REPORT

Tonkin+Taylor

Transfer Station Upgrade Business Case

Stonnington Waste Transfer Station

Prepared for
City of Stonnington
Prepared by
Tonkin & Taylor Pty Ltd
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Acknowledgement of Country

Tonkin + Taylor respectfully acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Owners of the land and water on which all Australians rely.

This project is within the Traditional lands of the Wurundjeri Woi Wurrung people of the East Kulin Nations. We pay our respects to their Elders past, present and future as custodians of cultural values, of land, wildlife and waterways.

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Executive summary

Introduction

The Stonnington Waste Transfer Station is a key waste transfer facility in Victoria's transfer station network, servicing Stonnington residents and other residents from neighbouring councils. The site has capacity constraints, and this has resulted in:

- The inability to sort and store an extensive range of materials. This has resulted in low rates of resource recovery (25 % of external material drop offs; 12 % if Council internal drop offs are included).
- Traffic congestion issues and a user pathway that does not separate potential traffic/pedestrian/operational conflicts (Section 9.3).
- Infrastructure configuration that disincentivises or prevents customer diversion of material (Section 11).
- Storage of material and management of environmental risk that is no longer compliant with the updated requirements of the Environment Protection Act, General Environmental Duty, and other updated or new regulations and policies (Section 11).

Minimum works

At a minimum, minor remodelling (Option 1) is recommended to address some of the non-negotiable issues above that relate to health and safety and maintaining compliance with recent changes to policy and regulation (such as the Environment Protection Act). The current infrastructure is also limited in the ability to support Councils' obligations to help meet state-wide targets and reforms associated with the Recycling Victoria Policy (Section 6.2).

Findings of the options assessment

Council has requested that the business case include four options for upgrade:

1 Minor remodelling – Basic aesthetic upgrade with a few essential changes.

2 Part extension/remodelling within the site's current footprint.

3 Full rebuild including minor expansion.

4 Full rebuild including major expansion with possible land acquisition and traffic redirection.

Several options include partial or full extensions (see Figure 13.1 below). The area directly to the north of the existing TS operations has been identified as an area that could be considered for future expansion.

Figure 13.1: Areas that each option proposes to expand into

The area is currently used to store material for other Council users in bunkers and kerbside bins. There is also potential to expand to most of the internal parking area in the depot (green in Figure 13.1). This area is currently used for staff and operational vehicle parking. High-level concept plans for each of the options have been prepared and are attached in Appendix A.

Alignment with best practice and key advantages and disadvantages of each option are summarised as follows:

Option	Order of materials	Reduce traffic conflicts	Separate operations area	Future expansion option	Key Advantages	Key Disadvantages
1	Waste first	No	No	No	• Reuse of several existing infrastructure components. • Will not impede on depot storage activities. • Could be completed with minimal disruption to existing TS operations.	• Minimal improvement to pedestrian/ traffic conflict and traffic congestion. • No future new material recovery opportunities (no additional space gained).
2	Split streams	No	No	No	• Reuse of several existing infrastructure components. • Could be completed with minimal disruption to existing TS operations. • Splitting chargeable and non-chargeable items means visitors can avoid queuing for drop off facilities they do not need.	• Potential traffic conflicts along Weir St will be created by the introduction of new site entrances/ exits. • Requires relocation of depot storage bunkers. • Minimal additional recovery opportunity. • Rubbish drop-off located prior to recycling does not incentivise diversion.
3	Waste first	No	Yes	No	• Reconfiguration of waste drop off means recoverable items can be pulled from waste drop offs. • More space for vehicle turning and queuing. • Retaining some space for depot users.	• Significant infrastructure build requirements (extension TS footprint). • Rubbish drop-off located prior to recycling does not incentivise diversion. • Does not address site queuing issues – entry via the site weighbridge. • Construction is likely to create significant disruption to current TS operations.
4	Recoverable first	Yes	Yes	Yes	• Improved customer journey flow and removal of key pedestrian/traffic conflict points. • Improved potential to meet recovery targets. • improved potential to support circular economy initiatives for the community. • State of the art facility with longevity.	• Takes up considerable depot space which would need to be re-established elsewhere. • Includes demolition of several buildings with associated value. • Construction is likely to create significant disruption to current TS operations.

An overview of the options assessment outcomes is provided below:

Evaluation Criteria	1. Minor remodelling	2. Part extension	3. Full rebuild including minor expansion.	4 Full rebuild including major expansion
Alignment with best practice guidelines	No best practice guidance aspects are met.	No best practice guidance aspects are met.	Operations and domestic areas are segregated.	Major expansion allows for alignment with best practice guidelines.
Increased diversion of waste from landfill	Diversion estimated at 5-10 %.	Diversion estimated at 5-10 %.	Diversion estimated at 5-15 %.	Diversion estimated to be 30—40 %.
Circular economy alignment	Does not provide for circular economy opportunities	Does not provide for circular economy opportunities	Does not provide for circular economy opportunities	Provides circular economy opportunities including maximising recovery and reuse
Minimisation of net carbon impacts needs to be considered	Minimal construction but minimal diversion or recovery.	Minimal construction and minimal additional diversion.	Relatively minor construction but increased diversion.	Extensive asphalt, steel, concrete and aggregate required. Large amounts of demolition. Major construction offset by significant diversion.
Capital cost	$640,000	$1,640,000	$6,090,000	$13,920,000
Manages risk to the environment and human health in line with the GED	All risks to the environment and human health are managed so far as reasonably practicable.	All risks to the environment and human health are managed so far as reasonably practicable.	All risks to the environment and human health are managed so far as reasonably practicable.	All risks to the environment and human health can be managed so far as reasonably practicable, new stockpiles and waste streams will require additional controls.
Delivers community benefit	No design features aimed at improving community benefit.	No design features aimed at improving community benefit.	No design features aimed at improving community benefit.	Design features (reuse shop, community centre etc) are specifically aimed at increasing community benefit.

Based on the findings of the assessment each option has advantages and limitations as summarised below:

Option 1 (minimum requirements)

- For the relatively low cost and low intervention, a relatively low increase in diversion, recovery, and social value is obtained.
- Due to a lack of space this option cannot meet the key design criteria, or the broader outcomes targeted by Council.
- The minor remodelling could achieve between 5% and 10% additional diversion and recovery of materials, without involving significant change management for other depot users (the storage space is not altered or relocated).
- This option offers little in terms of increased social benefits (including education/ engagement), disincentivising the disposal of materials to landfill, or transitioning to a circular economy model.

Option 2

- This option does go some way to reducing some of the traffic congestion currently experienced onsite.
- This option does not meet the key design criteria, and despite the additional predicted costs when compared with Option 1, does not offer significantly increased diversion, recovery, circularity, or social benefits.

Option 3

- This option has a higher cost than Options 1 and 2, has the potential to increase resource recovery by an additional 5-15% compared to the current operation.
- This option only partially meets the key design criteria due to continued traffic congestion in the expansion area available.
- This option offers little in terms of increased social benefits (including education/ engagement), disincentivising the disposal of materials to landfill, or transitioning to a circular economy model.

Option 4

- This option has the most significant financial investment requirements, and in return offers the best potential for achieving recovery and diversion targets, meets the key design criteria, and affords increased social benefits.
- The option requires significant land currently used by the depot so would require careful planning in detailed design to ensure both functions can still use the space or alternatively be relocated to a different site.
- Planning for capital expenditure for the works, and the budget bid process (and grant applications where funding becomes available) could be commenced pre-emptively in 2023 and be ongoing until the commencement of works and until full commissioning closer to 2030.

1 Introduction

Tonkin & Taylor Pty Ltd (T+T) has been engaged by City of Stonnington (Council) to prepare a business case to assess four options for the upgrade of the Stonnington Waste Transfer Station (TS). The TS is currently located at 43 Weir Street, Malvern (the site), and is intended to service the residents and businesses of the City of Stonnington area and neighbouring council areas including Glen Eira, Boroondara, Monash, and northern Kingston.

The Stonnington Waste Transfer Station is a key waste transfer facility in Victoria's transfer station network, servicing Stonnington residents and other residents from neighbouring councils. The site has capacity constraints, and the inability to sort and store an extensive range of materials has resulted in low rates of resource recovery. The site also experiences traffic congestion issues, operational challenges for staff and in some specific areas risks being no longer compliant with the updated industry guidelines and requirements of the Environment Protection Act, General Environmental Duty, and other updated or new regulations and policies. Acknowledging that at a minimum minor remodelling needs to be undertaken to address the issues listed above, prior to investing Council would also like to understand what further upgrade options could be available to bring the site up to best practice and the associated advantages and disadvantages of each.

Council has requested that the business case include four upgrade options:

1 Minor remodelling – Basic aesthetic upgrade with a few essential changes.

2 Part extension/remodelling within the site's current footprint.

3 Full rebuild including minor expansion.

4 Full rebuild including major expansion with possible land acquisition and traffic redirection.

This work has been carried out under the proposal submitted in response to Q23010 on 24 August 2022 and accepted by Council on 28 September 2022.

2 Scope

The scope of services completed was as follows:

Stakeholder engagement:

- Participated in the formation of the steering committee group.
- Liaised with relevant organisations for flooding overlays, easement, and traffic information.
- Sought input from shared users of the depot: fleet maintenance team, parks team, and traffic.

Concept design:

- Reviewed operations of the TS and identify infrastructure and operational improvements to increase recovery of current and new materials, subsequently decreasing waste sent to landfill.
- Developed concept designs for proposed site improvements, to be implemented across multiple stages to allow continuity of operations.
- Made projections for the resource recovery potential the site improvements will have when implemented.
- Identified site access, safety, and traffic improvements to enable extended hours for residential and commercial access.
- Ensured improvements create an accessible and welcoming centre that encourages materials separation and recycling.
- Examined the possibility of a glass drop off point for multi-unit dwellings.
- Identified circular economy opportunities.
- Used learnings from other councils that have had transfer stations built in the past 2-3 years.
- Included concept layout sketches in CAD.

Options assessment:

- Estimated the cost of the upgrades for each option including external Quantity Surveyor (QS) review.
- Identified the barriers and risks of each option.
- Justified the preferred option (to be completed after meeting with Council).
- Preparation of this business case report detailing the findings of the four options for Council's consideration.

Business case:

- Drafted a business case that will be used to apply for an infrastructure grant once approved by Council. The business case has been written to be used as evidence to support future grant applications.

3 Reference documents

In preparing this business case, T+T have relied on communications with Council. We have also reviewed the following documents and reference material supplied by Council:

City of Stonnington relevant policies and strategies:

- Stonnington Council Plan, 2017-2021.
- Sustainable Environment Strategy, 2018-2023.
- Climate Emergency Action Plan, 2021-2024.
- City of Stonnington Sustainable Assets Policy, March 2022.
- Towards a Circular Economy: Our Future Waste Strategy 2022-2025

Existing waste streams, projections, and management practices:

- Product movement summary, 2017.
- Customer movements 2021/22 Financial Year.
- Transfer Station Annual Report (2022-2021).

Operations and community survey for existing depot:

- Transfer Station Metro Councils Comparison, 2022.
- Transfer Station Survey, 2022.
- Transfer Station Survey Summary, 2022.

Information on current TS and Depot infrastructure and utilities:

- Stonnington Depot Administration Floor Plan.
- Stonnington Depot Fleet Workshop Floor Plan.
- TS Upgrade presentation, DEVCO, 2008.
- Electrical Services, 2006.
- Tooronga Road Depot Switchboard Schedule.
- Dial Before You Dig reports, 2022.
- EPA Victoria Site Entry Report, 2022.
- Traffic Management Plan – Waste Transfer Station – Tooronga Rd Depot, 2021.

Planning Information:

- Vic Land Title Data, 2022.
- Flood Map, 2003.
- Vic Plan Planning Property Reports.
- Department of Environment, Land, Water and Planning (DELWP) Planning Map, 2022.

Waste Policies:

- Recycling Victoria policy, Sustainability Victoria, 2020.
- Advice on Recycling and Resource Recovery Infrastructure, Infrastructure Victoria, 2020.
- Recycled First Policy, 2020.
- Circular Economy Act, 2021.

4 Design criteria and guidelines

4.1 Reference documents

This report has been written in accordance with published guidance, including:

- Guide to Better Practice at Resource Recovery Centres, Sustainability Victoria, 2019.
- Publication 1667.3: Management and storage of combustible recyclable and waste materials – guideline, EPA Victoria, 2021.

Detailed design of the TS will also need to comply with the most recent versions of Australian and EPA Victoria standards, City of Stonnington design requirements, and should be in general accordance with guidance documents published by Sustainability Victoria.

4.2 Key principles

The concept designs for each option have been developed in general accordance with guidance documents published by Sustainability Victoria[1] using the following key principles:

1 Recycling drop-off areas should be placed prior to residual waste disposal areas.

2 The layout should have clear separation of truck, car, and pedestrian traffic, and be arranged so that staff members can more easily supervise and manage traffic.

3 Placement of various activities, layout, and infrastructure in the transfer station shall contribute strongly to the safety of visitors and the people who work there by separating operations areas from site user access.

4 Where possible the site configuration considers future likely and potential expansion and diversion activities.

4.3 Environment Protection Act

4.3.1 Site registration

The TS would qualify as an A13c (Waste and Resource Recovery – Small) activity under the new Environment Protection Regulations (Environment Protection Act 2017, Schedule 1 Item 21)[1]. The TS meets the description of storing between 5 m^3 and 5000 m^3 of any waste on the site at any time, for the purpose of resource recovery off-site transfer, and is therefore a prescribed registration activity.

The site currently accepts around 2000 tonnes per month. Increasing the annual throughput to over 4000 tonnes per month would change the site permission requirements to an A13b permit (Waste and Resource Recovery – Medium).

The EPA has published a list of A13c registration conditions. Most conditions relate only to the operation of the facility and have not been considered as part of Conceptual Design development except for condition REG_WM4:

- "You must store and manage waste in a manner which minimises the risk of fires. For more information, see EPA guideline Management and storage of combustible recyclable and waste materials (publication 1667.2)".

[1] Guide to Better Practice at Resource Recovery Centres, Sustainability Victoria, Revised 2019

4.3.2 General Environmental Duty

The General Environmental Duty (GED) is set out in Section 25 of the Environment Protection Act 2017 and provides in 25(1):

- "A person who is engaging in an activity that may give rise to risk of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable."

The concept designs for the four options have been developed in a manner that considers risks to the environment from noise, odour, run off to stormwater, storage of hazardous materials, separation of combustible recyclables, resource recovery, and waste management. Early consideration and mitigation of these risks through design (where practicable) is aimed to assist Council in meeting their obligation to manage risk at the site under the GED.

Separation distances are also a key consideration in any Transfer Station upgrade. New draft guidance for consultation[2] has been considered as part of this assessment.

[2] Separation distance guideline, Draft EPA Publication 1949, State Government of- Victoria, December 2022

5 Where are we now?

City of Stonnington provides a suite of waste services. Waste and recycling are collected through the following systems and processes in 2020/21 were:

- Municipal kerbside collections:
  - 25,000 tonnes in household waste bins.
  - 6,900 tonnes in household recycling bins.
  - 4,000 tonnes in household food and green waste bins.
- Municipality-wide twice-yearly hard waste collection service (794 tonnes, and 3,553 number of mattresses).
- Facilitation of waste and recyclable drop-off at the TS for residents and external customers (4,427 tonnes).
- Public waste and recycling bins from within the City of Stonnington (680 tonnes).

As shown in Figure 5-1, approximately 37% of the collected waste and recycling from the City of Stonnington was recycled or recovered in the 2020/21 period, with the remaining 63% disposed to landfill.

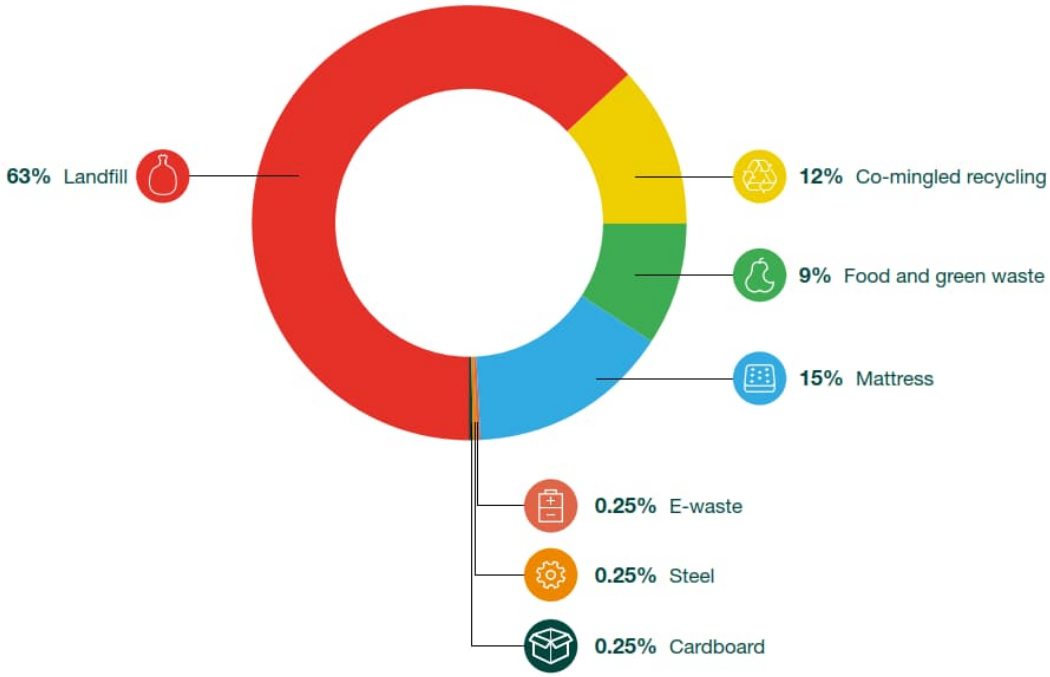


Figure 5-1: City of Stonnington waste diversion 2020/2021 (Source: City of Stonnington Waste Strategy, 2022 - 2025, City of Stonnington).

6 Drivers for change

6.1 Findings of current infrastructure assessment

The current site has significant capacity constraints, and this has resulted in:

- The inability to sort and store an extensive range of materials. This has resulted in low rates of resource recovery.
- Traffic congestion issues and a user pathway that does not separate potential traffic/pedestrian/operational conflicts.
- Infrastructure configuration that disincentivises or prevents customer diversion of material (Section 11).
- Storage of material and management of environmental risk in a manner that risks being no longer compliant with the updated requirements of the Environment Protection Act and GED.

At a minimum minor remodelling needs to be undertaken to address some of the non-negotiable issues above that relate to health and safety and maintaining compliance with recent changes to policy and regulation (such as the Environment Protection Act).

The current infrastructure is also limited in ability to support Councils' obligations to help meet state-wide targets and reforms associated with the Recycling Victoria Policy (See Section 6.2).

6.2 Recycling Victoria (RV) Policy

In response to the three Victorian 'recycling crises' events of 2018 and 2019 which saw the release of the China Sword Policy and significant disruption to the Victorian recycling reprocessing network, the Victorian State Government established Recycling Victoria[3] (RV), a new business unit of DEECA. The new RV planning and regulatory structure is expected to be fully operational by December 2023. RV amalgamated the staff and services of the former Waste and Resource Recovery Groups (WRRGs) as of July 2022. RV is tasked with overseeing the waste, recycling, and resource recovery sector, as well as supporting the development of the circular economy.

RV's 10-year plan[4] outlines a package of more than $300 million of waste sector reforms. These include landfill diversion strategies such as a state-wide four-bin kerbside system incorporating organics separation (a key aim is to ensure that every Victorian household has access to FOGO services by 2030), a container deposit scheme in 2023, and nearly $100 million to support resource recovery infrastructure. It is likely that the current RV strategy of releasing regular funding tranches for resource recovery infrastructure for different streams of works will continue.

The aim of the plan is to develop a new "circular" economy to reform the waste and resource recovery sector over a 10-year period. Key goals in the policy documents and associated RV plan include:

- Landfill diversion target of 80% by 2030.
- Cutting total waste generation by 15% per capita by 2030.
- Ensuring every Victorian household has access to FOGO services by 2030.

These targets can only be accomplished with the support of Councils, contractors, waste service users, and residents.

[3] Circular Economy (Waste Reduction and Recycling) Act 2021

[4] Recycling Victoria A new economy, The State of Victoria Department of Environment, Land, Water and Planning, 2020

7 Where do we want to be?

7.1 Circular Economy

The City of Stonnington has its own waste vision which is circular economy driven. In Stonnington's Community Vision 2040, the aim is to "pursue more eco-friendly ways of living, by reducing our impact on the Earth through improved waste management, energy consumption and low-emission forms of transport." The Community Vision for Stonnington aligns with the State Government's desire to transition to a circular economy.

One of the ways to reach Victoria's targets is more robust product stewardship, which shares responsibility of products and their waste between producers, importers, and consumers. However, for product stewardship to operate, there must be systems in place that can capture and process the recoverable materials, such as transfer stations.

In addition to recovery of materials a circular economy approach involves reducing waste generation. For example, identifying "waste" that can be given a new life so that it can continue to be used safely. Transfer stations are one way to capture products that can be refurbished and reused or separated into useful pieces.

Streamed funding, some of which is aimed at infrastructure upgrades, is made available in tranches by the Victorian Government, to support Councils in circular economy initiatives, as well as State-wide programs and campaigns designed to support the transition to a circular economy.

Recycling Victoria estimate that 9.2 jobs are created where 80% of 10,000 tonnes of waste is diverted from landfill. If the 10,000 tonnes of waste is landfilled 2.8 jobs will be created. In the City of Stonnington 63% of waste is currently landfilled, suggesting there is significant potential for increased reuse and recovery, and that doing so will create new job opportunities. Landfill levies will also continue to rise through to 2025 (and likely continuously beyond this as a disincentive to landfilling), making transfer stations focussed on reuse and recovery an increasingly affordable and desirable option for diverting waste.

City of Stonnington lists 'resources and water management' as second on their strategic priority areas, after 'climate change and energy'. This strategic priority's key focus areas include food waste, resource recovery, and waste avoidance education. Similarly, the priority for the City of Stonnington in the Towards a Circular Economy: Our Future Waste Strategy 2022-2025 is to "avoid and reduce waste", with targets to reduce residual waste production in Stonnington households by 20% by 2030. This is supported with increased education and community engagement and supporting new technologies that can recover materials from traditionally landfilled materials.

City of Stonnington is on track to follow RV towards a circular economy. However, to be successful in reducing waste and increasing resource recovery, it is imperative that the TS be upgraded to give City of Stonnington the best opportunities for reaching Council and State targets, and to support the transition into a circular economy.

To track Council's progress on matching their internal targets and RV targets, Council will assess the diversion rates, carbon emissions, cost, and safety aspects in evaluating upgrade options. In addition, the key goals and targets of Council's Sustainable Asset Management Policy will need to be met, including:

- Responsible materials selection in open space projects, which may include sourcing recycled materials for use in streetscape, sports grounds and more.
- Use of at least 20% recycled content in concrete pipes for drainage infrastructure (such a pits and pipes).

To manage capital costs associated with sustainability integration, Council's Sustainable Asset Management Policy also outlines that a whole of life approach must be taken when developing projects. This should consider maintenance, life of materials, and cost of the disposal, recycling, and/or reuse at the end of the material's use.

A circular economy is about more than how we manage waste. The circular economy preferences waste avoidance through the consideration of end of use during the design of a product. This requires a whole of economy shift, given our current economy is based on the linear model of continuous consumption and disposal of goods. The circular economy requires a systems thinking approach to the way we design solutions and requires extensive collaboration across stakeholders in each part of the value chain. This is consistent with Council's Sustainable Asset Management Policy.

Inherent in the circular economy approach is collaboration. Collaboration provides multiple perspectives on key issues and opportunities, promotes shared ownership of action, and in the context of City of Stonnington, has the potential to provide more efficient and effective activity through upgraded services and systems.

7.2 Linking circular economy to decarbonisation

The City of Stonnington is committed to combating climate change and has produced a city specific Climate Action Plan for 2021 – 2024, as well as a Sustainable Environment Strategy (2018 – 2023). By keeping products and materials in use, the circular economy helps to create a less carbon emission intensive economy. Circular economy actions that support carbon neutrality could include:

- Designing out waste and the associated potential emissions from landfill.
  - For example, preventing food waste at source through education or better manufacturing processes to reduce the embodied carbon of production or emissions associated with the breakdown of organic materials in landfill.
- Recovering materials to for remanufacturing or to generate new sources of renewable energy.
  - For example, anaerobic digestion/power generation arrangements that use organic waste as fuel.
  - For example, green waste as feedstock for composting and plastics for remanufacturing.
- Capturing materials to be reused.
  - For example, recovering working electronics that can be resold, and reduce the amount of virgin materials used to generate products.

7.3 Option evaluation criteria

A range of criteria to be used to evaluate the options for the TS redevelopment were identified as part of the kick-off meeting with the Council working group. These criteria reflect best practice in transfer station design and operation, the drivers for change from State Policy and Council strategic priorities. The criteria include the need to:

- Align with best practice guidelines on transfer station design and operation and follow the key principles listed in Section 4.2 which include but are not limited to traffic flow, safety in design, and ease of staffing.
- Deliver increased diversion of waste from landfill.
- Alignment with principles of the circular economy (regenerate natural systems, design out waste and pollution, keep products and materials in use at their highest value).
- Consider net carbon impacts and infrastructure to reflect Council's Sustainable Asset Management Policy.

- Design the TS to manage risk to the environment and human health so far as reasonably practicable and reflect Council's obligations under the General Environmental Duty.
- Deliver good value for money considering capital (infrastructure) and operational costs (whole of life cost), and any supporting funding sources such as Sustainability Victoria Grants.
- Deliver community benefit.

Each of the proposed options outlined in this report have been assessed against the above criteria. For ease of interpretation, in addition to comments on the evaluation, the assessment is colour coded to provide a visual cue for each criterion and each option. The evaluation approach and colour coding is outlined in Table 7.1.

Table 7.1: Evaluation criteria scoring

Evaluation Criteria	Does not support	Somewhat supports	Fully supports
Alignment with best practice guidelines	Multiple key elements of practice guidelines are not met	Almost all key elements of practice guidelines are met with the exception of one or two	All key elements of practice guidelines are met
Increased diversion of waste from landfill	No change from the current diversion from landfill.	Up to 30% additional diversion from landfill	More than 30% additional diversion from landfill
Circular economy alignment	Does not provide for circular economy opportunities	Provides some circular economy opportunities	Provides circular economy opportunities including maximising recovery and reuse at a material's highest value
Minimisation of net carbon impacts considered	No change from the current net carbon impact.	A limited improvement in the net carbon impact	A significant improvement in the net carbon impact.
Capital cost	Significant capital investment required	Moderate capital investment required	No capital investment required
Manages risk to the environment and human health in line with the GED	Risks to the environment and human health are not managed so far as reasonably practicable	Some risks to the environment and human health are managed so far as reasonably practicable	All risks to the environment and human health are managed so far as reasonably practicable
Delivers community benefit	No change in community benefit	Limited community benefit improvement	Integration of elements that are aimed at delivering community benefit beyond waste and resource recovery
Evaluation criteria not relevant			

8 Site background

8.1 Site construction

The original TS was constructed in 2008 as part of a larger project to redevelop the Council depot which is located next door. The existing site was built to incorporate:

- A weighbridge and gatehouse at the site entrance.
- A moving floor to move solid waste to a hopper feeding into a static packer.
- Location of the static packer below the public area with a ramp to below ground level for trucks to access for loading.
- Hook bin saw tooth arrangement for other drop offs (currently cardboard, green waste and metals).

The site was built up 3.5 m above Weir St ground level because this area was in a 10-year flood plain. Construction of the loading ramp (below ground level) was challenged by groundwater ingress issues. The walking floor sits on natural ground, whereas the public drop-off and vehicle turn around sits 3.5 m above on compacted fill.

A Melbourne Water main barrel drain, 3 m in diameter, also runs directly through the depot (Figure 8.1). A bridge was built over the drain to facilitate construction.

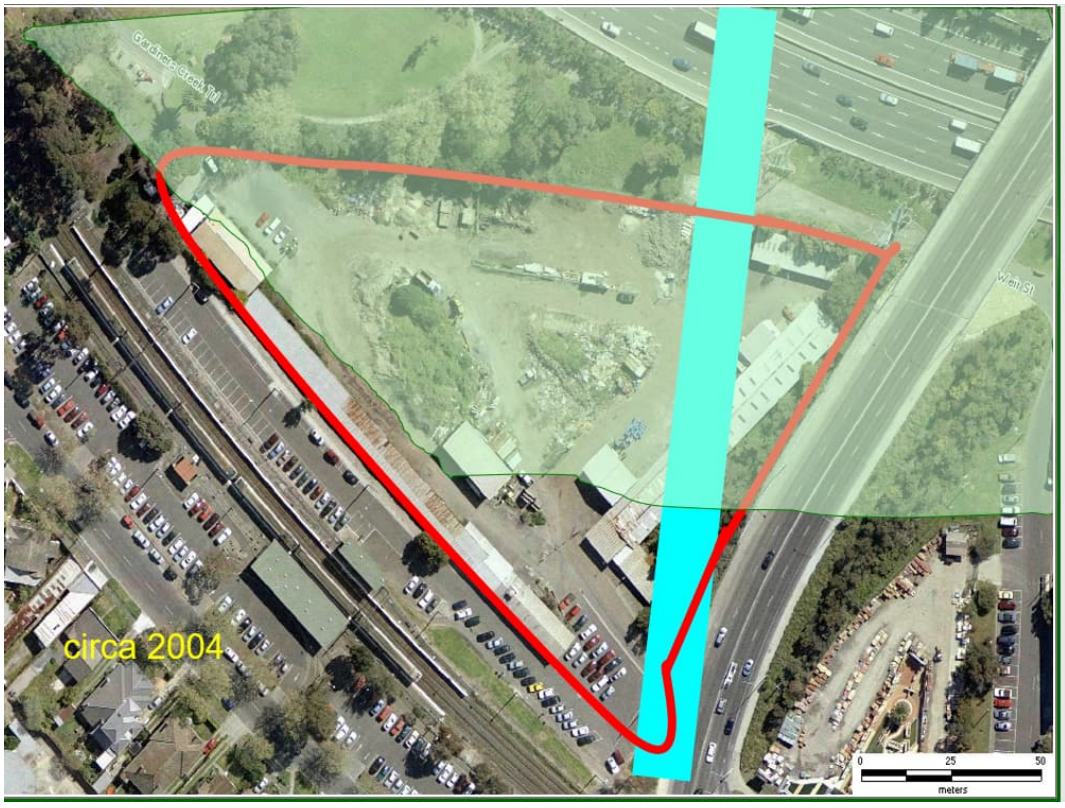


Figure 8.1: Location of Melbourne water drain[5] (blue) within the site (approximate site boundary in red). (Source: City of Stonnington)

The walking floor and static packer is a bespoke system designed and installed by Wastech (Figure 8.2).

