Regional summaries

This section provides more detail on the waste generation and infrastructure needs of each region in Western Australia. Each summary includes a snapshot of the region's industries, demographics and economy, painting a picture of how the region's activities have influenced waste generation in 2020. The 2020 waste generation and demographic data is then used to estimate 2030 waste generation.

The 2020 resource recovery infrastructure capacity is based on licensed capacity which was obtained through the *State Waste Infrastructure Register*. Gaps in existing infrastructure capacity are identified when comparing 2020 infrastructure capacity and 2030 waste generation data. Projections of needed waste infrastructure are developed using the methodology described in previous sections. Existing and planned infrastructure by region is compared to projected waste volumes to determine need, based on the concept of critical mass presented in this plan and the need for expansion of existing or development of new facilities.

Each regional summary includes waste generation by source, including MSW, C&D and C&I, to provide more insight and guide decision-making at the regional level. Each regional summary includes:

- an assessment of the social, economic and environmental indicators of the region
- a summary of waste generation, treatment and movements in 2020
- a summary of waste generation and treatment in 2030
- infrastructure capacity needs in 2030, including assessment of opportunities to provide or access capacity in neighbouring regions
- breakdown of the waste by facility type and source (MSW, C&I or C&D) in 2030
- breakdown of the material generation and recovery in 2030
- analysis of landfills by type and identified capacity risk
- an assessment of the principles and priorities for the region.

A desktop assessment of facilities' licences has been employed to understand infrastructure capacity and, as such, may not accurately reflect the specific activities conducted on site. This is one of the key limitations of with the *State Waste Infrastructure Needs Analysis* methodology for assessment, particularly in relation to FOGO recovery facility capacity needs and organics recovery facility capacity needs.

The infrastructure plan focuses on identifying infrastructure needs in alignment with meeting the waste strategy targets. Targets specifically relating to FOGO are currently limited to the Perth and Peel regions. In regions outside of Perth and Peel, FOGO waste is collectively categorised as 'organics'. Stakeholder feedback highlighted this gap in the 2030 needs assessment as several major regional centre municipalities, such as the South West and Great Southern, are considering or implementing FOGO recovery as a means to achieve their MSW recovery targets.

While there appears to be sufficient licensed capacity for organics recovery to meet regional demands until 2030, the specific availability of FOGO recovery capacity remains uncertain. In addition, there is potential for barriers to arise in regions outside of Perth and Peel depending on regional approaches on kerbside FOGO recovery. Some facilities, despite being licensed for FOGO waste, either do not accept it or handle quantities below their licensed capacity. This is discussed in more detail in the Considerations and limitations section.

Further, more detailed exploration of FOGO capacity needs outside Perth and Peel is required as an area of future work.

The infrastructure plan includes a summary for each region outlined in Figure 22:

- Perth
- Peel
- Pilbara
- Kimberley
- South West
- Great Southern
- Mid West
- Gascoyne
- Wheatbelt
- Goldfields-Esperance.

Major regional centres as defined by the waste strategy are also included in assessments:

- Albany (Great Southern region)
- Bunbury (South West region)
- Busselton (South West region)
- Greater Geraldton (Mid West region)
- Kalgoorlie-Boulder (Goldfields-Esperance region).

