Low Impact Development Consulting

Waste Management Plan & Operations Guide

Education – St Peters Anglican College

61 Train Street, Broulee NSW 2537

Prepared for: Anglican Diocese of Canberra and Goulburn
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Date: 9/2/2023

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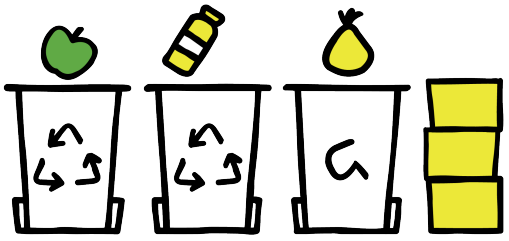

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1.0	26/7/2022	**WM Issue / Draft**	**LR**	**LR**
2.0	29/7/2022	**Revised**	**LR**	**LR**
3.0	31/1/2023	**Revised**	**LR**	**LR**
4.0	9/2/2023	**REVISED**	**LR**	**LR**

Disclaimer

The content of this document represents the entirety of work output or recommendations offered by LID Consulting for this particular project. This content supersedes all other verbal discussions undertaken by LID Consulting representatives in relation to this project.

Commercial waste calculations are based on rates provided by government organisations and adopted and used as an industry standard. Bin numbers and spatial requirements have been calculated in accordance with these guidelines. The end user requirements may vary from this depending on the business use, type and operational practice.

Contents

The approved Waste Management Plan (WMP) will be the model to be adopted for this development. Detailed design and as-built installation must incorporate the design proposed and approved under this WMP. Any revisions of the WMP or changes to the approved waste system of the development may require Council approval and may require a re-submitted Waste Management Plan. More detail is contained within this report.

LID acknowledges and pays respect to the Australian Aboriginal and Torres Strait Islander people, to their ancestors and elders, past, present and emerging, as the traditional custodians of the lands upon which we work and live. We recognise Aboriginal and Torres Strait Islander people's deep cultural and spiritual relationships to the water, land and sea, and their rich contribution to society.

1 Waste Summary

1.1 Proposed Development

Address: 61 Train Street, Broulee NSW 2537

Type: Education re-development
St Peters Anglican College

Application No. **DA0078/23**

The proposed development looks to update and extend the existing school facilities as it expands over the next 10 years. The existing P-12 school accommodated 704 students in 2022. This expansion will see an increase in students to 911 by 2032.

A private waste contractor (Cleanaway) is currently engaged to collect waste. Cleanaway does so from the Train Street kerbside. Waste streams currently collected by Cleanaway include landfill, co-mingled recycling & cardboard. This will continue to remain as the waste collection arrangement until a new dedicated bin store is constructed.

The proposed development will bring all waste management, storage and collection within the site. The proposed new bin store (P16) has been located adjoining the existing maintenance area. Collections times are to suit the development – ie outside peak times.

Space for the collection, separation and storage of waste and recyclables has been provided, including opportunities for on-site management of food waste through composting or other waste recovery as appropriate.

1.2 Waste Collection Summary

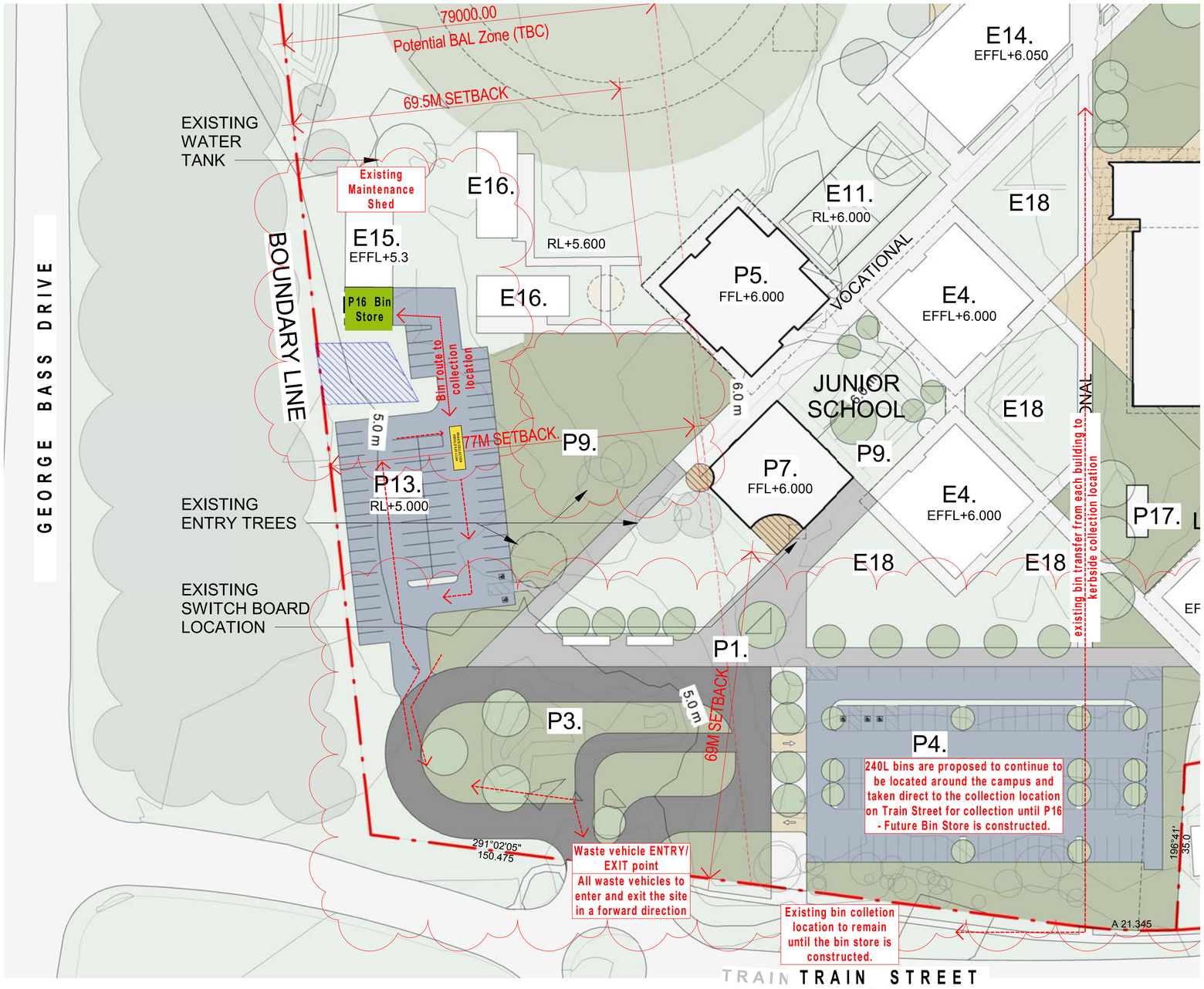
The existing private waste collection operator is to continue to collect all waste from the Train Street kerbside as is the current arrangement (see section 2.3 below) until the construction of a new dedicated bin store is competed.

