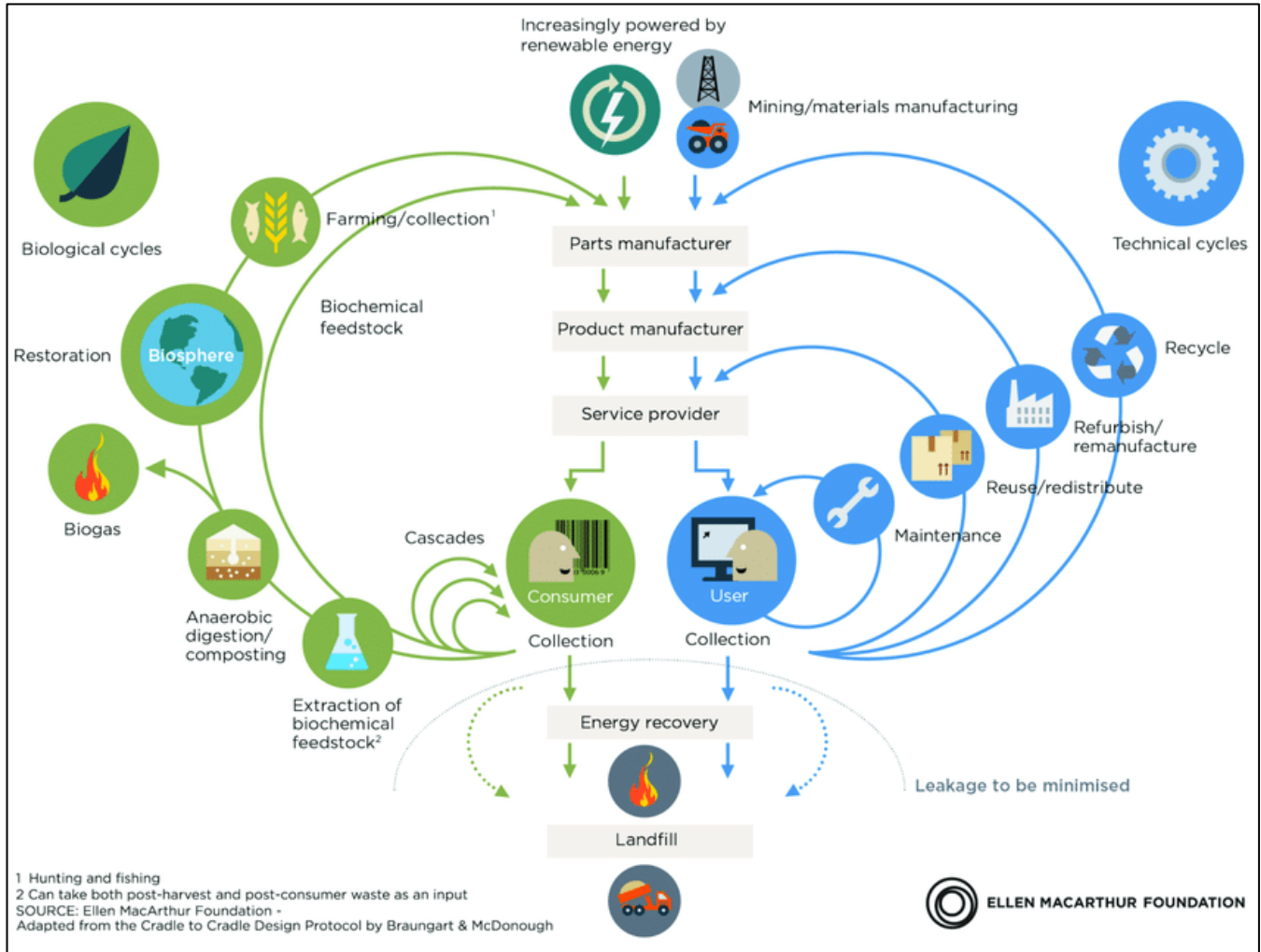
Figure 2.1 Waste hierarchy



2.1.1 National Waste Policy 2018: Less waste, more resources

The National Waste Policy embodies a circular economy, shifting away from 'take, make, use and dispose' to a more circular approach where the value of resources is maintained for as long as possible.

Figure 2.2 Outline of a circular economy (Ellen MacArthur Foundation)



The National Waste Policy's five principles underpin waste management, recycling and resource recovery in a circular economy and are reflected within the policy. These are:

1. Avoid waste:
 - a. Prioritise waste avoidance, encourage efficient use, reuse, and repair.
 - b. Design products so waste is minimised, made to last and can be more easily recovered.
2. Improve resource recovery:
 - a. Improve material collection systems and processes for recycling.
 - b. Improve the quality of recycled material produced.
3. Increase use of recycled material and build demand and markets for recycled products.
4. Better manage material flows to benefit human health, the environment and the economy.
5. Improve information to support innovation, guide investment and enable informed consumer decisions.

The policy is supported by a National Action Plan, with targets and actions to guide investment and national efforts to 2030 and beyond.

National targets:

- Ban the export of waste plastic, paper, glass and tyres, commencing in the second half of 2020.
- Reduce total waste generated in Australia by 10% per person by 2030.
- 80% average resource recovery rate from all waste streams following the waste hierarchy by 2030.
- Significantly increase the use of recycled content by governments and industry.
- Phase out problematic and unnecessary plastics by 2025.
- Halve the amount of organic waste sent to landfill by 2030.
- Make comprehensive, economy-wide and timely data publicly available to support better consumer, investment and policy decisions.

All targets will be measured against baselines in the 2018 National Waste Report

2.1.2 National Food Waste Strategy

The National Food Waste Strategy (2019) establishes a framework to half Australia's food waste by 2030.

Whilst the state governments have primary responsibility for managing waste, including food waste, local governments interact directly with their communities and have a significant role in organising waste collection and processing or disposing of food waste. Many local governments are taking steps to reduce food waste through a range of programs.

The WA State Government is focused on food organics and garden organics (FOGO) as a priority and commits to providing all local governments in the Perth and Peel regions with a consistent three bin kerbside collection system, which includes FOGO and kerbside collection by 2025.

2.1.3 China National Sword Policy

The viability of recycling packaging materials from households and businesses in Australia has been impacted by the more stringent contamination thresholds recently introduced by China for the importing of recycled materials.

Most separated recycling material previously sent from Australia to China does not meet the new contamination thresholds. This has led to a significant reduction in the value of recycled packaging materials which reduces the viability of recycling programs offered by local governments. This impact is greatest in locations, such as Broome, where the services face higher unit costs than metropolitan areas.

2.1.4 COAG Waste Export Ban

Waste plastic, paper, glass and tyres that have not been processed into a value-added material are subject to the export ban. The ban will be introduced in phased approach:

- All waste glass by July 2020
- Mixed waste plastics by July 2021
- All whole tyres including baled tyres by December 2021
- Remaining waste products, including mixed paper and cardboard, by no later than 30 June 2022.

This ban will have significant impacts on the market for packaging recyclables.

2.2 WESTERN AUSTRALIAN LEGISLATIVE AND POLICY CONTEXT

2.2.1 Legislation

2.2.1.1 Waste Avoidance and Resource Recovery Act 2007

Waste management is governed in WA by the Waste Avoidance and Resource Recovery Act 2007 (WARR Act). The primary objects of this Act are to contribute to sustainability and the protection of human health and the environment in Western Australia, as well as the move towards a waste-free society.

2.2.1.2 Waste Avoidance and Resource Recovery Levy Act 2007

The Waste Avoidance and Resource Recovery Levy Act 2007 (WARRL Act) puts in place a levy on all waste generated or landfilled in the Perth metropolitan region as an economic instrument to reduce waste to landfill and the levy rate is currently \$70 per tonne. Given this, landfill gate fees for general waste disposal in the Perth metropolitan area are between \$160 to \$210 per tonne.

2.2.1.3 Environmental Protection Rural Landfill Regulations

Landfills provided within rural areas across WA is generally governed by the *Environmental Protection (Rural Landfill) Regulations 2002* administered by the Department of Water and Environmental Regulation (DWER). 'Better practice' approaches for landfills as referred to in the WARR Waste Strategy are yet to be defined but will be developed as a priority.

2.2.2 Governing bodies

2.2.2.1 The Waste Authority

The Waste Authority is the statutory body with five members who are responsible for developing and implementing the long-term waste strategy for WA.

2.2.2.2 Department of Water and Environmental Regulation (DWER)

DWER focuses on environmental regulation, approvals and appeals processes, and pollution prevention.

2.2.3 Government policy

2.2.3.1 Our Priorities: Sharing Prosperity 2019

A target for waste recovery of at least 75 per cent of waste generated in Western Australia by 2030 is included as part of the liveable environment focus in the WA Government's *Our Priorities: Sharing Prosperity*. This target contributes to delivering a cleaner, more sustainable future by reducing waste.

2.2.3.2 Waste Avoidance and Resource Recovery Strategy 2030

The Waste Avoidance and Resource Recovery (WARR) Strategy 2030 was released in 2019 with a vision that Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste. The key focus of the strategy is to generate less waste, recover more value and resources from waste, and to protect the environment by managing waste responsibility.

Many of the targets, objectives and strategies (**Figure 2.3**) are relevant to the waste management activities of local government, with a number of targets relating specifically to municipal solid waste. Local governments can contribute to state-wide targets and are considered to be waste generators under both the 'community' and 'government and industry' categories. Targets for 'waste managers' also apply to local governments that operate waste services or facilities.

Figure 2.3 Objectives and State Targets (Waste Strategy 2030)

Objectives	Avoid Western Australians generate less waste.	Recover Western Australians recover more value and resources from waste.	Protect Western Australians protect the environment by managing waste responsibly.
State targets	2025 – 10% reduction in waste generation per capita 2030 – 20% reduction in waste generation per capita	2025 – Increase material recovery to 70% 2025 – All local governments in the Perth and Peel region provide consistent three bin kerbside 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	2030 – No more than 15% of Perth and Peel regions' waste is disposed to landfill 2030 – All waste is managed by and/or disposed to better practice facilities
Targets for waste generators	Community	Community	Community
	2025 – Reduction in MSW generation per capita by 5% 2030 – Reduction in MSW generation per capita by 10%	2020 – Increase MSW material recovery to 65% in the Perth and Peel regions, 50% in major regional centres 2025 – Increase MSW recovery to 67% in the Perth and Peel regions, 55% in major regional centres 2030 – Increase MSW material recovery to 70% in the Perth and Peel regions, 60% in major regional centres	2030 – Move towards zero illegal dumping 2030 – Move towards zero littering
	Government and industry	Government and industry	Government and industry
	Reduction in C&D waste generation per capita by 15% by 2025, 30% by 2030 Reduction in C&I waste generation per capita by 5% by 2025, 10% by 2030	C&D sector – Increase material recovery to 75% by 2020, 77% by 2025, 80% by 2030 C&I sector – Increase material recovery to 70% by 2020, 75% by 2025, 80% by 2030	2030 – Move towards zero illegal dumping
Targets for waste managers	Waste industry	Waste industry	Waste industry
	2030 – All waste is managed and/or disposed using better practice approaches	2030 – All waste facilities adopt resource recovery better practice	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 strategy includes specific resource recovery targets for the Metropolitan and Peel region and major regional centres for municipal solid waste (MSW). The Shire of Kent is not defined as a major regional centre within the Strategy and does not need to meet these specific targets for MSW, but rather will contribute towards the State-wide targets.

Whilst there is no legislative directive for rural local governments outside Metropolitan and Peel region and major regional centres to meet WARR Strategy targets, DWER expects rural local governments be 'working towards' and 'aligning services and approaches' with the Waste Strategy. Therefore, this SWP serves to work towards aligning the Shire of Kent waste services with the approaches and outcomes as detailed in the WARR Strategy 2030.

2.2.3.3 Waste plans

Local governments within the Perth and Peel regions are required to prepare and report a waste plan outlining how waste services will achieve the WARR Strategy targets. At this point, regional local governments such as the Shire of Kent are not required to prepare and report on achievement of WARR Strategy targets, however will be required to do so at some point in the future. The date for implementation for regional local governments is yet to be determined.

2.2.3.4 Container deposit scheme 'Containers for Change'

WA's container deposit scheme (CDS) 'Containers for Change' commenced in October 2020 and run by not-for-profit WA Return Recycle Renew Ltd. The CDS allows consumers to take beverage containers to a refund point to receive a refund of 10 cents. For communities without kerbside recycling services, it provides an opportunity to participate in recycling activities.

2.2.4 Waste Authority programs

The Waste Authority provides funding for programs to implement priority areas of the Waste Authority. Many of these funded programs and grants, however, currently have limited applicability outside the metropolitan area. With the introduction of a new WARR Strategy, it is likely that new funding streams will also be provided to assist local governments in meeting its requirements.

3 EXISTING INFRASTRUCTURE SERVICES AND ACTIVITY

There are a range of measures that local governments can use to avoid waste generation, increase recovery, and protect human health and the environment from the impacts of waste. DWER Waste Plan requirements are structured around these measures and include:

- Integrated planning and reporting
- Waste services
- Waste infrastructure
- Policies and procurement (contracts, local laws and policies, land use planning instruments and sustainable procurement)
- Behaviour change programs and initiatives
- Data collection
- Regional waste management
- Better practice approaches

The following section provides an overview of baseline waste data for the Shire and outlines the current waste management services provided in line with the DWER waste plan requirements.

3.1 POPULATION DATA

The Shire has an estimated population of 559 persons (ABS, 2016). The principal centres in the Shire are the towns of Nyabing (Pop approx. 296) and Pingrup (Pop approx. 264).

3.2 WASTE QUANTITIES

Waste stream data has been compiled into the following categories:

- **Municipal Solid Waste (MSW)** – is primarily waste collected from households through kerbside waste and recycling collections. It includes biodegradable material, recyclable materials such as bottles, paper, cardboard and aluminium cans, and a wide range of non-degradable material including paint, appliances, old furniture and household lighting (National Waste Report, 2010). Municipal waste may include waste from small commercial premises or other similar activities where this is collected as part of the standard local government service (DWER census glossary).
- **Commercial and Industrial Waste (C&I)** – is waste produced by institutions and businesses including schools, restaurants, offices, retail and wholesale, including manufacturing (WARR 2030).
- **Construction and Demolitions Waste (C&D)** – is waste produced by demolition and building activities, including road and tail construction and maintenance and excavation of land associated with construction activities (WARR 2030).

3.3 WASTE GENERATION RATES

As the Shire landfills at Nyabing and Pingrup are unstaffed and do not have weighbridges there is almost no data available on the quantities of waste received at them.

For the purposes of informing the baseline position in relation to waste generation for the Shire, ASK has adjusted the WA average per capita non-metropolitan waste generation values and the catchment population of the Shire to extrapolate tonnages. It is the opinion of ASK that the WA average per capita non-metropolitan waste generation values may not accurately reflect quantities for the Kent region due to the following factors:

- Data collected for non-metropolitan WA is heavily influenced by major regional centres (MRCs) that have landfills with weighbridges (e.g. Bunbury, Albany, Geraldton, Karratha, etc).

- The MRCs from which most of the data for non-metropolitan per capita averages are sourced have significantly different demographic and economic profiles to the Great Southern region, that are likely to result in differences to per capita waste generation rates, specifically:
 - MRCs generally have positive population growth that results in associated housing construction activity and the generation of C&D waste.
 - The Shire of Kent has had population decline associated with agricultural consolidation so have comparatively lower levels of domestic construction activity.
 - MRCs have elevated economic activity compared to the smaller Shires within the Great Southern region as they service the population of the surrounding region/s, rather than just their own residents. It is therefore considered that C&I waste generation in the Shire will be considerably lower than what is indicated by the non-metropolitan per capita average.

Considering the factors above, ASK has adjusted the per capita waste generation rates used to estimate waste quantities in the Shire as shown in **Table 3.1**.

Table 3.1 Per capita annual average waste generation rates ((tonnes/person/per year))

Waste type	WA average non-metro waste generation (2018 -2019)		Estimated average waste generation within Shire of Kent		Rationale for variation from non-metro averages
	Tonnes per person per year	% breakdown	Tonnes per person per year	% breakdown	
MSW	0.635	28%	0.635	40%	No change
C&I	0.970	43%	0.500	30%	It is considered likely that C&I waste generation in the Shire will be lower than MRCs.
C&D	0.670	29%	0.465	30%	Reduced by 30% as the Shire has less construction and demolition activity compared to the MRCs that the per capita data is largely sourced from.
Total	2.275		1,600		

Based on the estimated total quantity shown in **Table 3.2**, the waste generated within the Shire is estimated to be 900 tonnes per annum (rounded). **Table 3.2** shows the estimated tonnage breakdown by waste type. This value does not include liquid waste, clean fill accepted at the landfill or any wastes that were generated and managed directly by industry (e.g., mine sites, pastoral stations, isolated tourism camps) with their own disposal sites.

Table 3.2 Estimated tonnage of waste generated per annum within the Shire of Kent by waste type

Town & population	Kent (Population 296 ¹)	Pingrup (Population 264)	Shire total (Population 559)
MSW generation (tonnes)	190	170	360
C&I generation (tonnes)	150	130	280
C&D generation (tonnes)	140	120	260
Total tonnes generated per annum	474	422	896

¹ Population data sourced from ABS 2016

3.4 SHIRE RECOVERY RATE

The Shire provides a kerbside recycling service within the towns of Pingrup and Nyabing servicing approximately 80 properties (50 properties within Nyabing and 30 properties within Pingrup). 240L comingled recycling bins are also provided in the main streets of both towns to provide an option for residents that don't have a kerbside collection service to participate in the program.

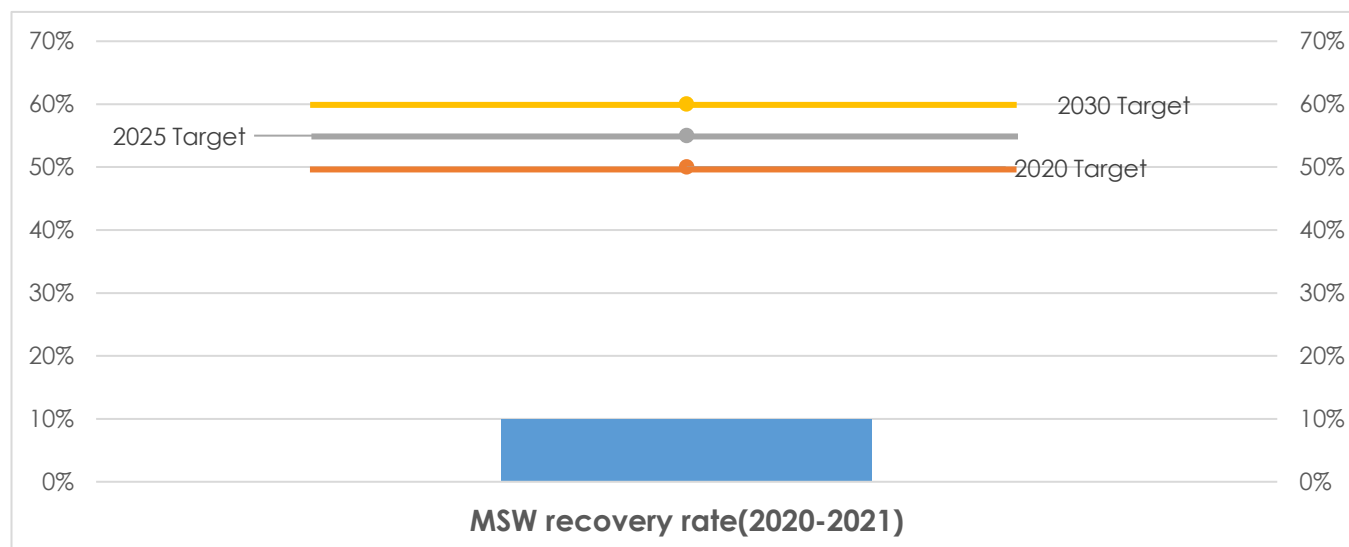
Based on the data provided by the kerbside recycling contractor, 37 tonnes was collected within the Shire during 2020-21, consisting predominantly of glass and mixed paper/cardboard.

The Shire also diverts metals, greenwaste, and waste oil from landfill. The Shire also participates in drummuster program. Metal is picked up sporadically for recycling, drummuster containers and waste oil is generally picked up annually and greenwaste is burnt on site. There is, however, no available data on the quantities of these materials diverted from landfill that could be incorporated into the Shire recovery rate.

Given the above the estimated MSW recovery rate for the Shire is approximately 10%. This is significantly below the metropolitan average for MSW waste recovery which is 34% (2018-2019). The Shire's the recovery rate of is within the range of smaller rural Shires in WA.

The Waste Strategy includes a target for major regional centres to increase MSW material recovery to 50% by 2020, 55% by 2025 and 60% by 2030. **Figure 3.1** shows the Shire's resource recovery rate compared to the Waste Strategy targets set for major regional centres. The Shire's baseline MSW recovery rate is currently significantly below the Waste Strategy targets. However, this State target does not apply to rural Shires such as Kent.

Figure 3.1 Shire of Kent MSW recovery rate compared with State targets for 2020, 2025 and 2030



3.5 INTEGRATED PLANNING AND REPORTING (IPR)

Integrated planning and reporting (IPR) guide the Shire's strategic direction and planning and gives local governments a framework for establishing local priorities and linking them with operational functions.

The Shire of Kent Strategic Community Plan 2017 – 2027 includes waste related outcomes under the Environment objective which states 'Effective Waste Services'. The Key Performance measure for this outcome stated as "effective long term waste and resource recovery strategies in place".

Strategic actions are linked to operational functions through the Corporate Business Plans (CBP). The Shire's CBP 2021 – 2025 contains the following waste related priorities:

- Implement recommended actions from the Strategic Waste Review.

The Strategic Waste Plan will fit within the Shire's IPR framework as an issue-specific informing strategy. The strategy actions will be included as part of the annual corporate business plan (CBP) review and new

expenditure required to implement actions will be incorporated into the Shire's CBP, long term financial plan, and annual budgets as appropriate.

3.6 WASTE SERVICES

Waste services provided by the Shire include kerbside collections, drop off facilities, public place bins, litter and illegal dumping, together with the management of waste created by local government service provision. They are summarised in **Table 3.3**.

These services can avoid waste generation, recover materials from waste, and protect human health and the environment from the impacts of waste. Maximising the efficiency of these services also ensures they are delivered with minimal impacts on Shire funding reserves.

Table 3.3 Shire of Kent waste services detail

Service	Type	Details	Notes/information/observations
Kerbside collections	Waste	<ul style="list-style-type: none"> • 240L MGB weekly kerbside waste collection service • Bin collection includes domestic, commercial premises and public place bins • Approximately 45% commercial premises • Provided under contract (Great Southern Waste) 	<ul style="list-style-type: none"> • Bins are property of the Shire • Only services provided in town centres (Nyabing + Pingrup) • 82 properties within the Shire are charged rubbish collection rates (totalling 95 bin collection services) • The Shire is charged for collection of 175 bins weekly. Shire records indicate 95 bins are authorised for collection. This represents a difference of 80 bins. Whilst the number of Shire public place bins and Shire services is unknown, it is unlikely this number would amount to 80 bins. • Waste is disposed at Nyabing facility • Approx. 1.5 – 2 tonnes collected per run • Only 19% of the Shire provided with access to kerbside service due to large distances between properties within the Shire
	Recycling	<ul style="list-style-type: none"> • 240L MGB fortnightly kerbside collection service • Service is mandatory in town centres • Bin collection includes domestic, commercial premises and public place bins (132 bins in total) • Recyclables taken back to Kojonup for recycling • Provided under contract (Warren Blackwood Waste) 	<ul style="list-style-type: none"> • Introduced in 2008. • Current contractor has been providing this service since commencement • Bins are property of the contractor. Advice from the Shire indicates that the contractor will sell back to Shire if the contract was discontinued • Only services provided in town centres (Nyabing + Pingrup) • 80 properties within the Shire are charged rubbish collection rates (totalling 88 bin collection services) • Approx. 1.2 – 1.5 tonnes collected per run (39 tonnes per annum) • On average approx. 2-8% per collection is landfilled (3 tonnes per annum) • WBW own bins.
	FOGO	<ul style="list-style-type: none"> • Nil 	<ul style="list-style-type: none"> • Key headline target of WARR Strategy for metropolitan area
	Bulk waste	<ul style="list-style-type: none"> • Nil 	<ul style="list-style-type: none"> • Bulk waste can be disposed for free at the Nyabing and Pingrup waste facilities
Drop off (Pingrup and Nyabing landfill)	Reuse and Recycle area	<ul style="list-style-type: none"> • Nil 	<ul style="list-style-type: none"> • Items deemed too good for landfill are often left next to disposal bins at Pingrup or separated from the active cell at Nyabing • No formal area for items to be left for reuse
	Mixed waste	<ul style="list-style-type: none"> • Bins for mixed waste provided at Pingrup transfer station • Landfill cell provided at Pingrup for bulky mixed waste 	<ul style="list-style-type: none"> • Collection of bins from Pingrup Transfer station under contract • Contractor responsible for bulk waste transfer monthly • Bins are hired through contractor responsible for bulk waste transfer (x4 bins)

Service	Type	Details	Notes/information/observations
		<ul style="list-style-type: none"> Waste disposed directly at tip face at Nyabing 	
	Construction and demolition	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Minimal construction activity within the Shire
	Cardboard	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none">
	Car batteries	<ul style="list-style-type: none"> Collection point provided for car batteries in town of Pingrup 	<ul style="list-style-type: none">
	E-waste	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Disposed within general waste
	Waste Oil	<ul style="list-style-type: none"> Facility provided at Nyabing and Pingrup 	<ul style="list-style-type: none"> Waste oil is collected by oil recycling company Wren Oil Oil is collected 1-2 times per year or when called.
	Scrap metal	<ul style="list-style-type: none"> Collection area for residential and commercial sources provided at Nyabing 	<ul style="list-style-type: none"> Collection seldom due to lack of interest from recycling companies Uncollected metal is buried on site utilising airspace
	Tyres	<ul style="list-style-type: none"> Some separated tyres stockpiled at Nyabing Most landfilled within general waste 	<ul style="list-style-type: none"> Lack of interest from recycling companies for collection
	Greenwaste	<ul style="list-style-type: none"> A collection point for clean greenwaste (branches, leaves) provided at both facilities 	<ul style="list-style-type: none"> Greenwaste burnt periodically
	Aluminium cans	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none">
	HHW	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Disposed within general waste
	Fluorescent tubes	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Disposed within general waste
	Mobile phones		
	Printer cartridges		
	AAA & AA batteries		
	Type 1&2 plastics	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Disposed within general waste
	Glass	<ul style="list-style-type: none"> Nil 	<ul style="list-style-type: none"> Disposed within general waste

Service	Type	Details	Notes/information/observations
	Whitegoods	<ul style="list-style-type: none"> Collection point for whitegoods provided within scrap metal piles at Nyabing 	<ul style="list-style-type: none"> No degassing occurring
	DrumMUSTER	<ul style="list-style-type: none"> Drop of point provided for eligible agricultural and veterinary chemical containers 	<ul style="list-style-type: none"> Serviced by CLAW Environmental
Public Place	Waste	<ul style="list-style-type: none"> 120L waste bins are provided in strategic locations within the Shire 	<ul style="list-style-type: none"> Bins serviced by kerbside contractor
	Recycling	<ul style="list-style-type: none"> Comingled recycling bins provided in main street of Nyabing and Pingrup (19 bins in Nyabing and 10 in Pingrup) 	<ul style="list-style-type: none"> Limited communication and education to community provided by Shire on correct use of bins Bins serviced by kerbside contractor
	Litter and illegal dumping	<ul style="list-style-type: none"> Shire is responsible for investigation, clean up and enforcement of littering and illegal dumping incidents on Shire owned/managed public reserves, vacant lots and roadside verges 	<ul style="list-style-type: none"> Litter, illegal dumping, and amenity maintenance not identified as an issue of significance within the Shire
Local government waste	Greenwaste inert waste	<ul style="list-style-type: none"> Waste generated from Shire operations and services 	<ul style="list-style-type: none"> Inert waste disposed to landfill Greenwaste stockpiled

3.7 WASTE INFRASTRUCTURE

This section summarises the Shire's current waste facilities.