[5] Building an Urban Transfer Station on a Confined Site, Presentation by Ian Smith - City of Stonnington

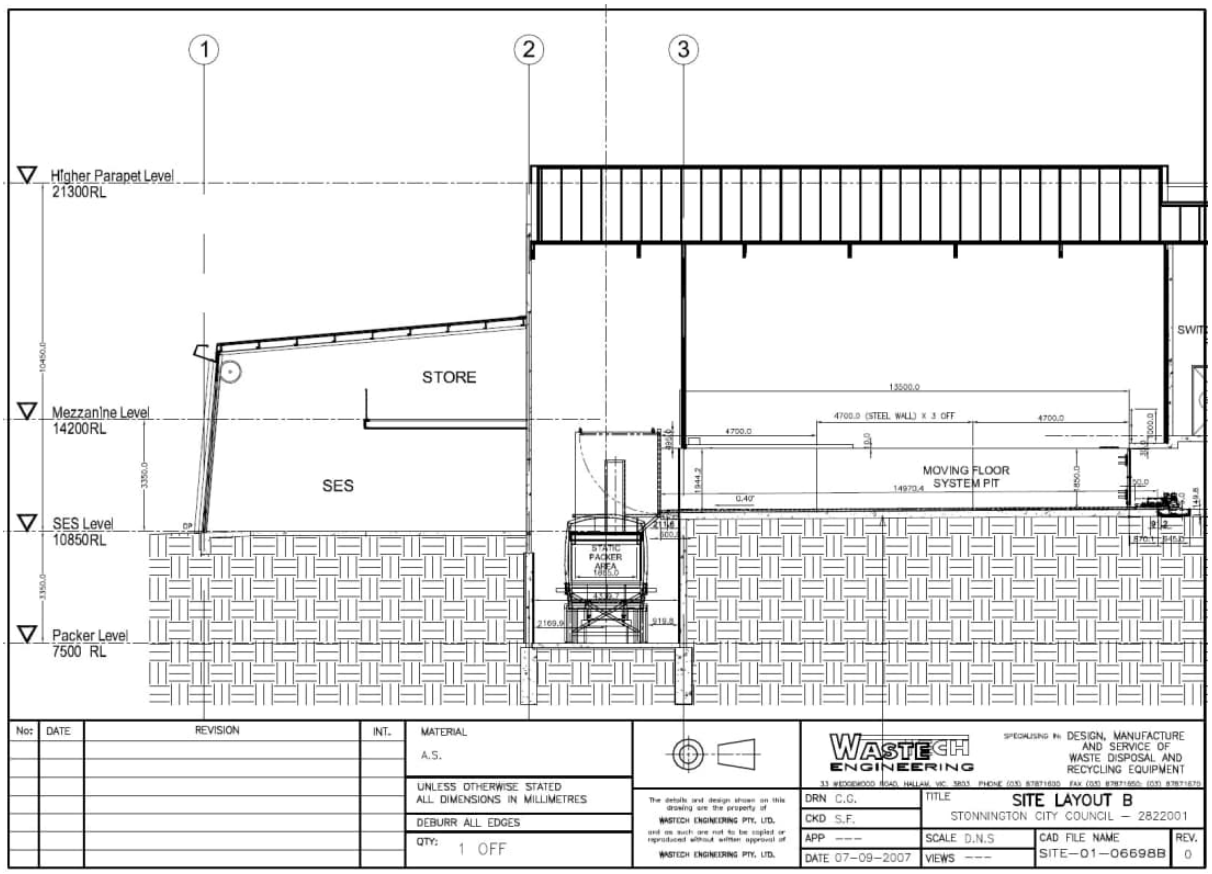


Figure 8.2: Wastetech moving floor and static packer arrangement[6]

The system designed and installed by Wastech includes purpose built prime movers to cart compacted materials away from the site.

8.2 Surrounding land uses

The site is surrounded by the following features:

- North: Monash Freeway and Gardiners Creek directly bounds the site, with residential, commercial, and open spaces beyond the creek. Residential properties are located approximately 180 m away, on the opposite side of the Monash Freeway with Gardiners Creek, and Gardiners Creek Reserve providing some buffer.
- South: Tooronga Train Station on the Glen Waverley train line runs northwest to southeast along the southern boundary of the site. Residential properties are located approximately 130 m away from the site.
- East: Tooronga Road abuts the site to the east, with commercial properties further east. Residential properties are present approximately 250 m from site.
- West: A Council depot sits adjacent to the TS, along with the Glen Waverley train line. Residential properties are present approximately 200 m from site.

The Council depot is immediately adjacent to the TS (Figure 1, Appendix A).

In addition to the residential areas listed above, sensitive receptors found within 1 km of the site include:

[6] Site layout B, Wastech, 2007

- An aged care facility 650 m southwest of the site.
- A playground 580 m east of the site.
- An aged care facility 870 m southeast of the site.
- Little Street Margaret's Kindergarten 900 m west of the site.
- Auburn High School 980 m north of the site.
- Bialik College 700 m north of the site.
- Save-A-Dog pound and animal shelter, adjacent to the south-east of the site.

8.3 Environmental setting

A search of key information including the geology, hydrogeology, hydrology, and historical reporting has been completed and is summarised below:

- The site is underlain by Pleistocene to Holocene alluvium consisting of silt, sand, and gravels. According to the DEECA Groundwater Reporting Tool[7], depth to groundwater is <5 metres below ground level (m bgl) within a Quaternary Aquifer consisting of sand, gravels, clay, and silt. Within the aquifer groundwater salinity is estimated to be 1,001 – 3,500 mg/L.
- Gardiners Creek is oriented east-west on the northern side of the Monash Freeway. Groundwater is inferred to flow to the north from the site to the creek.
- The site is not listed in the EPA Priority Sites Register or the Victorian Landfill Register. The site does not have an EPA Audit overlay or a Groundwater Restricted Use Areas (GQRUZ) overlay. To the north of Gardiners Creek, there are two (2) EPA Audit Areas and two (2) GQRUZ.
- Fill was imported to site during the construction of the TS[8].

8.4 Geotechnical setting

A geotechnical assessment for the site was last completed in 2000 by A.S. James Pty Ltd which noted that the site contains variable fill to 1.6 m. Underlying fill is quaternary alluvium (interbedded sand and clay) with perched water evident in the sand layers. The deeper fill appears to be in the northern to north-western part of the site.

Implications of the geotechnical findings of the A.S. James report on potential site upgrades at a high level are interpreted to be as follows:

- A new geotechnical investigation will be required for options that require significant development as the 2000 assessment is dated and lacking some of the information now required under the current Australian Standard.
- Where no documentation is available on the subgrade fill where it exists, the designers may undertake investigations to confirm subgrade fill characteristics, design for worst case conditions based on available information and/or specify re-work and replacement of this material.
- Perched water will need managing if any excavations were proposed.

[7] Department of Environment, Land, Water and Planning (DELWP), 2022. Accessed online October 2022 at: https://www.water.vic.gov.au/groundwater/groundwater-resource-reports
[8] TS Upgrade presentation, DEVCO, 2008

8.5 Cultural heritage

A Planning Property Report was obtained for the site. The report notes that the site does not contain any previously recorded Aboriginal Places. The requirement to prepare a mandatory Aboriginal Cultural Heritage Management Plan (CHMP) is not triggered under the relevant regulations.

The report also did not indicate if there is potential for an historical archaeological overlay, or if an historical archaeological survey will be required. This can be confirmed by Council once a preferred concept design is selected.

8.6 Climate

Design of the TS upgrade will need to consider local climate conditions including anticipated future conditions. For example, open-sided sheds and material storage areas on site should be configured to block the predominant wind directions. Site drainage will also need to be designed to accommodate significant but infrequent storm events reflecting projected climatic conditions for the design life of the facility.

We have reviewed the average weather data from the Viewbank weather station[9] (the nearest Bureau of Meteorology (BoM) weather station), located approximately 14.1 km from the site. Based on our review of the available historical weather data (1999 to 2022), we understand that the site is likely to have the following average climate characteristics:

- Average annual rainfall of 729 mm.
- 90th percentile annual rainfall of 913 mm.
- Approximately 105 days of rainfall >1mm each year.
- Mean 9am wind speed of 11.3 km/hr and mean 3pm wind speed of 17.2 km/hr.

The intensity-frequency-duration (IFD) design rainfall depths at the site location is shown in Figure 8.3 below, based on modelling provided by BoM for the Design Rainfall Data System (2016)[10]. The IFD modelling shows, for example, that the 1-hour duration storm with a 20-year average recurrence interval (ARI) at the site is estimated to have a total rainfall depth of approximately 50 mm. Selection of the design storm depth is expected to vary throughout the site, depending on the relevant design standard for the infrastructure element under consideration and the characteristics of the catchment area upslope of that element.

It should be noted that the predictions detailed above are based on available historical data, and pre-date the current La Niña multi-year weather event, which is now in year 3. Unusual climate conditions have been occurring during the last 3 years, therefore any updated advice from BoM on climate predictions will be monitored and considered in the final design proposals, to assist Council to plan accordingly with consideration for any increased likelihood and impact of such weather events as indicated by the BoM.

[9] Australian Bureau of Meteorology (BOM), "Climate statistics for Australian locations" Viewbank, Site number 086068. Accessed online October 2022, at bom.gov.au.
[10] Design Rainfall Data System (2016), Australia Bureau of Meteorology (BOM) Accessed online October 2022, at bom.gov.au

Wind rose data at the Melbourne weather station is presented in Figure 8.4a and Figure 8.4b for 9am and 3pm wind speeds, respectively. This wind rose data suggest that wind can be expected to come from all directions; however, by the afternoon, the predominant wind direction is from the north and the southwest.

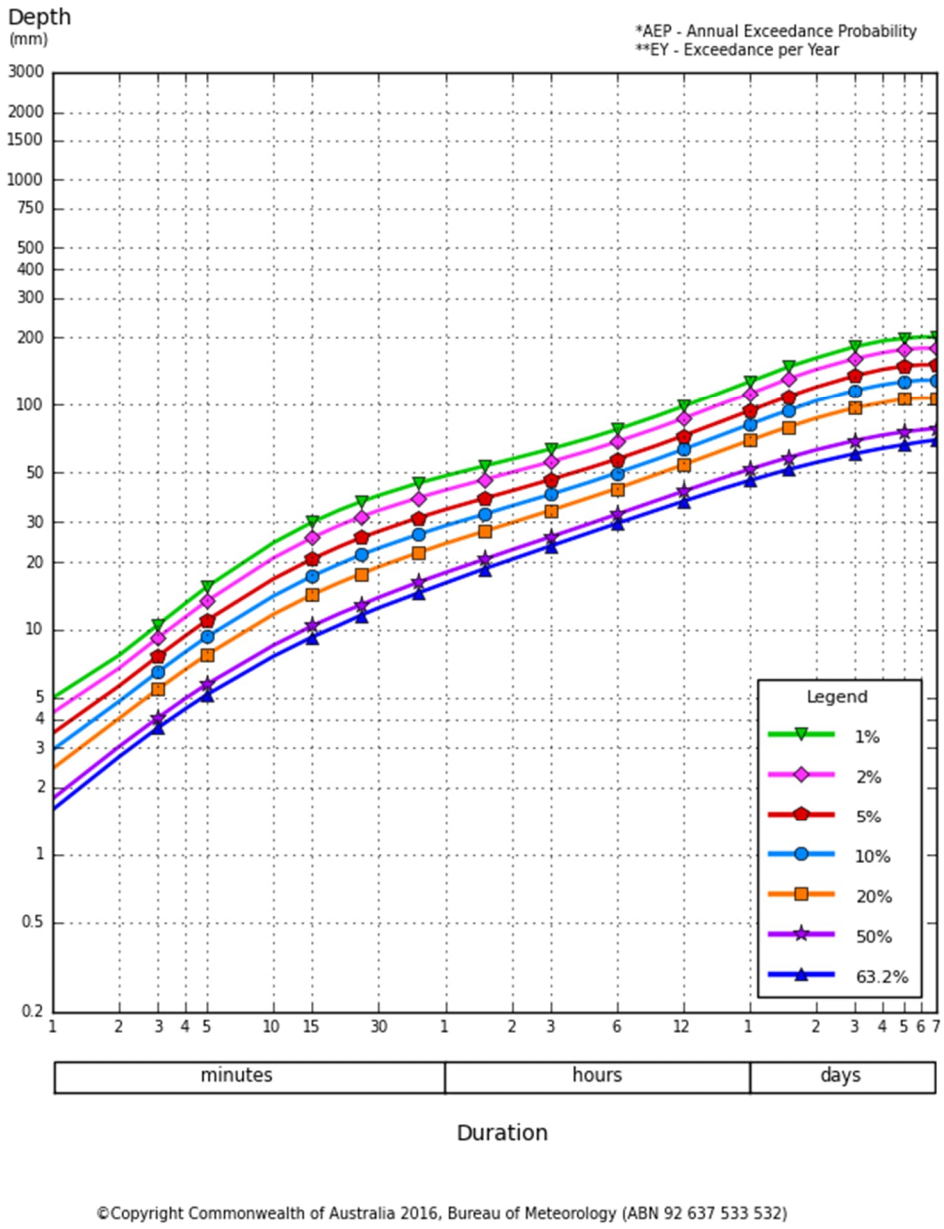


Figure 8.3: IFD Design Rainfall Depth (mm) at 43 Weir Street, based on modelling provided in BoM's Design Rainfall Data System (2016). (Source: Bureau of Meteorology, 2022)

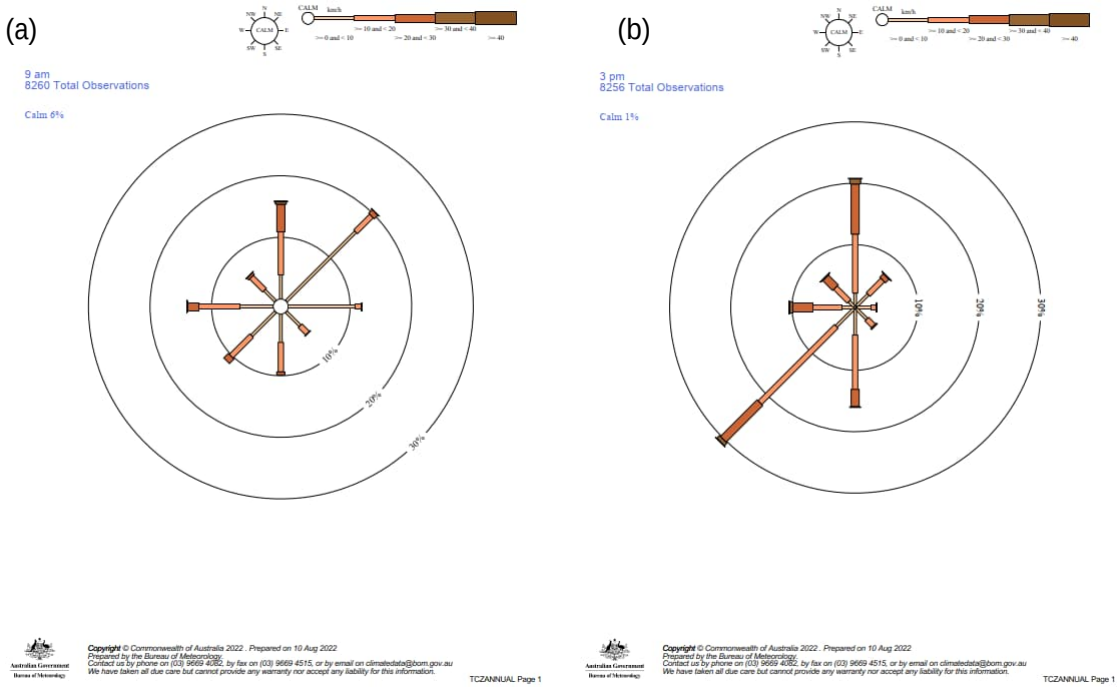


Figure 8.4: Wind roses for Viewbank weather station, including (a) 9am wind rose and (b) 3pm wind rose. (Source: Bureau of Meteorology, 2022)

8.7 Flooding risk

The information provided from the property planning report shows that the site does not have a Land Subject to Inundation Overlay (LSIO) layer, i.e., that the land is not affected by flooding associated with waterways and open drainage systems. However, it does show that the site is within a Special Building Overlays (SBO). These are planning scheme controls that identify areas prone to overland flooding. The purpose of these overlays is to set appropriate conditions and flood levels to address any flood risk to developments. These overlays required a planning permit for buildings and works. If significant recontouring of the site is to be considered further, the source of this flooding should be investigated, and a flood hazard assessment may be required to ensure minimal effect on adjacent land. An engineering solution that does not require recontouring of the land within the SBO may also be appropriate.

GHD[11] revised flood plain mapping areas within the City of Stonnington area to address submissions to Council regarding the Proposed Building Overlays and drainage improvements since the original mapping was undertaken. Where floor levels were known, GHD categorised property flood risk into categories, where Category 0 indicated a flood-free property in a 100-year event, and Category 4 indicated a flooded above floor level in more frequent than 20-year events. Within the City of Stonnington area, most properties are within Category 1 where a property would be affected in a 100-year event, but the floor would remain flood-free. The site-specific category was not included in documents Council was able to provide.

8.8 Melbourne Water

Melbourne Water is responsible for permit conditions at the site relating to the construction and operation of buildings adjacent to the Melbourne Main Drain and management of buildings located in the SBO. Key permit conditions currently in place at the site which indicate possible future

[11] GHD, 2003, "City of Stonnington – Stonnington Flood Plain Mapping Revision 2003 – Final Report".

challenges with further development of the site which would need to be considered carefully include:

- Unless otherwise agreed in writing by Melbourne Water the finished flood levels of any other structure must be constructed a minimum of 600 mm above the applicable flood levels.
- Loss of flood storage on the site must be kept to a minimum and must not impact on upstream flood levels. Prior to the commencement of works, calculations detailing the volumes of cutting and filling must be submitted to the satisfaction of Melbourne Water.
- Any proposed development must not cause any obstruction to the overland flow paths for all Melbourne Water Drains that traverse the site.
- A minimum vertical clearance of 5.3 m must be provided between the underside of the proposed roof support and structure and the finished floor level of Melbourne Water's Tooronga Road Main Drain.
- At least 21 days prior to the construction detailed plans of any roof structures and posts including footing details must be submitted to Melbourne Water for approval. Any roof structures and/or posts to be erected over Melbourne Water's main drains must be lightweight and demountable.
- No buildings or works other than those approved by Melbourne Water shall be constructed within 3 m either side of the centreline of the Tooronga Road Main Drain unless agreed to in writing by Melbourne Water.
- No walls and/or posts must be erected directly over or within 1.5 m from the outside of the edge of Melbourne Water's main drain except for the push pit and storage bin areas.
- Foundation footings to be established over and/or near Melbourne Water's main drain must satisfy Melbourne Water's footing criteria.
- No load is to be applied to the Melbourne Water drains unless supporting engineering calculations prove that it will have no effect on the drain.

8.9 Stormwater management

Construction notes from the original construction indicate that the Depot and TS site was designed to include stormwater capture and management on site. The design included porous paving, flush kerbs and stormwater flows into rain gardens and bioretention trenches. Key stormwater design features are shown in Figure 8.5.

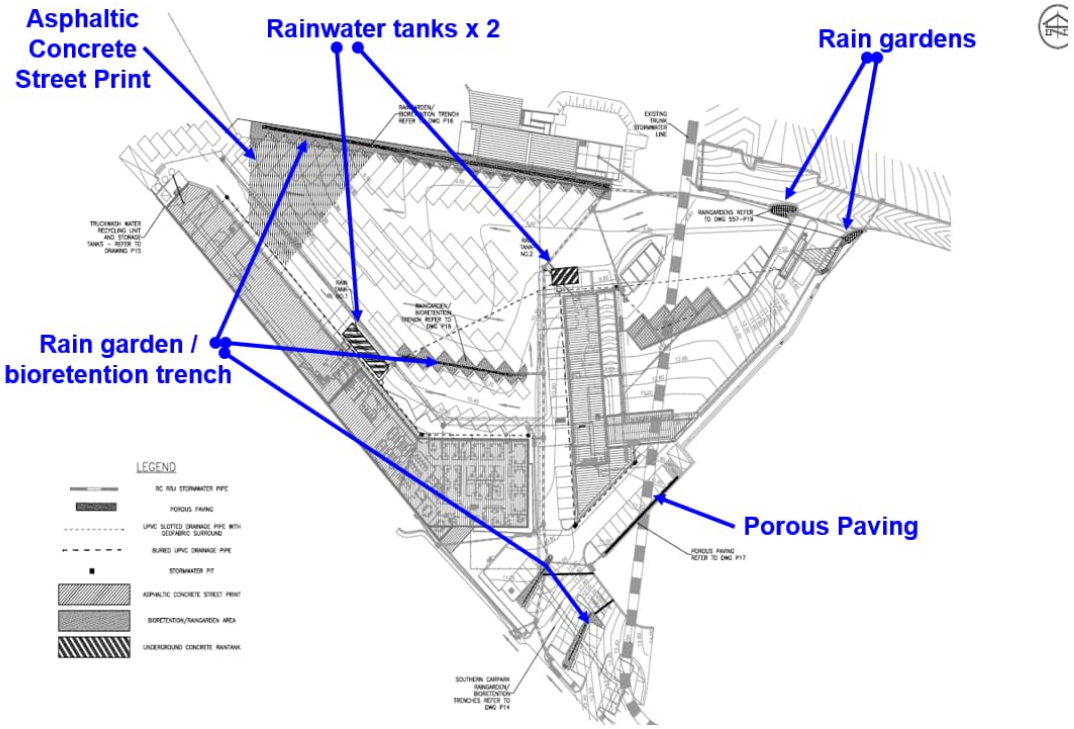


Figure 8.5: Stormwater design features of curent site[12]. (Source: DEVCO, 2008)

During the site visit it was noted that surface water was running off the TS site onto Weir Street. There is an opportunity to upgrade stormwater controls at the site as part of the upgrade to better align with the existing stormwater infrastructure and management practices associated with the wider site depot.

[12] TS Upgrade presentation, DEVCO, 2008

9 Site operations

9.1 Site visit

T+T staff conducted a site visit on 7 October 2022, which involved a walk over of the transfer station and adjoining depot. T+T also spoke to staff onsite and noted observations which are outlined in the following sections.

9.2 Infrastructure and layout

The existing site has two core functions:

- The consolidation and bulking of the first (morning) load of kerbside waste collection services for packing and bulk haul to landfill.
- Facilitation of drop off for waste and recoverable items from small commercial customers and residents.

The TS is only open to kerbside collection trucks and other internal departments in the morning for bulking activity and then opens for public drop-off from 10 am onwards. This means that the site effectively has two discrete operational phases each day. For consolidating kerbside waste, the focus is on efficient unloading of collection vehicles onto the walking floor/compactor system. After 10 am the site operates with light vehicles dropping off residual waste and materials for recycling or recovery. During this phase staff direct vehicles, managing potential conflicts as vehicles move around the site.

The site is situated between the M1 (Monash Freeway) and the Glen Waverley train line in Malvern. It can be accessed by the public, waste collection vehicles and bulk transport vehicles via an entrance off Weir Street.

From 10 am each morning the TS primarily accepts waste and a range of recyclable items from domestic users and mixed commercial users (mostly trades users). Based on the size of the existing site and limitations on available storage space, the types and quantities of waste accepted is restricted. The TS is currently unable to recover certain waste streams such as gas cylinders, tyres, or polystyrene. The TS is also restricted in its ability to accept significant waste quantities from commercial sources, with loads accepted up to a tandem cage trailer size.

Existing infrastructure at the TS includes the following:

- Weighbridge and gate house.
- Site office.
- E-waste covered container.
- Cardboard compactor.
- Saw tooth arrangement with three hook bin spaces (green waste, scrap metal, and the other houses the cardboard compactor).
- Drop off into walking floor (from height).
- Static packer.
- Kerbside bins for collection of small e-waste items.
- Collection area for batteries.
- Bunded collection area for motor oil.

The current layout is shown in Figure 9.1.

Figure 9.1: Current site layout.

9.3 Traffic flow

Traffic at the site is managed in accordance with the site management plan[13]. Customers enter from Weir Street and pass through the weighbridge. The site operates a concierge system. Site users are greeted by TS staff who assess loads to determine applicable charges and guide them to the correct drop off area based on their material and vehicle type. Several customers are regular visitors who know how to navigate the site once they enter. Vehicles then reverse into the bays to drop off material. The site layout provides very limited ability for traffic to manoeuvre, and staff are required to direct vehicles to maintain traffic flow and reduce the potential for vehicle/pedestrian conflict. We understand that there are often limitations to vehicle movements at periods of high demand, or when site users are dropping off multiple waste streams. At peak periods, we understand that prospective site users' queue along Weir Street prior to entering the site.

The existing facility lacks space to provide sufficient separation of vehicle and pedestrian traffic movements, or space for vehicles to effectively manoeuvre into position to dispose of materials in the correct place simultaneously to vehicles needing to enter and exit the site. To manage this the traffic management plan outlines controls in place to direct traffic which include:

- Traffic control by the deck hand (using a hand-held stop sign).
- Limiting the number of vehicles on the deck to a maximum of 6.
- Direction of traffic by deckhands to required drop off bays when it is safe to do so.

[13] Traffic Management Plan, Waste Transfer Station – Tooronga Rd Depot

The current configuration has a single weighbridge so for customers that need to be weighed out for the purposes of charging, they need to be directed to loop back through the site, adding to traffic congestion issues.

Recent traffic flow data has been skewed by the impacts of the Covid-19 pandemic with low customer counts during the lockdown period, and peaks once lock downs were lifted. On the busiest day over the 2021/22 period the site had 183 customers, but this peak was the result of the end of a lockdown. Looking at the data between January and July 2022 (after the lifting of restrictions associated with Covid-19) the customer count has averaged around 110 customers per day ranging between 50 and 150 customers a day. The quietest day is Sunday which is an indicator of the strong commercial customer base driving activity at the site.

10 Waste data and material flow

10.1 Current material flow

10.1.1 Transfer station customers (external)

An understanding of current and projected future waste streams is required for developing the concept design of the TS.

Table 10.1 presents a summary of the total waste volumes for waste streams from the site's point-of-sale (POS) system for the most recent financial year (July 2021 – June 2022).

Table 10.1: Waste tonnages at City of Stonnington Waste Transfer Station in FY2022

Item	Total tonnage FY2022	Vehicle movements	Tonnes per week
Waste	4,015	14,899	77
Green	1,098	7,115	21
Cardboard	105	7,025	2
Scrap metal	39	1,308	1
E-waste	32	3,243	1
Mattress	22	401	0.42
Xmas tree	7	216	0.13
Batteries	1	256	0.03
Bottles	1	135	0.03
Waste oil	1	170	0.02
Light globes	0	149	0.01
Total	5,323	34,917	102

Limitations of this data include:

- An additional 1,397 customer transactions were not categorised.
- Waste collection data from financial year 2021-2022 was affected by stay-at-home orders and targeted closure of select businesses during Victoria's response to the COVID-19 pandemic. Waste collections data between July 2021 and September 2021 may have been affected by Victoria's response to the pandemic.

The split between commercial and residential waste was not available in the material breakdowns provided except for over 20% of total incoming general waste tonnes being classified as "rubble builders rubbish". Site operators report that a large portion of the site users are regular small-scale commercial users.

10.1.2 Council transfer station customers (internal)

The TS also serves as a bulk haul facility for kerbside general waste. In the 2021/22 financial year approximately 11,600 tonnes of kerbside waste were accepted at the site for bulk haul to Melbourne Regional Landfill (MRL).

The site also accepts waste from other internal teams and facilities including the Jackson St Compactor and infrastructure maintenance, building maintenance, litter bins, street cleaning and

parks teams. The throughput from these internal customers was around 8,000 tonnes in the 2021/22 financial year.

The breakdown of waste volumes from internal waste customers is shown below in tonnes per annum (TPA). The total amount of waste recovered verse disposed to landfill from these streams is unknown as they are entered as "0" tonnes into the POS system. There is also little understanding of the waste stream composition and a lack of industry default data.

Table 10.2: Waste tonnages at City of Stonnington Waste Transfer Station (internal customers) in FY2022

Source	TPA (2021/22)
Jackson St Compactor	17
Stonnington Waste (trade waste and public housing)	800
Stonnington Infrastructure Maintenance	754
Stonnington Building Maintenance	0
Stonnington Litter Bins	688
Stonnington Street Cleaning	4,205
Stonnington Parks	839
Stonnington Garbage (kerbside)	12,490
Total	19,792

10.2 Materials accepted and end destinations.

The current collector and fates of the various waste streams currently accepted at the TS is summarised in Table 10.3.

Table 10.3: Contracted material collection arrangements

Item	Collection container	Processor/ recycler	Collection frequency[14]	End destination
General waste	Compacted prime mover	Cleanaway	20-22 semi-trailers a week with payloads of 20-22 tonnes each	Ravenhall Landfill
Cardboard	Onsite compaction	APR	Weekly	Dandenong
Green waste	Hook bin	BioGro	Seasonal but around 10 skips a week	Dandenong South
Metals	Hook bin	Norstar	4 weekly (approximate)	Dandenong
Motor oil	Oil collection drum	JJ Richards	NA	Dandenong South
Motor vehicle batteries	Pallet	Norstar	NA	Dandenong
E-waste – smaller items	Large movable container	Green Collect	Once or twice a fortnight	Braybrook

[14] Collection frequencies vary and are estimates only

Item	Collection container	Processor/ recycler	Collection frequency[14]	End destination
E-waste – larger items	Large movable container	Tech Collect	Once a week	Laverton
Gas bottles	Stored in cages	Peninsula Gas	NA	Mornington
Glass and plastic	Small bins	Cleanaway	Weekly	NA

The 'Council garbage' material is kerbside residual waste dropped off each weekday morning. With this material arriving in a short period of time the walking floor and packer system is at capacity or beyond.

10.3 Current diversion from landfill

Currently, 75% of the material that enters the TS from external customers is disposed of as waste. The 25% of material that is recovered is made up of: 85% green waste; 8% cardboard; and the remainder is a combination of e-waste, mattresses, Christmas trees, batteries, bottles, oil and light globes. The breakdown of material that is received at the TS from external customers is shown in Figure 10.1.

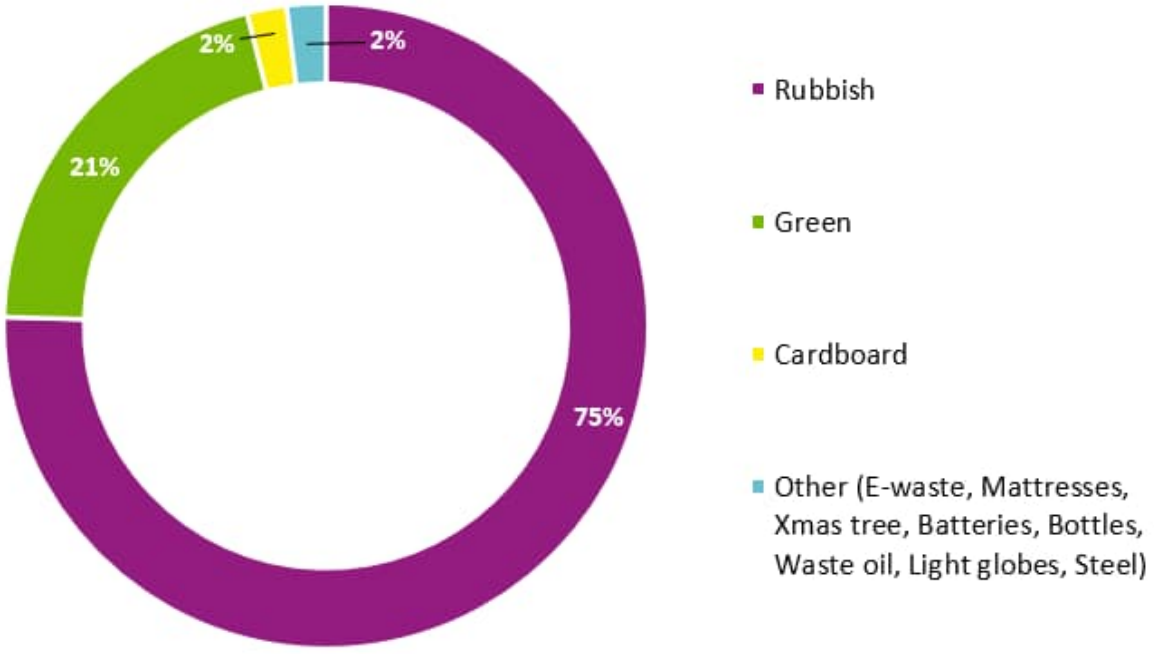


Figure 10.1: Breakdown of material recieved at the TS

No waste audits have been undertaken to understand the composition of waste dropped-off at the TS and sent to landfill. Observations from site staff indicate that key recoverable materials currently being disposed as waste at the TS are green waste, timber, cardboard, and construction and demolition (C&D) waste (example shown in Figure 10.2). Plastics, polystyrene, furniture, and textiles were also observed on the walking floor during the site visits conducted as part of this project.

Figure 10.2: Walking floor with material disposed of as general waste containing building material and green waste.

Audits from other transfer stations suggest that an additional 25 – 40%[15] [16] of the residual waste stream is divertible through improved resource recovery operations and infrastructure. Achieving this at the TS would increase the diversion rate to 50 – 65%. Recovery of material currently disposed of as waste can be facilitated through:

- Making sure all drop-off points for recoverable materials can be accessed by all types of vehicles.
- Creating a clear drop-off pathway that encourages users to pack loads in a manner that means recoverable material can be dropped before reaching the waste disposal area.
- Removal of recoverable materials from mixed waste on a tipping floor to recover additional material.

Diversion can be increased further by the introduction of additional drop-off points for other categories of material.