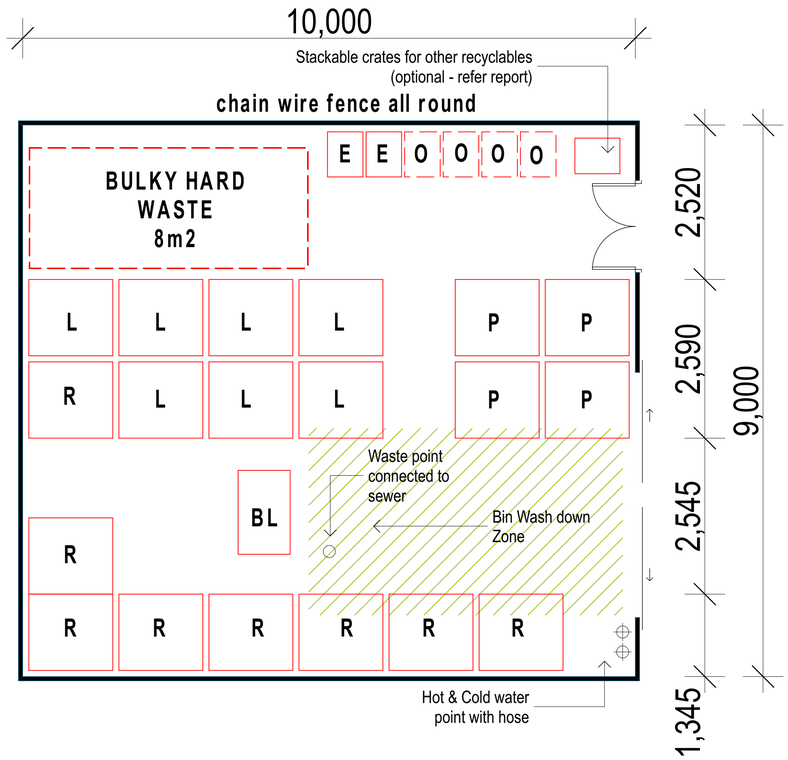
By 2032 the campus will be at the projected capacity with the following maximum number of bins to be accommodated. A private collection service is proposed to collect the following bins at the indicated frequency. The bins will be collected from within the site.

Commercial Waste	**Private Collection Service – collection from within the site**	
Waste streams	**No. of bins and capacity**	**Collection frequency**
Co-mingled Recycling	8 x 1100L	Fortnightly
Cardboard and paper	4 x 1100L	Fortnightly
Organic Food Waste	4 x 240L	Future collections if required.
Landfill	7 x 1100L	Weekly
Green Garden waste	N/A	N/A
Hardwaste	8m2	As often as required to maintain space
E-waste	2 x 240L	As often as required to maintain bin

Other waste streams • Batteries • Light globes • Soft plastics • Printer cartridges • Clothes	Optional but recommended that a space be allowed for additional 40L bins or a stack of tubs to allow separate storage of these other waste streams.	When bin/tub is full –building management is to arrange items to be collected or set to recycling facility.

1.3 Bin Store(s) & Collection Plan





COMMERCIAL WASTE

R = 8No. 1100L Co-mingled Recycling Bins collected fortnightly
P = 4No. 1100L Cardboard / Paper bins collected fortnightly
L = 7No. 1100L Landfill Bins collected weekly

plus space for 4No. 240L Food Organics Bins (future if required)
……

E = 2No. 240L E-waste bin*
8m2 Bulky hard waste (refer plan)*

* collected as often as required to ensure all bins are maintained and serviceable.

BL = Bin Lifter

240L bin size = 580 x 735mm
1100L bin size = 1245 x 1370mm
Bin store to be mechanically vented if enclosed or provide adequate natural ventilation

Bin Collection Location Plan
Street Level 1:500

Bin Store Layouts
1:50

Project
ST PETERS ANGLICAN COLLEGE
61 TRAIN STREET, BROULEE NSW 2537

Drawing
Bin Collection Location Plan
Bin Store Layout

Date	Scale	Sheet Size
9/2/2023	1:100 / 1:50	@A1
Reg No.	Drawn	Chk.
	LR	CH
Job No.	Drawing No.	Revision
	WP.01	C

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2 Waste Management Plan

Low Impact Development (LID) Consulting was engaged by Anglican Diocese of Canberra and Goulburn to assess the proposed development at 61 Train Street, Broulee NSW 2537 to provide a Waste Management Plan (as required by Statutory Planning).

A waste management analysis has been undertaken based on the following documents:

a) Dept of Environment & Climate Change NSW's Better Practice Guide for Waste Management in Multi-unit Dwellings (includes commercial rates);

b) Eurobodalla Shire Council's Site Waste Minimisation and Management CODE

https://www.esc.nsw.gov.au/__data/assets/pdf_file/0008/138509/Site-Waste-Minimisation-and-Management-Code.pdf

c) Eurobodalla Shire Council's letter dated 16/11/2022 with Reference: PAN-233923

d) Statement of Environmental Effects dated 12/7/2022 prepared by Rygate & west

This report is based on the drawing sets:

- DA-11-01, Revision 4, dated 28/7/2022 prepared by COX Architecture

2.1 Future Waste Streaming (NSW)

NSW will implement further waste and recycling system in all residential settings by 2030. This includes FOGO (Food and Garden Organic) and glass. As of now, six councils in the North East Waste region of NSW have FOGO services.

It is important that new developments look to incorporate space for these waste streams now in the planning phase. **Non-residential developments are also to implement these waste streams to ensure as much waste to landfill is diverted into recycling streams.**

For future provision for these waste streams, the shared bin store provided on-site has the capacity to accommodate shared food organics and glass bins, as 1 out of 3 garbage bins can be swapped for food organics and 1 out of 3 co-mingled recycling bins can be swapped for a glass recycling bins.

2.2 Council Considerations

The following issues / constraints were key consideration in preparing this waste collection strategy:

a) Utilizing the Council collection service is not possible in this instance for general waste/recycling as the volume of commercial waste generated exceeds the council standard bin allocation for each tenement.

b) A waste truck (up to 12.5m) is able to enter and exit the site in a forward direction traversing along the internal road ways.

c) The school currently operates with a private waste contractor collecting bins from the Train St kerbside. The proposed works will include provision for a new bin store with waste managed & collected from within the site.

