Fresh Hope Communities - Greenstead Valley, Joadja.
Operational Waste Management Plan.

Date

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It should be noted by the Reader that the calculation of waste volumes detailed are not precise as the frequency of waste is subject to the following: demographic, religious, cultural, and racial differences. Seasonal periods and events may also impact on waste generation rates. However, for the purposes of the exercise, industry standards and Council rates have been utilised as they include nominal allowances for normal daily problems encountered in mixed use developments.

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The Definitions

Acronyms	Description
BCA	Building Code of Australia
DA	Development Application
CLIENT	Fresh Hope Communities.
EPA	NSW Environmental Protection Authority
LAP	Local Approvals Policy
Wingecarribee Shire Council	Local Council.
WMP	A document that details the type and quantity of garbage and recyclable material that is likely to be generated during the construction, demolition, and ongoing operation of a development. It also details where and how the garbage and recycling should be stored, how it will be reprocessed or disposed of and handling procedures.
MGB	A waste container generally constructed of plastic with wheels with a capacity in litres of 120, 240, 360, 660, 1,100.
WH+S	Work Health and Safety
Bunded pallet	An enclosed pallet system intended to contain any liquid spillage or inundation from extending beyond an area.
Clean-up service	A booked, weekly collection service for large and bulky items such as furniture, white goods, or garden waste offered by the Council to residents.
Builder	Managing Contractor
Waste and recycling storage area	A dedicated space (including a bin room or bin bay) for the storage of waste, recycling, food and/or garden organics bins, and bulky waste, problem waste and textile waste that is convenient for residents and occupiers to access and use.

1. Introduction.

This Operational Waste Management Plan is submitted in support of a Development Application (DA) for the new development for Fresh Hope Communities, Project Greenstead Joadja, located at 1551 Joadja Road, Joadja, NSW.

The waste report outlines the waste generation, management, storage and dispatching of the following waste streams:

- General Waste
- Co-mingled waste
- Administration waste
- Green waste
- Liquid waste.

UFD notes that waste shall be generated from the following areas on site:

- Arrivals Building that includes the waste management area.
- Community building No 1.
- Community building No 2 Administration waste.
- Twenty-two (22) glamping tents (each tent having six (6) bed spaces)

This Waste Management Plan is an **Operational Waste Management Plan** that will address the operational requirements of this development and includes spatial comments for the waste areas through the development.

The purpose of this plan is to outline specific measures to attain the following outcomes:

- Comply with all relevant Local (Wingecarribee Shire Council) Council Authority and NSW State codes, legislative requirements and policies that will apply to this development.
- To outline compliant disposal and treatment of generated waste as detailed by Local (Wingecarribee Shire Council) Council Authority and Stakeholders.
- Options and processes to minimise the quantities of wastes generated ending up as land fill.
- Outline the waste material handling processes required for the safe and compliant movement of all waste streams from the site's waste management area.
- Support the principles of Ecologically Sustainable Development.
- Adhere to the Wingecarribee Shire Council commitment to reducing land fill and Co2 emissions.
- The waste management operation for this development will always operate in accordance with current Workplace and Safety standards in mind.
- Comply with the NSW Department of Environment and Climate Change (Better practice guide for Waste Management in Multi-use developments).

All waste calculations and figures provided by UFD are based on the drawings prepared by the engaged Architect, Stakeholder requirements and EPA recommended waste generation rates for a development such as this.

Key features of the plan include.

- The Waste Collection Specialists used on this development shall remove all general, and co-mingled waste collected as detailed in this report.

- The Client's Facility maintenance staff (Fresh Hope Communities staff) will be required to maintain and manage all bins in the holding/collection areas through the development. Fresh Hope Communities maintenance staff will be required to maintain all bin movements, compaction, and equipment to assist staff in the correct handling processes.

1.1 Background for the creation of this report.

A comprehensive waste management operation is crucial to the succesful day to day operation of the proposed development in Greenstead Valley.

As such, the collection, compaction, sorting and dispatching of all waste emanating from the future development should be seen as a service which plays a fundamental role in the functioning of the development that it supports.

This Operational Waste Management plan shall provide specific details and requirements that the facilities waste management area(s) will need to operate too.

1.2 Objectives of this report.

The objective of this report is to provide a way forward through a series of recommendations regarding the proposed future methods of transportation, handling, storage, compaction, and periodic waste removal of the waste stream in the most ecological sustainable manner possible.

Recommendations are provided regarding the capacity and performance requirements of new waste management equipment and systems as well as the periodic removal of all waste streams as detailed in this report.

1.3 Methodologies for the creation of this report.

The waste management operations as well as the outlined recommendations as detailed in this report has been based on the following:

- Current Breathe Architectural drawings for the proposed new development and surrounds.

Additionally, the following Standards, Codes and Guidelines have been adhered to in the production of this report.

- AS1668.2-2012 – Mechanical ventilation.
- Current BCA requirements.
- AS4586-2013 – slip resistance ratings.
- Current Work Health and Safety Requirements.
- AS4123.7-2006 mobile waste containers.
- AS1680-1990 – Artificial lighting requirements for Storage areas.
- Wingecarribee Shire Council – Waste requirements for mixed use developments.
- Australian Standard 1319:1994 Safety signs for the occupational environment.
- NSW Department of Environment and Climate Change (Better practice guide for Waste Management in Multi-unit dwellings).

2.4 Sustainability

UFD notes that The Wingecarribee Shire Council and Fresh Hope Communities Management are committed to environmental, economic, and social sustainability. With this being the case, the Fresh Hope Communities Stakeholders will be required to work in conjunction with the Council's waste reduction initiatives.

Figure 1 Waste reduction initiatives will be applied.

2. Waste management key requirements.

Key features:

This new development's waste holding/management area will be in the Arrival Village building, being located below the main kitchen, being located within easy access of the loading dock for ease of access and waste removal.

The Clients waste collector specialist shall remove collected general and co-mingled waste, periodically as detailed in this report.

The waste management area will be managed by the Fresh Hope Communities Staff Maintenance Caretaker/Manager.

Fresh Hope Communities Facility Staff will be required to maintain and manage all bin holding/collection areas and bin movements.

As part of the waste management operations the following points need to be applied:

2.1 Waste management area – Building fabric & waste services.

A dedicated waste holding area will be in the Arrival Village building being located below the main kitchen, being located within easy access of the loading dock for ease of access and waste removal.

A waste collector must collect all waste on a regular streams on a regular basis, as outlined in this report. The waste management/holding area(s) will be located for the ease of removal of all waste by the waste collection agency.

A dedicated waste collection/vehicle access pick up point will be provided.

The facilities waste holding area will be constructed and installed to comply with the National Construction Code (NCC) and all relevant Australian, State and Local Standards relating to Waste area construction requirements.

Additionally, all the following items are to be incorporated into the waste management areas:

- The ceiling height of waste storage area shall be a minimum of 2,400 mm**.**
- In the waste holding area the doorway (from the waste area to the loading dock) will be sized in accordance with the EPA's Better Practice Guide for Resource and Recovery in Residential Developments.
- UFD recommends that the floor to each waste area be a minimum of 75mm thick and coved at the walls and graded to a centrally located floor drain. Flooring will be slip rated in accordance with current Australian Standards (AS4586).
- A centrally located approved drain point with accessible and Watermark approved removable bucket trap will be installed into the floor. This drain point will be connected to the sewer.
- UFD recommends that all walls in the Waste Management areas be painted in an epoxy-based paint that is both washable and cleanable. The walls of the waste room must be constructed of approved solid impervious material. The Waste room will be constructed to prevent the entry of vermin (rats, mice etc.).

Note: Wall, floor, and ceiling finishes to be detailed by the Architect.

- The waste management area will be complete with hot and cold-water hose cocks which will have fitted to them a proprietary hose reel assembly. Hot and cold-water points complete with a Temperature Mixing Valve will be provided in the waste collection point.

