FORESIGHT ENVIRONMENTAL

Sandstone Precinct – Patina Hotel

Education Building – MOD 7

Operational Waste Management Plan

Prepared by Foresight Environmental

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This report is based on information provided by **Essence Project Management Pty Ltd** coupled with Foresight Environmental's knowledge of waste generated within the mixed-use development sector. To that extent this report relies on the accuracy of the information provided to the consultant. It has been compiled by Foresight Environmental on behalf of **Essence Project Management Pty Ltd**.

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Revision	Issue date	Consultant/s	Reason/comments
1	10 October 2019	Kyle Renwick Patrick Arnold	Initial issue
2	05 November 2019	Kyle Renwick Patrick Arnold	Update per Built feedback – 01/11/19
3	06 December 2019	Kyle Renwick Patrick Arnold	Update generation rates

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1. Executive Summary

This Operational Site Waste Minimisation and Management Plan has been prepared by Foresight Environmental on behalf of **Essence Project Management Pty Ltd**. The plan details the way in which the **Education Building** within the proposed Sandstone Precinct development will manage the waste and recycling generated during the ongoing operational use of the development in accordance with City of Sydney DA condition B23 and the Council's Guidelines for Waste Management in New Developments 2018.

2. Overview of Development

The proposed development will consist of a combination of restaurant/bar areas, kitchen facilities, function areas and hotel rooms. For the purposes of estimating a waste profile for the development, the waste generating components is used in conjunction with Foresight Environmental's extensive database of historical operational data from similar developments/assets.

Table 1 below details the waste generating areas of the development, these areas will form the basis of the waste generation estimates and subsequent equipment/management recommendations. These figures do not represent the total area of the new development – only the areas that will contribute to waste generation.

Table 1 - Area breakdown and usage

Component	Area (m^2)
Hotel	8,640*
Commercial	354
Restaurants / Bars / Eateries	869
Services	129
Function	466

*Hotel area calculated from 192 rooms using an average of 45m^2/room

3. Waste Generation

Based on the information provided and the Council's Guidelines for Waste Management in New Developments 2018, the primary waste streams expected to be generated in the ongoing operation of the development would be:

- Mixed recycling (paper/cardboard, plastics, glass, aluminium, steel)
- Food Organic Recycling
- General waste
- Cooking Oil

Additional smaller waste streams may include toner cartridge recycling, fluoro tube/globe recycling and battery recycling.

Generation rates are based on the Council's Guidelines for Waste Management in New Developments 2018 which are described in the following table:

Table 2 - Waste generation rates

CoS Generation Rates	Expected litres per 100m^2 per day		
Component	Waste	Recycling	Food Waste
Hotel	20	25	15
Commercial	15	25	5
Restaurants / Bars / Eateries	100	500	100
Services	20	50	5
Function	100	125	30

3.1 Estimates

The following table shows the projected waste generation estimates for each component of the development:

Table 3 - Waste generation estimates per component

	Expected litres per day			
Component	Waste	Recycling	Food Waste	**Total**
Hotel	1,728	2,160	1,296	**5,184**
Commercial	53	89	18	**159**
Restaurants / Bars / Eateries	869	4,345	869	**6,083**
Services	26	65	6	**97**
Function	466	583	140	**1,188**
Total	**3,142**	**7,241**	**2,329**	**12,711**

3.2 Total Waste Estimate

As the waste room will need to accommodate the waste generated from each component, the combined total of all components will be used to determine the requires waste management systems:

Table 4 - Total generation estimate

Stream	L/day	L/week
Waste	3,142	21,993
Recycling	7,241	50,684
Food Waste	2,329	16,303
Total	**12,711**	**88,979**

4. Waste Management Systems

Table 5 details the recommended equipment and collection frequency required to service waste and recycling streams for all waste generating components of the development. This also details the estimated spatial requirements for the waste storage area located on the lower ground level.

