

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).

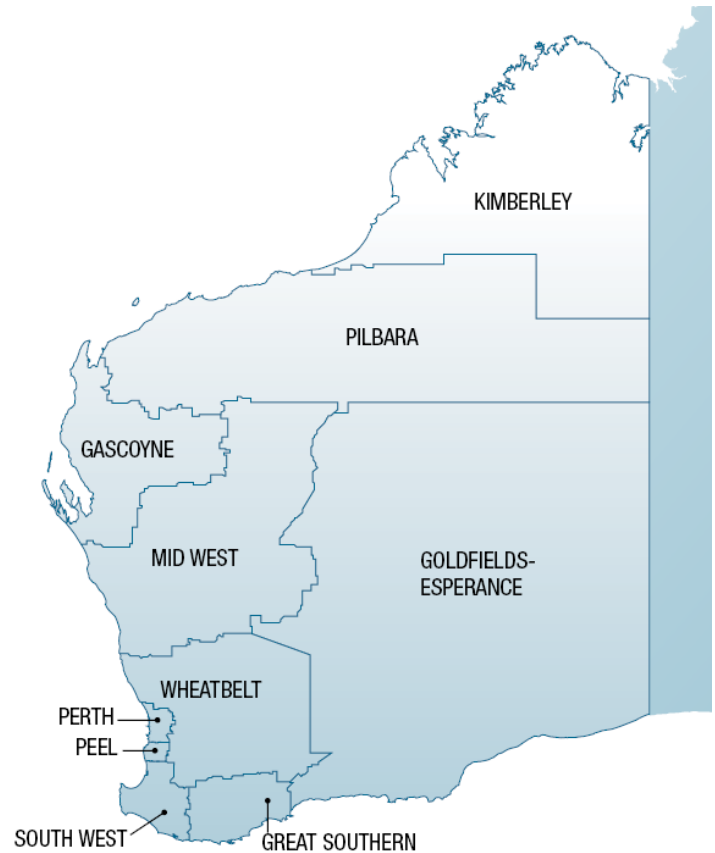


Figure 22 Regions used for the infrastructure plan

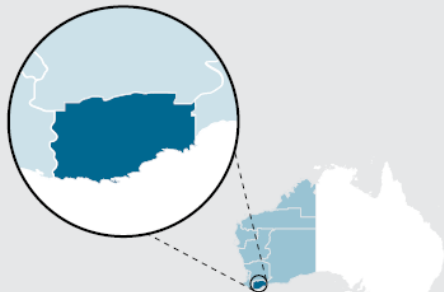
Great Southern region

Waste profile in 2020

The Great Southern region generates 2 per cent of the state's waste and has the lowest waste generation rate per capita of any region. The region generated 98,000 tonnes of waste in 2020, consisting of nearly equal parts C&I (35 per cent), MSW (34 per cent), and C&D (31 per cent). The region treated 87,000 tonnes in 2020, with 20,000 tonnes (23 per cent) being recovered and 67,000 tonnes (77 per cent) being landfilled. Key waste profile data for the Great Southern region waste and resource recovery in 2020 is presented below.

Residents in the Great Southern	<p>2 per cent of Western Australia's population resides in the Great Southern region.</p> <p>Population density of 2 people per km².</p> <p>Residents are mostly concentrated to the Albany major regional centre.</p>
Local governments in the region	<p>City of Albany, Shire of Broomehill-Tambellup, Shire of Cranbrook, Shire of Denmark, Shire of Gnowangerup, Shire of Jerramungup, Shire of Katanning, Shire of Kent, Shire of Kojonup, Shire of Plantagenet, and Shire of Woodanilling.</p>
Generating waste	<p>The Great Southern region generates 2 per cent of the waste generated in Western Australia.</p>
Transporting waste	<p>The Albany Highway provides direct connection between the region's major population centre and Perth, allowing for the transportation of recyclable materials. There is also railway connection to the Wheatbelt and a commercial port in Albany.</p>
Treating waste	<p>The Great Southern treats 1 per cent of the waste treated in Western Australia.</p> <p>The Great Southern recovers 1 per cent of the waste recovered in Western Australia.</p> <p>The Great Southern landfills 3 per cent of the waste landfilled in Western Australia.</p> <p>Acts as a critical hub for the southern regions.</p>

GREAT SOUTHERN REGIONAL SUMMARY

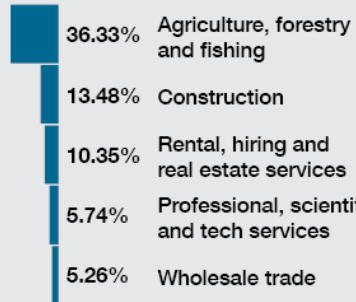


AREA
39,007 km²

GROSS REGIONAL PRODUCT (2019–20)
\$4.52B/CAP

NUMBER OF BUSINESSES (2019–20)
6,717

TOP 5 EMPLOYMENT BY INDUSTRY



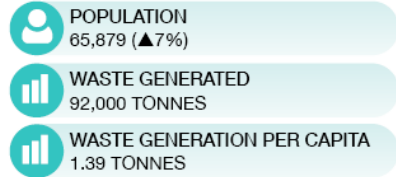
The manufacturing industry sector makes the greatest contribution to economic output in the region, which at \$1.3B accounts for 14.39% of total output. With 2,771 jobs representing 10.31% of total employment, it is the retail trade industry sector that is the region's largest employer.