3.7.1 Nyabing Landfill

The Shire operates the Nyabing landfill which is located approximately 1km west of the townsite and accessed from the Datatine road. The Shire recently secured access to the facility through a gated swipe card system to prevent non-ratepayers from exploiting free waste disposal at the site.

Figure 3.2 Nyabing Landfill Aerial Image (Google maps 2021)



Table 3.4 Nyabing Landfill attributes

Address	Crown Reserve 23430 Katanning – Nyabing Road
DWER registration	Registration R1681/2004/1 Category 89 landfill (more than 20 but less than 5,000 tonnes per year)
Period of use	Landfilling commenced 1923
Site Area	4.05 hectares
Site security	Electronic access entrance gate and perimeter fence. CCTV at entrance of the facility
Opening hours	All hours
Waste types accepted	Greenwaste, Commercial Bulk Waste/Builders Demolition Waste, Liquid Waste, Asbestos, Commercial/General Putrescible Waste
Infrastructure on site	Storage shed, waste transfer station building, waste oil disposal facility, drummuster compound, solar panel and battery, CCTV, signage
Cell construction	Below ground trenches
Remaining capacity	Most of the site has already been used for below ground landfilling. There is potential for the construction of above ground cells but may require the importation of soil for cell construction, cover, and final capping.
Roads	Gravel roads
Equipment	None stored on site however access to 20 tonne excavator and 12 tonne wheeled loader
Utilities	No mains water supply or electricity connection (solar panel and battery storage system used to operate gate and CCTV)
Post Closure Mgt Plan	Developed in February 2007 and under review – no final contours provided
Residential receptors	Closest residence 1km Northeast WA of site

Figure 3.3 Nyabing Landfill infrastructure



3.7.2 Pingrup Transfer Station

The Shire operates the Pingrup Transfer Station, located approximately 2km west of Pingrup. The site has been operated by the Shire of Kent after being commissioned in approximately 1924. Bins are provided on site for general waste disposal which is transferred monthly to Nyabing landfill for disposal. A landfill cell is also open for disposal of bulky waste on site.

The site currently has a slight fall from west to east with a Salt Lake forming part of the eastern boundary. The lake area on the site was first used as a convenient location for refuse disposal with a road being constructed directly from the townsite to the lake. It is estimated that 25% of the salt lake has been reclaimed through landfill (PCMP, 2007). In later years when landfill trenches became the preferred method of refuse disposal the lake area continued to be used as a site mostly for metal and green waste until closed in 2006 for any disposals. All other refuse was disposed of in the trenching system.

The Shire of Kent Planning Strategy (2019) notes that the site use as a landfill is very close to reaching capacity and is anticipated to be closed with the next five years with the transfer station to carry waste to the Nyabing facility continuing to operate.

The site has been unstaffed and unsecured since its inception and it is not possible to clearly state the types of waste deposited at the site. The Shire recently secured access to the facility through a gated swipe card access system to prevent non-ratepayers from exploiting free waste disposal at the site.

Figure 3.4 Pingrup waste facility Aerial Image (Google Maps 2021)

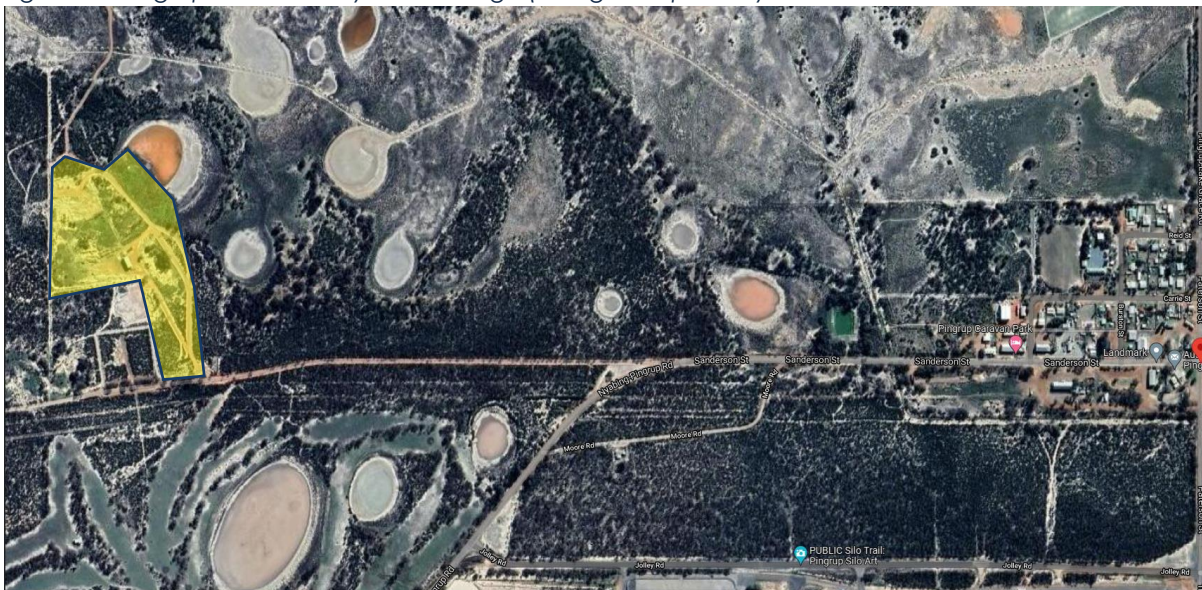


Table 3.5 Pingrup waste facility attributes

Address	Crown Reserve 45153 Sanderson Street Pingrup
DWER registration	Registration R1680/2004/1 Category 89 landfill (more than 20 but less than 5,000 tonnes per year)
Period of use	Landfilling commenced 1924
Site Area	14.1 hectares
Site security	Electronic access entrance gate and perimeter fence. CCTV at entrance of the facility
Opening hours	All hours

Waste types accepted	Greenwaste, Commercial Bulk Waste/Builders Demolition Waste, Commercial Liquid Waste, Asbestos, Commercial/General Putrescible Waste
Infrastructure on site	Storage shed, waste transfer station building, general waste bins(30m ³) waste oil disposal facility, drummuster compound, solar panel and battery, CCTV, signage
Cell construction	Below ground trenches
Remaining capacity	Most of the site has already been used for below ground landfilling. Remaining virgin ground will not meet Environmental Protection (Rural landfill) Regulations 2002 siting requirements due to proximity of groundwater (0.5m – 3mbgl).
Roads	Gravel roads
Equipment	None on site
Utilities	No mains water supply or electricity connection (solar panel and battery storage system used to operate gate and CCTV)
Post Closure Management Plan	Developed in February 2007 and under review
Residential receptors	Closest residence 2km away

Figure 3.5 Pingrup waste facility infrastructure



3.8 POLICIES AND PROCUREMENT

The DWER waste planning requirements require metropolitan local government policies and procurement strategies to integrate waste management and resource recovery considerations through all facets of local government services and activities to contribute to the WARR Strategy objectives. **Table 3.6** details the Shire's current policies and procurement initiatives in relation to DWER's better practice guidance.

Table 3.6 Shire of Kent policies and procurement relating to waste

Activity	Detail	Provided	Discussion
Contracts	The Shire currently has numerous contracts for provision of waste services	Yes	<ul style="list-style-type: none"> • Kerbside waste collection (domestic, commercial and public place) • Bulk waste transfer from Pingrup Transfer Station • Hire of bulk waste bins at Pingrup Transfer Station
Local Laws and policies	Waste Local Law	No	Waste Local Laws made under the WARR Act 2007 improve the management and control of waste disposal. WALGA have developed a model local law template for use by Local Government.
	Emergency waste management plan	No	The development of waste contingency plans in case of disruption or disaster, will assist the Shire to ensure timely, appropriate and coordinated responses to emergency situations. Given the small size of the Shire and lack of major development trends this is not seen as a priority for the Shire.
	Waste management plans (Development Applications)	No	WALGA have developed a model local planning policy, planning conditions flow chart and guidelines for waste management plans to assist local government. These guidelines demonstrate how the Local Planning Development Approval process can assist in meeting the Shire's objectives for waste management. Given the small size of the Shire and lack of major development trends this is not seen as a priority for the Shire.
	Litter and illegal dumping strategy	No	The Shire does not have a comprehensive litter strategy although given the small size of the Shire, and lack of identified issues it is not seen as a priority.
Land use planning instruments	Waste considered in local planning strategy	Yes	Considered within the Scheme however no specific actions.' <i>The Shire is currently seeking funding to undertake strategic planning for the sites to identify the long-term direction'</i>
	Local Planning Strategy identify current and future waste facility site	Yes	Current Yes Future No – 'Based on capacity of Nyabing landfill (30 – 60 years)..... there is no need to identify additional land for rubbish disposal for the lifetime of this strategy'
	Local Planning Strategy identify buffers around existing and/or future sites to avoid land use conflict	No	
	Local Planning Schemes reflect the Planning and	No	Resource recovery facilities, waste disposal facility and waste storage facility are not defined as land uses and included in the zoning table (as per Planning and

Activity	Detail	Provided	Discussion
	Development (Local Planning Schemes) Regulations 2015		Development (Local Planning Schemes) Regulations 2015). The Shire's local planning scheme needs to be updated to reflect these changes.
Procurement	Sustainable procurement policy	Yes	Contained within Policy 3.1.2 'Purchasing and Creditor Control' <i>Practically, sustainable procurement means the Shire shall endeavour at all times to identify and procure products and services that:</i> <ul style="list-style-type: none"> • Are environmentally sound in manufacture, use, and disposal with a specific preference for products made using the minimum amount of raw materials from a sustainable resource, that are free of toxic or polluting materials and that consume minimal energy during the production stage; • Products that can be refurbished, reused, recycled or reclaimed shall be given priority, and those that are designed for ease of recycling, re-manufacture or otherwise to minimise waste.'
	Regional Procurement	No	No formal policy however the Shire may be able to improve financial outcomes through pursuing regional procurement where practicable for provision of some waste services.

3.9 BEHAVIOUR CHANGE PROGRAMS

The Waste Authority define behaviour change programs and initiatives as activities that:

- Increase awareness, skills and knowledge
- Provide consistent messaging
- Help people to use waste infrastructure
- Encourage the adoption of specific, positive waste behaviours and attitudes

Communication and engagement with waste generators and managers underpin many local governments waste management activities and are vital to driving behaviour change needed to achieve the objectives and targets of the WARR Strategy.

Waste education programs and initiatives within the Shire are implemented generally on an adhoc basis in response to problems and issues encountered. There is no specific waste education position or funds provided within the Shire.

Given the significant role the Shire's waste generators play in minimising waste and the recovery of materials ongoing waste education is vital to ensure the best possible outcomes are achieved by the Shire in relation to waste management and resource recovery.

3.10 DATA AND INFORMATION

Data and information provide the key foundation for effective planning, monitoring, management and decision making in relation to waste management and resource recovery. Due to the small size, limited finances and technical waste management expertise the Shire only has limited access to appropriate waste data and information to guide strategic waste planning in the Shire.

Table 3.7 Shire of Kent waste data and information

Source	Details	Information
Waste data collection and reporting	<p>Accurate data is required to comply with mandatory reporting requirements under WARR Regulations. Accurate data will also be needed to track progress towards achievement of the WARR Strategy targets.</p> <p>The waste sites are currently unstaffed and as such accurate data is not obtained as to waste disposed at these sites.</p> <p>The Shire operates a CCTV and gated swipe card system to both waste sites where site use can be monitored (date and time logged).</p>	<p>Waste data capture methods should be reviewed to ensure they are consistent with mandatory reporting requirements under WARR Regulations.</p> <p>Options to improve waste collection at waste sites to be considered.</p> <p>Annual review of CCTV and gate access system will provide an ability for the Shire to track usage of waste sites</p>
Waste composition data	<p>Kerbside audits provide information on waste composition including, amount, type and proportion of materials in the general waste stream.</p> <p>The Shire has not conducted kerbside waste audits.</p>	<ul style="list-style-type: none"> • Informs development of waste and recycling initiatives. • Assists in determining the viability of recycling services.
Whole of life (WoL) operational costs for waste facilities	<p>Full cost of waste services, facility operations, capping liabilities and asset renewal has not been calculated.</p>	<p>All waste management costs relating both domestic and commercial wastes need to adequately cover for the life of the asset, or alternative revenue streams secured for any shortfalls quantified.</p>
Financial analysis	<p>Waste disposal at the Shire facilities for both domestic and commercial waste is free with the only charges being applied for car bodies and asbestos.</p> <p>Currently (21/22 budget) rubbish collection charges do not cover the costs of the contracts:</p> <ul style="list-style-type: none"> • Revenue (minus grants) ~ \$32,000 • Contract expenditure + admin overheads ~ \$63,500 <p>Rubbish collection charges do not include a cost for recovery of costs associated with disposal of waste collected.</p> <p>Costs associated with maintenance of landfill sites and transfer stations are being covered by general rates.</p>	<p>Free waste disposal options do not support or encourage a waste avoidance culture. It is inequitable as people producing the waste do not generally pay for its disposal, with costs incurred by the Shire in handling the waste being covered through a blanket fee applied to all ratepayers.</p> <p>Shire fees and charges could be reviewed to assess any cross subsidy and move to user pays principle.</p> <p>Consider the introduction of fees for waste disposal to help the Shire transition from all users pay to polluter/user pays principle.</p> <p>Review kerbside rubbish rates to ensure full costs are recovered</p> <p>Costs associated with provision of the current waste management facilities and public place bin provision and collection could be better covered through a waste levy under s66 of the WARR Act².</p>

² S66 of the WARR Act provides for 'an annual rate for the purpose of providing for the proper performance of all or any of the waste services it provides'. Waste service is defined under S3 of the WARR Act as: a) The collection, transport, storage, treatment, processing, sorting, recycling or disposal of waste; or b) The provision of receptacles for the temporary deposit of waste; or c) The provision and management of waste facilities, machinery for the disposal of waste and processes for dealing with waste.

Source	Details	Information
Community opinion	Community opinion should be considered for the development of waste management strategies, plans and resource recovery measures for the Shire	Community opinion is not currently known.

3.11 REGIONAL WASTE MANAGEMENT

In 2007 the Stirling Group of Councils (Shires of Broomehill - Tambellup, Gnowangerup, Kent and Jerramungup) agreed to work together to develop strategies to achieve improved outcomes for the region and the individual local governments in the management of waste. A project officer was appointed to review current waste management practices and to develop a Regional Waste Management Plan that would guide the management of solid waste in the region.

A Strategic Waste Management Plan was developed for the Group in 2009. The plan was developed in alignment with the Waste Authority Zero Waste Plan Development Scheme. The purpose of the plan was to provide strategies and actions to guide the local government communities of the Shire of Kent, Broomehill – Tambellup, Gnowangerup and Jerramungup to improve waste management practices consistent with the states vision of 'towards zero waste'.

The Plan showed that whilst each Council is making a concerted effort to deal with most forms of waste generated by their communities, major changes were however required to improved waste management practices consistent with the state strategy.

The Plan proposed the following:

- closure of many of the landfills across the region with members recommended to seek an agreement with the Shire of Katanning for disposal of waste in the Katanning landfill site.
- Improve and standardise waste data collection processes to assist in the planning of waste management activities
- Development of waste working group to share and advise on waste management issues
- Development of a regional waste education program to minimise the amount of waste to landfill.

In 2011, the Shires of Ravensthorpe, Jerramungup, Gnowangerup, Kent, and Katanning through the Country Local Government Fund (CLGF) (under Royalties for Regions Act 2009) received funding to prepare a feasibility study and business plan that investigates delivering a regional approach to waste management.

GHD prepared a report on the behalf of the Shires. The scope of work included:

- The preparation and delivery of a business case that investigates establishing a series of strategically located transfer stations for the disposal of waste into a regional landfill site or sites.
- Detailed investigation into proposed regional landfill sites including identification of proposed sites, financial analysis and a model pricing structure.

The report aimed at rationalising the waste network between the Shires and moving towards best practice landfill and transfer station network comprised of a series of transfer stations that are linked with one or two larger regional landfills. The location of the transfer stations was largely based on population and waste generation estimates.

The report outcomes indicated the closure of existing landfills within the Shires of Jerramungup, Gnowangerup, Kent and the construction of transfer stations within these locations. Waste was to be transported to the Shire of Katanning or Ravensthorpe landfills, which will be developed as 'regional facilities. The proposed timelines saw completion of this approach by 2014/2015.

The modelling highlighted at the time that due to the varying costs for each Shire and the allocation of grants/funding through the CLGF, the required fees to meet at least cost neutrality for this approach varied significantly across the region, with the smaller Shires more heavily impacted. Further based on the cost estimates provided in the report for the closing and upgrading waste facilities, it is concluded that the establishment of a new regional landfill facility (in addition to Katanning and Ravensthorpe to serve as regional landfills) will not be economically feasible for the Shires.

The report recommended the Shires; to discuss and agree of management models, detailed pricing structure modelling and proposed approach, coordination of the proposed staged development of the regional waste approach to ensure that the closure, conversion, and upgrading of the waste facilities occurs in a streamlined manner and to avoid waste handling capacity issues in the region; undertake proposed expansion of the Katanning and Ravensthorpe landfills as regional facilities.

There appears to be no further progression of this proposed past 2011.

3.12 BETTER PRACTICE APPROACHES

The achievement of better practice forms part of the WARR Strategy targets for the three headline objectives including:

Avoid: all waste is managed and/or disposed using better practice approaches.

Recover: all waste facilities adopt resource recovery better practice.

Protect: all waste facilities adopt environmental protection better practice.

Due to its small size, the Shire does not implement any current Waste Authority, DWER and broader State Government better practice initiatives.

The Waste Authority is currently developing better practice guidance to support local government adoption of better practice. The better practice guidance, once developed, may have relevance to the Shire's existing services and facilities.

4 AUDIT & ASSESSMENT

The Pingrup and Nyabing waste facilities are both classed as a Category 89 registered premises under the *Environmental Protection Regulations 1987*. As a registered premises there are no defined site-specific operational conditions, annual reporting requirements or annual fees associated with their operation. Category 89 landfills however are subject to the *Environmental Protection (Rural Landfill) Regulation 2002*. They are also subject to Section 53 of the *Environmental Protection Act 1986* (EP Act), in regard to restriction to changes at prescribed premises unless approvals are sought from DWER through a works approval or licence amendment.

4.1 COMPLIANCE AUDIT OUTCOMES

An audit of the Nyabing and Pingrup waste facilities was undertaken against the *Environmental Protection (Rural Landfill) Regulations 2002* and is contained in **Appendix A**. The audit table within the Appendix also contains better practice siting and operational considerations³ for each step of the waste management process. These better practice considerations are not legislated but are provided for the Shire for information and comparison. The audit outcomes are summarised in **Table 4.1** to follow.

Table 4.1 Facility audit non compliances with Rural Landfill Regulations 2002

Environmental Protection (Rural Landfill) Regulation 2002	Nyabing	Pingrup
Regulation 5: Tipping area	Comply	Comply
Regulation 6: Covering of waste	Not comply Assuming between 500 – 2000 tonnes are received per year, waste should be covered fortnightly Waste is currently only covered at end of cell life (up to 18 months)	Not comply Assuming less than 500 tonnes are received per year, waste should be covered monthly Waste is currently only covered at end of cell life (up to 36 months)
Regulation 7: Fencing of a landfill site	Comply	Comply
Regulation 8: Waste to be contained on landfill site	Comply	Comply
Regulation 9: Separation of waste from water and site boundary	Comply	Not comply Groundwater reporting very close to surface level (0.5m – 3mbgl) Salt lake located on the site which contains historical waste which was disposed within the lake until 2006.
Regulation 10: Stormwater management	Not comply No stormwater diversion in place Water in contact with waste not diverted to a sump	Not comply No stormwater diversion in place Groundwater possibly in direct contact with waste given high groundwater levels on site Water in contact with waste not diverted to a sump

³ Based on the Victorian best practice environmental management standard: Siting, design, operation and rehabilitation of landfills. Publication 788.3. August 2015. Western Australia currently has no best practice landfill standards.

Environmental Protection (Rural Landfill) Regulation 2002	Nyabing	Pingrup
Regulation 11: Dust suppression	Comply	Comply
Regulation 12: Firebreaks	Comply	Comply
Regulation 13: Burning of greenwaste	Assume comply with burning requirements r13 Note no documented greenwaste burning procedures	Assume comply with burning requirements Note no documented greenwaste burning procedures
		Unable to ascertain whether the designated burning area is positioned on an area of the site where waste (other than the greenwaste to be burnt) has not been deposited as no records of landfill
Regulation 14: Outbreak of fire	Not comply No documented procedures for fire, fires generally not reported to DWER in accordance with regulations	Not comply No documented procedures for fire, fires generally not reported to DWER in accordance with regulations
Regulation 15: Approval for disposal at landfill site of clinical waste and asbestos	Site receives asbestos material however unable to assess whether approval has been given as no record of original registration notification can be found by DWER or the Shire	Site receives asbestos material however unable to assess whether approval has been given as no record of original registration notification can be found by DWER or the Shire
Regulation 16: Disposal of clinical waste and material containing asbestos	Not comply Asbestos disposal register developed but not used since 2016 No plan of historic asbestos waste disposal areas No documented procedures for ensuring compliance with Reg 16 requirements	Not comply Asbestos disposal register developed but not used since 2016 No plan of historic asbestos waste disposal areas No documented procedures for ensuring compliance with Reg 16 requirements
Regulation 17: Post Closure Plan	Not comply PCMP developed for site in 2007 however unsure whether document was submitted to DWER and did not provide sufficient detail to meet requirement of regulations	Not comply PCMP developed for site in 2007 however unsure whether document was submitted to DWER and did not provide sufficient detail to meet requirement of regulations

An issue identified during the audit was the use of the site for a 'bitumen dump' at the Nyabing landfill. It was advised this area is used for cleaning asphalt and bitumen trucks, tanks and equipment, using kerosene as a degreaser.

The resulting wastewater emulsion has high levels of kerosene and hydrocarbons that pose considerable threat to the environment. This wastewater would be defined as a 'controlled waste' under the *Environmental Protection (Controlled Waste) Regulations 2004* and subject to strict controls. The bitumen wash down water will need to be collected and transported via a controlled waste carrier to an approved facility for treatment and disposal.

Another regulatory compliance issue for attention by the Shire is the requirement for fridges, freezers and air conditioners to be degassed before they are recycled and/ or disposed to landfill. Release of ozone can occur whilst compacting of the material within landfill or at a recycling facility. Under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 it is an offence to discharge gases that deplete the ozone layer and contribute to global warming with potential penalties of up to \$63,000 for individuals and \$315,000 for corporations.

Depending on the type of appliance, whitegoods should be degassed by licenced technicians prior to being transported to a recycling facility for processing or disposed to landfill where it will be compacted by machinery. Most whitegoods for recycling will be processed by metal recyclers, who may also provide a degassing service.

It is recommended that the Shire check if the metal collection recycler provides a degassing service as part of their processing. Alternatively, Shire staff can be trained and gain certification to degas appliances (<https://www.arctick.org/refrigerant-handling-licence/refrigerant-recovery/>).

Recovered gas can be returned to a participating refrigerant wholesaler who provides a rebate or credit. This requirement for degassing will increase costs to the Shire for management of ozone containing whitegoods which can be recovered through gate fees if the Shire were to staff the facility.

Other better practice issues identified as part of the audit, whilst not non-compliant with regulatory requirements, should be considered in terms minimising health, safety and environmental risks associated with the facilities.

- Currently the public have access to all areas of the site including the tipping face which increases public liability risks for the Shire.
- Both sites are unstaffed, resulting in an inability for the Shire to monitor and control what is disposed on the sites. This results in increased exposure risks to the public and Shire staff to unknown substances and material from the potential disposal of hazardous waste and liquids.
- Some site signage is provided however to minimise the disposal of hazardous waste, site entrance signage could be improved to indicate waste types accepted and not accepted on site.
- No waste compaction is occurring which increases vermin and litter risks, leachate generation potential as well as increasing airspace utilisation.
- The Transfer Station shed structure at both facilities presents significant safety risk due to the potential for falls from the raised platform.

