

South Coast Correctional Centre

Waste Management Plan

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1 Introduction

This Waste Management Plan (WMP) has been prepared on behalf of Guymer Bailey Architects for the development South Coast Correctional Centre (SCCC) upgrade located in Nowra, NSW. This Plan has been developed with consideration of Shoalhaven Council's Development Control Plan 2014 and other Authority's requirements. The development upgrade consists of:

- New 160 person maximum security section
- New 200 person minimum security section
- New industries facility/laundry
- Various upgrades and renovations to the facility

These upgrades are in addition to the existing facility, which has a current capacity of 630 inmates. The current facility has a mix of minimum, medium and maximum security divisions as well as medical, laundry and sporting facilities etc.

Waste audit and management strategies are recommended for new developments to provide support for the building design and promote strong sustainability outcomes for the building. All recommended waste management plans will comply with council codes and any statutory requirements.

This Operational Waste Management Plan addresses the appropriate segregation, containment and disposal of waste required with waste avoidance being the primary focus. To assist building management in achieving effective waste and recycling management, this waste management plan has three key objectives:

- to minimise the environmental impacts of the operations of the development on the environment** – this will be achieved by ensuring maximum diversion of waste from landfill; correct containerisation and transport of materials; correct segregation of materials into appropriate management streams; awareness among staff/inmates of waste avoidance practices.
- to minimise the impact of the management of waste within the development on local residents** – this will be achieved by ensuring waste is managed so as to avoid odour and litter and collected during suitable times.
- to ensure waste is managed so as to reduce the amount landfilled and minimise the overall quantity generated** – this will be achieved by implementing systems that assist staff/inmates to segregate appropriate materials that can be recycled; displaying signage in all staff/inmate areas to remind and encourage avoidance and recycling ; and through associated signage in the commercial areas to reinforce these messages.

It should be noted that some aspects of this waste management plan may need to be amended or adjusted to comply with security issues.

2 Waste Generation

2.1 Waste Streams

The majority of waste is produced by the inmates during meal times. Each inmate receives 3 meals per day in the form of a ration pack. Inmates consume their ration packs and dispose of their waste into general waste and recycling bins. These ration packs are produced onsite by the inmates themselves. A large portion of cardboard produced onsite is during the preparation of the inmates ration packs.

Inmates also work in industrial workshops. Currently there are three different working sectors. These include a furniture workshop, a private sector business unit (inmate currently build bed bases for a private external company) and an engineering section. Combined these sectors produce waste streams that include timber off cuts, sawdust and scrap metal.

Based on the development profile, the following waste streams would be expected on a regular basis (mainly from food preparation areas and where food is consumed);

- General waste;
- Comingled (container) recycling and
- Cardboard/Paper recycling;

In addition, the following industrial types of wastes/recyclables will be generated on a regular basis;

- Timber off cuts;
- Saw dust and
- Scrap metal.

2.2 Waste Generation Estimates

Waste produced by the new maximum-security building will be added to the existing facility waste area and the new minimum-security building will have its own waste collection area. Calculations are based on averages for quantity of waste generated and composition as determined by industry data (ie., data/information provided by WACS' waste audits conducted in a broad range of sectors) as well as consideration of the current waste generation rates as supplied by SCCC.

It is estimated that the development will generate a total of **174,240 litres** of waste and recyclables per week (this is total for the whole facility). This is broken down as follows:

- New maximum-security building plus existing facility waste – a total of **139,040 litres** of waste and recyclables per week.
- New minimum-security building – a total of **35,200 litres** of waste and recyclables per week.

The following tables summarise the expected quantities of waste and recyclables generated for the development in volume per week. This is for the new maximum security building (plus existing waste generated), and the new minimum security building.

Table 1 – Waste/recycling generation (Maximum security and existing)

| Waste Type | L/Week |
|---------------|---------------|
| General Waste | 126400 |
| Recycling | 12640 |
| Cardboard | 15800 |
| TOTAL | 139040 |

Table 2 – Waste/recycling generation (Minimum security building)

| Waste Type | L/Week |
|---------------|--------------|
| General Waste | 32000 |
| Recycling | 3200 |
| Cardboard | 4000 |
| TOTAL | 35200 |

3 Bin Requirements

3.1 New maximum security block including existing facility

The following table shows the recommended systems required to manage the estimated waste profile as detailed in the above tables for the development. The systems refer to the waste storage system rather than the internal bins that may be used within the development.