In the absence of site-specific general waste audit data an estimate was made of the composition of the general waste stream using the breakdown of waste sources entering the site by type (where recorded) combined with typical transfer pit waste audit data. Figure 10.3 is an indication only of the waste breakdown. Assumptions for this derivation are provided in Appendix B. The estimate suggests high quantities of timber, reflecting a relatively high proportion of construction waste material entering the site.

[15] Composition of Solid Waste At Southern Landfill Prepared for Wellington City Council, WasteNot Consulting, November 2018

[16] ACT NOWaste 2015 Landfill and Transfer Station Waste Audits, A.Prince Consulting Pty Ltd, July 2015

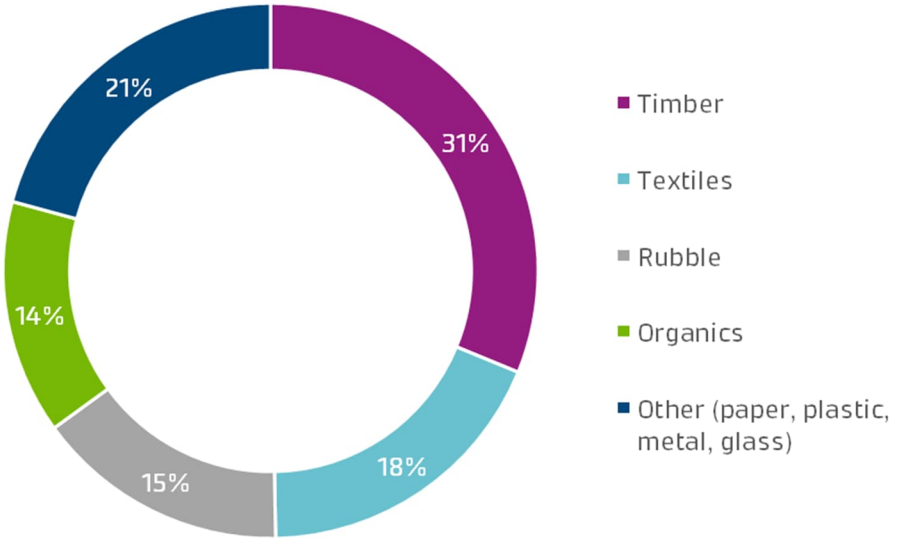


Figure 10.3: Estimate of composition of general waste by material type.

This data suggests that the key opportunities for diversion from the current general waste stream are:

- Timber, particularly untreated timber if it can be effectively separated.
- Green waste, as currently not all vehicle types are able to access the green waste drop off point and mixed loads are tipped onto the walking floor with no opportunity to divert green waste.
- Other recyclable construction and demolition waste (rubble).

10.4 Future material quantities and composition

Table 10.1 is meant to provide a baseline estimate of current waste streams accepted at the TS. Waste volumes are expected to increase during the life of the proposed upgrade, in line with projected growth in the population of the City of Stonnington, and therefore any upgrades need to be designed to accommodate larger waste volumes (for recovery and landfill disposal) than currently managed through the site. The upgrade should also where possible be designed to accommodate additional waste streams, such as tyres. Collection frequencies and fates of various materials are subject to change during development of the concept design phase, based on Council feedback, and may also change during the lifetime of the facility based on the needs of future site users and continued implementation of the RV policy.

11 Infrastructure gap analysis

11.1 Diversion of material

As part of an infrastructure gap analysis, Council recommended that the following improvements be implemented at the existing TS. These recommendations were considered in the options assessment for the proposed upgrade.

- Undercover storage for mattresses, batteries, and light globes and small recycling hub/area.
- Improvement of the oil collection areas and investigate possible recovery of cooking oil.
- Accommodate current purple e-waste trailer.
- Bird netting with possibility of utilising existing netting that has been recently installed.
- Staff tearoom with possibility of improving the existing portable office/room.
- Providing a glass drop-off area.

Additional upgrades are optional and may include:

- Improved green waste collection area.
- Improved collection and compaction of cardboard.
- Introducing paint collection as part of the Paintback program.
- Expansion of the current oil and batteries collections to a full permanent Detox Your Home site.
- Introducing textile collection.
- Pre-sort area before the weighbridge to encourage better recycling outcomes (Council note this would require the weighbridge to be moved).
- Recovery of construction material (i.e., timber and plasterboard).
- Extending opening hours.
- Community 'tip shop' for the sale or reusable items.

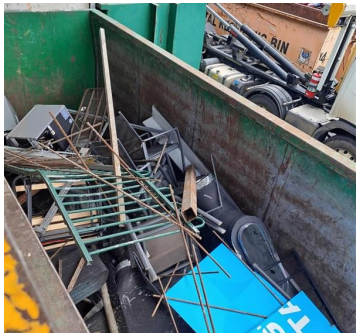
In addition to the Council recommendations specified above, consideration has been given to the following:

- Space for manoeuvring of vehicles at the site to safely access, dispose of waste, and exit the site.
- Improving the capacity of the walking floor to accommodate municipal waste collection materials.
- Arrangements to accommodate the upcoming CDS implementation, for example reverse vending machines or other arrangements for site users to claim refunds.
- Safety risks associated with unloading materials from height at the current waste disposal pit and sawtooth arrangement.

Limitations of the current material collection arrangements noted during the site visit and discussions with key stakeholders to date are shown in Table 11.1.

Table 11.1: Limitations of existing arrangements

Material	Current arrangement	Current limitation	Photo
Rubbish (General Waste)	• Walking floor • Flat packer arrangement	• No sorting/recovery once material is dumped due to limited/difficult access. • Needs to be sized for bulking of kerbside collection material. • Risk of falling from heights.	
Green waste	• Customers tip into hook bin	• Roof height restricts tipper vehicle types from tipping meaning some green waste enters waste pit.	
Cardboard	• Customer places cardboard into feed slot into compactor • Automatic compaction	• Compactor arrangement is bulky and takes up an entire bay. • Compactor has limited feed-in capacity, slowed operations and causing queuing.	

Material	Current arrangement	Current limitation	Photo
Scrap metal	• Customers tip into hook bin	Mixed scrap metal means Council are potentially missing out on additional revenue for non-ferrous metals.	
E-waste	• Customers place in removable container	• Takes up significant space on constrained site. • Trailer messaging does not align with the correct materials accepted.	
Oils and hazardous	• Customers stockpiling in corner. • Limited environmental management	• Environmental risk management improvements could be made. • Could be improved by providing an appropriately designed area. • Currently doesn't accept cooking oil.	
Small household recyclable drop-off	• Customer places in row of kerbside bins at site entrance	• Minimal area to pull off safely. • Minimal capacity. • Restricted number of materials.	

Material	Current arrangement	Current limitation	Photo
Mattresses	• None – ad hoc storage by operator	• No allocation of space currently. • Exposure to weather can mean mattresses become unsuitable for recycling.	NA
Construction and demolition waste	• None – landfilled by operator	• No allocation of space currently.	NA
Paint collection	• None	• No allocation of space currently.	NA
Tyres	• None – ad hoc storage by operator	• No allocation of space currently.	NA
Bulky items	• None – ad hoc storage by operator	• No allocation of space currently.	
Gas bottles	• None – ad hoc storage by operator	• No allocation of space currently. • Long term storage in flammables container (underneath stairwell) is undersized or collection of materials needs to be undertaken more regularly.	

11.2 Environmental management

T+T was supplied with an EPA site entry report which summarised an inspection completed to assess fire controls and fire risk at the premises. Although the EPA site entry point did not highlight any non -compliances at the time of inspection, this inspection was targeted at fire risk and storage of combustibles only.

Key compliance risks the TS needs to consider includes:

- Adequate storage and end destination arrangements for materials with product stewardship guidance in place or banned from landfill. Items accepted at the TS that fall into these categories include:

  Items banned from landfill:

  - E-waste
  - Gas cylinders
  - Batteries
  - Fluorescent Bulbs/ tubes
  - Whole tyres

  Items with guidance to avoid landfill:

  - Mattresses
- Storage of materials to align with best practice guidelines, hazardous waste guidelines, Management and Storage of Combustible Recyclables and Waste guidelines, and the GED.
- Management of risk to human health and the environment.

Current limitations of the site's ability to provide storage of materials is covered in Table 11.1 which highlighted that the site currently has issues with finding space to provide appropriate storage for gas cylinders, aerosols, batteries, and mattresses that align with EPA guidelines. The site does not have space to provide for paint collection.

A summary of current environmental management practices for storage of combustibles and risk to the environment in its current state is provided in Table 11.2. This assessment was completed to inform the prioritisation of upgrade options for Option 1 - Minor remodelling – Basic aesthetic upgrade with a few essential changes.

Table 11.2: Summary of environment practice

Environmental risk	Current management/ site observations by T+T during site visit	Comment	Risk rating	Proposed management measures to lower risk
Fire risk	• Fire risk at the site is managed through the absence of material stockpiling which is limited to materials contained in hook bins cleared weekly and clearing waste received each day. • Combustibles (such as cardboard and green waste) are contained in hook bins. • Flammable materials such as gas bottles and aerosols are currently stored in a lockable flammable's cabinet located under the stairway to the bunker area. • Fire management systems (fire hoses, extinguishers) are present at the site. • The flammables cabinet was observed to be an insufficient size for the items on site. This suggests there is a need to remove materials more regularly and/or increase capacity for storage.	• T+T was supplied with an EPA site entry report which summarised an inspection completed to assess fire controls and fire risk at the premises. The inspection concluded that no further action was required. • The site entry report does not refer to the flammable's storage area.	Medium	A larger flammables cage would help ensure gas cylinders are safely and securely stored upright reducing the risk of damage and release of flammable gas.
Surface water contamination	• Surface water on the site is managed by separating surface water from potential contamination (i.e., storing material in bins). • Water runs down the semi-trailer ramp and ponds at the base of the ramp under the compactor. This water currently causes a nuisance and must be manually swept out after periods of rain and disposed of as potentially contaminated. • Stormwater from the site runs off the site onto Weir Street.		Medium	Bunding around hazardous drop off area would further decrease risk of surface water contamination.

Environmental risk	Current management/ site observations by T+T during site visit	Comment	Risk rating	Proposed management measures to lower risk
	• Waste oil and batteries are stored in/on self-bunded containers and pallets however no bunding is present in the wider area.			
Odour	• Odour from the disposal of residual waste is managed through containment of the waste drop off area in a below ground shed and compactor and use of enclosed semi-trailers to transport material offsite. • No odour was noted during the site visit by T+T.	• No odour complaints have been received.	Low	
Dust	• Dust from the disposal of residual waste is managed through containment of the waste drop off area in a below ground shed and compactor and use of enclosed semi-trailers to transport material offsite. • No nuisance dust was noted during the site visit by T+T.	• No dust complaints have been received.	Low	
Noise	• Noise is managed through designation of specific hours of operation.	• No noise complaints have been received. • Risk to offsite receptors from noise is low due to the proximity to the freeway.	Low	
Birds and vermin	• Bird netting is being used.		Low	

12 Stakeholder engagement

12.1 Overview

Stakeholder identification and engagement is a critical exercise for accruing information about the current state and desired future state for the TS. The stakeholders at this stage of Council's processes for planning for the TS upgrade are internal only. Residents and other TS users were not assessed for stakeholder engagement for this early concept design stage. Future stakeholder engagement should be widened to incorporate the views of the community, regulatory/government agencies, and local indigenous groups.

This project is within the Traditional lands of the Wurundjeri Woi Wurrung people of the East Kulin Nations. Early collaboration with representatives from local Traditional Owners once an option has been selected can identify opportunities for the design of the space to reflect what the community can learn from Aboriginal and Torres Strait Islander cultures and/or promote cultural aspirations to the wider community.

12.2 Engagement aims and methodology.

In addition to the accrual of information and ideas, an open discussion forum with the key stakeholders from the TS and adjacent depot offers a safe and non-judgemental space for staff to discuss concerns, ask questions, gain clarity about the exercise being undertaken, and input ideas. This type of exercise is critical to ensure staff are engaged, clear on what is being undertaken and what is not and have a high level of comfort about the current work being undertaken. Any subsequent successful change management process would need to be underpinned by solid stakeholder engagement from the start of the process.

The engagement of staff was conducted over two days via in-person meetings at the TS on 21 and 22 November 2022. During the targeted workshops with key internal stakeholders, ideas, suggestions, and information about the current and future state of the TS was obtained, and detailed discussions were held.

Staff from depots and infrastructure teams (particularly outdoor workers including those managing waste, parks, drainage, roads, and street cleaning) consistently report in cultural surveys across all councils that they do not feel part of the larger organisation, and frequently do not feel consulted about changes which subsequently directly or indirectly impact their work practices and workspace.

Consequently, conducting a stakeholder engagement exercise at this early stage will assist City of Stonnington with subsequent engagement and discussions with staff, as well as ensuring that ideas and suggestions are captured at the start of the design process from the staff who work in (and use) the TS space and depot.

The ideas and information gained from the stakeholder engagement sessions have been considered in the design process for this exercise and implemented where appropriate.

12.3 Internal stakeholders identified.

Table 12.1 shows the stakeholders which were identified as being key stakeholders, and were engaged with for this exercise:

Table 12.1: Internal stakeholders identified

Stakeholder	Interest
Council waste team (office based)	Responsible for management of transfer station operations, implementation of waste strategy and meeting diversion target objectives. Includes: Manager City Operations, Waste Project Officer, Waste Strategy and Engagement Coordinator, Team Leader Non-Recreation Building Projects, Coordinator Sustainable Environment.
Transfer station operational staff	Responsible for the day-to-day operations at the transfer station site. Primary users of design. Includes: Waste Disposal and TS staff, Weighbridge Operator, municipal collections team, hook lift drivers.
Council depot users	The depot is adjacent to the transfer station and currently shares a traffic access point for the removal of hook bins. Expansion into the depot area is one of the options that could be explored. Includes: Parks, Infrastructure Maintenance and Roads Teams.
Other Council staff	Transfer station upgrade would be a significant investment and other people within the organisation are likely to take an interest. There will also be teams that are directly affected (i.e., City Projects, Planning, Building Maintenance and Building Projects teams).
Council transfer station users	There are several Council departments (Building Maintenance, Infrastructure Maintenance, Street Cleaning, Parks) that use the transfer station on a regular basis as part of their operations.
Council planning department	Would be required to manage and approve any planning permits if an upgrade eventuates.

12.4 Stakeholders engaged.

After consultation with the Stonnington project lead (Rose McVicar, Waste Project Officer), the following stakeholders were invited to the planned sessions on 21 and 22 November 2022 (Table 12.2). Due to operational requirements and the need to continue services, as well as the need to engage with several outdoor site-based and off-site staff, 3 sessions were planned for 21 November and a further session for 22 November 2022; most of the invitees were able to attend sessions or be engaged with on-site across the two days, providing much valuable feedback and insight.

Table 12.2: Attendees to stakeholder engagement sessions

Session	Invitees	Attended
21 November 2022 11am	James Wynne (Manager City Operations) Rose McVicar (Waste Project Officer) Amy Yang (Waste Strategy and Engagement Coordinator) Alice Trumble (Waste Strategy Lead/Coordinator Sustainable Environment) Reza Ramjerdi (Team Leader Non-Recreation Building Projects)	✓ ✓ ✓ Apology ✓
21 November 2022 12pm	Scott Cudmore (Weighbridge Operator) Des Dickinson (Team Leader Waste Disposal) Transfer Station Team	Apology ✓ ✓
21 November 1pm	Richard Evans (Coordinator Infrastructure Maintenance) Daniel Coady (Infrastructure Maintenance Officer) Tim Rathborne (Parks Coordinator) Peter Brosnan (Building Maintenance Officer)	✓ ✓ ✓ ✓

Session	Invitees	Attended
22 November 9am	Des Dickinson (Team Leader Waste Disposal)	Apology
	Rick Giles	Apology
	Scott Cudmore (Weighbridge Operator)	✓
	Debbie Adams (Acting Waste Management Coordinator)	Apology
	Steven Robertson (Waste Collector Supervisor)	✓
	Gerard Bensted (Team Leader Street Cleaning)	Apology

12.5 Key themes

Some key themes emerged throughout the discussions with the stakeholders. These are discussed below.

12.5.1 Site no longer fit for purpose.

Overall, the site has limitations which are mainly due to its size, position, and the traffic flow. The TS was originally the depot for the City of Malvern operations prior to the amalgamation exercise across all local governments in Victoria, which took place in 1994. Therefore, the depot, including the new TS, was not designed with a large enough footprint or traffic management capacity to effectively service the City of Stonnington as it does now.

T+T observation for consideration: The last TS redesign in 2008 was implemented on the original site, with no increase in overall footprint; the current circular economy and resource recovery requirements and aims were not in place at that time, so were understandably not accounted for. Consequently, considering all the above factors, the site is considered by staff to be no longer fit for purpose if it is to continue to be used as a TS, and should pivot to include an updated resource recovery hub.

12.5.2 Potential for operational conflicts

During the engagement sessions, stakeholders also repeatedly noted that the existing site layout and flow gives rise to potential for traffic/pedestrian conflict, and traffic/traffic conflict. It is currently only practicable to have a small number of light vehicles utilising the disposal deck simultaneously. Frequent traffic management is required due to the small operational deck space, and queues can form leading up to the entrance to the TS daily. This can be viewed as both a safety issue and an operational issue and is therefore critical that this be addressed in any redesign.

12.5.3 Low green waste recovery

It was repeatedly noted that a significant amount of green waste is landfilled via the walking floor, rather than recovered for composting through the TS, due to:

- The roof height of the sawtooth on the TS deck meaning that tipping mechanisms cannot be used to access the dedicated green waste skip.
- The small turning area, which often sees regular customers default to using the walking floor to avoid queuing for the dedicated green waste skip bin. This contributes to the low recovery rate at the TS, the loss of recoverable green waste to landfill, and higher costs and higher carbon footprint for site operations.

12.5.4 Green waste skip bin safety

The fall potential for users of the dedicated green waste skip bin (situated below the deck) was noted. This was partially addressed by the replacement of barriers by Council during this redesign exercise. However, further redesigning could offer additional safety improvements for users.

12.6 Team specific aspects

As well as the key themes which emerged repeatedly across the stakeholder groups discussed in Section 12.5, several more specific considerations were raised as each group of stakeholders was engaged with. These are discussed below.

12.6.1 Waste Team (office based)

The waste projects, strategic and education staff highlighted the need to:

- Increase recovery to meet RV and internal targets.
- Improve operational performance.
- Service the community better.
- Support transition to a circular economy

12.6.1.1 Increase recovery to meet RV and internal targets.

The low recovery rate was a concern; it is sub-optimal and results in a lower overall recycling rate for Council, as well as falling short of internal and external diversion targets. In particular the green waste disposal practices were noted as being a significant contributor to the low recovery rate and was highlighted as requiring resolution.

A related aspect which could be addressed during the redesign to increase recovery of green waste is the charging mechanism at the TS. Currently, customers may have their loads examined and classed as green waste, paying the appropriate fee at the weighbridge before being allowed on to the deck to deposit the materials. However, the traffic management and capacity constraints, coupled with the inability of vehicles with a tipping mechanism to fit under the sawtooth roof and utilise the dedicated green waste bin, means that a significant amount of green waste is disposed of to the walking floor. It is then packed for disposal with other landfill waste.

T+T observation for consideration:

Consequently, the gate fees paid by Council to dispose of the green waste to landfill when mixed with other waste would mean that Council is very likely to be paying more than theoretically necessary, with gate fees for green waste generally being less than that of landfill (including the gate fee and landfill levy). Therefore, this does not represent best value for money, nor the best environmental outcomes for resource recovery.

This can also be viewed as inequitable, with all residents and TS customers subsidising the landfilling of green waste, despite the practice being carried out by a small percentage of rate payers and/or customers, and the gap being accounted for within the costs of running the TS, and therefore being defrayed across all ratepayers and customers via the waste charge.

12.6.1.2 Improve operational performance.

The need to increase the storage capacity and capabilities at the TS was noted by staff, as increasingly stringent requirements are imposed on transfer stations for storage that meets the newer EPA regulations for batteries, oil, and mattresses. The cardboard compactor could be

relocated to free up space for green waste disposal, as the cardboard compactor does not require a high ceiling.

Currently, the TS configuration means that operationally it cannot meet circular economy aspirations, including those articulated in Stonnington's Towards a Circular Economy: Our Future Waste Strategy 2022-2025, is unable to align with City of Stonnington's Sustainable Asset Management Policy or other internal and external diversion and recovery targets.

Tyres are not accepted but are received as part of dumped rubbish management and require improved management and storage.

T+T observation for consideration:

It may be possible for the tyres which are received at the TS to be used in asphalt (including spray mixes). As a user of these types of mixed Council's infrastructure teams have the potential to specify tyre crumb mixes (promoting a circular economy approach). This would support a market for tyres from City of Stonnington while leaving the technical aspects of tyre crumbing, asphalt mix design and manufacturing to specialised operations.

12.6.1.3 Service the community better.

Currently the site does not include community orientated facilities (such as reuse shop, education space) or passive transport access options. Community are required to travel to other facilities located outside of Stonnington to dispose of items that can typically be disposed or recycled at municipal transfer stations, such as paint and gas bottles.

12.6.2 Waste collection vehicle drivers

The Waste Collector Supervisor (Steven Robertson) provided feedback and insight from an internal depot-user perspective. His team collects the municipal waste bins and deposits the first load at the TS on to the walking floor for packing and disposal to landfill. The second load each driver collects each day is direct hauled to the landfill, so that trucks are empty for the next day.

The key items noted in this discussion were:

- The depot is not entirely fit for its current overall purpose (discussed in Section 12.5.1), due to its historical use as the City of Malvern depot.
- The City of Boroondara TS and walking floor disposal, with 2 hoppers and packing into 2 prime movers simultaneously using a Wastech system, was cited as a good example which would assist with the diversion of green waste. However, the amount of space available at City of Stonnington is less than at Boroondara, so this may not overall be the right solution at City of Stonnington. It could however indicate the type of solution that City of Stonnington could apply (i.e., a walking floor for landfill, and a separate one for organics).
- The municipal recycling was discussed.
  - T+T observation for consideration: Given the municipal recycling is already direct hauled, including it in the TS operations would add extra truck movements and materials to the already 'at capacity' TS, so may not be considered as a suitable option to be pursued. Future recycling collection and disposal contracts should align with this by ensuring direct haulage by the contractor, avoiding the TS, is included.
- There is potential to transport all kerbside residual waste directly to landfill rather than staging the first load for each collection vehicle through the TS. This would increase total service time and transport distance but free up the TS for earlier public opening and avoid capacity issues. The feedback was that it would require significant changes to the current

Enterprise Bargaining Agreement (EBA), and a change in work practices for the waste drivers, so was not an immediately available solution.

  - T+T notes that given the lengthy timeline and potential for unsuccessful and disruptive negotiations, Council should examine the provisions of the EBA and explore the option to utilise nearby TS, such as the City of Boroondara, to deposit the first load of garbage each day. This would free up capacity at City of Stonnington and reduce traffic movements at the TS. This could be acceptable under the EBA providing the transport distance and working times required are within the parameters of the Agreement.

- The wash bay area was considered, and it was suggested that it is not fully utilised, mainly due to its current position being too far away from waste truck parking. A drive-through wash bay was suggested as a good solution to the under-utilisation of the wash bay, and the positioning could be adjusted to be on the way to the waste truck parking, which would likely see an increase in usage. The waste fleet parking was suggested as an opportunity, as it could be reconfigured/moved from its current position and setup, giving extra space to the TS. The cost of a drive-through wash bay may be preclusive, however the concept of moving the wash bay and/or reconfiguring the waste truck parking would be a low-cost opportunity to gain more space for the TS operations.
- In addition to the reconfiguration of truck parking, it was suggested that the street cleaning vehicles could also be parked differently, or elsewhere at the depot, to give more space for TS operations.
- It was noted that there is an electricity substation on-site, which also services some of the nearby freeway information boards, and lighting.

12.6.3 TS operational staff

The operational staff at the TS noted that the key issues they experienced regularly were:

- Traffic management.
- The unavailability of the dedicated green waste skip to any vehicles with a tipping mechanism, due to the position of the bin and height of the roof of the sawtooth, meant that a significant amount of material, particularly green waste, is currently landfilled via the walking floor – the materials should be diverted for recovery, but the current configuration and size of the TS does not allow for this (see Section 12.5.3).
- The number of staff required to run the TS as a more effective recovery facility would need careful consideration, depending on the layout chosen by Council. Should the operation be expanded to include a resource recovery facility, increased resources for supervision and guidance for site users will be critical to achieving behaviour change at the TS. Many regular users currently manage themselves at the site, and this would need to be adjusted if the TS is reconfigured, to gain the maximum number of materials for recovery.
- The current site hut is small, lacks some basic amenities (toilet/bathroom facilities), and lacks storage space for the staff. Currently, the toilet is in the weighbridge office.
- The cardboard compactor 'post box' aperture was raised, and a mix of opinions about whether it was too small or suitable was expressed. Some staff thought it appropriate, and others considered it too small, and prone to jamming.
  - T+T notes that the cardboard compactor does not appear to operate at full theoretical capacity, with a significant amount of cardboard being disposed of to landfill via the walking floor instead. Should this be able to be diverted more effectively via the compactor for recycling, the compactor would be operating at a more efficient capacity as well, optimising the space and energy utilised by the cardboard compactor.

12.6.4 Weighbridge operator

Aspects noted during the discussion with Scott Cudmore, the Weighbridge Operator, included the traffic management and low green waste recovery matters, and the idea being raised of the weighbridge being moved to under the M1 overpass, to enable traffic to be directed left to use the landfill walking floor, and straight ahead to use a resource recovery area (situated where the current storage bays are).

12.6.5 Other internal depot users

The City of Stonnington Parks, Infrastructure Maintenance (IM), and Building Maintenance teams are based at the depot and have materials stored in and around the TS for use by their teams. These teams were engaged with to understand their current usage of the site.

12.6.5.1 Parks team

Issues specific to the Parks team raised included:

- Parks use the mulch pile which is situated next to the TS (Figure 12.1). The in-house gardening team loads the material needed for each day's work from there daily. The option to store this elsewhere offsite was discussed, although feedback suggested that time restrictions may make this an unlikely solution. Mulch is needed to be kept at the depot, and near the loader (a shared resource at the Depot). Parks also use the TS to dispose of green waste; the green waste can't be tipped due to the existing roof angles/configuration. It is therefore not recovered but landfilled. Parks use the TS before the public can come in at 10am.

12.6.5.2 Infrastructure maintenance

Issues specific to the infrastructure maintenance include:

- IM use the sand/aggregate/screenings which are stored next to the TS (Figure 12.1), every day. The team utilises storage for 4 bays plus pit frames. They use the stored items regularly, but there isn't a high turnover of materials. Crews need to work around each other to be able to load the materials they need. They may have to wait 10-15 minutes to load. IM disposal is almost all currently landfilled materials. A small amount of steel is likely to be included in the general waste.

Figure 12.1: Material storage bins (note weighbridge canopy at the upper left of the photo)

- T+T was asked by Council if it might be possible to recover the hard fill and steel that is being brought in by IM, for reuse. There currently no option to pre-sort it at the TS to divert the steel and useable fill. T+T suggested that the TS alter their working practices and requirements for the teams so that steel is loaded on to vehicles separately to materials for

reuse and landfill, meaning steel could be more effectively diverted. The feedback was that this would need a significant amount of culture and work practice change to achieve, compared to current business as usual, but may be achievable. An opportunity to front end pre-sort the materials at the TS would also be useful to increase diversion and reuse.

- T+T notes that a further change to work practices for the bin maintenance crews could afford further opportunities. Currently, bins are placed on truck and at depot with the wheels on. This is an unusual practice due to the inability to stack the bins for transportation. Bin maintenance, including placement and removal of axles and wheels, could be done from the truck and a much smaller storage area would then be required. This could also offer operational efficiencies.

12.6.5.3 General site insights from both teams

Issues specific to both teams include:

- Other storage and works carried out in the depot adjacent to the TS includes graffiti removal equipment, a signage works office and the sign making area. The storage area next to SES is used for signage storage, and has a mezzanine. It may be possible to move the sign making workshop.
- In addition, it may be possible to utilise the car park area next to the SES differently to help improve TS operations. There is no pressing need for the SES to be on site, so an alternative option may be available.
- The nearby Golf course was suggested as a possible option for some longer-term storage for suitable items/teams. This was investigated further via a subsequent site visit (see Section 12.6.6.1).
- Car parking was discussed including an option to redesign or relocate some staff parking (for non-operational staff). It is thought that around 20 car spaces are being used by private vehicles, so this may represent an opportunity. However, it was noted that there are not many other options for staff parking.
- All stakeholders in this session agreed that the depot is not fit for its current purpose now that a lot of activities are carried out from there.
- Some information about the drainage at the site was noted and included the possibility of restrictions being imposed by Melbourne Water regarding works and reconfiguration at the depot. There is also a pump on site, it is not clear what that pump is attached to, or what its purpose is, so this should be resolved.

12.6.6 Depot area alternatives

12.6.6.1 Golf course

Stakeholders were asked if there were alternative sites owned by Council which could be utilised for storage and retrieval of items by teams which currently use the storage bays adjacent to the TS. The nearby Malvern Valley Golf Course (MVGC) was noted several times as a potential alternative for storage.

T+T observation for consideration

A site visit was carried out on 22 November 2022, and T+T noted that the MVGC has good road access, already has some gravel in place, and is currently used for ad-hoc storage of items by depot teams. The current civic amenity value of the storage arrangements in place can be considered as low, given the ad-hoc and unprotected system (i.e., no cover or protection over the materials) in place. There is the potential to plan and organise the storage space available to maximise the

potential to utilise this area for activities which are currently taking place on the depot's land. The accessing and retrieval of materials could be achieved without interrupting any golf course activities as there is a separate entrance to the area prior to the Golf Club car park.

Materials T+T believe could be considered for relocation to the MVGC may include, but not be limited to, storage of items such as signage, pit frames, and any other low turnover consumables used by teams. It may be possible to relocate the bin maintenance operations, or the signage workshop, or other activities to this area to assist with the TS reconfiguration and optimisation. There appears to be a sensitive receptor (a house) relatively nearby, so the operating hours would need to be carefully considered and stakeholder engagement should be undertaken prior to changes being made. The Golf Club would also be a key stakeholder for engagement.

12.6.6.2 Other areas

T+T noted that the area along the fence line adjacent to the current waste fleet parking, as well as the small area adjacent to the fence line at the gate of the dog pound, could be utilised since they currently do not appear to offer a significant amenity or noise reducing value. Neither the depot, nor the adjacent dog pound, appear to significantly benefit from the vegetation there, however the cumulative space could be reclaimed and incorporated into a redesign. T+T notes that any civic amenity value of the vegetation being removed could be offset with planting in municipal spaces, which would provide additional benefits to the community.

12.7 Summary of stakeholder impacts

A summary of the key stakeholder impacts is shown in Table 12.3 below.

Table 12.3: Summary of stakeholder impacts

Option	Stakeholders impacted	Reason
1	Waste team (kerbside bin maintenance and provision) TS Staff	• Bunkers currently used for storing new bins are proposed to be utilised by TS activities. • Revised working practices and/or location may be required
2	• Waste team (kerbside bin maintenance and provision) • Infrastructure Maintenance team • Parks team	• Bunkers currently used for storing new bins are proposed to be utilised for TS activities. • Bunkers used by the Infrastructure Maintenance and Parks teams to store materials are proposed to be used for TS activities. • Revised working practices and/or location may be required
3	• Waste team bin (kerbside bin maintenance and provision) • Infrastructure Maintenance team • Parks team	• Bunkers currently used for storing new bins are proposed to be utilised by TS activities. • Bunkers used by the Infrastructure Maintenance and Parks teams to store materials are proposed to be used for TS activities. • Revised working practices and/or location may be required
4	• All depot users (Infrastructure Maintenance, Building Maintenance, Parks, Waste Disposal, Waste collection, Street Cleaning) • Depot Office Based Staff	• Loss of bunker storage to the north of the TS • Large reconfiguration and loss of space at depot to be taken up by TS. Displaced activity includes: - Approx 330 m2 of warehouse/storage

Option	Stakeholders impacted	Reason
		- Approx 2200 m2 of parking • Alternative parking arrangements for fleet and staff vehicles may be required

13 Concept design options

Council has requested that the business case include four options for upgrade:

1 Minor remodelling – Basic aesthetic upgrade with a few essential changes.

2 Part extension/remodelling within the site's current footprint.

3 Full rebuild including minor expansion.

4 Full rebuild including major expansion with possible land acquisition and traffic redirection.

Several options include partial or full extensions. The area directly to the north of the existing TS operations has been identified as an area that could be considered for future expansion (Figure 13.1).