2020



2030

PROJECTIONS TO 2030 BASED ON ACHIEVING WASTE STRATEGY TARGETS



2030 INFRASTRUCTURE CAPACITY NEED

1. Construction and demolition | 16,500 tonnes
2. Material recovery facility | 5,000 tonnes
3. Scrap metal | 7,000 tonnes

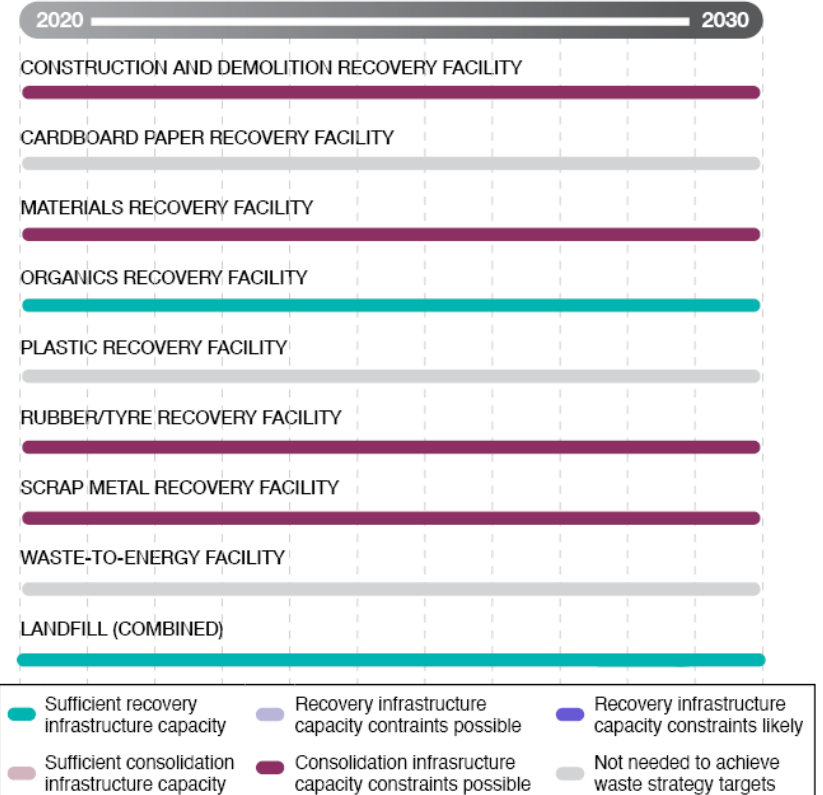


TOP PRIORITIES

1. Assess planning and development opportunities for construction and demolition facility siting to service Albany region.
2. Investigate alternative landfill facility contingency arrangements with the Great Southern and Wheatbelt region.
3. Assess whether existing 67A licensed facilities in Great Southern or neighbouring regions can be increasingly utilised to alleviate food organics and garden organics recovery capacity need.

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 GREAT SOUTHERN 2020 AND 2030

Waste projections to 2030 based on meeting the waste strategy targets

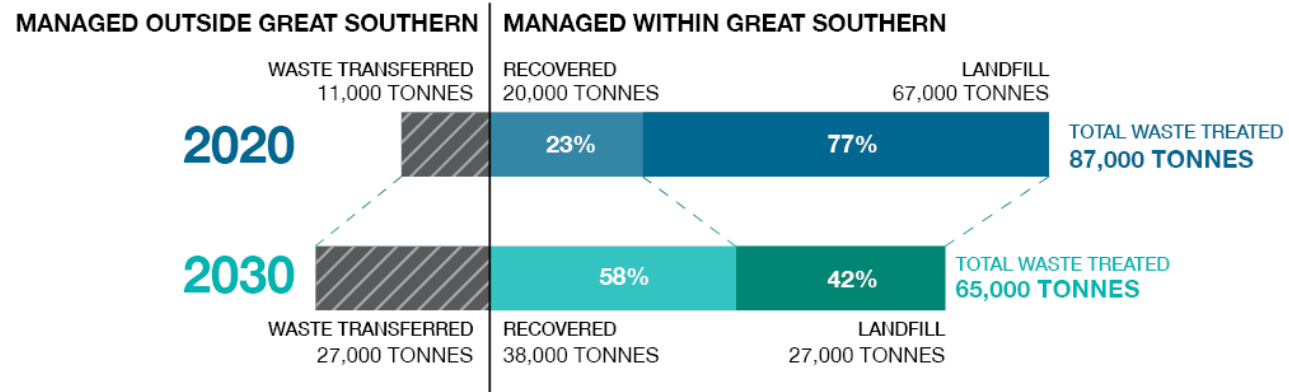


Figure 61 Waste in the Great Southern: statistics and projections

Waste and resource recovery in 2020

The Great Southern region still largely relies on landfill treatment for wastes, although implementation of three-bin collection systems has already begun in some local government areas. The top five materials processed in the region in 2020 include:

1. mixed putrescible waste – domestic (household)
2. sand/ soil
3. mixed putrescible waste (C&I)
4. mixed C&D
5. commingled recycling

Most of the waste infrastructure in the region is disposal facilities, which include three inert landfills and 22 putrescible landfills. Just over half (54 per cent) of all waste treated in the region was through putrescible landfill disposal. Active in waste recovery are two MRFs and three organics recovery facilities. There is no additional infrastructure under development in the region noted in the infrastructure plan.

Waste treated is mostly from local generation, with less than 1,000 tonnes received into the region. Received material consisted of commingled recycling from the neighbouring regions of Goldfields-Esperance and Wheatbelt. The Great Southern region also transferred out of region 11,000 tonnes of material, consisting predominately of ferrous metal and mixed C&D sent to Perth. The Great Southern also supports other adjoining regions by providing MRF capacity. Although the amount of material received from other regions are not large, they are important in achieving the waste strategy strategic objectives.