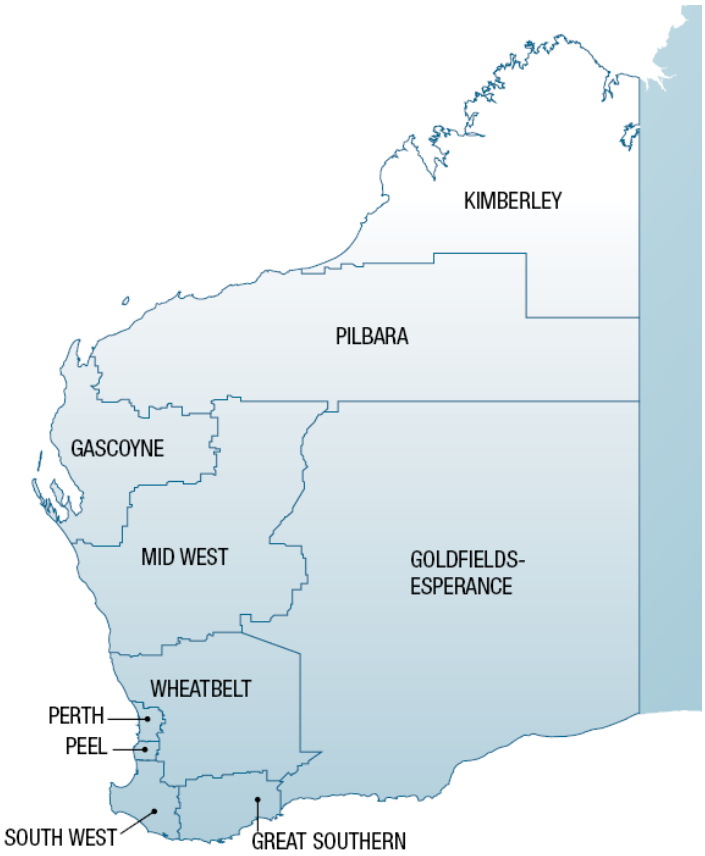


Figure 22 Regions used for the infrastructure plan

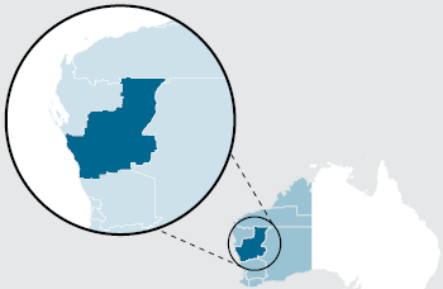
Mid West region

Waste profile in 2020

The Mid West region generates 2 per cent of the state's waste and has the second lowest waste generation rate per capita after the Great Southern region. The region generated 98,000 tonnes of waste in 2020, made up of primarily C&I (46 per cent), followed by MSW (39 per cent) and C&D (15 per cent). The Mid West treated 87,000 tonnes in 2020, with 20,000 tonnes (23 per cent) being recovered and 67,000 (77 per cent) being landfilled. The Mid West region did not receive any waste or material from other regions, although it transferred 13,000 tonnes, primarily to Perth. Key waste profile data for the Mid West region waste and resource recovery in 2020 is presented below.

Residents in the Mid West	2 per cent of Western Australia's population resides in the Mid West region.
	Population density of 0.1 people per km^2.
	Residents are mostly concentrated to the Geraldton major regional centre.
Local governments in the region	Shire of Carnamah, Shire of Chapman Valley, Shire of Coorow, Shire of Cue, City of Greater Geraldton, Shire of Irwin, Shire of Meekatharra, Shire of Mingenew, Shire of Morawa, Shire of Mount Magnet, Shire of Murchison, Shire of Northampton, Shire of Perenjori, Shire of Sandstone, Shire of Three Springs, and Shire of Yalgoo.
Generating waste	The Mid West region generates 2 per cent of the waste generated in Western Australia.
Transporting waste	There are several major roads and railway networks that connect the Mid West with Perth.
Treating waste	The Mid West treats 1 per cent of the waste treated in Western Australia.
	The Mid West recovers less than 1 per cent of the waste recovered in Western Australia.
	The Mid West landfills 3 per cent of the waste landfilled in Western Australia.

MID WEST
REGIONAL SUMMARY



AREA
478,000 km²

GROSS REGIONAL PRODUCT (2019–20)
$6.14B/CAP

NUMBER OF BUSINESSES (2019–20)
4,559

TOP 5 EMPLOYMENT BY INDUSTRY

29.01%	Agriculture, forestry and fishing
14.47%	Construction
9.89%	Rental, hiring and real estate services
6.82%	Transport, postal and warehousing
5.96%	Wholesale trade

The mining industry sector makes the greatest contribution to economic output in the region, which at $6.7B accounts for 47.24% of total output. This industry sector is also the largest employer with 3,921 jobs which represents 14.87% of total employment within the region.

2020
- POPULATION 53,867
- WASTE GENERATED 92,000 TONNES
- WASTE GENERATION PER CAPITA 1.72 TONNES

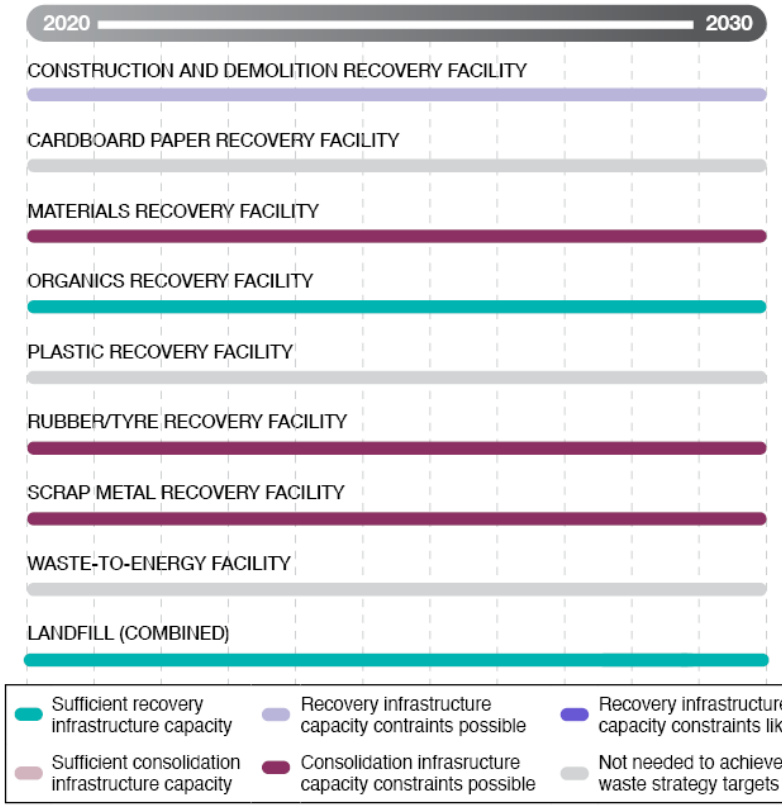
2030
PROJECTIONS TO 2030 BASED ON ACHIEVING WASTE STRATEGY TARGETS
- POPULATION 52,841 (▼2%)
- WASTE GENERATED 83,000 TONNES
- WASTE GENERATION PER CAPITA 1.57 TONNES

2030 INFRASTRUCTURE CAPACITY NEED
1. Material recovery facility | 13,000 tonnes
2. Scrap metal | 7,000 tonnes

TOP PRIORITIES
1. Investigate designating a waste precinct in the north, east or south of Geraldton.
2. Investigate a rural landfill risk assessment of unlicensed landfill and REMS landfills.