Table 3 – Waste Systems (Maximum security plus existing)

| Waste Stream | Bin Size (MGB) | No. of Bins | Clearance Frequency/week | Capacity (weekly) | Estimated volume / week | Footprint per bin (m2) | Total Footprint |
|---------------|----------------|-------------|--------------------------|-------------------|-------------------------|------------------------|-----------------|
| General Waste | 4000 | 11 | 3 | 132,000 | 126,400 | 2.9 | 31.9 |
| Recycling | 4000 | 4 | 1 | 16,000 | 12,640 | 2.9 | 11.6 |
| Cardboard | 4000 | 2 | 2 | 16,000 | 15,800 | 2.9 | 5.8 |
| TOTAL | | 17 | | 164,000 | 154,840 | | 49.3 |
| | | | | | | Plus 30% | 64.09 |

The above table is a guideline as to the required bins needed to service the new maximum security building to be built as well as the existing waste produced. An allowance of 30% extra space has been provided for bin manoeuvrability.

As mentioned previously, the new maximum-security building will use the existing outdoor waste disposal area currently used for the facility. The current waste disposal system is located in a separate large open “bin chute” area with easy truck access. These areas currently have 4m³ MGB’s provided for general waste, cardboard and recycling.

A variation of 4m³ MGB’s and 1100L MGB’s may be used. The existing waste storage space provided will be sufficient to clear all the waste from this development.

3.2 New minimum security block

Table 4 – Waste Systems (New minimum security)

| Waste Stream | Bin Size (MGB) | No. of Bins | Clearance Frequency/week | Capacity (weekly) | Estimated volume / week | Footprint per bin (m2) | Total Footprint |
|---------------|----------------|-------------|--------------------------|-------------------|-------------------------|------------------------|-----------------|
| General Waste | 4000 | 3 | 3 | 36,000 | 32,000 | 2.9 | 8.7 |
| Recycling | 4000 | 1 | 1 | 4,000 | 3,200 | 2.9 | 2.9 |
| Cardboard | 4000 | 1 | 1 | 4,000 | 4,000 | 2.9 | 2.9 |
| TOTAL | | 5 | | 44,000 | 39,200 | | 14.5 |
| | | | | | | Plus 30% | 18.85 |

Allowing 30% space for bin movement, the minimum size of the waste storage area for the new minimum-security building should be approximately **19 m²**. This area will be fully accessible by the appointed waste contractor trucks for bin emptying.

3.3 Industrial workshops

Existing industrial workshop facilities produce timber and metal waste. Current provisions for the wood working facilities include four x 4m³ bins for timber offcuts and one bin for sawdust. The industrial engineering sector produces waste metal, these are stored in one x 4m³ bin and picked up on an intermittent basis.

The appointed waste services contractor already caters for the timber waste produced by the current industries section. A scrap metals recycler has also been appointed to pick up scrap metal as needed.

As part of the Correctional Centre upgrade, a new industries area will be constructed. At this stage the industrial nature of this facility is uncertain, therefore waste bin requirements are unknown.

Bin requirements will be finalised once industry type has been decided. Generation rates will be based on the existing workshop waste generation rates mentioned above. Sufficient bins and clearance rates can then be provided.

4 Waste Management Systems

The following summarises the recommended waste and recycling systems that will be implemented within each facility. These recommendations are also based on Shoalhaven Councils requirements.

Inmates will do most of the cleaning within the facility and are overseen by a hygiene crew (as per current practice). Most waste production occurs during meal preparation and meal times.

240L MGB's are located throughout the facility, when these bins are full they are then taken to the larger 4m³ bins located in the "bin chute" area. These bins are then emptied into the larger bins via a mechanical bin lifter.

The waste collection contractor will perform garbage pick-ups at hours that provide the facility with the most security. (i.e. pick ups to occur in the early hours of the morning). These hours are whilst inmates are in bed and have been accounted for after security roll call.

Hazardous waste such as needles and bio hazardous waste will not be accepted into the general waste stream. All hazardous waste produced by the medical facilities will be serviced by a private medical waste specialist.

4.1 Storage area design

In keeping with best practice sustainability programs, all waste areas; reuse areas and waste and recycling bins will be clearly differentiated through appropriate signage and colour coding to Australia Standards to reflect the materials contained.

The waste and recycling bins will be colour coded and clearly signed. Each stream will be located in the designated area. This will assist in easy identification of correct bins by those disposing of waste.

