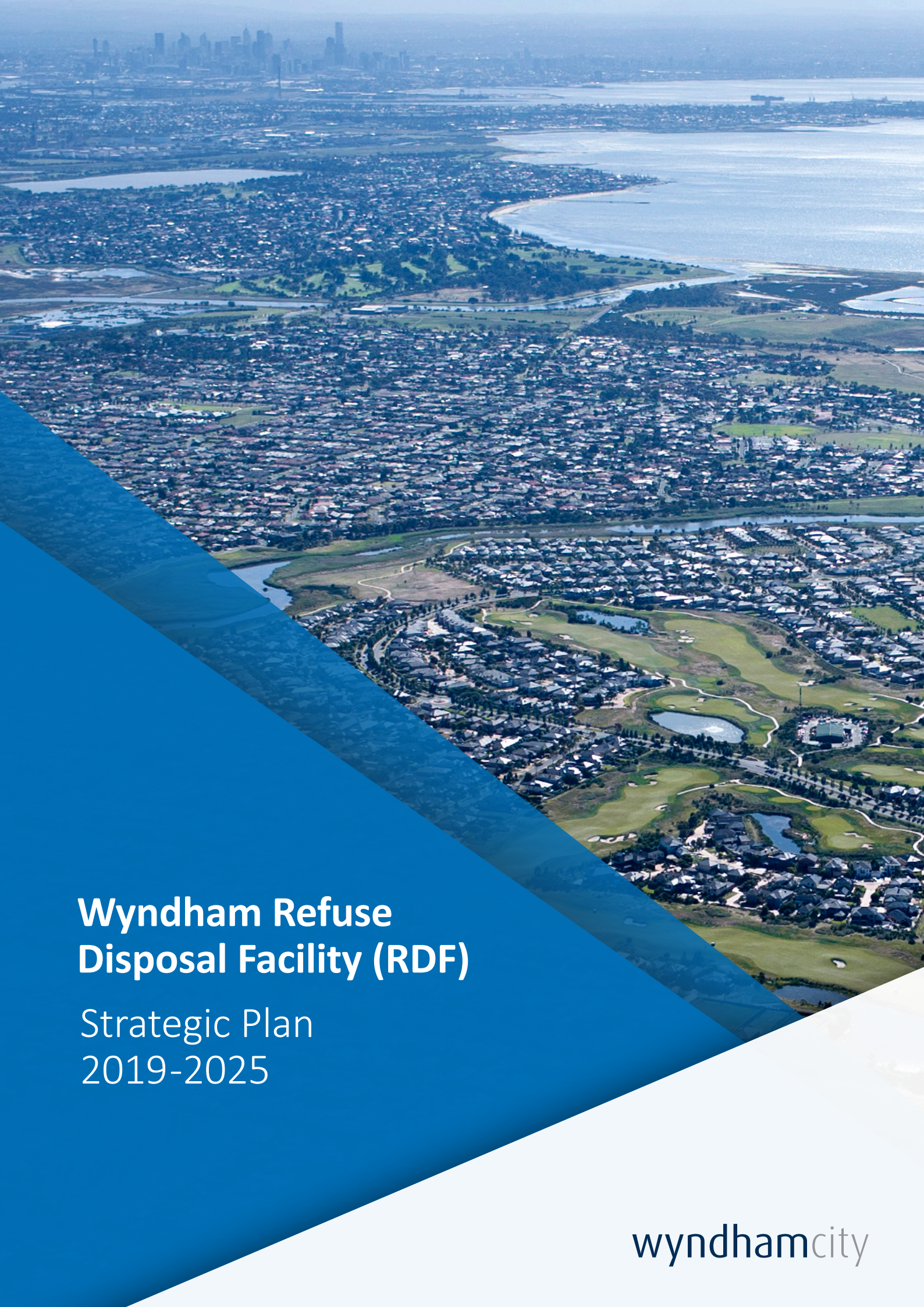


Wyndham Refuse Disposal Facility (RDF)

Strategic Plan 2019-2025

wyndhamcity

Contents

Executive Summary

The Refuse Disposal Facility (RDF) is a key Council asset and is one of four major metropolitan landfills licensed to accept putrescible waste, such as household kerbside waste.

As well as providing a final landfill disposal option for Wyndham's municipal waste, the RDF provides landfill disposal services for many other councils as well as commercial businesses and waste management companies.

Council adopted a strategic plan for the RDF in March 2016 which presented a 2040 vision for the Refuse Disposal Facility.

Vision 2040: The RDF will become the centre of a precinct focussed on resource recovery, with residual waste to landfill. Complementary businesses are co-located and the area is a centre for economic growth and green jobs. The centre plays a key role in environmental education and is acknowledged by the community.

Many of the actions developed as part of the 2016 strategic plan have either been completed or are nearing completion. In addition, there have been changes in the landfill sector specifically and the waste management sector more generally, which mean it is appropriate to review the 2016 strategic plan.

Critically, while the 2040 plan provided a high-level vision it did not provide the level of detail required to make the transformation outlined in the vision. The 2019 strategic plan provides more detail on how that transformation will commence and the key steps that will be undertaken. The new plan also has a shorter timeframe, focussing on the next five to six years to 2025.

This Wyndham RDF Strategic Plan 2019 - 2025 outlines six new goals to achieve a transition of the RDF business away from a traditional landfill to a resource and energy recovery operation which relies on landfill only for waste that is left over after recovery of resources.

The achievement of this transition will present a different waste management proposition for our customers, particularly those from local government. It will help them achieve their stated waste policy goals around resource recovery and reduced reliance on landfill.

The vision for this 2019-2025 period is:

The RDF will reduce reliance on traditional landfill as a means of waste management and provide a different model of waste management to customers, particularly from local government. This will be the primary point of differentiation in the marketplace. Wyndham will commence development of the RDF as a precinct for green jobs development and as a Waste Management Centre of Excellence.

This will be achieved through a focus on six goals:

Goal 1 **Become a best practice landfill by baling waste inside an enclosed, purpose built facility.**	**Goal 2** **Implement resource recovery through the establishment of presort and organics processing facilities.**
Goal 3 **Recover energy from waste after resource recovery.**	**Goal 4** **Strengthen the governance of the RDF by creating a Local Government Business Enterprise.**
Goal 5 **Integrate kerbside collection and related waste services with the resource and energy recovery infrastructure at the RDF.**	**Goal 6** **Advocate for state and federal governments to better support the investment required to move away from a reliance on landfill.**

1. Background

Wyndham City Council has operated the Refuse Disposal Facility (RDF) at 470 Wests Road since the mid 1970s. Over that time the RDF has transformed from a small regional landfill that catered for the former Shire of Werribee to a large commercial operation. The RDF is now one of the major landfills in metropolitan Melbourne that is licenced to accept putrescible waste, with the others being the Melbourne Regional Landfill at Ravenhall, the Hanson Landfill at Wollert and the Suez landfill at Hampton Park.