INFRASTRUCTURE NEED BETWEEN 2020 AND 2030

Projections for capacity constraints compare current, approved and planned capacity against the infrastructure needs by 2030 to meet the waste strategy targets.



WASTE IN MID WEST 2020 AND 2030

Waste projections to 2030 based on meeting the waste strategy targets

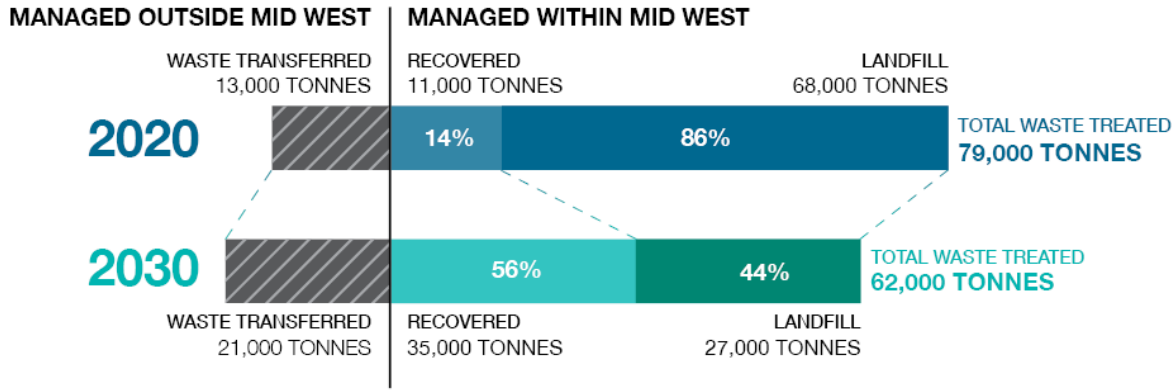


Figure 68 Waste in the Mid West: statistics and projections

Waste and resource recovery in 2020

The Mid West region largely relies on putrescible landfills for the treatment of material. The region generates 36,000 tonnes of MSW, with only 3 per cent recovered. The top five materials processed in the region in 2020 include:

1. mixed putrescible waste – domestic (household)
2. mixed inert waste
3. mixed putrescible waste (C&I)
4. metals – ferrous steel – non-packaging
5. sand/soil.

There are a total of 27 waste facilities in the region, predominantly landfills (including three inert landfills and 21 putrescible landfills) along with one C&D recovery facility and one organics recovery facility. An additional inert landfill is in development in the south of Geraldton. There are also five REMS landfills in the Mid West region.

The region's population is primarily concentrated along the west coast, especially in the Geraldton area. Most waste facilities are also in Greater Geraldton because of the proximity to waste generation sources and road/rail transportation to Perth for material offtake. The commercial port in Geraldton can be leveraged for material transportation to end markets. Offtake opportunities also exist for recovered organic products as the Mid West has a strong agricultural industry.

Transferred material consisted of ferrous steel, mixed C&D and electric and electronic goods.

Aspects of waste and resource recovery in the Mid West region in 2020 that must be considered when working towards the waste strategy targets include:

- C&I formed the largest waste source in the Mid West region, consisting of about 43,000 tonnes, of which 21 per cent was recovered in the region.
- The Mid West transferred 13,000 tonnes of material, predominantly to Perth (97 per cent), which was facilitated by strong transportation networks.
- The Mid West transferred all ferrous metal generated in the region out of the region for processing.
- There is a current lack of MRFs in the region, resulting in low regional resource recovery rates, particularly for MSW.

The location of current and planned recovery infrastructure in the Mid West region in 2020 is shown inFigure 71 (see Facility lists in the Appendix for a full list of facilities).