Figure 13.1: Areas that each option proposes to expand into

The area is currently used to store material for other Council users in bunkers and kerbside bins. High-level concept plans for each of the options have been prepared and are attached in Appendix A.

Detail for each of the options and high-level advantages and disadvantages are summarised in Table 13.1.

Table 13.1: Summary of TS concept design options

Option	Description	Advantages and disadvantages	Key considerations and alternatives evaluated
1 Minor remodelling	1 Reconfiguration of the hazardous waste area to be better positioned for access and the installation of improved environmental controls. 2 Reconfiguration of hook bin drop off order to allow tippers to access green waste drop off. 3 Reconfiguration of the cardboard compactor (or consideration of removal all together) so the final bay space can allow for mattress and bulky drop off. 4 Upgrade of stormwater diversion infrastructure and re-establishment of stormwater treatment areas. 5 Reconfiguration of e-waste drop off and storage to allow more space for single item drop offs (i.e., having a smaller drop off area that is transferred to a larger bunker daily). 6 Allocation of an area for storage of tyres and gas bottles in the adjacent bunker area. 7 Installation of second weighbridge	<u>Advantages</u> • Low cost. • Reuse of several existing infrastructure components. • Will not impede on depot storage activities. • Improved environmental management (stormwater flows and hazardous waste storage). • Could be completed with minimal disruption to existing TS operations. <u>Disadvantages</u> • Minimal improvement to pedestrian/ traffic conflict and traffic congestion. • No future new material recovery opportunities (no additional space gained). • Kerbside truck access and public enter from the same point meaning transfer station operations will likely need to continue to work split hours	• This option was aimed at addressing pressing issues for the site that could be amended with minimal remodelling within the current footprint. • This option does propose to utilise some of the bunker area below for storage which would displace some of the activity currently undertaken there. • Alternative points of entry/exit off Tooronga Road were considered but evaluated to not be viable due to the potential traffic conflicts (busier intersection, railway boom gates, tighter turn into the site).
2 Part extension/ remodelling	1 Extending the TS activity into the bunker storage area to the north of the site and using northern area for resource recovery while materials that need to be charged for stay in the original TS area. 2 Reconfiguring the waste drop off areas to include a flat floor sort area where	<u>Advantages</u> • Low cost. • Reuse of several existing infrastructure components.	• This option proposes to utilise some of the bunker area below for storage which would displace some of the activity currently undertaken there. • Alternative points of entry/exit off Tooronga Road were considered but evaluated to not be viable due to the

Option	Description	Advantages and disadvantages	Key considerations and alternatives evaluated
	the public tips their waste and operators can remove large recyclable items prior to pushing into the walking pit. 3 Reusing the bunkers to the north of the site for resource recovery activity (hazardous, white goods, tyres). 4 Creating a new household recycling drop off shed (batteries, light bulbs, car parts, x-rays, paint). 5 Installation of a new site office (portacom). 6 Remove bunkers and vegetations and reinstate pavement to create parking for operational vehicles. 7 Reconfigure the layout of the current site entrance to make space for a new entry point. 8 Installation of second weighbridge	• Improved environmental management (stormwater flows and hazardous waste storage). • Could be completed with minimal disruption to existing TS operations. • Splitting chargeable and non-chargeable items means visitors can avoid queuing for drop off facilities they don't need. • Reconfiguration of waste drop off means recoverable items can be pulled from waste drop offs. • Removal of some key current pedestrian/ traffic conflict points. • Provides additional buffer capacity for early morning kerbside residual waste drop off. <u>Disadvantages</u> • Traffic congestion and turn around area improvements in chargeable material area are minimal. • Requires relocation of depot storage bunkers or reconfiguration to include them in the ops area of transfer station. • Limited flexibility for collecting additional materials in the future as space constraints remain. • Mobile plant will be required to push waste into the walking floor/hopper for loading. • Potential traffic conflicts along Weir St will be created by the introduction of new site entrances/exits.	potential traffic conflicts (busier intersection, railway boom gates, tighter turn into the site).

Option	Description	Advantages and disadvantages	Key considerations and alternatives evaluated
		• Kerbside truck access and public enter from the same point meaning transfer station operations will likely need to continue to work split hours	
3 Full rebuild including minor expansion	1 Extending the TS platform to create one larger facility with a saw tooth drop off arrangement that extends to the north into the depot bunker area. 2 Reconfiguring the waste drop off areas to include a flat floor sort area where the public tips their waste and operators can sort out large recyclable items prior to pushing into the walking pit. 3 Installation of second weighbridge	<u>Advantages</u> • Reuse of key infrastructure (weighbridge, static packer). • Improved environmental management (stormwater flows and hazardous waste storage). • Reconfiguration of waste drop off means recoverable items can be pulled from waste drop offs. • Removal of some key current pedestrian/ traffic conflict points. • More space for vehicle turning and queuing. • Retaining some space for depot users. • Provides additional buffer capacity for early morning kerbside residual waste drop off. • Provides potential for extra TS operating staff role or roles to assist with public drop off to correct area, and further sorting to divert more materials to the correct streams. • Reduction in costs associated with material disposal to landfill. <u>Disadvantages</u> • Significant infrastructure build requirements (extension of raised TS footprint).	• A suspended slab over the bunker area to create reusable space underneath was considered but the height difference required could not be achieved without significant cost implications. • A geotechnical assessment will be required. • Alternative points of entry/exit off Tooronga Road were considered but evaluated to not be viable due to the potential traffic conflicts (busier intersection, railway boom gates, tighter turn into the site). • Additional staff allocation and therefore costs may be required at $70,000 per role plus approximately 18% oncosts to Stonnington.

Option	Description	Advantages and disadvantages	Key considerations and alternatives evaluated
		• Higher costs than options 1 and 2 described above. • Rubbish drop-off located prior to recycling does not incentivise diversion or support customer behaviour change to prioritise increased resource recovery. • Mobile plant will be required to push waste into the walking floor/hopper for loading. • All site users need to enter the site via the weighbridge (the same as current arrangement), potentially retaining a capacity constraint. • Kerbside truck access and public enter from the same point meaning transfer station operations will likely need to continue to work split hours. • Construction is likely to create significant disruption to current TS operations.	
4 Full rebuild including major expansion	1 Expansion and full utilisation of adjacent depot bunker area and portions of adjoining depot. 2 All customers pass recycling/recovery area, those dropping off free recyclable materials can exit without passing through the waste drop off area. 3 Rebuilding site to create a customer drop off pathway that starts with recyclables and finishes with waste, supporting circular economy outcomes and facilitating resource recovery and behaviour change for site users.	<u>Advantages</u> • Improved customer journey flow. • Improved potential to meet recovery targets. • Improved environmental management (stormwater flows and hazardous waste storage). • Reconfiguration of waste drop off means recoverable items can be pulled from waste drop offs. • Removal of all key current pedestrian/traffic conflict points. • More space for vehicle turning and queuing.	• To create a sensible traffic configuration key, existing buildings would need to be demolished and areas of depot parking would need to be utilised by the TS. • A flood risk assessment would be required with possible regrading of the northern area of the site adjacent to waste/bulky drop off. • A high-level traffic assessment has indicated that road alignment to allow for a semi-trailer through the north west portion of the site could be achieved through detailed design. • A geotechnical assessment will be required.

Option	Description	Advantages and disadvantages	Key considerations and alternatives evaluated
	4 Consideration of different waste collection methods i.e., hook bins to remove need for such large level changes. 5 Separating operational movements from public traffic. 6 A Reuse shop – engaging and educating the community on circularity and waste minimisation, repair and reuse, could be run in partnership with a community organisation. 7 Café/community centre – creating a destination for the community to engage and acquire education around waste. 8 Pedestrian and cycle access – creating safe access for passive modes of transport. 9 Reconfiguration to be a tidy, safe, spacious, welcoming environment. 10 A bulky collection area where the community and Council teams can collect materials recovered and processed i.e., mulch. 11 Space for container deposit scheme (CDS) drop offs	• Flexibility for future expansion opportunities, with sufficient space for some expansion and potential to expand further if the land becomes available. • State of the art facility with longevity. • Flexible residual waste/bulky waste/green waste drop off area provides for early kerbside residual waste drop off. • Provides potential for extra TS operating staff role or roles to assist with public drop off to correct area, and further sorting to divert more materials to the correct streams. • Reduction in costs associated with material disposal to landfill. <u>Disadvantages</u> • Significant reconfiguration or replacement of existing infrastructure would be required. Higher cost compared to options 1, 2 and 3 described above. • Takes up considerable depot space which would need to be re-established elsewhere. • Includes demolition of several buildings with associated value. • Construction is likely to create significant disruption to current TS operations. • Kerbside truck access and public enter from the same point meaning transfer station operations will likely need to continue to work split hours.	• Alternative points of entry/exit off Tooronga Road were considered but evaluated to not be viable due to the potential traffic conflicts (busier intersection, railway boom gates, tighter turn into the site). • Additional staff allocation and therefore costs may be required at $70,000 per role plus approximately 18% oncosts to Stonnington

14 Options assessment

14.1 Best practice

Evaluation of each option against the design criteria listed in Section 4.2 is included in Table 14.1 below.

Table 14.1: Comparison of options against key design criteria

Option	1. Order of materials dropped	2. Minimisation of traffic conflicts	3. Separate operations area from domestic access	4. Space available for future expansion
1	Weighbridge -> Residual waste -> Recyclables	No	No	No
2	Split streams: 1 Recyclables 2 Weighbridge -> Residual waste -> Recyclables	No	No	No
3	Weighbridge -> Residual waste -> Recyclables	No	Yes	No
4	Recyclables -> Weighbridge -> Green/bulky recycling -> Residual Waste	Yes	Yes	Yes

Due to the constricted location of the site, only the fourth option (which includes a major expansion) was able to achieve all of the key design principles.

Option 1 does not include any improvements to design principles as refurbishments do not include taking up any additional space. A traffic study[17] has been completed confirming that the current concierge model is the most adequate way of managing traffic conflicts onsite. Separation of operations and domestic activity is carefully managed by site staff and by accessing bins for collection when the site is closed to the public. As it currently stands there is no room for future expansion, however Option 1 does propose utilising some of the lower bunker area for long-term storage.

Option 2 splits the free items drop off from chargeable materials which will relieve some of the congestion on the upper level but only to a point. There is also potential for the option to create traffic conflicts through the introduction of an additional site entrance/exit off Weir Street. The option proposes taking some of the bunker area for operations space which could also be used for future expansion, however opportunities are limited due to the lack of space. Operational and domestic separation is not achieved on the top floor and due to the level change, there is very limited opportunity for expansion in the raised area.

[17] Review of Traffic Management Options, Ratio Consultants, June 2004.

Option 3 creates more space on the top platform for traffic manoeuvring but not enough to consider the area free of potential conflict. The decision to maintain the walking floor in its current position to reduce cost means that customers still access general waste drop-off prior to recyclables. Expansion does allow for much improved separation of domestic and operational vehicles however; future expansion opportunity is limited as existing buildings and road access have been maintained.

Option 4 includes the demolition of several buildings and reconfiguration of the depot area to create one-way traffic system with large areas for manoeuvring. Household recyclables drop-off is placed in front of the weighbridge so customers can enter and exit the site without queuing for the weighbridge with the aim to decrease traffic congestion. Residual waste is placed last so that recovery is incentivised prior to general waste disposal. Operational and domestic vehicles operate on two different road pathways to minimise conflict. Operational areas are consistently maintained on the outside of the domestic drop-off loop. The site has been designed with the intended flexibility for expansion of the household drop-off area or expansion of the collection area into the operations area. The waste shed is designed so that bays currently designed for residual waste drop-off could also be used for bulky waste as the site needs change into the future.

14.2 Environmental compliance

All options have made provision in design for minimising risk to the environment to reduce the risk of not meeting the site's responsibility under the GED. For all sites this includes:

- Upgrade of stormwater management systems and practices.
- Containment of material in covered bins, skips or sheds.
- Storage of potentially hazardous material in line with Australian Standards.
- Consideration of separation distances for potentially combustible materials.

Additional controls will be required for Option 4 including consideration of:

- Stormwater controls and management around the flat floor tipping and sorting area.
- Odour from the general waste sorting area.
- Dust from the segregation and sorting of building waste.
- Dust, odour and litter management of any stockpiles, or material processing undertaken on site.
- Separation distances for the TS as per EPA Guideline 1518: *Recommended Separation Distances for Industrial Residual Air Emissions.*

14.3 Landfill diversion and circular economy opportunities

The current diversion rate for the site is 25% of material from external waste customers. This number is significantly lower (estimated to be 12% by Council) if internal customers are included. Table 14.2 below provides a high-level indication of the additional diversion that could be achieved through each of the options and associated assumptions. All assumptions are detailed in Appendix B. Table 14.2 does not include potential diversion by internal customers as the data was not available to complete this assessment.

Note that diversion estimates are a high-level indication only as no site-specific audit data was available, so the breakdown of the general waste stream is approximate only (see Section 10.3 and full assumptions in Appendix B). Diversion estimates could be improved by completing a site-specific waste audit and recording a more detailed breakdown of site users by type (i.e., commercial, residential). Options 1 to 3 have low diversion potential (5-15%) as the additional space is used to reduce vehicle conflicts rather than introduce significant additional recovery opportunity. Option 4

has significant diversion potential (30-40%) as space can be allocated to sorting, separation and diversion of new and existing material streams.

Table 14.2: Potential diversion opportunity from each option

Option	Diversion potential
1. Minor remodelling	Low – additional 5% Improvements will be driven by: • Increased green waste recovery as a larger portion of loads will be able to access green waste drop area. Assumptions • Estimated waste composition (see Appendix B). • 25% of green waste currently sent to landfill through general waste can be diverted.
2.Part extension/remodelling	Low – additional 5-10% Improvements will be driven by: • Increased green waste recovery as a larger portion of loads will be able to access green waste drop area. • Creating a small flat floor tipping area. • A larger designated household recyclables area may induce some additional users due to its appealing layout. • Ability to recover material from dumped waste pre-pushing material into the pit (limited to green waste, steel, and cardboard). • Ability to incorporate new material recovery opportunity with the addition of more space (i.e., bulky items, paint). Assumptions: • Estimated waste composition (see Appendix B). • 25% of green waste currently sent to landfill through general waste can be diverted. • 4% of general waste stream can be pulled out and diverted. • A larger, easier to navigate, clearly signed site makes a more appealing and accessible household drop off area, so induces 5% more drop offs. • Paint drop off established
3.Full rebuild including minor expansion	Low – additional 5-15% Improvements will be driven by: • Increased green waste recovery as a larger portion of loads will be able to access green waste drop area. • Creating a medium sized flat floor tipping area. • A larger designated household recyclables area may induce some additional users due to its appealing layout.

Option	Diversion potential
	• Ability to recover material from dumped waste pre pushing material into the pit (limited to green waste, steel and cardboard). • Ability to incorporate new material recovery opportunity with the addition of more space (i.e., bulky items, paint). Assumptions: • Estimated waste composition (see Appendix A). • 25% of green waste currently sent to landfill through general waste can be diverted. • 7%-15% of general waste stream can be pulled out and diverted. • A larger, easier to navigate, clearly signed site with space for more recovery streams makes a more appealing and accessible household drop off area, so induces 10% more drop offs. • Paint drop off established
4. Full rebuild including major expansion	High – additional 30-40% Improvements will be driven by: • Increased green waste recovery as a larger portion of loads will be able to access green waste drop area. • Creating a large flat floor tipping area for pre-sorting. • A larger designated household recyclables area may induce some additional users due to its appealing layout. • Ability to recover material from dumped waste pre pushing material into the pit (extended to green waste, steel, timber, C&D[18] waste, and cardboard). • Ability to incorporate new material recovery opportunity with the addition of more space (i.e., bulky items, paint, C&D material). • Introduction of a reuse shop. Assumptions: • Estimated waste composition (see Appendix B). • 25% of green waste currently sent to landfill through general waste can be diverted. • 40% of general waste stream can be pulled out and diverted. • A larger, easier to navigate, clearly signed site with space for maximised number of recovery streams makes a more appealing and accessible household drop off area, so induces 20% more drop offs. • Reuse shop diverting approximately 300 tonnes per annum. • Having a C&D waste recovery area will induce an additional 20% of C&D waste. • Paint drop off established

[18] Construction and demolition

14.4 Circular Economy Opportunities

The three principles of the circular economy are:

- Regenerate natural systems.
- Design out waste and pollution.
- Keep products and materials in use.

Evaluation of each option against the principles of a circular economy are included in Table 14.3.

Table 14.3: Comparison of options against key design criteria

Option	Circular economy opportunities
1	• Circular economy principles at the site do not go beyond business as usual (diversion of waste from landfill for recycling)
2	• Circular economy principles at the site do not go beyond business as usual (diversion of waste from landfill for recycling). Some improvement in planting on site could offer a minor amenity increase.
3	• Circular economy principles at the site do not go beyond business as usual (diversion of waste from landfill for recycling), however some reuse of construction materials for this option provides potential for an improved circular outcome compared to Options 1 and 2.
4	• Community and education space – can be used to teach community how to design out waste. • Reuse shop – aimed at keeping products and materials in use. • Bulky collection area – opportunity for site to contribute to recirculation of materials back into the local community. • Offers the best potential for circular economy principles to be applied via reuse of construction materials for fill during construction, compared to Options 1, 2, and 3. • Offers potential to increase the amount of rainwater harvesting on site. • Increased space gives potential for increased plantings onsite to further reduce and manage runoff, as well as a more significant visual amenity increased compared to Options 1, 2, and 3.

14.5 Carbon

Carbon impacts are difficult to quantify as the impact of any solution is made up of several elements including the embodied carbon of the technology, transport emissions, level of diversion from landfill and potential to generate a product that displaces a carbon intensive activity (i.e., production of renewable energy). For the purposes of this feasibility assessment only high-level commentary on emissions reduction potential is provided at this stage.

In general, there are carbon emission reductions where degradable material (such as green waste and timber) is diverted from landfill. There are also (embodied) emissions benefits where materials such as metals and concrete are recovered for reuse or recycling. This means that carbon benefits are closely correlated with waste recovery (increased recovery = reduced carbon emissions) with degradable waste providing the most benefit. In general:

- Option 1 and 2 are likely to have a small net carbon emissions change as embodied carbon associated with new infrastructure is small but there is also minimal additional diversion achieved. It is possible the options may be net zero or carbon negative to a small degree.
- Option 3 is associated with moderate investment in steel, concrete and asphalt which will be associated with high embodied carbon and minimal additional diversion is achieved to offset this meaning net carbon change would likely be negative.
- Option 4 is associated with significant infrastructure upgrades that will be associated with much higher embodied carbon than the other three options. Carbon mitigation is difficult to estimate for this option but will be significantly more than the other options due to the significant diversion of additional materials but also the impact of the reuse shop and C&D waste recovery which have the potential to keep materials with high embodied carbon in circulation, such as recycled concrete. The impact of community and education facilities on behaviour change also need to be incorporated but are difficult to quantify. Initial high-level estimates indicate that additional diversion alone through the waste/bulky area will not offset the embodied carbon of this upgrade but the incorporation of other factors (keeping material in circulation, community education) will likely be significant.

The above assumes all material used is virgin material, there will be a potential to reduce embodied emissions through use of site-won materials recovered from any demolition works being undertaken on site and using recycled materials in construction.

14.6 Community

Options 1, 2 and 3 do not include features that are aimed at increasing community benefit (beyond supply of material drop off infrastructure). Option 4 includes major expansion and there is therefore more scope to include additional site features that add value to the community. For Option 4 these include:

- A Reuse shop – engaging and educating the community on circularity and waste minimisation, repair and reuse, could be run in partnership with a community organisation.
- Café/community centre – creating a destination for the community to engage and acquire education around waste.
- Pedestrian and cycle access – creating safe access for passive modes of transport.
- Reconfiguration to be a tidy, safe, spacious, welcoming environment – the large recycling drop off area provisioned for in Option 4 provides the opportunity to create bright, engaging and easy to use spaces (Figure *14.1*) and spacious drop-off areas that are easier to navigate (Figure 14.2).

Figure 14.1: Recycle Street – Gold Coast (Bright, engaging, spacious, easy to use). (Source: Recycling Near You, 2018)

Figure 14.2: Southern Landfill (spacious drop off areas, thriving community reuse shop)

14.7 Cost

14.7.1 Capital cost.

High-level cost estimates have been included as Appendix C and is based on current rates at the time of writing (March 2023). These costs are based on the indicative layout for each site shown in Appendix A. The purpose of this cost estimate is to provide an indicative comparison of the costs of various elements of the project.

These costs were reviewed by a quantity surveyors Rider Levett Bucknall (RLB), in March 2023. A summary of the recommendations adopted has been provided in Appendix D. RLB note that *'... there has been no inclusion for Escalation within this project. Should the project be procured to be delivered within the first half of 2023, Escalation may be excluded. RLB recommend the allowances for escalation be reviewed based on the project expected program.'* (Section 4.5 of their review report).

RLB suggest their indices (www.rlb.com/ccc) could be used to estimate the potential cost impacts of the timing of the project. These indices suggest that the current estimates (for construction in March 2023) could be escalated as follows:

- 1-year escalation (March 2024): 3.9% increase on estimate values from March 2023.
- 3-year escalation (March 2026): 11.3% increase on estimate values from March 2023.

Option 1 – Minor remodelling

Key costs associated with upgrading the site in its current footprint include:

- A new static cardboard compactor.
- Upgrades to the hazardous waste drop-off.
- Site stormwater collection and retention upgrades.

Developing the existing site will cause minimal disruption to daily operations as the works can be staged with areas of the site shut off to allow for access.

- *Indicative estimate $640,000*

Option 2 – Part extension/remodelling

Key costs associated with undertaking a part extension include:

- A new static cardboard compactor.
- Upgrades to the hazardous waste drop-off.
- Site stormwater collection and retention upgrades (related to tipping floor specifically).

Developing the existing site will cause minimal disruption to daily operations as the works can be staged with areas of the site shut off to allow for access.

- *Indicative estimate $1,640,000*

Option 3 – Full rebuild including minor expansion.

Key costs associated with undertaking a full rebuild with minor expansion include:

- Filling site to grade and retaining wall construction.
- Re-establishment of drop off area infrastructure in new positions.

Rebuilding the existing site will cause extensive disruption to transfer station daily operations as the site would need to be shut down for the continuation of works.

- *Indicative estimate $6,090,000*

Option 4 – Full rebuild including major expansion.

Key costs associated with undertaking a part extension include:

- Demolition of existing site infrastructure.
- Re-establishment of drop off area infrastructure in new positions.
- Establishment of a new waste and bulky waste tipping area with associated equipment.

Rebuilding the existing site and expanding into the depot area will cause extensive disruption to both transfer station and depot daily operations as the site would need to be shut down for the continuation of works. This option also displaces a large area currently used by the depot that would need to be substituted elsewhere.

- *Indicative estimate $13,920,000*

Costs include and allowance for preliminaries, design and approvals, mobilisation, overhead and a contingency.

The construction rates utilised for this high-level cost estimate are based on assumed design concepts, estimated quantities, experience with similar projects and documented case studies. Consequently, a significant margin of uncertainty exists on the cost estimate and the contingency we have allowed should be considered as part of the cost rather than a potential add on.

Cost estimates do not include acquisition of new plant or machinery, except for a material handler or equivalent for the waste/bulky drop off area. These costs are subject to change as the proposed layout and function of the facility is further developed during detailed design. As such, for this options assessment, the indicative costs are estimated to have a range of at least ± 30%. It is recommended that this cost estimate be used only as a rough guide to inform selection of preferred options to advance to more detailed design. It should not be used at this stage for detailed financial planning.

14.7.2 Other cost considerations

Operational cost considerations were not part of the scope of this business case, but key cost impacts additional to capital costs listed in 14.7.1 are listed against each option in Table 14.4 below.

Table 14.4: Operational cost considerations

Option	Operational cost considerations	Operational savings considerations
1. Minor remodelling	• Displacement of the bin storage in bottom bunker area, a new storage area will need to be provisioned for. • Cost of green waste disposal will increase by up to 25%, due to the increased diversion of green waste from landfill, offsetting some of the landfill disposal savings.	• Reduced landfill tip fees associated with material diverted from waste stream. • Cost of landfill disposal estimated to reduce by 5% therefore costs reduced by approximately $141,500 per annum (2022/23 landfill disposal rates)
2.Part extension/remodelling	• Displacement of the bin storage in bottom bunker area, a new storage area will need to be provisioned for • Displacement of storage area used by Infrastructure Maintenance and Parks teams; a new storage area will need to be provisioned for • Additional staff required to supervise separate areas of the site. • The assumed increased drop off rate of 5% would increase landfill costs by up to 5% (141,500 per annum). • Cost of green waste disposal will increase by up to 25%, offsetting some of the landfill disposal savings.	• Reduced landfill tip fees associated with material diverted from waste stream. • Cost of landfill disposal estimated to reduce by up to 10% therefore costs reduced by approximately $283,000 per annum (2022/23 landfill disposal rates).
3.Full rebuild including minor expansion	• Displacement of the bin storage in bottom bunker area, a new storage area will need to be provisioned for • Displacement of storage area used by Infrastructure Maintenance and Parks teams; a new storage area will need to be provisioned for • Additional staff required to supervise separate areas of the larger site and operate tipping floor sort area. • The assumed increased drop off rate of 10% would increase landfill costs by up to 10% ($283,000 per annum). • Cost of green waste disposal will increase by up to 25%, offsetting some of the landfill disposal savings. • An extra staff member may be required, if so, this would be at a cost of $70,000 per annum plus oncosts.	• Reduced landfill tip fees associated with material diverted from waste stream. • Cost of landfill disposal estimated to reduce by up to 15% therefore costs reduced by approximately $424,500 per annum (2022/23 landfill disposal rates).

Option	Operational cost considerations	Operational savings considerations
4. Full rebuild including major expansion	• Displacement of depot areas and new storage areas/reconfiguration of depot activities will need to be provisioned for. Displaced activity includes: - Approx 330 m^2 of warehouse - Approx 2200 m^2 of parking However, it is worth noting that Option 4 has been designed in a way that depot and TS operations could possibly utilise shared roads/storage/operational areas. • Additional staff required to supervise separate areas of the larger site and operate tipping floor sort area. • Staffing the reuse shop and community centre • Additional plant and machinery • The assumed increased drop off rate of 20% would increase landfill costs by up to 20% ($566,000 per annum). • Cost of green waste disposal will increase by up to 25%, offsetting some of the landfill disposal savings. • Additional extra staff members may be required for the sorting area, C&D drop off management, and reuse facility, if so, this would be at a cost of $70,000 per annum plus oncosts for each role.	• Reduced landfill tip fees associated with material diverted from waste stream. • Revenue from tip shop (noting this is a potential only, not all reuse shops turn a profit) • Cost of landfill disposal estimated to reduce by up to 40% therefore costs reduced by approximately $1,132,000 per annum (2022/23 landfill disposal rates). • The assumed increase in C&D drop off and recovery may offset some of the landfill savings if recovery includes some material being landfilled.

14.8 Summary

An overview of the options assessment outcomes is provided in Table 14.5.

Table 14.5: Option evaluation notes

Evaluation Criteria	1. Minor remodelling	2. Part extension	3. Full rebuild including minor expansion.	4 Full rebuild including major expansion
Alignment with best practice guidelines	No best practice guidance aspects are met.	No best practice guidance aspects are met.	Operations and domestic areas are segregated.	Major expansion allows for alignment with best practice guidelines.
Increased diversion of waste from landfill	Diversion estimated at 5-10 %.	Diversion estimated at 5-10 %.	Diversion estimated at 5-15 %.	Diversion estimated to be 30—40 %.
Circular economy alignment	Does not provide for circular economy opportunities	Does not provide for circular economy opportunities	Does not provide for circular economy opportunities however some reuse of construction materials for this option gives an improved circular outcome compared to options 1 and 2.	Provides circular economy opportunities including maximising recovery and reuse
Minimisation of net carbon impacts needs to be considered	Minimal construction but minimal diversion or recovery.	Minimal construction and minimal additional diversion.	Relatively minor construction but increased diversion.	Extensive asphalt, steel, concrete and aggregate required. Large amounts of demolition. Major construction offset by significant diversion.
Capital cost (2023)	$640,000	$1,640,000	$6,090,000	$13,920,000
Manages risk to the environment and human health in line with the GED	All risks to the environment and human health are managed so far as reasonably practicable.	All risks to the environment and human health are managed so far as reasonably practicable.	All risks to the environment and human health are managed so far as reasonably practicable.	All risks to the environment and human health can be managed so far as reasonably practicable however introduction of stockpiling and additional waste streams will require additional controls.
Delivers community benefit	No design features aimed at improving community benefit.	No design features aimed at improving community benefit.	No design features aimed at improving community benefit.	Design features (reuse shop, community centre etc) are specifically aimed at increasing community benefit.

15 Other procurement and design considerations

15.1 Circularity in construction management

RV's 10-year plan outlines a package of more than $300 million of waste sector reforms. These include landfill diversion strategies via kerbside recycling reforms, a container deposit scheme in 2023, and nearly $100 million to support resource recovery infrastructure.

The clearly stated aim of the plan is to develop a new 'circular' economy to reform the waste and resource recovery sector over a 10-year period. A circular economy is aimed at transforming the current 'linear' economy mindset (take-use-dispose), which sees raw materials being made into products, these products are used once, then disposed of. Disposal is either directly to landfill or to the recycling reprocessing network, both of which have sub-optimal outcomes for the environment, although recycling is preferred to landfill disposal.

A circular economy will transform the linear economy mindset and in turn seeks to reduce the environmental impacts of production and consumption. The more productive and considered use of natural resources is aimed at achieving the environmental aims at the same time as enabling economic growth.

The Victorian Government introduced the Recycled First Policy in 2020, to support and progress RV's 10-year plan, and the Victorian Government's circular economy strategy. The Recycled First Policy supports a circular economy by ensuring that, where appropriate, Recycled and Reused Materials are used in preference to virgin materials, to drive greater use of such materials, encourage innovation and develop a new viable market for those materials.

To underpin the Recycled First Policy requirements, several other Victorian Government departments are working to realign activities to the circular economy. These include the work being undertaken by the Department of Energy, Environment and Climate Action (DEECA), Environment Protection Authority Victoria (EPA), and the Waste and Resource Recovery Groups (WRRGs).

Funding is likely to be made available for research to develop new products made from recycled materials such as glass, plastic, organics, electronic waste, concrete, brick, and rubber.

A Business Innovation Centre has also been established, bringing together industry, universities, and councils to develop new technologies and collaborate on creative solutions to waste challenges.

It is therefore recommended that, in alignment with the Sustainable Asset Management Plan, and Council's overall approach to sustainability, that a circular economy approach be taken to any works at the TS. Despite the TS reconfiguration not being classed as a 'major Victorian construction project' and therefore not having a mandate applied via the Recycled First Policy, it would likely give better environmental, economic, and social outcomes for the project. In addition to lowering the carbon and environmental footprint of activities, nearby residents may benefit from less truck movements, for example, if materials such as recovered brick, concrete and crumb rubber were being reused on site wherever possible. A detailed analysis of any proposed works should be undertaken to identify any opportunities to reuse materials on-site, opportunities for grant funding for trials using innovative materials in construction, and the prioritisation of the use of recycled materials (local or Victorian wherever possible).

Innovations may include the use of supplementary cementitious materials (SCMs), for example replacing virgin sand with unwashed or washed glass fines, which could theoretically be procured directly from the Materials Recovery Facility (MRF) which accepts City of Stonnington's municipal recycling. Currently glass fines are most likely to be landfilled and have long been a problematic material for MRFs to manage. Alternative uses are being sought in the construction industry, and smaller scale construction projects, such as one that may result from this process, are ideal to trial

innovations. Of course, safety must remain the key priority, however there is a growing set of successful case studies, and updates to technical specifications (such as Vic Roads) are occurring as a result.

The use of non-conventional materials means additional potential liability/risk for designers and constructors. If Council want to see materials actively considered and utilised for this project, they will need to develop an acceptable risk allocation approach so that suppliers see an acceptable risk profile for the specifying or use of recovered materials.