The garbage storage area will contain the following to minimise odours, deter vermin, protect surrounding areas, and make it a user-friendly and safe area:

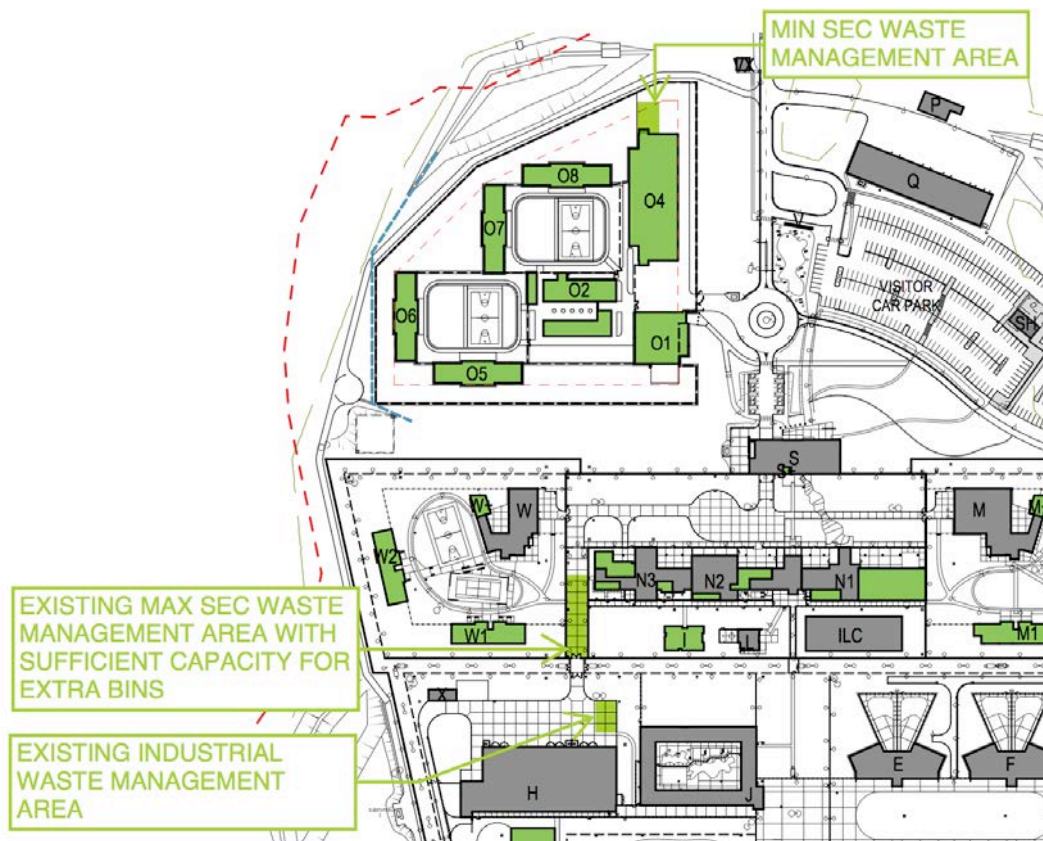
- waste collection area must hold all bins – bin movements should be with ease of access;
- conform to the Building Code of Australia, Australian Standards and local laws; and
- a water facility with hose cock must be provided for washing the bins;
- any waste water discharge from bin washing must be drained to sewer in accordance with the relevant water board;
- storm water access preventatives (grate);
- optional pest control system installed to eliminate all pest types and assist with odour reduction.

There will be a need to ensure that there is sufficient space to allow for bin movement. As a general rule, it is recommended that an additional 30% of the estimated footprint for bins be allocated to this (and this has been calculated in estimating the waste storage space requirements).

Occupational Health and Safety issues such as slippery surfaces in waste storage areas and the weight of the waste and recycling receptacles will need to be monitored.

Inmates will monitor the bin storage area and all spills will be attended to immediately by those responsible. Noise is not likely to be an issue due to the external location of the waste storage area.

Figure 1 – Storage areas



4.2 Organics recycling

It is recommended that an organics recycling system be introduced into the facility. Initial segregation to occur in the food waste producing areas with organic waste to be disposed of in a separate bin.

The Correctional Centre has the option of using a private contractor to collect organics waste or using the Pulpmaster system. However, it is important that the Correctional Centre management liaise directly with Pulpmaster to ensure that management requirements and costs are clearly communicated and understood. If neither option is engaged then organics waste will be diverted to general waste and picked up by the appointed contractor.

Below is a brief description of the Pulpmaster system:

*The Pulpmaster 5000 machines are located in the highest food waste generation points, it should maximise the food waste capture at the lowest possible rental cost. The kitchen/catering staff could transfer smaller amounts of food waste to the Pulpmaster 5000 using the 23L Pulpmaster caddy bins. The Pulpmaster 5000 machine can process 70 litres (3 x Caddy Bins) in approximately 45 seconds. The pulped food waste would be pumped from the Pulpmaster 5000 machine into the Pulpmaster 2700L Tank that could be located in a Waste Room. This saves devoting labour to carrying bagged waste to the general waste bins. **Please note: We estimate that disposing of 1 tonne of food waste into plastic bag lined kitchen bins would require transporting 40 to 50 bags to a front lift bin.***

Pulpmaster Training would be carried out by Pulpmaster initially to ensure that the kitchen/catering staff capture and separate their organic waste. It is crucial that a Site Champion would need to be trained by Pulpmaster to ensure that the separation of the organic waste continues to happen, and that contamination does not make its way into the Pulpmaster 5000 batch machine.