Table 5 - Recommended equipment and collection frequency

Stream	Bin Type	No. of Bins	Weekly Clearance Frequency	Weekly Capacity (L)	Estimated volume / week (L)	Footprint per bin (m^2)	Total Footprint (m^2)
Organics	Pulpmaster - 2700L Tank	1	4	21,600	16,303	2.35	2.35
	Pulpmaster 6000	1	-	-	-	0.50	0.50
Mixed Recycling	MGB - 1100L	7	7	53,900	50,684	1.20	8.40
General Waste	MGB - 1100L	3	7	23,100	21,993	1.71	5.12
Cooking Oil	Heated Tank*	1	1	800	800	1.00	1.00
Total bin footprint							**17.37**
Recommended Room Size – including circulation space & 4m2 bulky waste storage							**32.05**
Available Space							**37.00**

*The heated tank is to be in a bunded and drained area. It is recommended the bunded capacity is the same capacity of the tank.

4.1 Other waste/recycling

The following waste streams are unlikely to be generated regularly but can be collected on call as needed:

- E-waste - collected by facilities management staff and consolidated for collection by specialty e-waste contractor for recycler (usually provided by the appointed waste contractor on an on-call basis).
- Bulky waste – it will be the duty of retailers to inform facilities management staff of any bulky waste that will be required to be removed from site, including material generated during defit/refurbishments. The material/s will be stored in the tenancy, or approved area, until facilities management can coordinate with the waste contractor to organize an appropriate receptacle to be temporarily supplied.

Contractor/delivery waste – Waste generated onsite by contractors/deliveries must be taken back unless prior consent has been negotiated with facilities management.