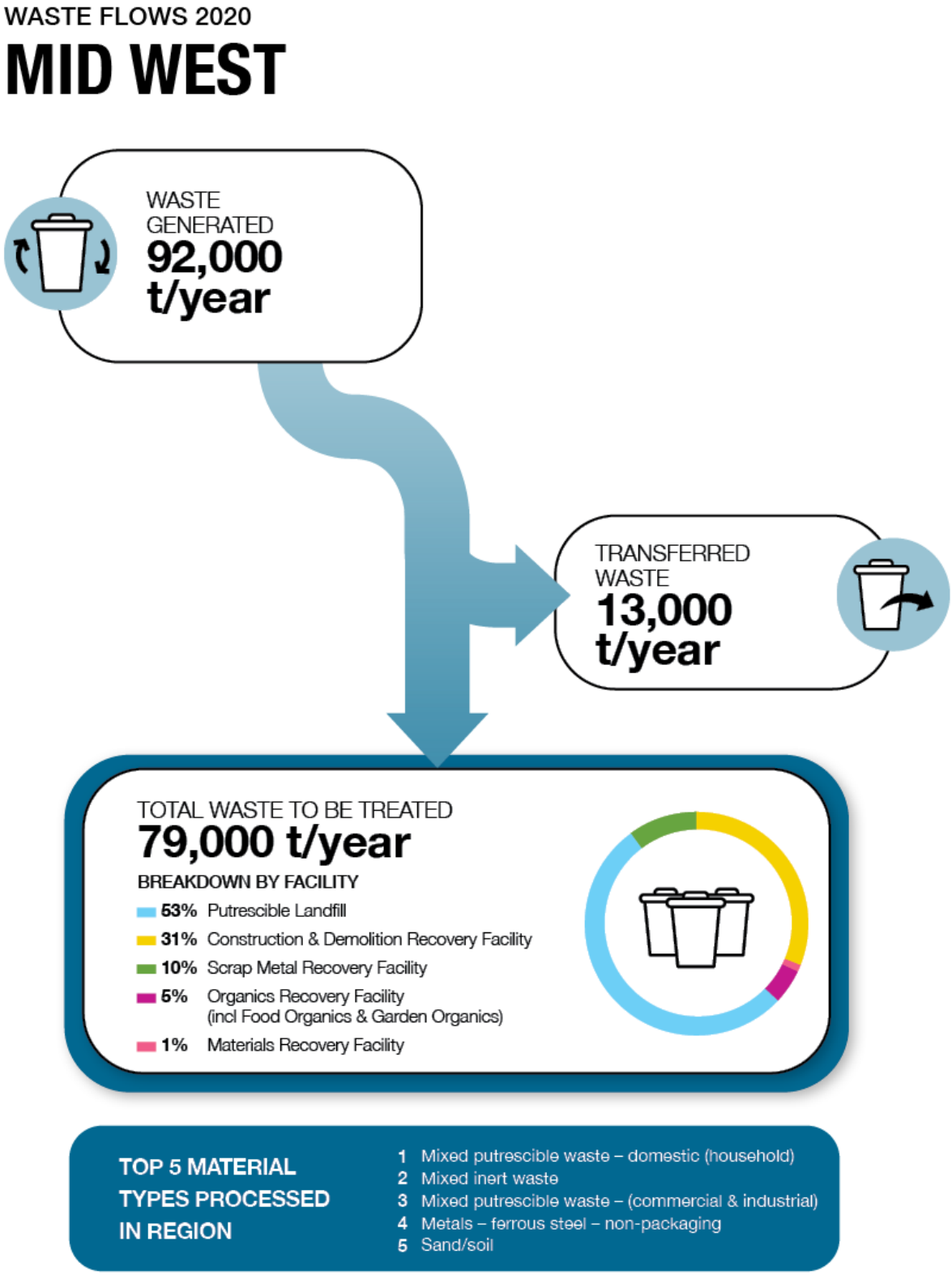


Figure 69 Waste generated, received, transferred and treated in the Mid West in 2020