Waste management practices vary across different areas of the Great Southern. In Albany, a comprehensive three-bin system is in place which collects general waste, commingled recycling and FOGO. In the Shires of Jerramungup, Denmark, and Plantagenet, two-bin kerbside collections are offered, catering to general waste and recycling needs. Moreover, rural residents without access to a kerbside service can utilise drop-off facilities to responsibly manage their waste.

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

- Mixed C&D contributes more than 20 per cent of waste transferred out of the Great Southern region because of a lack of local capacity to reprocess.
- Nearly all (97 per cent) of waste transferred out from the Great Southern region was transported to Perth for further treatment.
- Mixed putrescible waste from domestic (household) and commercial sources forms the largest waste material processed in the region, requiring ongoing management of landfill capacity.
- Strong transportation connections with adjoining regions and Perth enable opportunities for material consolidation and offtake.
- The region currently imports commingled recycling materials from neighbouring regions for processing.

The location of current and planned recovery infrastructure in the Great Southern region in 2030 is shown in Figure 64 (see Facility lists in the Appendix for a full list of facilities). Facilities granted work approvals since 2020 by the department in the Great Southern region are listed below in Table 33. These facilities have not been included in the modelling for the infrastructure plan and may alleviate some of the region's capacity needs.

Table 33 Facilities granted licences or works approvals since 2020 in the Great Southern

Facility type	Facility name	Location
Asphalt manufacturing and consolidation centre	Albany Asphalt Plant	Great Southern

WASTE FLOWS 2020

GREAT SOUTHERN

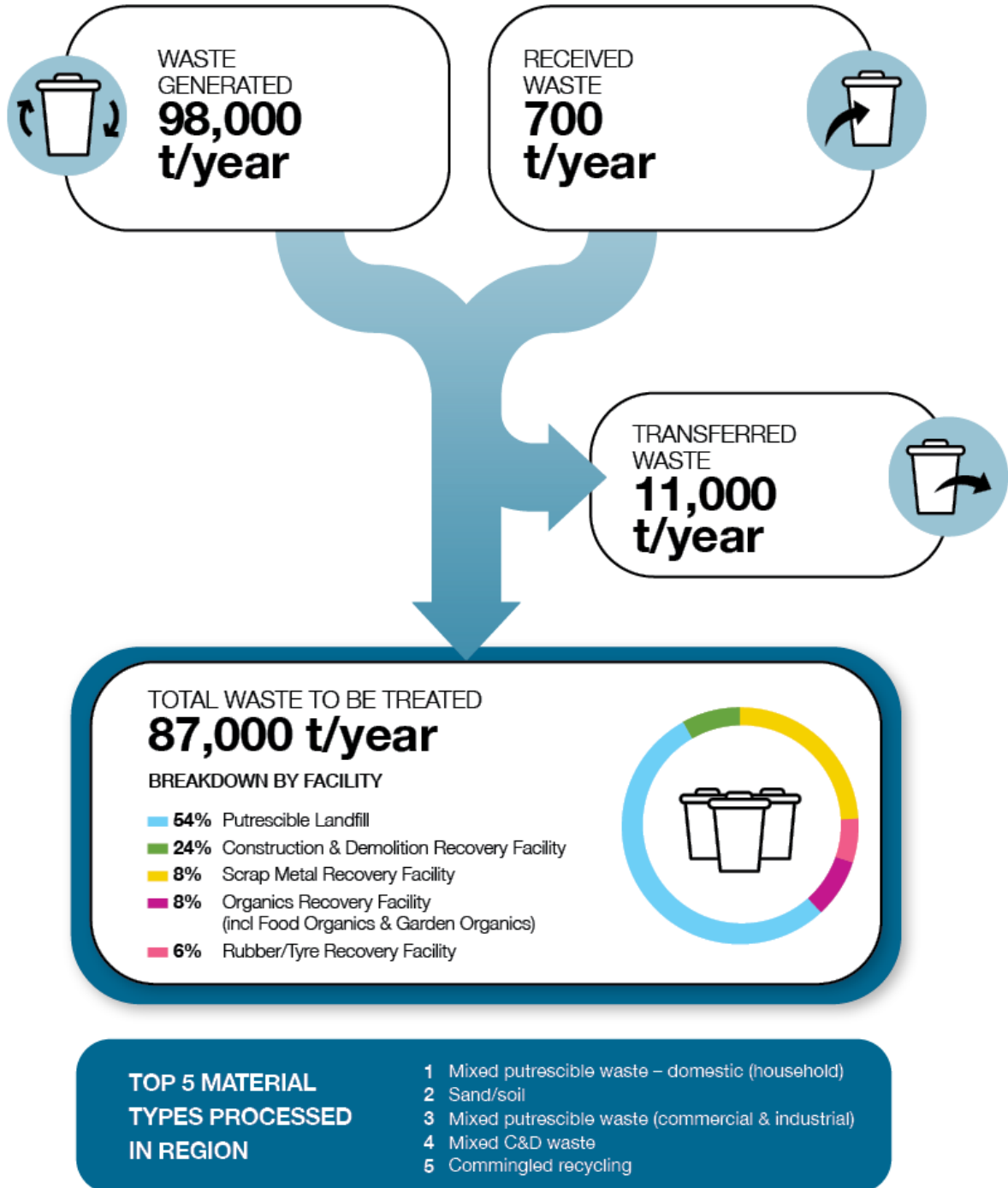


Figure 62 Waste generated, received, transferred and treated in the Great Southern in 2020