4.2 FACILITY USAGE ASSESSMENT OUTCOMES

An assessment of usage of the Nyabing and Pingrup waste facilities using gate access information was undertaken for the period between September 2020 to September 2021⁴. The outcomes of this assessment are discussed to follow.

4.2.1 Combined access data

- Usage data indicates that the facilities were accessed on 2068 occasions. Nyabing and accounted 73% of total usage and Pingrup 27%.

⁴ Pingrup facility records contained no data for period 1 January to 30 March 2021.

- The top ten users of the facility accounted for 32% of all visits to the facilities (672 visits).
- Of the top ten users, six were Shire users (gardener, building & maintenance, works crew, administration) and accounted for 23% of all visits to the facilities.
- Of the top ten users, four were ratepayers and accounted for 9% of all visits to the facilities.

4.2.2 Nyabing access data

Usage data indicates the following:

- The facility was used (access granted) on 1507 occasions by 136 users.
- The top ten users of the facility accounted for 35% of all visits to the facility (525 visits).
- 126 users accessed the facility 25 times or less in the 12 months (982 visits or 65% of visits).
- Of the top ten users, five were Shire users (gardener, building & maintenance, works crew, administration) and accounted for 20% of all visits to the facility. It is noted that Shire will need to access the facility for maintenance and operational works.
- Of the top ten users, five were ratepayers and accounted for 15% of all visits to the facility. The highest ratepayer user accessed the facility 66 times, averaging 5.5 times per month and accounted for 4% of all visits.
- Use was highest in December followed by July. The months of lowest usage was September. Highest day of use is generally Monday and Tuesday, with the lowest usage generally on Wednesdays and Fridays.

Figure 4.1 Nyabing customer usage by month

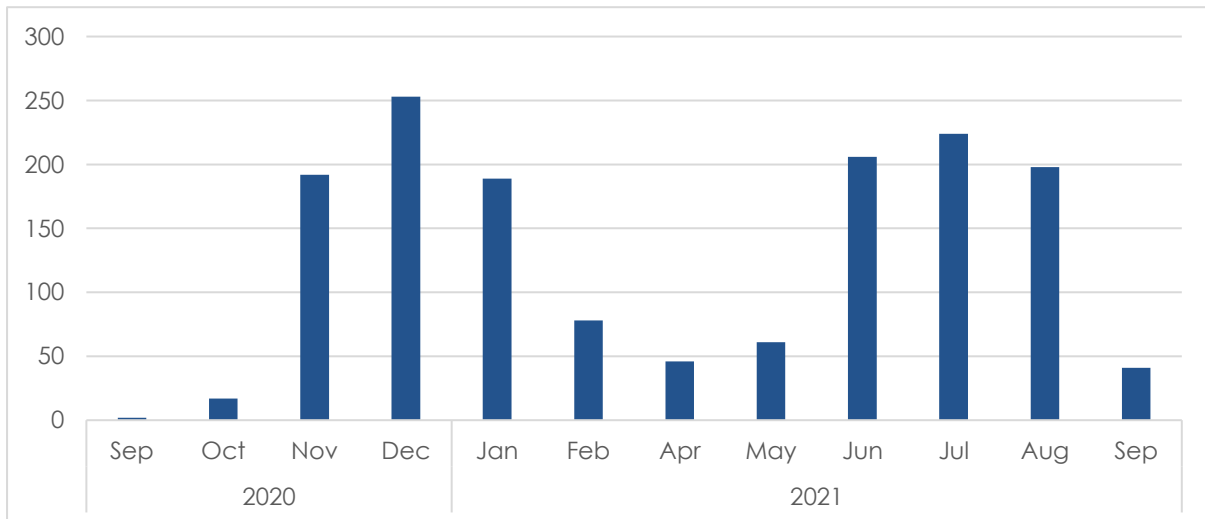
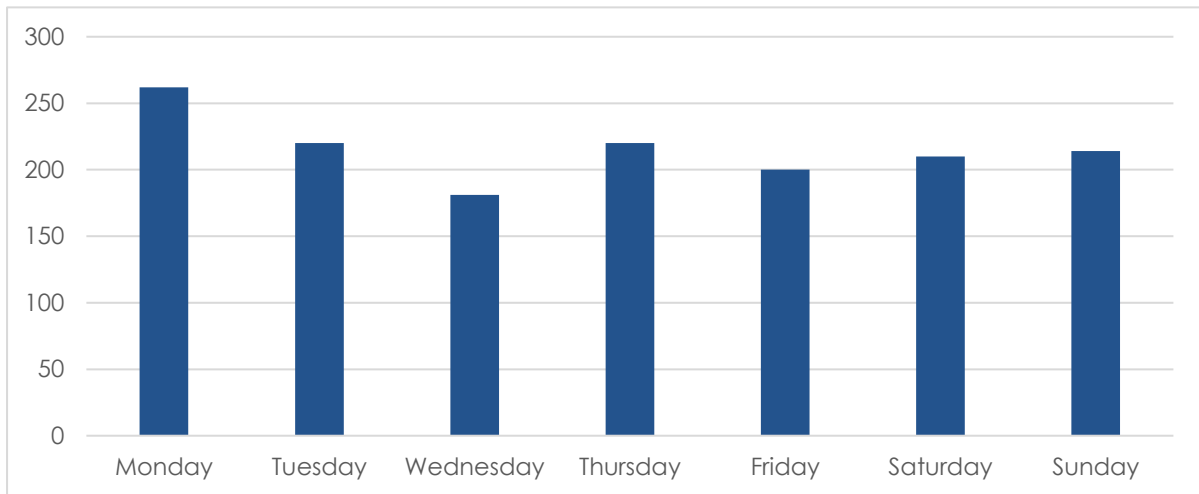


Figure 4.2 Nyabing customer usage by day of week (over a 12 month period)



4.2.3 Pingrup access data

Usage data for nine months⁵ of the 2020-201 period indicates the following:

- The facility was used (access granted) on 561 occasions by 64 users.
- The top ten users of the facility accounted for 57% of all visits to the facility (321 visits)
- 54 users accessed the facility 12 times or less in the 12 months (240 visits or 43% of visits).
- Of the top ten users, three were Shire users (Gardener, works crew) and accounted for 27% of all visits to the facility. It is noted that Shire will need to access the facility for maintenance and operational works.
- Of the top ten users, seven were ratepayers and accounted for 30% of all visits to the facility. The highest ratepayer user accessed the facility 39 times, averaging 3.25 times per month and accounted for 7% of all visits.
- Use was highest in August followed by May. The months of lowest usage was October and September. Highest day of use is generally Monday and Thursday, with the lowest usage generally on Saturdays and Sundays.

⁵ Note access data did not include any information from January 1 to March 30 2021.

Figure 4.3 Pingrup customer usage by month

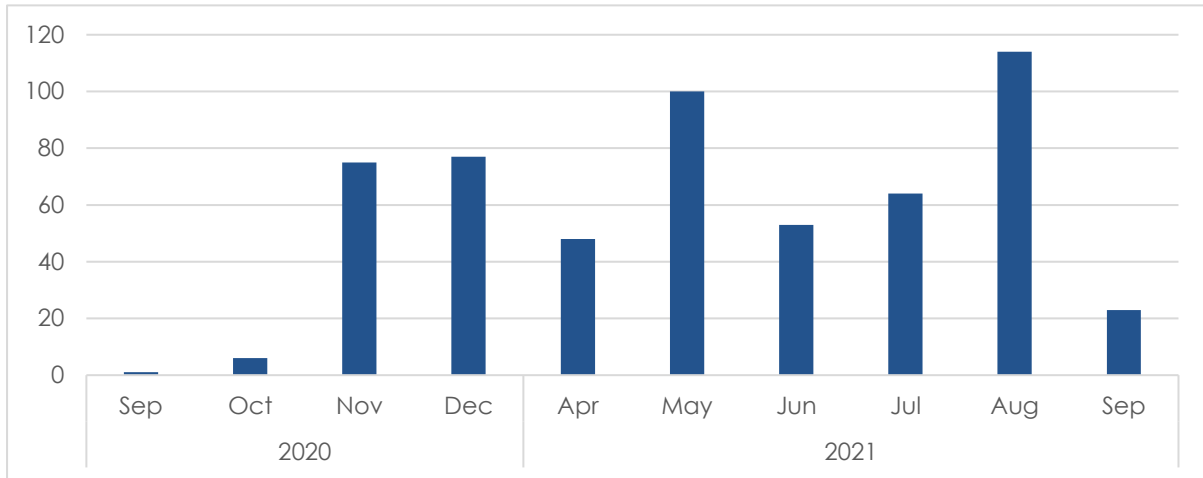
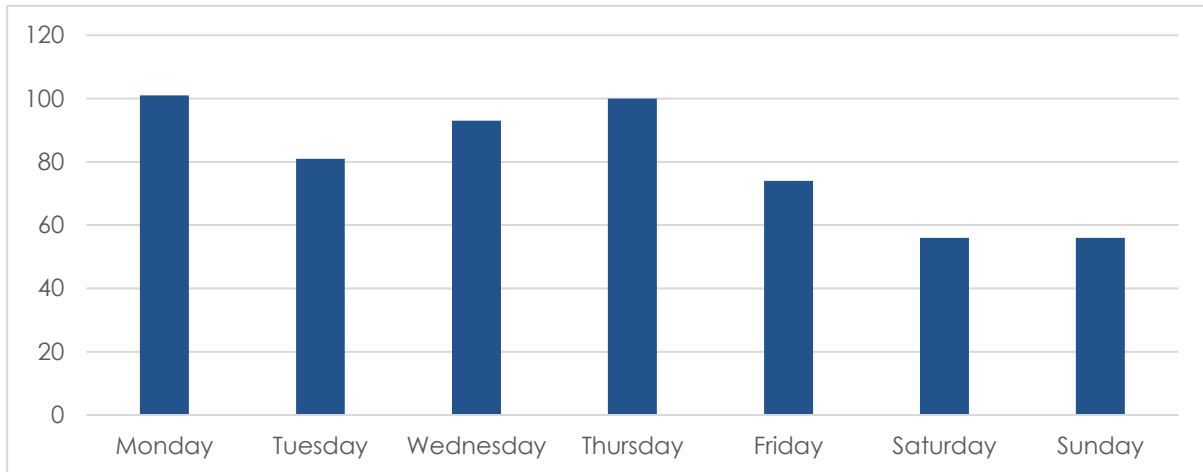


Figure 4.4 Pingrup customer usage by day (over a 12 moth period)



4.2.4 Other Observations

The Shire advises there are currently 425 rateable properties within the Shire. The Site access records indicate that there only 200 users of the site (including Shire personnel). This shows that less than 50% of the Shire ratepayers use the waste facilities provided.

The information also shows that there are up to four ratepayers whom use the site far more than the majority of users. In Nyabing this accounted for 15% of all visits and 30% of all visits in Pingrup. Assuming these visits correspond with waste to be disposed it could be concluded that these ratepayers account for a similar percentage of waste disposed annually and needing to be managed by the Shire.

Typically the pattern of usage by customers is monthly (or using less than 12 times in a year) by 54 users in (Pingrup) and fortnightly (or 25 times or less in a year) by 126 users in Nyabing.

The costs incurred for handling and management of waste disposed within the Shire is being covered through general rates. This means each ratepayer is charged the same regardless of amount disposed or usage of the facility. This is inequitable as people producing the waste do not generally pay for its disposal nor does it encourage people to avoid waste generation or recycle waste as they are charged the same regardless of their individual actions taken.

4.3 KERBSIDE CONTRACT ANALYSIS

The Shire provides kerbside waste and recycling collection services in the Shire. Only 19% of the Shire is eligible to access these services due to large distances between properties within the Shire. An analysis of existing costs and services is provided to follow.

Table 4.2 Kerbside collection contract information (October 2021)

Element	Detail	Notes
Waste		
Contractor	Great Southern Waste Disposal (GSWD)	Based in Narrogin
Unit charge rate by contractor	\$3.69 per bin	Contractor being paid by total bin services, not actual bin lifts made each week.
Collection frequency	Weekly	
Number of properties serviced/bins collected	<ul style="list-style-type: none"> GSWD invoices for 175 bin services weekly Shire records indicate that 82 properties are levied charges for 95 bin services made up of the following bin numbers: <ul style="list-style-type: none"> - Pingrup 24 - Nyabing 43 - Commercial bins 28 	<ul style="list-style-type: none"> Shire records and GSWD records do not appear to match with 80 bins services unaccounted for. Public place bins and Shire facility bins would account for some of these services, however the number these bin services are currently unknown. Some Shire public place waste bins are advised to be 120L MGBs. Kerbside waste MGB lids are do not meet the Australian Standard (AS).
Cost per year per bin collected	\$192 per bin service per year	Assuming \$3.69 x 52 wks.
Kerbside general waste charge to ratepayers per bin	\$240	\$4.61 per bin lift being paid by ratepayer ($\$240/52 = \4.61)
Recycling		
Contractor	Warren Blackwood Waste	WBW own bins. Advice from the Shire indicates that WBW will sell bins to the Shire at \$25 per bin if the Shire discontinued their contract
Unit rate	\$5.29 per bin	Contractor being paid by total bin services, not actual bin lifts made each week.
Collection frequency	Fortnightly	
Number of properties serviced/bins collected	<ul style="list-style-type: none"> WBW charges for 132 bin services Shire records indicate a total of 117 bin services made up of the following. <ul style="list-style-type: none"> Residential and commercial bins: 80 properties are levied charges (for 88 bin services). <ul style="list-style-type: none"> - 56 bins Nyabing - 32 bins Pingrup Public Place bins: 29 public place bins as follows: <ul style="list-style-type: none"> - 19 Nyabing 	Shire records and WBW records do not match with 15 bin services unaccounted for.

Element	Detail	Notes
	- 10 Pingrup	
Cost per year per bin collected	\$137.54 per service per year	
Kerbside recycling waste charge to ratepayers	\$131	Ratepayers paying \$5.03 per bin lift (\$131/26 = \$5.04)

4.3.1 Observations

- There are two major kerbside waste collection providers in the region servicing LGAs in various formats. Most collection contracts appear to be individually procured. Due to the small population size and distance from service providers, this would increase the unit rate of collection for the Shire.
- Both contractors are being paid by bin numbers and not lifts actually made, thereby increasing costs to the Shire.
- There is a lack of current contract documentation for services provided to the Shire.
- Contracts appears to roll over from year to year with an increase in their costs of CPI.
- There is no data recorded or provided on tonnage collected each week by waste provider impacting on DWER mandatory waste data reporting accuracy.

Kerbside waste contracts

- The Shire is currently charged for collection of 175 waste bins weekly. Shire records indicate 95 bins are authorised for collection. This represents a difference of 80 bins. Whilst the public place bins and Shire facility bins would account for some of this variance, the actually number of these additional bins is unknown.
- The rubbish collection charges do not include for recovery of Shire costs associated with disposal of waste collected. Cost of disposal of the waste collected is covered through general rates as a standard fee for all.
- No accurate data for the number of public place bins and Shire owned bins collected.
- Shire public place bins are advised to be 120L MGBs. The Shire could change to 240L MGBs as this will reduce collection charges as less bins will be required for the same volume of waste.

Kerbside recycling contract

- Kerbside recycling waste charge is below breakeven cost per pick up by 25 cents per bin pick up.
- The Shire is currently charged for collection of 132 bins weekly. Shire records indicate 117 bins (including public place bins) are authorised for collection. This represents a difference of 15 bins.
- If the Shire were to change collection contractor, the Shire will be required to supply recycling bins. This can either be through a new contract or through buying the existing bins. At the current quoted costs this would equate to \$2,925 (117 bins at \$25 per MGB).
- There are no arrangements for share in profits from collection of CDS containers by the recycling provider.

5 FINANCIAL REVIEW

A financial review was undertaken as part of the development of the SWMP that includes:

- Existing costs and services
- Cost to meet regulatory compliance
- Comparison of landfill vs transfer stations and projection of tipping point to convert Nyabing to a transfer station and movement of waste to Katanning

The analysis and findings of the financial review are contained in the following sub-sections.

5.1 EXISTING COSTS

Existing revenue and expenditure details for the Shire's waste services are provided to follow in **Table 5.1**. Figures have been taken from the 2021/2022 Budget. It is noted that these figures exclude 2021 grant funding of \$105,515 and professional expenses \$40,000 which were considered not to be indicative of an average year.

The Shire waste revenue is obtained from the rubbish collection charges which are levied at \$131 per property for recycling services and \$240 for waste services. There is no revenue obtained from gate fees at the Shire's waste facilities as waste disposal for both domestic and commercial waste is free with the only charges being applied for car bodies and asbestos.

Table 5.1 Existing waste services revenue and expenditure (2021/2022)

REVENUE	
Household refuse charges	\$25,265
Commercial refuse charges	\$6,720
	\$31, 985
EXPENDITURE	
Household refuse (collection contract and admin allocation)	\$55,064
Commercial refuse (collection contract and admin allocation)	\$8,526
Nyabing Tip expenses	\$23,265
Pingrup Tip expenses	\$21,439
Other refuse collection	\$16,323
Depreciation infrastructure	\$14, 942
	\$139,559
Net annual loss	\$107,574

The data shows that waste services provision by the Shire incurs an annual loss of approximately \$107,000 which is covered through general rates.

5.2 COSTS FOR COMPLIANCE

Based on the outcomes of the audit undertaken the **Table 5.2** provides an overview of the approximate costs of compliance with regulatory requirements.

The Shire is in the progress of ceasing landfilling at the Pingrup site and will become a dedicated transfer station only, with the Transfer Station to be operational by 2024 (Shire of Kent Planning Strategy 2019⁶). When landfilling ends at the Pingrup site, it is recommended that the Shire consider

⁶ Confirmed by Acting CEO Rob Stewart October 2021

surrendering the 'landfill' registration for the facility. It is envisaged the transfer station at Pingrup would receive less than 500 tonnes of waste per annum, as such it will not be required to be licenced under the *Environmental Protection Regulations 1987* as a Category 62 Solid waste depot.

Given the low tonnage of waste likely to be received, the costs provided below exclude any regulatory compliance works to the Pingrup facility given as the transfer station it will no longer need to comply with the *Environmental Protection (Rural Landfill) Regulations 2002*.

As summarised in **Table 5.2** the cost for compliance with the *Environmental Protection (Rural Landfill) Regulations* and other regulatory requirements at the two facilities is approximately \$30,000⁷. This represents an increase in costs annually by approximately \$9,000.

To minimise health, safety and environmental risks associated with the facilities and align with better practice it would be recommended to staff of both facilities with reduced opening times (2 half days per week at each facility), as the facilities currently have little control on waste acceptance and no way to charge gatefees. The swipe card access data can be used to identify the key times the facilities are used to identifying the future opening hours. Furthermore, facilities have sheds close to the entrance gates that could be used as a gatehouse and office for site staff.

It is recommended that the Shire undertake a feasibility assessment for staffing of both facilities commensurate with the level of usage to mitigate risks and improve site operations and control. The introduction of gate fees and/or a limited free tip pass system could recoup staffing costs and provide for a more equitable costing structure where those that generate waste within the Shire pay for its management.

⁷ Does not include unknown costs associated with disposal of bitumen washwater or degassing of whitegoods

Table 5.2 Costs for compliance with regulatory and better practice requirements (both facilities)

Requirement	Proposed solution	Total Cost	Annualised Cost
Regulatory			
Waste covered fortnightly at Nyabing	Waste operator to undertake pushing up, compaction and covering of waste Costed at four hours per fortnight at \$35 per hour + overheads = \$50/hr. Total hours 104.	\$5200	\$5200
Stormwater management	Bunds constructed around new waste cells to divert stormwater from contacting waste within cell. Assume costs absorbed within existing resources when constructing new cell.	Existing costs	Existing costs
Documented procedures: - Greenwaste burning, Asbestos disposal and management, Fire management, Cell filling plan	Development of an Operational Management Plan (OMP) for the Nyabing site to document the required practices to be implemented at the landfill. Costs assumed for developing OMP and training of staff, approximately \$20,000 by external consultant. This cost has been annualised over seven years.	\$20,000	\$2,900
Asbestos approval	Submit approval request from the Director General of DWER (i.e. the CEO) to authorise the acceptance of asbestos containing material (ACM) for disposal at Nyabing. Prohibit further disposal of asbestos at Pingrup. All asbestos to be brought to Nyabing for disposal.	Existing staff costs	Existing staff costs
Bitumen wash out	The washing out of bitumen to be discontinued on site. Wastewater to be collected and transported via a controlled waste carrier to an approved disposal facility. The Shire may wish to contact surrounding LGAs to organise a coordinated collection to minimise transport costs.	Unknown	Unknown
Transfer station shed structure at both Pingrup and Nyabing presents significant safety risk due to falls from raised platform	Implement suitable controls to minimise risk (e.g. railings etc.) Costs are unknown and are dependent on proposed solution. A provisional sum has been provided. This cost has been annualised over 10 years.	\$5,000	\$500
Post Closure Management Plan	Development of PCMP to meet requirements of Regulations and submitted to DWER. This is being produced as part of this project and as such no costs have been included.	Nil	Nil
Degassing of fridge, freezers and air conditioners	Shire staff trained and gain certification to degas appliances (https://www.arctick.org/refrigerant-handling-licence/refrigerant-recovery). Costs and time (resources consumed) in degassing whitegoods can be recovered by gate fees is staffing the facilities.	Unknown ⁸	Unknown ⁸
Regulatory upgrade total costs		\$30,000⁹	\$8,600

⁸ Given the unknown quantity of whitegoods collected on site, costs associated with this requirement cannot be generated

⁹ Does not include unknown costs associated with disposal of bitumen washwater and whitegoods degassing

5.3 COSTS FOR OPERATION OF TRANSFER STATIONS ONLY

Scenario modelling was undertaken to estimate the cost of closing the landfill at Nyabing and transferring all waste received at the Shire's waste facilities to the Shire of Katanning landfill for disposal. To determine the estimated cost of this scenario the following inputs were modelled:

- Capital costs of construction of a transfer station at Nyabing and Pingrup
- Operational costs of a transfer station at Nyabing and Pingrup
- Disposal volumes
- Transportation costs of waste from Nyabing and Pingrup to the Katanning landfill
- Waste disposal costs (gate fees) at the Katanning landfill.

The model results are discussed in the following sub-sections.

5.3.1 Capital costs construction of a transfer station

Both sites already contain much of the infrastructure required for operation of a transfer station on site, with Pingrup already operating as a transfer station and transferring some waste to Nyabing.

Both sites contain three sided structures designed to receive waste for transport off site ('transfer station sheds') and hardstands previously constructed as part of prior grant funding. Site upgrades proposed for this project (see **Appendix B – Future site development**) are to be covered through recent grant funding. As such this existing and proposed infrastructure costs for this are not included in the modelling.

The modelling does however include costs associated with purchase of transfer containers and bins for receipt of recycling material. Costs also include current infrastructure depreciation costs (as listed in the 2021/2022 budget) of \$15,000 per annum.

Table 5.3 lists the approximate total cost for each parameter, followed by the annualised cost spread over a 25 year lifespan for each facility.

Table 5.3 Summary of capital costs

Element	Total cost	Annualised cost
Establishment Groundworks, Hardstand area (unsealed), Access roads (compacted unsealed), fencing, gating, signage	Nil	Nil
Equipment Incl. Transfer containers (3 x sealed 30m ³ hooklift bins), bins for receipt of material for recycling	\$46,000	\$1,900
Depreciation Depreciation on Infrastructure (from existing 21/22 budget costs)	\$15,000	\$15,000
Total (rounded up)	\$46,000	\$17,000

5.3.2 Operational costs

The operational cost for both facilities has been modelled. It assumes both facilities are staffed at 8 hours per week. **Table 5.4** lists the approximate cost for each parameter, followed by the annualised cost spread over the 25 year lifespan of the facility.

Table 5.4 Summary of operational costs

Element	Total cost	Annualised cost
---------	------------	-----------------

Service Establishment Procuring equipment and staff, development OMPS and SOPs for site operation	\$32,000	\$4,486
Human Resources 2 x gatehouse operator (Staff at \$35/hr (inc. super, sick and admin)	\$30,000	\$30,000
Plant* Plant costs, repair and maintenance, insurance, public works overheads, communications equip (*assume no new plant required and utilise existing loader)	\$19,000	\$19,000
General operations Provisional sum to cover general op costs for each site	\$10,000	\$10,000
Total (rounded up)	\$91,000	\$64,000

5.3.3 Transportation costs

Upon closure of the Shire's landfill all waste requiring disposal will need to be transported to an alternative facility. It has been assumed in the modelling that waste will be transported to the Shire of Katanning landfill, located within 50km of Nyabing.

The assumptions and rationale for the transport logistics is provided to follow.

Transport of kerbside collected domestic waste

Waste collected via the kerbside waste collection contract would be transported directly to an alternative landfill in the kerbside collection trucks. The approximate tonnage of kerbside waste to be transferred direct is assumed at 104 tonnes per annum (source GSWD, via Shire 2021). There have been no additional costs for the transport distances included in the modelling given the current contractor will be required to return via Katanning to the contractor depot.

Transport of domestic drop-off waste from Pingrup Transfer Station (PTS)

The model assumes the domestic drop-off waste from the PTS would be transported directly to an alternate landfill. The model assumes one container (or 30m³) per month would be transferred. The cost of transport for full hooklift bins is based on \$1,140 per hooklift bin to the Katanning landfill. This has been calculated using the current costs of transfer of one bin per month from the Pingrup transfer station to the Nyabing landfill at \$570. The modelling assumes the same cost for transfer from Nyabing to Katanning given the similar distance.

Transport of domestic drop-off waste from Nyabing Transfer Station (NTS)

The model assumes the domestic drop-off waste from the NTS would be transported directly to the Katanning landfill. The model assumes one container (or 30m³) per month would be transferred. This is based on current quantities moved from Pingrup, the similar population numbers and increased number of kerbside servicing as compared to Pingrup.

Transport of future recycling streams (e.g e-waste, batteries, other materials)

Given the small volumes of the recycling stream anticipated, it is assumed Shire staff will transfer these materials via trailer or ute to the Katanning waste facility as part of other duties in the area, when required. As such no additional costs have been assumed for transport of this material.