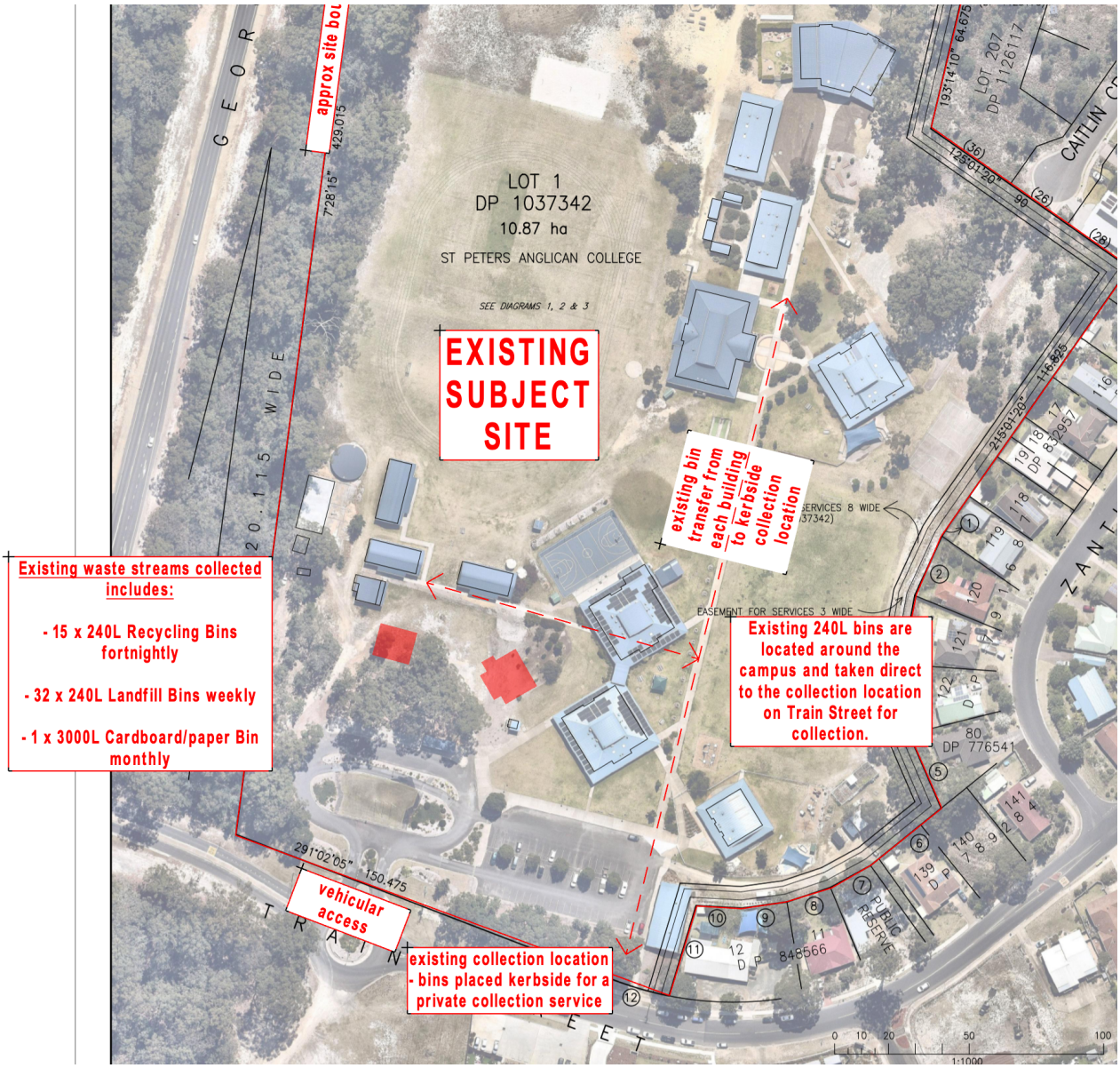
2.3 Existing Waste Summary

St Peters Anglican College currently utilises a private collection service.

Recycling and landfill 240L MGBs are located around the school grounds. The grounds maintenance team currently collects the MBGs and places them along Train Street for collection.

The Waste contractor currently does not enter the site, nor is there a central bin store for waste storage.

The volume of waste collected is documented through the monthly invoicing from Cleanaway.



The table below summaries the monthly volumes of waste collected. With 704 students on the site in 2022, an estimated weekly Litre/Student waste generation rate can be calculated from the 2022 invoicing received from Cleanaway. This can then be applied to the total future student numbers.

	Comingled Recycling	Landfill	Cardboard	Green Garden Waste	Bulky Hard waste
June 2022	14 x 240L 10 x 240L	24 x 240L 11 x 240L 32 x 240L 18 x 240L	1 x 3000L	On site	Taken direct to landfill as required
Totals	**24 x 240L or 5760L monthly**	**85 x 240L or 20,400L monthly**			
May 2022	11 x 240L 15 x 240L	23 x 240L 29 x 240L 23 x 240L 20 x 240L 20 x 240L	2 x 3000L	On site	Taken direct to landfill as required
Totals	**26 x 240L or 6240L monthly**	**115 x 240L or 27,600L monthly**			
April 2022	9 x 240L 1 x 240L	21 x 240L 30 x 240L 15 x 240L 10 x 240L	1 x 3000L	On site	Taken direct to landfill as required
Totals	**10 x 240L or 2400L monthly**	**76 x 240L or 18 ,240L monthly**			
March 2022	9 x 240L 13 x 240L	32 x 240L 21 x 240L 29 x 240L 24 x 240L 21 x 240L	1 x 3000L	On site	Taken direct to landfill as required
Totals	**22 x 240L or 5280L monthly**	**127 x 240L or 30,6480L monthly**			
Frequency	fortnightly	weekly	monthly		
Average monthly waste volumes generated (4 months)	4920L OR 21 x 240L 8 x 660L 5 x 1100L	24,222L OR 101 x 240L 37 x 660L 22 x 1100	3,750L OR 6 x 660L 4 x 1100L 3 x 1500L		
For 704 Existing Students (2022) approx. - L/student	7.0L / month 1.6L / week	34.4L / month 7.9L / week	5.3L / month 1.2L / week		

2.4 Proposed Waste Solution

The proposed works include the construction of 4 new key facilities as outlined below plus a number of external landscape and sport structures. The expected student numbers are to rise to 911 by 2032.

While the NSW EPA Better Practice Guide outlines 20L per student per week for landfill and 15L per student per seek for comingled recycling, the actual rates outlined above more accurately reflect the most appropriate waste generation rates for each waste stream for this school facility. This is tailored to reflect the teaching practices and resource management.

These rates can be reduced in time with a strategic waste minimisation campaign and waste education across the school, better waste separation and recycling practices as well as a shift to a circular economy approach to resource management.

Waste generation, bin numbers and collection frequency should be reviewed regular over the growth period and adjusted to ensure waste storage and collection can occur efficiently.

Proposed New Buildings

P7	Community Hub
P6	Music Centre
P10	Sports & Recreation Centre
P5	Junior Learning
Site Layout:	Refer Bin Store & Collection Plan - **Section 1.3**.
Collection Type:	Private collection service to collect all waste streams.
Collection Location:	From within the site once the new bin store is constructed
Bin Store Location:	Refer Bin Store & Collection Plan - **Section 1.3**.
Base Rates:	Co-mingled Recycling - 5L / Student / week Cardboard & Paper - 2L / Student / week Landfill – 10L / student / week
Diversion rates:	Allow 10% of landfill (garbage) diverted to dedicated organics collections Allow 10% of recycling diverted to dedicated glass collections

Commercial	**Private collection service**		**Proposed solution**		
	Allowances	**Total estimated waste volume**	**No. of Bins**	**Bin Size**	**Collection Frequency**
Co-mingled Recycling	**As above for 911 Students (predicted by 2032)**	4555 of recycling	8	1100L	Fortnightly
Organic Food Waste*		911L of FOGO	4	240L	Once weekly (future allowance)
Cardboard / paper		1822L of Cardboard / paper	4	1100L	Fortnightly
Landfill		8199L to landfill	7	1100L	Once weekly

		(10% diverted to organics collections)			
Green Garden Waste	Green garden waste to continue to be composted on site. Food organic waste may be added to this.		na	na	
Hard Waste	8m³ space provided to store bulky hard waste items. See **Section 2.8** & **Appendix 4** for Bulky Hardwaste Collections & Recycling.		na	na	As often as required to maintain space
E-waste	See **Section 2.9** & **Appendix 4** for E-Waste Collections & Recycling.		2	240L	As often as required to maintain bins
Other items	1 bin per waste stream or a stack or tubs for: • batteries • light bulbs • soft plastics • printer cartridges • clothes See **Section 3.8.4** & **Appendix 4** for more information.		4	40L	As often as required to maintain bins

*Cleanaway currently collects organic waste in 3000m3 skip bins only. This can be a mix of food and garden prunings / lawn clippings. Cleanaway may introduce collection of organic waste in the smaller 240L bins in the near future. Alternately, this waste can be streamed from landfill waste and composted on site.