The strategic intent in owning the RDF was to provide certainty for municipal waste disposal, and to generate income by accepting waste from other councils whilst having better control over the types of wastes that were being disposed of to landfill

Since that time, the RDF has grown to become a major landfill servicing Wyndham and numerous councils and businesses in Geelong and Melbourne. The revenue from the RDF has been used by Wyndham City Council to supplement the annual capital works program and undertake projects that would otherwise have not been possible.

In March 2016, Council adopted a strategic plan and vision for the RDF to transition from landfilling to resource recovery to create green jobs and support development in the Werribee Junction Precinct. This was a significant change in strategic intent and added economic development to waste disposal and revenue generation as reasons for owning the RDF.

This 2019 strategic plan for the RDF builds on the 2016 strategic plan by being more specific about the actions that will be undertaken to achieve the vision of the RDF also becoming a strategically important resource recovery precinct. The status of the 2016 strategy is discussed in more detail in the following section.

2. The 2016 strategic plan

Council adopted a strategic plan for the RDF in March 2016, which identified a clear 2040 vision for the RDF.

Vision 2040: The RDF will become the centre of a precinct focussed on resource recovery, with residual waste to landfill. Complementary businesses are co-located and the area is a centre for economic growth and green jobs. The centre plays a key role in environmental education and is acknowledged by the community.

A lot has happened since the 2016 strategic plan was drafted and it is appropriate that a new strategic plan is prepared and adopted by Council. The key considerations in revising the strategy include:

- Many of the key actions have been achieved.
- The market dynamics have changed considerably since March 2016. These are outlined in the section 3 and include the announced closure by Suez of the Hampton Park landfill by 2025.
- A study tour undertaken by Council in May 2018 identified several resource and energy recovery technologies that could be introduced at the RDF.
- Council is committed to landfill being used as a last resort for residual waste only.

The status of the nine themes from the 2016 strategic plan is summarised below:

Theme	Status			
	Not commenced	In progress	Substantially complete	Complete
Developing the Future Vision: protecting the RDF as a future resource recovery centre planning controls, land acquisition and economic development		✓		
Integrated strategic direction: completion of an opportunity analysis, the Waste & Litter Strategy and dividend policy				✓
Better understanding of financials: updating the long term financial plan and pricing models				✓
Operational security: works approval for the site and operational improvements				✓
Visual amenity: landscaping and improving the site appearance		✓		
Toward serious resource recovery: shift towards less landfilling and more resource recovery		✓		
Governance: updated governance arrangements to provide strategic oversight of the business			✓	
Communications and engagement: undertake stakeholder mapping, community engagement plan and communications plan		✓		
Secure external funding: advocate for state government funding via the Sustainability Fund to support investments in alternate waste technologies		✓		

It should also be noted that Council adopted a Waste and Litter Strategy in May 2016, which set 2020 and 2040 targets for the RDF. These targets are shown in the table below along with their status, including the achievement of two out of three short term objectives:

Theme	Not commenced	In progress	Substantially complete	Complete
2020				
Newly developed and operational transfer station				✓
Increase in collected recycled material from the Transfer Station by 15% (from 2015 baseline year)				✓
75% of landfill gas generated at the RDF is captured for renewable energy generation and flaring				
2040				
Newly developed and operational Resale Shed and Education Centre established				✓
Waste pre-sorting technology and/or other feasible alternative waste treatment technologies maximising resource/energy recovery established at the RDF		✓		

3. Why a New Strategy - What has changed?

Whilst the 2016 strategic plan is only three years old, the waste management landscape in Victoria has changed. These changes warrant a revision of the strategy with more detail about the steps to transition the RDF to a resource and energy recovery operation over the next five to six years. Some of these changes include:

- The significant and rapid population growth occurring in the western region generally and in Wyndham in particular.
- The issue of a whole of site works approval by Environment Protection Authority (EPA) which now provides certainty about landfill for residual waste and allows resources to be allocated to the development of resource and energy recovery infrastructure.
- The procurement of alternate waste technologies by the Metropolitan Waste and Resource Recovery Group (MWRRG) to maintain the current levels of landfilling for Municipal Solid Waste (MSW) in the face of population growth.
- The proposed closure of Suez's Hallam Road landfill by 2025.
- The significant quantity of waste being transferred from the south-east side of Melbourne to the landfills in the West.
- Uncertainty in the recycling sector with several closures of a key provider - SKM Recycling - leading to some recycling having to be diverted into landfill, and
- The impact on the recycling sector from the tightening of quality standards for the import of recycling materials into China and other parts of south-east Asia.

3.1 Waste Generation Trends

The MWRRG has modelled the growth in waste generation in Victoria.

The expected increase in population from 4.5 million in 2016 to 7.5 million in Melbourne by 2046 is one of the major drivers of the expected growth in waste generation. Over this period municipal residual waste (that currently goes to landfill) is estimated to increase from 940,000 tonnes to 1.55 million tonnes. The MWRRG predicts that under a 'business as usual' scenario this will require two more landfills to become operational.

Wyndham City is expected to experience an even greater rate of population growth, with the official population at 30 June 2018 being 255,322. The population is expected to increase to 361,400 by 20313, and to around 450,000 by 2040.

The current municipal waste generation in Wyndham is made up of the following components:

- Kerbside waste - 48,000 tonnes per annum (tpa).
- Kerbside recycling - 20,000 tpa.
- Kerbside greenwaste - 10,000 tpa.
- Kerbside hardwaste - 3,000 tpa.
- Transfer station drop off (landfill) - 16,000 tpa, and
- Transfer station drop off (recycling) - 6,000 tpa.

This added up to a total municipal waste generation of around 103,000 tpa in 2018.

This could increase to 180,000 tpa by 2040 based on population growth alone. The actual amount that is ultimately disposed in landfill at the RDF, from both Wyndham City Council residents and other customers, will depend on the successful implementation of this strategy.

The work undertaken by the MWRRG makes clear that under a 'business as usual' model the amount of municipal waste will continue to grow and the demand on existing landfill airspace will increase. At the same time, the forecast closure of the Suez landfill in Hampton Park will reduce the current supply of landfill airspace.