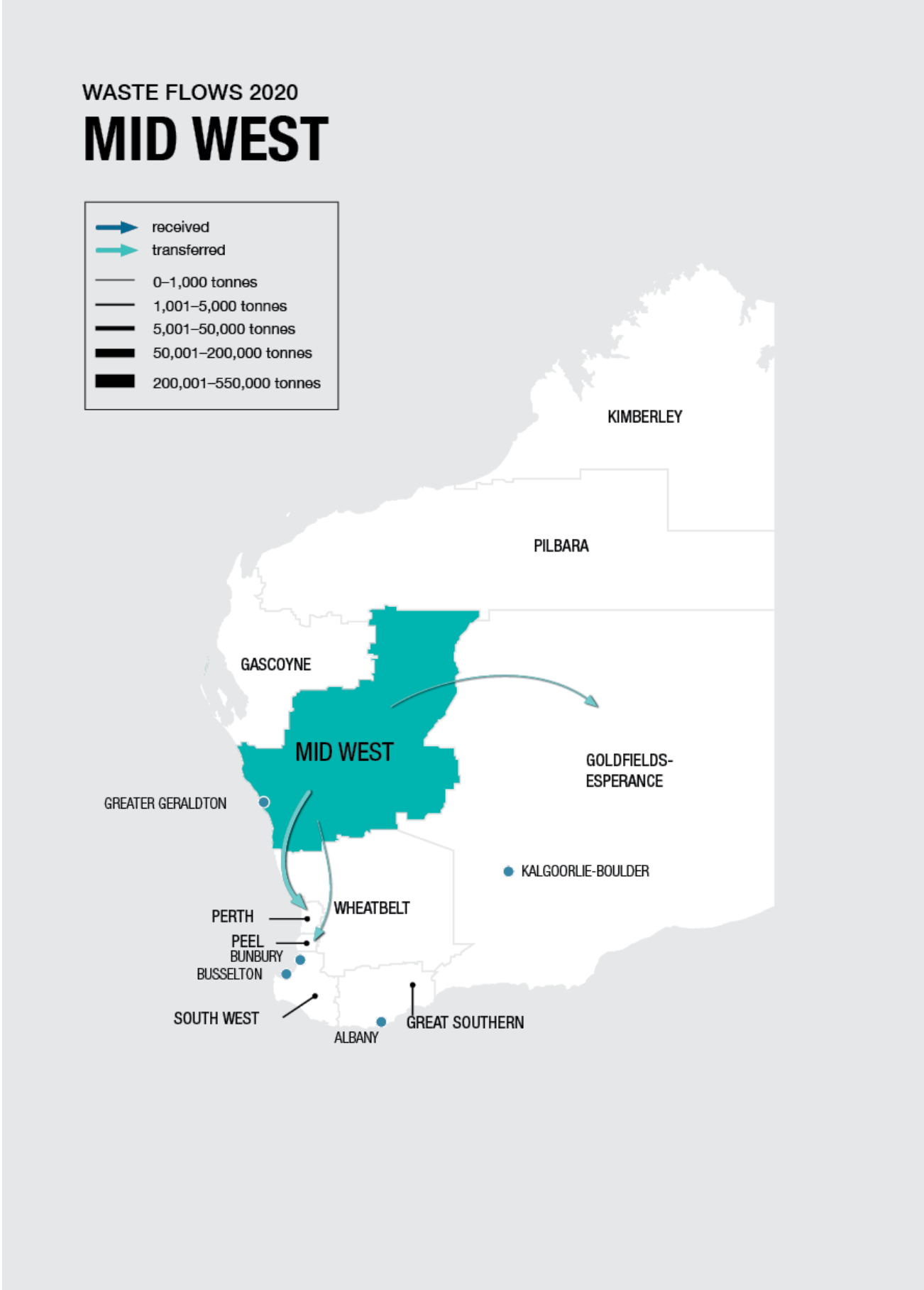


Figure 70 Waste flows in the Mid West in 2020

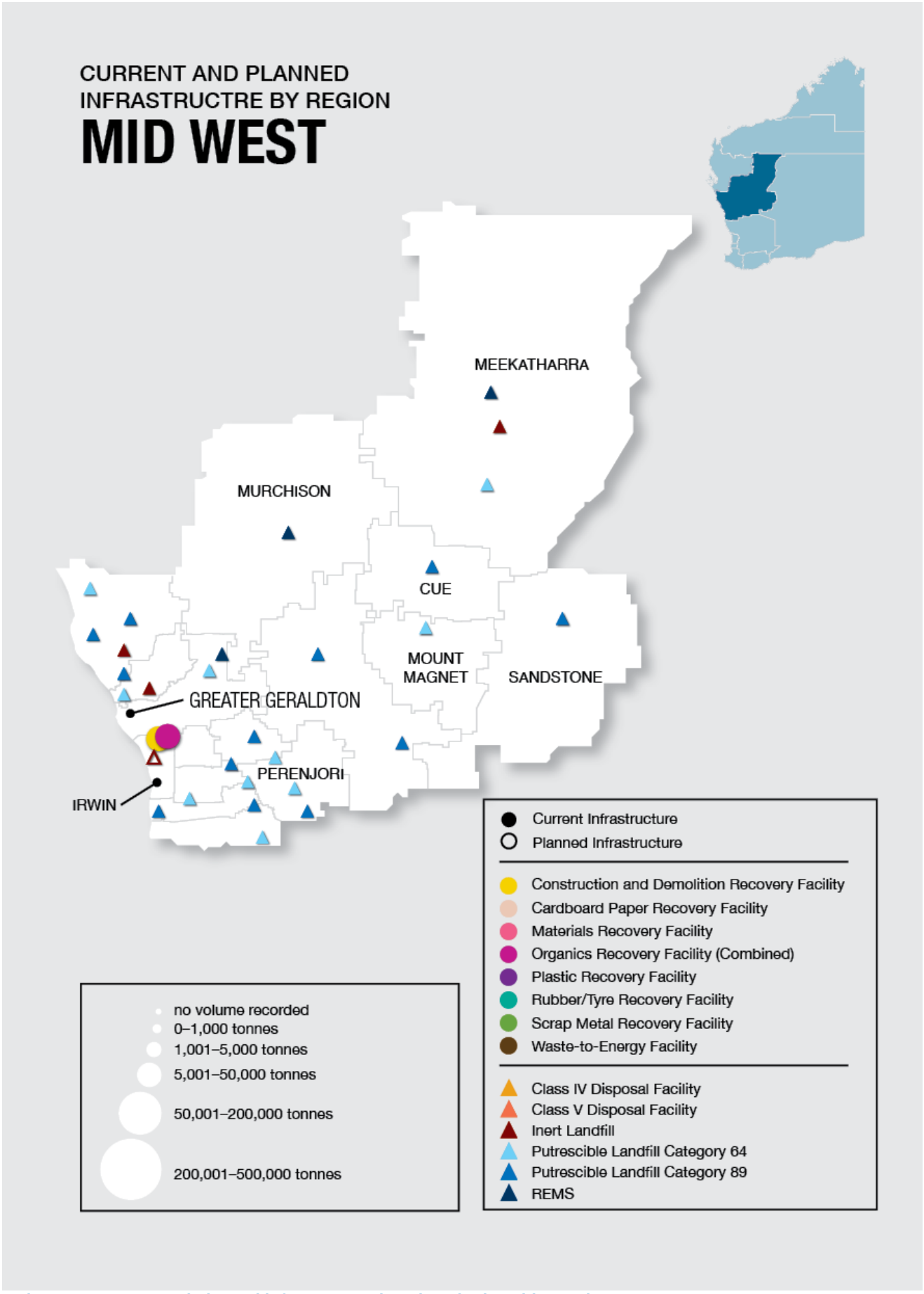


Figure 71 Current and planned infrastructure locations in the Mid West in 2020

Waste and resource recovery in 2030

Modelling to achieve all waste strategy targets in 2030 found the Mid West region would generate 83,000 tonnes, which is lower than 2020 quantities.