- UFD recommend that the waste management area will be under surveillance to minimise vandalism.

- Lighting shall be provided in accordance with Australian Standards for LUX requirements in Waste Management areas. (160 LUX). Lighting shall be detailed by others.

- The section of driveway that will be used by the nominated Waste Collection Contractor will need to be designed in accordance with Australian Standard AS 2890.2 – 2002 Parking Facilities Part 2: Off-street commercial vehicle facilities for heavy rigid vehicles.

- Vehicle access and turning circle requirements is detailed by the Access/Transport Consultant in accordance with Australian Standards. Enough space shall be made available to assist the Clients waste collection vehicles to move in and out of the facility in a forward manner.

Note: Refer to Section 5 of this report for proposed Waste Collection Vehicle size and details.

- The waste management operation for this development will always operate in accordance with current Statutory Workplace and Safety standards in mind.

- The waste collection and holding area of the facility will be designed into the building in such a manner as to not compromise the streetscape character.

- Waste collection times shall be nominated by the Stakeholder. With regard bin empty times, the waste collection agency will always pick up waste during normal times (Monday to Friday).

- Maintenance Staff shall organise and coordinate all waste streams removals in a just in time manner with the waste collection agencies.

- Maintenance staff shall ensure that bin movements from the waste management area to the waste collection area shall be done in accordance with current WH+S requirements.

- An insect control device (bug zapper) will be installed into the central waste holding area.

3. Garden and food waste (composting and worm-farming).

UFD notes that the facility and its surrounds will be used by guests in creating a green scape that all who visit it can enjoy. As such, green waste will be generated on site. This waste should be turned into compost creating a closed loop on a large part of the waste generated on site.

To assist in reducing landfill with green waste and recycling this waste on the Community Garden and Orchid as well as the active green spaces of the development. UFD notes that a 1,000 litre Thermo Compost bin be used (or approved equal).

Figure 2 A compost system is recommended to reduce garden waste volumes and landfill.

<u>The advantages of composting</u>.

- <u>Reduce Plant Mortality Rates</u>: Not only do more plants grow in soils that have been composted, but they also grow stronger, reducing the diseases plants can get.

- <u>Composting reduces waste volumes sent off site to landfill:</u> According to the EPA, food scraps and yard waste comprise more than 30% of a typical waste stream.

- <u>Composting Reduces Methane Emissions at Landfills</u>: When organic material breaks down in an oxygen-poor environment (like landfill), it goes through anaerobic decomposition. That creates methane gas, a greenhouse gas that's up to 34 times stronger than the same amount of carbon dioxide.

- <u>Better soil water retention</u>: Using compost can increase the soil's ability to retain water to such a degree that it can reduce the need for irrigation, which is especially important for Australia which is now having more “dry” events caused by climate change.

<u>What food products can be composted?</u>

1. “Greens" are the nitrogen-rich additions to your compost pile. These tend to have lots of moisture, break down quickly, and provide a quick burst of heat to your pile. While we call them greens, technically any plant matter will work here: coffee grounds, for example, are brown in colour, but they're rich in nitrogen, hence, they're a green for composting purposes. Here are some ideas for greens to add to your compost bin:

- Coffee grounds.
- Tea leaves and paper tea bags.
- Old vegetables that aren't suitable for eating anymore.
- Fruit and vegetable peels.
- Cooked plain rice.
- Cooked plain pasta.
- Corn husks and cobs.
- Eggshells.
- Grass clippings.

"Browns" are the carbon-rich materials that add aeration to the pile and structure to your compost. They break down more slowly, so it's a good idea to chop them up small. Here are some browns to put in your compost:

- Shredded newspaper.
- Shredded office or school papers.
- Shredded, non-glossy junk mail.
- Chopped up twigs and small branches.
- Used paper coffee filter.
- Brown paper bags shredded or torn.

Note: Not all food waste can go into a composter. It will be imperative that operational staff are trained in what can and cannot be placed into the composter.

Key features of the garden/green waste holding area will be:

- The garden/green waste holding area will be screened from view.

- Developed compost will used in the vegetable and herb gardens located as part of this development.

UFD notes that Fresh Hope Communities Stakeholders are endeavouring to create a sustainable and efficient waste management operation of which the management of composting and re-using both "green" and "brown" waste is integral. The process of composting would be undertaken to reduce greenhouse gases, recover vegetation for processing into quality compost that will be used on site, and extending the life span of the local landfill sites.

3.1 Worm farming.

Composting food waste not only diverts your some of the food scraps away from local landfill, where it would otherwise be releasing Co2 emissions into the atmosphere, but it also creates healthy soil for growing food teeming with nutrients.

To have an efficient composting system in place you also need worms. Worms need the following:

- A moist but not wet environment.
- Good air circulation.
- Worms need some carbon in their diet to survive. This can be addressed by adding shredded paper to the compost.

Additionally, the right type of worm needs to be used.

Not all food waste can be composted. As such, UFD recommends the use of a bio-digestor on this development. Some of the food items that should not composted are:

- Dairy products.
- Protein items (meat and fish).
- Butter, cooking oil, animal fat, and grease.
- Plants or wood treated with pesticides or preservatives.
- Weeds that have gone to seed.
- Dog or cat faecal waste.
- Cooked menu items that can attract vermin.

4. Bio-Digestor.

4.1 What is a Bio-digestor?

A Bio-digester is a closed system that gives off no odour from food waste (as it held under vacuum). This eliminate flies and rodents from the facility, increasing hygiene. Also, eliminating food waste on-site saves money by reducing waste removal costs.

Food waste gets recycled into energy and organic fertilizer to be used for agriculture.

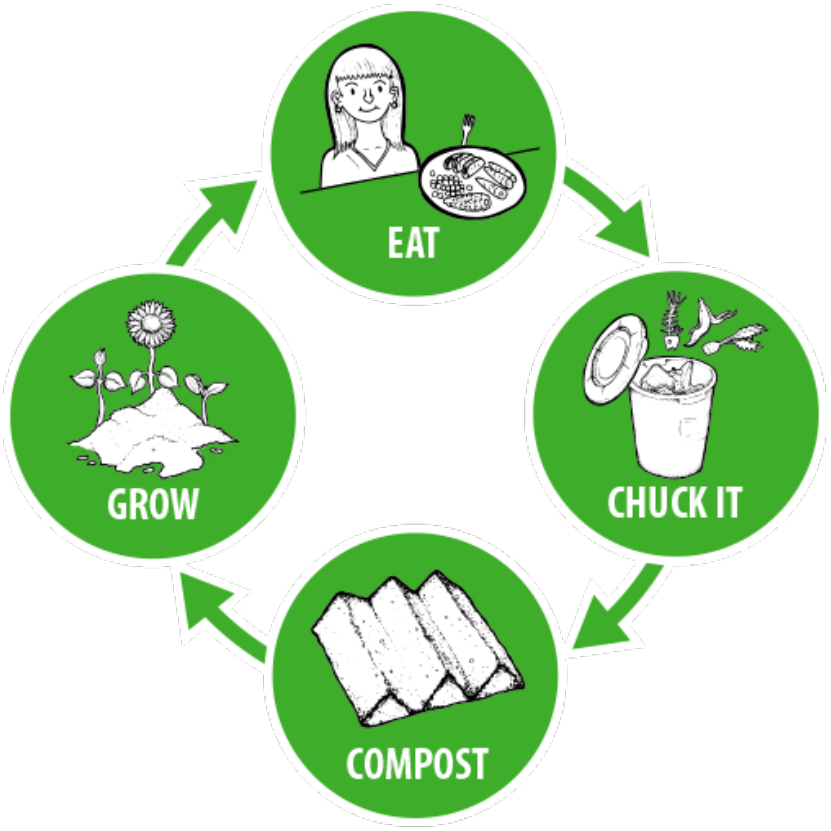


Figure 3 The closed loop process.