Other examples which may apply to a construction project at TS could be:

- Reuse of site won crushed concrete, brick, crumb rubber as an SCM or fill.
- Reuse of materials from Roads/Infrastructure operations, including recovered asphalt (RAP).
- Use crumb rubber from tyres at the TS and council fleet in pathways/asphalt, during construction and ongoing maintenance.
- Use plastics (soft, hard, mixed, polystyrene) in construction as an SCM.
- Noise walls or fencing made from recycled plastic.
- Limit transport distances.
- Consider reused and refurbished site offices/huts, including bathroom fittings with recycled ceramic tiles.
- Contracts and the procurement process to adopt a Recycled First approach; specifications to clarify requirements. These would be shown as the non-price criteria. Assigning a higher value to the non-price criteria assists with the shift to a circular economy and a change in mindset to assigning the genuine value of materials which are to be used, as opposed to a simpler linear price model.
- Deconstruction considerations and Decommissioning Plans for both the existing site, and the new site.

15.2 Constructability and maintaining transfer station operations during upgrade.

Any construction will need to work around TS operations. This implies a contractor who can work closely with site staff and show some flexibility. Careful deconstruction of existing transfer station infrastructure can result in less net construction and demolition waste generation from the project. However, deconstruction aimed at retaining value of materials can take significantly longer than typical demolition and push out project timeframes which may not be appealing for critical infrastructure such as this transfer station.

Alternatively, City of Stonnington is in the fortunate position that there are TSs in surrounding councils that could be used by residents should the TS need to be closed for rebuild.

A typical program of works for a large program of works (such as Option 3 and 4) for upgrade of a brownfield development may resemble:

- Year 1: Design and procurement works with potential to start on enabling works.
- Year 2: 12 to 18 months to complete construction

Liaison with authorities, stakeholder engagement and approval sign off has the potential to push out these timeframes. It is also important to note there are long lead times of procurement of specific plant and this can also impact project timeframes.

Early input from contractors and service providers once an option has been selected is one measure of managing potential issues relating to constructability. Other key next steps for managing constructability are listed in the next steps (Section 17).

15.3 Early engagement and collaboration with Traditional Owners

This project is within the Traditional lands of the Wurundjeri Woi Wurrung people of the East Kulin Nations. Early collaboration with representatives from local Traditional Owners once an option has been selected can identify opportunities for the design of the space to reflect what the community can learn from Aboriginal and Torres Strait Islander cultures and/or promote cultural aspirations to the wider community. Early and authentic stakeholder engagement also reflects the ambitions of Council's recently adopted Reconciliation Action Plan. Examples of the outcome of good collaboration on similar projects include:

- Respectful incorporation of indigenous names.
- Cultural planting for landscaping informed by cultural values assessment.
- Reflection of Aboriginal and Torres Strait Islander views in the options assessment process and driving regenerative, inclusive infrastructure.
- Early engagement on the topic of cultural heritage and pro-active management of protecting cultural heritage value.

16 Conclusions

An assessment of upgrade options for the TS has been completed with the following desired outcomes:

- Increasing the recovery and diversion of materials at the TS.
- Increasing the range of materials accepted at the TS.
- Improving traffic flow and safety at the TS.
- Attaining the required RV waste diversion and recovery targets.
- Aligning with the City of Stonnington Sustainable Assets Policy.
- Providing a TS which can offer increased social benefits to the community and transitioning to a circular economy model.
- Planning a TS which can accommodate future growth in volumes and types of wastes received.

These outcomes are considered throughout the assessment of the four upgrade options:

1 Minor remodelling – Basic aesthetic upgrade with a few essential changes.
2 Part extension/remodelling within the site's current footprint.
3 Full rebuild including minor expansion.
4 Full rebuild including major expansion with possible land acquisition and traffic redirection.

Based on the findings of the assessment each option has advantages and limitations as summarised below:

Option 1

- For the relatively low cost and low intervention, a relatively low increase in diversion, recovery, and social value is obtained.
- Due to a lack of space this option cannot meet the key design criteria, or the broader outcomes of the exercise.
- The minor remodelling could achieve between 5% and 10% additional diversion and recovery of materials, without involving significant change management for other depot users (the storage space is not altered or relocated).
- This option offers little in terms of increased social benefits (including education/engagement), disincentivising the disposal of materials to landfill, or transitioning to a circular economy model.

Option 2

- This option does go some way to reducing some of the traffic congestion currently experienced onsite.
- This option does not meet the key design criteria, and despite the additional predicted costs when compared with Option 1, does not offer significantly increased diversion, recovery, circularity, or social benefits over Option 1.

Option 3

- This option has a higher cost than Options 1 and 2, has the potential to increase resource recovery by an additional 5-15% compared to the current operation.
- This option only partially meets the key design criteria due to continued traffic congestion in the expansion area available.

- This option offers little in terms of increased social benefits (including education/engagement), disincentivising the disposal of materials to landfill, or transitioning to a circular economy model.

Option 4

- This option has the most significant financial investment requirements, and in return offers the best potential for achieving recovery and diversion targets, meets the key design criteria, and affords increased social benefits.
- The option requires significant land currently used by the depot so would require careful planning in detailed design to ensure both functions can still use the space or alternatively be relocated to a different site.
- Planning for capital expenditure for the works, and the budget bid process (and grant applications where funding becomes available) could be commenced pre-emptively in 2023 and be ongoing until the commencement of works and until full commissioning closer to 2030.

17 Next steps

The next step is to confirm the preferred option. This will reflect realistically available capital budget balanced against Council policy aims and aspirations. For similar projects T+T have worked with senior Council staff and Councillors to work through the options and confirm the preferred option.

Once a preferred option has been confirmed, key steps through to have the new arrangements in place include:

- Developing a plan for staging of works considering programming of stages, ability to maintain operations, prioritisation works and includes an operational continuity plan.
- Evaluation of procurement and operation options (i.e., design vs. design construct).
- Review of constructability for the selected option including:
  - *Interface with existing operations include the operations staff.*
  - *Materials and logistics assessment – make sure there are no issues with plant and equipment (acknowledging that procurement of equipment has a long lead time)*
  - *Enabling works and demolition packages*
  - *Early input from contractors to feedback on constructability.*
- Value engineering to scrutinise the high-level design concepts in this Business Case to identify opportunities to optimise capital spend and anticipating operating costs – this would be a collaborative process with contractor, operations and QS team
- Complete site investigations relating to the selected option:
  - *Flood modelling impacts*
  - *Geotechnical assessment update*
  - *Environmental site investigation (or confirmation from previous assessments that contamination risk does not need to be accounted for).*
- Early conversations with key authorities
  - *To pre-empt what approvals will be required prior to construction and what needs to be accounted for in detailed design (Melbourne Water, VicTrack, VicRoads)*
  - *To identify future development by any of these authorities that could impact the project.*
- A detailed safety in design process for the selected option

The above works needs to be mapped into a program with early indication of budget for each step so Council can put aside resources to fund the project next steps.

18 Applicability

This report has been prepared for the exclusive use of our client City of Stonnington , with respect to the brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Pty Ltd
Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Pty Ltd by:
	
.....	.....
Caroline Turnbull Environmental Engineer	Sze-Fei Peng/Chris Purchas Project Director/Technical Review

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Appendix A Figures

C:\12dSynergy\data\ALBTCAD\Stonnington Transfer Station Upgrade_1277\CAD\FIG\1089303.0000-F01.dwg 2023-Jan-30 11:36:12 AM Plotted By: KATHRYN JACKSON

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NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD IMAGERY DATE: 03/12/2022.

A3 SCALE 1:1000

0 5 10 15 20 30 40 50 (m)

ORIGINAL IN COLOUR

PROJECT No.	1089303	
DESIGNED	CATU	Dec.22
DRAWN	KMJA	Dec.22
CHECKED		
APPROVED		DATE

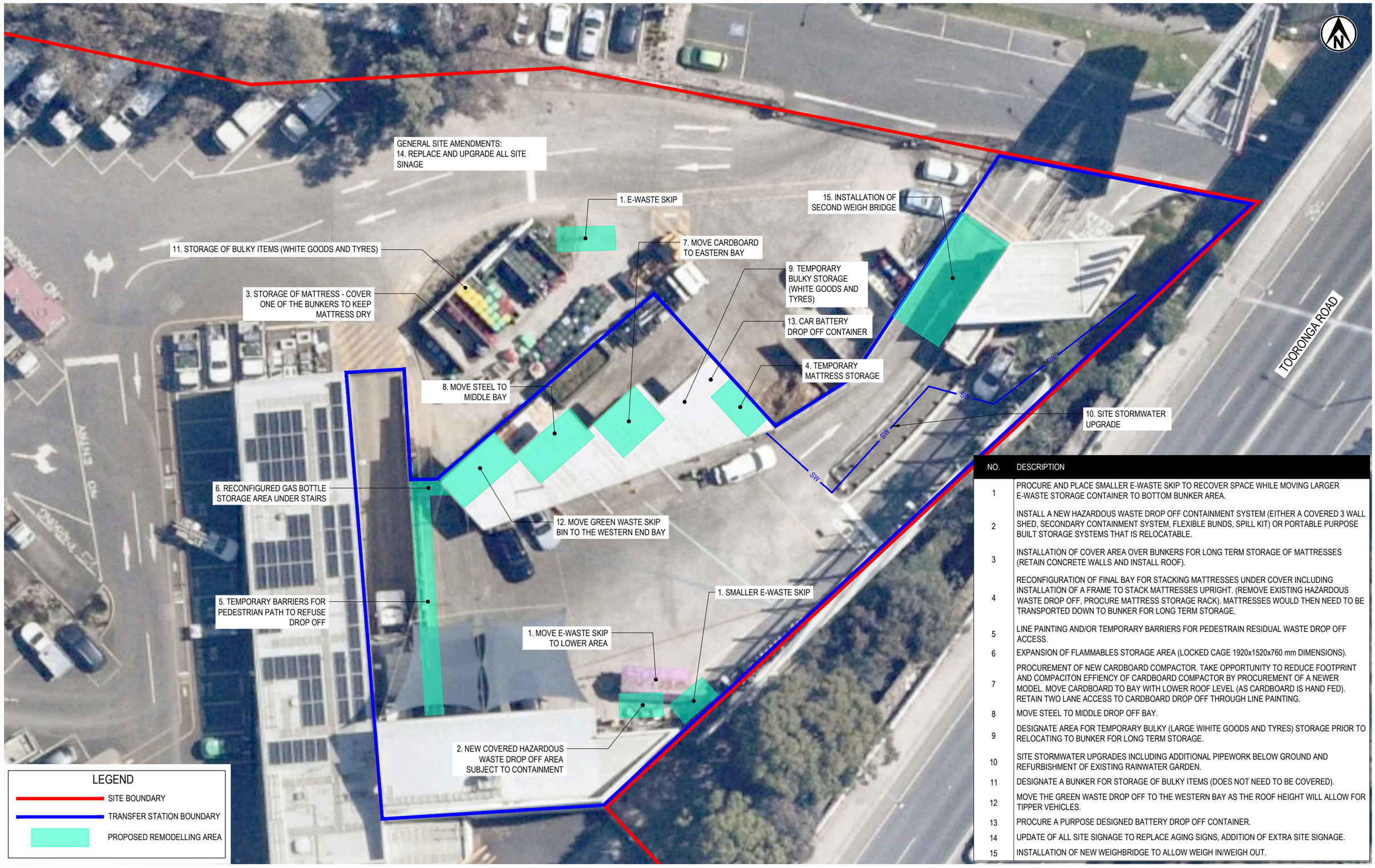
CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE SITE LOCALITY PLAN

SCALE (A3) 1:1000 FIG No. 1089303-F01 REV 1

C:\12dSynergy\data\ALBTCAD\Stonnington Transfer Station Upgrade_1277\CAD\FIG\1089303.0000-F02.dwg 2023-Feb-01 4:49:05 PM Plotted By: KATHRYN JACKSON



NO.	DESCRIPTION
1	PROCURE AND PLACE SMALLER E-WASTE SKIP TO RECOVER SPACE WHILE MOVING LARGER E-WASTE STORAGE CONTAINER TO BOTTOM BUNKER AREA.
2	INSTALL A NEW HAZARDOUS WASTE DROP OFF CONTAINMENT SYSTEM (EITHER A COVERED 3 WALL SHED, SECONDARY CONTAINMENT SYSTEM, FLEXIBLE BUNDS, SPILL KIT) OR PORTABLE PURPOSE BUILT STORAGE SYSTEMS THAT IS RELOCATABLE.
3	INSTALLATION OF COVER AREA OVER BUNKERS FOR LONG TERM STORAGE OF MATTRESSES (RETAIN CONCRETE WALLS AND INSTALL ROOF).
4	RECONFIGURATION OF FINAL BAY FOR STACKING MATTRESSES UNDER COVER INCLUDING INSTALLATION OF A FRAME TO STACK MATTRESSES UPRIGHT. (REMOVE EXISTING HAZARDOUS WASTE DROP OFF, PROCURE MATTRESS STORAGE RACK). MATTRESSES WOULD THEN NEED TO BE TRANSPORTED DOWN TO BUNKER FOR LONG TERM STORAGE.
5	LINE PAINTING AND/OR TEMPORARY BARRIERS FOR PEDESTRAIN RESIDUAL WASTE DROP OFF ACCESS.
6	EXPANSION OF FLAMMABLES STORAGE AREA (LOCKED CAGE 1920x1520x760 mm DIMENSIONS).
7	PROCUREMENT OF NEW CARDBOARD COMPACTOR. TAKE OPPORTUNITY TO REDUCE FOOTPRINT AND COMPACITON EFFIENCY OF CARDBOARD COMPACTOR BY PROCUREMENT OF A NEWER MODEL. MOVE CARDBOARD TO BAY WITH LOWER ROOF LEVEL (AS CARDBOARD IS HAND FED). RETAIN TWO LANE ACCESS TO CARDBOARD DROP OFF THROUGH LINE PAINTING.
8	MOVE STEEL TO MIDDLE DROP OFF BAY.
9	DESIGNATE AREA FOR TEMPORARY BULKY (LARGE WIHITE GOODS AND TYRES) STORAGE PRIOR TO RELOCATING TO BUNKER FOR LONG TERM STORAGE.
10	SITE STORMWATER UPGRADES INCLUDING ADDITIONAL PIPEWORK BELOW GROUND AND REFURBISHMENT OF EXISTING RAINWATER GARDEN.
11	DESIGNATE A BUNKER FOR STORAGE OF BULKY ITEMS (DOES NOT NEED TO BE COVERED).
12	MOVE THE GREEN WASTE DROP OFF TO THE WESTERN BAY AS THE ROOF HEIGHT WILL ALLOW FOR TIPPER VEHICLES.
13	PROCURE A PURPOSE DESIGNED BATTERY DROP OFF CONTAINER.
14	UPDATE OF ALL SITE SIGNAGE TO REPLACE AGING SIGNS, ADDITION OF EXTRA SITE SIGNAGE.
15	INSTALLATION OF NEW WEIGHBRIDGE TO ALLOW WEIGH IN/WEIGH OUT.

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NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD IMAGERY DATE: 03/12/2022.

1:300

0 3 6 9 12 15 (m)

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APPROVED		DATE

CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 1: MINOR REMODELLING

SCALE (A3) 1:300 FIG No. 1089303-F02 REV 1

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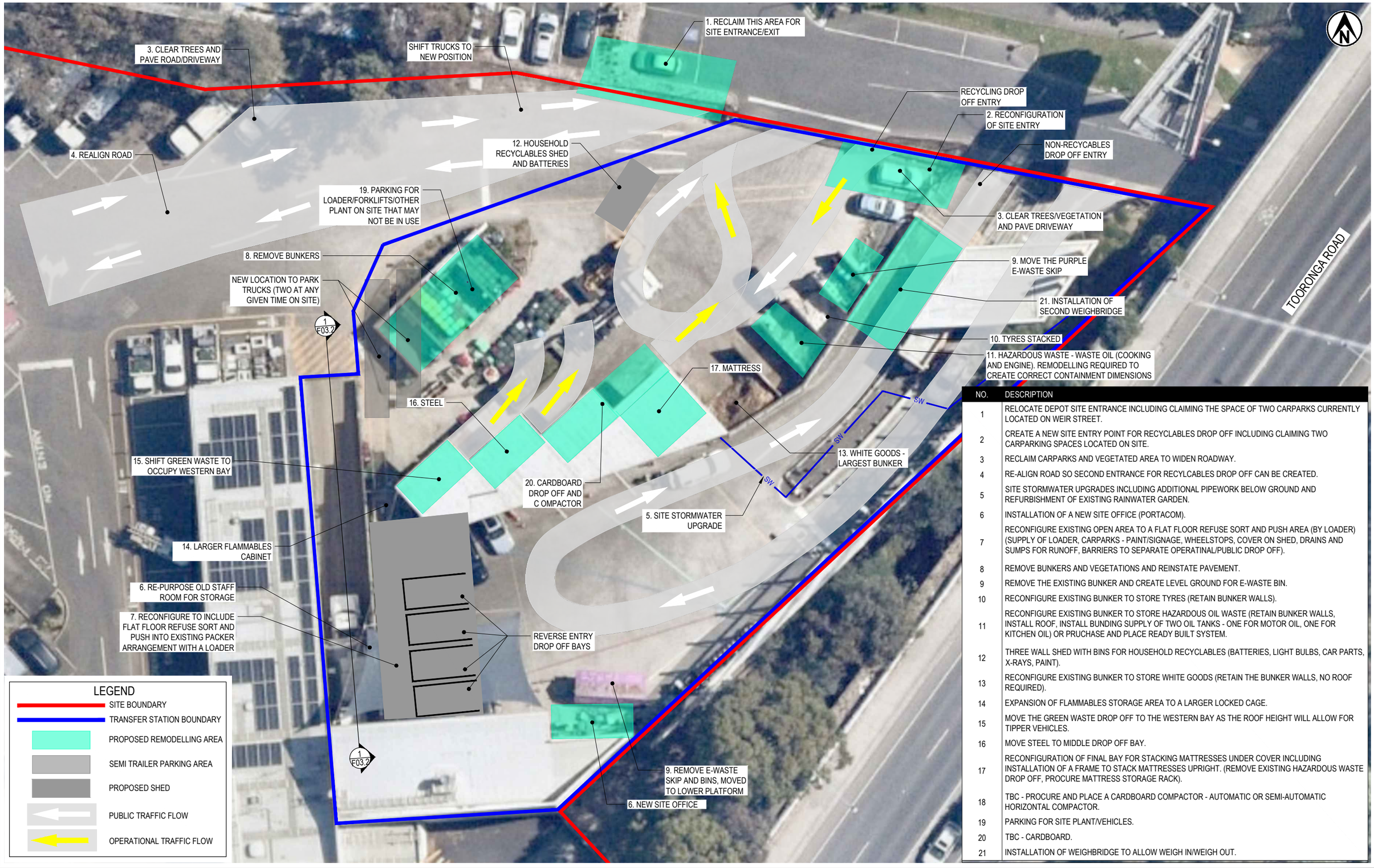

NO.	DESCRIPTION
1	RELOCATE DEPOT SITE ENTRANCE INCLUDING CLAIMING THE SPACE OF TWO CARPARKS CURRENTLY LOCATED ON WEIR STREET.
2	CREATE A NEW SITE ENTRY POINT FOR RECYCLABLES DROP OFF INCLUDING CLAIMING TWO CARPARKING SPACES LOCATED ON SITE.
3	RECLAIM CARPARKS AND VEGETATED AREA TO WIDEN ROADWAY.
4	RE-ALIGN ROAD SO SECOND ENTRANCE FOR RECYLCABLES DROP OFF CAN BE CREATED.
5	SITE STORMWATER UPGRADES INCLUDING ADDITIONAL PIPEWORK BELOW GROUND AND REFURBISHMENT OF EXISTING RAINWATER GARDEN.
6	INSTALLATION OF A NEW SITE OFFICE (PORTACOM).
7	RECONFIGURE EXISTING OPEN AREA TO A FLAT FLOOR REFUSE SORT AND PUSH AREA (BY LOADER) (SUPPLY OF LOADER, CARPARKS - PAINT/SIGNAGE, WHEELSTOPS, COVER ON SHED, DRAINS AND SUMPS FOR RUNOFF, BARRIERS TO SEPARATE OPERATINAL/PUBLIC DROP OFF).
8	REMOVE BUNKERS AND VEGETATIONS AND REINSTATE PAVEMENT.
9	REMOVE THE EXISTING BUNKER AND CREATE LEVEL GROUND FOR E-WASTE BIN.
10	RECONFIGURE EXISTING BUNKER TO STORE TYRES (RETAIN BUNKER WALLS).
11	RECONFIGURE EXISTING BUNKER TO STORE HAZARDOUS OIL WASTE (RETAIN BUNKER WALLS, INSTALL ROOF, INSTALL BUNDING SUPPLY OF TWO OIL TANKS - ONE FOR MOTOR OIL, ONE FOR KITCHEN OIL) OR PRUCHASE AND PLACE READY BUILT SYSTEM.
12	THREE WALL SHED WITH BINS FOR HOUSEHOLD RECYCLABLES (BATTERIES, LIGHT BULBS, CAR PARTS, X-RAYS, PAINT).
13	RECONFIGURE EXISTING BUNKER TO STORE WHITE GOODS (RETAIN THE BUNKER WALLS, NO ROOF REQUIRED).
14	EXPANSION OF FLAMMABLES STORAGE AREA TO A LARGER LOCKED CAGE.
15	MOVE THE GREEN WASTE DROP OFF TO THE WESTERN BAY AS THE ROOF HEIGHT WILL ALLOW FOR TIPPER VEHICLES.
16	MOVE STEEL TO MIDDLE DROP OFF BAY.
17	RECONFIGURATION OF FINAL BAY FOR STACKING MATTRESSES UNDER COVER INCLUDING INSTALLATION OF A FRAME TO STACK MATTRESSES UPRIGHT. (REMOVE EXISTING HAZARDOUS WASTE DROP OFF, PROCURE MATTRESS STORAGE RACK).
18	TBC - PROCURE AND PLACE A CARDBOARD COMPACTOR - AUTOMATIC OR SEMI-AUTOMATIC HORIZONTAL COMPACTOR.
19	PARKING FOR SITE PLANT/VEHICLES.
20	TBC - CARDBOARD.
21	INSTALLATION OF WEIGHBRIDGE TO ALLOW WEIGH IN/WEIGH OUT.

NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD IMAGERY DATE: 03/12/2022.

1:300

0 3 6 9 12 15 (m)

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CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 2: MINOR REMODELLING

SCALE (A3) 1:300 FIG No. 1089303-F03.1 REV 1

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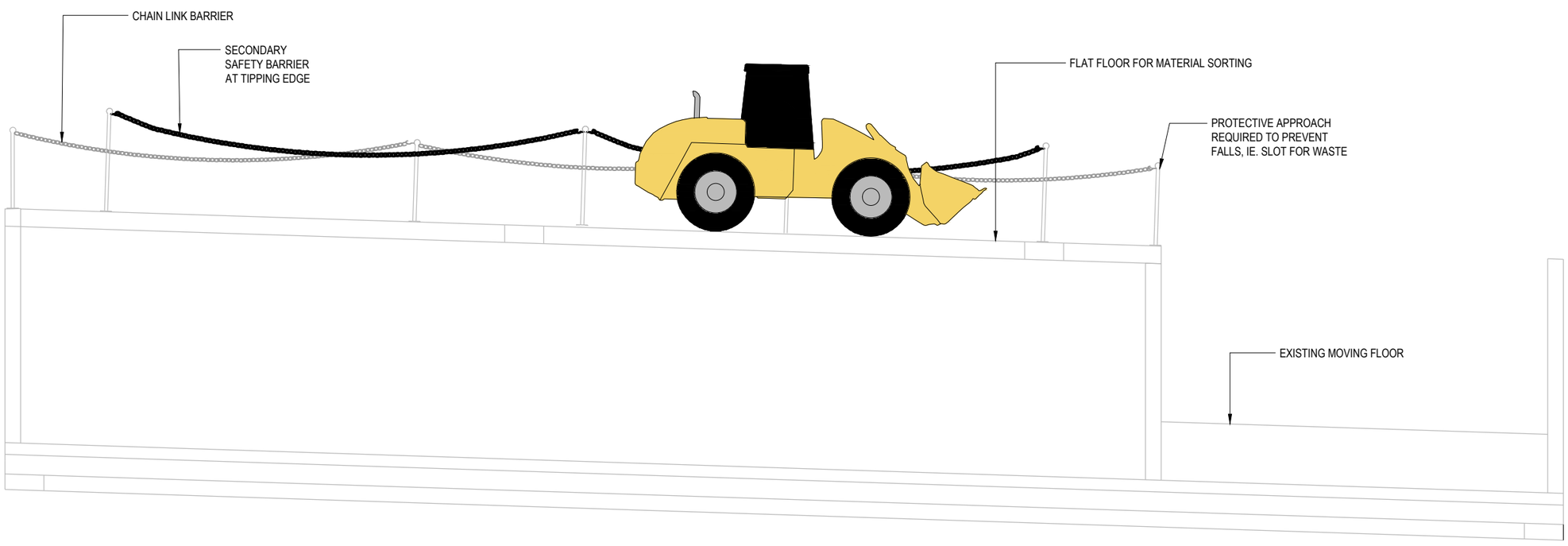

SECTION 1 / F03.1 INDICATIVE FLAT FLOOR SORT AREA (SEE NOTE 7 ON FIGURE 1089303-F03.1)
SCALE 1:125

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NOTES:
1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

A3 SCALE 1:125
0 1 2 3 4 5 6 7 (m)

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CLIENT CITY OF STONNINGTON
PROJECT STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE
TITLE OPTION 2: SECTION
SCALE (A3) 1:125 FIG No. 1089303-F03.2 REV 1

C:\12dSynergy\data\ALBTCAD\Stonnington Transfer Station Upgrade_1277\CAD\FIG\1089303.0000-F04.dwg 2023-Feb-01 5:09:18 PM Plotted By: KATHRYN JACKSON

LEGEND

- SITE BOUNDARY
- PROPOSED TRANSFER STATION BOUNDARY
- EXTENSION OF RAISED AREA
- OPERATIONS AREA
- EXISTING SITE FEATURES
- PROPOSED SHED
- BINS CONTAINING MATERIAL
- PROPOSED SITE OFFICE
- PUBLIC TRAFFIC FLOW
- OPERATIONAL TRAFFIC FLOW

NO.	DESCRIPTION
1	FILL BEHIND A RETAINING WALL TO EXTEND RAISED PLATFORM AT CURRENT TRANSFER STATION HEIGHT.
2	RESIDUAL WASTE DROP OFF ONTO TIPPING FLOOR FOR SORTING PRIOR TO PUSH ONTO WALKING FLOOR.
3	INSTALLATION OF A NEW SITE OFFICE (PORTABLE).
4	FLAMMABLE LOCKABLE STORAGE CAGE.
5	STEEL SHED ROOF (NO WALLS) OVER TIP FLOOR AREA.
6	STEEL SHED ROOF (NO WALLS) OVER BINS TO DROP OFF HOUSEHOLD RECYCLABLES (BATTERIES, LIGHT BULBS, CAR PARTS, X-RAYS, PAINT, HAZARDOUS WASTE).
7	ESTABLISHMENT OF RAMP ALONG BACK OF SITE FOR LOADER TO ENTER AND EXIT OPERATIONS AREA.
8	STORAGE OF EQUIPMENT AND AREA FOR AD HOC STOCKPILING IE BULKY WHITEWARE, TYRES.
9	ROAD RE-ALIGNMENT TO ALLOW SAW TOOTH TO PUSH FURTHER NORTH WITH OUT IMPACTING DEPOT AND OPERATIONAL VEHICLE (HOOK BIN TRUCK) ACCESS.
10	ESTABLISHMENT OF A NEW SAW TOOTH SHED TO FACILITATE THE DROP OFF OF GREEN WASTE, STEEL AND CARDBOARD INTO HOOK BINS BELOW. THE FINAL BAY WOULD BE USED FOR THE UNDERCOVER STORAGE OF MATTRESSES.
11	WIDEN ROAD AND CREATE LAYBY AREA INTO THE SITE TO CREATE ADDITIONAL QUEUING SPACE PRIOR TO WEIGHBRIDGE.
12	INSTALLATION OF SECOND WEIGHBRIDGE TO WEIGH IN/WEIGH OUT.

NOTES:
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A3 SCALE 1:500

0 5 10 15 20 25 (m)

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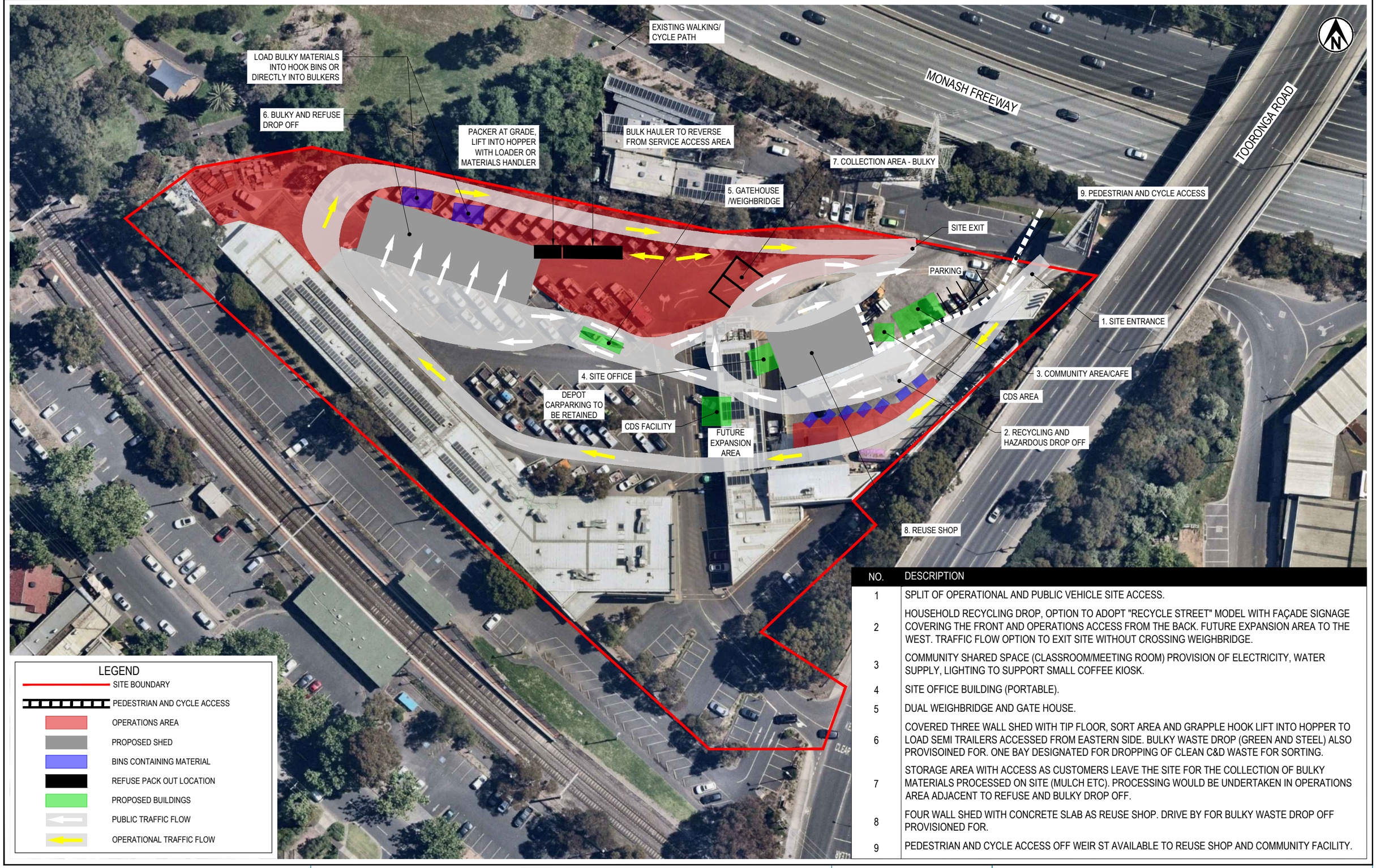
CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 3: FULL REBUILD WITH MINOR EXPANSION

SCALE (A3) 1:500 FIG No. 1089303-F04 REV 1

C:\12dSynergy\data\ALBTCAD\Stonnington Transfer Station Upgrade_1277\CAD\FIG\1089303.0000-F05.dwg 2023-Jan-30 2:01:14 PM Plotted By: KATHRYN JACKSON



LEGEND

- SITE BOUNDARY
- PEDESTRIAN AND CYCLE ACCESS
- OPERATIONS AREA
- PROPOSED SHED
- BINS CONTAINING MATERIAL
- REFUSE PACK OUT LOCATION
- PROPOSED BUILDINGS
- PUBLIC TRAFFIC FLOW
- OPERATIONAL TRAFFIC FLOW

NO.	DESCRIPTION
1	SPLIT OF OPERATIONAL AND PUBLIC VEHICLE SITE ACCESS.
2	HOUSEHOLD RECYCLING DROP, OPTION TO ADOPT "RECYCLE STREET" MODEL WITH FAÇADE SIGNAGE COVERING THE FRONT AND OPERATIONS ACCESS FROM THE BACK. FUTURE EXPANSION AREA TO THE WEST. TRAFFIC FLOW OPTION TO EXIT SITE WITHOUT CROSSING WEIGHBRIDGE.
3	COMMUNITY SHARED SPACE (CLASSROOM/MEETING ROOM) PROVISION OF ELECTRICITY, WATER SUPPLY, LIGHTING TO SUPPORT SMALL COFFEE KIOSK.
4	SITE OFFICE BUILDING (PORTABLE).
5	DUAL WEIGHBRIDGE AND GATE HOUSE.
6	COVERED THREE WALL SHED WITH TIP FLOOR, SORT AREA AND GRAPPLE HOOK LIFT INTO HOPPER TO LOAD SEMI TRAILERS ACCESSED FROM EASTERN SIDE. BULKY WASTE DROP (GREEN AND STEEL) ALSO PROVISOINED FOR. ONE BAY DESIGNATED FOR DROPPING OF CLEAN C&D WASTE FOR SORTING.
7	STORAGE AREA WITH ACCESS AS CUSTOMERS LEAVE THE SITE FOR THE COLLECTION OF BULKY MATERIALS PROCESSED ON SITE (MULCH ETC). PROCESSING WOULD BE UNDERTAKEN IN OPERATIONS AREA ADJACENT TO REFUSE AND BULKY DROP OFF.
8	FOUR WALL SHED WITH CONCRETE SLAB AS REUSE SHOP. DRIVE BY FOR BULKY WASTE DROP OFF PROVISIONED FOR.
9	PEDESTRIAN AND CYCLE ACCESS OFF WEIR ST AVAILABLE TO REUSE SHOP AND COMMUNITY FACILITY.