However, the increase in materials exported out of the region means the total waste treated in the Mid West will decrease by 22 per cent. This shift, along with the addition of new infrastructure, will increase the Mid West resource materials rate from 14 per cent to 56 per cent. Figure 72 shows the distribution of feedstock materials used by each facility type, indicating which waste streams are most significant and where the resource recovery efforts should be concentrated. This is also reflected in the Mid West region Principles and priorities section.

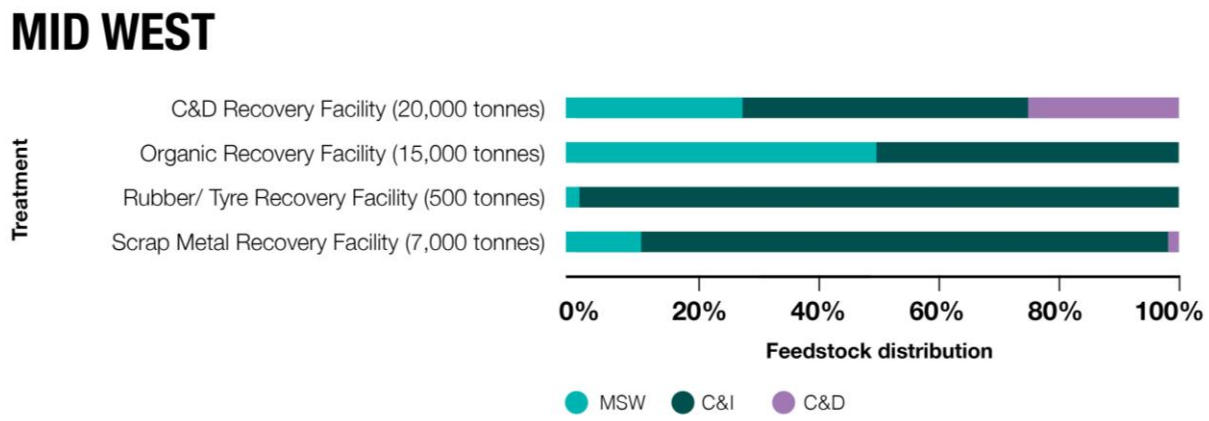


Figure 72 Feedstock distribution of treatments in the Mid West in 2030

One of the Mid West's local governments (City of Greater Geraldton) is considered a major regional centre under the waste strategy. This regional centre is working towards the MSW recovery target of 60 per cent by 2030. Other local governments in the Mid West may be interested in implementing FOGO collection and recovery, increasing the demand for local FOGO processing infrastructure.

The model uses licensed capacity for facilities and can result in an overestimation of actual capacity. Stakeholder feedback indicates that only a fraction of the region's licensed capacity of 20,000 tonnes of Category 67A capacity is actually available for the processing of FOGO. The Mid West's licensed Category 67A capacity is only in the City of Greater Geraldton. The Infrastructure priorities section describes the need to investigate further to confirm actual FOGO processing capacity.

Infrastructure capacity needs in 2030

Based on current, planned and approved infrastructure in 2020, the Mid West requires the following additional capacities to meet the waste strategy targets in 2030:

- 13,000 tonnes of additional capacity is needed in MRFs, which may be sufficient to allow for an additional recovery facility if augmented with material received from the Gascoyne region (1,000 tonnes).
- 7,000 tonnes of additional consolidation capacity is needed for scrap metal recovery.

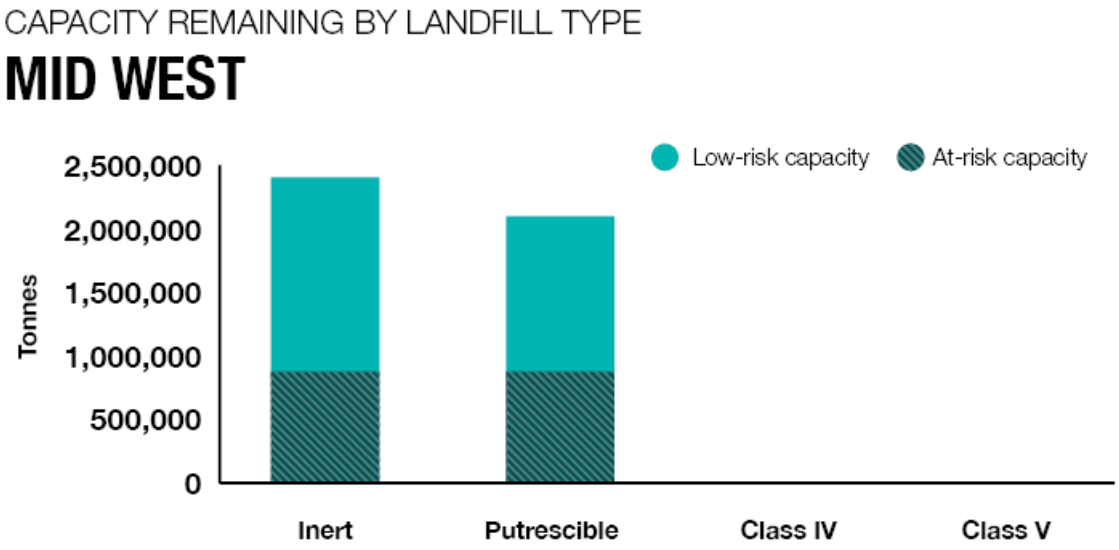


Figure 73 Capacity remaining by landfill type in the Mid West, including an assessment of low-risk and at-risk capacity

Total remaining capacity by landfill types is presented in Figure 73. This figure also indicates the proportion of that capacity that is at risk (see section on Landfill capacity lifetime assessment to 2030 and 2050).