4.2 Customer benefits.

A Bio-digester offers the following benefits to the operator:

- Recycling food waste into energy/ reducing the CO2 footprint.
- Optimizing food waste management.
- No more waste handling with related cleaning & disinfection.
- No cross contamination.
- Reduced vehicle movements in and out of the site to collect waste.
- Reduced landfill / reducing the CO2 footprint.

Figure 4 Pulpmaster Bio-digestor holding tank.

Figure 5 Pulpmaster header located in the kitchen.

5. Waste bins standards.

All waste bins used at the Development (including waste collection points through the development buildings) are to be aligned with current Australian Standards regarding waste management.

An Australian Standard has recently been developed for mobile bin colours (AS4123.7-2006 mobile waste containers - Part 7: colours, markings, and designation requirements). The colour designations for common waste categories are listed in the table below.

Waste Category	Bin body colour	Bin lid colour
Garbage	**Dark green or black**	**Red**
Recycling (commingled or containers)	**Dark green or black**	**Yellow**
Paper / Cardboard	**Dark green or black**	**Blue**
Organics (including co-collected food and garden organics)	**Dark green or black**	**Lime green**

AS4123 consists of several sections covering critical areas of a MGBs design and functionality.

- Two (2) wheel containers with a capacity up to 400L for lifting devices' Dimensions and design.
- Four (4) wheel containers with a capacity from 500L to 1200L with flat lid(s), for trunnion and/or lifting devices' Dimensions and design.
- Four (4) wheel containers with a capacity from 770L to 1300L with dome lid(s), for trunnion and/or lifting devices' Dimensions and design.
- Four (4) wheel containers with a capacity from 750L to 1700L with flat lid(s), for wide trunnion or BG and/or wide comb lifting devices' Dimensions and design.
- Performance requirements and test methods.
- Health, safety, and environment.
- Colors, markings, and designation requirements.

5.1 Bin Carting Routes.

For safety and ease of manoeuvrability, the distance required for Facilities Staff to transfer bins to their collection point must be the minimum achievable. No steps or kerbs are allowed in the path for wheeling bins to the collection point.

Table C.2: Bin-carting design standards

Bin capacity	Up to 360L	360L – 1100L	More than 1100L
Maximum distance	30m	5m	3m
Maximum surface grades	1:14	1:14	1:30
Steps or kerbs	None	None	None

The noted bin route from the waste bin holding area to the kerbside collection point is in alignment with the highlighted travel distance above being within 30m.

5.2 Liquid waste storage requirements.

UFD recommends a movable **bunded pallet** be provided in the waste collection area. This will assist in ensuring the waste liquids such as contaminated oil, fuels, old cooking oils, paint tins, chemical's etc. do not enter the trade waste system.

UFD recommends an area of a **nominal 0.5 square meters (810mm x 610mm)** be allowed for bunded drip tray in the waste collection area for this purpose.

Figure 6 Liquid waste hold for the RACF waste holding area.

6. General Waste and Co-mingled Waste generation rates.

Universal Foodservice Designs, UFD has carried out an analysis of the waste and recycling requirements of the new Home and note the following calculations.

6.1 Waste bin numbers.

The following bin numbers will be required for this project.

Bin type	Bin size/capacity	Bin numbers	Pickups – per week
General waste	**240 litres**	**10**	**2 time**
Co-mingled waste	**240 litres**	**15**	**2 time**
Administration waste	**240 litres**	**1**	**As volume dictates**
Green/Garden waste	**Compost system**	**1**	**N/A**
Fluid waste	**810mm x 610mm bunded area**	**1**	**As volume dictates**

The waste calculations to determine the noted bin numbers are as detailed below.

6.2 General waste generation rates.

Based on the facility Complying with the NSW Department of Environment and Climate Change (Better practice guide for Waste Management in Multi-unit dwellings). UFD provides the following general waste generation rates.

Area	General waste litres per day requirement	General waste litres per week requirement
Arrivals Building	760 litres per day	5,320 litres per week.
Community building No 1	65 litres per day	455 litres per week.
Community building No 2	130 litres per day	910 litres per week.
22 Glamping Tents	220 litres per day	1,540 litres per week.
GENERAL WASTE TOTALS	**1,175 LITRES PER DAY.**	**8,225 LITRES PER WEEK.**

6.3 General waste generation rates with compost and worm farm and Bio-digestor engaged.

Note: We estimate that a **combined nominal 80% of food waste** would be sent to a worm farm on site. This would reduce waste volumes as tabled below.

Area	General waste litres per day requirement	General waste litres per week requirement
Arrivals Building	136 litres per day	952 litres per week.
Community building No 1	39 litres per day	273 litres per week.
Community building No 2	78 litres per day	546 litres per week.
22 Glamping Tents	132 litres per day	924 litres per week.
GENERAL WASTE TOTALS	**385 LITRES PER DAY.**	**2,695 LITRES PER WEEK.**

6.4 Co-mingled waste generation rates.

Based on the facility Complying with the NSW Department of Environment and Climate Change (Better practice guide for Waste Management in Multi-unit dwellings). UFD provided the following Co-mingled waste generation rates.

Area	Co-mingled waste litres per day requirement	Co-mingled waste litres per week requirement
Arrivals Building	648 litres per day	4,536 litres per week.
Community building No 1	54 litres per day	378 litres per week.
Community building No 2	260 litres per day	1,820 litres per week.
22 Glamping Tents	110 litres per day	770 litres per week.
CO-MINGLED WASTE TOTALS	**1,072 LITRES PER DAY**	**7,504 LITRES PER WEEK.**

It is recommended that the waste management system be monitored in the initial stages to ensure that enough bins have been provided to handle the waste generated. The bin numbers noted are estimates based on anticipated volumes and the amount of times waste is collected during the typical weekly period.

It should be noted by the Reader that the calculation of waste volumes detailed are not precise as the frequency of waste is subject to the following: demographic, religious, cultural, and racial differences. Seasonal periods and events may also impact on waste generation rates. However, for the purposes of the exercise, industry standards and NSW EPA waste generation rates have been utilised as they include nominal allowances for normal daily problems encountered.

6.5 Bin washing area.

UFD recommends that adequate bin washing space is made available for the washing of 60, 120, 240, 660 & 1,100 litre bins inside or near the waste management area. As such, cold and warm water hose cocks will be required in this area along with a waterproof general power outlet and proprietary hose reel assembly.

Note: The Waste Management area will be complete with a proprietary floor grate assembly complete with a removable bucket trap assembly which will also be connected to the grease arrestor to meet NSW Trade Waste requirements.

7. Facilities Staff – Responsibilities.

The size of this development will influence the responsibility for ongoing management and the maintenance of all waste bins, bins areas and associated waste streams.

All waste bin and waste equipment movements in and around all the Greenstead Valley Communities are always to be managed by the Fresh Hope Communities maintenance staff.

Fresh Hope Communities maintenance staff duties include, but are not limited to, the following:

- Organising, maintaining, and cleaning the general and recycled waste the holding area (Frequency will be dependent upon waste generation rates and will be determined based upon the Fresh Hope Communities operations).

- Organising and coordinating both General waste and Recycled Waste pick-ups with Fresh Hope Communities waste collection agency. Maintenance staff shall ensure that bin movements from the waste management area to the waste collection area shall be done in accordance with current WH+S requirements and EPA regulations relating to travel distance from the bin holding area to the collection point (refer to Section 5.1 of this report).

- Staff shall be required to collect all generated waste from the following areas:

    - Arrivals Building General waste.
    - Community building No 1.
    - Community building No 2 Administration waste.
    - 22 glamping tents
    - Site garden areas.

Note: Additionally, staff shall be responsible for the dispersion of compost material to herb and vegetable gardens etc.

Note: The collection of all generated waste generated through the spaces nominated above will be carried out on a regular basis, with all generated waste being removed from the noted areas and transferred to the BOH waste management area by staff.