Table 5.5 Summary of transport costs

Element	Annualised cost
Transfer of waste from Pingrup Transfer station	\$13,680

Transfer of waste from Nyabing Transfer Station	\$6,840
Transport of kerbside collected domestic waste	Nil
Transport of future recycling streams	Nil
Total Cost (rounded)	\$21,000

5.3.4 Waste disposal gate fees

Gate fee prices for waste disposal at the Katanning landfill site was based on \$65 per tonne for kerbside waste and \$25 per m³ for bulk bins, based on the 2021/22 gate fees charged at the site. Annual disposal costs for waste disposal at Katanning are contained in **Table 5.6**.

Table 5.6 Summary of disposal costs

Element	Annualised cost
Gate fees on waste from Pingrup Transfer station (30m ³ x 12 x \$25)	\$9,000
Gate fees on waste from Nyabing Transfer station (30m ³ x 12 x \$25)	\$9,000
Gate fees on kerbside collected domestic waste (104 tonnes x \$65)	\$6,760
Total Cost (rounded up)	\$25,000

5.3.5 Financial results

Based on the modelling undertaken the annual costs for operation of transfer stations only with transfer of domestic mixed drop off waste to the Katanning landfill for disposal are contained in **Table 5.7**.

Table 5.7 Total costs associated with provision of transfer stations only

Description	Annualised cost
Capital costs	\$17,000
Operational expenses (including staffing of facilities)	\$64,000
Transportation costs	\$21,000
Disposal costs	\$25,000
Other costs (other refuse collection) sourced from 21/22 budget	\$16,300
Estimated total cost (rounded up)	\$143,000

The current costs of operation of the Pingrup transfer station and the Nyabing landfill is approximately \$76,000¹⁰. With the projected additional costs associated with regulatory compliance as discussed in **Section 5.2** of \$9,000¹¹, the annual cost of operation will be approximately \$85,000.

The operation of transfer stations only within the Shire, staffing of facilities and the transfer of waste for disposal to Katanning landfill is approximately \$144,000 per year. This increases costs to the Shire by approximately \$59,000 or 69%. Site staffing and transport and disposal costs incur a significant portion of this expenditure.

The operation of unstaffed transfer stations within the Shire and the transfer of waste for disposal to Katanning landfill is approximately \$114,000 per year. This increases costs to the Shire by

¹⁰ Based on 21/22 budget items (Nyabing expenses, Pingrup expenses, other refuse collection, depreciation)

¹¹ Excluding costs associated with disposal of bitumen washwater and whitegoods degassing

approximately \$29,000 or 34%. Transport and disposal costs incur a significant portion of this expenditure.

Based on this concept modelling, the results indicate the most economic option is for the Shire to continue utilise landfill as the preferred waste disposal option for the Shire and maximise the landfill airspace availability to prolong the life of the site as much as practicable. This will prolong the increased expenditure to the Shire associated with transport and disposal of waste at an alternate site. Whilst the continued operation of the landfill over a transfer station will impose additional impacts on receiving environments along with increased greenhouse emissions, these impacts can be minimised by good operational management and progressive capping of the site.

The 'Tipping point' for transition from landfill operations at Nyabing to Transfer station only will occur when the regulatory standards for the operation of landfills change where landfill cells need to be 'lined'. It is more likely that regulatory pressures will lead the landfill being closed, rather than exhausting the potential airspace for waste disposal.

Landfill liners are physical barrier systems intended to, as far as possible, prevent the escape of leachate and gases out of the body of the landfilled waste. A landfill liner is placed at the bottom and sides of modern landfills to provide an impermeable barrier that contains the waste and any leachate generated. Leachate is then collected from the cell and managed onsite (typically in WA via lined lagoons and evaporation).

There is significant cost involved with the lining of a landfill. Given the relatively small waste volumes generated and received at the Nyabing landfill, it will not be able to achieve suitable economies of scale to make lining of the landfill viable. At this point, it is very likely to be more cost effective to transport waste outside the Shire to an appropriate landfill.

6 RECYCLING OPTIONS

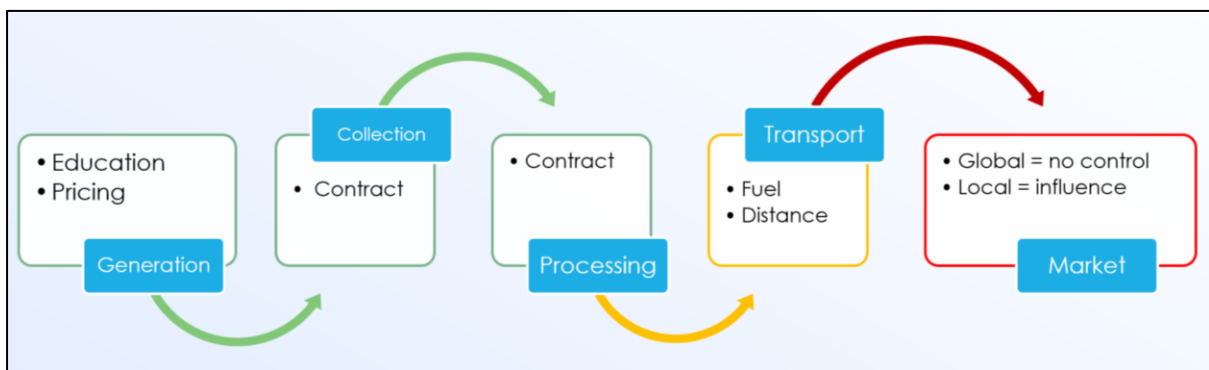
The minimisation of waste disposal provides a number of benefits to the Shire and the community. Reducing the quantity of waste landfilled preserves available airspace and increases the operational life of the landfills. It also reduces the pollution risk from the facilities, while the recycling of materials preserves resources and is aligned with targets in the State's Waste Strategy. However, given the region's distance from material collectors and reprocessors, recycling activities in the Shire should focus on materials that demonstrate one or more of the various qualities:

- have a local market demand
- are of high value that can off-set the transportation cost (e.g., metals)
- are hazardous and produce significant impacts if disposed of in unlined landfills (HHW, car batteries, e-waste etc.)
- are problematic to dispose and consume significant quantities of airspace (tyres etc.)

Many factors must be considered before a program is introduced to recover resources from landfill to ensure the program has long term viability. The factors to assess include a materials full supply chain, including the end market for the material. **Figure 6.1** shows a summary of a material supply chain, while the colours indicate the degree of 'control and influence' a local government typically has on each stage.

Reduced control and influence leads to higher risk for a program, for example, the China Sword policy and the program of bans for the export of materials by the Federal Government has significantly reduced the market for packaging materials and thus the economic viability of recycling services. These factors need to feed into a triple bottom line (TBL) assessment that considers the economic, environmental and social impacts of the proposed recycling program. There is little point in separating and processing a material stream if there is no viable end market for the product.

Figure 6.1 Local Government control of the waste and recycling supply chain



The Shire currently provides kerbside recycling and also diverts metals, greenwaste, and waste oil from landfill. The Shire also participates in drummuster program. Metal is picked up sporadically for recycling, drummuster containers and waste oil is generally picked up annually and greenwaste is burnt on site.

An overview of potential recycling options for the Shire is provided in **Table 6.1**. As stated above, a supply chain and market assessment should be completed to guide feasibility of new services.

Table 6.1 Overview of potential recycling options

Stream	Issues and comments	Recommendation
Scrap metal	<ul style="list-style-type: none"> Collection seldom due to lack of interest from recycling companies to collect the scrap metal. Scrap metal market values currently high. Scrap metal is a valuable material for recycling and should be recovered wherever possible. 	<p>Continue Service</p> <p>The Shires work together to develop a regional solution that ensures scrap metal is collected from all facilities for recycling on a 'milk run'.</p>
Whitegoods	<ul style="list-style-type: none"> Some currently collected in metal piles or disposed as general waste in landfill. Scrap metal market values currently high Fridges, freezers and air conditions must be degassed before they are recycled. Not only can discharging gases damage the ozone layer, it is also illegal, with potential penalties of up to \$63,000 for individuals and \$315,000 for corporations. Shire staff could be trained and gain certification to degas appliances (https://www.arctick.org/refrigerant-handling-licence/refrigerant-recovery/). Recovered gas can be returned to a participating refrigerant wholesalers who provides a rebate or credit. 	<p>Continue Service</p> <p>Train staff to degas appliances</p> <p>Recover degassing costs through gate fees</p>
Greenwaste	<ul style="list-style-type: none"> Greenwaste collected and burnt on site. The controlled burning of greenwaste prevents leachate generation, preserves landfill airspace and significantly reduces the GHG impacts. However, the resource is lost. Greenwaste can be shredded and composted to produce a mulch, but unless there is a market for the material, the processing cost cannot be recovered, and the excess mulch may require burning or disposal. 	<p>Due to the lack of markets for the mulch and cost to process, it is not economically viable for the Shire to process greenwaste.</p>
Concrete, brick and tiles	<ul style="list-style-type: none"> Not currently separated in the Shire Recycling construction and demolition (C&D) waste is important for reducing the demand for virgin materials, diverting waste from landfill and salvaging valuable resources. Concrete and brick waste can be crushed to produce recycled aggregates can be used for infill material, road-base or as aggregate replacement. Due to the potential presence of asbestos in this material DWER require an Asbestos Management Plan (AMP) for premises storing and processing C& D material. The plan must include acceptance procedures and inspection, processing controls, monitoring and testing plan 	<p>Due to the sites being unstaffed, the Shire will not be able to comply with the requirements within the AMP for visual inspection of loads as they arrive at site. There are also high costs involved in monitoring and testing for asbestos and processing costs for the material stream.</p>
Tyres	<ul style="list-style-type: none"> Tyres are received free of charge and stockpiled and/or disposed to landfill Tyres are problematic to dispose of and compact, while due to their shape can consume large volumes of airspace. Waste tyres pose a significant fire risk if not managed correctly Tyre recyclers charge for collection of tyres 	<p>Tyres be separated and stored for collection by tyre recycler</p>

Stream	Issues and comments	Recommendation
Waste Oil	<ul style="list-style-type: none"> Currently being collected by Wren Oil 	Continue service
Drummuster	<ul style="list-style-type: none"> Currently being stockpiled and collected by CLAW environmental 	Continue service
Beverage containers	<ul style="list-style-type: none"> Beverage containers, including PET plastic and glass bottles, can be collected and returned to the State's container deposit scheme (CDS). The value of each bottle at the CDS is 10c. As there is no authorised return point in the Shire these containers will need to be transported to the nearest refund point (Katanning) 	Consider the introduction of CDS collection containers at waste sites
E-waste	<ul style="list-style-type: none"> Not currently being collected at waste sites. E-waste should be separated from the storing, processing and disposal of other waste, as it can contain hazardous materials. These can harm human health and the environment. Valuable materials can be recovered for reuse from e-waste. The Shire of Katanning is part of the National Television and Computer Recycling scheme (Computers and Tvs accepted for free). 	Consider and review the feasibility of introducing collection containers and transport to Katanning landfill for recycling
Batteries	<ul style="list-style-type: none"> Not currently collected at waste sites but being collected privately in town. Generally good returns for batteries and can be sold to scrap metal recyclers. Should not be disposed in general waste due to containing hazardous materials for human health and the environment. Car batteries are a Controlled Hazardous Waste and Dangerous Good. Used lead acid batteries (ULAB) must be stored, handled and transported in accordance with a range of Western Australian and Federal regulations and should be stockpiled on bunds without lids. 	Consider the introduction of battery collection containers at waste sites and sell to scrap metal recyclers
Gas bottles	<ul style="list-style-type: none"> Not currently collected at waste sites. Can be collected for recycling with scrap metal. Gas bottles for recycling as scrap must be degassed, have the valves removed and punctured to indicate their safe status for recycling. 	Consider the introduction of gas bottle collection point at waste sites. Will cost the Shire to degas bottles

Stream	Issues and comments	Recommendation
Household hazardous waste ¹²	<ul style="list-style-type: none"> • Currently disposed in general waste. • These products are hazardous due to their potential for reactivity, ignitability, corrosivity, toxicity, or persistence. • HHW materials need to be carefully managed to ensure they do not create environmental or human health issues, especially in the unlined Kent landfill. • The Waste Authority hosts a HHW Program which provides funding to assist with the storage, transport, treatment and recovery of HHW, collected by participating local governments and regional councils. • Closest HHW facility is the City of Albany Waste Facility (Hanrahan Road). 	Consider the collection of HHW for transport to the Albany facility for safe and free disposal
Cardboard, paper, HDPE	<ul style="list-style-type: none"> • Cardboard, paper and HDPE plastic can be collected as source separated materials. • These will need to be consolidated and transported to a recycler for export. • There are two privately run Material Recovery Facilities operating within the greater region (WBW and Great Southern Waste) that could collect material. 	Consider the introduction of waste stream specific collection bins at waste sites which are collected by the kerbside recycling contractor
Mobile phones	<ul style="list-style-type: none"> • MobileMuster recycles all mobile phone components, including all brands of handsets, along with their batteries, chargers and accessories. www.mobilemuster.com.au • MobileMuster partners with retailers, repair stores, local councils and workplaces across Australia providing free collection units that can be used to promote mobile phone recycling in the community. • MobileMuster is the product stewardship program of the mobile phone industry and is accredited by the Federal Government. 	Consider partnering with MobileMuster to provide a collection point for printer cartridges at the Shire administration office.
Printer cartridges	<ul style="list-style-type: none"> • Cartridges 4 Planet Ark is an innovative recycling program that provides Australians with a free and easy way to recycle their used printer cartridges. • To become part of the program the Shire can register for a Cartridges 4 Planet Ark workplace collection box. 	Consider the provision of a collection point for printer cartridges at the Shire administration office.
Fluorescent tubes, compact fluros, HIDS	<ul style="list-style-type: none"> • All contain mercury and should not be disposed to landfill or in kerbside waste bin. • FluoroCycle is a voluntary partnership between government and industry to increase the recycling of mercury-containing lamps. Lamp recycling helps reduce the amount of mercury being sent to landfill. 	Consider partnering with Flurocycle and provide a collection point for lamps at Shire waste facilities.

¹² Household Hazardous Waste (HHW) includes household chemicals and other substances for which the owner no longer has a use, such as consumer products sold for home care, personal care, automotive care, pest control and other purposes

Stream	Issues and comments	Recommendation
Numerous streams	<ul style="list-style-type: none"> • TerraCycle offers free national recycling programs funded by brands, manufacturers, and retailers around the world (including oral care products, writing instruments, dish and hair care products). • Terracycle offer the opportunity to become a Community Collection Hub. A Community Collection Hub is a community recycling station and drop-off point for TerraCycle's free recycling programs. These programs are funded by brands and are therefore completely free for any local business, community organisation or educational institution to implement. • Material is shipped free back to Terracycle. 	Consider partnering with Terracycle to provide a community collection hub for various suitable waste streams at Shire office or other suitable location.
Reuse Shop/ area	<ul style="list-style-type: none"> • There is no reuse shop within the Shire. • Unwanted material can be rehomed and diverted from landfill. • There is opportunity to develop the existing sheds near the site entrances to house a reuse area or shop. 	Consider the development of the existing sheds on site as a reuse area or shop.
Reading glasses	<ul style="list-style-type: none"> • Lions Recycle for Sight Australia Collect reading glasses and sunglasses to donate to charities around the world as well as remote Australia. https://lionsclubs.org.au/our-impact/recycle-for-sight-australia/ • Drop off or send to most Lions Clubs around the country. 	Consider the provision of a collection point for used reading glasses at the Shire administration office.

7 REGIONAL APPROACHES

There has a long history of intent, stretching back as far as 2009, for the Shires in the region to collaborate and form a regional waste management approach. However, there has been little progress for this objective. This is likely due to the increased costs that will be incurred by the smaller Shires involved in transporting waste to an alternate landfill with costs dependent on waste quantities and distances from the proposed 'regional landfill', and the lack of waste devoted resources to implement the changes required.

As shown by the financial modelling undertaken in **Section 5**, the operation of transfer stations and the transport of waste to Katanning landfill for disposal increases costs to the Shire. Given waste disposal within the Shire is currently free, there is little ability to recoup this cost through gate fees.

The 'tipping point' for transition from landfill operations at Nyabing to a transfer station only will occur when the regulatory standards for the operation of landfills become more stringent and require rural landfill cells to be 'lined'. Given the relatively small waste volumes generated and received at the Nyabing landfill, the cost to construct and operate a lined landfill be unviable. At this point, it is very likely to be more cost effective to transport waste outside the Shire to a 'regional' lined landfill.

Whilst the development of a regional landfill may not be viable at this point, there is still many benefits to working as a collective rather than individual Shires on waste management issues. General issues faced across the region by working in isolation are:

- Increased cost of services due to the limited economies of scale achieved. Currently all kerbside collections are carried out by either Warren Blackwood Waste or Great Southern Waste under individual contracts. Regional procurement could reduce the unit cost for individual LGAs by increasing the services to be provided therefore economies of scale.
- All Shires generally have metal stockpiles, drummuster containers, used oil collection facilities which can experience difficulty in attracting recyclers to the region due to the distance from markets and comparatively low volumes on site. Regional coordination of collection services will ensure optimum costs.
- Most Shire officers responsible for waste management are not dedicated waste officers but are also responsible for a wide range of other technical duties. Therefore, they are only able to devote a relatively small portion of their time to waste, while at the same time waste management activities increase as the expectation and need for more environmentally responsible waste management solutions increases.
- Limited information sharing and problem solving.
- No opportunity for regional collaboration on projects.
- Limited access to regional funding streams.
- Limited data collection occurring

Research for this project has revealed that in 2015, some Shires (who were previously part of the regional studies) formed a Voluntary Regional Organisation of Councils, supported by an Executive Officer. The Southern Link Voluntary Regional Organisation of Councils (VROC) involves the Shires of Broomehill-Tambellup, Cranbrook, Gnowangerup, Katanning, Kojonup and Plantagenet. The vision of the group is to sustain a collaborative partnership that services the member local governments.

The purpose of the group is to work collaboratively with other local governments in the region to share knowledge and resources for mutually beneficial outcomes.

The Southern Link VROC's Strategic Plan 2021 - 2024 identifies the goals, strategies and targets that the group will seek to achieve over the next four years. One of the key strategies for the group is to improve waste management. To this end the group has planned to:

- Progress the recycling of household hazardous waste and e-waste; and
- Develop opportunities for combined waste management for collection services, transfer station management and landfill operations.

The Shire is not currently part of this group.

In order to improve efficiency, collaboration and delivery of waste services across the region (and potentially other Shire provided essential services) it is recommended the Shire consider joining the Southern Link VROC to work collaboratively with other local governments in the region to share knowledge and resources for mutually beneficial outcomes (see **Action 9.5.1**).

It is also recommended that a local government officers waste group be formed for staff responsible for waste within their respective LGA to meet regularly to discuss waste management and resource recovery matters. Actions that could be discussed include:

- Identifying potential regional projects/collaboration opportunities
- Sharing experiences and solutions of environmental compliance issues with waste sites
- Planning waste management goods and services procurement
- Regional waste education and engagement opportunities
- Progressing regional initiatives

This group could operate as a subset of the Southern Link VROC. Whilst an officers' group will require an initial additional effort from the member LGAs, this would be outweighed by the long-term benefits from a coordinated approach to waste management within the region. This is an opportunity which, if actioned, could assist in reducing capital expenditure and increase the economic feasibility of waste and recovery programs in the region (see **Action 9.5.2**).

8 FUTURE SITE DEVELOPMENT

As part of the project brief, and to inform the outcomes of actions of the SWMP, the development of site layout plans for the Shire's Refuse Sites was required to guide future site development.

An informing report titled '**Future Site Development – Nyabing and Pingrup Refuse Sites**' (ASK, 2022) was developed to meet this requirement and is contained within **Appendix B**. The report contains the rationale and concept site layout plans for future site development.

The site layout plans include key infrastructure, optimal traffic flows, locations for material stockpiles (for recovery / recycling), stormwater infrastructure and any other key infrastructure. Included within the report are estimates of the capital works expenditure required to meet the site layout plan requirements. These are reproduced in the tables to follow. Further detail can be found within the document within **Appendix B**.

Table 8.1 Nyabing capital works cost estimates

Item	Detail	Approx. Cost
Security	Internal stock fencing; Supply and install lockable gates; Fall prevention barrier at transfer station	\$7,000
Site signage	Information and directional signs supply and install	\$7,000
Stormwater	Excavate, shape and form a table drain with trapezoidal profile (includes top soil and grassing)	\$21,000
Material storage areas	Install and supply stockpile bunds for greenwaste and scrap metal; Install and supply hardstand for greenwaste, scrap metal and used oil, tyre and drummuster area; Install and supply fenced compound for drummuster; Storage containers for collected waste streams, Development of internal tracks around material stockpile area and access to disposal cell	\$64,500
Rehabilitation	Capping of historic disposal area; Capping of active disposal area; shrubs	\$158,000
Regional factor	15% contingency on Perth Prices	\$39,000
Contingency	20% of subtotal	\$59,000
GST	Approx. GST on total	\$36,000
TOTAL estimated sum including GST (rounded)		\$390,000

Table 8.2 Pingrup capital works cost estimates

Item	Detail	Approx. Cost
Security	Internal stock fencing, supply and install lockable gates; Fall prevention barrier at transfer station	\$27,000
Siter signage	Information and directional signs supply and install	\$5,000
Stormwater	Excavate, shape and form a table drain with trapezoidal profile	\$6,000
Material storage areas	Install and supply stockpile bunds for greenwaste and scrap metal; Install and supply hardstand for greenwaste, scrap metal and used oi, tyre and drummuster area; Install and supply fenced compound for drummuster; Development of access track and approach apron to greenwaste areas	\$42,800
Rehabilitation	Caping of existing trench	\$20,000
Regional factor	15% contingency	\$15,172
Contingency	20% of subtotal	\$23,264
GST	Approx. GST on total	\$13,958
TOTAL estimated sum including GST		\$154,000

Of note quantities are +/- 20% and are subject to detailed design. Indicative costs have been provided are preliminary and are subject to detailed design. The Cost estimate has been based on a contract approach and may not be representative of an internal/Council construction campaign. The cost is subject to Council's approach to resource procurement and expected availability and efficiencies. Costs provided are for construction only and don't include design, Superintendent or CQA costs with these external to contractors works.

9 ACTION PLAN

This Strategic Waste Management Plan (SWMP) provides a series of actions and tasks that support achievement of the Shire's aims and objectives (**Section 1.2**). The action plan has been developed with consideration of the Shire's resources and is appropriate for a rural Shire with a small population.

Tasks for implementation have been grouped into seven categories contained within this Action Plan. The Action Plan includes:

- Findings: A brief description of the findings discovered during the development of the SWMP.
- Issues: The implications that are brought about by the findings.
- Implementation: Key activities required to implement the task.
- Cost: Estimated cost to implement the task and potential funding sources.
- Target: A measurable time-bound target that will be obtained through implementation of the task
- Priority: Prioritised as either short (one – two years), medium (three – five years) or long term (five years +).
- Link to WARR Strategy 2030: Link to the key outcomes of Avoid, Protect, Recover

The seven categories are listed and defined below.

Waste infrastructure and operations

To protect the environment, waste infrastructure and operations need to be managed to comply with better practice standards, DWER licence conditions and the relevant regulations. The use of better practice will assist in minimising the risk of environmental damage or pollution, extending the life of the Shire's landfill and reducing costs. Actions include:

- Implement site layout upgrades and cessation of landfilling at Pingrup waste facility
- Optimise operational life of Nyabing landfill
- Improve legislative compliance at Nyabing landfill
- Develop operational management plans
- Review options for management of waste facilities to address potential LGA liability with operation of unstaffed facilities
- Infrastructure implications of Waste Strategy 2030

Waste services

Through these services the Shire can avoid waste generation, recover more materials from waste, and protect human health and the environment from the impacts of waste. Actions relating to the Shire waste services include:

- Kerbside contract review
- Undertake a bin audit and authorisation project
- Review resource recovery streams
- Consider introduction of a CDS collection point

Data, information and economics

Data and economic information provide the key foundation for effective planning, monitoring, management and decision making in relation to waste management and resource recovery. Actions include:

- Improve waste data collection
- Introduce new Waste Local laws
- Review waste fees and charges

Regional collaboration

Strategies and actions to strengthen regional collaboration and cooperation in the delivery of waste management services and improve waste management practices across the region. Actions include:

- Regional Coordination
- Regional Cooperation

Behaviour Change

Communication and engagement with waste generators underpin many local government waste management activities and is vital to driving behaviour change needed to achieve the objectives and targets of the WA Waste Strategy 2030. Actions include:

- Education and awareness

9.1 WASTE INFRASTRUCTURE AND OPERATIONS

To protect the environment, waste infrastructure and operations need to be managed to comply with DWER licence conditions, other relevant legislation and better practice guidance. The use of better practice for the waste management activities assists in minimising the risk of environmental damage or pollution, extending the life of the Shire's waste facilities and reducing the operational and maintenance costs associated with the facilities. The Waste Avoidance and Resource Recovery Strategy 2030 requires all waste facilities to adopt better practice and environmental protection better practice approaches by 2030. These approaches are yet to be defined.