5. Waste and Recycling Storage Area

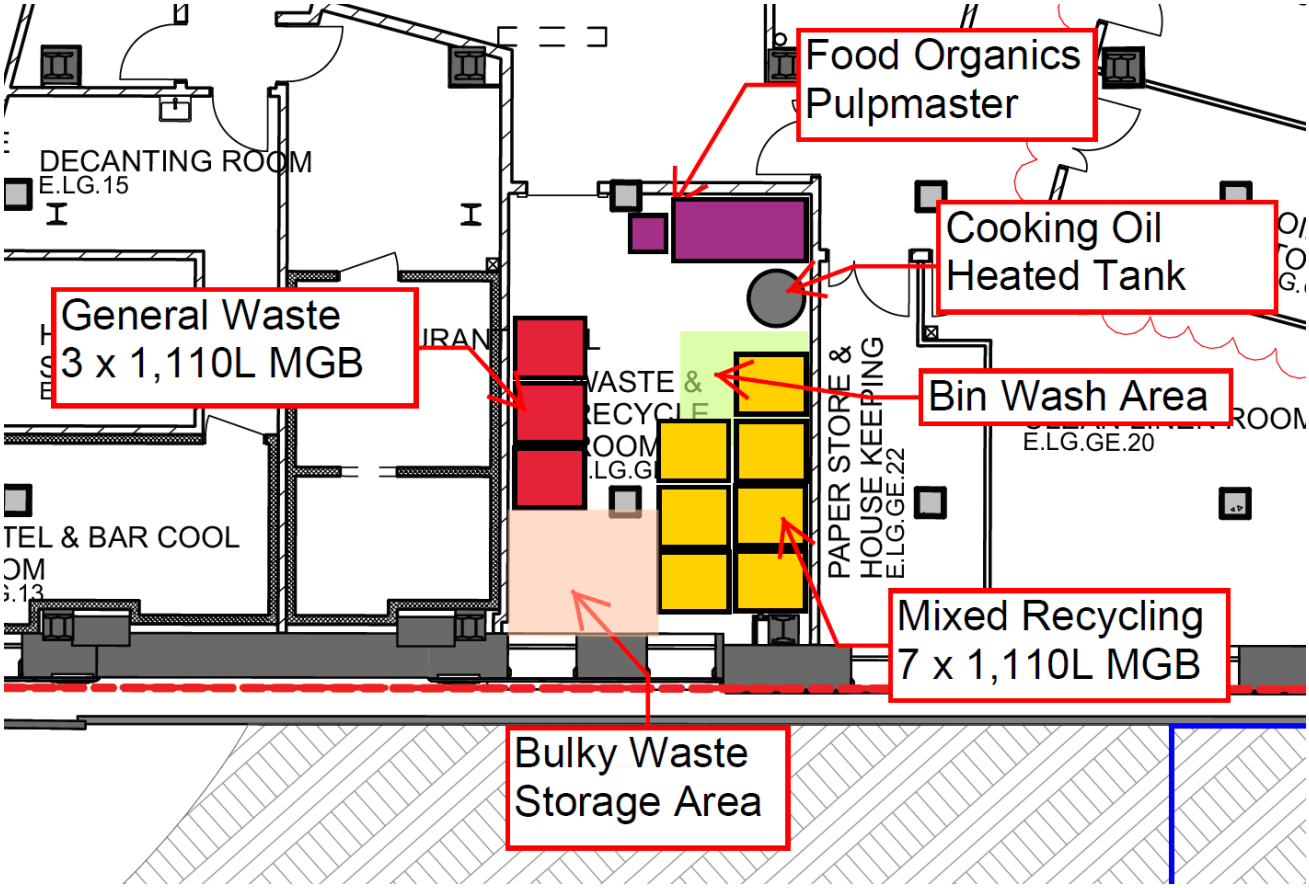
5.1 Waste Storage Area

The waste and recycling storage room is located on the lower ground level adjacent the loading dock and can be accessed via Loftus St – see figure 1 below. The waste storage room provides ample storage space for the recommended systems detailed in the tables above, as can be seen from the indicative layout detailed in figure 2.

Figure 1 - Waste storage area located on the lower ground level

Note that the access to the loading dock area is in an existing space which, in this heritage building, has limited width and headroom. As such, a private waste collection contractor will be selected based on their ability to provide a suitable truck size. Foresight Environmental have had discussions with several waste contractors who have the ability to use an SRV and meet the 2.9m clearance requirement – see section 7.1.

Figure 2 – Indicative layout of the waste storage area location within the lower ground floor



5.2 Amenity

The waste and recycling storage room will have the following features:

- Ventilation: The bin storage room will be ventilated to external air or mechanically exhausted in accordance with AS 1668.2-2002
- Vermin Prevention:
    - The bin storage room will feature tightly fitted doors
    - Opening will be vermin proof
    - Cleaners are to ensure that bin lids are closed when unattended
- Doors: The room will be fitted with a close fitting self-closing door that is openable from inside the room without the use of a key. The doors will be finished with a smooth faced impervious material that is capable of being easily cleaned
- Floor: Structural concrete slab with smooth epoxy topping finish with coved wall and floor junctions. Graded drains to approved sewer connections – fitted with an in-floor dry basket arrestor approved by Sydney Water Corporation
- Walls: Brick work/concrete block or similar finished in a light coloured, washable paint in accordance with AS 3958
- Ceiling: Structural concrete slab over
- Lighting: Base building lighting with switches inside and outside waste room (sensors may also be used)
- Water Supply: hot and cold tap and hose connection
- Signage: clear signage identifying the various streams and appropriate use will be prominently displayed (see section on signage below)

The ongoing maintenance and up-keep of the waste storage room will be the responsibility of cleaning/building management staff. They will be tasked with ensuring bins are stored neatly and are cleaned as required.

5.3 Signage

All waste and recycling streams will be differentiated with clear signage on all bins and on walls within the waste storage area. Below are examples of appropriate signage incorporating textual information, pictures and colour-coding to communicate the message.