Note: Different waste streams (as indicated in this report) will require different coloured bins (refer to section 5). Maintenance and Cleaning staff shall be responsible for training staff and guests on the correct placement of generated waste into the correct bin type.

- Cleaning and exchanging all bins as required through all areas of the site and associated grounds.

- Staff will ensure that waste bins are not left un-attended in the loading dock of the facility.

- The maintenance staff will also be responsible for the following to minimise dispersion of site litter and prevention of stormwater pollution to avoid impact to the environment and local amenity.

- Promoting adequate waste disposal into all bins across all waste holding areas on site.

- Keep under surveillance the bin rooms and areas (whilst affording access to staff/contractors).

- Prevent overfilling of all waste bins; keep all bin lids closed and bungs leak-free.

- Act to prevent dumping or unauthorised use of waste areas or litter on site.
- Require collection contractor/s to clean-up any spillage that may occur when clearing bins.
- Coordinate preventative maintenance requirements on all waste machinery and plant as detailed in this report.

7.1 Recommended signage for waste areas.

UFD recommends that facility staff employ and maintain signs for garbage, recycling should be used. These signs will need to comply with the standard signs promoted by the Environmental Protection Agency.

WH+S Standard wall posters and bin lid stickers etc. must be provided in accordance with Australian Standard 1319:1994 Safety signs for the occupational environment.

Figure 7 Waste signage to be used where applicable in accordance with Australian Standards.

8. Light fittings.

It is estimated that Australia generates from 30+ million end-of-life fluorescent tubes and a further 20+ million end-of-life mercury-containing globes (CFL/HID etc.). Currently, around 96% of these end up in landfill.

Mercury is a potent neurotoxin that contaminates water supplies through leakage from landfill.

There is growing environmental and social desire to eliminate dangerous chemicals from entering landfill and subsequently finding their way into waterways and our living environment.

At the same time, it is also highly desirable to recycle as much metal and glass to further reduce the community's carbon footprint.

The Federal Government recently launched the Fluoro Cycle Scheme (Sep 2010), which is indicative of the issue's growing importance.

Based on this information UFD recommends that as part of a recycling process a Company such as Lamp recyclers assist in collecting broken lamps and bulbs. http://www.lamprecyclers.com.au/default.aspx

Lamp Recyclers can now help you to comply with environmental standards, with their Ezy-Return reply-paid lamp recycling packs. Fresh Hope Care would simply fill the pack(s) and lodge them at any Australia Post outlet/agent.

9. Waste removal vehicle requirements.

The Contractor waste collection vehicle(s) will be used to remove the balance waste that will end up in landfill. The waste collection vehicle should be rear/end loading. **The size of the vehicle may vary according to the collection service and who is providing it**. With UFD recommending a series of bins (as noted in this report) being utilised, the diagram below indicates the type and size of vehicle that may be required.

Figure 8 Typical rear lift waste truck.

Turning circle considerations must also include allowances for driver steering error and overhangs. The steering error allowance must be at least 0.6 metres (absolute minimum) on both sides of the theoretical wheel path and 1m as a desirable minimum. The vehicle will require a nominal 18 to 20 (maximum) meter turning circle and will **nominally** 9.3 (maximum) meters in length.

Vehicle Height.

If a private waste collection agency is employed, the waste collection agencies nominal vehicle height will be 3,600mm being a rear lift vehicle.

The Wingecarribee Shire Council Vehicle height will be a nominal 2,800mm in height.

Note: If Wingecarribee Shire Council waste collection vehicles are to be used for the collection of waste generated on site the vehicle type will be a rear loading vehicle with the size being 8,000mm long & 2,700mm wide.

Access and turning provisions.

The design aspect of waste removal must be considered by the architect and Traffic Consultant and should include the following:

- The presence of parked cars on access roads during Kerbside collection.

Note: The operator will be required to contract a waste removal organization that is proficient and accredited in removing all waste generated on site as detailed in this report.

Waste pick up/collection zone.

To assist the waste collection agency and ensure that the vehicles used in the collection of waste do not clash with the site's building elements and surrounds, UFD notes that a dedicated waste collection zone (for Kerbside collection) will be allowed for. Key features of the waste collection processes are as follows:

- The waste collector must collect all general and recyclable generated on a regular basis. The collection of waste and pick up times will be coordinated with Fresh Hope Communities Maintenance team to ensure that all bins ready for collection are correctly located prior to the pickup time.

- Maintenance team members will be required to move the required waste bins from the waste management area to the noted waste collection point for pick up before returning the waste bins back to the allotted waste areas.

- The waste collection area will have enough height to allow for the waste collection vehicle to gain movement into this area.

Note: Vehicle access and vehicle movements shall be aligned with the NSW Department of Environment and Climate Change (Better practice guide for Waste Management in Multi-unit dwellings). Which details the following.

- The collection point must be designed to ensure that the waste collection vehicle can safely access and manoeuvre.

- The travel route shall suit the dimensions of the waste collection vehicle.

- Travel routes shall be adequately surfaced.

- The grades of entry must not exceed the capabilities of the waste collection vehicle.

- The waste collection vehicle will not be reversing into the grounds.

10. Waste minimization recommendations – Waste area.

All businesses are encouraged to reduce/minimise its volume of waste. Fresh Hope Communities are no different.

To this end UFD recommends the following practices and processes be initiated as part of the facilities waste management plans:

- Set all computers to print on both sides of the page – reducing paper consumption by 50%
- Reduce / eliminate plastic bottle usage by providing filtered water in jugs to the Foodservice points.
- Undertake regular audits of rubbish collected in cleaners' bins noting what can be placed in recycled bins instead of general waste.
- Employ recycling signage through the Fresh Hope Communities team and foodservice areas to promote a positive recycling message.
- Recycle light fittings as detailed above.
- Employ a worm farm (see report).
- Employ a bio-digestor (see report).

11. Ewater.

UFD recommends that as part of the future commercial foodservice operation a **ROX10 ewater system** (or equal) be employed to reduce chemical usage in the foodservice operation. This offers several distinct advantages not only to the foodservice operation but also to the waste management operations and the ecological sustainability of the overall development.

1. With the application of an ewater system in the kitchen the Client would be able to clean the following items without the use of chemicals:

   - Stainless steel work benches and cooking surfaces.
   - Cutting boards.
   - Clean fruit, vegetables, and protein items.
   - Cutting utensils (blades etc).

2. Additionally, the ewater product can be placed into pump packs and given to cleaning staff to clean the following items and areas outside the kitchen:

   - Dining tables.
   - Reception counters.
   - Windows and glazed panels.
   - Balustrading.
   - Hard surfaces in toilets, washrooms and guest sleeping areas.

3. The application of ewater (whilst not eliminating all chemicals used on site) will reduce the size of storage areas for holding chemical, and associated packaging. This will reduce the amount of plastic and chemical packaging waste, lowering the amount of co-mingled waste held in the waste areas awaiting disposal.

4. Ewater is produced from a lower power charge, table salt and mains tapped (potable water) this reduces WH+S issues when handling ewater and ewater is dispensed with onsite it turns back into water eliminating algae blooms in local water ways.

Note: for additional information regarding ewater please refer to **Appendix G** in this report.