NOTE: Streaming of waste into dedicated bins is encouraged where possible. The type of recycling bins nominated above may be swapped to suit the type of recyclable commercial waste generated (while not altering the number of bins overall). Possible additional separate waste streams include:

- hard plastics
- soft plastics
- glass (if applicable)

2.5 Food Waste Collections

The EPA NSW Better Practice Guide stipulates diverting food from landfill waste. This can be achieved in a number of ways including on site composting or treatment – refer **Section 3.8.4** & **Appendix 4** below.

An organics food collection service is recommended for this type of development if not all organic waste is composted on site.

a) Food waste collections could occur a minimum 2-3 times per week (depending on the temperature of the bins) to avoid a build-up of odour and unwanted mess.

b) Consideration should also be given to end of trip / processing of this waste by the engaged waste contractor to ensure this waste stream is appropriately treated and does not end up in landfill.

2.6 Glass Collections

Space for additional glass bins can be provided in the bin store in the future if required. In school settings, glass is generally not a waste stream that is generated or introduced.

2.7 Green Garden Waste

Currently, green garden prunings and lawn clippings are composted and managed on site. This is to continue with the increase in student numbers. It is not likely the volume of this organic waste would increase significantly.

Food organic waste is recommended to be introduced into this waste stream to divert waste going to landfill. Ultimately the compost produced can be re-used on the site.

2.8 Bulky Hard Waste Collection

In the first instance, unwanted bulky items, clothes and other consumables should be donated to charities, sold on online or at second-hand market places if in good condition. If repairs are required, seek out repair community centres for re-purposing – Refer **Appendix 4** for more details.

a) Bulky hard waste items are currently taken directly to the Council run local waste recovery centre.

b) The current private waste contractor can also be engaged to collect all bulky hard waste and eWaste items at a frequency to maintain the storage space.

c) Local information regarding the disposal and recycling of common household items for each Council can be found at:

www.recyclingnearyou.com.au

https://www.esc.nsw.gov.au/residents/household-waste-and-bins/a-to-z-of-recycling-and-waste-disposal

2.9 E-Waste Recycling

Any item with a plug, battery or cord can be deposited at a designated e-waste drop-off point. Electronic waste includes old mobile phones, computers, audio devices, refrigerators and other white goods, hair dryers, TVs, heaters, and air-conditioners.

a) Ewaste items are currently taken directly to the Council run local waste recovery centre.

b) The current private waste contractor can also be engaged to collect all Ewaste items at a frequency to maintain the storage space.

a) Other authorised electrical waste disposal locations can be found:

- Officeworks collects e-waste
- https://recyclingnearyou.com.au/electrical
- https://www.mobilemuster.com.au

3 Waste Management Details

3.1 Waste Streaming & Contamination

Managing waste contamination requires the correct separation of products that are recycled differently. This is called waste streaming. Correct streaming requires consideration by stakeholders that generate, dispose of or manage waste.

Good waste streaming reduces contamination to ensure more effective recycling. Refer **Appendix 4** for Better Practice Waste Management links.

3.2 Management Responsibilities

The School is responsible for all aspects of waste management including implementing adequate safe operating procedures. Items to be addressed include:

a) Requesting a copy of the endorsed Waste Management Plan from Council if they do not have it the developer has failed to provide the WMP to them.

b) Ensuring minimal contamination occurs between waste streams to maximise recycling. This is to be achieved by:

- Providing separate bins for each waste stream (including recycling, glass, food organics & landfill) in all student classrooms, staff work areas and in open areas where people congregate to appropriately stream waste. See **Section 4.2.1.**
- Routine inspection of bins to ensure their appropriate use.
- Providing information to students / staff with guides of how to using the various bin systems e.g. boxes to be flattened, containers for recycling washed, bins to not be over-full. See **Section 3.13** for further information about Signage, Education & Safety.
- Providing feedback to students / staff if the system is not working properly. Undertaking a waste audit should it be suspected waste is not being placed in the correct bins.

c) Ensuring all students / staff are aware of their responsibility with regard to waste & bin management.

d) Ensuring the waste contractor has access to the site and bin store area on the days of collection and for also providing information to make staff & visitors aware that waste vehicles enter the carpark.

e) Allocation of responsibility to the contractor to retrieve bins directly from the bin store area and return emptied bins at the time of collection. Responsibility should include ensuring the contractor collects any waste that spills from the bins during emptying.

f) Cleaners & staff are responsible for placing waste in the appropriate colour coded bins in provided in work areas and then transferring them to corresponding bin in the bulk bin store to ensure all waste types are collected and recycled where possible.

g) That bins and bins store areas are monitored regularly with bins rotated as required to ensure areas are fully operational with regular cleaning of the bins and bin store spaces and clean-up after collection if necessary.

h) Management and coordination of bulky hard waste, e-Waste and other waste collections.

i) Managing communal composting areas (if applicable).

3.3 Individual Occupants Responsibilities

The students / staff and cleaners are responsible for their own waste. Items to be addressed in maintaining the system include:

Individuals are responsible for placing their waste in the appropriate colour coded bins. This is to ensure all waste types are collected and recycled where possible and contamination of waste streams is minimised.

a) Managing communal composting areas (if applicable).

b) **Ensuring landfill placed in plastic bags** before placement into bins

c) **Ensuring recycling materials are <u>not</u> bagged** and are to be placed loosely into the recycling bins. (Items in plastic bags in recycling bins are not recycled). Recyclable items in bin collections include:

- Rigid plastic containers
- Paper, cardboard
- Steel cans, aluminium cans and aluminium foil are among items that can be recycled.

But exclude:

- Soft plastic bags

d) **To improve recycling**:

- Empty containers and bottles of any leftover food or liquid. Ideally rinse them out. Generally keep lids separate from bottles when made from another product or plastic type (as is the case with most plastic drink bottles).
- Don't put anything inside plastic bottles or containers
- Paper – if it can't be ripped, it can't be recycled due to the plastic coating.
- Check local waste collection / contractor requirements – some recycle all plastic resin codes, some are more restricted. Some want lids on bottles, some want them separate and in landfill.

3.4 Occupational Health & Safety

A preliminary OHS risk assessment has been included to identify potential OHS issues, however this risk assessment does not replace the need for the Management and collection contractors to complete their own OHS assessment for the bin collection process. See **Appendix 1** for further detail.