9.1.1 Implement site layout upgrades and cessation of landfilling at Pingrup waste facility

TARGET: To Implement site layout upgrades and cessation of landfilling at Pingrup waste facility Dec 22 Priority: Medium Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>The current site layout has been developed in an ad hoc manner and presents challenges with its design and layout. Landfilling is currently undertaken on site. The Shire Council has endorsed the transition of the site from landfill to transfer station only by 2024.</p> <p>The Transfer Station shed and drop-off area presents significant safety risk due to falls from the raised platform.</p>	<p>Unstructured planning and development can lead to inefficient operations and reduce the operational life of the site. The development of better practice design and layout at the facility will increase efficiencies, minimise environmental and OHS risks, and increase resource recovery.</p> <p>The site infrastructure and operations must be ready to be operated as a transfer station only by 2024.</p> <p>Asbestos is currently accepted on site and this will be prohibited once operational as a transfer station. Asbestos requiring disposal will need to be brought to Nyabing for disposal by the generator.</p>	<ul style="list-style-type: none"> • That site layout upgrades developed for the site as part of this project are implemented in a timely fashion allowing for the transition from landfill to transfer station only. • That the community is engaged throughout the process and is aware of the changes. • Safety risks are addressed in the Transfer station structure 	<ol style="list-style-type: none"> 1. Develop a schedule of works for implementation of site layout upgrades. 2. Obtain funding for the construction and implementation of site layout upgrades. 3. Implement / construct upgrades required. 4. Operation and maintenance of the facility including development of supporting management plans, and ongoing community education and engagement. (see Action 9.1.5 and Action 9.4.1) 	<p>Cost of site upgrades covered through 21/22 grant funding</p>

9.1.2 Implement site layout upgrades at Nyabing landfill

TARGET: To Implement site layout upgrades at Nyabing landfill by Dec 2022 Priority: HIGH Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>The current site layout has been developed in an ad hoc manner and presents challenges with its design and layout.</p> <p>Landfilling is currently undertaken on site and is not planned or documented.</p> <p>There are no final landforms for the landfill or an understanding of the expected life of the facility.</p> <p>An area of the site was used for a 'bitumen dump' for cleaning asphalt and bitumen trucks, tanks and equipment, using kerosene as a degreaser.</p> <p>The Transfer Station presents significant safety risk due to falls from the raised platform.</p>	<p>Unstructured planning and development can lead to inefficient operations and reduce the operational life of the site. The development of better practice design and layout at the facility will increase efficiencies, minimise environmental and OHS risks, reduce waste to landfill and increase resource recovery.</p> <p>Landfill airspace is a valuable asset for a local government, and as such optimal use of this asset should be planned and documented to ensure best long term outcomes for the Shire.</p> <p>The resulting wastewater emulsion from the bitumen dump would have high levels of kerosene and hydrocarbons and defined as a 'controlled waste' under the Environmental Protection (Controlled Waste) Regulations 2004 and subject to strict controls.</p>	<ul style="list-style-type: none"> • That site layout upgrades developed for this project are implemented and the community is engaged throughout the process. • That cell excavation and filling continue in line with the proposed final landforms developed for this project. • The use of the site as a bitumen dump ceases and/or the bitumen wash down water is collected and transported via a controlled waste carrier to an approved facility for treatment and disposal. 	<ol style="list-style-type: none"> 1. Develop a schedule of works for the implementation of site layout upgrades. 2. Obtain funding for construction and/or implementation of site layout upgrades. 3. Implement / construct upgrades required. 4. Operation and maintenance of the facility including development of supporting management plans (See Action 9.1.3), staff training, community education and engagement. 	<p>Cost of site upgrades covered through 21/22 grant funding</p>

9.1.3 Optimise operational life of Nyabing landfill

TARGET: Actions to optimise operational life at the Nyabing landfill are reviewed and implemented by Dec 2024 Priority: HIGH Link to WARR Strategy 2030: Protect				
Findings	Issues	Recommendations	Implementation	Cost
Based on the report modelling, the results suggest the most economic option is for the Shire to continue utilise landfill as the preferred waste disposal option and maximise the landfill airspace availability to prolong the life of the site as much as practicable.	Increasing the landfill airspace availability at Nyabing landfill will postpone the increased financial implications of landfill closure and the transfer of all waste for disposal outside of the Shire.	<p>To optimise the landfill airspace as far as practicable. Options include:</p> <ul style="list-style-type: none"> Increasing resource recovery options to minimise waste to landfill Undertaking a cost benefit analysis to redirect kerbside trucks to Katanning. Whilst this waste will attract a gate fee, the airspace consumption savings will see an extension to the landfill life, and in turn delaying increased waste disposal costs for the Shire. Adopting best practice operations to maximise the airspace for waste disposal. Liaise with surrounding Shires for bulk pick up runs of recoverable material to ensure these waste streams do not need to be disposed on site, occupying airspace. 	<ol style="list-style-type: none"> Investigate resource recovery options for the Shire (Action 9.2.3) Undertake a cost benefit analysis to redirect kerbside trucks to Katanning for disposal. Investigate best practice operations that can be implemented on site to conserve airspace Liaison with other Shires to coordinate pickup of recoverable material (used oil, metal, drummuster containers) 	Actions can be undertaken by existing resources

9.1.4 Improve legislative compliance at Nyabing landfill

TARGET: Nyabing Waste Facility is compliant with the Environmental Protection (Rural Landfill) Regulations by Dec 2022

Priority: HIGH **Link to WARR Strategy 2030:** Protect

Findings	Issues	Recommendations	Implementation	Cost
<p>An audit of the Nyabing waste facility revealed numerous areas of non-compliance in relation to the Environmental Protection (Rural Landfill) Regulations 2002 including:</p> <ul style="list-style-type: none"> • Waste cover • Stormwater management • Asbestos disposal • Fire management • Post Closure Management Plans (PCMP) 	<p>All rural landfills are required by law to operate in line with the regulations and penalties can apply for non-compliance. The regulations specify minimum standards to protect the environment and public health, failure of which to meet increases risks to the environment and the community.</p>	<p>The Shire implement changes to operational practices and procedures to meet the requirements of the regulations.</p> <p>The Shire maintain compliance with the EP, Rural Landfill Regulations 2002.</p>	<p>The following changes are to be implemented:</p> <ul style="list-style-type: none"> • A waste operator is to undertake pushing up, compaction and covering of waste fortnightly • Bunds are to be constructed around new waste cells to divert stormwater from contacting waste within cell • Development of an operational management plan for the Nyabing site to document the required practices to be implemented at the landfill in line with regulatory requirements • Submit approval request from the Director General of DWER (i.e. the CEO) to authorise the acceptance of asbestos containing material (ACM) for disposal at Nyabing • Development of PCMP to meet requirements of Regulations and submitted to DWER 	<p>See section 5.3</p> <p>Total cost for compliance with the <i>Environmental Protection (Rural Landfill) Regulations</i> and other regulatory requirements is approximately \$30,000¹³. This represents an increase in costs annually by approximately \$9,000.</p>

¹³ Does not include unknown costs associated with disposal of bitumen washwater or degassing of whitegoods

9.1.5 Develop Operational Management Plans

TARGET: Operational practices and requirements for site management are documented by December 2023. Priority: HIGH Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>There was a lack of a documented Operational Management Plan (OMP) and roles and responsibilities for staff at the waste sites.</p> <p>The EP Rural Landfill Regulations require documented processes for:</p> <ul style="list-style-type: none"> • Greenwaste burning • Asbestos disposal • Fire management 	<p>Inefficient operations result in an increase in time and costs. The operational staff require a clear plan to work towards relating to waste operations. Documented plans and procedures ensure business continuity if key staff leave the organisation.</p> <p>Site management plans are effectively the 'rule book' governing all activities at the site. They are 'living' documents that are essential to ensure the safety of people and the environment, and the profitability of the operation (whether expressed in financial or other terms). They should be accessible and known to all staff and be reviewed on a regular basis to ensure that they remain relevant and effective.</p>	<p>The Nyabing Landfill and Pingrup Transfer Station should have an operational plan that is updated every five years. The detail required should be appropriate to the size and complexity of the site.</p> <p>The OMP will facilitate the safe and efficient operation of the Facility and ensure that the environment and the surrounding community is safeguarded from pollution and off-site effects. It will describe the level of operational performance expected and practices for managing and operating the Facility. An OMP can address the following:</p> <ul style="list-style-type: none"> • Compliance requirements; • Acceptable waste types and quantities; • Waste acceptance procedures • Facility design and site layout; • Landfill operational requirements; • Cell locations and fill sequence planning; • Recycling and resource recovery measures and procedures • Environmental management measures; • Environmental monitoring program; • Occupational Health and Safety; • Site closure and rehabilitation; • Emergency management and response procedures; • Record keeping and reporting procedures (internally and externally). 	<p>A review of the current operations should be undertaken to produce an accurate operational plan for the Shire waste management operations.</p> <p>The plan will provide an operational roadmap for the future requirements that will enable the Shires to pro-actively manage the site effectively and efficiently.</p> <p>Operational plans should be updated every five years to reflect changes in the site, legislation, environmental and social factors.</p>	<p>The production of an Operational Management for Nyabing is included in costs for Action 9.1.4. Costs for development of an OMP for Pingrup would be approximately \$10K - \$15K by a consultant or alternatively, produced in house.</p>

9.1.6 Review options for management of waste facilities to address potential risks from unstaffed facility

<p style="text-align: center;">TARGET: The management options for the Shires waste sites have been reviewed and endorsed by Dec 2024. Priority: HIGH Link to WARR Strategy 2030: Recover, Protect</p>				
Findings	Issues	Recommendations	Implementation	Cost
<p>Both waste sites within the Shire are unstaffed.</p> <p>Waste is not monitored for acceptance and no data is recorded on volumes.</p> <p>Swipe card access data is available of customer access trends and presentation rates.</p> <p>Both facilities have sheds close to entrance gates that could be used as a gatehouse and office for site staff.</p>	<p>Unstaffed sites present numerous operational challenges including:</p> <ul style="list-style-type: none"> • Wind-blown rubbish offsite, requiring additional resources to clean the surrounding area • Dumping of waste external to bins/or in non-designated areas of the site which results in staff needing to mobilise additional equipment to remove materials and clean area, resulting in increased costs. Materials often need to be manually handled. • Dumping of bulky and problematic waste resulting in overfull bins and protruding waste causing difficulties in transportation. This can result in increased costs to service and/ or mobilise additional equipment to remove materials from the bins to make them safe for transporting. • Dumping of prohibited and dangerous waste: e.g., chemicals, pesticides, asbestos. Asbestos waste dumped at facilities causes health risks for staff and other station users it also results in the need for additional costs to remove and transport the waste in the correct manner. <p>They also present significant risks to the Shire including:</p> <ul style="list-style-type: none"> • public liability claims from potential accidents and injuries, • environmental contamination and remediation costs associated with uncontrolled acceptance of dangerous and hazardous waste, • workers compensation claims from staff associated with exposures and risks in working in these sites, • Increased fire risks. <p>Without any monitoring of incoming waste loads to the facilities, there is also no waste data collection. (see action 9.3.1). Waste data is critical to providing the key foundation for effective planning, monitoring, management and decision making in relation to waste management and resource recovery within the Shire.</p>	<p>Undertake a feasibility assessment for staffing of one or both facilities commensurate with the level of usage to mitigate risks and improve site operations and control.</p>	<p>1. Feasibility assessment to include:</p> <ul style="list-style-type: none"> • Benchmark service provision type, structure and costs (i.e., staffed facilities, opened 2.5 days per week) with surrounding Shires. • Undertake a review of customer access trends and presentation rates from swipe cards to ascertain preferred days and times for potential opening. • Consider options for introducing gate fees and/or tip pass system (see Action 9.3.3) to recoup staffing costs. • Outline pros vs cons for staffing the facility • Determine a preferred approach (note an approach maybe to remain unstaffed) <p>2. Council endorsement of preferred approach</p> <p>3. Implement preferred approach</p>	<p>Action can be undertaken internally or alternatively via external consultant. Costs for a consultant to undertake a review approx. \$10K - \$15K.</p>

9.1.7 Infrastructure implications of Waste Strategy 2030

TARGET: To review services provided with better practice approaches/guidelines within 12 months of release. Priority: LOW Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>A drop off service for recovered material (metal, waste oil, drummuster) is currently provided at the Shire landfill. Material collected through the drop off services is minimal, contributing to the Shires low recovery rate. Waste Authority better practice drop off guidelines were due to be released in 2021 and should be expected within 2022.</p>	<p>Low recovery rates for materials contributes to increased consumption of Shire landfill airspace.</p> <p>Disposal of recyclable material negates the environmental benefits that can be gained from the use of recyclable material over virgin sources.</p> <p>The Waste Strategy 2030 requires: <i>all waste to be managed and/or disposed using better practice approaches by 2030.</i></p>	<p>Review and align services provided with better practice guidelines once released.</p>	<p>Unknown at this time given the better practice guidelines are yet to be released.</p>	<p>Unknown at this time given the better practice guidelines are yet to be released.</p>
<p>The WARR Action plan (Action 1.11) indicates that <i>'in consultation with relevant State Government agencies, local government and communities, develop pragmatic guidelines for the design, maintenance and management of waste services and infrastructure in regional/remote communities, including Aboriginal communities.'</i></p> <p>Timing short – to medium term.</p>	<p>This will impact on how the Shire's waste facilities are managed.</p>	<p>Review and align services provided with better practice guidelines once released.</p> <p>Should there be significant increases in minimum requirements for landfills the 'tipping point' for closure of the landfill and transfer of waste to Katanning landfill be revisited.</p>		

9.2 WASTE SERVICES

The Shire provides a range of municipal waste services to domestic, commercial and industrial sectors within the community. Through these services the Shire can avoid waste generation, recover more materials from waste, and protect human health and the environment from the impacts of waste. Maximising the efficiency and minimising the costs of these services also ensures the services are delivered with minimal impacts on Shire funding reserves. Actions relating to the Shire's waste services are contained in the following tables.

9.2.1 Kerbside services contract review

TARGET: The kerbside contract provisions are reviewed and a new contract developed for tender by Dec 2022. Priority: HIGH Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>The kerbside collection service (waste and recycling) is provided under contract. Recycling bins are owned by the contractor and waste bins owned by the Shire. Kerbside waste MGB lids are do not meet the Australian Standard (AS).</p> <p>Issues with current contracts are:</p> <ul style="list-style-type: none"> • Lack of current contract documentation for services • Contracts appear to roll over from year to year with an increase in their costs of CPI. • Both contractors are being paid by bin numbers and not lifts actually made, thereby increasing costs to the Shire. • There are no arrangements for share in profits from collection of CDS containers by recycling provider. • The small population size and distance from service providers increases the unit rate of collection. • There is no data recorded or provided on tonnage collected each week by kerbside waste provider impacting on DWER mandatory waste data reporting accuracy. <p>There are two major providers in the region servicing LGAs in various formats. Most collection contracts appear to be individually procured.</p>	<p>The Shire is at risk of paying more for collection contracts than required through lack of documented records and lack of up to date and contemporary contract provisions.</p> <p>The Shire also risks legal challenge and issues with dispute resolution for contracted services where no contract documentation can be found, Review and planning for a new contract will be required.</p>	<p>The Shire should develop a new contract based on contemporary and better practice contract provisions and retender collection services.</p> <p>The content of the new contract should specify options that allow for provision of the following within the life of the contract:</p> <ul style="list-style-type: none"> • Paid by bins lifted not residential service numbers • Incorporation of new AS requirements for waste bin (i.e., red bin lids) to ensure consistency throughout the state • Improved education and awareness requirements of what can be recycled and how to recycle correctly to minimise contamination rates • Potential for change in disposal location within the life of the contract (i.e. transport to Katanning as specified in action 9.1.3) • Arrangements for share in profits from collection of CDS containers by recycling provider pursuant with the Waste Avoidance and Resource Recovery (Container Deposit Scheme) Regulations 2019. (Local Government Sharing Protocol (dwer.wa.gov.au)) • Tonnages collected each week are to be recorded and provided in monthly invoice • The Shire should implement actions to take advantage of the economy of scale offered by regional procurement. Regional procurement does not require a single contract to be signed by all Councils, rather it involves similar services being advertised as part of the same package with a request made to tender applicants that they also provide pricing based on being awarded contracts for all Councils. 	<ol style="list-style-type: none"> 1. Review and develop new contract provisions. 2. Investigate options for regional procurement. 3. Tender for provision of services. 	<p>Review of current contracts undertaken as part of this project.</p> <p>Costs associated with procurement of services absorbed as part of Shire operational costs.</p>

9.2.2 Undertake a kerbside MGB collection audit and authorisation project

TARGET: A kerbside MGB audit is undertaken to align with the development of the new a kerbside collection contract

Priority: HIGH **Link to WARR Strategy 2030:** Recover, Protect

Findings	Issues	Recommendations	Implementation	Cost
<ul style="list-style-type: none"> • Currently Shire records for bin services do not match contracted provider records. • The Shire is currently charged for collection of 175 waste bins weekly. Shire records indicate 95 bins are authorised for collection. This represents a difference of 80 bins. • The Shire is currently charged for collection of 132 recycling bins weekly. Shire records indicate 117 bins (including public place bins) are authorised for collection. • Waste and recycling bin numbers and locations for public places and Shire facilities is not documented. • Some Shire public place waste bins are advised to be 120L MGBs. • There is no method to determine whether commercial and domestic 240L bins placed kerbside for collection are authorised (paid) services for collection. 	<p>An accurate data set is required to inform new contract provisions.</p> <p>The Shire appears to be paying for more services than bins in the Shire.</p> <p>There is potential for the Shire for additional bins to put kerbside and collected by the contractor which have not been paid for and as such authorised to receive the service.</p>	<ul style="list-style-type: none"> • A bin audit and subsequent 'bin sticking' project to ensure kerbside bins are authorised and identified for collection will assist the Shire to manage this issue. This involves a bin audit to ensure Shire service records match bins presented. Following an audit, bin stickers are issued (separate colours for commercial and residential) which provide clear indication to the contractor as to which bins are authorised for collection and on which day. • The Shire should consider changing 120L public place MGBs to 240L MGBs as this will reduce collection charges as less bins will be required for the same volume of waste. • The Shire should incorporate the outcomes of this action into the kerbside collection contract specifications (bin numbers, locations, servicing frequency, authorisation for collection requirements). 	<p>A bin audit is undertaken to document bin numbers and locations to inform Shire records.</p> <p>Following the audit, bin stickers are issued (separate colours for commercial and residential) which provide clear indication to the contractor as to which bins are authorised for collection.</p> <p>This project should be undertaken prior to development of the new kerbside contracts to accurately inform the contract provisions.</p>	<p>This can be undertaken in house or using local labour with project direction and management provided by the Shire.</p> <p>Other costs will be associated with the design and manufacture of suitable stickers.</p>

9.2.3 Review Resource Recovery streams

TARGET: Potential resource recovery streams for the Shire have been reviewed by Dec 2024 Priority: HIGH Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>The Shire has a very low recovery rate and is below the 2020 Waste Strategy target for MSW recovery.</p> <p>The Shire is experiencing difficulty at having scrap metal collected. Given Shire's distance from material collectors and reprocessors increasing transport costs and the low population and potential volumes of materials to be collected, recycling is generally a cost negative exercise for the Shire.</p> <p>There is a lack of developed end markets for recyclable material in the Shire.</p>	<p>The minimisation of waste disposal provides a number of benefits to the Shires and the community. Reducing the quantity of waste landfilled preserves available airspace and increases the operational life of the landfills. It also reduces the pollution risk from the facilities, while the recycling of materials preserves resources and is aligned with targets in the State's Waste Strategy</p> <p>Given the isolation, population size and volumes generated within the Shire there is restricted ability to develop appropriate local markets for recovered material streams to offset costs associated with collection and processing.</p>	<p>The Shire should focus on materials for recovery that demonstrate one or more of the various qualities:</p> <ul style="list-style-type: none"> • have a local market demand • are of high value that can offset the transportation cost (e.g., metals) • are hazardous and produce significant impacts if disposed of in unlined landfills (HHW, car batteries, e-waste etc.) • are problematic to dispose and consume significant quantities of airspace (tyres etc.) 	<p>The Shire review of recycling options and approaches in line with Section 6.</p>	<p>Process can be completed in-house, so costs relate to time required by staff to complete assessment and analysis.</p> <p>Or using a specialist consultant, \$15k - \$25 to analyse the data and complete a market assessment.</p>

9.2.4 CDS collection point

TARGET: The Shire has installed a CDS collection point by Dec 2022 Priority: HIGH Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>There is potentially over 400,000 beverage containers generated in the Shire per year¹⁴. Much of this material is landfilled or littered.</p> <p>The State Government is introducing a Container Deposit Scheme (CDS) to commence in early 2020.</p> <p>The CDS scheme should assist to increase materials recovery in the Shire.</p> <p>There is no CDS collection point in the Shire. Katanning operate a refund point for CDS materials (Katanning Environmental Container Cash In).</p>	<p>Discarded beverage containers create environmental risks to wildlife. Broken glass and metal cans present an injury risk to people and animals. Litter also adversely affects amenity and enjoyment of the environment and incurs significant clean-up costs for local governments and other land managers.</p> <p>Resources are lost when recyclable material ends up in landfill.</p>	<p>The Shire considers the introduction of a CDS container collection point at the Shire waste facilities to increase material recovery and decrease the amount of littered material.</p> <p>The containers will need to be transported by the Shire to the Katanning refund point as required.</p> <p>Refunds obtained can be used to offset Shire waste costs or alternatively donated to a nominated cause.</p>	<ol style="list-style-type: none"> 1. Install collection cages 2. Advice to community 	<p>Purchase of collection container/cages if required.</p> <p>Marketing can be completed in-house, so costs relate to time required by staff.</p> <p>Staff time to transport containers as required.</p>

¹⁴ Based on the Beverage Industry estimates of an average of two containers are generated per person per day and Shire population (559).

9.3 DATA, INFORMATION AND ECONOMICS

Data and information provide the key foundation for effective planning, monitoring, economic management and decision making in relation to waste management and resource recovery within the City. The City has access to a wide range of data and information to inform decision making, however there is potential to improve data activities further to ensure that any actions implemented as part of this plan are based on complete and correct data and assist with the evaluation of the actions.

9.3.1 Waste Data

TARGET: The Shire has appropriate systems to improve waste data collection by Dec 2022. Priority: HIGH Link to WARR Strategy 2030: Recover, Protect				
Findings	Issues	Recommendations	Implementation	Cost
<p>There is a lack data on tonnage of waste disposed each year by the Shire and the amount that is diverted.</p> <p>The waste facilities are unstaffed therefore waste data is not collected.</p>	<p>A lack of data on incoming waste types and producers creates difficulty in analysing waste volumes, types and flows needed to underpin site development and landfill airspace consumption, feasibility of recycling initiatives and to set, monitor and manage costs for waste services provided.</p> <p>With no material type data, the actual tonnage that could be diverted and processed is unknown.</p> <p>The lack of accurate waste data makes comparison and collation of the region's data problematic and creates difficulty in analysing the data needed to underpin any regional initiatives.</p>	<ul style="list-style-type: none"> Should the Shire decide to staff the facilities as per action 9.1.6, that options for recording incoming waste loads be investigated and implemented. Improve kerbside contract provisions to include requirement for waste loads to be routinely weighed and tonnages reported to the Shire. 	<ol style="list-style-type: none"> Investigate options for recording of waste data from waste sites (e.g., excel spreadsheet or other waste software systems (i.e cooee). Implement chosen option. Include provisions within new kerbside contracts for weighing of loads at an interval as determined appropriate by the Shire. 	<p>Internal staff time will be involved in developing this action.</p> <p>Costs associated with recording of waste loads will be covered as part of site staffing costs.</p>

9.3.2 Waste Local Law

TARGET: The Shire has appropriate local laws to govern waste management practices by Dec 2025 Priority: Medium Link to WARR Strategy 2030: Protect				
Findings	Issues	Recommendations	Implementation	Cost
The Shire does not have a Model Waste Local Laws.	Waste collection and removal from residential property can now be regulated under a Waste Local Law enacted under the Waste Avoidance and Resource Recovery Act (WARR) which came into force on 1 July 2008. A waste local law contains greatly improved enforcement provisions not available for local laws previously made under the Health Act 1911.	Adopt a waste local law based on WALGA waste local law template to improve regulation and enforcement of waste and refuse.	Commence the process of drafting a waste local law under the WARR Act.	Internal staff time will be involved in developing this action.

9.3.3 Waste fees and charges

TARGET: The Shire has reviewed options for waste fees and charges by Dec 2024 Priority: Medium Link to WARR Strategy 2030: Avoid, Recover				
Findings	Issues	Recommendations	Implementation	Cost
<p>Currently waste disposal at the Shires facilities is free.</p> <p>The Site access records analysed for this project indicate:</p> <ul style="list-style-type: none"> • that that less than 50% of the Shire ratepayers use the waste facilities provided. • Approx. four ratepayers accounted for 15% of all visits in Nyabing and 30% of all visits in Pingrup. Assuming these visits correspond with waste to be disposed it could be concluded that these ratepayers account for a similar percentage of waste disposed annually and needing to be managed by the Shire. • Typically most of the 50% of residents that use the waste sites, visit them every 2 – 4 weeks. • The full cost of waste disposal and airspace construction has not been calculated. • Kerbside recycling waste charge is below breakeven cost per pick up by 0.26 cents per bin pick up. • The kerbside waste charge covers collection costs only and does not include a cost for management of that waste for disposal by the Shire. 	<p>Current costs incurred for handling and management of waste disposed within the Shire is being covered through general rates. This means each ratepayer is charged regardless of amount disposed or usage of the Shires waste facilities. This is inequitable as people producing the waste do not generally pay for its disposal nor does it encourage people to avoid waste generation or recycle waste as they are charged the same regardless of their individual actions taken.</p> <p>Free waste disposal does not encourage a waste avoidance culture as defined as a key headline outcome required within the Waste Strategy 2030.</p>	<p>Consider options to increase the equity of waste charges within the Shire being covered by those that generate the waste.</p> <p>In order to do this the full cost of waste disposal and airspace construction will need to be calculated (per tonne) that will provide a base position for the Shire to inform charges to community.</p> <p>Options to increase equity could include:</p> <ul style="list-style-type: none"> • introducing gate fees and a tip pass system to increase the equity of waste costs being covered by those that generate the waste. This will require the facility to be staffed, however returns from gate fees can offset costs • Providing free access up to a limited number of times, after that point customers are charging for use of the facility (annually based on access records) • Increasing kerbside waste charges to cover costs of disposal of that waste by the generator and not the general population. 	<ol style="list-style-type: none"> 1. Establish the full cost of waste disposal and airspace construction (per tonne) 2. Undertake a feasibility and options assessment to increase equity of waste charges within the Shire. The assessment can include: <ul style="list-style-type: none"> • Benchmarking other LGAs • Review and analysis of options • Outline pros vs cons for each option • Determine a preferred approach 3. Determine charge structure based on feasibility outcomes 4. Council approval 5. Implement outcome 	<p>Can be undertaken internally or by consultant approx. costs \$10K - \$15K dependent on number of options analysed.</p>

9.4 BEHAVIOUR CHANGE PROGRAMS

Communication and engagement with waste generators underpin many local government waste management activities and is vital to driving behaviour change needed to achieve the objectives and targets of the Waste Strategy. The Waste Authority define behaviour change programs and initiatives as activities that increase awareness, skills and knowledge, provide consistent messaging, help people to use waste infrastructure; and encourage the adoption of specific, positive waste behaviours and attitudes.