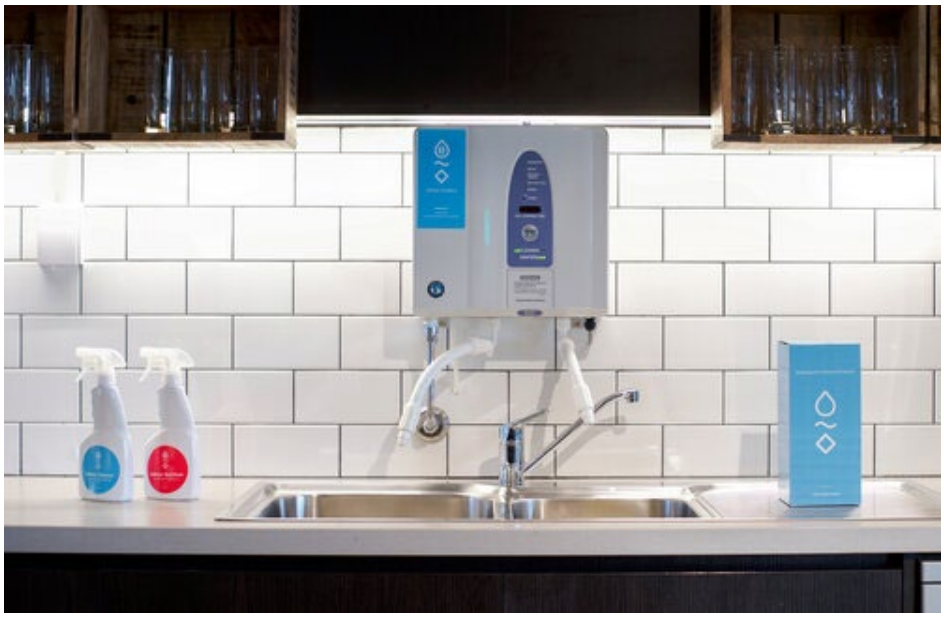


Figure 9 A wall mounted ROX10 Ewater system is recommended.

12. Waste area and Collection point.

UFD recommends that the future **Waste Management Area be a nominal 56m² (including space for the bio-digestor tank).** This area shall be sufficiently sized to also accept the waste bin allowances as detailed in **Section 6.1** of this report.

The waste area shall be located under the main kitchen area in the Arrival Village. Waste will be transferred to the waste collection point at the Service area via motorised transport.

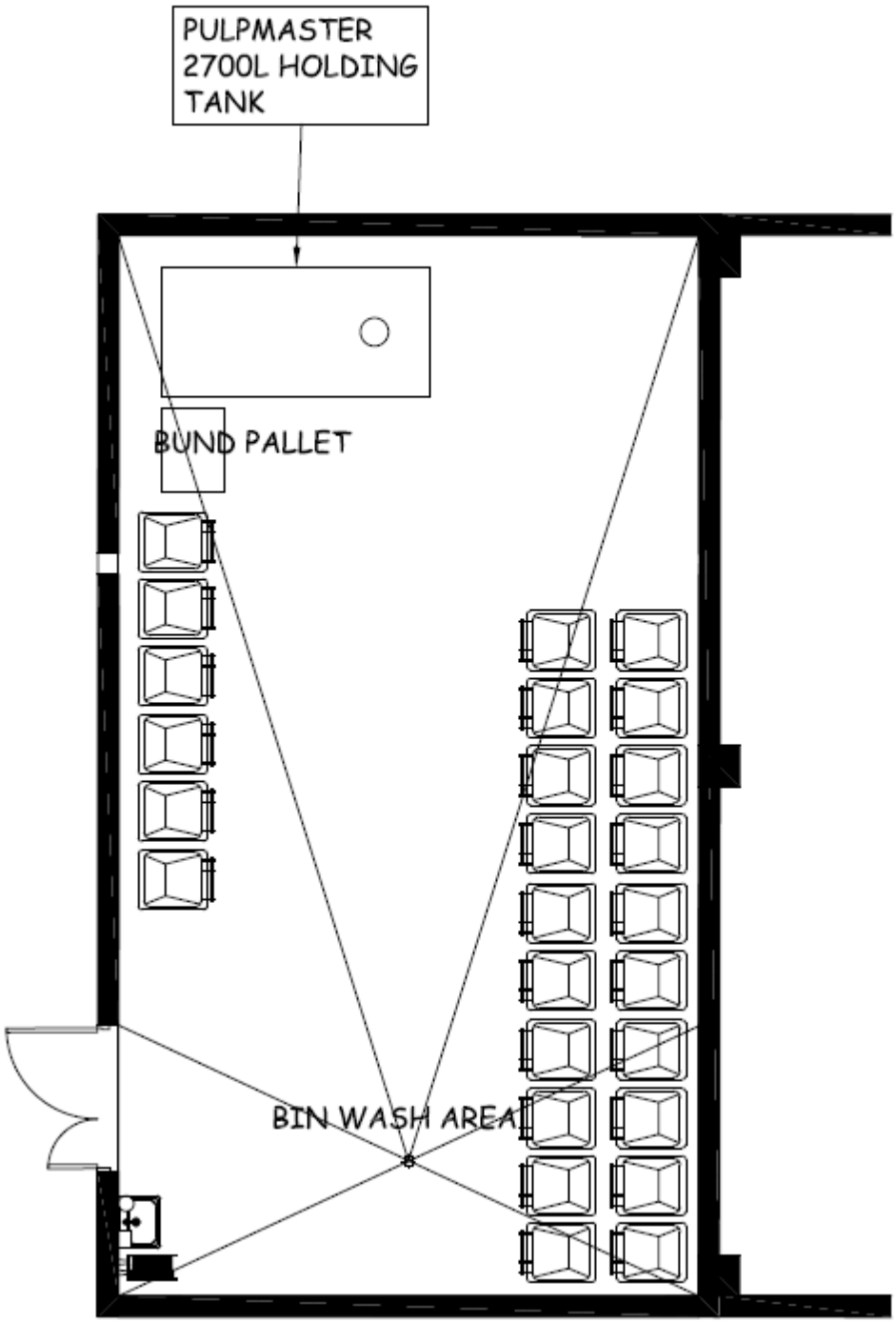


Figure 10 Proposed waste management area.