3.5 Bin Store Area Design

The Bin store area design/location must include the following:

a) All screening should be suitably designed for durability and to blend in with the development. Floor and wall surfaces are to be appropriately durable and easily cleaned.

b) Doors located in the allocated storage areas should be designed for easy access of larger bins sizes and hard waste.

c) Space suitable for bin wash down is to be available in the development. If this is the bin store then the floor is to be graded to a waste outlet with a litter trap. Alternately, a private contractor can be arranged to swap dirty bins for clean ones on a regular basis.

d) If a bin wash is installed, a water tap and hose installed in or near the bin wash areas and correct drainage to sewer (never direct waste to storm water drains) should be designed in accordance with the relevant EPA Bunding Guidelines. Drains to the sewer to be located undercover to prevent rainwater infiltration.

e) Bin stores or bins should be vermin proof - particularly where food waste is included. Ensure bin lids are closed and lockable if needed or the bin store is an enclosed space and considered to be largely vermin proof.

f) A waterproof power point in or near the bin store.

g) Adequate mechanical or natural ventilation if not outdoors.

h) Ensure adequate lighting is provided in accordance with National Construction Code (NCC) guidelines if to be accessed after hours.

i) Secure locks (where bin stores are accessible to the street)

j) Space for a tug or bin lifter if required by the waste contractor(s) / facility management.

k) Meter boxes should not be included in bin store areas.

3.6 Bin Store Area Access

A layout that allows access to all of the bins with adequate size to allow easy movement/transfer of the required number of bins. There is to be convenient access by staff and made easily accessible to people with limited mobility.

a) Manoeuvrability within the bin store area is open, with 1m minimum to walk between bins.

b) There is to be no significant step at any threshold between the bin store area and the point of collection.

c) Bin Lifters require 2.5m clearance depending on the unit sourced.

3.7 Bin Types & Bin Sizes

3.7.1 Mobile Wheelie Bins (MGBs)

The following sizes are indicative bin sizes based on the Sustainability Victoria Better Practice Guide specified sizes (Appendix 9). These sizes are the size allowances required by most Councils in bin store areas. Allow 100mm between 4 wheel bins and 50mm between 2 wheel bins for movement.

Size	Width	Depth	Height	Footprint
80L	450mm	530mm	870mm	0.24m^2
120L	485mm	560mm	940mm	0.27m^2
240L	580mm	735mm	1080mm	0.43m^2
360L	600mm	885mm	1100mm	0.53m^2
660L	1370mm	850mm	1250mm	1.16m^2
1100L	1370mm	1245mm	1470mm	1.71m^2

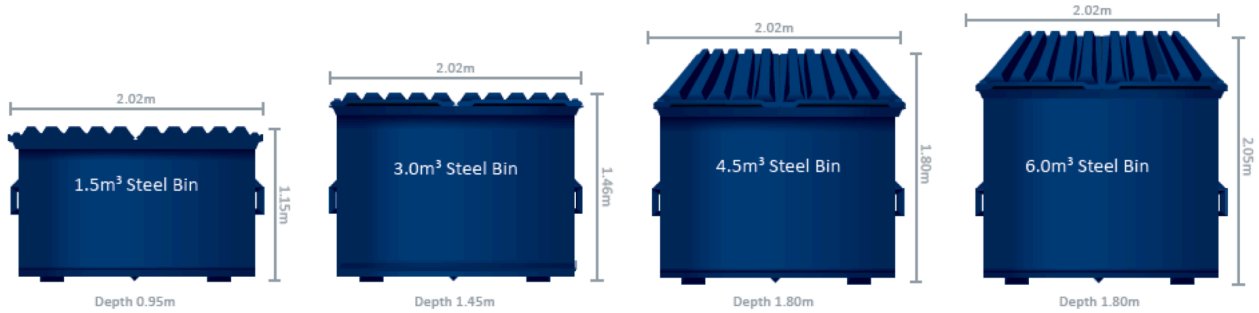
Standard bin colours (refer AS4123.7)	
Landfill	Red
Co-mingled recycling	Yellow
Green organics	Light Green
Glass	Purple
Paper and cardboard	Light Blue
E-waste	Light Grey

* NOTE: size may vary between Councils and contract suppliers

3.7.2 Skip Bins

Larger metal steel bins may be used. These require larger front fork lift waste collection vehicles with up to 6m head clearance. As full bins are heavy, careful consideration is required for the placement and collection of these bins within the waste storage area.

Sizes & clearances may vary between different collection contractors.



3.7.3 Internal Bins – Commercial

Correct streaming in commercial developments requires consideration by staff, cleaners and visitors. It needs to be clear for all users as to where and how they dispose of their waste.

Where food and garden organic waste can be composted onsite, Bokashi Bins or Urban Composters used in the staff kitchenettes and even in classrooms can speed up this process.

a) Correct streaming in all areas in the first instance reduces contamination to ensure more effective recycling occurs.

b) Separation of landfill and recyclables is to initially occur in all work areas, communal spaces, classrooms and kitchenettes and then in bin stores. For this reason, the development will include streamed waste bins on each area. Cleaners and/or staff would then transfer already streamed waste to the corresponding bin in the main storage area.

c) Waste is to be transferred to the bin store with minimal manual handling. The development is to include a trolley to cart bags of waste or wheeled bins to transfer waste.

Examples of streamed commercial waste bins. Larger sizes may be required to suit development

Example of trolley used for moving waste to bulk bin storage location

Example of smaller 60L wheeled bins allow for easier transfer of waste

Examples of a stack of tubs for small recyclable waste streams such as batteries, light globes and printer cartridges.

Pull–out kitchen bins to be supplied in each kitchenette for better waste separation. This encourages better recycling practices.

Bokashi / Urban Composter bins where food scraps can be placed in on site compost.

A more extensive recycling unit may be more appropriate to stream miscellaneous items.

This unit is to be placed in strategic locations to make it easy for the wider school community and encourage further separation of smaller recyclable items such as:

- Batteries
- Light globes
- Plastic bread tags & bottle tops
- Printer cartridges
- Toothpaste tubes
- Medicine blister packs

Items can be tailored to suit waste types most generated.

This communal recycling sorting hub managed by central management. Each waste stream is to be sent / taken to the appropriate recycling facility as often as required.
*– refer **Section 4.3.3** below.*

d) In outdoor spaces, litter bins are recommended to be provided within forecourts or public areas for students to dispose of waste in the correct manner outside classrooms.

Example of external public litter bins appropriately located top encourage users to separate out waste for better recycling practices

All bins are to be placed alongside each other to ensure recycling is easy.

3.8 Signage, Education & Safety

It will be the responsibility of the school to ensure all staff, students and cleaners have all of the material available to them and that they adhere to the required practices regarding waste management, sustainability and promoting waste minimisation.

a) All education material will be in accordance with Council requirement or if this is not available, per signage on the following website:

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

b) Ensure permanent "No Standing" sign / text and line markings are visible in the car park area, indicating the parameters of the rubbish collection zone to ensure access for the collection vehicle.

c) The hard waste storage zone should also be signed.

d) Instructional signage within shared communal bin stores is to indicate which bin is for landfill and which is for recyclables or other waste streams.