4.3 Summary of management process

The following summarises the management system for the Correctional facility.

Table 5 – Overview of management process

| Stream | System | Comment |
|---------------------|-----------------------|--|
| Cardboard recycling | 4m ³ MGB's | Inmates separate paper/cardboard materials to deposit into correct bin. Inmates collect the dedicated bins from various areas in the facility and transfer to the waste storage area. Waste contractor to empty bins at waste storage area. |
| Comingled Recycling | 4m ³ MGB's | Inmates separate comingled materials to deposit into correct bin. Inmates collect the dedicated bins from various areas in the facility and transfer to the waste storage area. Waste contractor to empty bins at waste storage area. |
| General Waste | 4m ³ MGB's | Inmates separate general waste to deposit directly into the correct bin. Inmates/staff collect the dedicated bins from various areas in the facility and transfer to the waste storage area. Waste contractor to empty bins at waste storage area. |

4.4 Disposal of Wastes/Recyclables

The following summarises the disposal pathway for the wastes and recyclables generated once the upgraded development is fully operational. Disposal locations will be at the discretion of the current waste service contractor.

Table 6 – Waste Management Systems

| Type of material | Destination |
|----------------------|---|
| Paper/Cardboard | Transported to a recycling facility for recycling by the appointed contractor |
| Co-mingled recycling | Transported to a recycling facility for recycling by the appointed contractor |
| General waste | Transported to a landfill for disposal |

5 Waste Stream Acceptance Criteria

5.1 Acceptance Criteria

General Waste:

General waste bins will be 4m³ MGB's. The lids and signage should be colour-coded red. The general waste stream does not include hazardous material such as medical waste and fluorescent light tubes.

Comingled (Mixed Recycling):

The comingled recycling system will be 4m³ MGB's and should accept all recyclable plastic containers, aluminium containers, glass bottles and steel cans in. Comingled recycling bin lids and signage should be colour-coded yellow.

Paper/cardboard Recycling:

All paper and cardboard (excluding waxed cardboard) will be deposited into 4m³ MGB's which have a blue bin lid and signage.

5.2 Bin Requirements

Containers located within the development for waste and recycling should be consistent. The following table outlines the colour coding that has been developed by Standards Australia.

Table 5: Standards Australia waste/recycling container colour coding

| Waste Stream | Bin Body Colour | Lid Colour |
|---------------------------|-----------------|------------|
| Paper/Cardboard Recycling | Blue | Blue |
| Food Organics | Burgundy | Burgundy |
| Commingled Recycling | Green | Yellow |
| General Waste | Green | Red |

Appendix A contains illustrations of bins (and other waste management equipment), that could be used within the correctional centre. The pictures provide examples of the different options for equipment such as MGB, tugs for transporting bins, trolley unit and a wheelie-safe trolley.

6 Inmate Education

All inmates will receive information regarding the waste collection systems including how to use the system and which items are appropriate for each stream and collection. Appropriate signage and updated information will also be provided, as well as receiving feedback on issues such as contamination of the recycling stream or leakage of the recyclables into the general waste. The SCCC facility staff will have the responsibility for these tasks.

All waste receptacles will be appropriately signed and additional room signage is usually provided from most waste contractors during implementation of the waste contract. Examples of signage are included in Appendix B.

It is recommended that all signs should;

- Clearly identify the waste/recycling stream;
- Use correct waste/recycling stream colour coding;
- Identify what can and cannot be disposed of in the receptacle; and
- Include highly visual elements to accommodate for individuals with inadequate English literacy.

7 Ongoing Management

Having suitable systems in place is only one element of an effective waste management system. Compliance by all stakeholders (inmates and staff) is essential.

Those responsible for cleaning are a key element in the effectiveness of the systems in place. Inmates/staff will be required to feed back to management any non-compliance issues they observe during their cleaning activities. This may include contamination of recycling; non-participation in the recycling system, or missing or damaged bins. In this way issues can be promptly dealt with by management.

Waste and recycling contractors will be required to report actual volumes collected by stream so that site management can monitor performance and feed this back to stakeholders.

It is highly recommended that a basic reporting program be set up at the site which would include bin tally sheets that detail the number of bins collected and how full they are at the time of collection, in addition to communication procedures to allow waste contractors to provide feedback regarding contamination and leakage.

All inmates and staff should be educated and made aware of any changes to the existing waste systems.

Appendix A – Waste Management Equipment

The following diagrams illustrate colours and sizes of different bins that could be used within the development.

Figure 1 – MGB bin



Figure 2 – MGB bin



Figure 3 – Indicative size of MGB



Figures 4, 5, 6 and 7 – Bin movers and tugs





Appendix B – Example Signage



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