Under the low-risk scenario, half of the total landfill capacity of 1.5 million tonnes was identified as potentially at risk, of which inert landfills make up 50 per cent and putrescible landfills 50 per cent. The region would require 18,000 tonnes of residual waste disposed of in landfill each year. Feedstock lifetime remaining for landfills is shown in Figure 19.

Details of the infrastructure needed to achieve waste strategy targets are outlined in Figure 74, including the expected facilities, capacities and capacity needs in 2030.

CURRENT RECOVERY INFRASTRUCTURE PIPELINE

MID WEST

This overview includes a comparison of projected generation and capacities to determine the infrastructure need in 2030.
It includes planned and approved facilities, as well as closures between 2020 and 2030.

Figure 74 Mid West recovery infrastructure pipeline and capacity need in 2030

Principles and priorities

The principles outlined in this plan have been used to identify priorities.

Priority areas that are projected to go beyond capacity need, based on the completed modelling for the region, arise when applying the principles.

Based on the analysis, the top priorities for the Mid West region are:

- Investigate designating a waste precinct in the north, east or south of Geraldton.
- Investigate a rural landfill risk assessment of unlicensed landfills and REMS landfills.

These are discussed in more detail in Table 35 below. The principles are outlined once more in Figure 2 for reference.

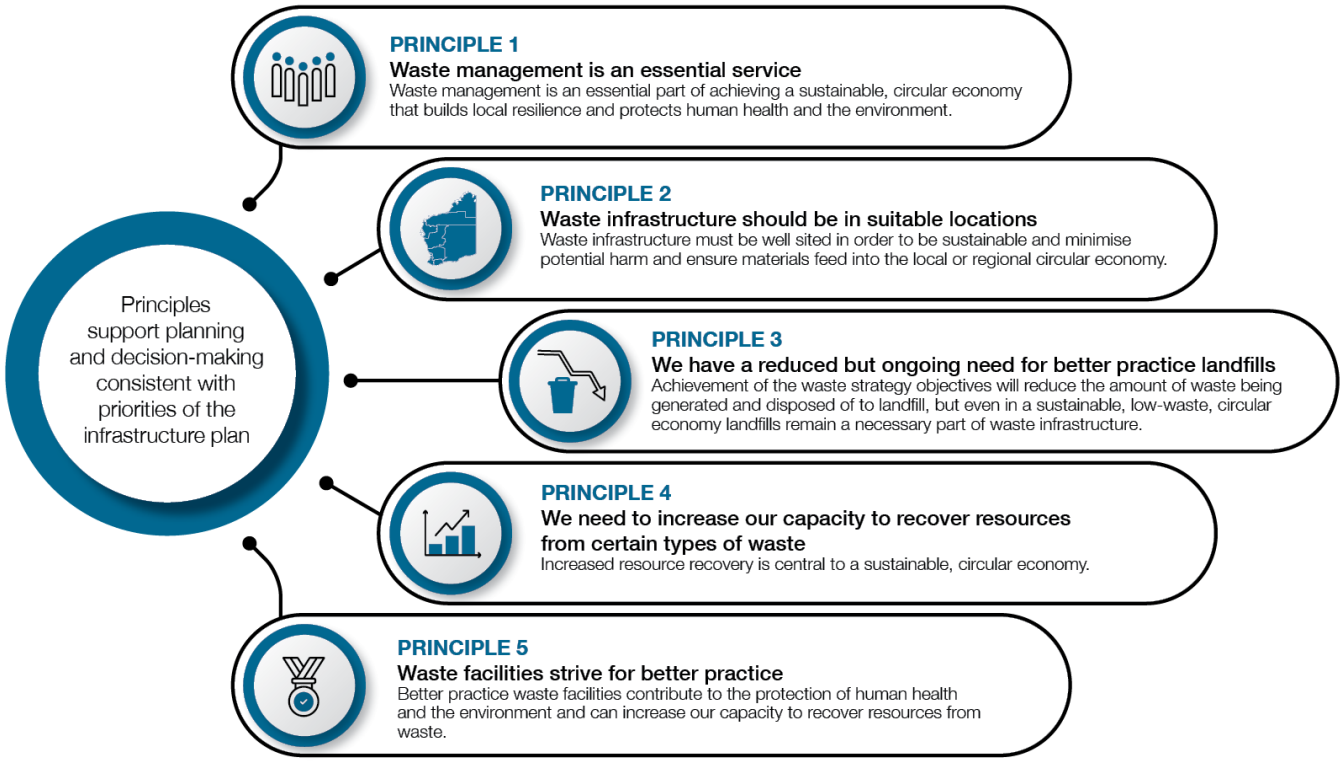


Figure 2 Principles of the *State waste infrastructure plan*

Table 35 Consideration of infrastructure plan principles and priorities in the Mid West