WASTE FLOWS 2020

GREAT SOUTHERN

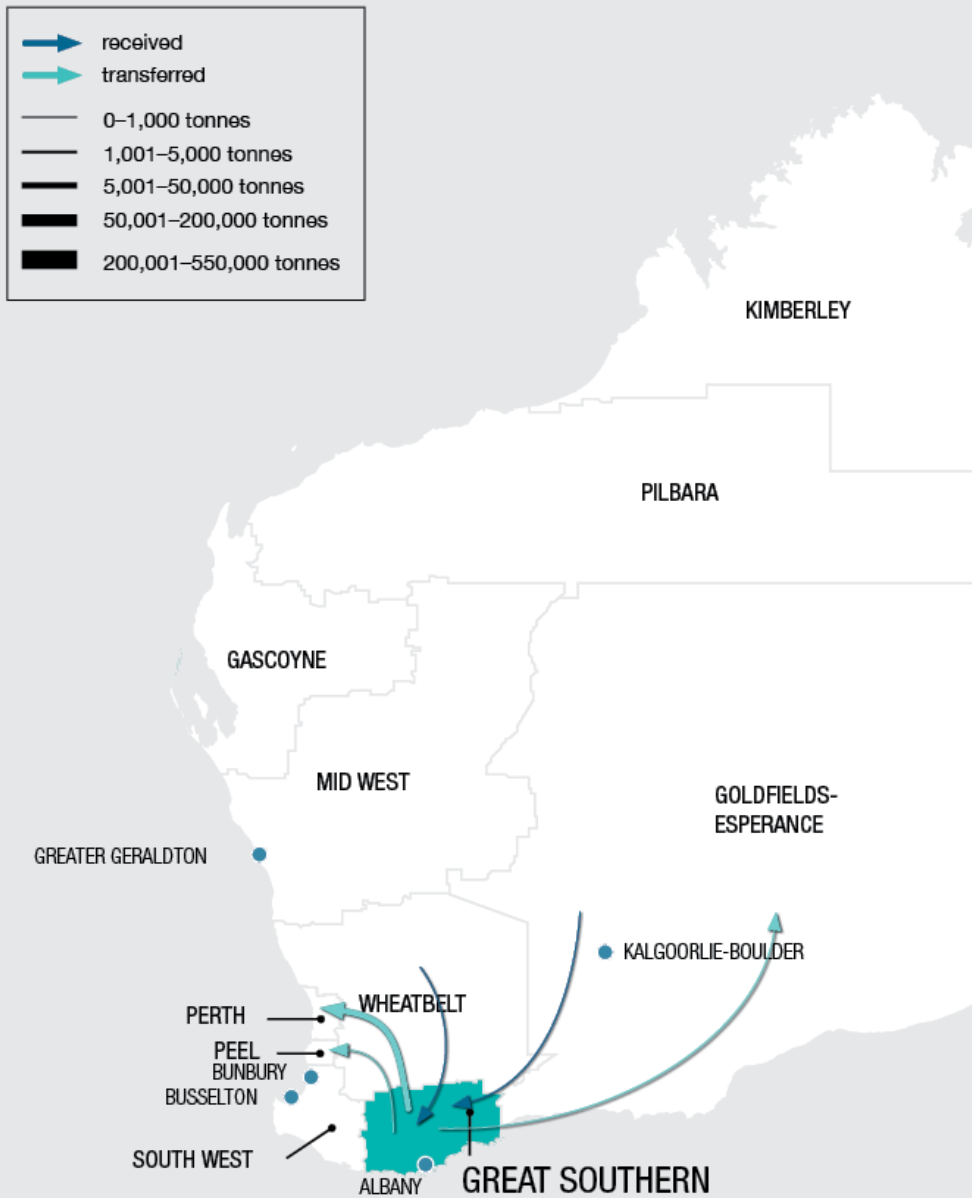


Figure 63 Waste flows in the Great Southern in 2020

CURRENT AND PLANNED INFRASTRUCTURE BY REGION GREAT SOUTHERN

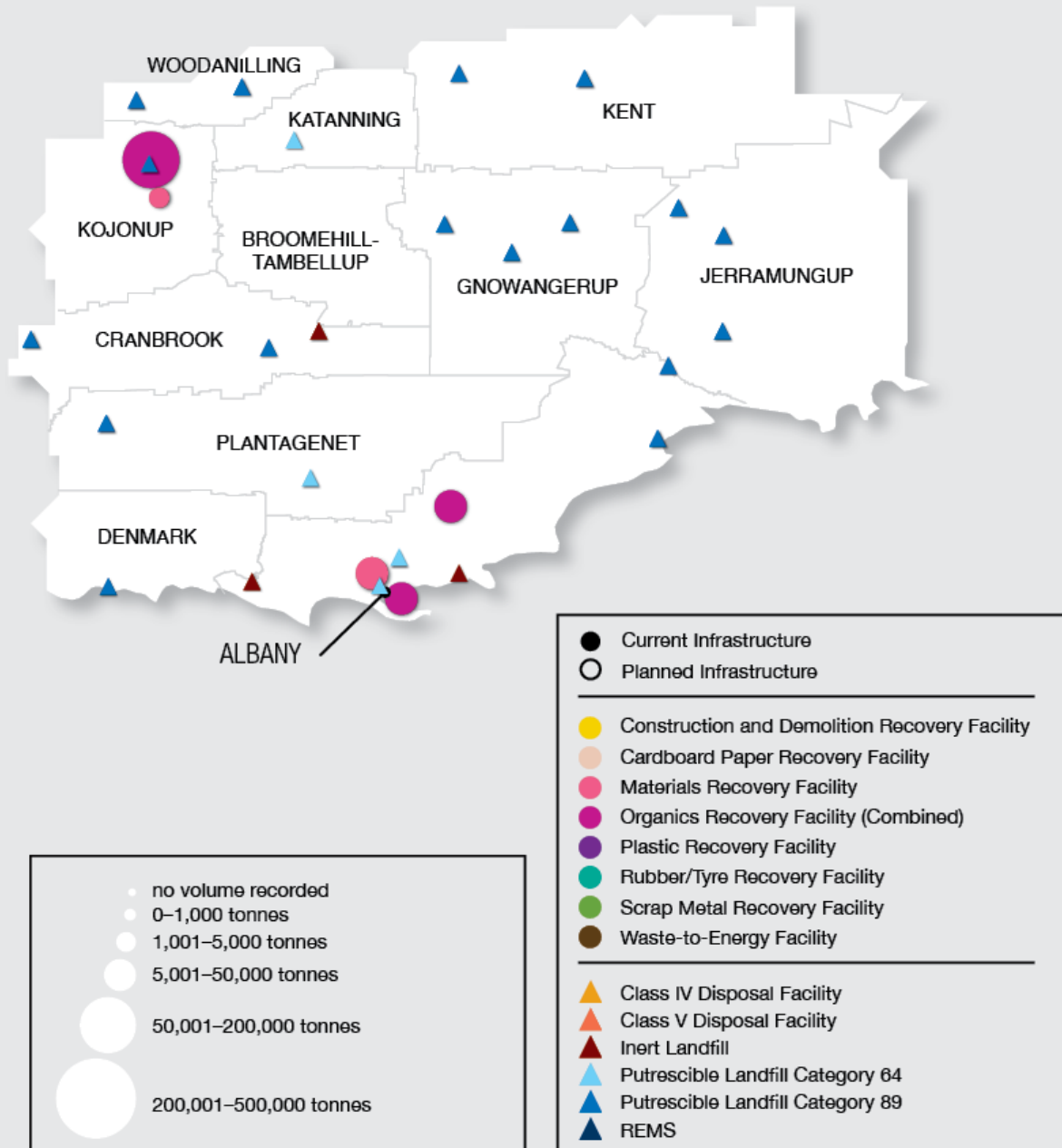
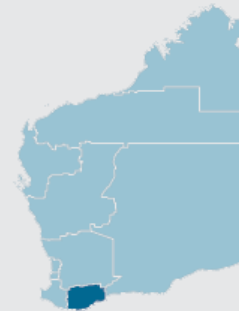


Figure 64 Current and planned infrastructure locations in the Great Southern in 2020

Waste and resource recovery in 2030

Modelling to achieve all waste strategy targets in 2030 found the Great Southern region would generate 92,000 tonnes, similar to 2020 quantities.

However, the increase in waste exported out of the region means the total waste treated in the South West will decrease by 25 per cent. This shift, along with the addition of new infrastructure, will increase the Great Southern materials recovery rate from 23 per cent to 58 per cent.

Figure 65 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 Great Southern region Principles and priorities section.

GREAT SOUTHERN

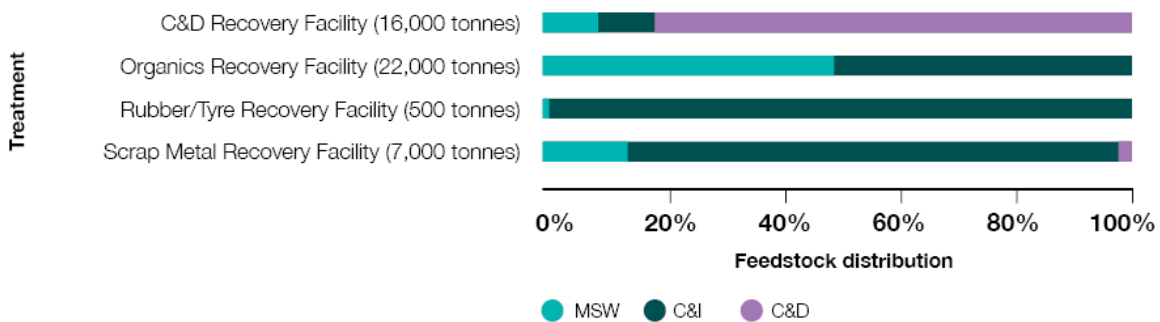


Figure 65 Feedstock distribution of treatments in the Great Southern in 2030

One Great Southern local government (City of Albany) 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 Great Southern local governments and the C&I sector have shown an interest 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 69,000 tonnes of Category 67A capacity is actually available for the processing of FOGO. The Infrastructure priorities section describes the need to investigate further to confirm actual FOGO processing capacity. This is particularly important in regional centres – for example, City of Albany, which has licensed capacity of 18,000 tonnes for Category 67A and is required to achieve 60 per cent recovery of MSW to achieve the waste strategy targets.

Infrastructure capacity needs in 2030

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

- 16,500 tonnes of recovery capacity is needed for C&D recovery, which will require consolidation and transfer from the region as it is not sufficient to allow for an additional recovery facility. A mobile C&D recovery facility may be considered.
- 5,000 tonnes of additional consolidation capacity is needed for materials recovery.
- 7,000 tonnes of additional consolidation capacity is needed for scrap metal.
- While not identified though *Infrastructure Needs Analysis* modelling (as explained above), stakeholders have reported local demand for access to FOGO processing capacity. Further investigation of this need at a regional level is required.