There are currently no new landfills listed on the MWRRG Landfill Infrastructure Schedule, which is a legislative prerequisite to the Environmental Protection Authority (EPA) considering a Works Approval Application for a new landfill.

3.2 Whole of Site Works Approval at the RDF

Historically, Wyndham City Council had applied for a works approval to the EPA for only one or two cells at a time. This had several clear disadvantages, including:

- The time and cost associated with preparing each works approval document.
- Forcing a short-term business focus to the landfill operations.
- The substantial risk of running out of approved airspace before the next cell was approved and constructed.

The 2016 strategic plan had the achievement of a whole of site works approval as a key priority. This was achieved in 2018, and approximately 21.5 million cubic metres of future airspace is now approved. The achievement of this outcome is significant because it allows long-term commitments to investment in new technology and it has removed the constant cycle of allocating resources to preparing short term works approval applications.

Council can now confidently allocate resources to the implementation of the strategies outlined in this Wyndham RDF Strategic Plan 2019-2025.

More importantly and in comparison, to the 2016 strategic plan, Council can now pursue explicit strategies that support a new vision. This will not only reduce reliance on traditional landfill as a means of waste management, but also provide a differentiation in the marketplace by developing the RDF as a precinct for green jobs development and as a Waste Management Centre of Excellence.

3.3 Current Market Environment

There have been changes in the waste management sector since 2016 and these have already impacted on the operation of the RDF. They need to be taken in to account in developing the Wyndham RDF Strategic Plan 2019-2025. The significant changes include:

- EPA is increasingly taking enforcement action against waste management companies that demonstrate a reluctance to meet required environmental standards.
- Changes to legislation with the introduction of the new Environment Protection Act from 1 July 2020.
- The publicly stated closure of the Suez Hallam Rd landfill by 2025/2026, some 14 years earlier than the date indicated in the 2016 Metropolitan Waste and Resource Recovery Implementation Plan. This will see many councils and commercial customers seeking alternate options for management of their residual waste.
- The significant increase in the amount of waste being moved from the south-east of Melbourne to the west, predominately by Cleanaway via its Ordish Road Transfer Station to the Melbourne Regional Landfill (MRL) at Ravenhall.
- The significant increase in the tonnage of waste being received at MRL with common industry estimates putting this at between 1.3-1.5 million tonnes per annum.
- Several closures of a key provider - SKM Recycling as mentioned previously.
- The challenges posed to the recycling sector, particularly recycling of kerbside recyclables, due to the introduction of tighter quality standards on the importation of unsorted recyclable materials into China from the beginning of 2018. The approach taken by China has been followed by several other countries such as Malaysia, India, Vietnam and more recently Indonesia. The result of these changes has been that a higher level of sorting is now required to be able to export paper, cardboard and plastics to Asia (where most of the actual reprocessing is done).
- Infrastructure Victoria has recently been requested by the Special Minister of State to make recommendations regarding waste management infrastructure needs for Victoria.
- The Legislative Council's Planning and Environment Committee is also conducting an inquiry into the waste and recycling sector and is expected to hand down its findings in August 2019.

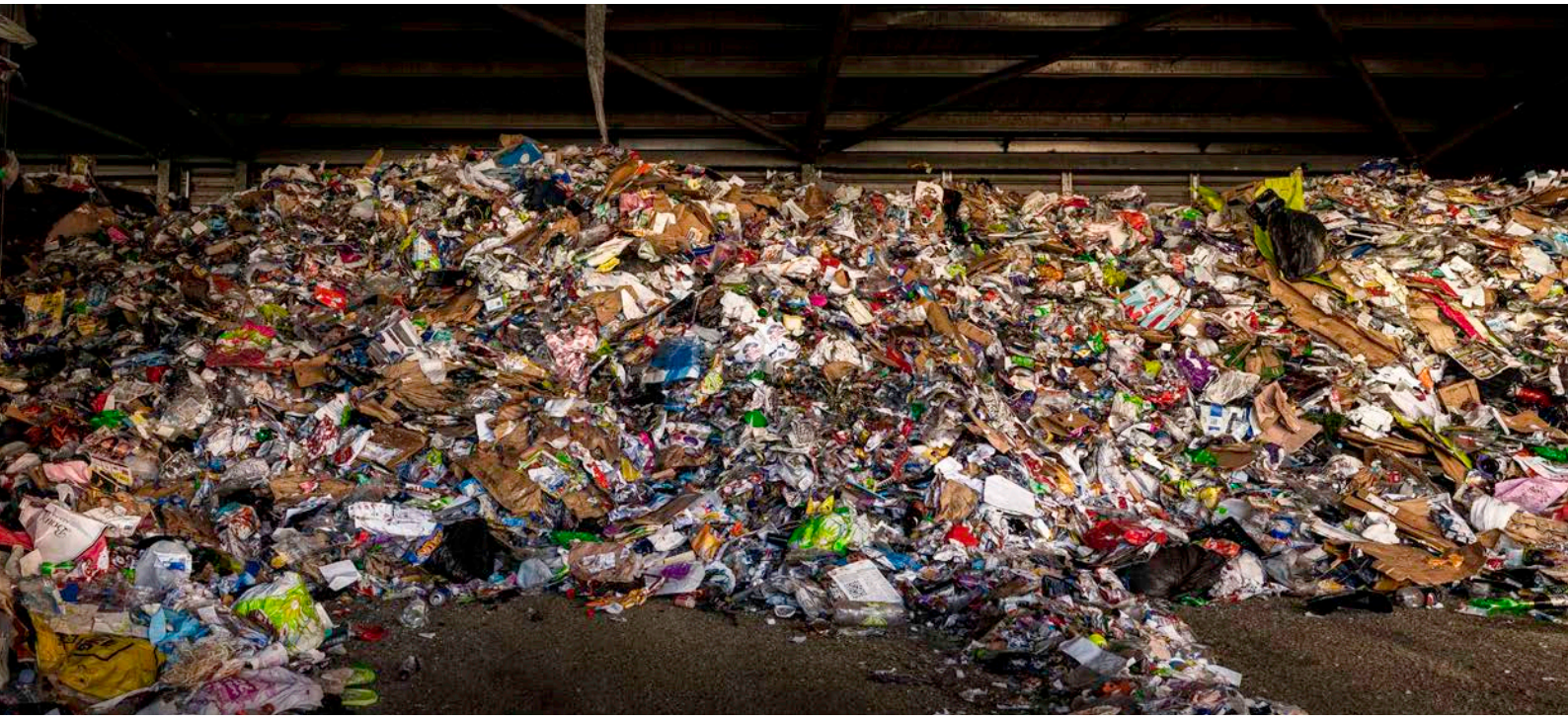
In many ways the landfill sector can be characterised as a 'race to the bottom', whereby waste transport companies and local governments are continually looking for the lowest cost waste disposal option and; integrated waste businesses use their control of landfill assets to give their collection business a competitive advantage in the marketplace.