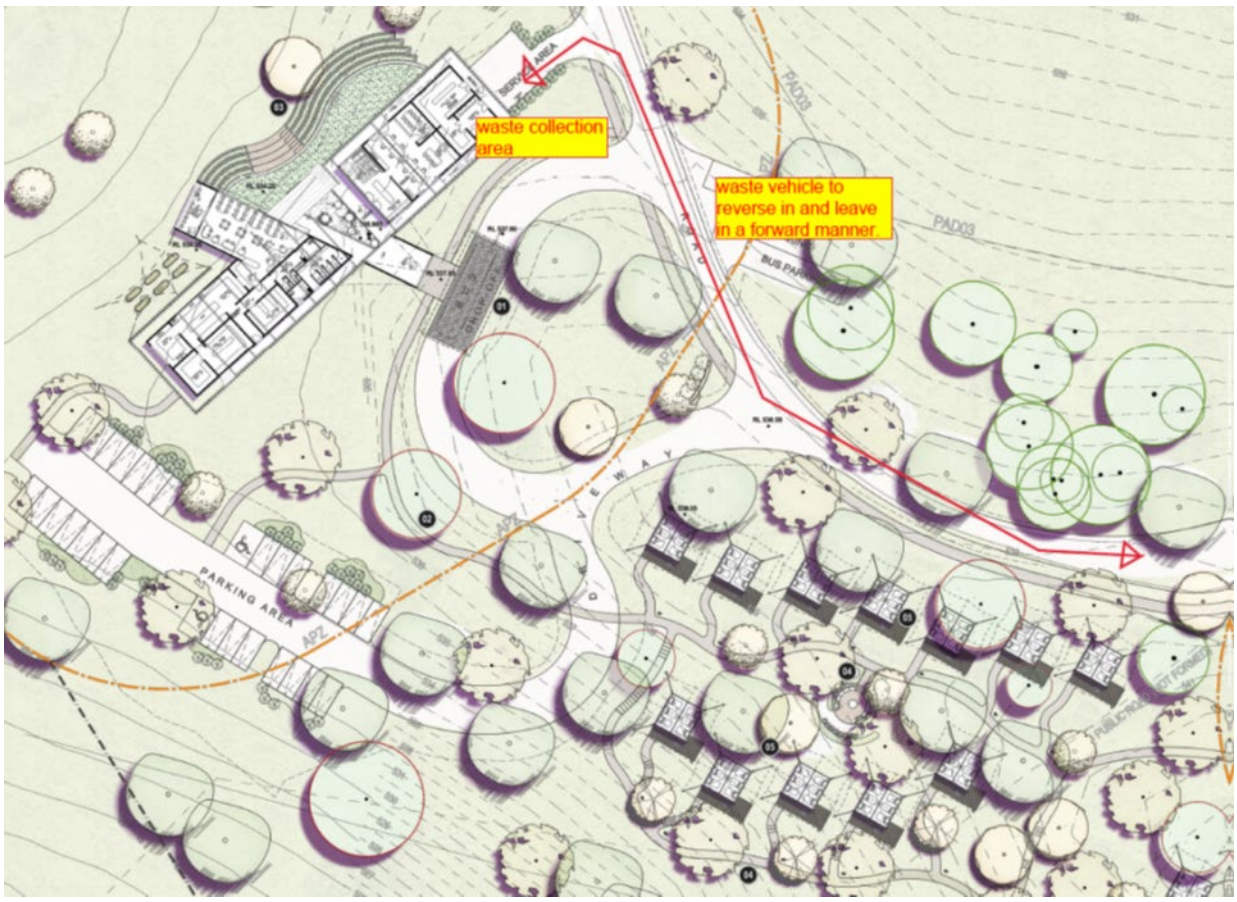


Figure 11 Proposed Waste collection point and vehicle travel path.

12. Conclusion.

This Waste Management report for Fresh Hope Communities, Greenstead Valley is based on the following:

- AS1668.2-2012 – Mechanical ventilation.
- Current NCC requirements.
- AS4586-2013 – slip resistance ratings.
- Current Work Health and Safety Requirements.
- AS4123.7-2006 mobile waste containers.
- AS1680-1990 – Artificial lighting requirements for Storage areas.
- Wingecarribee Shire Council – Waste requirements.
- Australian Standard 1319:1994 Safety signs for the occupational environment.
- NSW Department of Environment and Climate Change (Better practice guide for Waste Management in Multi-unit dwellings).

Additionally, all material provided by UFD has always been done so based on being independent and representing the Stakeholders best interests. Thought and consideration has been provided on how to reduce operational costs, consolidate labour costs, and increase Safe work practices across the Home.

By the Fresh Hope Stakeholder moving ahead with the recommendations as noted in this report, UFD note that they are rising to the challenge of creating an efficient and sustainable Waste management operation as part this new development and surrounds in the years to come.

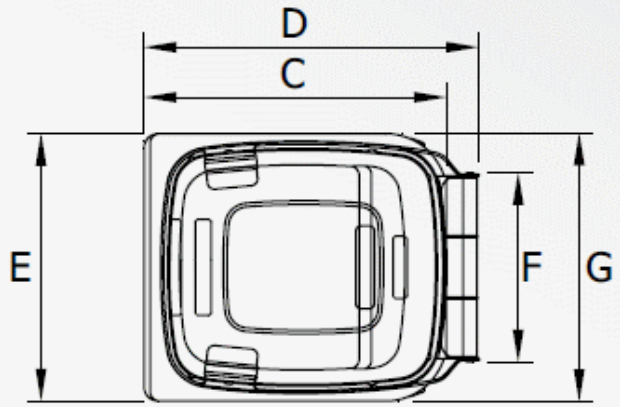
Appendix A - 240 litre waste bin data sheet.

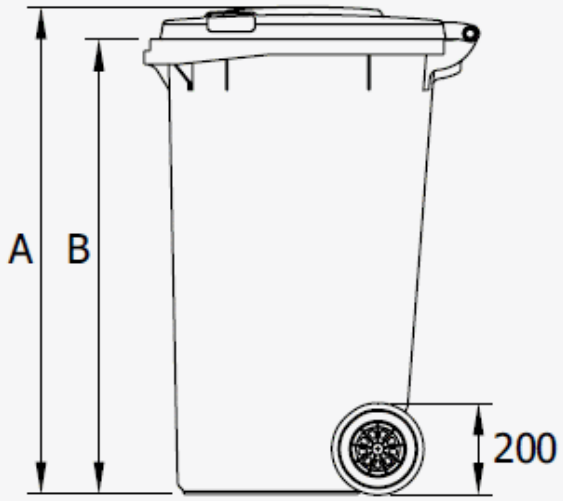
Dimensions - Weights - Standards

Nominal volume:	240 litres
Net weight:	approx 13 kg
Max load:	96 kg
Permitted total weight:	110 kg

A	1060 mm	D	730 mm	G	550 mm
B	990mm	E	585 mm		
C	660 mm	F	400 mm		

Measurements to be used as a guide only – variations will occur





Appendix B - WHS Signage

Appropriate Work Health and Safety hazard signs and Work Safe signage to inform people of hazardous areas, where there is restricted access and to reduce risks to staff, employees and to people that are in a location that could be a threat to safety and well-being. Hazard and tactile signage as well as safety symbols may warn or prevent entry by unauthorised personnel.

The purpose of these guidelines is to provide information for the application of regulatory and hazard signage in accordance with the requirements of the following legislations.

- Dangerous Goods Act (1985).
- Gene Technology Act (2000).
- Quarantine Act (1908).
- Occupational Health and Safety Act (2004) and associated New South Wales regulations.
- Australian Standard 1319:1994 Safety signs for the occupational environment.

Appendix C- Waste Generation rates applied.

Waste generation rates applied to the report as provided.

* this assumes a 7L kitchen caddy for food preparation and food scraps is emptied 3.5 times per week. In addition to food waste there may also be organics waste generated from the maintenance of communal gardens and pot plants.

Estimated commercial waste and recycling generation rates

The following instructions apply when using the data in Table F3 to calculate waste generation rates for commercial buildings.

- Data has been provided on a 'per day' calculation rate because similar premises types can operate five or seven days per week.
- This data is for general waste and recyclables (paper/cardboard and commingled). The premises may generate other waste types (for example, medical clinics in a shopping centre) and so generation rates for these should also be considered.
- This data is predominantly to be used for calculating waste and recycling generation rates as part of the planning process.
- For premises that have multiple types of facilities (for example, a club that has accommodation, bars, cafes and restaurants or a residential building with a convenience store or an office building with café, gym and childcare), all such facilities must be calculated separately and then volumes generated combined when looking at the bins required, storage size and servicing frequencies.
- As several premise types generate organics (for example, butchers, seafood retailers and greengrocers), the calculations of waste generation and systems should consider if an organics system will be implemented.
- 'Per premises' data is based on the average size for the type of business (approximately 80 m^2). Where the waste generation areas are larger, a pro-rata increase in waste/recycling generation should be made.
- Consideration should be given for times of peak generation such as when stock is delivered or sale times at retail stores.
- Shopping centres can have a variable tenant mix. Some have large tenancies (used by the major chains), whereas others have a broad range of small tenancies as well as offices, medical centres and a higher percentage of food outlets as opposed to general retail. Therefore, these should be calculated separately.
- The volume calculations do not take into consideration systems that may be used, such as compactors for paper/cardboard or waste.

Table F3: Calculating commercial and industrial waste and recycling generation rates

Premises type	Suggested generation (litres per unit per day)		Comments
	Waste	Paper, cardboard and commingled materials	
Accommodation: non-hotel/motel	10	5	Based on the number of guest rooms with other types of facilities calculated separately. Note: function rooms are based on potential bookings and restaurant data.
Aged care	5	1	Per resident. Kitchen to be calculated as per restaurant. Need to determine if other services are offered. Note that other waste such as clinical waste will be generated.
Cafes	100	120	Based on per 100 m^2 floor space.
Carparks (commercial)	1	1	Based on per 100 m^2 floor space.