9.4.1 Education and awareness

TARGET The Shire implements ongoing waste engagement and education Priority: HIGH Link to WARR Strategy 2030: Avoid, Protect, Recover				
Findings	Issues	Recommendations	Implementation	Cost
<p>Waste education within the Shire is implemented on an adhoc basis in response to problems and issues encountered. There is no specific education program or resources to undertake this task. The Shire's recovery rates are low.</p>	<p>There is a need to educate and involve the community (residential and commercial) about waste management and resource recovery in line with the WA Waste Strategy 2030 objectives and outcomes.</p> <p>The Shire should focus on effectively communicating why it is important to act in more sustainable ways and supported with measures of success.</p> <p>Unless the community understand the reasons for their actions, and can see genuine and attainable results, there is little motivation for changes in behaviour.</p> <p>Waste generators also play a significant role in determining resource recovery rates achieved by the Shire. This will be influenced through the participation in recycling services provided and the amount of contamination within collected materials. Education, engagement and positive promotion of services will play a key role in influencing the Shire's performance.</p>	<p>Develop and implement a method suitable to the Shire to enable ongoing engagement and education with the community on waste and recycling.</p> <p>An education levy added to kerbside service fees could provide a specific fund for education and awareness activities.</p>	<p>The Waste Authority is identified within the WA Waste Strategy 2030 as responsible for developing and implementing strategies and programs to improve communication, engagement and education on waste avoidance behaviours and resource recovery state-wide. Some of these measures could be used in the Shire including the 'Own your impact' program and the 'WasteSorted' toolkit.</p>	<p>Staff time and resources to provide ongoing engagement and education to the extent determined appropriate by the Shire.</p> <p>An education levy could be used to offset the costs associated with this action.</p>

9.5 REGIONAL EFFICIENCIES

The concept of regionalisation is well recognised to deliver successful waste management services. Regional waste infrastructure projects can create better efficiencies and economies of scale. Regionalisation is then seen as the key determining factor for the viability of the overall resource recovery services for the region.

9.5.1 Regional Coordination

Findings	Issues	Recommendation	Implementation	Cost
<p>TARGET: The Shire has considered joining the Southern VROC by Dec 2022.</p> <p>Priority: HIGH Link to WARR Strategy 2030: Avoid, Recover, Protect</p>				
<p>There is appetite for combined approaches to waste management within the Region.</p> <p>Whilst there have been numerous reports and recommendations in the past 10 years, no major changes in service delivery have eventuated.</p> <p>The Southern Link Voluntary Regional Organisation of Councils (VROC) involving the Shires of Broomehill-Tambellup, Cranbrook, Gnowangerup, Katanning, Kojonup and Plantagenet is currently investigating regional opportunities for waste including:</p> <ul style="list-style-type: none"> • the recycling of household hazardous waste and e-waste • Developing opportunities for combined waste management for collection services, transfer station management and landfill operations <p>The Shire is not currently part of this group.</p>	<p>A lack of regional collaboration on waste management can:</p> <ul style="list-style-type: none"> • Increase costs of services due to the limited economies of scale achieved. • Result in limited information sharing and problem solving. • Limits access to regional funding streams. • Restrict avenues for recycling streams 	<p>Consider joining the Southern Link VROC to work collaboratively with other local governments in the region to share knowledge and resources for mutually beneficial outcomes.</p>	<p>Shire to approach the Southern Link VROC to become a member of the group.</p>	<p>The costs relate to internal Shire resources for the additional time spent progressing and participating in the group.</p> <p>The cost of individual waste projects will depend on each project's scope.</p>

9.5.2 Regional Cooperation

Findings	Issues	Recommendation	Implementation	Cost
TARGET: To establish the Officers group and maintain regular meetings by Dec 2022. Priority: HIGH Link to WARR Strategy 2030: Avoid, Recover, Protect				
Shire officers responsible for waste management are not dedicated waste professionals but are also responsible for a wide range of other duties.	<p>Most of the officers are only able to devote a relatively small portion of their time to waste.</p> <p>This is problematic considering the industry's tightening environmental regulation and increasing community expectations for waste management.</p> <p>Demands on staff time for waste management activities will continue to grow as the expectation and need to provide more environmentally responsible waste management solutions increases.</p>	<p>Establish an Officers Group that meets regularly (at least quarterly) to discuss waste management and resource recovery matters.</p> <p>Hold an annual face to face meeting and include a tour of a different facilities within the region.</p> <p>A regional group will require an initial additional effort from the member LGAs, the long-term benefits would include improved efficiency, collaboration and delivery of waste services across the region. This is an opportunity which, if actioned, could assist in reducing capital expenditure and increase the economic feasibility of recycling and recovery programs in the region.</p> <p>This group could operate as a subset of the Southern Link VROC (Action 9.4.1)</p>	<ol style="list-style-type: none"> 1. Seek interest and approval from Council for the Shire to lead the establishment and ongoing operation of a waste officers advisory group. 2. Obtain interest from surrounding LGAs to participate in group. 3. Formulate group charter and objectives. 4. Form group and commence regular meetings. Meetings can be undertaken in person or via teleconference with agendas particularly focussing on the following: <ul style="list-style-type: none"> • Identifying potential regional projects/collaboration opportunities • Progressing regional initiatives • Sharing experiences and solutions of environmental compliance issues with waste sites • Planning waste management goods and services procurement • Regional waste education and engagement opportunities 	The costs relate to internal Shire resources and the additional time spent preparing, disseminating information and holding additional meetings.

10 IMPLEMENTATION, MONITORING AND REVIEW

10.1 IMPLEMENTATION PLAN

This plan is focused on the next five years. A basic implementation schedule for the recommended actions and estimated budget costs is contained in Error! Reference source not found..

The schedule should be expanded and modified by the Shire, particularly as the more complex recommendations may require individual project plans.

10.2 MONITORING AND REVIEW

Ideally, progression of the plan should form part of the Shires Strategic Community Plan, with actions being incorporated into annual Corporate Business Plan and reported annually to the community.

In addition to monitoring of actions, the plan should be treated as a dynamic document that is reviewed and amended periodically to ensure that it remains contemporary and relevant to emerging waste management issues and legislation. The Shire should complete updates of the plan on a five yearly basis, or more frequently if required.

Table 10.1 Summary of actions and costs

#	Task Title	2022	2023	2024	2025	2026	2026+	Notes/costs
	Priority	Short term	Med term	Long term				
9.1	Waste Infrastructure and Operations							
9.1.1	Implement site layout upgrades and cessation of landfill at Pingrup waste facility	X	X	X				Upgrades covered through grant funding
9.1.2	Implement site layout upgrades at Nyabing landfill	X	X					Upgrades covered through grant funding
9.1.3	Optimise operational life at Nyabing landfill	X	X	X	X	X	X	
9.1.4	Improve legislative compliance at Nyabing landfill	X						Approx \$50,000
9.1.5	Develop operational management plans for Pingrup	X	X					Costs for Nyabing OMP included in action 9.1.4. Costs for Pingrup \$10k - \$15k.
9.1.6	Review options for site management	X						Produce internally or by consultant would be in the range of \$10k-\$15k.
9.1.7	Implications of infrastructure better practice guidelines							Timing and costs unknown at this point
9.2	Waste Services							
9.2.1	Undertake a kerbside services contract review	X						Review of contract undertaken as part of this project. Procurement of services undertaken by internal resources.
9.2.3	Undertake a kerbside MGB audit and authorisation project	X						Costs associated with design and manufacture of stickers. Internal resourcing of audit will be required.
9.2.4	Review resource recovery streams			X				Undertaken internally or by consultant in the of \$12k - \$18k
9.2.5	Develop a CDS collection point/s within the Shire		X					Costs associated with purchase of collection container/cages if required (approx. \$2000). Staff time to transport containers as reqd.
9.3	Data, information and economics							
9.3.1	Improve waste data	X	X	X	X	X	X	Initial action then implementation of outcome
9.3.2	Implement new waste local laws			X				Internal staff time will be involved in developing this action
9.3.3	Review waste fees and charges			X				Can be undertaken internally or by consultant approx. costs \$8 -\$12K dependent on number of options analysed
9.3.4	Improve waste education and awareness	X	X	X	X	X	X	Timing is ongoing, costs associated with internal resourcing of action
9.4	Regional efficiencies							
9.4.1	Improve regional coordination of services	X	X	X	X	X	X	Timing is ongoing, costs associated with resourcing of actions
9.4.2	Improve regional cooperation on waste services	X	X	X	X	X	X	Timing is ongoing, costs associated with resourcing of actions

APPENDIX A - AUDIT OUTCOMES

Requirement	Better Practice ¹⁵	Rural Landfill Regs	Nyabing Landfill	Pingrup Landfill
Siting	Provide separation distances as follow: <ul style="list-style-type: none"> • 2m between waste and watertable • 100 metres from surface waters. • 500 metres from building or structures. • 1500 metres from an aerodrome for piston-engine propeller-driven aircraft. • 3000 metres from an aerodrome for jet aircraft¹. 	Regulation 9 Separation of waste from water and site boundary <ul style="list-style-type: none"> • 35 metres from the fence surrounding the site; • 100 metres of any surface water body at the site; or • 3mtres of the highest level of the water table aquifer at the site. 	Comply Depth to groundwater advised to be approx. 6mbgl	Groundwater reporting very close to surface level (.5m – 3mbgl) Salt lake located on site
Site Layout	<ul style="list-style-type: none"> • Site layout and filling sequence planned to ensure that landfill cells are open for the minimum period of time and site operations are optimised. • Minimisation of public access to the tipping face and, where appropriate, assurance that waste received at the landfill can be vetted and recycled. 	No requirement	Public access to tipping face Unstaffed site as such waste not able to be vetted No cell sequence planning Layout currently under review	Public access to tipping face Unstaffed site as such waste not able to be vetted No cell sequence planning Layout currently under review
Water Management	<ul style="list-style-type: none"> • Segregation of stormwater, leachate and groundwater. • Management and treatment of leachate to: <ul style="list-style-type: none"> - Prevent it from escaping into surface waters or groundwater - Prevent offensive odours onsite and; - Minimise human contact with the leachate 	Regulation 10 Stormwater management <ul style="list-style-type: none"> • it is diverted from areas of the site where there is waste; and • water that has come into contact with waste is to be diverted into a sump on the site, or otherwise retained on the site. 	No stormwater diversion in place Water in contact with waste not diverted to a sump	No stormwater diversion in place Groundwater possibly in direct contact with waste given high groundwater levels on site Water in contact with waste not diverted to a sump

¹⁵ From EPA Victoria (788.3: Siting, design, operation and rehabilitation of landfills)

Dust	<ul style="list-style-type: none"> No dust beyond boundary Sealed or treated roads Dust Management Plan 	Regulation 11 Dust Suppression The occupier of a landfill site must ensure that no visible dust escapes from the landfill site.	Comply	Comply
Odour	<ul style="list-style-type: none"> Complaints records and procedure for complaints implemented. Odour management plan 	No requirement	Comply	Comply
Noise	<ul style="list-style-type: none"> Compliance with the Environmental Protection (Noise) Regulations 1997. 	No requirement	Comply	Comply
Security and Fencing	Design fencing to minimise unauthorised access to the site	Regulation 7 Fencing of landfill site The occupier of a landfill site must ensure that there is a fence around the boundary of the site which is an effective barrier to cattle, horses and other stock.	Comply	Comply
Waste Minimisation	To divert suitable wastes from landfill		Site unstaffed as such limited diversion of waste from landfill Limited options for collection of diverted and stockpiled waste streams for recycling	
Waste Acceptance	<ul style="list-style-type: none"> Ensure non conforming waste is not disposed of at the landfill site. Provide signs advising the types of waste allowed at the site. Implement a procedure to deal with the dumping of non-conforming waste at the landfill site. 	Regulation 15 Approval for disposal at landfill site of clinical waste or material containing asbestos Site must be approved for disposal of asbestos waste	Unable to assess as no record of original registration notification can be found by DWER or the Shire Some site signage provided – however could be improved (front gate to provide a sign advising of what can be disposed of on site)	Unable to assess as no record of original registration notification can be found by DWER or the Shire Some site signage provided – however could be improved (front gate to provide a sign advising of what can be disposed of on site)
Waste Placement	<ul style="list-style-type: none"> To place waste in a manner that is mechanically stable and that controls litter and birds and that maximises the degree of compaction. 	Regulation 5 Tipping Area Must be not greater than (a) 30 metres in length; and (b) 2 metres above ground level in height.	Comply No compaction except for closure works No cover except for end of cell life	Comply No compaction except for closure works No cover except for end of cell life

Waste Cover	<ul style="list-style-type: none"> • Covering of the waste, at least daily, with soil or another approved cover material for all sites that accept putrescible waste and maintain the cover. • Close cracks in old exposed cover layers to contain landfill gas and odour. • No use of acid sulphate soil as daily cover • 	<p>Regulation 6 Covering of Waste Waste must be covered:</p> <ul style="list-style-type: none"> • Less than 500 tonnes -Monthly • Between 500 -2000 tonnes Fortnightly • Between 2000 -5 000 tonnes Weekly • with a dense, inert and incombustible material, or such other material as is approved • totally covered, so that no waste is left exposed. • The occupier must ensure that there is enough cover material at any time stored and readily available for the tipping area to be covered at least twice. 	Waste only covered at end of cell life (up to 18 months)	Waste only covered at end of cell life (up to 36 months)
		<p>Regulation 16 Disposal of clinical waste and material containing asbestos</p> <ul style="list-style-type: none"> • disposed of under the occupiers personal supervision or the personal supervision of a person nominated by the occupier. • covered as soon as is practicable after its disposal with a dense, inert and incombustible material; and to a depth of at least one metre. • an accurate and up to date register of clinical waste and material containing asbestos disposed of at the landfill site, a plan showing the position of clinical waste and material containing asbestos disposed of at the landfill site. 	<p>Generally residents contact Shire if needing to dispose of asbestos and operator meets on site – hole dug, and buried straight away</p> <p>Some previous areas contained asbestos disposal signposted on site</p> <p>No register kept</p>	<p>Generally residents contact Shire if needing to dispose of asbestos and operator meets on site – hole dug, and buried straight away</p> <p>Some previous areas contained asbestos disposal signposted on site</p> <p>No register kept</p>

		<ul style="list-style-type: none"> • make an entry in the register within 2 hours of supervising the covering of waste under stating; • date, persons name, that the waste is covered, grid coordinates. • grid references entered in the register are marked on the plan of the landfill site. 		
Litter Control	That no litter from the landfill operations reaches beyond the boundary of the premises.	<p>Regulation 8. Waste to be contained on site</p> <ul style="list-style-type: none"> • waste does not get washed, or blown, outside the site; and • waste that has been washed, or blown, away from the tipping area of the site is returned to the tipping area at least once in each month. 	Comply Minimal amounts of litter observed outside the site	Comply Minimal amounts of litter observed outside the site
Fires	To prevent landfill fires and efficiently extinguish any that should occur	<p>Regulation 12. Firebreaks</p> <p>A fire break of at least 3 metres around the boundary of the site required</p>	Comply	Comply
		<p>Regulation 13 Burning of greenwaste</p> <p>Waste is not burnt at the site, other than greenwaste burnt in accordance with this regulation.</p> <p>Regulation 14 Outbreak of Fire</p> <ul style="list-style-type: none"> • There are appropriate procedures in force at the site so that any unauthorised fire on the site is promptly extinguished; and appropriate alarm and evacuation procedures are in place. 	<p>Ensure greenwaste for burning is positioned on an area of the site where waste (other than the greenwaste to be burnt) has not been deposited;</p> <p>No documented procedures for fire, fires generally not reported to DWER in accordance with regulations.</p>	<p>Ensure greenwaste for burning is positioned on an area of the site where waste (other than the greenwaste to be burnt) has not been deposited;</p> <p>No documented procedures for fire, fires generally not reported to DWER in accordance with regulations.</p>

		<ul style="list-style-type: none"> that an unauthorised fire on the site is extinguished as soon as possible. Within 14 days of an unauthorised fire at a landfill site, that a report on the fire containing (a) details of the date, time and location of the fire; (b) the time the location of the fire was declared safe by the Fire Control Officer for the site; and (c) the cause, or suspected cause, of the fire is provided to DWER. 		
Disease Vector Control	<ul style="list-style-type: none"> Cover waste daily Elimination of any water bodies at the landfill that are not required for fire, sediment or leachate control. 		Waste uncovered	Waste uncovered
Noxious weed control	<ul style="list-style-type: none"> Minimise the introduction of noxious weeds to the site. Eradicate any noxious weeds that have established themselves on site. 			
Rehabilitation plan	To ensure that landfills are rehabilitated to minimise the seepage of water into the landfill and maximise the collection and oxidisation of landfill gas from the landfill.	<p>Regulation 17. Post Closure Plan</p> <ul style="list-style-type: none"> Prepare and submit to the Chief Executive Officer for approval a post-closure rehabilitation plan within 18 months of the site being registered under the Environmental Protection Regulations 1987. The plan is to include: a plan for the rehabilitation of the site including options for the use of the site after it has ceased to be a landfill site, 	PCMP developed for site in 2007 however unsure whether document was submitted to DWER and did not provide sufficient detail to meet requirement of regulations	PCMP developed for site in 2007 however unsure whether document was submitted to DWER and did not provide sufficient detail to meet requirement of regulations

		<ul style="list-style-type: none"> • a conceptual design of the infrastructure needed for the preferred option for the use of the site after it has ceased to be a landfill site; • the estimated final contours of the site, after allowing for settlement, and specifying to what extent settlement has been allowed for; • the capping materials proposed to be used on the site; • a proposed system of drainage of the site; • measures proposed for the protection of the environment and the monitoring of the site; • the estimated period for which the site will require protection and monitoring. 		
<p>Aftercare Management</p>	<p>To manage the site after closure so that environmental protection and monitoring systems are maintained until the landfill has stabilised.</p>	<p>Requirements contained within Regulation 17</p>		

APPENDIX B – FUTURE SITE DEVELOPMENT: NYABING AND PINGRUP REFUSE SITES

Future Site Development: Nyabing and Pingrup Refuse Sites

Shire of Kent



August 2022

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Acknowledgements

ASK Waste Management acknowledges the Traditional Owners of the land in which we work and live, and pays respects to Elders past, present, and emerging.

ASK also gratefully acknowledge the cooperation of the Shire of Kent staff that provided information and assistance in the development of this report.

Disclaimer

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The mention of any company, product or process in this report does not constitute or imply endorsement by ASK Waste Management.

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Report produced by:

ALISON EDMUNDS
GILES PERRYMAN

ASK Waste Management

PO BOX 401
Brunswick Heads
NSW. 2483
AUSTRALIA

0447 393363
admin@askwm.com
www.askwm.com



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1 INTRODUCTION

The Shire of Kent (the Shire) engaged ASK Waste Management (ASK) to prepare its Strategic Waste Management Plan (SWMP) to set the future for contemporary waste management within the Shire. Included within the project brief, and to inform the outcomes of actions of the SWMP, was the requirement for the development of site layout plans for the Nyabing and Pingrup Refuse Sites to guide future site development.

This document provides the rationale and concept site layout plans for future development of the Shires Refuse Sites. The site layout plans include key infrastructure, optimal traffic flows, locations for material stockpiles (for recovery / recycling), stormwater infrastructure and any other key infrastructure.

The following outcomes have been used to guide the development of the site layout plans:

- lowering OHS, environmental and other risks
- increasing source separation opportunities and lowering stockpile contamination rates
- improving traffic flows
- more efficient and effective storage and handling of materials
- improving site amenity and cleanliness
- increasing customer satisfaction
- increasing the capacity to manage future needs, including accepting additional material streams required by regulations and legislation
- a site that is easier to maintain.

2 NYABING LANDFILL SITE LAYOUT AND LANDFILL PLAN

2.1 CURRENT LAYOUT AND TOPOGRAPHIC CONTOURS

The existing landfill extent has a footprint generally indicated in **Figure 2.1**. There has been below and above ground waste disposal within this area for many years. The current layout and landform is characterised as follows:

- The site slopes south east with the far north western corner at 339m AHD to approximately 323m AHD along the south eastern border of the site.
- A significant portion of the site has been used for landfill, in consultation with the Shire staff the areas have been identified, together with some suspected areas, labelled with a “?” in **Figure 2.2**.
- The site services/facilities are spread across the site connected via access tracks.
- Some signage exists on site to direct users on site.
- Most waste disposal has occurred below ground, however a mound of above ground waste exists in the central waste disposal area of the site. The ridge of the mound is approximately 330m AHD.
- There is a relatively level portion of land nearest to the site access gates that is used to store greenwaste, steel and the oil recovery shed.
- A ‘transfer station’ shed was previously constructed on the site through grant funding, however is not in use.

Figure 2.1 Nyabing landfill existing site layout and topographic contours



Figure 2.2 Suspected historic landfill areas (Shire of Kent, 2021)



2.2 CELL EXCAVATION LAYOUT DESIGN

A cell layout and schematic final landform has been developed and is included in the Nyabing Post Closure Rehabilitation Plan. Please refer to this document for more detail.

2.3 LANDFILL AIRSPACE AVAILABILITY

There is little data available about the factors that are used to estimate remaining operational life of a landfill. This include:

- Average compaction rate
- Proportion of cover material used
- Quantity of waste disposed
- Airspace of existing disposal cells.

The new disposal cell was excavated after the site survey was completed, therefore there is no accurate value of the airspace generated by this cell. However, based on anecdotal information provided by the Shire it has been estimated that the current cell will provide 4 – 5 years of waste disposal. Assuming this estimate is only for below ground filling, the current cell should provide 6 – 7 years of waste disposal when the above ground airspace is considered.

Given at least one more cell can be excavated to the south, this suggests the site has at least 12 – 15 years of waste disposal capacity. If the area future south does not contain historical waste, this timeline can be doubled. There is also an area to the east of the active disposal cell that would not have been used in the past. If this area can be utilised for waste disposal the site may be able to dispose of waste for more than 40 years.

However, this estimate should be revisited once the existing cell has been filled, as this will provide an indication of the rate of filling at the site.

2.4 SITE LAYOUT PLAN

A site layout plan has been developed in conjunction with the Shire to guide the future development of the site and is provided in **Figure 2.3** and **Figure 2.4**. The proposed site layout detail and considerations are contained in **Table 2.1** to follow.

Table 2.1 Nyabing Site layout considerations

Element	Detail
Drop off area footprint	The current materials drop off area (greenwaste, steel and oil recovery) is proposed to remain in its current location. The area is to be levelled and a compacted insitu hardstand created. Earthen bunds will be constructed to separate material streams to be received in this area.
Site access	The public access to the greater site is proposed to be restricted to the immediate materials drop off area and landfill disposal area through the provision of fencing. Gates will be placed on internal access roads to restrict public access the bitumen dump out area and animal disposal trench.
Traffic flow	A one way traffic flow is proposed using a loop circuit in and out of the facility. Sufficient area is provided for vehicles to manoeuvre and reverse safely without affecting traffic flow to other areas. Effective traffic control devices such as signage and speed limits will be required.
Landfill	Waste will continue to be landfilled on site for the medium term in accordance with the cell layout plan and final landform.
General waste disposal	Customers will unload domestic self-hauled mixed general waste into a waste receival area adjacent to the landfill cell. Waste will then be pushed from this area into the cell by Shire operators. Waste will be covered fortnightly or as required. Temporary fencing and signage will be used to restrict customer access to the landfill cell whilst staff are not onsite.
Greenwaste stockpile	The current greenwaste stockpile location will be discontinued. The greenwaste stockpile will be relocated in a suitable location within the compacted and levelled hardstand within the Drop off area. The area will contain two bunded areas, one for seasoning of greenwaste in preparation for burning, and the other for fresh greenwaste. Customers will unload material directly into stockpile areas.
Scrap metal stockpile	The current metal stockpile location will be discontinued. The metal stockpile will be relocated in a suitable location within the compacted and levelled hardstand within the Drop off area. Material will be stockpiled for collection by a metal recycler. Customers will unload material directly into stockpile areas.
White goods	A separate area for the collection of whitegoods will be provided within the Drop off area hardstand. Customers will unload material directly into the whitegoods storage area. Storing white goods separately from scrap metal enables them to be degassed prior to disposal or recycling in line with the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989. Degassed material can be added to metal stockpiles for collection by a metal recycler.
Tyre stockpile	A storage area is proposed for the recovery of separated tyres within the drop off area hardstand. Tyre stockpiles should be located away from flammable material and ignition sources. Tyres may either be removed offsite via a tyre recycling company if feasible or buried onsite.

Element	Detail
	The Shire may alternatively consider the cessation of acceptance of tyres on site.
Drummuster compound	The current drummuster compound will be discontinued. A new portable 6m X 6m lockable cage will be obtained from Drummuster and located within the compacted and levelled hardstand within the Drop off area.
E-waste	An area will be provided within the compacted and levelled hardstand within the Drop off area to provide containers for e-waste. E-waste should be separated from the storing, processing and disposal of other waste, as it can contain hazardous materials. E-waste should be stored in an appropriate container on an impermeable surface and protected from the weather, to help control dust particles and run-off being released that could contaminate land, surface water and groundwater.
Gas bottles	An area will be provided within the compacted and levelled hardstand within the Drop off area to provide containers for materials not generally suitable for landfill disposal including gas bottles. Gas bottles for recycling as scrap must be degassed, have the valves removed and punctured to indicate their safe status for recycling. As such an appropriate area for storage and degassing should be provided. Household gas cylinders can also be taken by arrangement to the City of Albany Hanrahan Road site for free disposal under the HHW program funded by the Waste Authority.
Batteries	An area will be provided within the compacted and levelled hardstand within the Drop off area to provide containers for materials not generally suitable for landfill disposal including batteries. Batteries should be stored on banded pallets to contain any spills. Batteries should be stacked on pallets no more than three layers high, with each layer being separated by sturdy cardboard or a similar material. Adequate vehicle access to the storage area is essential as the storage pallets are usually extracted by forklift to be placed on the collection vehicle. Ideally the area should be sheltered from weather impacts to prevent generation of environmental risks and ensure all weather use.
Oil recovery	Waste oil recovery infrastructure is to remain in its current location.
Bitumen Dump	See SWMP Section 4.1
Animal burial bit	Currently deceased animals are buried in a separate below ground cell on site. Options for future management of this waste stream include relocating the disposal area to the active landfill area, providing a gated/controlled access system where residents are accompanied to site by a staff member to limit potential public liability issues associated with the use of the unfenced below ground pit, or alternatively cease acceptance of deceased animals. The future site layout plan incorporates the use of gated access to this area.
Asbestos disposal area	The asbestos disposal area will be relocated to a specific area within the active landfill cell. Disposal practices are to comply with the requirements as stipulated within the <i>Rural Landfill Regulations 2002</i> . Alternatively the Shire may consider the option to cease acceptance of asbestos waste on site. This waste stream will need to be taken to the Shire of Katanning landfill for disposal (or other suitable landfill) by the waste generator.
Area for expansion	Sufficient area is provided within the drop off are to allow for expansion in drop off streams to be provided by the Shire at a later date. This could include comingled recyclables, CDS etc..
Signage	Signage will be needed to provide consistent information and be clearly and prominently displayed.