This reflects a common industry view that waste goes to the lowest cost disposal option available. In a commoditised market, and the absence of any value proposition to the contrary, this is likely to continue.

At the same time, there is an increasing interest in how alternate waste technologies can play a role in the Victorian waste management sector, including:

- The State Government released a Waste to Energy Discussion Paper in late 2017, which has now been replaced with a Circular Economy Issues Paper in July 2019.
- The MWRRG intends to release a procurement in late 2019 for the development of alternate waste technologies.
- Cesar Melham MP, Member for the Western Metropolitan Region, undertook a public consultation in western Melbourne into Waste to Energy technologies as an alternate to landfill in late 2017.
- Australian Paper has been issued with a revised Works Approval to construct a 600,000 tpa Waste to Energy facility at its Maryvale Mill, following a negotiated agreement between Environment East Gippsland, Australian Paper and EPA.
- Several private companies and councils are either pursuing or investigating alternative ways to recover resources and energy from new waste technologies.

In working to achieve the vision and goals outlined in the Wyndham RDF Strategic Plan 2019-2025, Wyndham City Council cannot afford for the RDF to engage in a 'race to the bottom' with other landfills. This would prevent Wyndham City Council achieving its waste management and litter goals and is unlikely to be successful given the scale economies available to MRL as the closest and largest competitor.



In taking this position Wyndham City Council understands that many customers are primarily price driven and a decision to implement a different business model may result in a reduction in tonnages being received. It offers an opportunity for Wyndham to lead in best practice waste management through investment to treat the waste generated from Wyndham's residential collections.

Investment in a new business model is also predicated on customers' willingness to pay a higher gate fee, particularly the local government sector. This will be challenging as the local government sector has enjoyed extremely low landfill gate fees over the last 8-10 years.

Due to the capital investment required and the potential for a reduction in the tonnages received, the profit contribution of the RDF is likely to be reduced over the next 3-4 years as this strategic plan is implemented.

The discussion above highlights some of the pressures on the waste management sector, several of them contradictory in nature.

However, the implementation of this strategic plan would see a Waste Management Centre of Excellence being established at the RDF and a substantial reduction in the amount of residual waste being disposed to landfill. The benefit to many local governments from this is that it would help them achieve their own stated waste strategies, goals and targets.

In implementing this goal, it is important to restate that Wyndham City's response will be:

- Not to engage in price cutting 'race to the bottom' model.
- To transition the RDF to a best practice landfill operation with a value proposition that supports higher prices.
- To progressively move away from landfill as a sole method of waste management to recover resources and only landfill waste from which resources cannot be recovered.

3.4 State Government Policies

The policy settings used by governments can have a significant impact on the type of waste management systems that exist. In general, the types of policy instruments that are available to governments to support resource recovery and investments in alternatives to landfill include:

- Clear targets for resource recovery or reductions on the amount of material sent to landfill.
- Prohibitions or restrictions on materials that can be sent to landfill, such as the electronic waste landfill ban that came into effect on 1 July 2019.
- Financial instruments that effectively tax an undesirable practice, such as the landfill levy.
- Product stewardship schemes for end of life products, with effective examples being the national computer and television product stewardship scheme and the Paintback Program for end of life paint.
- Support for the development of markets for products made from recycled materials or energy produced from renewable resources (such as biogas from the anaerobic digestion of food waste).

In the Victorian context, there are several plans and strategies in place such as the Statewide Waste and Resource Recovery Infrastructure Plan, but these have not historically been supported with 'at scale' investments needed to address Victoria's waste and recycling challenges.

However, it is generally recognised that there is currently a lack of a clear policy with goals and targets. The need for this clear policy was highlighted by the Victorian Auditor General in the 2019 report "Recovering and Reprocessing Resources from Waste".

Notwithstanding this, there are several policy instruments being used in Victoria to support resource recovery and reduce reliance on landfill, including:

- The landfill levy of $65.90 per tonne for the 2019/20 financial year. Whilst this is lower than the neighbouring states of SA and NSW, it is also clear that the amount of the levy is not the only factor that influences investment in alternatives to landfill.

- The use of bans on landfill for selected materials - e.g. the electronic waste ban that commenced 1 July 2019.

- Reinvestment of the landfill levy to support resource recovery - the widely held view of the waste management and local government sectors, is that the level of reinvestment has been low and this is one of the factors that influences investment in resource recovery systems.

- Product stewardship schemes such as televisions and computers, paint and batteries.

By contrast, the European Union has a sophisticated suite of policies that have driven a reduction in landfill and a strong investment in alternate waste technologies. These include clear restriction on the types of materials that can be landfilled, specific resource recovery targets, landfill reduction targets, landfill taxes and market incentives to produce biogas.

Overall, the waste management outcomes in Victoria could be strengthened through the adoption of an integrated suite of policy instruments and investments such as those used in the European Union. Ongoing advocacy will be required to influence waste policy settings.

3.5 European Waste Education Tour, 2018

In May 2018, Cr Peter Maynard (then Mayor), Stephen Thorpe (Director City Operations) and Simon Clay (Manager Waste Management and Disposal) undertook a study tour of waste management facilities in the UK and Europe. The aims of the study tour were to understand:

- What technologies were proving to be technically feasible.
- What policy settings existed to support investment in alternatives to landfill, and
- What processes local government used in the procurement of alternate waste technologies, particularly in the UK.

A report detailing the key findings from the study tour was presented to Council at its meeting on 3 July 2018. In summary, the study tour involved visiting 11 waste management facilities across six different countries and visiting the IFAT trade fair in Munich where detailed discussions were held with around 20 technology and service providers.

The key findings from the study tour, which are expanded on in the Council report were:

- Cultural and economic circumstances strongly influence waste management, with the common direction set by the European Union (EU) being translated into action according to the values and circumstances of each country or region.
- Government policy is a key influence on waste disposal - the policies for taxing waste, reinvesting waste taxes into capital projects, facilitating public-private partnerships and providing subsidies for renewable energy or materials recovery strongly influence the choice of alternatives to landfill.
- Alternate waste technologies developed by councils in the UK are mostly focussed on solving municipal waste management issues and not providing broader solutions to the commercial waste management sector. The private sector is making the investments in so called “merchant” facilities to provide solutions to the commercial and industrial waste sector.
- Energy from waste, through mass burning, was the only technology that appeared capable of treating all residual waste on a large scale, and
- Those countries that have the lowest landfill also have the have the highest utilisation of waste to energy and the highest resource/material recovery rates.