Figure 3: Stream appropriate signage

5.4 Colour-coding

To further reinforce the differentiation between waste and recycling streams, it is highly recommended that the bin storage room be colour-coded to ensure bins are stored in the correct area and to enable easy identification of the streams provided. This can be done by painting borders on the floor indicating where bins should be stored. The colour of the paint should be consistent with the waste stream e.g. yellow paint for comingled recycling, red paint for general waste. The waste room walls can also be painted.

Figure 4: Indicative colour-coding guide

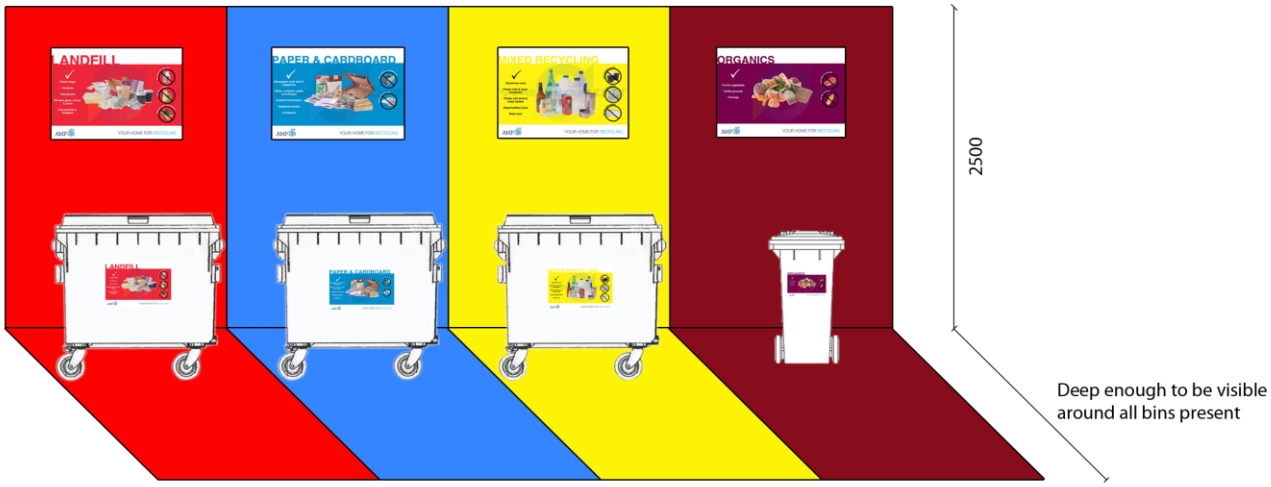


Figure 5: Example of appropriate colour-coding

6. Onsite Management Protocols

6.1 Waste collection practices

The details provided in table 6 outline a high-level management procedure for the movement of waste internally amongst the different stakeholders.

Table 6: Internal waste management guidelines for all stakeholders

Component	Management Protocol
Function	• Staff will clear function waste from the rooms and separate into back of house bin-hub set ups (for example see figure 6/7). • Staff will be required to transfer contents of bins to the waste storage area as required throughout the day for disposal into the larger bins provided. • Figure 8 shows a trolley system that can be used to assist in moving these bins when full.
Cleaners	• Cleaners will be responsible for the daily collection of the bin hubs scattered throughout the building. They will transfer all waste and recyclables to the waste storage area on the lower ground floor via the lift. All materials will be decanted into the larger bins provided within the waste storage area on ground floor.
Kitchen/Bars	• Kitchen/Bar staff will be responsible for the separation of waste and recycling streams in 60L/90L multi-sort bins (or similar equivalent - refer to figure 7 below) in their immediate back-of-house area i.e. under bench. • Kitchen/Bar staff or cleaners will be required to transfer the full bins to the waste storage area as required throughout the day for disposal into the larger bins provided or into Pulpmaster. • Sealed cooking oil caddies will be transferred to the main waste room to be emptied into the sealed vacuum silo in the main waste room
Hotel	• Hotel waste managed internally by hotel staff/cleaners and transferred to the waste storage room on lower ground level via the lifts. • Figure 9 shows a trolley system that can be used to assist in moving waste from hotel room bin hubs to the main waste storage area.