Simple, brightly coloured signs to quickly communicate what items are acceptable for each bin.

3.9 Waste Vehicle Requirements

a) Train Street is a typical suburban street and no vehicle size limitation should apply. The waste contractor currently provides both MRV and HRV vehicles for this site.

b) A MRV or HRV waste vehicle is able to enter the site and school carpark from Train St and travel to collect bins from the Bin Store.

c) The waste contractor will be responsible for retrieving, emptying and returning bins to/from the bin store at the time of collection.

d) The waste vehicle is to turn circulate through the carpark before exiting back onto Train Street in a forward direction.

e) The School Management is responsible for ensuring the waste contactor has access to the site and bin store on the days of collection. If there is a security code or key required for access, the contractor should be provided with these so they may access the bin store on the specified collection days.

Vehicle	Typical size
Rear Loading	8.8m – 10m long x 2.6m wide truck – 4.0m head clearance (Medium Rigid Vehicles)
Front Fork Loading automated arm	10.4m – 12.4m long x 2.6m wide – 5.5m head clearance (Heavy Rigid Vehicles)
NOTE: Larger vehicles may need to be assessed for clearances prior to entering the site.	

3.10 Traffic Management

a) Traffic management along Train St should not be an issue with collection occurring within the property boundary. The street is considered a local street, traffic volumes would not be expected to be high and the site is not near an intersection.

b) Appropriate engineering standards will need to be addressed in the detailed design stage to ensure adequate pavement depths and clearance height.

3.11 Collection Times

Collection times will be in coordination with the school and suited to outside school peak times.

Collection times in New South Wales are not subject to any specific legislated time restrictions as waste collections are considered an essential service. If excessive noise is coming from waste collections associated with either residential or commercial premises, you can refer a complaint to the locate council to investigate if this cannot be resolved otherwise. See https://www.environment.nsw.gov.au/questions/noise-from-garbage-trucks

Waste collection from private services are best suited on an alternate day to the Council service and completed at times of least interference/inconvenience to the local amenity and traffic conditions.

3.12 Noise management

Minimizing noise associated with waste movement and collections include:

a) Locating bin stores and collection points at an appropriate distance from adjoining residences;

b) Minimising the need for the waste vehicle to reverse;

c) Collections occurring during the stipulated collection times restrict the hours of noise from collections.

3.13 Response to Increasing Waste

a) The total waste capacity exceeds the required allowance calculation by rounding up to the nearest bin size so there is built in capacity should waste levels increase beyond estimates.

b) A waste audit can be undertaken to understand the content of the waste bins. Audits provide feedback to clients of good or poor recycling practices. Images can be helpful to convey feedback.

c) If landfill bins consistently overflow, then students, staff or cleaners are to be directed to educational material as to the appropriate streaming of waste including food and other recyclables. (see **Section 4** and

d) **Hard plastic** containers not collected in comingled recycling coded 1-7 (excluding polystyrene) can generally be recycled. This should be checked with each council or private collection contractor. Ie toys, tubs etc

e) Soft Plastic Recycling below).

f) If recycling bins continue to overflow, students, staff or cleaners should be reminded to crush and flatten all cardboard boxes before placing these in the recycling bin(s). If may also be appropriate to obtain an additional recycling bin.

g) The bin store area has spare space to accommodate additional bins if required.

h) The last choice option is for more regular collections to occur.

3.14 Reducing Odour

Odour from waste primarily emanates from bin store areas. Control of odour must occur in the bin store area with the provision of suitable natural or mechanical ventilation. If installed the mechanical ventilation system for the bin storage area must not cause a public health nuisance (noise and odour generation) and comply with EPA requirements and in accordance with the ventilation requirements of the Building Code of Australia and AS 1668.2.

a) As the bin store is located outdoors and open to the air, it will be naturally well ventilated. Bins store should be located away from adjoining residences.

b) The bin store area and bins are to be monitored and cleaned on a regular basis to remove sources of smells.

3.15 Litter Spread

a) Litter spread is to be managed by ensuring bins are not overloaded, and lids are always closed.

b) Litter spread is to be managed by the system of contractors collecting bins from within the property. As bins are not left outside overnight, the possibility of vandalism is removed.

c) The private collection contractor's agreement should require their pickup of any waste that spills from the bins during collections.

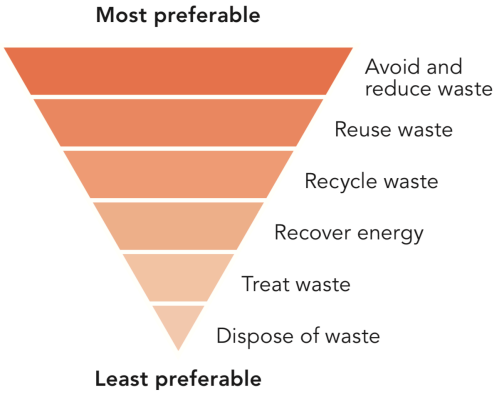
4 Minimising Waste to Landfill

A circular economy is a system where products and services are designed to be reused or ideally be regenerative i.e. to repair the environment. This differs from the predominantly linear model of "take, make and waste" that we have seen in the last few decades.

Food organics is an example of where waste can be regenerative. Food waste is now being actively used via composting to improve the quality of soils.

While occupants of buildings are generally limited in how they can impact on the design of products to make them re-useable, they can change their own and others behaviour to minimise waste.

Where possible building occupants should practice the waste reduction hierarchy.



Avoidance of landfill waste by building occupants might involve

a) Purchase only what you will consume
b) Purchase items of quality that can be re-used, sold on donated or up-cycled.
c) Use re-usable drink bottles, lunch containers, shopping bags
d) Avoid single use plastics
e) Compost anything that once was alive

The 2025 National Packaging Targets are supported by Australian industry and government to deliver a new and sustainable approach to packaging. They apply to all packaging that is made, used and sold in Australia.

The 2025 Targets are:

- 100% reusable, recyclable or compostable packaging.
- 70% of plastic packaging being recycled or composted.
- 50% of average recycled content included in packaging (revised from 30% in 2020).
- The phase out of problematic and unnecessary single-use plastics packaging.

In March 2020, The Australian Packaging Covenant Organisation (APCO) also released a series of material-specific sub-targets relating to the uptake of recycled content in packaging

The Australian Packaging Covenant Organisation (APCO) is a not for profit organisation leading the development of a circular economy for packaging in Australia. [1].

[1] https://apco.org.au/national-packaging-targets

5 Supplementary information

Eurobodalla Shire Council Waste Directory:

https://www.esc.nsw.gov.au/residents/household-waste-and-bins/a-to-z-of-recycling-and-waste-disposal

5.1 Waste Contractors

Waste collection companies in NSW:

- Suez (incl Sita) www.suez.com.au/en-au Ph: 1300 651 116
- Transpacific-Cleanaway - https://www.cleanaway.com.au, ph 13 13 39
- Waste Wise Environmental www.wastewise.com.au Ph: 0447 595 092 (Metro Sydney)
- JJ Richards & Sons www.jjrichards.com.au
- Veolia - https://www.veolia.com/anz/, Ph 132 955

5.2 Other Useful Links

- Sustainability Victoria https://www.sustainability.vic.gov.au
- PlanetARK https://recyclingnearyou.com.au
- Redcycle https://redcycle.net.au
- Sustainable Procurement Guide (for Commonwealth entities) https://www.awe.gov.au/sites/default/files/documents/sustainable-procurement-guide.pdf
- Wastech www.wastech.com.au

Appendix 1 - Preliminary Risk Review

Class 1 Risk = Potential to cause death or permanent injury.	**Class 2 Risk** = Potential to cause injury requiring medical attention.	**Class 3 Risk** = Potential to cause an injury treatable with first aid.