Element	Detail
	Clear directional and waste stream drop off locations and acceptance signage will need to be provided throughout the drop off and landfill area.
Salvage shed/outlet	The existing shed structure near the entrance could be used to drop off reusable material for salvage by customers
Transfer Station Shed	The current unused transfer station shed structure is to remain. Whilst not proposed for use at this stage, appropriate safeguards to prevent access to this facility is recommended to prevent customer fall/trip accidents and public liability claims upon the Shire.

Figure 2.3 Nyabing Site Layout Plan - traffic flow and gates

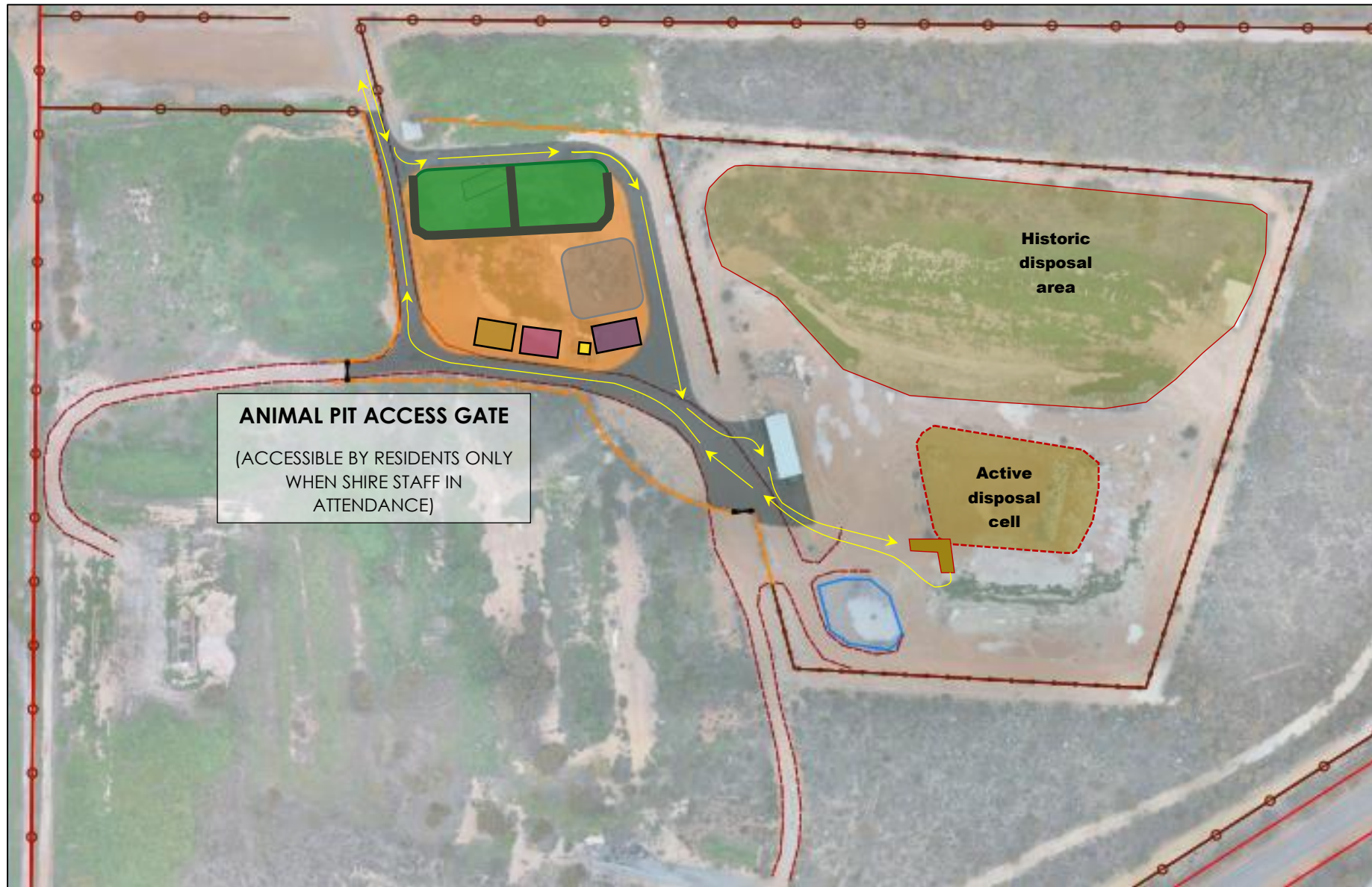
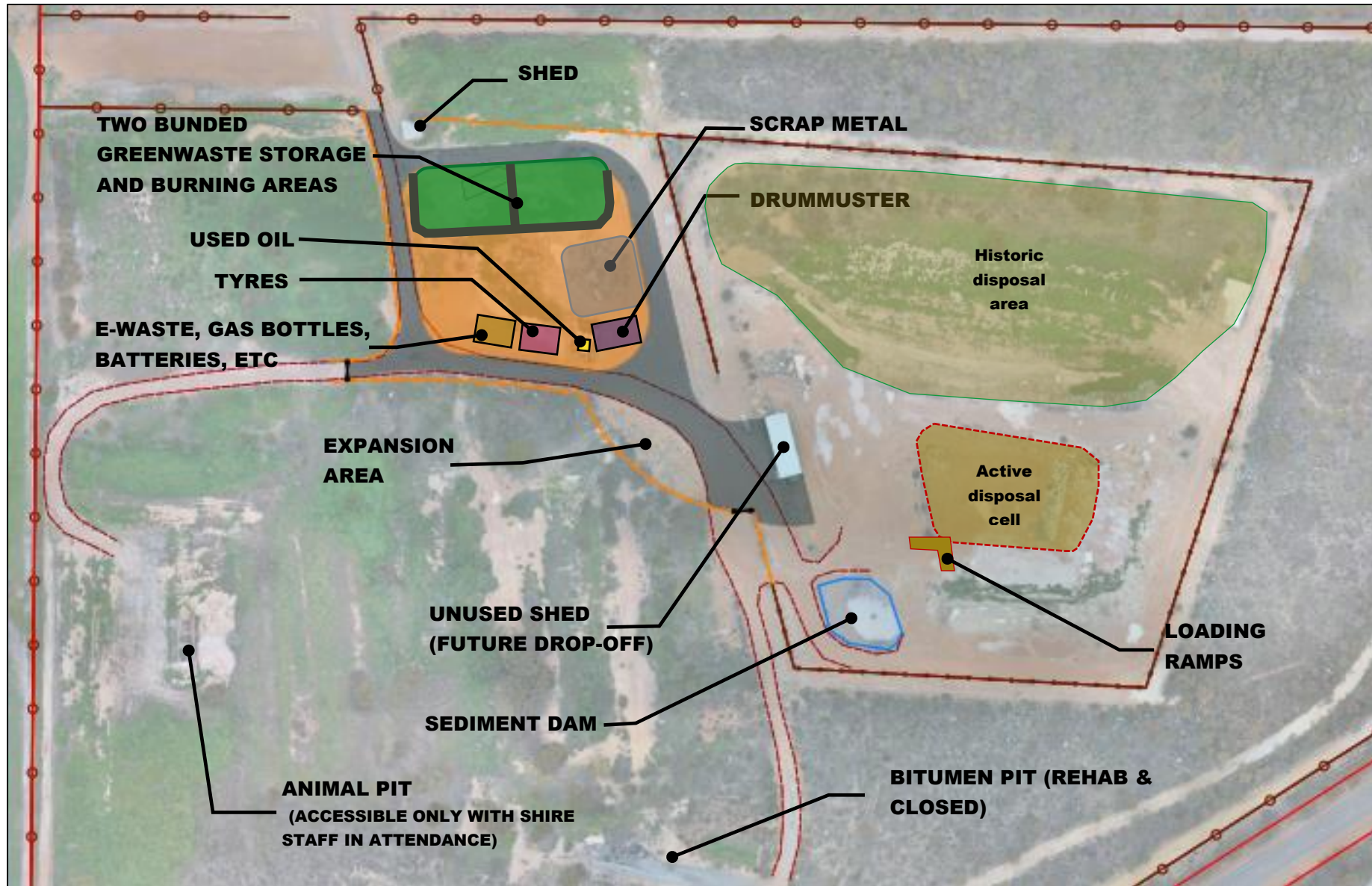


Figure 2.4 Nyabing Site Layout Plan – details of active portion of site



2.5 FACILITY SIGNAGE

The site is unstaffed, so there are no staff on-site to guide residents within the facility or direct them to the correct areas for recycling and disposal. Therefore, signage at the site is very important and the key measure to direct and instruct residents using the facility. The following sub-sections and **Figure 3.6** provide guidance of the signed required at the site.

The [NSW EPA¹](https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs) provide an excellent source for organisations that need to produce waste facility signs. The sign templates are based on the Australian standard designs and AS 4123.7–2006 Mobile Waste Containers – Part 7: Colours, markings and designation requirements. The sign templates can be downloaded with no cost, in TIF, EPS and JPG format and edited before being printed. These templates have been used, when appropriate, in the sections below.

2.5.1 Facility entrance

While it is not a regulatory requirement for a Registered site, such as Nyabing, an entrance sign is compulsory for licenced sites and this site would benefit from an entrance sign that includes the following information.

- hours of operation (while the site could be open 24/7, this has a high risk of injury and should be reduced)
- contact telephone number (for residents to report any damage, fires, etc)
- warning indicating penalties for people lighting fires
- list of materials that can be accepted for burial
- list of materials accepted for drop-off at the transfer station or for recycling.

Figure 2.5 Example of an entrance sign

Shire of Augusta Margaret River
Davis Road Recycling & Waste Management Facility

Opening Hours
Monday-Friday:
8am - 4pm
Weekends:
8am - 4pm
Public Holidays:
8am - 4pm
All Facilities Closed:
Christmas Day
New Year's Day
Good Friday
Caution: All waste types and recyclables are to be disposed of in their designated areas, failure to do so may result in a non compliance penalty of \$1,000. Unauthorised removal of any material from this facility is prohibited, offenders will be prosecuted

Material Accepted
Domestic/Household & Commercial/Industrial Waste
Green Waste - must be separated and uncontaminated
Co-Mingled Domestic Recyclables:
Glass Bottles & Jars - please rinse/remove lids
Paper & Cardboard - loose/clean/free from any packing, please flatten all boxes
Plastics - symbol code 1 - 6 please rinse and remove caps
Steel & Aluminium Cans
Recyclable:
Used Motor Oil - free from oily water contamination
Car Batteries - no acid leaks or damage
Mixed Scrap Metals - gas bottles must be empty and valve fully open
e-waste, in-scope EPSA items only (see gatekeeper)
Building Waste
Asbestos - by appointment only, acceptance criteria applies, discuss details with gatehouse prior
Drum/Muster Chemical Containers - by prior arrangement, must be triple rinsed clean/empty/caps

Material Not Accepted
Hazardous Household, Industrial or Agricultural
Unwanted Chemicals (please contact the ChemClear booking line on 1800 008 182 to register for the next scheduled collection and further information).

Waste & Recycling Charges

Domestic recycling	No Charge
Mixed general waste - minimum charge (per wheelle bin)	\$ 9.50
Mixed general waste (per 1m ³)	\$ 38.00
Green waste - minimum (up to 1m ³)	Free
Green waste (per m ³ exceeding 1m ³)	\$ 7.00
Green waste - contaminated (per m ³)	\$ 38.00
Mulch - self load (6x 4 trailer load only)	Free
Mattress/Base - single, inner steel spring (each)	\$ 5.00
Mattress/Base - double/queen, inner steel spring (each)	\$ 10.00
Mattress/Base - king, inner steel spring (each)	\$ 15.00
Fridges, air-cons, freezers (each)	\$ 15.00
Fridge/freezer dual commercial unit (each)	\$ 30.00
Tyres residential - car/4WD no rim (each)	\$ 10.00
Tyres residential - car/4WD with rim (each)	\$ 14.00
Tyres residential - motorbike (each)	\$ 5.00
Domestic animals (each)	\$ 20.00
Farm animals (each)	\$ 35.00
Asbestos - (per m ³)	\$ 110.00
Asbestos - small parcel (less than 0.25m ³)	\$ 55.00
Motor vehicle body - no tyres	\$ 14.00
Caravans/boats (per m ³)	\$ 38.00
Separated bulk waste - (per m ³)	\$ 35.00
Problematic mixed bulk waste - (per m ³)	\$ 65.00
Commercial glass - (per m ³)	\$ 16.00
Commercial cardboard - (per m ³)	\$ 15.00

Contacts: Information and Complaints: 9780 5677
Notification of Fires (Rangers): 0419 902 540
Emergency Services: Phone 000

WARNING: No Fires Allowed
Penalty: Deliberately lighting a fire in a waste disposal site is prohibited. \$1,000 on the spot infringement notice and maximum \$10,000 fine (section 24E bush fires act)

¹ <https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/business-government-recycling/standard-recycling-signs>

2.5.2 Directional

The roads within the site require direction signage, including arrows, speed limits, no-entry, etc to guide residents around the site as intended.

2.5.3 Hazard warnings

Waste facilities are high risk sites, especially when unstaffed. Warning signage must be installed to make residents aware of the risks. Key areas include:

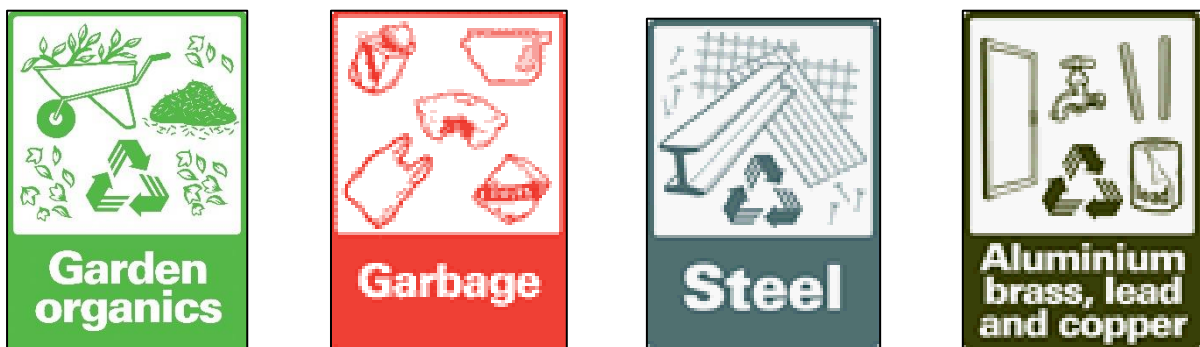
- Fall hazard at the transfer station
- No scavenging signs to prevent trips and other injuries.
- Fall hazard at the animal burial pit
- No access at the landfill burial cell

2.5.4 Guidance and locations

The locations for the dropping off of mixed waste (transfer station) and separated recoverable materials must be clearly sign. Area for recoverable materials should include signage asking residents not to contaminated source separated materials.

Relocatable signs will also be required, for example to direct residents to the correct greenwaste area (as the two bunded areas should only be used one at a time, to allow the 'full are' time to season before burning).

Figure 2.6 Examples of location signs (source: NSW EPA)



The NSW EPA site also includes 'blank' signs that can be edited to include any information required at the site.

Figure 2.7 The 'blank sign' templates on the NSW EPA site

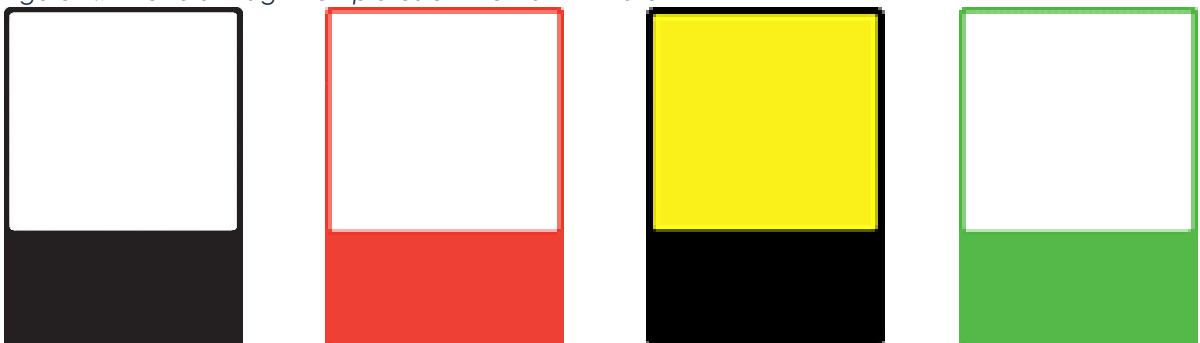
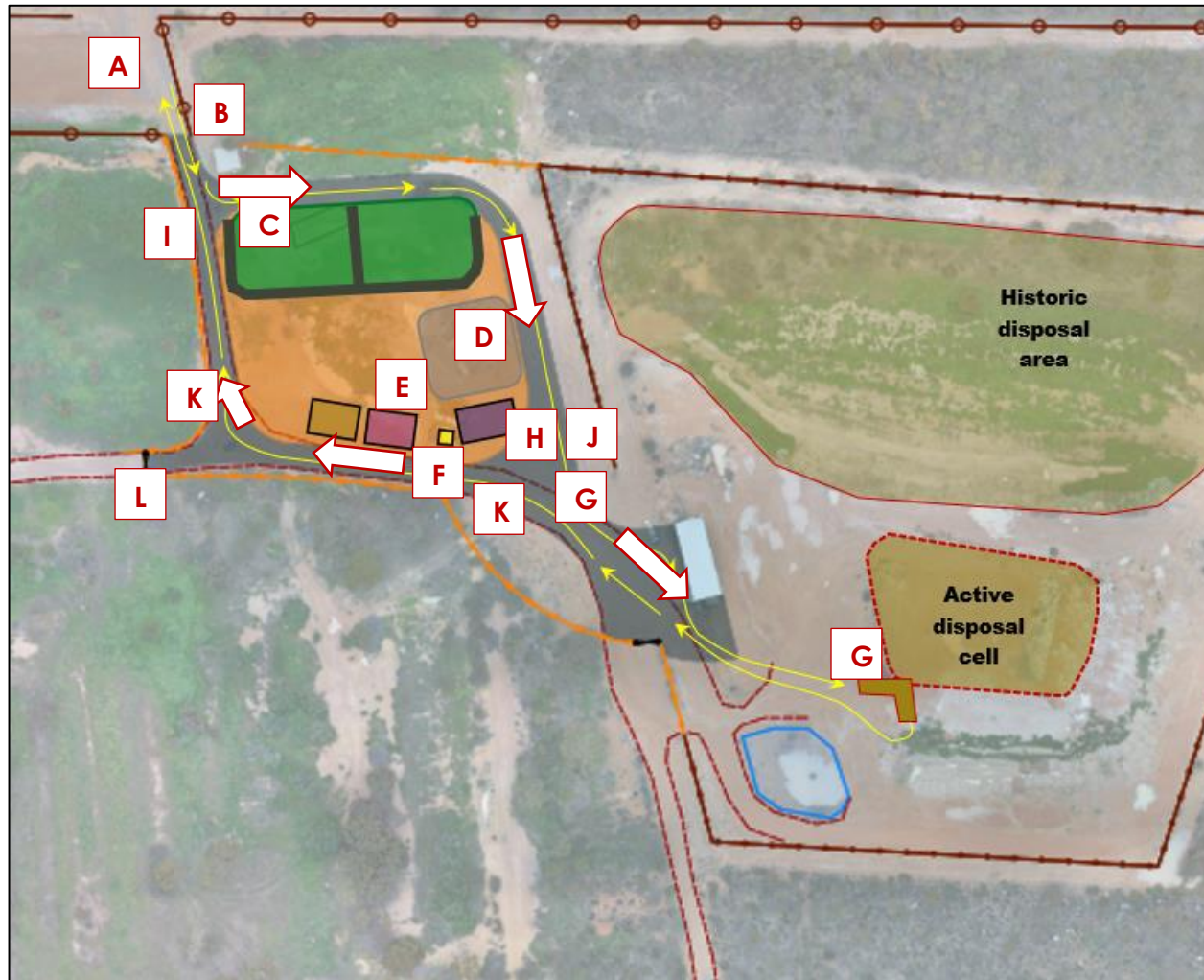


Figure 2.8 Nyabing Site Layout Plan – Proposed signs



Key to signs

- A - Entrance Sign
- B - Site map, directing towards GW & scrap or mixed waste, tyres, oil, Drummuster
- C - Greenwaste sign (inc no contamination)
- D - Scrap metal (inc No scavenging)
- E - Tyre storage
- F - Used oil
- G - Mixed waste disposal (Inc no scavenging)
- H - Drummuster
- I - No Entry sign (facing entrance)
- J - No Entry sign (facing transfer station)
- K - Exit sign
- L - Animal Pit (inc access via Shire instructions)
- ↗ Directional signs (showing speed limits)

2.6 CAPITAL WORKS ESTIMATE

The estimated cost of the capital works proposed to upgrade the layout at the facility is summarised in **Table 2.2**, with a complete breakdown provided in **Appendix A**.

Table 2.2 Nyabing capital works cost estimates

Item	Detail	Approx. Cost
Security	Internal stock fencing; Supply and install lockable gates; Fall prevention barrier at transfer station	\$7,000
Site signage	Information and directional signs supply and install	\$7,000
Stormwater	Excavate, shape and form a table drain with trapezoidal profile (includes top soil and grassing)	\$21,000
Material storage areas	Install and supply stockpile bunds for greenwaste and scrap metal; Install and supply hardstand for greenwaste, scrap metal and used oil, tyre and drummuster area; Install and supply fenced compound for drummuster; Development of internal tracks around material stockpile area and access to disposal cell	\$56,500
Storage/collection containers	Provisional sum for purchase of containers/bins for collected material streams	\$8,000
Rehabilitation	Capping of historic disposal area; Capping of active disposal area; shrubs	\$159,000
Regional factor	15% contingency on Perth Prices	\$39,000
Contingency	20% of subtotal	\$59,000
GST	Approx. GST on total	\$36,000
TOTAL estimated sum including GST (rounded)		\$390,000

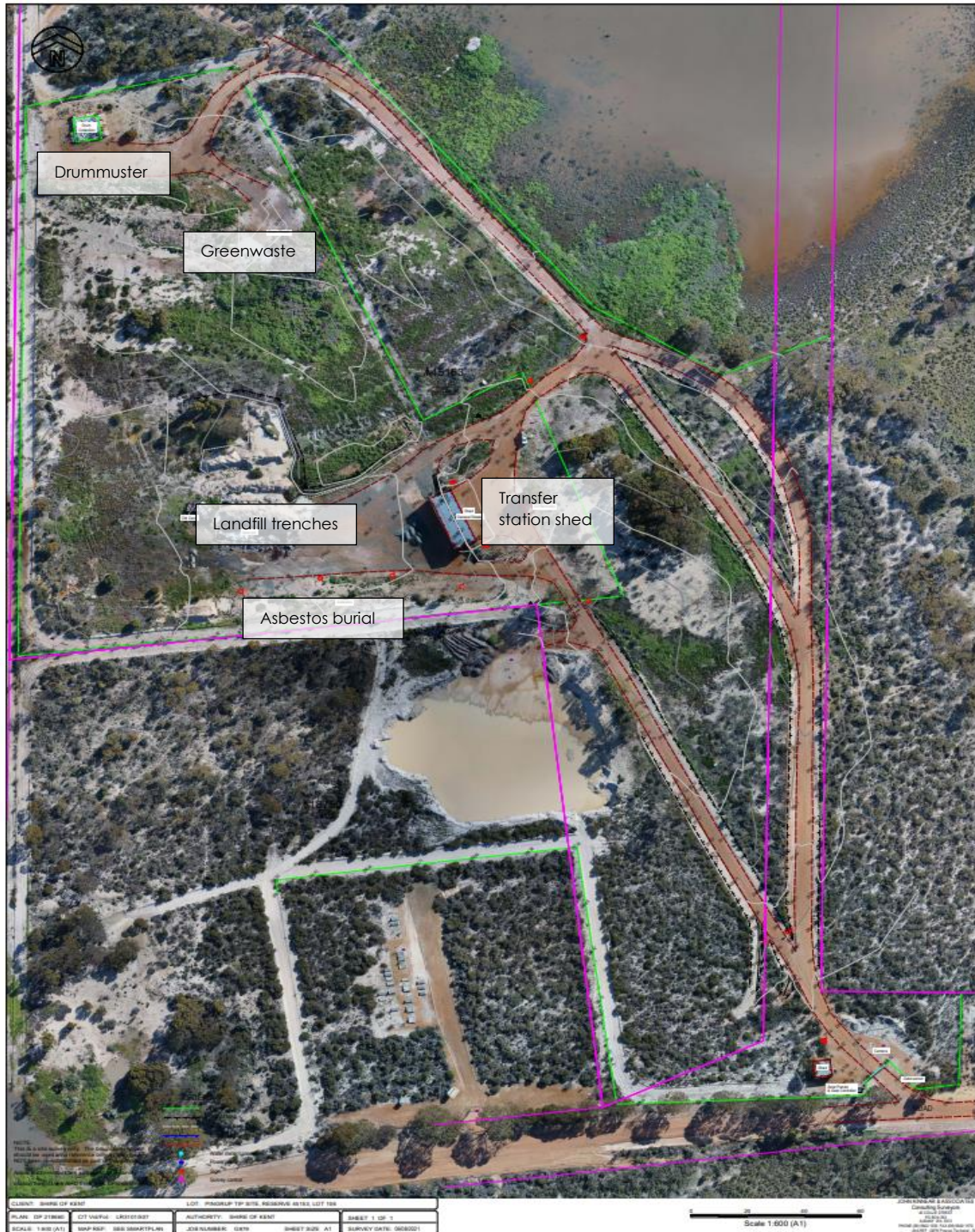
This cost estimate is preliminary only for planning purposes. Quantities are +/- 20% and are subject to detailed design. Indicative costs have been provided are preliminary and are subject to detailed design. The Cost estimate has been based on a contract approach and may not be representative of an internal/Council construction campaign. The cost is subject to Council's approach to resource procurement and expected availability and efficiencies. Costs provided are for construction only and don't include design, Superintendent or CQA costs with these external to contractors works. No responsibility or liability to any party is accepted for any damages howsoever arising out of the use of this preliminary costing by any party.