The figures below provide examples of the recommended (or equivalent) bins for retailer/operator use.

Figure 6: Examples of small waste/recycling "multisort" bins for bin hubs (60L or 90L)

Figure 7: Example of multi-sort transport trolleys – could be provided for retailer and cleaner use

Figure 8 - Example of segregated cleaner trolley

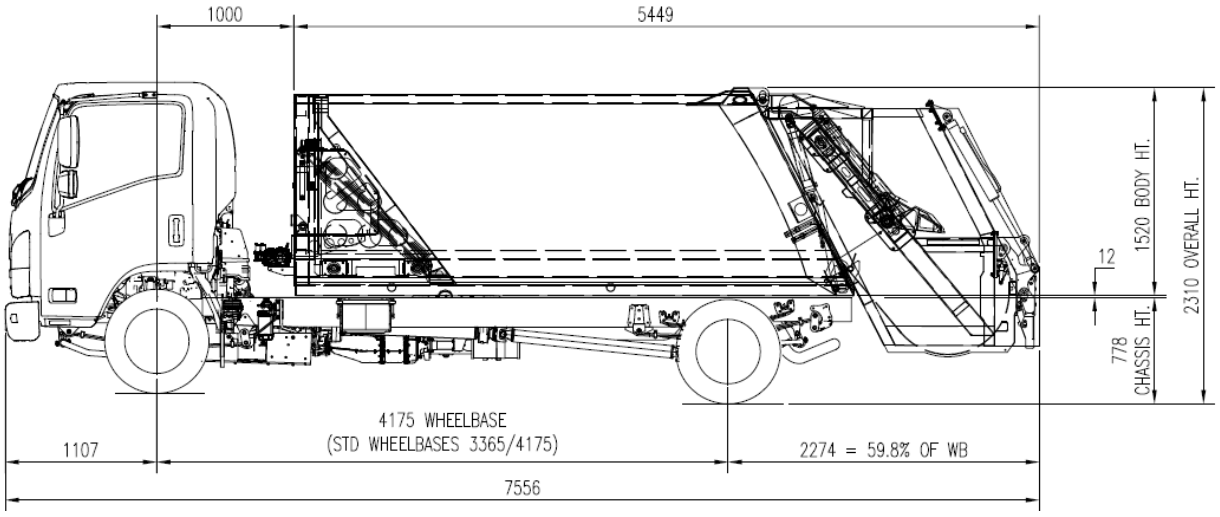
7. Collection

Waste and recycling collection services will be provided by a commercial waste contractor (TBA). Utilising a commercial waste contractor affords hotel management greater flexibility regarding collection schedules and the appropriate final collection frequencies will be determined in consultation with the waste contractor once appointed – recommended collection frequencies have been detailed in Table 5 above based on the estimated waste profile however once operational, collection schedules may need to be adjusted accordingly depending on actual waste generation.

7.1 Waste Collection Vehicle

Waste truck specifications will vary slightly between contractors however as a guide and due to the limited headroom of the loading dock area, all streams and bins recommended in this report would typically be collected by a small-rigid rear lift waste truck – figure 10 provides an example of a smaller used truck by commercial waste contractors (see appendix for Pulpmaster collection vehicle specifications).

Figure 9 - Small-rigid rear lift commercial waste truck specifications



The waste contractor will need to comply with the Loading Dock Management Plan (created by ARUP) for this property to ensure an appropriate vehicle is supplied to meet clearance height and swept paths.