Childcare	20	5	Per child
Cultural and recreational services: (museums, theatres, cinemas)	5	10	Based on per 100 m^2 floor space for patrons (seating areas for theatre/cinema). Calculate cafes separately. Calculate office areas separately.
Dry cleaning	15	5	Per premises (80 m^2)
Food retail: bakeries	240	120	Per premises (80 m^2)
Food retail: butchers	250	50	Per premises (80 m^2). If organics recycling implemented, then 150L may be transferred from waste.
Food retail: seafood	250	50	Per premises (80 m^2) If organics recycling implemented, then 150L may be transferred from waste.
Food retail: greengrocers	540	60	Per premises (80 m^2) A higher rate needs to be considered for larger premises (based on a pro-rata increase for the 80 m^2) premises. If organics recycling implemented, then 300L may be transferred from waste.
Food retail: other	120	80	Per premises (80 m^2)
Food retail: takeaway (with sit-down area)	500	240	Per premises (80 m^2) – day operation only Note consideration must be given to the number of hours or operation.
Food retail: takeaway (food preparation only)	120	60	Per premises (80 m^2)
Gymnasiums	20	15	Based on per 100 m^2 floor space
Hair and beauty	50	40	Per premises (80 m^2)
Hotels/pubs (without meals provided at the bar)	50	50	Based on per 100 m^2 floor space. Calculate restaurants separately (including meals served at bar) as well as accommodation (use motel rate).
Licensed clubs (with gaming)	50	50	Based on per 100 m^2 floor space. Calculate restaurants separately (including meals served at bar) as well as accommodation (use motel rate).
Medical	20	10	Per number of doctors' consulting rooms. Need to determine if other services are offered. Note that other waste such as clinical waste will be generated.
Motels	10	5	Based on the number of guest rooms with other types of facilities calculated separately.
Offices	10	15	Based on per 100 m^2 floor space that is used for staff activities (e.g. exclude lobby areas).
Optical	15	25	Per premises (80 m^2)
Restaurants	400	280	Based on per 100 m^2 floor space
Retail: chemists	20	45	Per premises

Retail: chain stores (clothing, manchester etc.)	5	20	Based on per 100 m^2 floor space. Other facilities such as cafes calculated separately.
Retail: other non-food	50	100	Per premises
Retail: grocery and convenience stores	120	240	Based on per 100 m^2 floor space
Retail: homeware and kitchenware shops	20	120	Per premises
Retail: newsagents and stationery shops	30	60	Per premises
Retail: office-based (e.g. travel agents)	30	40	Based on per 100 m^2 floor space that is used for staff activities (e.g. exclude lobby areas).
Retail: variety gift stores	20	120	Per premises
Schools: pre-school	10	15	Per student
Schools: primary	15	20	Per student
Schools: secondary	20	15	Per student
School: tertiary	10	10	Per student (full time equivalent). Note that other waste such as chemical waste will be generated. Need to calculate other services (e.g. food halls, student accommodation, childcare, gyms), separately.
Showrooms	10	25	Based on per 100 m^2 floor space
Supermarkets	240	300	Based on per 100 m^2 floor space. Larger supermarkets may have a number of recycling streams, so advice should be sought as to what systems will be provided.
Wholesale trade	100	50	Based on per 100 m^2 floor space

Table F3 has been developed using a range of data sources including literature review of other published waste generation data and the results from the *2014 NSW EPA Generator site survey of the commercial and industrial waste stream in the regulated areas of NSW* as well as comparisons to actual waste audit data from a range of commercial types.

Appendix D. Composter.

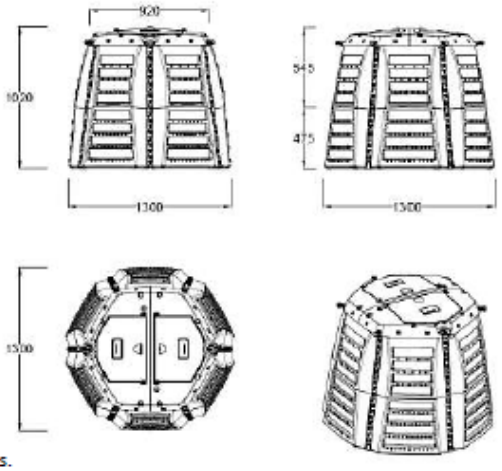
MEVA-TEC
MEMBER OF MEVA GROUP

TECHNICAL DATA SHEET

PRODUCT No. 7234

Thermo-Star composter – 1000 l

(Illustrative photograph)

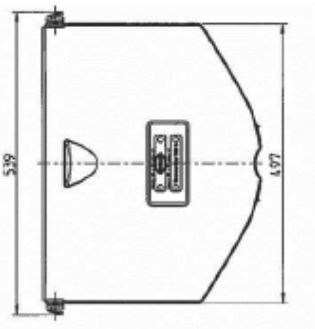


Technical data

Material	Recycled PP (Thermolen®)
Weight	20 kg
Capacity	1000 l
Temperature resistance	-30°C/+45°C
Wall thickness	4,5 mm
Width	1300 mm
Depth	1300 mm
Height	1020 mm

Attributes

- Premium composter – made of Thermolen®.
- Excellent thermal insulation, resistant to wheather influences.
- Resistant to UV radiation.
- Simple modular construction (easy and quick assembly).
- Lid for filling is located at the top.
- Equipped with sufficient number of vent holes.
- Removing the compost is possible after pulling the locking bar from multiple sides.



Product purpouse

- Designed for composting.
- Creating of full-bodied humus.

Additions

- Effective ventilation reduces the volume of composted waste.
- Thanks to excellent thermal insulation, the grinding process is accelerated.

Tel.: 416 823 181
E-mail: info.mevatec@meva.eu

MEVA-TEC s.r.o.
Chelčického 1228
413 01 Roudnice nad Labem - Bezděkov

Appendix E. Brian Lennox CV.

CV for BRIAN JAMES LENNOX

Brian Lennox FCSI is a foodservice, laundry, and operational waste management design consultant, who specialises in the design of compliant facilities that meet the needs of the operator.

A refrigeration technician by trade, Brian has also successfully completed accreditations in Engineering drafting, AutoCAD, Small business operations and freelance journalism having contributed articles to International and local industry magazines.

Brian has been involved in the foodservice industry for over thirty (35) years working in various roles which have culminated in his work over the last decade as an operational Waste management, Foodservice and Commercial Laundry Design consultant.

Having worked on a diverse range projects over the past twenty (20) years including the National Portrait Gallery, Park Hyatt Sydney, Villawood Detention Centre, Google, Apple, South Sydney Juniors Rugby Leagues Club, Bankwest corporate head office in Perth, Virgin airline lounges throughout Australia, Busselton Health Campus, Tetsuya's Restaurant Sydney, Bupa Care Services projects in Wodonga, Bankstown, Sutherland and the Goodman Fielder test kitchen, Brian has a solid understanding of controlling budget costs, spatial planning requirements and compliant laundry, waste and foodservice facility designs.

Brian specialises in providing credible advice concerning sustainable Waste management, laundry and foodservice designs which operate on less water, chemicals, power, and labour. This provides the operator with a healthier bottom line. Using cutting edge ideas and emerging trends in sustainable designs, Brian looks to bring the future of foodservice and laundry designs into existence now.

Australian Standards, health code regulations, Occupational health and safety, BCA requirements and HACCP procedures are all applied in the designs created by Brian and his team.

Brian is a Professional Member of the FCSI (Foodservice and Consultants Society International) and WMAA (Waste Management Association of Australia) and as such works in accordance with the ethical guidelines of excellence outlined by these Societies. In 2010 Brian was promoted to the Worldwide Council of members who oversee the Professional standards of the Society, assessing and giving direction to material that assists all members to continue growing professionally.

Brian is the Company director of Universal Foodservice Designs. This firm has been in existence for the past ten (10) years and works on design and documentation projects throughout Australia. The Company has a total staff of nine (9) which Brian manages on a basis.