CAPACITY REMAINING BY LANDFILL TYPE

GREAT SOUTHERN

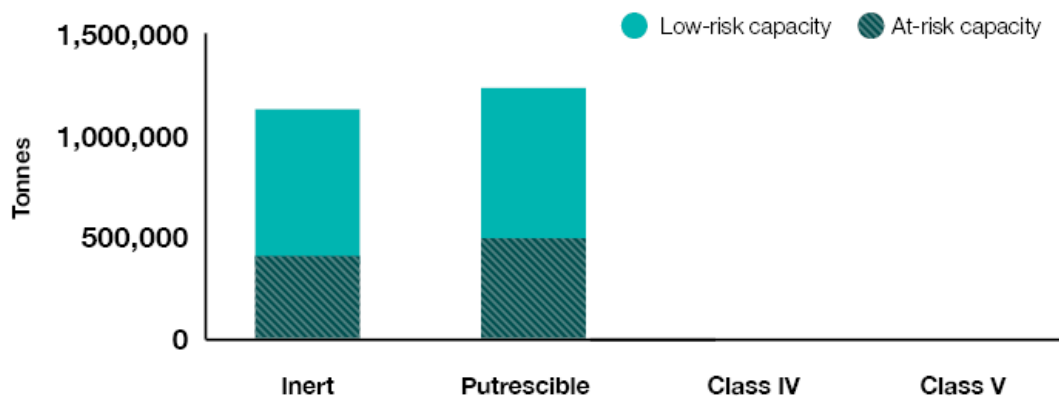


Figure 66 Capacity remaining by landfill type in the Great Southern, including an assessment of low-risk and at-risk capacity

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

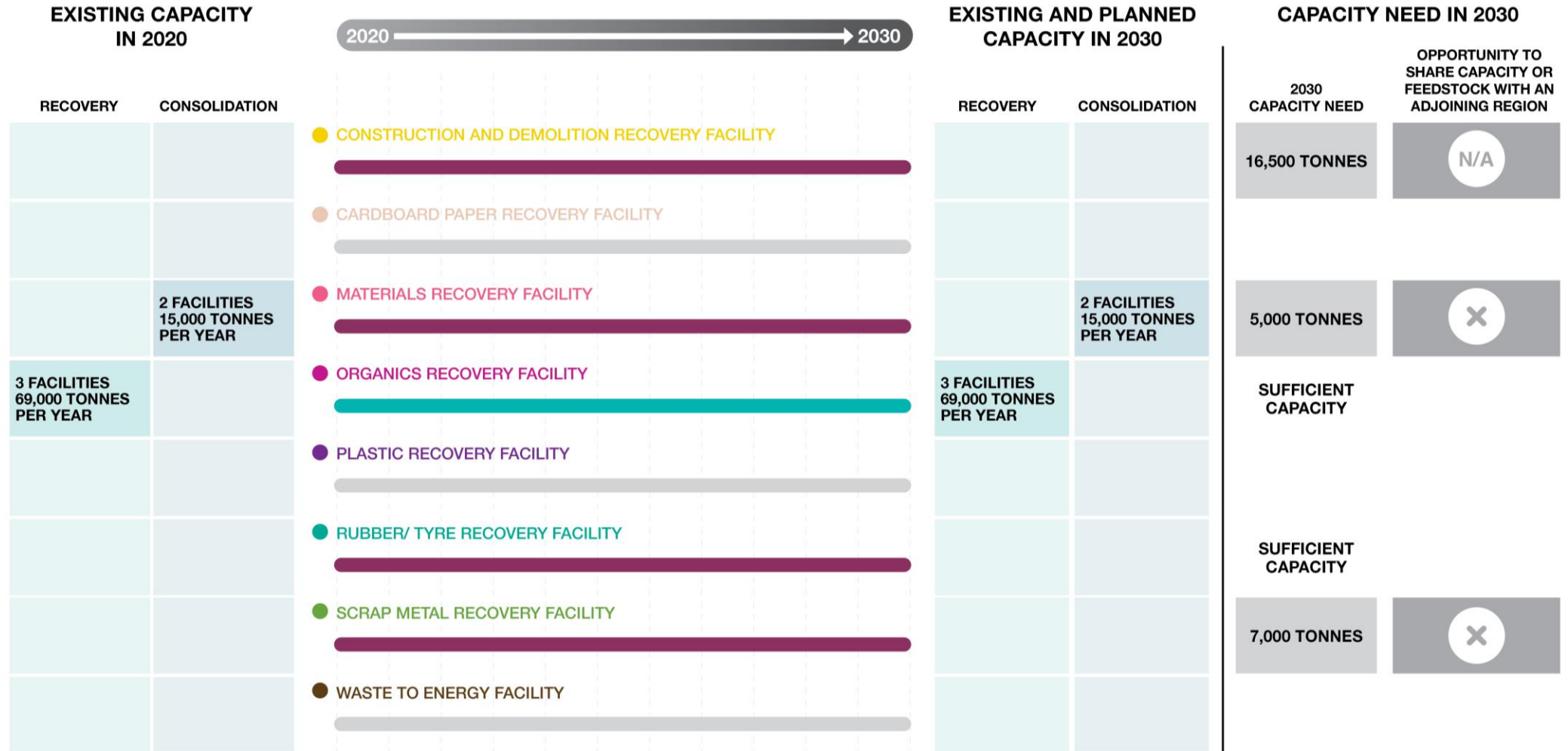
Under the low-risk scenario, half of the total landfill capacity of 970,000 tonnes was identified as potentially at risk, of which inert landfills make up 47 per cent and putrescible landfills 53 per cent. *State Waste Infrastructure Needs Analysis* modelling predicts 27,000 tonnes of residual waste will be 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 67, including the expected facilities, capacities and capacity needs in 2030.