The study tour also informed the types of technologies that could be used for resource and energy recovery and highlighted the opportunities for integrated facilities that could be developed to undertake both resource and energy recovery.

Of relevance were the facilities at Allerton and Milton Keynes in the UK, both of which achieved a high level of resource recovery prior to energy recovery.

The facilities in Leeds (UK) and Toledo (Spain) as well as the landfills in France and Italy all incorporated some level of resource recovery.

These facilities varied in complexity from straightforward ferrous metals recovery through to very sophisticated materials recovery and highlighted the following of relevance to Wyndham:

- The quality of recovered materials from mixed waste is lower than achieved through the kerbside recycling system, so the effort should always be on effective source separation rather than relying on recovery from the residual waste stream. The impact on material quality was particularly noticeable for cardboard/paper and some plastics.
- Over-investment in mechanical recovery systems can easily occur given the lower quality of recovered materials and the designed recovery performance may not be achieved.
- Recovered cardboard and paper fibre may have to be downgraded to a feedstock for a subsequent process in integrated plants depending on market conditions.
- The minimum level of materials recovery that should be aimed at is metals (both ferrous and non-ferrous) and organics. The rationale behind targeting these materials is that metals are relatively easy to separate and the quality is relatively unaffected by close contact with waste.
- Organics are the major cause of subsequent issues in landfill operations (odour, leachate, attraction of vermin, gas generation).
- There are a range of dry anaerobic digestion technologies in the market which overcome the problem of the large quantity of liquid generated from more traditional wet anaerobic digestion technologies. The requirement to treat this liquid would introduce additional waste management complexity and cost.

The findings from the study tour have been a critical input into the goals and actions proposed in this Wyndham RDF Strategic Plan 2019-2025.

4. Strategic Goals

The intent of this Wyndham RDF Strategic Plan 2019-2025 is to outline the goals and key actions for the RDF to transition from a traditional landfill operation using a conventional open tip face to a resource recovery operation coupled with a best practice landfill for residual waste only.

There are a number of distinct goals to this transformation which are outlined in further detail below:

Goal 1 **Become a best practice landfill**	**Goal 2** **Implement resource recovery at the RDF**
Goal 3 **Recover energy from waste after resource recovery**	**Goal 4** **Strengthen the governance of the RDF**
Goal 5 **Integrate kerbside collection and waste treatment and disposal services**	**Goal 6** **Advocate to state and federal government**

4.1 Goal 1: Become a Best Practice Landfill

The goal to become a best practice landfill involves the transition away from a conventional landfill operation along with implementing initiatives consistent with a best practice landfill operation.

In the context of this strategy a best practice landfill means a landfill operation that:

- Is compliant with its legislative obligations.
- Has integrated systems for quality, health safety and environmental management, and
- Has addressed its legacy issues from historical practices.

Furthermore, though it is a landfill that:

- Has moved away from the traditional open tip face method of operation and has eliminated or significantly reduced all the amenity issues associated with operating a large landfill including litter, odour, noise and dust; and
- Progressively recovers resources from the incoming waste stream to ensure the residual waste that is landfilled has reduced quantities of degradable organic materials to reduce future legacy issues associated with landfill gas and leachate.

The specific actions that will be implemented to achieve this goal include:

- Reclamation of waste from Cell 1A, which is the oldest cell at the RDF. This cell is unlined and the waste deposited in this cell from 1975-1992 was placed directly onto the quarry floor. Reclamation of waste from this cell will reduce the potential for ongoing contamination of groundwater whist reclaiming land for subsequent infrastructure development. The reclamation of waste from Cell 1A will be dependent on outcomes from a trial being undertaken in July-August 2019 and approval from EPA.
- Construction of a purpose-built enclosed facility housing a waste baling operation. This will mean all waste receival will be inside an enclosed facility, under negative pressure and with all the ventilation air directed to an odour treatment system. Moving to this type of operation is expected to eliminate or substantially reduce the amenity issues associated with the operation of a traditional open tip face (odour, dust, litter, noise and birds).
- Addressing legacy issues associated with historic landfill operations. The RDF is still addressing some historical legacy issues associated with capping and leachate management. These include completion of capping of filled cells the long-term management of leachate, potentially through onsite treatment and discharge to sewer.
- Strengthening the environmental, quality and safety management to relevant standards for quality, environmental and health and safety management systems.

Waste Baling - Northern Adelaide Waste Management Authority Bale Landfill

Baling of waste has been used by several landfills to address environmental concerns and achieve better and more consistent waste compaction. These include the Northern Adelaide Waste Management Authority's (NAWMA) landfill in South Australia, the St Lucie landfill in Florida (USA) and landfills in France and Italy that were visited as part of the 2018 Study Tour.

At the landfill in the Montblanc region of southern France, the requirement to bale and wrap the waste was a permitting requirement to reduce litter. The site visit in 2018 noted that there was a very minor amount of litter present at the landfill operation, in contrast to the level of litter from a traditional open face landfill . NAWMA has been operating its bale landfill for approximately 15 years with a high degree of reliability . A site tour undertaken by Wyndham in November 2018 indicated a very tidy landfill operation with very low levels of onsite litter and no birds present.

Photo courtesy of NAWMA website

The anticipated timing and dependencies of specific actions associated with this goal are shown below:

	Action	Timing	Dependencies
1.1	Waste Reclamation from Cell 1A	March 2020 to June 2023	Successful outcome from trial and EPA approval
1.2	Waste Baling and Wrapping	June 2021	Final business case
1.3	Completion of capping of Cells 1B-3 as per EPA requirements	December 2021	Auditor and EPA approval of capping design
1.4	Treatment of leachate and discharge to sewer	June 2021	Treated leachate quality meeting Trade waste discharge criteria
1.5	Completion of capping of Cells 4A-C	June 2021	Auditor and EPA approval of capping design
1.6	Implementation of integrated environmental, quality and safety management system	June 2022	

4.2 Goal 2: Implement Resource Recovery at the RDF

Goal 2 deals specifically with the recovery of resources (materials) from the waste stream, whereas Goal 3 addresses the recovery of energy from the remaining waste.

Goals 2 and 3 are linked through an integrated approach to materials and energy recovery, whereby energy recovery will only be considered for those materials that cannot be recovered from the waste stream based on technical and economic considerations.