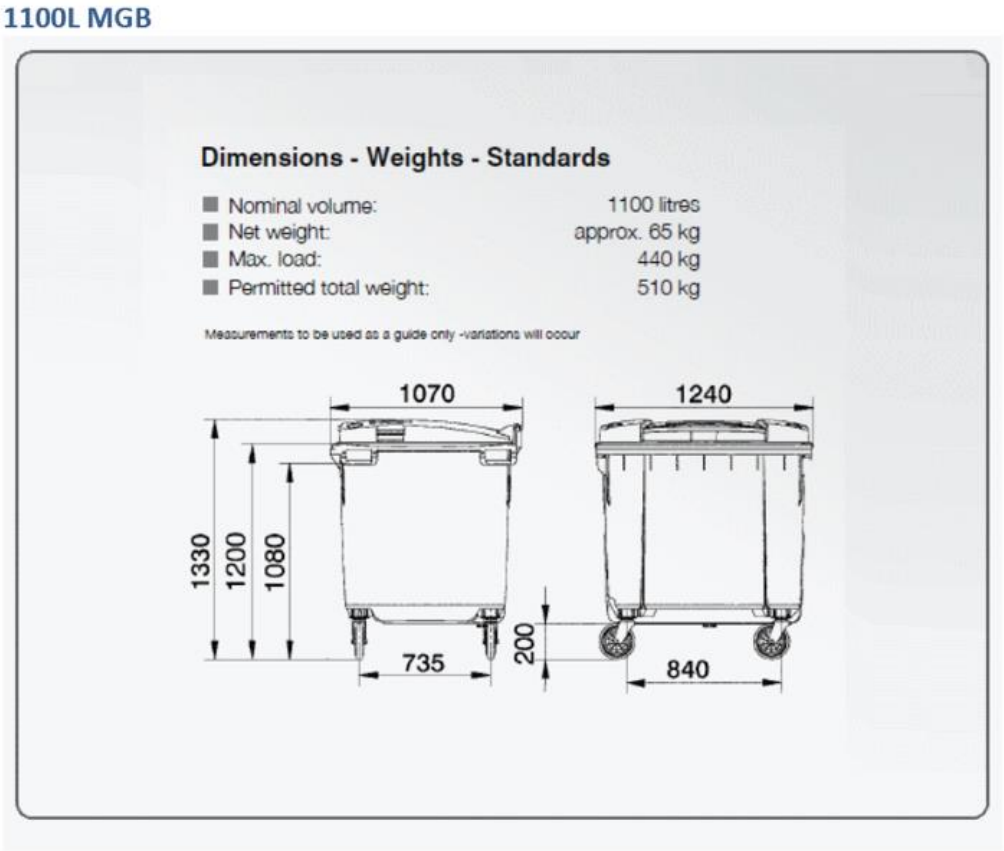
8. Conclusion

The details of this waste management plan confirm that the waste facilities provided in the proposed design adequately cater for the projected waste generation rates at the completion of the development in accordance with City of Sydney DA condition B23 and the Council's Guidelines for Waste Management in New Developments 2018.

9. Appendix

9.1 MGB dimensions

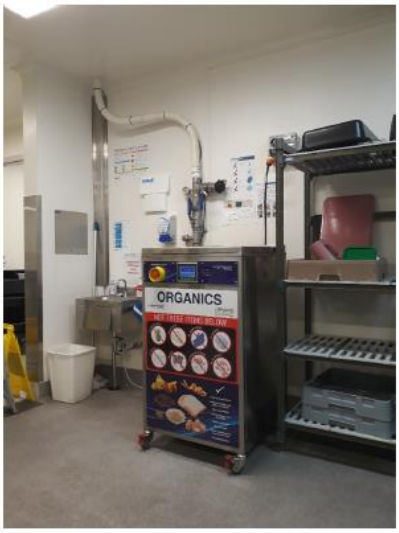
Figure 10 – 1,100L MGB Dimensions



9.2 Pulpmaster

Pulpmaster 6000 – Features and Benefits

- Fully Stainless Steel for Durability
- Back to Base Communication
- All machine functions monitored
- Liquid cycle for organic liquid waste
- Category 4 Safety Rated
- Low water use – average 20L per tonne
- Reduction in waste volume over 50%
- Auto cycle for quick efficient use
- Tank level monitored electronically
- All mechanical functions in the machine
- Wash cycle for easy cleaning
- Can process 1 kilogram a second
- Power usage – average 2.8kwh per tonne
- Reduced Truck Movements