Capacity needs to achieve waste strategy targets 2030	Consideration of infrastructure plan principles	Findings in response to meeting the waste strategy 2030 target (with assigned priority ranking)
13,000 tonnes of capacity for MRFs	**Principle 1: Waste management is an essential service** The lack of existing facilities will require additional licensing and planning considerations. An opportunity to offer recycling collection services to the major regional centre of Greater Geraldton and surrounding areas may create additional feedstocks of about 11,000 tonnes of commingled recycling, pushing the MRF capacity need to 24,000 tonnes, which is sufficient to develop one additional facility. Contingency planning should include alternative facilities in adjoining regions to counter emergency situations (such as natural and other disasters) and unexpected closures of facilities arising from a variety of potential causes. **Principle 2: Waste infrastructure should be in suitable locations** The 13,000 tonnes of capacity needed to achieve waste strategy Recover targets in 2030 is about 85 per cent of the critical mass for an MRF. The adjoining Gascoyne region needs an additional 1,000 tonnes of capacity, which is far below critical mass for a recovery facility. If the Mid West receives material from the Gascoyne region, the 14,000 tonnes of commingled recyclables is 70 per cent of critical mass required for a new MRF. Considering principle 2, this may make the Mid West an appropriate place for an additional MRF in the medium term. Whole-of-life impacts should be determined and evaluated for any proposed site, including the potential for eventual urban encroachment and having suitable buffers. Most of the areas to the north, east and south of Geraldton present areas that are free of the assessed constraints, which may provide opportunities for the siting of waste infrastructure close to the main waste generation hub of the region.	**High** Designating a waste precinct in the areas north, east or south of Geraldton could facilitate low-risk development of an MRF. This is a high priority given the immediate capacity need and potential role supporting the Gascoyne region.
7,000 tonnes of capacity for scrap metal recovery	**Principle 1: Waste management is an essential service** The 7,000 tonnes of capacity needed to achieve the waste strategy Recover targets 2030 requires consolidation and transport to Perth when considering the essential nature of scrap metal recovery under principle 1. **Principle 2: Waste infrastructure should be in suitable locations**	**High** Investigate designating a waste precinct in areas north, east or south of Geraldton. This is a high priority given the immediate capacity need and potential role supporting the Gascoyne region.

Capacity needs to achieve waste strategy targets 2030	Consideration of infrastructure plan principles	Findings in response to meeting the waste strategy 2030 target (with assigned priority ranking)
	The Mid West is an appropriate place to develop a consolidation facility that can meet the additional capacity need of 7,000 tonnes for the Mid West and 500 tonnes for the Gascoyne region. A designated waste precinct in the areas north, east or south of Geraldton with low constraints will support the future needs of a consolidation facility and improve the efficiency of waste transportation in the region. **Principle 4: We need to increase our capacity to recover resources from certain types of waste** Consideration of principle 4 highlights the negative impact of consolidation and transport of scrap metal material long distances to Perth. However, unless downstream markets for recovered scrap metal are developed in the region, transport to Perth as the closest downstream market will remain necessary.	
Used tyre storage	**Principle 3: We have a reduced but ongoing need for better practice landfills** Waste management of tyres in remote locations poses challenges. Existing landfills are being used for collection and consolidation of tyres and present a suitable centralised location for waste management in remote regions. About 1,700 tonnes per annum of rubber/tyre material is projected to be generated in the Mid West and this will continue to be generated, highlighting better practice landfills as an important part of the Mid West's waste management. **Principle 4: We need to increase our capacity to recover resources from certain types of waste** Tyres can be processed but infrastructure may only be available in Perth so the recovery of rubber/tyre materials in the Mid West region is dependent on consolidation and transport to enable recovery. Consolidation and transport will remain the likely fate given the insufficient quantity to support regional processing. **Principle 5: Waste facilities strive for better practice** One class 64 putrescible landfill in the Mid West is also a tyre storage facility. See the landfill capacity risk assessment below to further understand how the loss of this facility may occur, noting that this may reduce the ability to consolidate rubber/tyre arising in the Mid West.	**Medium** There is a facility in Geraldton listed in the region for Category 57 with total capacity of 2,000 tyres that may be sending tyres to Perth. There is an opportunity to consolidate volumes and transport these tyres for reprocessing outside the region.

Capacity needs to achieve waste strategy targets 2030	Consideration of infrastructure plan principles	Findings in response to meeting the waste strategy 2030 target (with assigned priority ranking)
Landfill capacity risk assessment	**Principle 5: Waste facilities strive for better practice** Based on current, planned and approved landfill capacity, the Mid West region has sufficient capacity to manage residual waste needs to 2030. Under a low-risk approach to landfill capacity lifetime the region continues to have sufficient capacity to manage residual waste needs to 2030. **Principle 5: Waste facilities strive for better practice** Consideration of principle 5 highlights seven facilities with a total capacity of 770,000 tonnes potentially at risk of noncompliance with better practice in the Mid West region. In addition, 95 per cent of landfills also require post-closure planning, having not completed or updated a plan within the past 10 years.[7] Collaboration with the local mining industry will create opportunities to recover mining waste and improve better practice management of REMS landfills.	**High** Updated rural landfill risk assessment methodology of unlicensed landfill and REMS landfills can be used to effectively assess the potential risk of environmental, human health and amenity impacts. **High** New facility development in the Mid West regions can be facilitated through assisted land use planning and approvals frameworks to alleviate local putrescible landfill capacity constraints

[7] Western Australia Waste Infrastructure Audit, ASK Waste Management Consultancy Services on behalf of the Department of Water and Environmental Regulation, (2021).