CURRENT RECOVERY INFRASTRUCTURE PIPELINE

GREAT SOUTHERN

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.



Sufficient recovery infrastructure capacity	Recovery infrastructure capacity constraints possible	Recovery infrastructure capacity constraints likely	indicates when capacity constraint changes
Sufficient consolidation infrastructure capacity	Consolidation infrastructure capacity constraints possible	Not needed to achieve waste strategy targets	

Figure 67 Great Southern 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 Great Southern region are:

- Assess planning and development opportunities for C&D facility siting to service Albany region.
- Investigate alternative landfill facility contingency arrangements with the Great Southern and Wheatbelt regions.
- Assess whether existing 67A licensed facilities in the Great Southern or neighbouring regions can be increasingly utilised to alleviate FOGO capacity need.

These are discussed in more detail in Table 34 below. The principles are outlined once more in Figure 2 for reference.

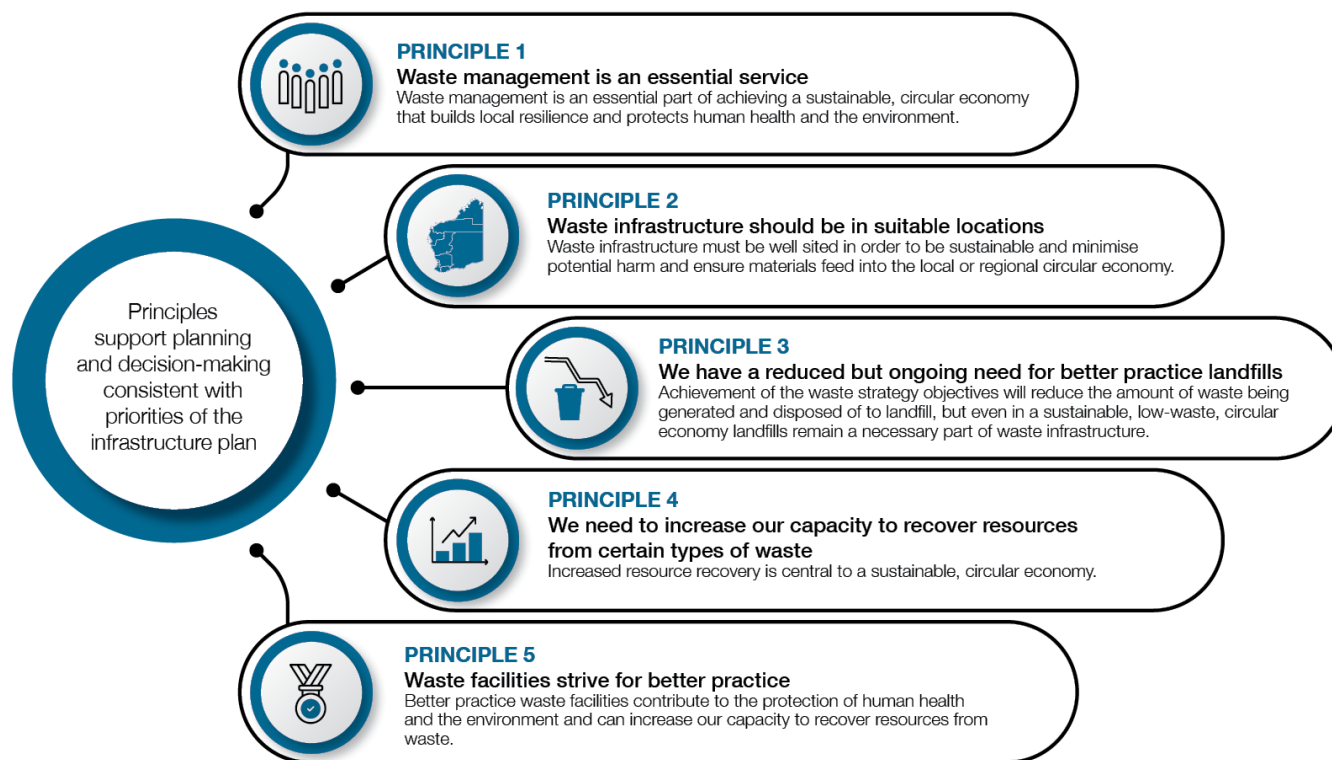


Figure 2 Principles of the State waste infrastructure plan

Table 34 Consideration of infrastructure plan principles and priorities in the Great Southern