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NOTES:
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A3 SCALE 1:800

0 8 16 24 32 40 (m)

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PROJECT No.	1089303	
DESIGNED	CATU	Jan.23
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APPROVED		DATE

CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 4: REBUILD WITH MANOR EXPANSION INTO DEPOT

SCALE (A3) 1:800 FIG No. 1089303-F05 REV 1

Appendix B Detailed derivation of waste diversion

Derivation of Transfer Station External Material Incoming Composition and Potential Diversion - Key Assumptions

Waste type	%	Source	Paper	Plastic	Organics	Non metals	Non metals	Glass	Textiles	Tertiary Paper	Rubble	Timber	Rubber	hazardous		Source
C&D	0.2	*Incoming waste classified as "rubbish builders rubbish"*	5.0%	8.0%	2.5%	5.0%	0.1%	0.5%	10.0%	0.1%	45.0%	25.0%	0.0%	0.0%		*A mixture of Southern Landfill Transfer Pit and Act Transfer Pit waste audit data*
Residential	0.5	*Estimate (informed by Industry TS info)*	7.2%	5.8%	9.9%	7.5%	0.3%	0.9%	23.0%	1.4%	1.9%	41.6%	0.4%	0.2%		*Southern Landfill TS Pit Data checked against Act Transfer Pit to make sure it is within ball park*
Landscaping	0.15	*Estimate (informed by Industry TS info)*			55.0%						35.0%	10.0%				*Southern Landfill TS Pit Data checked against Act Transfer Pit to make sure it is within ball park*
C&I	0.15	*Estimate (informed by Industry TS info)*	18.4%	6.8%	3.7%	5.3%	0.8%	2.0%	33.7%	1.2%	1.0%	26.6%	0.4%	0.2%		*Southern Landfill TS Pit Data checked against Act Transfer Pit to make sure it is within ball park*

Tonnes per annum

Waste type	Tonnes	Source	Paper	Plastic	Organics	Non metals	Non metals	Glass	Textiles	Tertiary Paper	Rubble	Timber	Rubber	hazardous			Source
Total tonnes	4000	*2022 waste flow data*															
C&D	800	*Total tonnes x assumed %*	40	64	20	40	1	4	80	1	360	200	0	0	0		
Residential	2000	*Total tonnes x assumed %*	144	116	198	150	6	18	460	28	38	832	8	4	0		
Landscaping	600	*Total tonnes x assumed %*	0	0	330	0	0	0	0	0	210	60	0	0	0		
C&I	600	*Total tonnes x assumed %*	110	41	22	32	5	12	202	7	6	160	2	1	0		
Overall composition (tonnes) (weighted average)			294	221	570	222	12	34	742	36	614	1252	10	5	0		
Adjusted for fixing green waste tipping to complete diversion calculations			294	221	428	222	12	34	742	36	614	1252	10	5	0		
Diversion potential (%) - small tip floor option 2		*T+T estimate (informed by prior work)*	13%	0%	13%	20%	20%	0%	0%	0%	0%	0%	0%	0%			
Diversion potential (%) - medium tip floor option 3 lower bound		*T+T estimate (informed by prior work)*	25.0%	0.0%	25.0%	40.0%	40.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Diversion potential (%) - medium tip floor option 3 upper bound		*T+T estimate (informed by prior work) - [additional scenario with breakdown required for grant application]*	50.0%	0.0%	50.0%	80.0%	80.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
Diversion potential (%) - large tip sort floor option 4		*T+T estimate (informed by prior work)*	50.0%	0.0%	50.0%	80.0%	80.0%	0.0%	0.0%	0	60.0%	50.0%	0	0			

Source links:
SWAP full report (wellington.govt.nz)
2015-ACTNoWaste-landfill-and-Transfer-Station-audit-report.pdf

Tonnes per annum

		Paper	Plastic	Organics	Non metals	Non metals	Glass	Textiles	Tertiary Paper	Rubble	Timber	Rubber	hazardous			Total
Diversion potential (tonnes) - small tip floor option 2	*T+T estimate (informed by prior work)*	37	0	53	44	2	0	0	0	0	0	0	0	0		137
Diversion potential (tonnes) - medium tip floor option 3 (lower bound)	*T+T estimate (informed by prior work)*	74	0	107	89	5	0	0	0	0	0	0	0	0		274
Diversion potential (tonnes) - medium tip floor option 3 (upper bound)	*T+T estimate (informed by prior work) - [additional scenario with breakdown required for grant application]*	147	0	214	177	9	0	0	0	0	0	0	0	0		650
Diversion potential (tonnes) - large tip floor option 4	*T+T estimate (informed by prior work)*	147	0	214	177	9	0	0	0	368	626	0	0	0		1542

Summary of diversion by material

	TPA diverted through each option [Breakdown required for grant application purposes]			
	Option 2	Option 3 low	Option 3 high	Source
Green waste	206	274	392	See above with 5 % added to reflect induced users in option 2 and 10 % for option 3
Cardboard	39	81	162	See above with 5 % added to reflect induced users in option 2 and 10 % for option 3
Ferrous	47	98	195	See above with 5 % added to reflect induced users in option 2 and 10 % for option 3
Non ferrous	3	10	10	See above with 5 % added to reflect induced users in option 2 and 10 % for option 3
Paint	50	50	50	5 yearly average at Boroondara approximately 100 tonnes, conservatively estimate 50 %, source PaintBack Annual Report 2021/22

Derivation of Transfer Station External Material Potential Diversion - Key Assumptions

Option	Diversion opportunities											
	Green waste tippers can access green waste	Small tip sort floor	Medium tip floor	Large tip floor	Larger household recovery area with potential induced users	Reuse shop	Separate C&D waste	Bulky items	Paint	Current diversion rate	New diversion rate	Increase
	Diverting existing	Diverting existing	Diverting existing	Diverting existing	Induced tonnes	Induced tonnes	Induced tonnes					
Option 1	143	NA	NA	NA	NA	NA	NA		NA	25%	27%	3%
Option 2	143	137	NA	NA	10	NA	NA		50	25%	31%	6%
Option 3 (lower bound)	143	NA	274	NA	21	NA	NA		50	25%	33%	9%
Option 3 (upper bound)	143	NA	650	NA	21	NA	NA		50	25%	40%	16%
Option 4	143	NA	NA	1542	42	376	160		50	25%	61%	36%
Comment	The existing green waste drop off does not allow all tipper types. Assumption: 25 % of green waste currently sent to landfill through general waste can be diverted.	4 % of general waste stream can be pulled out and diverted	7 % of general waste stream can be pulled out diverted (lower bound) (15 % used for upper bound)	40 % of general waste stream can be pulled out an diverted	A larger more accessible household drop off induces 5,10 and 20 % additional tonnes for options 2,3 and 4 respectively	A reuse shop will induce additional tonnes for diversion (estimate from Australian charity shop study [1])	The bulky refuse area in Option 4 will allow segregation and sorting of C&D waste	Not included	5 yearly average at Boroondara approximately 100 tonnes, conservatively estimate 50 %, source PaintBack Annual Review 2021/22 [2]			

1. Measuring the Impact of the Charitable Reuse and Recycling SectorA comparative study using clothing donated to charitable enterprises, MRA Consulting3 March 2021, Accessed from https://www.charitablerecycling.org.au/wp-content/uploads/2021/06/Charitable-Recycling-Australia-Recycled-Clothing-Impact-Assessment-240521.pdf
2. Paintback Annual Review, 2020/21, accessed from https://www.paintback.com.au/media-centre/publications/annual-review-202021

Appendix C Cost estimate assumptions

CLIENT City of Stonnington
Contract No. 1089303

PROJECT Stonnington Transfer Station Upgrade Business Case

Schedule of prices estimate
OPTION 1

Item	Description	Quantity	Unit	Rate	Amount	Source	Comment
1	Procure and place smaller e-waste skip	1	LS	2000	$2,000	Online	1500 L Front load bin. Price rounded up to include delivery.
2	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	1	LS	50,000	$50,000	T+T - estimate from previous work	Could also procure a portable purpose built storage systems that is relocatable
3	Installation of cover area over bunkers for mattresses - longer term mattress storage	1	LS	5000	$5,000	T+T - estimate from previous work	Canvas cover with steel frame only over existing concrete bunker.
4	Reconfiguration of final bay for stacking mattresses under cover including installation of a frame to stack mattresses upright. Includes removal of existing hazardous waste drop off area, and construction of frame for mattress	1	LS		$5,000	Nominal provision	Steel mattress stacking frame.
5	Line painting and/or temporary barriers for pedestrian residual waste drop off access	1	LS	7000	$7,000	Nominal provision	Small area for line marking but increased to reflect minimal visit cost. Procurement of additional retractable temporary barriers.
6	Expansion of flammables storage area (lockable cage, larger cages)	1	LS	5000	$6,500	Online	Price rounded up to include delivery.
7	Static cardboard compactor	1	LS	$80,000	$80,000	Industry guidance	Nominal amount used. Price increased to reflect builders work in connection i.e. slab tolerances, weights, foundations bearing capacities etc.
8	Upgrade of all site signage	1	LS	$10,000	$10,000	Industry guidance	Replacing and upgrading all site signage
9	Site stormwater upgrades including additional pipework below ground and refurbishment of existing rainwater garden.	1	LS	$50,000	$50,000	Industry guidance	Does not include additional storm or waste water detention / retention / treatment. Does not include disposal of contaminated excavations if encountered.
10	Procurement of purpose designed battery container	1	LS		$10,000	Online	
11	New weighbridge	1	LS		$150,000	T+T - estimate from previous work	Includes weighbridge, installation costs and associated civil works

Subtotal			$	375,500
Preliminaries				
Mobilisation	0 No.	0		$0
Contractor preliminaries		15%	$	56,250
Overhead		10%		$43,175
Design & Approvals		8%	$	37,994
Subtotal			$	137,419
Contingency		25%	$	128,230
Grand Total			$	641,149

Exclusions:
Statutory body costs which in this instance would definitely include Melbourne Water but could include others

CLIENT City of Stonnington
Contract No. 1089303

PROJECT Stonnington Transfer Station Upgrade Business Case

Schedule of prices estimate
OPTION 2

Item	Description	Quantity	Unit	Rate	Amount	Source	Comment
1	Ancillary civil works - prep						
1.1	Demolish and clear existing structures on site	1	LS		$ 40,000.00	RLB revised estimate	Total area to demolish measured at 180m2. Demo of bunker areas @ $250/m2 = $20,000. Site entrances demo @ $200/m2 = $20,000. Total of $40,000.
1.2	Tree / vegetation clearance	100	m2	10	$ 1,000.00	Industry guidance	Vegetation clearance adjacent to site entrance (up to 100 m2)
2	Ancillary civil works - site-wide civil works						
2.1	Site stormwater upgrades including additional pipework below ground and refurbishment of existing rainwater garden	1	LS	$50,000	50,000	Industry guidance	Does not include additional storm or waste water detention / retention / treatment. Does not include disposal of contaminated excavations if encountered.
2.2	Upgrade of all site signage	1	LS	$20,000	$20,000	RLB revised estimate	Replacing and upgrading all site signage
2.3	Prepatory works prior to reinstating asphalt under bunker area removed	80	m2	$50	$4,000	Industry guidance	Removal of earth and fill with engineered fill
2.4	Reinstating asphalt under bunker area	80	m2	$60	$4,800	Industry guidance	
2.5	Line painting and/or temporary barriers for managing traffic flow in new recycling drop off area	1	LS	$25,000	$ 25,000.00	Industry guidance	
3	Site entry/exit civil works						
3.1	Importing, placing and compacting material to form base for pavement	40	m3	$100		Industry guidance	Area of approx 100m2 at entries, this allows for 400mm of fill
3.2	Placing asphalt	200	m2	$120	$ 34,000.00	RLB revised estimate	Allowance of $10k added for new crossovers at entry/exit.
3.3	Site fencing and gates	1	LS	$40,000	$ 40,000.00	RLB revised estimate	Reinstatement of fence and gates at Weir St entrance (2100 high security fence of galvanised chain mesh) and allowance for new automatic gates
3.4	Traffic management	1	LS	$5,000	$ 5,000.00	Industry guidance	
4	Tipping floor						
4.1	Line painting for new residual waste tip floor access	1	LS	5000	$ 5,000.00	Industry guidance	
4.2	Chain link barriers	20	m	350	$ 7,000.00	Industry guidance	
4.3	Cover shed (no walls)	150	m2	650	$ 100,000.00	RLB revised estimate	Structural framing and colorbond roofing
4.4	Concrete slab	150	m2	360	$ 54,000.00	RLB revised estimate	
4.5	Stormwater controls and bunding	1	LS	50000	$ 50,000.00	Industry guidance	
5	Hazardous waste						

Item	Description	Quantity	Unit	Rate	Amount	Source	Comment
5.1	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	1	LS	50,000	$50,000	T+T - estimate from previous work	Could also procure a portable purpose built storage systems that is relocatable
5.2	Procurement of purpose designed battery container	1	LS		$ 10,000.00	Industry guidance	
6	Hazardous waste - paint and gas cylinders						
6.1	Supply of paint drop off bins	1	LS	1000	$ 1,000.00	RLB revised estimate	Allowance for delivery / install of supplied bin
6.2	Supply of lockable cages	1	LS	6500	$ 6,500.00	RLB revised estimate	Allow for bolting, delivery and install
7	Mattress						
7.1	Reconfiguration of final bay for stacking mattresses under cover including installation of a frame to stack mattresses upright. Includes removal of existing hazardous waste drop off area, and construction of frame for mattress	1	LS		$5,000	Nominal provision	Steel mattress stacking frame.
8	Cardboard compactor						
8.1	Static cardboard compactor	1	LS	$80,000	$80,000	Nominal provision	Nominal amount used. Price increased to reflect builders work in connection i.e. slab tolerances, weights, foundations bearing capacities etc.
9	Household recyclables						
9.1	Three wall shed	30	m2	900	$27,000	RLB revised estimate	Structural steel, columns beams and rafter with roof over (no pad).
10	Other site items						
10.1	Portable building	20	m2	1000	$20,000		No amenities are included
10.2	New weighbridge	1	LS		$ 150,000.00	T+T - estimate from previous work	
10.3	Site lighting allowance				$ 30,000.00	RLB revised estimate	Minor allowance for site lighting - 2-3 light poles throughout site

Subtotal			$	819,300
Preliminaries				
Contaminated materials allowance			$	50,000
Mobilisation	1 No.	30000	$	30,000
Contractor preliminaries		15%	$	134,895
Overhead		10%	$	103,420
Design & Approvals		15%	$	170,642
Subtotal			$	488,957
Contingency		25%	$	327,064
Grand Total			$	1,635,321

Exclusions:
Statutory body costs:
Liaising with planners on site planning requirements
Liaising with Victoria Roads for reconfiguration and widening of site entrance
Liaising with Melbourne Water for configuration of overflow paths and covering bunkers

CLIENT City of Stonnington
Contract 1089303
PROJECT Stonnington Transfer Station Upgrade Business Case

Schedule of prices estimate
OPTION 3

Item	Description	Quantity	Unit	Rate	Amount	Source	Comment
1	Demolition						
1.1	Decomissioning and deconstruction of bunker area, saw tooth drop off areas road entrances and site boundary to create area for the ramp	1	LS	250000	$ 250,000.00	Industry guidance and known local disposal rates	Deconstruction, removal,haul and disposal of 1000 m2. Does not include disposal of contaminated excavations if encountered.
2	Site preliminary works						
2.1	Stripping of bunker area to remove hardstand	1200	m2	50	$ 60,000.00	Industry guidance	Does not include disposal of contaminated excavations if encountered.
2.2	Preparation of ground surface for earthworks	1200	m2	50	$ 60,000.00	Industry guidance	
3	Earthworks						
3.1	Import and place fill to extend raised platform and create ramp to operational area	1900	m3	100	$ 190,000.00	Industry guidance	
3.2	Build retaining walls for raised platform	60	m	2000	$ 120,000.00	RLB revised estimate	Retaining wall 2.2 m high. Piled steel U beams with precast concrete slabs placed between
4	Site-wide civil works						
4.1	Site stormwater upgrade	1	LS	400000	$ 400,000.00	RLB revised estimate	$100/m2 and additional allowance of $125k made for expected retention and redirection systems - assumed little reuse of existing possible
4.2	Upgrade all site signage	1	LS	20000	$ 20,000.00	Industry guidance	
4.3	Assess and upgrade site road system (paint, separation bunds, judder bars etc TBC)	1	LS	55000	$ 55,000.00	RLB revised estimate	
4.4	Supply and install barriers / guard rails - site wide, includes tipping floor area, and moving floor, and four bays	1	LS	20000	$ 20,000.00	RLB revised estimate	
4.5	Re-asphalt surface	1	LS	375,000	$ 375,000.00	RLB revised estimate	Allowed for concrete slab pavement ($150/m2) to 1500m2 of raised area. Heavy duty asphalt ($120/m2) to remainder of site 1250m2
5	Tipping floor						
5.1	Line painting for new residual waste tip floor access	1	LS	5000	$ 5,000.00	Industry guidance	
5.2	Chain link barriers	20	m	350	$ 7,000.00	Industry guidance	
5.3	Supply and install shed (cover no walls)	380	m²	650	$ 247,000.00	RLB revised estimate	Structural steel, columns beams and rafter with roof over. Pad included separately.
5.4	Concrete slab	380	m²	300	$ 114,000.00	Industry guidance	Reinforced 25 MPa concrete slab on fill (up to 300mm thick)
5.5	Supply and install drain and sumps to manage runoff from tipping floor, and associated collection, storage and treatment system	1	LS	100000	$ 100,000.00	Industry guidance	
6	Resource recovery area (small items)						

Item	Description	Quantity	Unit	Rate	Amount	Source	Comment
6.1	Supply and install shed (cover no walls)	25	m²	650	$ 16,250.00	RLB revised estimate	Structural steel, columns beams and rafter with roof over (no pad).
6.2	Procure and place skip bins to collect recyclable material	3	No.	2000	$ 6,000.00	RLB revised estimate	
6.3	Establishment of ramp down to operations area (kerbing, barriers and fall protection)	1	LS	100000	$ 100,000.00	Industry guidance	Allowance of $900/m2 would to cover all requirements for fill/retaining etc.
7	Resource recovery area (bulky items)						
7.1	Supply and install hook bin shed (no walls)	200	m²	650	$ 130,000.00	RLB revised estimate	Structural steel, columns beams and rafter with roof over (no pad).
7.2	Configuration of hook bin drop off area (ie barriers)	1	LS	10000	$ 10,000.00	Industry guidance	Minor barriers and metalwork.
7.3	Static cardboard compactor	1	LS	80000	$ 80,000.00	Industry guidance	
7.4	Reconfiguration of final bay for stacking mattresses under cover including installation of a frame to stack mattresses upright. Includes removal of existing hazardous waste drop off area, and construction of	1	LS	5000	$ 5,000.00	Online	Steel mattress stacking frame.
8	Hazardous waste drop off						
8.1	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	1	LS	50000	$ 50,000.00	T+T - previous work	Could also procure a portable purpose built storage systems that is relocatable
8.2	Battery collection container	1	LS		$ 10,000.00	Online	
9	Widening of road to introduce layby at site entrance						
9.1	Widening of Weir St to create a traffic layby at site entrance	1	LS	80000	$ 500,000.00	RLB revised estimate	Generic lane construction rate used. Cost will be refined if option is selected. Noting that road is adjacent to HV lines and removal of large billboard signage is required, there may need to be a greater allowance for these works and $200,000 has been added as a nominal provision.
10	Other site items						
10.1	New weighbridge	1	LS	150000	$ 150,000.00	T+T - previous work	
10.2	Site Lighting allowance	1	LS	137500	$ 137,500.00	RLB revised estimate	Allowance for lighting throughout site area, assuming unable to reuse existing and lighting will be required throughout. Allowance will cover approx 10 - medium/full light poles and other lighting

Subtotal			$	3,217,750
Preliminaries				
Contaminated materials allowance				100000
Mobilisation	1	No.	30000	$ 30,000
Contractor preliminaries			15%	$ 502,163
Overhead			10%	$ 384,991
Design & Approvals			15%	$ 635,236
Subtotal			$	1,652,389
Contingency			25%	$ 1,217,535
Grand Total			$	6,087,674

Exclusions:
Statutory body costs:
Liaising with planners on site planning requirements
Liaising with Victoria Roads for reconfiguration and widening of site entrance
Liaising with Melbourne Water for configuration of overflow paths and covering bunkers

CLIENT City of Stonnington
Contract 1089303
Stonnington Transfer Station Upgrade
PROJECT Business Case

Schedule of prices estimate
OPTION 4

Item	Description	Quantity	Unit	Rate	Amount	Source	Comments
1	Demolition						
1.1	Demolition of site buildings	1	LS	340000	$ 340,000.00	RLB revised estimate	Demolition and disposal of materials associated with depot buildings, walking floor and SES ar $400/m2
1.2	Demolition of transfer station buildings and asphalt	1	LS	220,000	$ 220,000.00	RLB revised estimate	Assumed 550m2 of building to be demolished
1.3	Demolition and excavation of raised transfer station and existing infrastructure	1	LS	360000	$ 360,000.00	RLB revised estimate	Cut rate of $50/m3 applied to remove raised area. Removal of hardstand and fittings / light structures included at $100/m2
2	Site preliminary works						
2.1	Stripping vegetation	400	m²	10	$ 4,000.00	Industry guidance	
2.2	Prepare ground surface for reprofiling	1	LS	600000	$ 525,000.00	RLB revised estimate	Stripping of asphalt, removal of 0.3 m across entire site (7000m2). Stripping of asphalt has been allowed for at $75/m2 to allow for disposal assuming top layers will be contaminated
3	Earthworks						
3.1	Cut and fill to reprofile site to design profile to meet fall requirements	3500	m³	75	$ 262,500.00	RLB revised estimate	Area is extent that will be reprofiled and asphalted (7000m2). Assumed reprofiling will be within 0.5 m.
3.2	Upgrade pavement throughout reprofiled site extent	7000	m²	150	$ 1,050,000.00	RLB revised estimate	Area is site extent that will be reprofiled and repaved. Allowance for concrete paving 150 mm thick.
4	Site-wide civil works						
4.1	Site stormwater upgrade	1	LS	700000	$ 700,000.00	RLB revised estimate	Allowance of $100/m2 site area
4.2	Upgrade all site signage	1	LS	40000	$ 40,000.00	RLB revised estimate	
4.3	Construct site road system (paint, separation bunds, judder bars etc TBC)	760	m	160	$ 121,600.00	RLB revised estimate	Length of access road for public, and for semi trailers includes kerbs and barriers
4.4	Construct site pedestrian system (paint, railing, etc TBC)	115	m	200	$ 23,000.00	RLB revised estimate	Allowance for railing along one side of path + line marking and other fitments as required.
4.5	Supply and install barriers / guard rails - site wide, includes tipping floor area, and moving floor, and four bays	340	m	350	$ 119,000.00	Industry guidance	Barriers along pedestrian paths (as above) barriers along the bulky and refuse drop off - 90m collection area bulky - 45m recycling drop off - 90m
5	Recycling drop off area						
5.1	Line painting for pull over area	1	LS	5000	$ 5,000.00	Industry guidance	

Item	Description	Quantity	Unit	Rate	Amount	Source	Comments
5.2	Procure and place skip bins to collect recyclable material in addition to what site already has	8	LS	2000	$ 16,000.00	Industry guidance	1500 L Front load bin. Price rounded up to include delivery.
5.3	Façade for front of bins	1	LS	50000	$ 50,000.00	Nominal amount	
5.4	Hazardous waste drop off area	1	LS	50000	$ 50,000.00	T+T previous project	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)
5.5	Battery collection	1	LS	10000	$ 10,000.00	Online	
5.6	Paint collection	1	LS	1000	$ 1,000.00	Revised RLB estimate	
5.7	Procure a new cardboard compactor (automatic or semi-automatic horizontal compactor)	1	LS	80000	$ 80,000.00	Industry guidance	
6	Bulky and refuse drop off area						
6.1	Supply and install dual weighbridge and gatehouse	1	LS	350000	$ 350,000.00	RLB revised estimate	Includes weighbridge and portacom gatehouse
6.2	Supply and construction of carparks (approx. 10 parks) including paint/signage, wheel stops, fencing	80	m	50	$ 4,000.00	Industry guidance	
6.3	Supply and install tipping floor shed (shed three walls)	600	m²	900	$ 540,000.00	RLB revised estimate	Structural steel, columns beams and rafter with walls and roof over. Pad included separately.
6.4	Supply and install slab in the base of tipping floor area	600	m²	300	$ 180,000.00	Industry guidance	Reinforced 25 MPa concrete slab on fill (up to 300mm thick)
6.5	Supply and install drain and sumps to manage runoff from tipping floor, and associated collection and storage system	1	LS	200000	$ 200,000.00	Industry guidance	
6.6	Line painting and/or temporary barriers for pedestrian residual waste drop off access	1	LS	5000	$ 5,000.00	Industry guidance	
6.7	Hazardous waste - aerosols and gas cylinders - Supply of lockable cages	1	LS	5000	$ 5,000.00	Online	
6.8	Refuse hopper, compactor	1	LS	1,000,000	$ 1,000,000.00	Supplier	Wastetech high level quote for walking floor, compactor and hopper. Assumes semis can be reused.
7	Community and reuse area						
7.1	Supply and install bunkers for collection of bulky materials	1	LS	50000	$ 50,000.00	Industry guidance	Two concrete bunkers for storage of bulky items for collection
7.2	Construction of reuse shop	320	m²	1500	$ 480,000.00	RLB revised estimate	Four sided steel shed (no amenities). Fully enclosed structure, including minor allowance for finishes / lighting etc.
7.3	Construction of community area / café	75	m²	3500	$ 262,500.00	RLB revised estimate	Includes amenities
7.4	Site office	20	m2	1000	$20,000	Industry guidance	Portable buildings (no amenities)
8	Other site items						

Item	Description	Quantity	Unit	Rate	Amount	Source	Comments
8.1	Lighting	1	LS	25000	$ 350,000.00	RLB revised estimate	A full lighting allowance (assumes no lighting retained). Allowed for $50/m2 of site area for full height lighting poles throughout site (30 no.)
8.2	Gates, Fencing	1	LS	20000	$ 57,000.00	RLB revised estimate	Approx 60m of street frontage to be fenced at $450/m + 2 automatic gates @$15,000 each
8.3	IT Connectivity & POS	1	LS	10000	$ 10,000.00	Industry guidance	IT connectivity will be required at weighbridge, reuse shop, site office and community area. Assume can be connected into existing site comms and can run through electrical conduits (wiring and connection cost only).
8.4	Electrical connection to facilities	1	LS	90,000	$ 90,000.00	RLB revised estimate	Assumed new trenching and conduits required. Connection into existing site mains assumed. Approx 200m of conduits / trenching required @200/m and allowance of $50k for connections.

Subtotal			$	7,580,600
Preliminaries				
Contaminated materials allowance				250000
Mobilisation	1 No.	30000	$	30,000
Contractor preliminaries		15%	$	1,179,090
Overhead		10%	$	903,969
Design & Approvals		15%	$	1,193,239
Subtotal			$	3,556,298
Contingency		25%	$	2,784,225
Grand Total			$	13,921,123

Exclusions:
Statutory body costs:
Liaising with planners on site planning requirements
Liaising with Melbourne Water for configuration of overflow paths and covering bunkers

Appendix D QS review report

CONCEPT ESTIMATE PEER REVIEW DRAFT

23 MARCH 2023

STONNINGTON TRANSFER STATION

WEIR STREET, MALVERN

TONKIN AND TAYLOR

RLB Rider Levett Bucknall

PREPARED FOR

Tonkin and Taylor
Kings Technology Park, Level 3, 99 Coventry Street, Southbank, Vic 3006

SUBMITTED ON

23 March 2023

SUBMITTED BY

Rider Levett Bucknall Victoria Pty Ltd
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PROJECT NO.

222724

OUR REF

TM427_CEPR

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23 March 2023
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MT/TM/ap

Tonkin and Taylor
Kings Technology Park, Level 3, 99 Coventry Street
Southbank, Vic 3006

Attention: Caroline Turnbull

Dear Caroline

CONCEPT ESTIMATE PEER REVIEW DRAFT
STONNINGTON TRANSFER STATION
WEIR ST, MALVERN

Thank you for the opportunity to undertake a peer review of the Concept Cost Estimate produced by Tonkin and Taylor.

We trust that our report is of assistance and will be pleased to provide any further information, which you may require upon request.

Yours faithfully

Tony Moleta

Managing Director
Rider Levett Bucknall Victoria Pty Ltd

email: tony.Moleta@au.rlb.com

Enclosed:

cc:

TABLE OF CONTENTS

1. SCOPE OF REPORT

RLB have been instructed by Tonkin and Taylor to review and recommend changes (if any) to the cost estimates for the four (4) conceptual design options prepared for the Stonnington Transfer Station.

2. COST SUMMARIES

Tonkin and Taylor's Revised Estimate summary for each option following RLB review is tabled below:

Description	Option 1	Option 2	Option 3	Option 4
Demolition	$-	$41,000	$250,000	$920,000
Site Preliminary Works	$-	$103,800	$120,000	$529,000
Earthworks	$-	$-	$310,000	$262,500
Civil Works	$-	$79,000	$870,000	$2,053,600
Tipping Floor	$-	$216,000	$473,000	$-
Resource Recovery Area	$165,500	$112,000	$347,250	$2,496,000
Hazardous Waste Drop Off	$-	$67,500	$60,000	$-
Community and Reuse Area	$-	$-	$-	$812,500
Other Site Items	$210,000	$200,000	$787,500	$507,000
Contaminated Materials Allowance	$-	$50,000	$100,000	$250,000
Subtotal Direct Costs	**$375,500**	**$869,300**	**$3,317,750**	**$7,830,600**
Preliminaries / Overheads	$99,425	$268,315	$917,154	$2,113,059
Subtotal Construction Costs	**$474,925**	**$1,137,615**	**$4,234,904**	**$9,943,659**
Design & Approvals	$37,994	$170,642	$635,236	$1,193,239
Subtotal Project Costs (Excl. Contingency)	**$512,919**	**$1,308,257**	**$4,870,139**	**$11,136,898**
Contingency (25%)	$128,230	$327,064	$1,217,535	$2,784,225
Total Project Costs	**$641,149**	**$1,635,321**	**$6,087,674**	**$13,921,123**

The estimate compiled by Tonkin and Taylor is generally structured in a logical structure and is easy to follow.