Pulpmaster 5000 Batch Machine

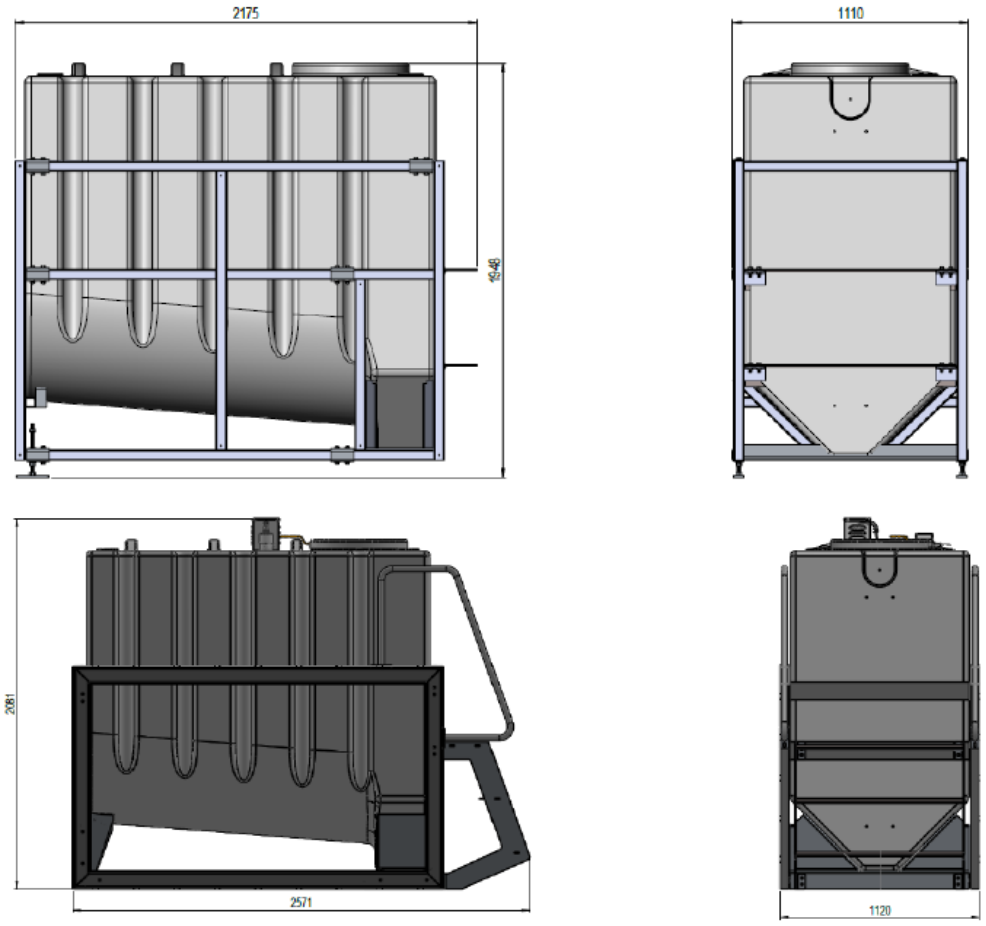
Lid Lift Position – 70 Litres per load

Pulpmaster 6000 - Specifications

Machine dimensions

Height 1230 mm (with the lid in the down position)
Width 680 mm
Depth 730 mm
Weight 170 kg's

2700L Flat Holding Tank



SPECIFICATIONS

Pulpmaster Mini Tanker

Height	2100mm
Width	2000mm
Length	5500mm

The Mini Tanker has on board water to rinse out the Pulpmaster Tank after each pump out