Brian's unique background allows him to offer the Client a range of services including Facility Design, budget control, Specification and Documentation packages, tender review assistance, services co-ordination, Project Management assistance and facility dilapidation and certification reporting.

Brian provides important input to any Consultant design team.

Brian can be contacted on 0422 468 834 or on his Email address at Brian@ufd.net.au.

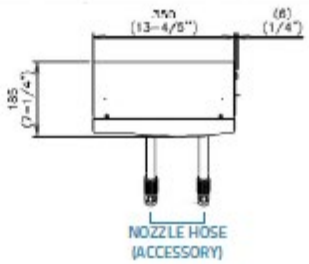
eWater® ROX10

DATA SHEET

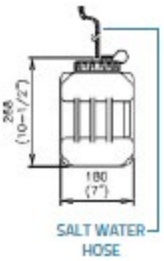
The eWater Systems ROX 10® is compact, easily installed machine that produces a sustainable alternative to potentially harmful and wasteful packaged cleaners and sanitisers. Using electrolysis technology similar to that of salt water pools, the eWater Systems ROX 10 needs just table salt, tap water and a little electricity to produce proven cleaning and sanitising solutions. Installation is quite simple, it should always be located immediately above a sink (preferably mid-point of a double bowl sink) and requires just 240v and connection to mains water.

ITEM		eWater Systems Water Electrolyser
MODEL		ROX-10WB-EWS
POWER SUPPLY		1 Phase 100 - 240V 50/60Hz
AMPERAGE		2.0A
ELECTRIC CONSUMPTION		170W
ELECTRIC CIRCUIT PROTECTION		Ground Fault Interrupter (with Overcurrent Protector) Grounding Wire, Fuse(for PC Board: 5A)
STANDARD PERFORMANCE	PRODUCTION RATE	Acid/Alkaline Water: approx. 0.7-1.5L/min
	AVAILABLE CHLORINE	20ppm or more
	pH	Acid Water: Approx. 3 or less Alkaline Water: 11 or more
OUTSIDE DIMENSIONS		350mm(W) x 185mm(D) x 340mm(H)
WEIGHT		Approx. 13kg (16kg Gross)
PACKAGE		Carton 610mm(W) x 250mm(D) x 452mm(H)
EXTERIOR		Galvanized Steel (Polyester Powder Paint, ABS Plastic
INTERIOR		Stainless Steel, Galvanized Steel (Polyester Powder Paint)
PRODUCTION RATE ADJUSTMENT SYSTEM		Automatic Adjustment by Switch Operation (Low/Standard/High)
WATER SUPPLY SYSTEM		Direct Conection to Water Main(Accessory pressure reducing valve required) G3/4 (G1/2) Water Supply Pressure: 0.15 - 0.75MPa(22 - 109 PSIG)
START/STOP		Push Button Switch, Noncontact Sensor
DISPLAY		Operation, Ready, Add Salt Water, Replace Cell, Error, Water Outlet (Acid/Alkaline)
ACCESSORIES		Salt Water Tank (5L), Cap, Water Supply Hose, Nozzle Hose (x2), pH Tester (TB, AZY), Chlorine Tester, Measuring Cup, Gasket, Pressure Reducing Valve (22 PSIG), Operation Sheet, Screw Collar, Anchor Bolt, Wood Screw, Rubber Dropper, Shower Nozzle, Straight Nozzle, O-ring, Elbow Assy
INSTALLATION CONDITIONS		Clean. Dust Free. Well Ventilated. Install mid-point over sink, preferably mid-point over double bowl sink

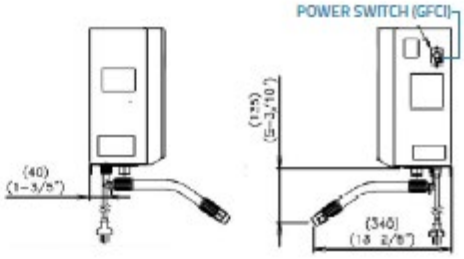
TOP VIEW



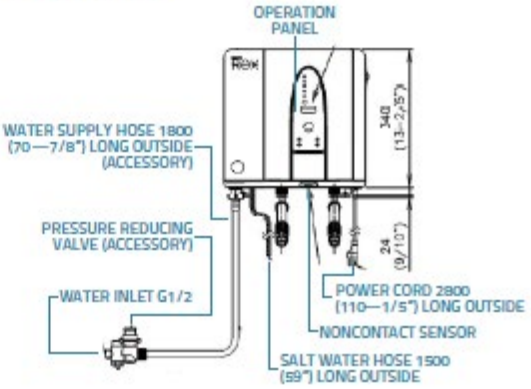
BRINE TANK



SIDE VIEW



FRONT VIEW



ewatersystems — Cleaner. Safer. Smarter.

Certified
B
Corporation

eWater Disinfectant

Commercial Grade Disinfectant
Kills COVID-19 (SARS-CoV-2) ARTG N. 343004

ewatersystems
ewatersystems.com

Product Overview

eWater Disinfectant is an ARTG listed and certified organic hard surface disinfectant proven to kill Coronaviruses including SARS-CoV-2 (COVID-19).

This product is produced by the eWater Hygiene System using salt and water with electrolysis technology.

eWater Disinfectant contains no additives, fragrances or other harsh synthetic components.

Certifications -

GECA CERTIFIED

Certified Allowed Input

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Hygiene that doesn't cost the Earth

Proven & Effective

Commercial Grade Disinfectant

eWater Disinfectant passes the TGA Option C disinfectant test for commercial grade disinfectants demonstrating effective bacteria kill rates.

Coronavirus (COVID-19) Viral Claim

eWater Disinfectant passes the TGA viral claim test demonstrating a >5.56 Log kill rate.

Shelf Life

eWater Disinfectant has a 30 day shelf life once produced from the eWater Hygiene System.

Australian Register of Therapeutic Goods

Listing No. 343004

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3

Applications

Use eWater Disinfectant across all hard surface, equipment and touchpoints.

Furniture

Bathrooms

Floors

Glass & Stainless

Surfaces

Touchpoints

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Hygiene that doesn't cost the Earth

4

How to use

Use eWater Disinfectant on all hard surface and touchpoints.

Application

1. Apply eWater Disinfectant after cleaning.
2. Spray on surface and leave to dry for 10 minutes at room temperature.
3. If required, wipe dry with disposable towelling.

Storage

- Store below 30C out of direct sunlight in sealed containers.
- Use within 30 days of production date.

Safety

- eWater Disinfectant is a non-hazardous product.
- No PPE required.

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5

Availability

eWater Disinfectant is produced on demand by the eWater Hygiene System. The first TGA listed solution produced by onsite generation, eWater Disinfectant

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Hygiene that doesn't cost the Earth

6

eWater Solutions

Four versatile solutions for use across your organisation.

eWater Disinfectant

A commercial grade disinfectant proven to kill Coronaviruses including COVID-19. Use on all hard surfaces.

eWater Sanitiser

An effective, quick contact anti-bacterial sanitiser for surfaces, hands and food contact applications.

eWater Cleaner

A multi-purpose cleaning agent that cuts through dirt, grease and grime. Leaving no residue, it is ideal for use on all surfaces, including stainless, glass, floors and equipment. Food safe for produce wash.

eWater Neutral

A pH neutral, sanitising cleaner that is ideal for getting rid of odours, cleaning floors, bathrooms and other hard surfaces where ensuring a sanitary and clean environment is crucial.

7

Why choose eWater

Secure, cost effective supply

By replacing conventional harsh hygiene chemicals, eWater reduces risk and saves you money.

Safer, healthier work environments

Containing no harsh chemicals, synthetic fragrances or volatile ingredients, eWater ensures your workplace is both safe and healthy.

Sustainable by design

With onsite production and no harsh or volatile chemicals, eWater reduces single use plastic and chemical waste.

eWater is the only onsite generated hygiene solution that is TGA listed and certified by -

GECA CERTIFIED

Certified Allowed Input

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