Developing a resource recovery facility at the RDF will involve mechanical sorting to recover materials that can be reused or recycled, such as metals, timber, soils and rubble, plastics, paper and cardboard and glass.

Recovered materials would be sold into existing markets (e.g. metals, cardboard). A high organic fraction (essentially food waste) would also be recovered and used in an associated anaerobic digestion process. Facilities in the UK such as the Milton Keynes and Allerton Waste Recovery Parks are examples of what can be achieved through this type of integrated approach.

The Milton Keynes Waste Recovery Park in the UK combines three technologies into an integrated facility that processes kerbside residual waste:

- *Mechanical treatment, which uses a range of conventional sorting equipment such as trommels, ballistic separators and optical sorters to recover resources such as steel, aluminium, cardboard and plastic from the residual waste stream. The recovery target for this part of the operation is 9%. The mechanical treatment plant handles up to 132,000 tonnes of waste per annum (tpa).*
- *Dry anaerobic digestion: Food and biodegradable items are extracted from the waste as it goes through the mechanical treatment technology. These items are then processed in a fully enclosed anaerobic digestion facility to generate renewable energy. The anaerobic digestion plant processes the estimated 32,000 tpa of organic waste recovered from the residual waste. The compost like output is used in brownfields rehabilitation projects.*
- *Energy Recovery: Any waste remaining which is not recyclable or compostable is used as a fuel for an Energy from Waste (EFW) plant. This facility generates steam from the combustion which is turn is used to drive a turbine and generate electricity. The plant has a capacity of around 94,000 tpa.*

The achievement of this Goal will position the RDF as a modern waste management business capable of receiving, processing, recovering and disposing of materials from waste. It will need long-term contracts with customers to aggregate sufficient waste to support the required capital investment.

Other considerations in the ultimate technology choices include:

- Differences in composition and recoverable materials between municipal waste and commercial/industrial waste.
- The current market conditions and likely revenue for recovered materials.
- The ability to use a treated organic material back in the RDF operations such as capping and rehabilitation, which will require EPA approval.
- The potential offtakes for any gas or energy generated from an anaerobic digestion process, and
- Integration with the waste baling operation outlined in Goal 2.

The anticipated timing and dependencies of specific actions associated with this goal are shown below:

Action		Timing	Dependencies
2.1	Construct an integrated resource recovery (mechanical separation) facility to recover materials from incoming waste	June 2023	Approval of final business case by Council
2.2	Construct an anaerobic digestion facility for the organics rich fraction from the mechanical separation facility	June 2023	Approval of final business case by Council. Issue of Works Approval by EPA

4.3 Goal 3: Recover Energy from Residual Waste

In the context of this strategy, the term 'energy recovery' refers to the use of technologies to recover the energy value of the residual waste after the recovery of materials and organics faction has occurred as outlined in Goal 2.

This goal could be achieved in two different ways:

1. Providing the residual waste output from the materials/organics recovery stage as a feedstock to a third-party user, (a so called Solid Residual Fuel (SRF)

2. Develop an Energy from Waste (EfW) facility at, or in proximity to, the RDF

The first option of providing a SRF as feedstock to another party would be a relatively straight forward commercial consideration and would most likely see the SRF exported to Asia as a supplementary fuel for cement kilns due to the limited number of cement kilns still operating in Australia (there are none operating in Victoria).

The export of a SRF from the RDF directly to a EfW facility is another future possibility, however a speculative one, as no EfW facilities operating on a SRF or similar feedstock currently exist in Victoria.

The second option involves developing an energy recovery facility at, or near, the RDF. There are numerous examples globally of operating energy recovery facilities and the Renergia facility in Luzern, Switzerland illustrates a state-of-the-art facility that has a cooperative ownership model (refer box below). Given the large capital expense associated with the development of energy recovery facilities there are multiple considerations such as:

- Facility capacity or throughput.
- Technology selection.
- Ownership model.
- Financing.
- Land zoning at and adjacent to the RDF.
- Planning and Works Approvals.
- Securing feedstock, and
- Potential beneficial reuse of bottom ash.

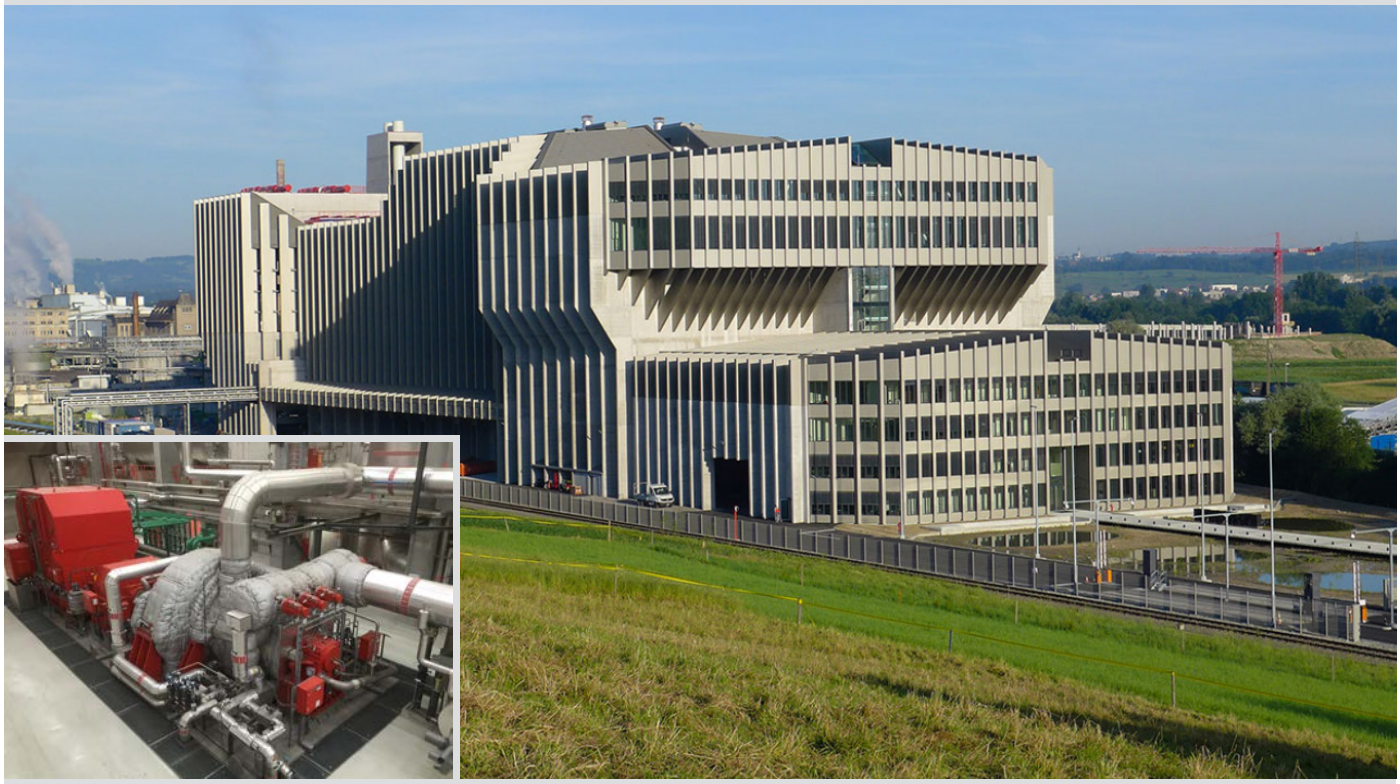
The intention of this strategic plan is not to make a commitment to either of these options, but to explicitly outline the necessary work needed to inform any future decision-making process regarding the appropriate energy recovery options for the RDF.