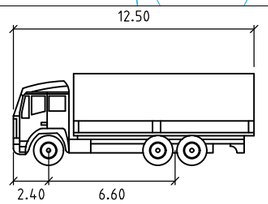
Activity	Steps involved in completing activity & risk	Risk level	Risk mitigating measures	Implementation responsibility
Moving of bins from bin store to collection space	Risk of manual handling injuries	2	Ensure larger bins are moved no more than 10m or use a mechanical tug. The bin transfer grade should not exceed 1:14 The travel path is to be kept free of all obstacles including loose gravel or dirt, steps, kerbs, speed bumps, berms, sills or ramps. Ensure all access points have suitably wide doorways and circulation areas.	Building Designer / School
Vehicle comes on site for collection	Large vehicle entering site, and reversing before exiting site. Major risk is hitting young children, the elderly or unaware people, particularly when reversing,	1 1	Vehicle driver entering site is to survey carpark for activity and proceed at 10km per hour within the site. Vehicle driver entering site is to survey the area for activity. If there is no activity near reversing location, driver to execute reverse move immediately before the situation can change. If there is activity, the driver should ensure the person/persons moving in the area are aware of the pending reversing action, and have time to stay away from the reversing zone or ensure children are away from the reversing zone. Reversing should be at very slow speed. Reversing buzzers to be applied to all trucks.	Waste collection contractor / School
Movement of waste to the bin store	Carting waste from across the site to the main bin store. Risk of manual handling injuries.	2-1	Staff & Cleaners should ensure their bin sizes are not excessive and cannot carry too much weight to safely negotiate to the bin store. Provide wheeled options to cart waste / bins.	School / manager
Note this assessment is for consideration during the design phase of the project. It is <u>not</u> to replace a risk assessment / Safe Work Method Statement being completed by the contractor and persons undertaking the waste removal process.				

Appendix 2 - Swept paths

SWEPT PATH KEY

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 35.2

WASTE COLLECTION TO OCCUR BEFORE TYPICAL SCHOOL HOURS TO ALLOW 12.5m HRV TO DRIVE OVER PARKING SPACES

EXISTING SWITCH BOARD LOCATION

E16.

E15.

EFFL+5.3

P16.

E16.

BOUNDARY LINE

6.1

P13.

77M SETBAC

RL+5.000

PROPOSED STAFF PARKING

68 CAR SPACES

RL+

EXISTING

HRV STANDARDS 2018 (AU)

VEHICLE ENTRY

WASTE COLLECTION TO OCCUR BEFORE TYPICAL SCHOOL HOURS TO ALLOW 12.5m HRV TO DRIVE OVER PARKING SPACES

EXISTING WATER TANK

E16.

E15.

EFFL+5.3

P16.

E16.

BOUNDARY LINE

6.1

P13.

77M SETBAC

RL+5.000

PROPOSED STAFF PARKING

EXISTING SWITCH BOARD LOCATION

68 CAR SPACES

RL+

EXISTING

HRV STANDARDS 2018 (AU)

VEHICLE EXIT

Stantec

PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT NOTIFICATION

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

DESIGNED	W.XIE
DESIGN CHECK	C.COATH
APPROVED BY	C.COATH
DATE ISSUED	2 FEBRUARY 2023
CAD FILE NO.	300303369-AT01-P10.DWG
SCALE	A3 — 0, 2.5, 5, 10 — 1:500

ST PETER'S BROULEE

VEHICLE SWEPT PATH ASSESSMENT

DRAWING NO. 300303369-AT01-02 SHEET 02 OF 08 ISSUE P10

Appendix 3 - Better Practice Waste Recycling

Below is a range of practical information and resources to better manage &/or divert many waste types from landfill into recycling streams.

Food Organics & Garden Organics

On-site Composting

a) **Bokashi bins** http://www.bokashi.com.au/ are an effective way of reducing waste volumes and breaking down food waste. Food scraps are placed in bokashi bins with an accelerator mix added. The volume of waste food is reduced, and the waste in the bin is already on the path to being composted. Bokashi bins can be emptied into compost bins so providing a compost bin on site and having a garden also helps. Bokashi bins are also available from http://www.eco-organics.com.au/about-us.htm

a) **Aerobic green cone bio-digester designer compost** is a landscape option for some smaller applications to divert a larger range of food waste (including bread, dairy, meat and small bones). Refer to https://www.treehugger.com/lawn-garden/green-cone-solar-food-digester-will-reduce-90-food-waste-your-backyard.html for more info.

b) **Subpod in-ground composting/worm farm unit** www.subpod/com that composts fast, and ensures worms don't die off as they can often can in unshaded above-ground worm farms. These units can also be located in raised planters and act as seats in common areas. At capacity, 15L of food waste can be processed each month.

c) **Hungry Bin worm farms** are a proven worm farm system that have been used by many private and commercial organisations & businesses to process food waste. The number of bins can be scaled up and down depending on the volume of waste being generated on site. https://www.wormlovers.com.au

Green cone bio-digester

Hungry Bin worm farm unit

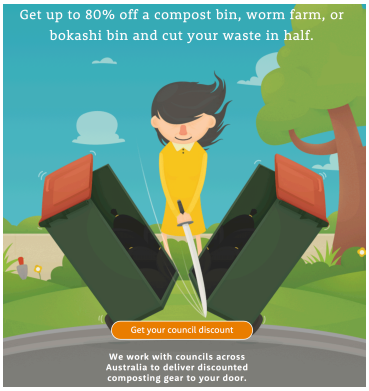
Subpod in-ground compost


Subpod's Modbed inserts a Subpod into a mobile garden bed suitable for composting and growing healthy plants in apartments

Community Partnerships & Government Initiatives

a) **Love Food Hate Waste** aims to raise awareness of avoidable food waste from NSW families. The average household in NSW loses over $3,8000 a year from wasting food. [Home | Love Food Hate Waste (nsw.gov.au)]

b) **Join the Compost Revolution** **https://compostrevolution.com.au** provides up to a 80% discount on a number of composting bins and accessories. It also has a range of tutorials on how to compost.



Co-designed with councils, the Compost Revolution is a multi-award-winning program that educates and equips residents to cut their waste in half through home composting and worm farming. This platform is the only all-in-one education, infrastructure logistics and marketing program of its kind streamlining the process so that councils achieve waste and emissions reduction targets while saving money.

Commercial Food waste

There are a number of onsite treatment and diversion options to remove food waste from landfill.

a) **Onsite Options for Organics Treatment**

On site food and organic waste treatment/pre-processing systems can reduce the footprint area of a bin store by reducing the number of bins required, and can reduce waste collection frequency when food or organics waste can be diverted to these units.