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)
16,500 tonnes of capacity for C&D recovery	<p>Principle 1: Waste management is an essential service Existing capacity constraints to treat C&D material will be compounded by future population growth and increased urbanisation of regional centres such as Albany. Application of principle 1 suggests that there is a high priority to develop additional C&D processing capacity to support a wide range of development projects.</p> <p>Principle 2: Waste infrastructure should be in suitable locations C&D processing benefits greatly from being situated close to the source of generation and offtake markets. The increasing population and urbanisation of regional centres such as Albany should be considered for the development of additional infrastructure. There are large areas north and east of the city that have opportunities for new developments. This will provide a regional source for recovered C&D material offtake and the decreased need to transfer material to Perth.</p> <p>Principle 3: We have a reduced but ongoing need for better practice landfills The development of local capacity to recover inert C&D material will decrease reliance on local inert landfill infrastructure. Inert landfill capacity should be maintained to provide contingency during disaster events or facility constraints.</p>	<p>High Better understanding of sub-regional gaps for C&D recovery near major regional generators will improve infrastructure outcomes for Albany</p>
5,000 tonnes of additional capacity for materials recovery	<p>Principle 1: Waste management is an essential service Commingled recycling is currently received into the region from the neighbouring Wheatbelt region because of a lack of local processing capacity. Developments of new facilities in the Wheatbelt and South West may decrease the need for Great Southern to process commingled recycling received from these regions. This will create new capacity for local material. Although, the Great Southern is still likely to be relied upon by neighbouring regions during the planning and development stages of any new infrastructure.</p> <p>Principle 2: Waste infrastructure should be in suitable locations Existing MRFs in the region are well located to serve regional centres and receive inter-regional material. Commingled collection services are already</p>	<p>Low Lifetime and capacity expansions of existing MRFs in the Great Southern region will decrease the risk, capital costs and timeframes required to meet capacity needs.</p>

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)
	<p>offered in Albany so the expansion of existing infrastructure can shorten timelines to develop new capacity. Capacity building should be shared across the two existing facilities to create contingency during constraint periods (such as when one facility is offline).</p>	
<p>7,000 tonnes of capacity for scrap metal recovery</p>	<p>Principle 1: Waste management is an essential service Scrap metal is the largest material transferred out of the Great Southern region, indicating access to a strong consolidation and transportation network to supply feedstock for facilities in Perth. Expansion of the existing consolidation network will be required to achieve waste strategy Recover targets.</p> <p>Principle 2: Waste infrastructure should be in suitable locations New consolidation facilities should be developed in areas that lack current infrastructure, while still having access to good transportation connections with Perth. Developments in north Albany could also leverage the area's commercial port for inter-regional transportation of material.</p>	<p>Low Better understanding of sub-regional gaps for scrap metal consolidation near transportation networks will improve infrastructure coverage in the Great Southern region.</p>
<p>Large volume of organics allows for development of other processes</p>	<p>Principle 2: Waste infrastructure should be in suitable locations Development of bioenergy infrastructure could be located where organics are being processed as an additional option to treat suitable organics, expand capacity or diversify outputs (expanding from compost to energy production). This may present an opportunity for the Wheatbelt to treat organic waste or FOGO waste that exceeds the treatment capacity of the region.</p> <p>Principle 4: We need to increase our capacity to recover resources from certain types of waste To achieve waste strategy targets, Western Australia needs to recover and process a large volume of organics. Expanding infrastructure to develop facilities that produce bioenergy expands capacity, diversifies options and reduces risk of failure to meet waste strategy targets.</p> <p>Principle 5: Waste facilities strive for better practice As volumes of organics are captured by large facilities in the region, there is potential to develop other processes. Better practice guidelines or regulatory requirements may change market activities and present an opportunity to utilise bioenergy more in the Great Southern.</p>	<p>Medium There is one facility listed in the region with capacity of 51,000 tonnes/year. These larger existing facilities may consider options to implement other processes or technologies.</p>

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)
Used tyre storage	<p>Principle 1: Waste management is an essential service</p> <p>About 950 tonnes of rubber/tyre material is generated in the Great Southern and this will continue to be generated. Waste management of tyres in remote locations poses challenges. Tyres from mining operations pose their own particular challenges. Consolidation of this material for processing in other regions is necessary whilst it remains unviable to process within the region.</p> <p>Principle 2: Waste infrastructure should be in suitable locations</p> <p>Although tyre material processing may be near end markets that can take crumbed tyres or use recovered materials in manufacturing or construction, consolidation centres will be needed in remote or regional locations. Existing landfills are being used for collection and consolidation of tyres and present a suitable centralised location for waste management in remote regions.</p> <p>Principle 4: We need to increase our capacity to recover resources from certain types of waste</p> <p>Tyres can be processed, but infrastructure may only be available in Perth so the recovery of rubber/tyre materials in the Wheatbelt 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.</p> <p>Principle 5: Waste facilities strive for better practice</p> <p>One class 64 putrescible landfill in the Great Southern is also licensed to store tyres. 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 Great Southern.</p>	<p>Medium</p> <p>Two facilities are listed in the region for Category 57 with total capacity exceeding 1,200 tyres. These facilities may be sending tyres to Perth. There is an opportunity to consolidate volumes and transport these tyres for reprocessing outside the region.</p>
Landfill capacity risk assessment	<p>Principle 2: Waste infrastructure should be in suitable locations</p> <p>The Great Southern region has sufficient putrescible and inert landfill capacity under low-risk modelling until 2029. These landfills could potentially accept material generated in the South West, which under low-risk modelling is expected to have significant capacity constraints.</p> <p>Principle 4: We need to increase our capacity to recover resources from certain types of waste</p>	<p>High</p> <p>Options for more efficient inter-regional waste transfer infrastructure and contingency arrangement could alleviate short-term capacity constraints between the South West, Great Southern and Wheatbelt regions.</p>

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)
	<p>Sub-regional analysis reveals a lack of inert disposal capacity in the Katanning region. Low generation rates means that material not recovered locally will require disposal in putrescible landfills.</p> <p>Principle 5: Waste facilities strive for better practice</p> <p>64 per cent of facilities have not completed or updated closure management plans within the past 10 years, which is a requirement of better practice principles.⁶</p>	

⁶ Western Australia Waste Infrastructure Audit, ASK Waste Management Consultancy Services on behalf of the Department of Water and Environmental Regulation, (2021).