3. REVIEW METHODOLOGY

In carrying out this review we have:

- Taken receipt of project documentation
- Reviewed the project documentation and attended a meeting with the project team to run through any associated queries or clarifications
- Reviewed the cost estimate, including:
  - Scope of the project
  - Key cost drivers, including key rates and quantities
  - Checked cost estimate for gross errors
  - Contractors Preliminaries
  - Contractor's Overheads and Profit
  - Design & approvals
  - Contingencies
- Prepared this Peer Review Report; and
- Responded to any draft report queries and updated the report

4. KEY FINDINGS

4.1. ESTIMATE LOGIC

RLB reviewed the structure of the estimate and the use of logical cost breakdown structure (CBS) including Contractor's Direct Costs and Indirect Costs, Client Costs and Risk & Contingency. RLB generally, agree in principle with the logic of the estimate and make the following comments:

4.2. CONTRACTOR'S DIRECT COSTS

The Contractor's Direct Costs were largely found to be in accordance with the scope of work and deemed adequate for this type and size of project at the conceptual design stage.

A number of items were adjusted in order to reflect the scope intended and current market pricing. RLB have generally applied rates encountered at the higher range of market pricing to reflect the lack of design maturity at this stage of the project and the potential for scope to increase as further design work is undertaken.

The largest changes are in the following areas:

- Placement of asphalt
- Construction of concrete pavement
- Site gates
- Sheds (including steel framing, roof cladding and rainwater goods)
- Concrete slabs
- Site stormwater allowances
- Road furniture and kerbs

- Reuse shop and cafe construction

Additionally, allowances for site lighting were added to options 3 and 4, and an allowance for contaminated materials added to options 2, 3 and 4.

For details of the changes made during the RLB peer review, please refer to *Attachment 1*.

The following scope items are recommended to be considered for inclusion within the estimate:

1. Water connections for amenities and cafe usage (option 4 only)
2. Existing road maintenance allowance
3. Site Electrical infrastructure costs (options 1, 2 and 3 only)
4. Update of lighting allocations for external areas, sheds, and amenities (option 1 only)

4.3. CONTRACTOR′S INDIRECT COSTS

Our key findings are listed below:

- Contractor preliminaries have been included at 15% of direct costs. This is considered reasonable for a project this size.
- Design and approvals have been included at 8% for option 1, which appears reasonable given the limited scope of works.
- Design and approvals for options 2, 3 and 4 have been included at 15%. This appears reasonable for options 2 and 3 due to the relatively minor scope of works, and the costs resulting from this application ($98,670 and $430,950 respectively) appear reasonable. However, the 15% when applied to option 4 results in a design and approvals allowance of $1,486,881 which appears high for the scope of works. RLB would consider an allowance of 12% (resulting in a value of $1,189,505) to be more reasonable for option 4.
- Corporate Overhead and Profit are in line with what would be expected for a project of this size.
- Indirect costs have been altered to be applied multiplicatively rather than additively to the project cost.

4.4. RISK AND CONTINGENCY

RLB has reviewed the Risk/contingency allocations provides within the estimate and the values are generally in line with benchmarked contingency provisions required for this type of project at the current design stage.

Should the business case require any governmental funding, there may be requirements for probabilistic contingency calculations identifying the P50, P60 and P90 contingencies either based on a probabilistic or deterministic approach as identified within the RTCC guide or any relevant guide for funding.

4.5. CASHFLOW AND ESCALATION

We note there has been no inclusion for Escalation within this project. Should the project be procured to be delivered within the first half of 2023, Escalation may be excluded. RLB recommend the allowances for escalation be reviewed based on the project expected program.

RLB can advise on the following escalation horizons to provide an indication of the potential cost impacts of the timing of the project, based on the RLB TPI sourced from www.rlb.com/ccc:

- 1-year escalation (March 2024): 3.9% increase on estimate values from today
- 3-year escalation (March 2026): 11.3% increase on estimate values from today

Estimate Value	Option 1	Option 2	Option 3	Option 4
First Half of 2023	$641,149	$1,635,321	$6,087,674	$13,921,123
1 Year Escalation (March 2024)	$662,306	$1,689,286	$6,288,567	$14,380,519
3 Year Escalation (Match 2026)	$713,598	$1,820,112	$6,775,581	$15,494,209

4.6. EXCLUSIONS

RLB note that Tonkin and Taylor have outlined the following exclusions for each option:

Option 1:

- Statutory body costs which in this instance would definitely include Melbourne Water but could include others;

Option 2 and 3:

- Statutory body costs, including: Liaising with planners on site planning requirements, liaising with Victoria Roads for reconfiguration and widening of site entrance and liaising with Melbourne Water for configuration of overflow paths and covering bunkers;

Option 4:

- Statutory body costs, including: Liaising with planners on site planning requirements and liaising with Melbourne Water for configuration of overflow paths and covering bunkers.

RLB recommend that the above items be included in the total project budget to accurately reflect the estimated total project costs.

5. DISCLAIMER

This document is commercial in confidence and contains privileged information. The information contained in the document is not to be given to or discussed with anyone other than relevant employees acting on this project. Privacy protection control systems designed to ensure the highest security standards and confidentiality are to be implemented.

6. LIMITATIONS OF REVIEW

We have not prepared an independent CAPEX and cost estimate for comparative review and consequently have not carried out a detailed line by line review of the Tonkin and Taylor estimate.

The review undertaken has not measured all items, however spot measures and spot rate build-ups have been applied to items of higher value and consequence.

7. ATTACHMENTS

ATTACHMENT 1

TONKIN AND TAYLOR ESTIMATE

ATTACHMENT 2

CONCEPT DESIGN

ATTACHMENT 1
TONKIN AND TAYLOR ESTIMATE

CLIENT City of Stonnington
Contract No. 1089303

Red indicates where changes were proposed and accepted

PROJECT Stonnington Transfer Station Upgrade Business Case

Schedule of prices estimate
OPTION 1

Item	Description	Quantity	Unit	Rate	Amount	RLB Revised Amount	Source	Comment	RLB Comments
1	Procure and place smaller e-waste skip	1	LS	2000	$2,000	$2,000	Online	1500 L Front load bin. Price rounded up to include delivery.	Rate appears reasonable, $1500 for skip bin + $500 for delivery / install
2	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	1	LS	50,000	$50,000	$50,000	T+T - estimate from previous work	Could also procure a portable purpose built storage systems that is relocatable	Does this require plumbing or services connection? If not appears high
3	Installation of cover area over bunkers for mattresses - longer term mattress storage	1	LS	5000	$5,000	$5,000	T+T - estimate from previous work	Canvas cover with steel frame only over existing concrete bunker.	Total area to cover is roughly 20m2. Equates to $250/m2 which seems reasonable for steel framing + canvas
4	Reconfiguration of final bay for stacking mattresses under cover including installation of a frame to stack mattresses upright. Includes removal of existing hazardous waste drop off area, and construction of frame for mattress	1	LS		$5,000	$5,000	Nominal provision	Steel mattress stacking frame.	Allow $1.5k for removal of existing, $2k for mattress frame and $1.5k for installation, other works. Appears reasonable.
5	Line painting and/or temporary barriers for pedestrian residual waste drop off access	1	LS	7000	$7,000	$7,000	Nominal provision	Small area for line marking but increased to reflect minimal visit cost. Procurement of additional retractable temporary barriers.	20m of barriers ($1780), line marking (approx 1 day for crew of 4) ~ $5k appears reasonable.
6	Expansion of flammables storage area (lockable cage, larger cages)	1	LS	5000	$6,000	$6,500	Online	Price rounded up to include delivery.	Unsure of number of cages required, rate would allow for around 4 which appears reasonable.
7	Static cardboard compactor	1	LS	$80,000	$80,000	$80,000	Industry guidance	Nominal amount used. Price increased to reflect builders work in connection i.e. slab tolerances, weights, foundations bearing capacities etc.	If allowing for a full compactor bin (up to $60,000 depending on size). Assuming that area is required to be structurally upgraded, the allowance of $20,000 for approx. 20m2 is very healthy and potentially high.
8	Upgrade of all site signage	1	LS	$10,000	$10,000	$10,000	Industry guidance	Replacing and upgrading all site signage	Unsure of quantity required. Current sum would allow for between 10-20 signs of various sizes
9	Site stormwater upgrades including additional pipework below ground and refurbishment of existing rainwater garden.	1	LS	$50,000	$50,000	$50,000	Industry guidance	Does not include additional storm or waste water detention / retention / treatment. Does not include disposal of contaminated excavations if encountered.	Drawings indicate roughly 50m of stormwater to be upgraded. Unsure of size of pipe but allowing $500/m for removal and install would leave $25k for rainwater gardens and reinstatement of pavementst. Appears reasonable
13	Procurement of purpose designed battery container	1	LS		$ 10,000.00	$10,000	Online		145L cage priced at $5,525. T&T to confirm size required here
15	New weighbridge	1	LS		$ 150,000.00	$150,000	T+T - estimate from previous work	Includes weighbridge, installation costs and associated civil works	Previous work would suggest weighbridge procurement and install costs to be between $70k-90k. Uncertain of scale of civil work required, but allowing for removal of existing, new drainage and road surface + potential rebuild of adjacent retaining wall, the allowance of $60k for approx 50m2 area ($1,200/m2) appears reasonable.
	Subtotal				**$ 375,000**	**$ 375,500**			
	Preliminaries								
	Mobilisation	0	No.	0	$ -	$0		On costs made to be multiplicative	
	Contractor preliminaries			15%	$ 56,250	$ 56,250			All appear reasonable
	Overhead			10%	$ 37,500	$43,175			
	Design & Approvals			8%	$ 30,000	$ 37,994			
	Subtotal				**$ 123,750**	**$ 137,419**			
	Contingency			25%	**$ 124,688**	**$ 128,230**			
	Grand Total				**$ 623,438**	**$ 641,149**			

Exclusions:
Statutory body costs which in this instance would definitely include Melbourne Water but could include others

CLIENT City of Stonnington
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PROJECT Stonnington Transfer Station Upgrade Business Case

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Schedule of prices estimate
OPTION 2

Item	Description	Quantity	Unit	Rate	Amount	RLB Revised Amount	Source	Comment	RLB Comments
1	**Ancillary civil works - prep**								
1.1	Demolish and clear existing structures on site	1	LS		$ 87,000.00	$ 40,000.00	T+T estimate	Deconstruction, removal,haul and disposal of four bunkers (80 m2), 2 x site entrances (fencing, kerb,sidewalk) (40+20 m2). Does not include disposal of contaminated excavations if encountered.	Total area to demolish measured at 180m2. Demo of bunker areas @ $250/m2 = $20,000. Site entrances demo @ $200/m2 = $20,000. Total of $40,000. Current allowance appears high
1.2	Tree / vegetation clearance	100	m2	10	$ 1,000.00	$ 1,000.00	Industry guidance	Vegetation clearance adjacent to site entrance (up to 100 m2)	Appears reasonable given multiple small sites
2	**Ancillary civil works - site-wide civil works**								
3	Site stormwater upgrades including additional pipework below ground and refurbishment of existing rainwater garden	1	LS	$50,000	50,000	$ 50,000.00	Industry guidance	Does not include additional storm or waste water detention / retention / treatment. Does not include disposal of contaminated excavations if encountered.	As per option 1. Appears reasonable
2.2	Upgrade of all site signage	1	LS	$10,000	$10,000	$ 20,000.00	Industry guidance	Replacing and upgrading all site signage	As per Option 1. Allows for 10-20 signs. Would expect a higher allowance given more signs to be impacted in option 2
2.3	Prepatory works prior to reinstating asphalt under bunker area removed	80	m2	$50	$4,000	$ 4,000.00	Industry guidance		Assuming this will cover for removal of earth and fill with engineered fill. If so, appears reasonable
2.4	Reinstating asphalt under bunker area	80	m2	$60	$4,800	$ 4,800.00	Industry guidance		Asphalt rates are healthy, but given likely need for a heavier duty surface to facilitiate larger vehicles and plant, appears reasonable
2.5	Line painting and/or temporary barriers for managing traffic flow in new recycling drop off area	1	LS	$25,000	$ 25,000.00	$ 25,000.00	Industry guidance		Extent of barriers not known. However, applying $6/m2 line marking rate to site areas gives $16k for line marking, leaving $9k for barrier works.
3	**Site entry/exit civil works**								
3.1	Importing, placing and compacting material to form base for pavement	40	m3	$100	$ 4,000.00		Industry guidance		Rates appear reasonable. Given area of approx 100m2 at entries, this allows for 400mm of fill, which should be adequate to cover any pavement type
3.2	Placing asphalt	200	m2	$60	$ 12,000.00	$ 34,000.00	Industry guidance		Rate appears reasonable given heavy vehicle use. Area nominated includes for 100m2 nominated on drawings + additional allowance for tie-in to existing and other modifications not shown. Allowance of $10k for new crossovers at entry/exit. $120/m2 for full depth asphalt
3.3	Site fencing and gates	1	LS	$10,000	$ 10,000.00	$ 40,000.00	Industry guidance	Reinstatement of fence and gates at Weir St entrance (2100 high security fence of galvanised chain mesh) and allowance for new hinged gates (not automatic).	fence rate appears reasonable, allows for approx. 13m of fence. Allowance for automatic gates (assumed 2 no. @ $15,000 each)
3.4	Traffic management	1	LS	$5,000	$ 5,000.00	$ 5,000.00	Industry guidance		Generally would consider as part of prelims, but not an unreasonable allowance. Would cover around 3 days of TM, which would allow for installation of new gates / fence
3	**Tipping floor**								
3.1	Line painting for new residual waste tip floor access	1	LS	5000	$ 5,000.00	$ 5,000.00	Industry guidance		Rate appears reasonable for area required (150m2). $5k should cover this
3.2	Chain link barriers	20	m	350	$ 7,000.00	$ 7,000.00	Industry guidance		Qty appears reasonable and rate would cover chain link required
3.3	Cover shed (no walls)	150	m2	300	$ 45,000.00	$ 100,000.00	Industry guidance		Rate may be too low for structural framing + what would be assumed to be colorbond roofing. Rate closer to $550-650/m2 would be more appropriate. Recommended total cost $90-100k
3.4	Concrete slab	45	m3	200	$ 9,000.00	$ 54,000.00	Industry guidance	Reinforced 25 MPa concrete slab on fill (up to 300mm thick)	$60/m2 for concrete slab on ground is too low. Would consider $250-350/m2 more appropriate depending on reinforcement/thickness, ground beams, subbase preparations etc.. Suggest allowance of $54k for area.
3.5	Stormwater controls and bunding	1	LS	50000	$ 50,000.00	$ 50,000.00	Industry guidance		Nature of bunding and stormwater is unknown. Allowance is quite high for area affected (150m2: $330/m2), but should cover required scope
4	**Hazardous waste**								
4.1	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	1	LS	50,000	$50,000	$ 50,000.00	T+T - estimate from previous work	Could also procure a portable purpose built storage systems that is relocatable	As per option 1. Appears reasonable
4.2	Procurement of purpose designed battery container	1	LS		$ 10,000.00	$ 10,000.00	Industry guidance		As per option 1. Appears reasonable depending on size of cage required
6	**Hazardous waste - paint and gas cylinders**								
6.1	Supply of paint drop off bins	1	LS	0		$ 1,000.00	Industry guidance	Assumption these can be sourced from PaintBack	Allowance for delivery / install - say $1k
6.2	Supply of lockable cages	1	LS	5000	$ 5,000.00	$ 6,500.00	Industry guidance		$6k was allowed for this in option 1 - Allow for bolting, delivery and install (flat pack equipment only) Please also advise on required number?
7	**Mattress**								
7.1	Reconfiguration of final bay for stacking mattresses under cover including installation of a frame to stack mattresses upright. Includes removal of existing hazardous waste drop off area, and construction of frame for mattress	1	LS		$5,000	$ 5,000.00	Nominal provision	Steel mattress stacking frame.	As per option 1. Please advise on extent of demolitiona dn remediation. This may impact on the allowance provided.
8	**Cardboard compactor**								
8.1	Static cardboard compactor	1	LS	$80,000	$80,000	$ 80,000.00	Nominal provision	Nominal amount used. Price increased to reflect builders work in connection i.e. slab tolerances, weights, foundations bearing capacities etc.	As per option 1. Appears reasonable
9	**Household recyclables**								
9.1	Three wall shed	30	m2	300	$9,000	$27,000	Industry guidance	Structural steel, columns beams and rafter with roof over (no pad).	As per 3.3. $650/m2 would cover your roofing structure + foundations, add an additional $250/m2 for walls. Total of $900/m2
9	**Site office**								
9.1	Portable building	20	m2	1000	$20,000	$20,000		No amenities are included	If fitout/amenities are excluded, this appears reasonable.
11	New weighbridge	1	LS		$ 150,000.00	$ 150,000.00	T+T - estimate from previous work		As per option 1. Appears reasonable
12	Site lighting allowance					$ 30,000.00			Minor allowance for site lighting - 2-3 light poles throughout site

Subtotal			**$ 657,800**	**$ 819,300**	
Preliminaries					
Contaminated materials allowance				$ 50,000	On costs made to be multiplicative
Mobilisation	1 No.	30000	$ 30,000	$ 30,000	
Contractor preliminaries		15%	$ 98,670	$ 134,895	
Overhead		10%	$ 65,780	$ 103,420	
Design & Approvals		15%	$ 98,670	$ 170,642	
Subtotal			**$ 194,450**	**$ 488,957**	
Contingency		25%	**$ 213,063**	**$ 327,064**	
Grand Total			**$ 1,065,313**	**$ 1,635,321**	$ 570,008

Exclusions:
Statutory body costs:
Liaising with planners on site planning requirements
Liaising with Victoria Roads for reconfiguration and widening of site entrance
Liaising with Melbourne Water for configuration of overflow paths and covering bunkers

CLIENT City of Stonnington
Contract I 1089303
PROJECT Stonnington Transfer Station Upgrade Business Case

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Schedule of prices estimate
OPTION 3

Item	Description	Quantity	Unit	Rate	Amount	RLB Revised Amount	Source	Comment	RLB Comments
1	**Demolition**								
1.1	Decomissioning and deconstruction of bunker area, saw tooth drop off areas road entrances and site boundary to create area for the ramp	1	LS	250000	**$ 250,000.00**	**$ 250,000.00**	Industry guidance and known local disposal rates	Deconstruction, removal,haul and disposal of 1000 m2. Does not include disposal of contaminated excavations if encountered.	Uncertain of extent of demolition (i.e. site area for option 3 is 2,750m2). If taking 1000m2 as demo area, allowance of $250/m2 appears reasonable.
2	**Site preliminary works**								
2.1	Stripping of bunker area to remove hardstand	1200	m2	50	$ 60,000.00	$ 60,000.00	Industry guidance	Does not include disposal of contaminated excavations if encountered.	Qty matches that on drawings, rate appears reasonable but would only cover removal of hardstand
2.2	Preparation of ground surface for earthworks	1200	m2	50	$ 60,000.00	$ 60,000.00	Industry guidance		Does this include for additional fill material? If so appears reasonable, otherwise allowance seems too high
3	**Earthworks**								
3.1	Import and place fill to extend raised platform and create ramp to operational area	1900	m3	100	$ 190,000.00	$ 190,000.00	Industry guidance		Uncertain of area required. Rate does appear reasonable however
3.2	Build retaining walls for raised platform	60	m	15000	$ 900,000.00	$ 120,000.00	Industry guidance	Retaining wall 2.2 m high. Piled steel U beams with precast concrete slabs placed between	Retaining wall quantity unable to be verified. Rate applied appears very high. Similar walls recently have been priced between $1200-2000/m depending on type and size. $2000/m adopted here
4	**Site-wide civil works**								
4.1	Site stormwater upgrade	1	LS	150000	$ 150,000.00	$ 400,000.00	Industry guidance	Does not include disposal of contaminated excavations if encountered.	Extent of stormwater upgrade unclear. Considering site area of 2750m2, allowance of $55/m2 appears low. Would expect $100/m2 to be more appropriate given design maturity. Additional allowance of $125k made for expected retention and redirection systems - assumed little reuse of existing possible
4.2	Upgrade all site signage	1	LS	20000	$ 20,000.00	$ 20,000.00	Industry guidance		As per option 1. Appears reasonable given expanded site area
4.3	Assess and upgrade site road system (paint, separation bunds, judder bars etc TBC)	1	LS	20000	$ 20,000.00	$ 55,000.00	Industry guidance		Allowance is roughly $10/m2 site area. Would consider $20/m2 more likely to be appropriate.
4.4	Supply and install barriers / guard rails - site wide, includes tipping floor area, and moving floor, and four bays	50	m	350	$ 17,500.00	$ 20,000.00	Industry guidance		If simple chain link barriers, rate appears appropriate. If intention is for full strength guard rails, rate should be increased to roughly $400/m. Unsure of quantity
4.5	Re-asphalt surface	1500	m2	60	$ 90,000.00	$ 375,000.00	Industry guidance	Allowance for concrete paving 150 mm thick - over raised platform area extension.	Allowed for concrete slab pavement ($150/m2) to 1500m2 of raised area. Heavy duty asphalt ($120/m2) to remainder of site 1250m2
5	**Tipping floor**								
5.1	Line painting for new residual waste tip floor access	1	LS	5000	$ 5,000.00	$ 5,000.00	Industry guidance		approx 400m2 of area. Rate is higher than expected. Would assume $4k
5.2	Chain link barriers	20	m	350	$ 7,000.00	$ 7,000.00	Industry guidance		Rate appears reasonable
5.3	Supply and install shed (cover no walls)	380	m²	300	$ 114,000.00	$ 247,000.00	Industry guidance	Structural steel, columns beams and rafter with roof over. Pad included separately.	As per option 2 - would expect $650/m2 to cover foundations, structure and roof covering / rainwater goods
5.4	Concrete slab	380	m²	300	$ 114,000.00	$ 114,000.00	Industry guidance	Reinforced 25 MPa concrete slab on fill (up to 300mm thick)	Rate appears reasonable
5.5	Supply and install drain and sumps to manage runoff from tipping floor, and associated collection, storage and treatment system	1	LS	100000	$ 100,000.00	$ 100,000.00	Industry guidance		Unable to verify allowance, scope uknown. Allowance may not be enough depending on eventual size of storage / treatment system
6	**Resource recovery area (small items)**								
6.1	Supply and install shed (cover no walls)	25	m²	300	$ 7,500.00	$ 16,250.00	Industry guidance	Structural steel, columns beams and rafter with roof over (no pad).	As per option 2 - would expect $650/m2 to cover foundations, structure and roof covering / rainwater goods
6.2	Procure and place skip bins to collect recyclable material	3	No.	1000	$ 3,000.00	$ 6,000.00	Online		Rate for skips in option 1 was $2000/each and may be more appropriate, but would depend on actual size
6.3	Establishment of ramp down to operations area (kerbing, barriers and fall protection)	1	LS	100000	$ 100,000.00	$ 100,000.00	Industry guidance		Ramp area appears to be approx. 110m2. Allowance of $900/m2 would be adequate and cover all requirement for fill/retaining etc.
7	**Resource recovery area (bulky items)**								
7.1	Supply and install hook bin shed (no walls)	200	m²	300	$ 60,000.00	$ 130,000.00	Industry guidance	Structural steel, columns beams and rafter with roof over (no pad).	As per option 2 - would expect $650/m2 to cover foundations, structure and roof covering / rainwater goods
7.2	Configuration of hook bin drop off area (ie barriers)	1	LS	10000	$ 10,000.00	$ 10,000.00	Industry guidance		Scope unknown. Allowance of $50/m2 would cover minor barriers and metalwork.
7.3	Static cardboard compactor	1	LS	80000	$ 80,000.00	$ 80,000.00	Industry guidance		As per option 1. Appears reasonable
7.4	Reconfiguration of final bay for stacking mattresses under cover including installation of a frame to stack mattresses upright. Includes removal of existing hazardous waste drop off area, and construction of	1	LS	5000	$ 5,000.00	$ 5,000.00	Online	Steel mattress stacking frame.	As per option 1. Appears reasonable
8	**Hazardous waste drop off**								
8.1	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	1	LS	50000	$ 50,000.00	$ 50,000.00	T+T - previous work	Could also procure a portable purpose built storage systems that is relocatable	As per option 1. Appears reasonable
8.2	Battery collection container	1	LS		$ 10,000.00	$ 10,000.00	Online		145L cage priced at $5,525. T&T to confirm size required here
8	**Widening of road to introduce layby at site entrance**								
7.3	Widening of Weir St to create a traffic layby at site entrance	1	LS	80000	$ 300,000.00	$ 500,000.00	Industry guidance	Generic lane construction rate used. Cost will be refined if option is selected.	Uncertain of extent of widening. Noting that road is adjacent to HV lines and removal of large billboard signage is required, there may need to be a greater allowance for these works.
11	New weighbridge	1	LS		$ 150,000.00	$ 150,000.00	T+T - previous work		As per option 1. Appears reasonable
12	Site Lighting allowance	1	LS			$ 137,500.00			New item - allowance for lighting throughout site area, assuming unable to reuse existing and lighting will be required throughout. Allowance will cover approx 10 - medium/full light poles and other lighting
	Subtotal				**$ 2,873,000**	**$ 3,217,750**			
	Preliminaries								
	Contaminated materials allowance					$ 100,000			
	Mobilisation	1	No.	30000	$ 30,000	$ 30,000			
	Contractor preliminaries			15%	$ 430,950	$ 502,163			
	Overhead			10%	$ 287,300	$ 384,991			
	Design & Approvals			15%	$ 430,950	$ 635,236			
	Subtotal				**$ 1,179,200**	**$ 1,652,389**			
	Contingency			25%	**$ 1,013,050**	**$ 1,217,535**			
	Grand Total				**$ 5,065,250**	**$ 6,087,674**	$ 1,022,424		

Exclusions:
Statutory body costs:
Liaising with planners on site planning requirements
Liaising with Victoria Roads for reconfiguration and widening of site entrance
Liaising with Melbourne Water for configuration of overflow paths and covering bunkers

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Schedule of prices estimate
OPTION 4

Item	Description	Quantity	Unit	Rate	Amount	RLB Revised Amount	Source	Comments	RLB Comments
1	**Demolition**								
1.1	Demolition of site buildings	1	LS	580000	$ 580,000.00	$ 340,000.00	Industry guidance and known local disposal rates	Demolition and disposal of materials associated with depot buildings, walking floor and SES. Does not include disposal of contaminated excavations if encountered.	Would consider $400/m2 to be adequate to cover demolition of existing structures.
1.2	Demolition of transfer station buildings and asphalt	1	LS	230,000	$ 230,000.00	$ 220,000.00	Industry guidance and known local disposal rates	Does not include disposal of contaminated excavations if encountered.	As above. Assumed 550m2 of building to be demolished
1.3	Demolition and excavation of raised transfer station and existing infrastructure	1	LS	650000	$ 650,000.00	$ 360,000.00	Industry guidance and known local disposal rates	Demolition and disposal of materials associated with raised transfer station (assumes fill can not be reused and needs to be disposed of). Does not include disposal of contaminated excavations if encountered.	Cut rate of $50/m3 applied to remove raised area. Removal of hardstand and fittings / light structures included at $100/m2
2	**Site preliminary works**								
2.1	Stripping vegetation	400	m²	10	$ 4,000.00	$ 4,000.00	Industry guidance		Appears reasonable
2.2	Prepare ground surface for reprofiling	1	LS	600000	$ 600,000.00	$ 525,000.00	Industry guidance	Stripping of asphalt, removal of 0.3 m across entire site (7000m2).	Stripping of asphalt has been allowed for at $75/m2 to allow for disposal assuming top layers will be contaminated
3	**Earthworks**								
3.1	Cut and fill to reprofile site to design profile to meet fall requirements	3500	m³	50	$ 175,000.00	$ 262,500.00	Industry guidance	Area is extent that will be reprofiled and asphalted (7000m2). Assumed reprofiling will be within 0.5 m.	Cut and fill extents unknown. Blended rate of $75/m3 adopted (assumes more filling than cutting)
4	Upgrade pavement throughout reprofiled site extent	7000	m²	60	$ 420,000.00	$ 1,050,000.00	Industry guidance	Area is site extent that will be reprofiled and repaved. Allowance for concrete paving 150 mm thick.	As per option 3 - $150/m2 for concrete pavement
5	**Site-wide civil works**								
5.1	Site stormwater upgrade	1	LS	150000	$ 150,000.00	$ 700,000.00	Industry guidance		As per option 3 - allowance of $100/m2 site area would be more appropriate given design maturity. Current allowance of $20/m2 would not be sufficient
5.2	Upgrade all site signage	1	LS	20000	$ 20,000.00	$ 40,000.00	Industry guidance		Given area of works, would consider roughly twice as many signs as other options and would expect allowance to be around $40k as a result
5.3	Construct site road system (paint, separation bunds, judder bars etc TBC)	760	m	50	$ 38,000.00	$ 121,600.00	Industry guidance	Length of access road for public, and for semi trailers	If this is intended to cover kerbs and other barriers, would expect rates closer to $160/road m (2 x $80/m kerbs)
5.4	Construct site pedestrian system (paint, railing, etc TBC)	115	m	50	$ 5,750.00	$ 23,000.00	Industry guidance	Adjacent recycling drop - 40m Adjacent café and parking - 50m Adjacent reuse shop - 25m	If railing is required along entire length of pedestrian area, would consider rate of $200/m to be more appropriate. (allowance for railing along one side of path + line marking and other fitments as required)
5.5	Supply and install barriers / guard rails - site wide, includes tipping floor area, and moving floor, and four bays	340	m	350	$ 119,000.00	$ 119,000.00	Industry guidance	Barriers along pedestrian paths (as above) barriers along the bulky and refuse drop off - 90m collection area bulky - 45m recycling drop off - 90m	Rate appears reasonable
6	**Recycling drop off area**								
6.1	Line painting for pull over area	1	LS	5000	$ 5,000.00	$ 5,000.00	Industry guidance		Appears reasonable for area required
6.2	Procure and place skip bins to collect recyclable material in addition to what site already has	8	LS	2000	$ 16,000.00	$ 16,000.00	Industry guidance	1500 L Front load bin. Price rounded up to include delivery.	Appears reasonable, matches option 1
6.3	Façade for front of bins	1	LS	50000	$ 50,000.00	$ 50,000.00	Nominal amount		Area of cladding required is uncertain. Assuming 100m2 of cladding, $500/m2 is reasonable for cladding, framing and painting
6.4	Hazardous waste drop off area	1	LS	50000	$ 50,000.00	$ 50,000.00	T+T previous project	New hazardous waste drop off containment system (covered 3 wall shed, secondary containment system, spill kit)	As per option 1, appears reasonable
6.5	Battery collection	1	LS		$ 10,000.00	$ 10,000.00	Online		As per option 1, appears reasonable, but size to be confirmed
6.6	Paint collection					$ 1,000.00		Assumption these can be sourced from PaintBack	Installation allowance of $1k provided
6.7	Procure a new cardboard compactor (automatic or semi-automatic horizontal compactor)	1	LS	80000	$ 80,000.00	$ 80,000.00	Industry guidance		As per option 1, appears reasonable
7	**Bulky and refuse drop off area**								
7.1	Construct base of weighbridge - import, place and compact hardfill material AP40 to form minimum thickness of 100mm below the weighbridge	15	m³	100	$ 1,500.00		Industry guidance		Would consider the allowances in other options to be baseline ($150k per weighbridge.) Add additional $50k for gatehouse and gates
7.2	Construct base of weighbridge - sand blinding for weighbridge - 300 mm thickness	45	m³	75	$ 3,375.00		Industry guidance		
7.3	Supply and install dual weighbridge and gatehouse	1	LS	200000	$ 220,000.00	$ 350,000.00	T+T recent project	Includes weighbridge and portacom gatehouse	
7.4	Supply and construction of carparks (approx. 10 parks) including paint/signage, wheel stops, fencing	80	m	50	$ 4,000.00	$ 4,000.00	Industry guidance		$400/space allowance appears reasonable
7.5	Supply and install tipping floor shed (shed three walls)	600	m²	750	$ 450,000.00	$ 540,000.00	Industry guidance	Structural steel, columns beams and rafter with walls and roof over. Pad included separately.	As per option 2 - $650/m2 would cover your roofing structure + foundations, add an additional $250/m2 for walls. Total of $900/m2
7.6	Supply and install slab in the base of tipping floor area	600	m²	300	$ 180,000.00	$ 180,000.00	Industry guidance	Reinforced 25 MPa concrete slab on fill (up to 300mm thick)	Rate appears reasonable
7.7	Supply and install drain and sumps to manage runoff from tipping floor, and associated collection and storage system	1	LS	200000	$ 200,000.00	$ 200,000.00	Industry guidance		Unable to verify allowance, scope uknown. Allowance may not be enough depending on eventual size of storage / treatment system
7.8	Line painting and/or temporary barriers for pedestrian residual waste drop off access	1	LS	5000	$ 5,000.00	$ 5,000.00	Industry guidance		Rate appears reasonable
7.9	Hazardous waste - aerosols and gas cylinders - Supply of lockable cages	1	LS	5000	$ 5,000.00	$ 5,000.00	Online		As per option 1 - appears reasonable
8	Refuse hopper, compactor	1	LS	1,000,000	$ 1,000,000.00	$ 1,000,000.00		Wastetech high level quote for walking floor, compactor and hopper. Assumes semis can be reused.	Apparently matches quote from supplier
9	Community and reuse area								
10	Supply and install bunkers for collection of bulky materials	1	LS	50000	$ 50,000.00	$ 50,000.00	Industry guidance	Two concrete bunkers for storage of bulky items for collection	Assume bunkers will consist of insitu/precast walls - approx 70m2 of walls required to form bunkers (assumed 2m high). Allowance appears reasonable
10.1	Construction of reuse shop	320	m²	750	$ 240,000.00	$ 480,000.00	Industry guidance	Four sided steel shed (no amenities)	Would allow for approx $1,500/m2 for fully enclosed structure, including minor allowance for finishes / lighting etc.
10.2	Construction of community area / café	75	m²	1600	$ 120,000.00	$ 262,500.00	Industry guidance	Includes amenities	Fully fitted out café with amenities would benchmark to around $3500/m2 - assuming fully enclosed
10.3	Site office	20	m2	1000	$20,000	$20,000	Industry guidance	Portable buildings (no amenities)	Appears reasonable
10	**Other site items**								
11.1	Lighting	1	LS	25000	$ 25,000.00	$ 350,000.00	Industry guidance	Lighting will be required for weighbridge, reuse shop, site office, community area, refuse/bulky drop off.	Given extent of demo and rebuild. A full lighting allowance to site would be more appropriate (assumes no lighting retained). Allowed for $50/m2 of site area for full height lighting poles throughout site (30 no.)
11.2	Gates, Fencing	1	LS	20000	$ 20,000.00	$ 57,000.00	Industry guidance	Reinstatement of fence and gates at Weir St entrance (2100 high security fence of galvanised chain mesh) and allowance for new hinged gates (not automatic).	Approx 60m of street frontage to be fenced at $450/m + 2 automatic gates @$15,000 each
11.3	IT Connectivity & POS	1	LS	10000	$ 10,000.00	$10,000	Industry guidance	IT connectivity will be required at weighbridge, reuse shop, site office and community area.	Assume can be connected into existing site comms and can run through electrical conduits (wiring and connection cost only). Appears resonable
11.4	Electrical connection to facilities	1	LS	25,000	$ 25,000.00	$ 90,000.00	Industry guidance	Electrical connection will be required for weighbridge, reuse shop, site office, community area, refuse/bulky drop off.	Assumed new trenching and conduits required. Connection into existing site mains assumed. Approx 200m of conduits / trenching required @200/m and allowance of $50k for connections.
	Subtotal				**$ 5,781,625**	**$ 7,580,600**			