In the absence of any clear State or Federal Government policy, such as the EU Landfill Directive and mandated resource recovery targets, the choice to direct waste to an energy recovery facility will be a voluntary one.

Some local governments, and many commercial waste generators, are likely to continue to use landfill for management of residual waste if it is both cheaper and legal. This is expected to be the case for the foreseeable future. Therefore, Wyndham City Council intends that the landfill component of the RDF would continue to operate in conjunction with any resource recovery and energy recovery developments.

The Renergia Waste to Energy (WTE) facility in the Luzern region of Switzerland is a state of the art facility that was commissioned in 2015 after a construction period of 2.5 years. The plant runs 24 hours a day, 365 days a year and is run on a 3-shift system. It has a capacity of approximately 220,000 tpa. In addition to generating around 26 MW of electrical energy the facility exports around 60 MW of thermal energy to an adjacent paper plant. This results in the plant having a very high operating efficiency. It is owned by eight municipal waste associations in central Switzerland and the Perlen Papier AG (the adjacent paper mill).

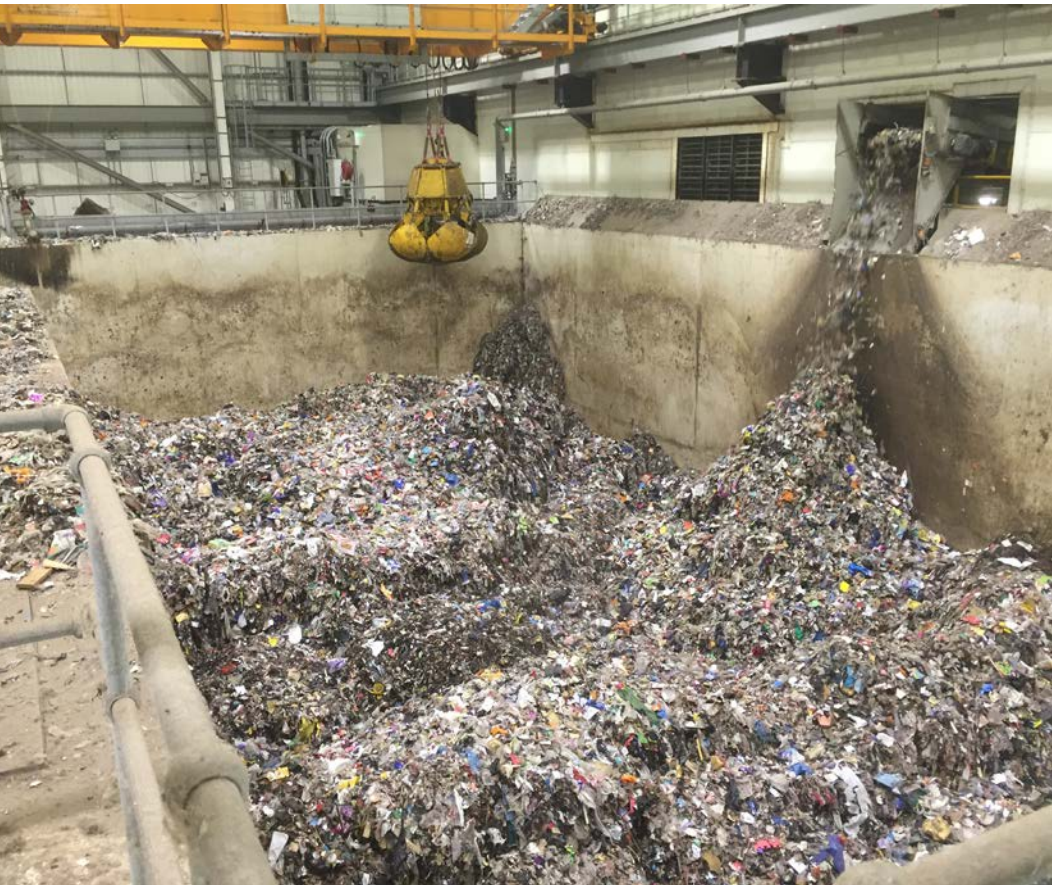
The plant uses a sophisticated and extensive emissions management system to reduce emissions to well below regulated levels. As well as standard electrostatic precipitators and a baghouse with sodium bicarbonate injection to remove particulates and neutralise acid gases, catalytic reduction of nitrogen oxides is used followed by activated carbon adsorption to control emissions of compounds such as dioxins. The effort put into emissions management means this plant has no relationship to the incineration plants of 20 or so years ago.



The anticipated timing and dependencies of specific actions associated with this goal are shown below:

	Action	Timing	Dependencies
3.1	Develop a full business case for the provision of a Solid Residual Fuel to third party Energy from Waste operators	March 2020	A viable market for a Solid Refuse Fuel being identified
3.2	Complete a feasibility study for the potential development of an energy recovery operation by Wyndham City Council	March 2020	
3.3	Depending on outcomes from action 3.2, source appropriate partners for the development of an energy recovery operations at the RDF. facility,	December 2020	

It is critical to note that any decision to progress to the development of any energy recovery options or a facility by Wyndham City Council would be subject to further consideration by Wyndham City Council following the completion of the above actions. It is not expected that a decision-making process would be triggered until 2021 at the earliest, unless significant changes occur in state or federal government policies or in the market.