These units reduce food scraps to 90% of their original volume in 24 hours, through heat and agitation, and the by-product is a compost material. These units take all kinds of food ie fruit, vegetables, meat, fish, eggshells so sorting is not an issue. These units prevent generation of the greenhouse gas methane (methane is 25 times more detrimental than carbon dioxide) which otherwise is generated when organic wastes decompose anaerobically in landfills. The suppliers usually can provide Green-house gas cost v benefit assessments of their units. These systems are increasingly being introduced around Melbourne.

- **WasteMaster** is an Australian technology which converts putrescible waste to a concentrated residue within 24 hours. https://www.greenecotec.com
- **Closed Loop Organics** provide CLO'ey bins of different capacity and rental servicing costs. More information available at: http://www.closedloop.com.au/domestic-composter
- Other systems such as **PulpMaster, EcoGuardians (Gaia system) or Biobin** generally provide systems that dehydrate or mash up food waste to reduce total volumes, but operate slightly differently to the above two systems.

Plastics, Glass & Aluminium

NSW Return & Earn

a) Bottles, cans and cartons make up a large proportion of the litter on our streets, beaches and green spaces. Tackling the problem costs NSW millions of dollars every year. Return and Earn is a way for us all to help solve the litter problem and be rewarded for our efforts.

b) With a food based tenancy proposed within the building, a recycling bin can be swapped for a Return & Earn bin. There are many options for these containers to be deposited or collections. View the website for more information: https://returnandearn.org.au

Hard Plastics

Hard plastic containers not collected in comingled recycling coded 1-7 (excluding polystyrene) can generally be recycled. This should be checked with each council or private collection contractor. Ie toys, tubs etc

Soft Plastic Recycling

Eliminating or reducing the use of single-use plastics can greatly reduce waste volumes both in residential and commercial settings. This includes straws, plastic bags and plastic wraps. Many private waste contractors can commercially collect soft Plastic.

a) Other commercial waste contractors may also be able to collect streamed soft plastics depending on your location.

b) NSW is yet to set legislation to ban soft single use plastic but will in the future. There are a number of companies that already collect streamed soft plastics in NSW including:

- https://wanless.com.au/waste-services/soft-plastic-recycling/
- https://www.veolia.com/anz/our-services/our-services/recycling-waste-services/recycling/plastics/soft-plastics
- https://www.cleanaway.com.au/waste/clear-plastic-and-polystyrene/

Polystyrene

Expanded Polystyrene (EPS) is a problematic material that takes hundreds of years to breakdown in landfill. Despite 98% of the plastic packaging being air, EPS takes up large amounts of space in landfills where it can easily be blown away and enter our natural environment.

For commercial businesses, private collections should be arranged to collect and recycle this product. The following links may assist further:

- http://epsa.org.au/about-us/collection-centres/victoria/
- https://www.inspiredwastesolutions.com.au/polystyrene-recycling-melbourne/

- https://www.foamex.com.au/news/polystyrene-recycling-what-you-can-do

Other Items and Textiles

Other Unwanted Items

Unwanted items, clothes and other consumables can be donated to charities, sold on online or at second-hand local market places if in good condition. If repairs are required, seek out repair community centres for re-purposing.

b) **PlanetARK** for a comprehensive listing to each council. https://recyclingnearyou.com.au/councils/

c) Suppliers such as **Ecycle** http://www.ecyclesolutions.net.au will deliver whitegoods and either collect clean polystyrene from retailers or take polystyrene away after delivery.

d) **TerraCycle** is a national initiative where you can look up where to deposit non-recyclable waste such as contact lenses, coffee capsules, mailing satchels, toothbrushes & tubes. http://www.terracyclemap.com

Colgate Oral Care Recycling Program

Recycle your oral care through this program.

e) **Toys for Joy** recycle any brand of pre-loved toys for free with partners Big W & Terracycle. These are for toys that cannot otherwise be donated such as broken parts or just worn out. This avoids more toys in landfill. There are drop off points Australia wide at Big W stores. https://www.bigw.com.au/toys-for-joy

Clothes Recycling

Clothing in good condition can be donated to a number of charities. A dedicated tub / bin is to be provided to ensure fabrics are removed from landfill & able to be recycled appropriately. For clothes that cannot be re-worn, textile recyclers are available Australia wide for public and commercial donators including:

- https://scrg.com.au
- https://texrecaus.com
- https://upparel.com.au/toesox-australia/.

Appendix 4 - Equipment

Business Recycling Equipment Catalogue

70% or more of general waste placed in commercial Landfill Bins can be recycled or diverted. The quantity and type or waste will vary from business to business. Planet Arc has developed the following catalogue for businesses to access to encourage recycling were possible. https://equipment.businessrecycling.com.au.

Further links and information of commonly used equipment to aid easy waste management is provided below.

Mechanical Tug and Bin Trolley Details

Multiple options exist for tugs that can move both two wheel and four wheel bins at the same time.

The Sitecraft Logistec tug above is a tug/trailer combined, that can tow 660L and 1100L bins while also moving 120L or 240L bins.

Alternatively two-wheel bins can be loaded onto a trailer/dolly for transportation. Space is required for storage of the tug unit plus trailer, but bins can be stored on the tug/trailer while it is stored. Trailers can vary in size – allow space larger than the bin footprint.

Four-wheel bins can be towed directly by the tug and require less space as only the tug is required to be stored, not a trailer. Towing brackets and directional wheel locks are available from Sulo www.sulo.com.au and can readily be retrofitted to 660-1100L bins for towing. Towing brackets and wheel locks do not project outside of the bin footprint area.

Mechanical tug systems will usually cost in the range of $10,000 - $15,000, with trailer possibly extra. Tugs can be 1-1.5m long x 0.8m wide.

Suppliers include

- www.electrodrive.com.au
- http://www.mastermover.com.au
- www.sitecraft.net.au
- http://www.hercules.com.au/index.php?tug2.

Manual wheelie bin handling trolleys provide assistance with the manual handling of 120L to 360L bins. Various models are available with standard manual trolley as well as an electric boosted trolley to carry up to four 2-wheelie bins. They should be included in case of a longer bin movement distance or for the less abled people to safely move the bins if required.

Suppliers include

- https://www.materialshandling.com.au
- https://www.wheeliesafe.com.au/

Bin Lifters

Electro Hydraulic Bin-Lifters should be provided in each bin room to help staff safely to empty the internal 120L/240L bins into the main 1100L bins placed in the bin store.

Suppliers for Bin-Lifter are as follows:

- LiftMaster http://www.liftmastermh.com.au/
- WasteTech http://www.wastech.com.au/Bin-Lifters/bin-lifters.html
- SPACEPAC Industries Pty Ltd. http://www.spacepac.com.au/Brochures/Lifters/LiftMaster/Bin-Lifters_2pg_np.pdf
- SiteCraft http://www.sitecraft.net.au/materials-handling/recycling-waste-management/wheelie-bin-lifters-bin-tippers/#
- Easylift http://www.easylift.com.au/a/Materials_Handling_Equipment/Wheelie_Bin_Lifters
- Active lifting equipment co. pty ltd. http://www.activelifting.com.au/MaterialsHandling/Binlifters/powered150.htm