Preliminaries						On costs made to be multiplicative
Contaminated materials allowance					$ 250,000	Allowance added due to likelihood of contamination across large site area
Mobilisation	1 No.	30000	$ 30,000		$ 30,000	
Contractor preliminaries		15%	$ 867,244		$ 1,179,090	
Overhead		10%	$ 578,163		$ 903,969	
Design & Approvals		15%	$ 867,244		$ 1,193,239	adjusted to 12%
Subtotal			**$ 2,342,650**		**$ 3,556,298**	
Contingency		25%	**$ 2,031,069**		**$ 2,784,225**	
Grand Total			**$ 10,155,344**		**$ 13,921,123**	

Exclusions:
Statutory body costs:
Liaising with planners on site planning requirements
Liaising with Melbourne Water for configuration of overflow paths and covering bunkers

ATTACHMENT 2
CONCEPT DESIGN

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NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD IMAGERY DATE: 03/12/2022.

A3 SCALE 1:1000

0 5 10 15 20 30 40 50 (m)

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PROJECT No.	1089303	
DESIGNED	CATU	Dec.22
DRAWN	KMJA	Dec.22
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CLIENT **CITY OF STONNINGTON**

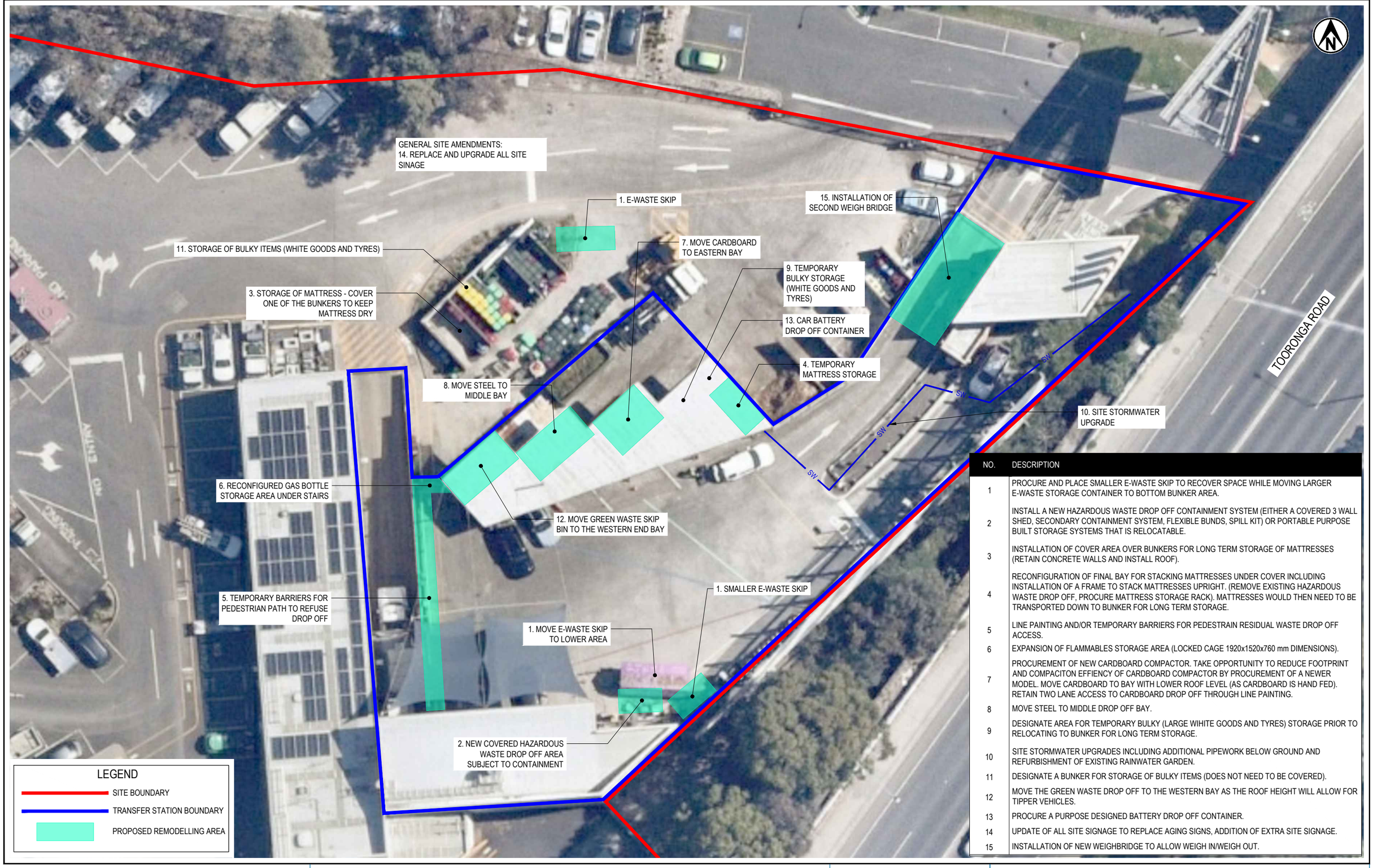
PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE SITE LOCALITY PLAN

UNDER REVISION 1

SCALE (A3) 1:1000 FIG No. 1089303-F01 REV 1

C:\12dSynergy\data\ALBTCAD\Stonnington Transfer Station Upgrade_1277\CAD\FIG\1089303.0000-F02.dwg 2023-Feb-01 4:49:05 PM Plotted By: KATHRYN JACKSON



NO.	DESCRIPTION
1	PROCURE AND PLACE SMALLER E-WASTE SKIP TO RECOVER SPACE WHILE MOVING LARGER E-WASTE STORAGE CONTAINER TO BOTTOM BUNKER AREA.
2	INSTALL A NEW HAZARDOUS WASTE DROP OFF CONTAINMENT SYSTEM (EITHER A COVERED 3 WALL SHED, SECONDARY CONTAINMENT SYSTEM, FLEXIBLE BUNDS, SPILL KIT) OR PORTABLE PURPOSE BUILT STORAGE SYSTEMS THAT IS RELOCATABLE.
3	INSTALLATION OF COVER AREA OVER BUNKERS FOR LONG TERM STORAGE OF MATTRESSES (RETAIN CONCRETE WALLS AND INSTALL ROOF).
4	RECONFIGURATION OF FINAL BAY FOR STACKING MATTRESSES UNDER COVER INCLUDING INSTALLATION OF A FRAME TO STACK MATTRESSES UPRIGHT. (REMOVE EXISTING HAZARDOUS WASTE DROP OFF, PROCURE MATTRESS STORAGE RACK). MATTRESSES WOULD THEN NEED TO BE TRANSPORTED DOWN TO BUNKER FOR LONG TERM STORAGE.
5	LINE PAINTING AND/OR TEMPORARY BARRIERS FOR PEDESTRAIN RESIDUAL WASTE DROP OFF ACCESS.
6	EXPANSION OF FLAMMABLES STORAGE AREA (LOCKED CAGE 1920x1520x760 mm DIMENSIONS).
7	PROCUREMENT OF NEW CARDBOARD COMPACTOR. TAKE OPPORTUNITY TO REDUCE FOOTPRINT AND COMPACITON EFFIENCY OF CARDBOARD COMPACTOR BY PROCUREMENT OF A NEWER MODEL. MOVE CARDBOARD TO BAY WITH LOWER ROOF LEVEL (AS CARDBOARD IS HAND FED). RETAIN TWO LANE ACCESS TO CARDBOARD DROP OFF THROUGH LINE PAINTING.
8	MOVE STEEL TO MIDDLE DROP OFF BAY.
9	DESIGNATE AREA FOR TEMPORARY BULKY (LARGE WIHITE GOODS AND TYRES) STORAGE PRIOR TO RELOCATING TO BUNKER FOR LONG TERM STORAGE.
10	SITE STORMWATER UPGRADES INCLUDING ADDITIONAL PIPEWORK BELOW GROUND AND REFURBISHMENT OF EXISTING RAINWATER GARDEN.
11	DESIGNATE A BUNKER FOR STORAGE OF BULKY ITEMS (DOES NOT NEED TO BE COVERED).
12	MOVE THE GREEN WASTE DROP OFF TO THE WESTERN BAY AS THE ROOF HEIGHT WILL ALLOW FOR TIPPER VEHICLES.
13	PROCURE A PURPOSE DESIGNED BATTERY DROP OFF CONTAINER.
14	UPDATE OF ALL SITE SIGNAGE TO REPLACE AGING SIGNS, ADDITION OF EXTRA SITE SIGNAGE.
15	INSTALLATION OF NEW WEIGHBRIDGE TO ALLOW WEIGH IN/WEIGH OUT.

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NOTES:
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1:300

0 3 6 9 12 15 (m)

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CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 1: MINOR REMODELLING

UNDER REVISION 1

SCALE (A3) 1:300 FIG No. 1089303-F02 REV 1

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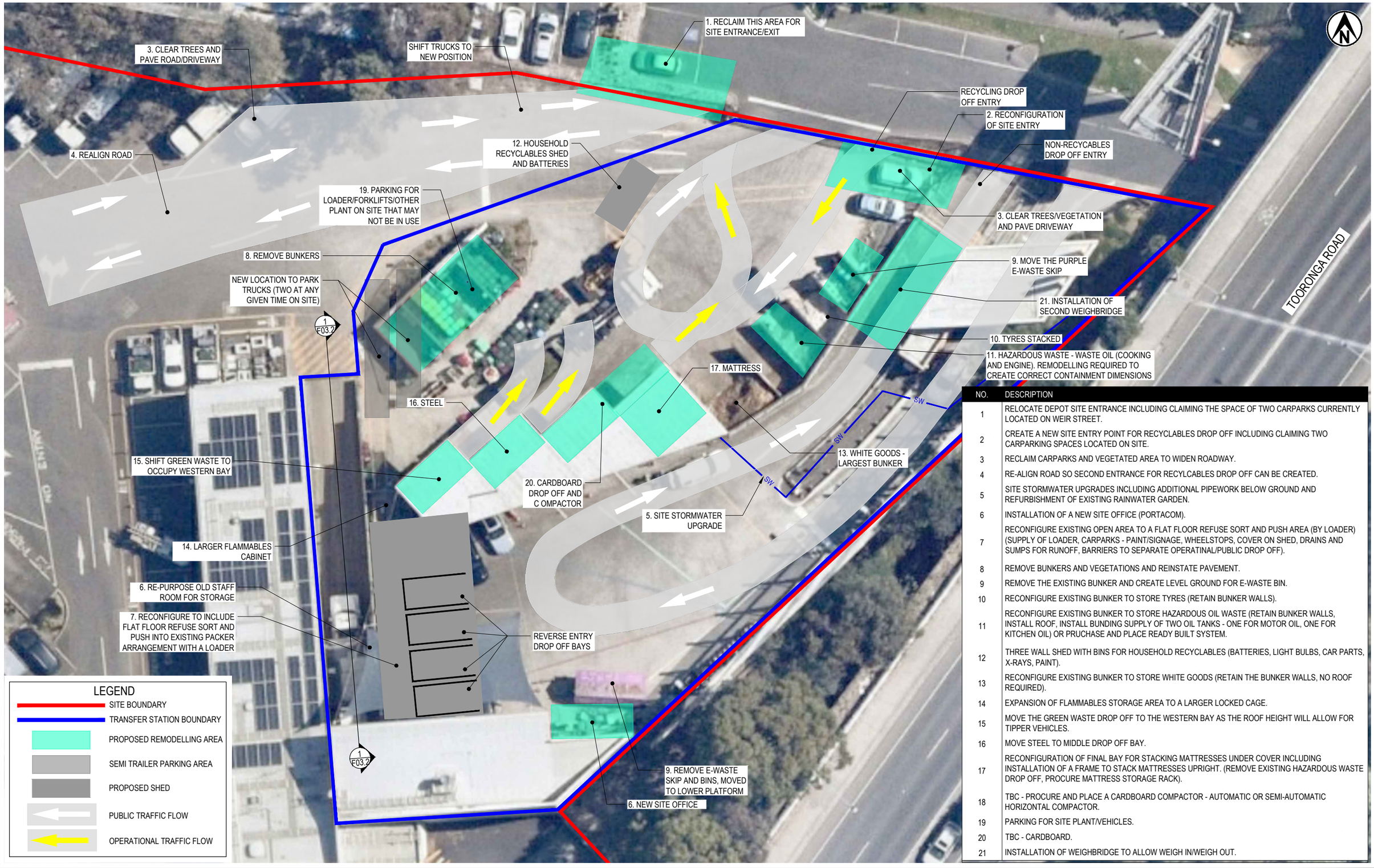

NO.	DESCRIPTION
1	RELOCATE DEPOT SITE ENTRANCE INCLUDING CLAIMING THE SPACE OF TWO CARPARKS CURRENTLY LOCATED ON WEIR STREET.
2	CREATE A NEW SITE ENTRY POINT FOR RECYCLABLES DROP OFF INCLUDING CLAIMING TWO CARPARKING SPACES LOCATED ON SITE.
3	RECLAIM CARPARKS AND VEGETATED AREA TO WIDEN ROADWAY.
4	RE-ALIGN ROAD SO SECOND ENTRANCE FOR RECYLCABLES DROP OFF CAN BE CREATED.
5	SITE STORMWATER UPGRADES INCLUDING ADDITIONAL PIPEWORK BELOW GROUND AND REFURBISHMENT OF EXISTING RAINWATER GARDEN.
6	INSTALLATION OF A NEW SITE OFFICE (PORTACOM).
7	RECONFIGURE EXISTING OPEN AREA TO A FLAT FLOOR REFUSE SORT AND PUSH AREA (BY LOADER) (SUPPLY OF LOADER, CARPARKS - PAINT/SIGNAGE, WHEELSTOPS, COVER ON SHED, DRAINS AND SUMPS FOR RUNOFF, BARRIERS TO SEPARATE OPERATINAL/PUBLIC DROP OFF).
8	REMOVE BUNKERS AND VEGETATIONS AND REINSTATE PAVEMENT.
9	REMOVE THE EXISTING BUNKER AND CREATE LEVEL GROUND FOR E-WASTE BIN.
10	RECONFIGURE EXISTING BUNKER TO STORE TYRES (RETAIN BUNKER WALLS).
11	RECONFIGURE EXISTING BUNKER TO STORE HAZARDOUS OIL WASTE (RETAIN BUNKER WALLS, INSTALL ROOF, INSTALL BUNDING SUPPLY OF TWO OIL TANKS - ONE FOR MOTOR OIL, ONE FOR KITCHEN OIL) OR PRUCHASE AND PLACE READY BUILT SYSTEM.
12	THREE WALL SHED WITH BINS FOR HOUSEHOLD RECYCLABLES (BATTERIES, LIGHT BULBS, CAR PARTS, X-RAYS, PAINT).
13	RECONFIGURE EXISTING BUNKER TO STORE WHITE GOODS (RETAIN THE BUNKER WALLS, NO ROOF REQUIRED).
14	EXPANSION OF FLAMMABLES STORAGE AREA TO A LARGER LOCKED CAGE.
15	MOVE THE GREEN WASTE DROP OFF TO THE WESTERN BAY AS THE ROOF HEIGHT WILL ALLOW FOR TIPPER VEHICLES.
16	MOVE STEEL TO MIDDLE DROP OFF BAY.
17	RECONFIGURATION OF FINAL BAY FOR STACKING MATTRESSES UNDER COVER INCLUDING INSTALLATION OF A FRAME TO STACK MATTRESSES UPRIGHT. (REMOVE EXISTING HAZARDOUS WASTE DROP OFF, PROCURE MATTRESS STORAGE RACK).
18	TBC - PROCURE AND PLACE A CARDBOARD COMPACTOR - AUTOMATIC OR SEMI-AUTOMATIC HORIZONTAL COMPACTOR.
19	PARKING FOR SITE PLANT/VEHICLES.
20	TBC - CARDBOARD.
21	INSTALLATION OF WEIGHBRIDGE TO ALLOW WEIGH IN/WEIGH OUT.

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NOTES:
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1:300

0 3 6 9 12 15 (m)

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CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 2: MINOR REMODELLING

UNDER REVISION 1

SCALE (A3) 1:300 FIG No. 1089303-F03.1 REV 1

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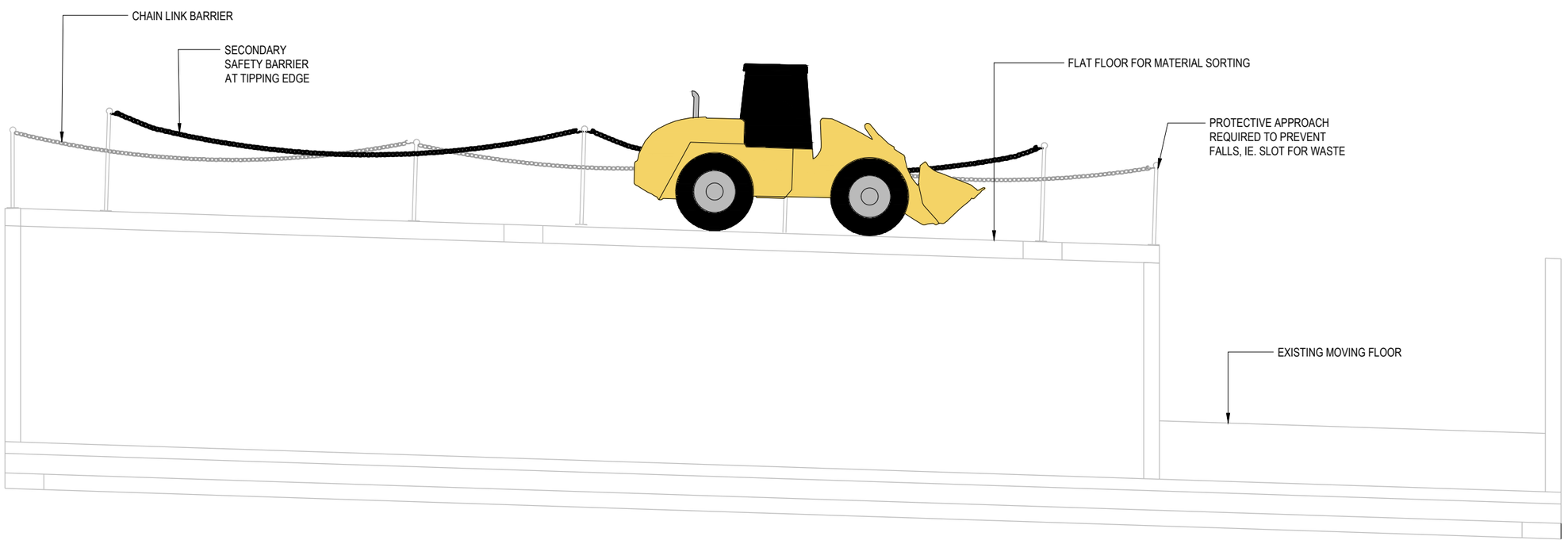

SECTION 1 INDICATIVE FLAT FLOOR SORT AREA (SEE NOTE 7 ON FIGURE 1089303-F03.1)
SCALE 1:125 F03.1

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NOTES:
1. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.

A3 SCALE 1:125

0 1 2 3 4 5 6 7 (m)

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CLIENT CITY OF STONNINGTON
PROJECT STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE
TITLE OPTION 2: SECTION

UNDER REVISION 1

SCALE (A3) 1:125 FIG No. 1089303-F03.2 REV 1

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LEGEND

- SITE BOUNDARY
- PROPOSED TRANSFER STATION BOUNDARY
- EXTENSION OF RAISED AREA
- OPERATIONS AREA
- EXISTING SITE FEATURES
- PROPOSED SHED
- BINS CONTAINING MATERIAL
- PROPOSED SITE OFFICE
- PUBLIC TRAFFIC FLOW
- OPERATIONAL TRAFFIC FLOW

NO.	DESCRIPTION
1	FILL BEHIND A RETAINING WALL TO EXTEND RAISED PLATFORM AT CURRENT TRANSFER STATION HEIGHT.
2	RESIDUAL WASTE DROP OFF ONTO TIPPING FLOOR FOR SORTING PRIOR TO PUSH ONTO WALKING FLOOR.
3	INSTALLATION OF A NEW SITE OFFICE (PORTABLE).
4	FLAMMABLE LOCKABLE STORAGE CAGE.
5	STEEL SHED ROOF (NO WALLS) OVER TIP FLOOR AREA.
6	STEEL SHED ROOF (NO WALLS) OVER BINS TO DROP OFF HOUSEHOLD RECYCLABLES (BATTERIES, LIGHT BULBS, CAR PARTS, X-RAYS, PAINT, HAZARDOUS WASTE).
7	ESTABLISHMENT OF RAMP ALONG BACK OF SITE FOR LOADER TO ENTER AND EXIT OPERATIONS AREA.
8	STORAGE OF EQUIPMENT AND AREA FOR AD HOC STOCKPILING IE BULKY WHITEWARE, TYRES.
9	ROAD RE-ALIGNMENT TO ALLOW SAW TOOTH TO PUSH FURTHER NORTH WITH OUT IMPACTING DEPOT AND OPERATIONAL VEHICLE (HOOK BIN TRUCK) ACCESS.
10	ESTABLISHMENT OF A NEW SAW TOOTH SHED TO FACILITATE THE DROP OFF OF GREEN WASTE, STEEL AND CARDBOARD INTO HOOK BINS BELOW. THE FINAL BAY WOULD BE USED FOR THE UNDERCOVER STORAGE OF MATTRESSES.
11	WIDEN ROAD AND CREATE LAYBY AREA INTO THE SITE TO CREATE ADDITIONAL QUEUING SPACE PRIOR TO WEIGHBRIDGE.
12	INSTALLATION OF SECOND WEIGHBRIDGE TO WEIGH IN/WEIGH OUT.

NOTES:
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A3 SCALE 1:500

0 5 10 15 20 25 (m)

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CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 3: FULL REBUILD WITH MINOR EXPANSION

UNDER REVISION 1

SCALE (A3) 1:500 FIG No. 1089303-F04 REV 1

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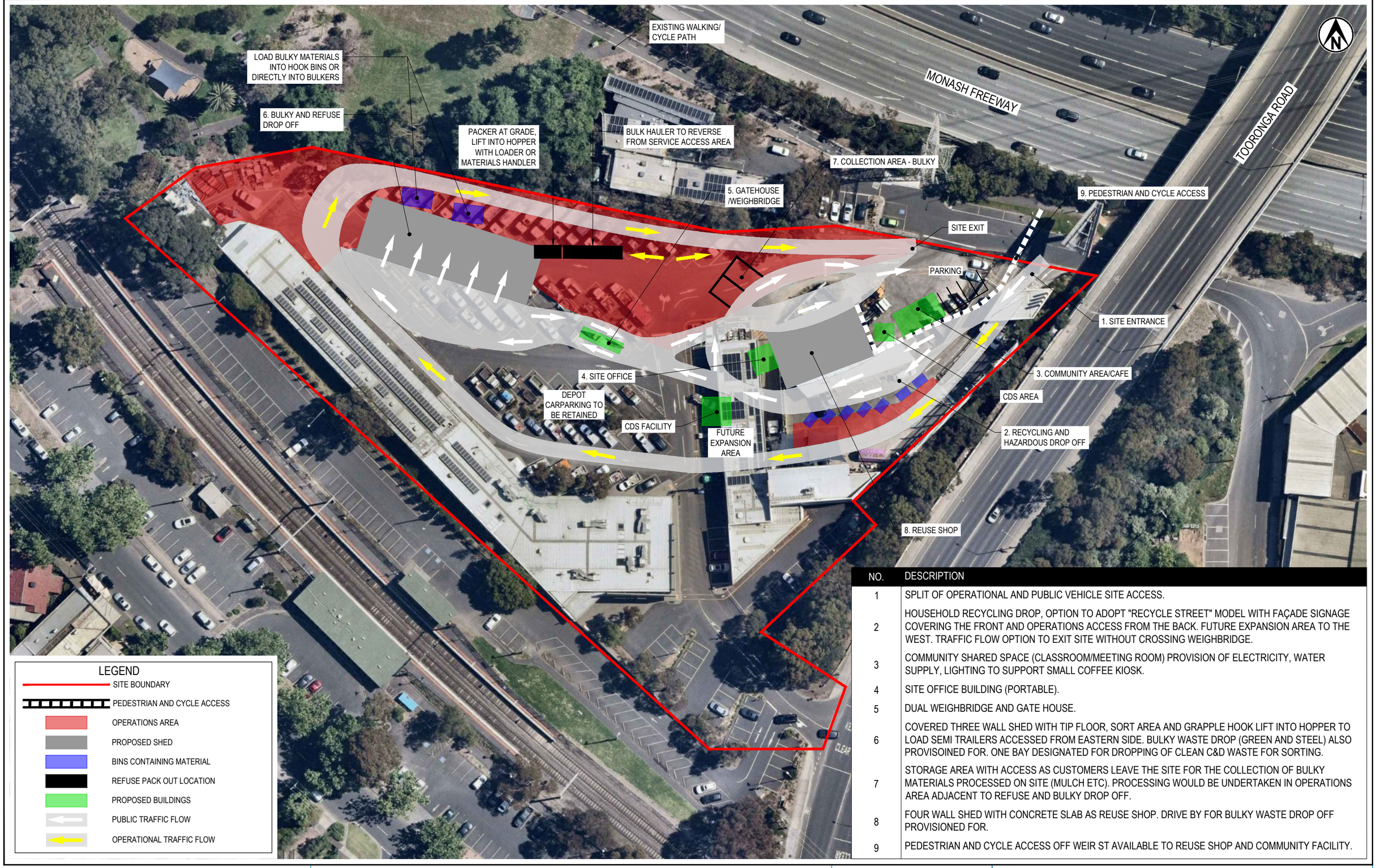

LEGEND

- SITE BOUNDARY
- PEDESTRIAN AND CYCLE ACCESS
- OPERATIONS AREA
- PROPOSED SHED
- BINS CONTAINING MATERIAL
- REFUSE PACK OUT LOCATION
- PROPOSED BUILDINGS
- PUBLIC TRAFFIC FLOW
- OPERATIONAL TRAFFIC FLOW

NO.	DESCRIPTION
1	SPLIT OF OPERATIONAL AND PUBLIC VEHICLE SITE ACCESS.
2	HOUSEHOLD RECYCLING DROP, OPTION TO ADOPT "RECYCLE STREET" MODEL WITH FAÇADE SIGNAGE COVERING THE FRONT AND OPERATIONS ACCESS FROM THE BACK. FUTURE EXPANSION AREA TO THE WEST. TRAFFIC FLOW OPTION TO EXIT SITE WITHOUT CROSSING WEIGHBRIDGE.
3	COMMUNITY SHARED SPACE (CLASSROOM/MEETING ROOM) PROVISION OF ELECTRICITY, WATER SUPPLY, LIGHTING TO SUPPORT SMALL COFFEE KIOSK.
4	SITE OFFICE BUILDING (PORTABLE).
5	DUAL WEIGHBRIDGE AND GATE HOUSE.
6	COVERED THREE WALL SHED WITH TIP FLOOR, SORT AREA AND GRAPPLE HOOK LIFT INTO HOPPER TO LOAD SEMI TRAILERS ACCESSED FROM EASTERN SIDE. BULKY WASTE DROP (GREEN AND STEEL) ALSO PROVISOINED FOR. ONE BAY DESIGNATED FOR DROPPING OF CLEAN C&D WASTE FOR SORTING.
7	STORAGE AREA WITH ACCESS AS CUSTOMERS LEAVE THE SITE FOR THE COLLECTION OF BULKY MATERIALS PROCESSED ON SITE (MULCH ETC). PROCESSING WOULD BE UNDERTAKEN IN OPERATIONS AREA ADJACENT TO REFUSE AND BULKY DROP OFF.
8	FOUR WALL SHED WITH CONCRETE SLAB AS REUSE SHOP. DRIVE BY FOR BULKY WASTE DROP OFF PROVISIONED FOR.
9	PEDESTRIAN AND CYCLE ACCESS OFF WEIR ST AVAILABLE TO REUSE SHOP AND COMMUNITY FACILITY.

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A3 SCALE 1:800

0 8 16 24 32 40 (m)

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CLIENT **CITY OF STONNINGTON**

PROJECT **STONNINGTON TRANSFER STATION UPGRADE BUSINESS CASE**

TITLE OPTION 4: REBUILD WITH MANOR EXPANSION INTO DEPOT

UNDER REVISION 1

SCALE (A3) 1:800 FIG No. 1089303-F05 REV 1

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