4.4 Goal 4: Strengthen the Governance of the RDF

The RDF is currently managed through a direct reporting relationship to the CEO, Wyndham City via the Director of City Operations with advice from a Strategic Management Committee (SMC). The SMC's membership includes two Directors, the Chief Financial Officer, Council's legal counsel, an independent business representative, the Manager Waste Management & Disposal, Manager Environment & Water and selected key staff.

As the RDF implements the transition away from conventional landfilling outlined by Goals 1-3, the operational and financial complexity will increase and it is therefore appropriate to implement a governance structure that provides confidence to the community and Council that the RDF is being managed to maximise opportunities within a defined appetite for risk.

The anticipated timing and dependencies of specific actions associated with this goal are shown below:

	Action	Timing	Dependencies
4.1	Transition the RDF budget to a standalone budget inclusive of operating costs, capital costs and future liabilities (cell capping and aftercare costs)	December 2019	
4.2	Development of a standalone business plan and asset management plan	December 2019	
4.3	Evaluate the transition to a Local Government Business Enterprise, similar to the Western Leisure Services model	October 2019	This evaluation will also consider whether the transfer station service and the kerbside collection service should move to the Local Government Business Enterprise or stay within council
4.3	Depending on outcomes from action 4.3, transition to a Local Government Business Enterprise	March 2021	Subject to the evaluation outcome in 4.3 and approval from the Local Government Minister

4.5 Goal 5: Integrate Kerbside Collection and Waste Treatment and Disposal Services

Effective source separation at the kerbside is generally acknowledged as the preferred method of achieving high resource recovery levels due to the relatively low contamination.

By contrast, recovering resources from the residual waste stream will always result in a lower quality product due to the contamination from waste materials. It also requires more significant capital investment in equipment to recover those resources from mixed residual waste. Therefore, there is a clear link between the kerbside waste collection model and the level of effort required to recovery resources from the residual waste stream.

The kerbside and related collection systems should link to the resource recovery systems being used at the RDF. This will require closer integration of this Wyndham RDF Strategic Plan 2019-2025 with Wyndham's Waste and Litter Strategy 2016-2040.

The types of initiatives that will be explored to integrate the waste collection system with RDF operations include:

- Introduction of a kerbside food and garden organics service in conjunction with the development of an anaerobic processing facility at the RDF. The resulting compost product would be kept separate from the output from digestion of organics from the residual waste thereby providing a range of reuse opportunities for this material.
- Processing of kerbside recyclables in the pre-sort/mechanical treatment section of the RDF resource recovery operation.
- Incorporation of a new transfer station facility at the RDF within the waste baling and wrapping operation., thereby providing for better all-weather accessibility and greater levels of resource recovery from waste coming into the transfer station.

The anticipated timing and dependencies of specific actions associated with this goal are shown below:

	Action	Timing	Dependencies
4.1	Introduce kerbside food waste collection	June 2023	Operation of an anaerobic digestion facility at the RDF
4.2	Processing kerbside recyclables at the RDF	June 2023	Operation of a per-sort facility at the RDF
4.3	Development of a new transfer station facility	December 2021	Construction of waste baling facility

4.6 Goal 6: Advocate to State and Federal Governments

The recent Auditor General report "Recovering and Reprocessing Resources from Waste" dated June 2019 highlighted some shortcomings associated with the policy settings and implementation in Victoria. The findings reinforce views across the waste management sector and in councils that historical policies in Victoria and Australia have not leveraged the investments required to drive a substantial increase in resource recovery.

This can be contrasted with Europe where there is a strong policy (e.g. the EU Landfill Directive), high landfill taxes in many jurisdictions and high levels of reinvestment in the sector by government. Whilst investments in resource and energy recovery can be made within the current Victorian policy settings, they carry a higher level of risk and uncertainty compared to similar investments in the UK or Europe.

In this context, Wyndham City Council will continue its advocacy role to both federal and state governments to:

- Develop national and state resource recovery targets.
- Reform levies so they are attached to the waste at the point of generation and not the point of disposal.
- Introduce waste tracking systems for all type of waste.
- Increase the levy and reinvest the levy to support activities that recover materials and resources from the residual waste stream, and.
- Develop policies that support investment such as the EU Landfill Directive and support renewable energy and biogas generation from organic waste materials.

The anticipated timing and dependencies of specific actions associated with this goal are shown below:

	Action	Timing	Dependencies
6.1	Advocate for stronger policy support for resource and energy recovery from waste	December 2021	Operation of an anaerobic digestion facility at the RDF
6.2	Garner support for reinvestment of the landfill levy in resource and energy recovery infrastructure at the RDF	June 2020	Operation of a per-sort facility at the RDF
6.3	Regulatory support for councils to collaborate with or without private businesses to recover resources from waste	December 2020	Implementation of a new Local Government Act with more flexible procurement powers and the State Government's Circular Economy Policy
6.4	Improved consumer knowledge of waste and recycling challenges and opportunities	Ongoing	

5. Financial Implications

The costs of achieving the actions in each of the six strategic goals in this Wyndham RDF Strategic Plan 2019 - 2025 will be significant. The final costs will be determined through the development of detailed business cases for many of the actions, with considerable consultation to occur with Council over the life of this strategic plan.

The high-level cost and complexity associated with each strategy goal are summarised in the table below:

	Goal	Cost	Complexity	Timing to Completion
1.	Become a Best Practice Landfill	$$	Low	June 2021
2.	Implement resource recovery at the RDF	$$$	Moderate	June 2022
3.	Recover energy from residual waste**	$$$$	High	June 2023
4.	Strengthen the Governance of the RDF	$	Moderate	June 2021
5.	Integrate Kerbside Collection and Waste Treatment and Disposal Services	$	Moderate	June 2021
6.	Advocacy to State and Federal Governments	$	Low	Ongoing

$ = <$10m, $$ = $10m to 20m, $$$ = $20m to $100m, $$$$ = >$100m

**As discussed in Goal 3 above, the intention of the new strategy is not to make a commitment to either of these options, but to highlight the further work required before any decision-making process would be triggered. Therefore, the date listed in this table is the date when a decision-making process might be commenced.

6. Consultation

This Wyndham RDF Strategic Plan 2019-2025 has been discussed with the RDF Community Reference Group (CRG). The key points from the CRG members were:

- The maximum tonnage received at the RDF should be informed by several transparent factors.
- There was strong support for baling of waste to address the amenity issues with a traditional tip face operation.
- Council should show leadership even if a chosen option is not popular.
- The development of any EfW option should include resource recovery and the choice of technology needs to be evidence based.
- Redevelopment of the transfer station should include consideration of satellite facilities, with a clear role for social enterprises.