3 PINGRUP TRANSFER STATION SITE LAYOUT PLAN

3.1 CURRENT LAYOUT AND TOPOGRAPHIC CONTOURS

The current site layout is shown in **Figure 3.1**, which allows customers access to the whole site.

Figure 3.1 Pingrup transfer station current site layout (Shire of Kent, 2021)



3.2 SITE LAYOUT PLAN

A site layout plan has been developed in conjunction with the Shire to guide the future development of the site and is provided in **Figure 3.2** and **Figure 3.3**. The proposed site layout detail and considerations are contained in **Table 3.1**.

Table 3.1 Pingrup site layout considerations

Element	Detail
Transfer station footprint	A reduced transfer station footprint is proposed through the relocation of stockpile areas from the greater site to a location in close vicinity to the current transfer station drop off shed. This provides for greater control of material disposal locations, minimises public liability and safety issues in relation to greater site access and minimises the operational costs associated with maintenance of a smaller site area.
Site access	The public access to the greater site is proposed to be restricted to the immediate transfer station drop off area through the provision of fencing. Keyed access gates will also be provided restricting access to the northern aspect of the site including the current greenwaste areas and drummuster areas. Currently the site's perimeter road and site entrance provide the only access by the landowner due north of the facility to access their property. As part of future site upgrades, the Shire is proposing to investigate the feasibility of construction of a private access road separate to the facility roads to enable the landowner to access their property.
Traffic flow	A one way traffic flow is proposed using a loop circuit in and out of the facility. Sufficient area is provided for vehicles to manoeuvre and reverse safely without affecting traffic flow to other areas. Effective traffic control devices such as signage and speed limits will be required.
General waste disposal	The current transfer station shed containing a bulk waste bin is to remain for domestic users of the transfer station to drop off waste materials. Customers will unload domestic self-hauled mixed general waste into the bin. Any items that due to their size and/or dimensions is unable to fit in bins, the customer will need to self haul to Nyabing landfill for disposal.
Greenwaste stockpile	The current greenwaste disposal will be discontinued. Greenwaste will be placed on a compacted insitu clay bunded hardstand on an area within the reduced transfer station footprint which has not previously contained waste. The area will contain two bunded areas, one for seasoning of greenwaste in preparation for burning, and the other for fresh greenwaste. Customers will unload material directly into stockpile areas.
Scrap metal stockpile	Currently scrap metal and whitegoods are generally discarded within the landfill cell on site. Given the site will no longer be 'landfilling' waste, a scrap metal and whitegoods stockpile area will be constructed. A compacted insitu clay bunded hardstand will be constructed to contain metal and whitegoods. Material will be stockpiled for collection by a metal recycler. Customers will unload material directly into stockpile areas.
Tyre stockpile	A storage area is proposed for the recovery of separated tyres. The tyre collection area should be fitted with a hardstand of sufficient size and have adequate drainage. Tyre stockpiles should be located away from flammable material and ignition sources.
Drummuster compound	The current drummuster compound will be relocated to an area within the reduced transfer station footprint.
E-waste, gas bottles, batteries	An area will be provided within the current transfer station shed to provide containers for materials not generally suitable for landfill disposal including e-waste, gas bottles and batteries. A suitable screen wall (e.g., 1800mm (h) x 3000mm (l)) is to be constructed on the lip of raised concrete platform to both restrict entry to pit below and provide a suitable covered location where collection containers can be placed.
Oil recovery	Waste oil recovery infrastructure is to remain in its current location.

Asbestos	No asbestos will be accepted on site and must be taken to Nyabing for controlled disposal by the customer/waste generator.
Area for expansion	Sufficient area is provided to allow for expansion in drop off streams to be provided by the Shire at a later date. This could include comingled recyclables, etc..
Signage	Signage will needed to provide consistent information and be clearly and prominently displayed.

Figure 3.2 Pingrup Site Layout Plan full site- traffic flow and gates

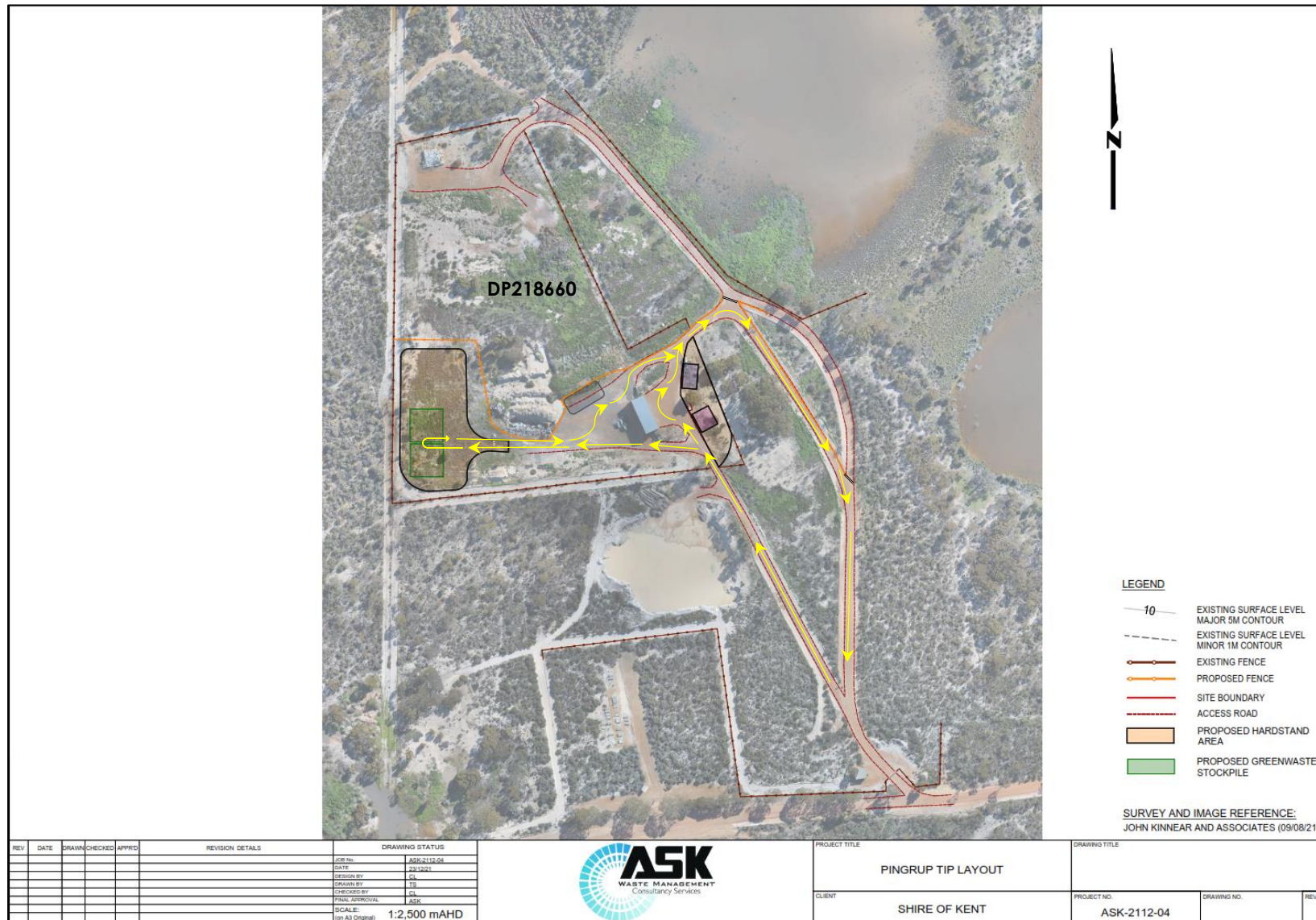
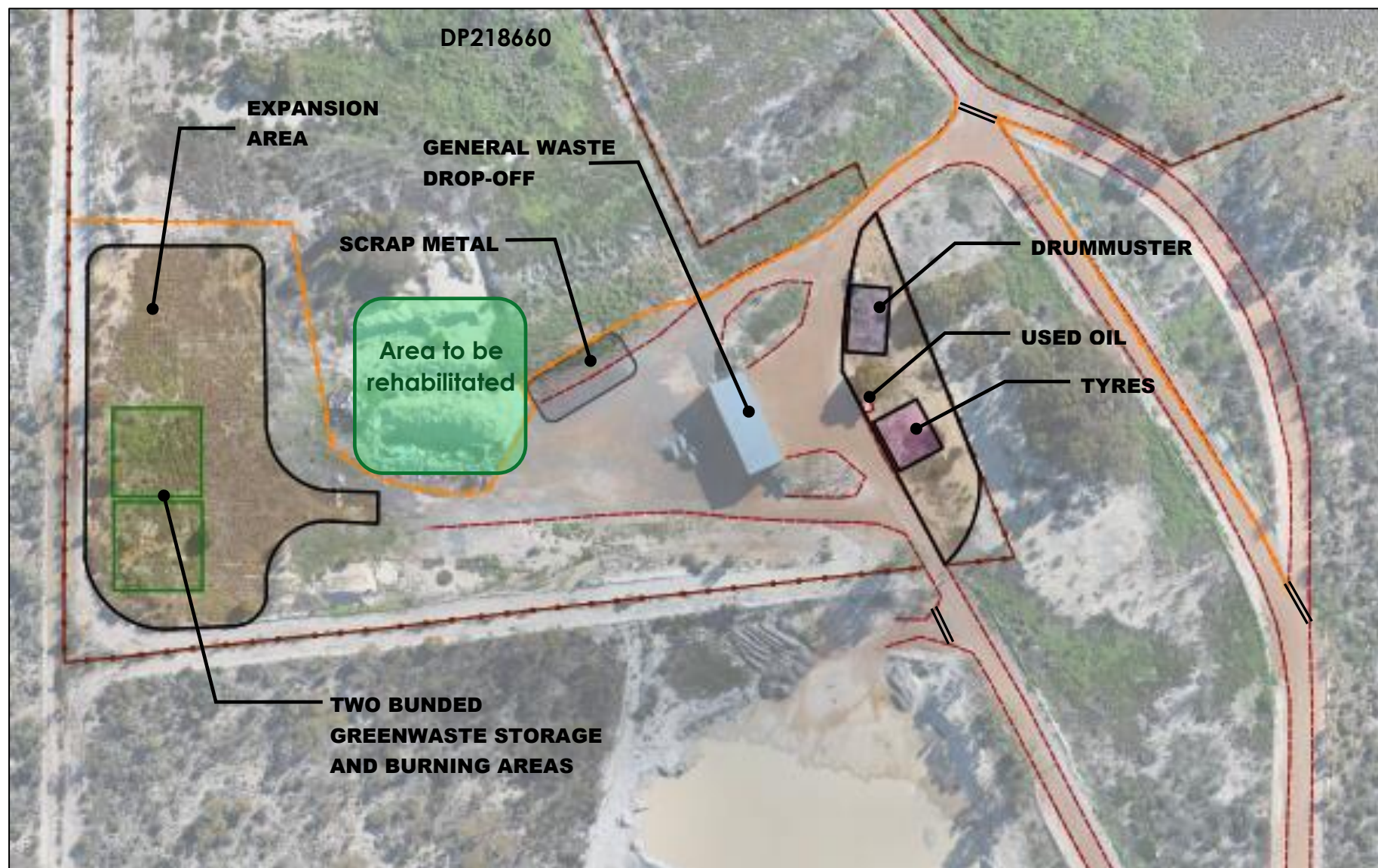


Figure 3.3 Pingrup Site Layout Plan – details of active portion of site



3.3 FACILITY SIGNAGE

Section 2.5 above outlined the NSW EPA sign templates that are referred to below. The sections below include some repetition from the Signage section for Nyabing but have been included in case this section of the document is referred to in isolation.

3.3.1 Facility entrance

While it is not a regulatory requirement for a Registered site, such as Pingrup, an entrance sign is compulsory for licenced sites and this site would benefit from an entrance sign (see example in **Figure 2.5**) that includes the following information.

- hours of operation (while the site could be open 24/7, this has a high risk of injury and should be reduced)
- contact telephone number (for residents to report any damage, fires, etc)
- warning indicating penalties for people lighting fires
- list of materials that can be accepted for burial (for Pingrup no wastes can be accepted for burial)
- list of materials accepted for drop-off at the transfer station or for recycling.

3.3.2 Directional

The roads within the site require direction signage, including arrows, speed limits, no-entry, etc to guide residents around the site as intended.

3.3.3 Hazard warnings

Waste facilities are high risk sites, especially when unstaffed. Warning signage must be installed to make residents aware of the risks. Key areas include:

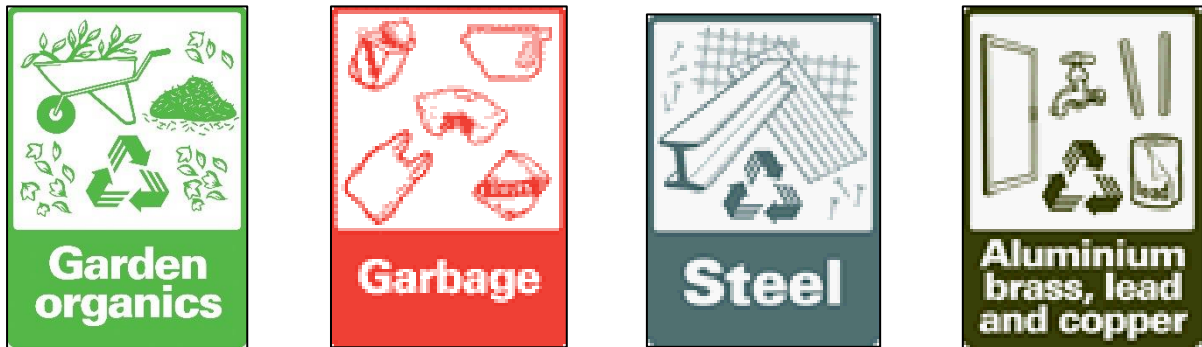
- Fall hazard at the transfer station
- No scavenging signs to prevent trips and other injuries
- Legacy asbestos disposal areas.

3.3.4 Guidance and locations

The locations for the dropping off of mixed waste (transfer station) and separated recoverable materials must be clearly sign. Area for recoverable materials should include signage asking residents not to contaminated source separated materials.

Relocatable signs will also be required, for example to direct residents to the correct greenwaste area (as the two bunded areas should only be used one at a time, to allow the 'full are' time to season before burning).

Figure 3.4 Examples of location signs (source: NSW EPA)



The NSW EPA site also includes 'blank' signs that can be edited to include any information required at the site.

Figure 3.5 The 'blank sign' templates on the NSW EPA site

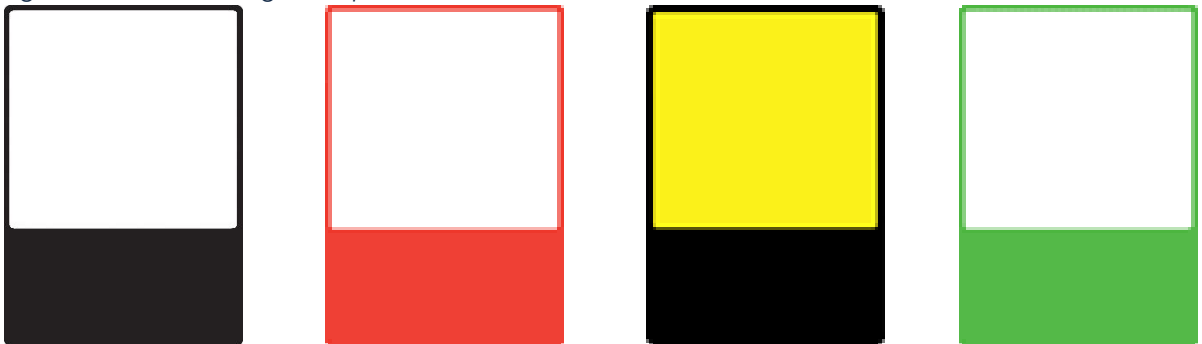


Figure 3.6 Pingrup Site Layout Plan – Proposed signs



Key to signs

- A - Entrance Sign
- B - Site map, directing residents towards GW & scrap or mixed waste, tyres, oil, Drummuster
- C - Greenwaste sign (inc no contamination)
- D - Scrap metal (inc No scavenging)
- E - Tyre storage
- F - Used oil
- G - Mixed waste drop-off (inc fall hazard)
- H - Drummuster
- I - No Entry sign (facing entrance)
- J - No Entry sign (facing transfer station)
- K - Exit sign
- ↗ Directional signs (showing speed limits)

3.4 CAPITAL WORKS ESTIMATE

The estimated cost of the capital works proposed to upgrade the layout at the facility is summarised in **Table 3.2**, with a complete breakdown provided in **Appendix A**.

Table 3.2 Pingrup capital works cost estimates

Item	Detail	Approx. Cost
Security	Internal stock fencing, supply and install lockable gates; Fall prevention barrier at transfer station	\$27,100
Siter signage	Information and directional signs supply and install	\$5,250
Stormwater	Excavate, shape and form a table drain with trapezoidal profile	\$6,000
Material storage areas	Install and supply stockpile bunds for greenwaste and scrap metal; Install and supply hardstand for greenwaste, scrap metal and used oi, tyre and drummuster area; Install and supply fenced compound for drummuster; Development of access track and approach apron to greenwaste areas	\$37,800
Storage containers	For collected material recycling streams. Provisional sum provided	\$5,000
Rehabilitation	Caping of existing trench	\$20,000
Regional factor	15% contingency	\$15,172
Contingency	20% of subtotal	\$23,264
GST	Approx. GST on total	\$13,958
TOTAL estimated sum including GST (rounded)		\$154,000

This cost estimate is preliminary only for planning purposes. Quantities are +/- 20% and are subject to detailed design. Indicative costs have been provided are preliminary and are subject to detailed design. The cost estimate has been based on a contract approach and may not be representative of an internal/Council construction campaign. The cost is subject to Council's approach to resource procurement and expected availability and efficiencies. Costs provided are for construction only and don't include design, Superintendent or CQA costs with these external to contractors works. No responsibility or liability to any party is accepted for any damages howsoever arising out of the use of this preliminary costing by any party.

APPENDIX A – CAPITAL EXPENDITURE ESTIMATES

CAPITAL EXPENDITURE ESTIMATE FOR PINGRUP REFUSE SITE						
NO.	ITEM	UNIT	QUANTITY	RATE	COST (\$)	ASSUMPTION CALCULATIONS
1	SECURITY					
1.1	Internal 1.8m 'Stock' fencing	m	2050	\$ 12.00	\$ 24,600	
1.2	Lockable gates (install and supply)	Each	3	\$ 500.00	\$ 1,500	3m x 1.2m
1.3	Fall prevention barrier at transfer station	Each	1	\$ 1,000.00	\$ 1,000	Rough estimate, as no design or spec
2	SITE SIGNAGE					
2.1	Information and direction signs (install and supply)	Each	15	\$ 350.00	\$ 5,250	
3	STORMWATER TABLE DRAIN					
3.1.1	All-in rate per lineal metre to excavate, shape and form a table drain with trapezoidal profile.	m	200	\$ 30.00	\$6,000	Quantity for perimeter of proposed site, rate assumed.
4	MATERIAL STORAGE AREAS					
4.1	GREENWASTE STOCKPILE BUND					
4.1.1	Install and Supply stockpile Bund (fire break)	m	100	\$ 40.00	\$ 4,000	Quantity for perimeter of bund, assume site grades to back. Assume 0.5m high at 1:3 slope, no crest.
4.1.2	Install and Supply hardstand (150mm)	m2	1000	\$ 10.00	\$ 10,000	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
4.1.3	Access track and approach apron from existing area to GW bunds	m2	1000	\$ 10.00	\$ 10,000	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
4.2	SCRAP METAL STOCKPILE BUND					
4.2.1	Install and Supply stockpile Bund	m	30	\$ 40.00	\$1,200	As above
4.2.2	Install and Supply cv hardstand (150mm)	m2	300	\$10.00	\$3,000	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
4.3	USED OIL, TYRE & DRUMUSTER AREA					
4.3.1	Install and Supply hardstand	m2	160	\$ 10.00	\$1,600	As above
4.4	DRUMUSTER COMPOUND					
4.4.1	Install and Supply fenced compound	Each	1	\$8,000.00	\$ 8,000	Assumes 10m x 10m x 2.4m chain-link fence
4.5	CONTAINERS					
4.5.1	Storage containers for collected waste streams	Each	1	\$5,000.00	\$5,000	Provisional sum
5	REHABILITATION					
5.1	Capping of existing trenches. Volume is estimate only, insitu/compacted in place volume.	m3	2000	\$10.00	\$20,000	Assume cut fill across total area to produced soil mound over existing cells / trenches. Rate assumes light soil excavation
				REGIONAL FACTOR	\$ 15,172.50	15% Regional Factor on Perth Prices
				SUBTOTAL	\$ 116,322.50	
				CONTINGENCY (20%)	\$ 23,264.50	
				SUBTOTAL + CONTINGENCY (20%)	\$ 139,587.00	
				GST	\$ 13,958.70	
				TOTAL ESTIMATED SUM INCL GST	\$ 153,545.70	

CAPITAL EXPENDITURE ESTIMATE FOR NYABING REFUSE SITE						
NO.	ITEM	UNIT	QUANTITY	RATE	COST (\$)	ASSUMPTION CALCULATIONS
1	SECURITY					
1.1	Internal 1.8m 'Stock' fencing	m	390	\$ 12.00	\$4,680	
1.2	Lockable gates (install and supply)	Each	2	\$ 500.00	\$1,000	3m x 1.2m
1.3	Fall prevention barrier at transfer station	Each	1	\$ 1,000.00	\$ 1,000	Rough estimate, as no design or spec
2	SITE SIGNAGE					
2.1	Information and direction signs (install and supply)	Each	19	\$ 350.00	\$6,650	
3	STORMWATER					
3.1	TABLE DRAIN					
3.1.1	All-in rate per lineal metre to excavate, shape and form a table drain with trapezoidal profile. Rate to include topsoil and grassing.	m	700	\$ 30.00	\$21,000	Quantity for perimeter of proposed site, rate assumed.
4	MATERIAL STORAGE AREAS					
4.1	GREENWASTE STOCKPILE BUND					
4.1.1	Install and Supply stockpile Bund (fire break)	m	120	\$ 40.00	\$4,800	Quantity for perimeter of bund, assume site grades to back. Assume 0.5m high at 1:3 slope, no crest.
4.1.2	Install and Supply hardstand	m2	1400	\$ 10.00	\$14,000	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
4.1.3	Access track and approach apron from existing area to GW bunds	m2	1000	\$ 10.00	\$10,000	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
4.2	SCRAP METAL STOCKPILE BUND					
4.2.1	Install and Supply stockpile Bund	m	60	\$ 40.00	\$2,400	As above
4.2.2	Install and Supply hardstand (150mm)	m2	700	\$ 10.00	\$7,000	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
4.3	USED OIL, TYRE & DRUMUSTER AREA					
4.3.1	Install and Supply hardstand	m2	180	\$ 10.00	\$1,800	As above
4.4	DRUMUSTER COMPOUND					
4.4.1	Install and Supply fenced compound	Each	1	\$ 8000.00	\$8,000	Advice from Shire (May2022) - 6m x 6m portable lockable cage from Drummuster
4.5	CONTAINERS					
4.5.1	Storage containers for collected waste streams (e-waste, gas bottles, batteries etc)	Each	1	\$ 8000.00	\$8,000	Provisional sum
5	INTERNAL TRACKS					
5.1	Internal tracks around material stockpile area and access to disposal cell	m2	850	\$ 10.00	\$ 8,500	Shire owned laterite gravel. Cost provided by Shire, inc. supply, haulage, laying, spreading (all plant and labour)
6	REHABILITATION					
6.1	HISTORIC DISPOSAL AREA					

6.1.1	Capping of historic disposal area. Volume is estimate only, insitu/compacted in place volume.	m2	11000	\$ 10.00	\$110,000	Assume minimal cut & fill across total area to produced soil mound over historic disposal area. Rate assumes light soil excavation.
6.2	ACTIVE DISPOSAL AREA					
6.2.1	Capping of Active disposal area. Volume is estimate only, insitu/compacted in place volume.	m3	2100	\$ 20.00	\$42,000	Assume placement and compaction of 700m think soil cap over disposal area. Rate assumes soil available on site
6.2.2	Average Shrubs	Each	300	\$ 20.00	\$6,000	Rate from Rawlinsons, Quantity Assumed one shrub per 10m2. Note: Rehab from seed would be more cost effective
				REGIONAL FACTOR	\$ 38,524.50	15% Regional Factor on Perth Prices
				SUBTOTAL	\$ 295,354.50	
				CONTINGENCY (20%)	\$ 59,070.90	
				SUBTOTAL + CONTINGENCY (20%)	\$ 354,425.40	
				GST	\$ 35,442.54	
				TOTAL ESTIMATED SUM INCL GST	\$ 389,867.94	