

Waste Management Plan

Ningaloo Reef Resort

Rev_1

Project No: 21-1148-1
Architectus
2 June 2023





Encycle Consulting Pty Ltd

ABN 41 129 141 484

PO Box 6044

East Perth WA 6892

t: +61 8 9444 7668

www.encycle.com.au

DLadle@encycle.com.au

| Revision | Drafted by | Reviewed by | Date issued |
|----------|------------|-------------|--------------|
| Rev_0 | D Ladle | J Campbell | 10 June 2022 |
| Rev_1 | D Ladle | J Campbell | 1 June 2023 |

Copyright

All intellectual property rights and copyright associated with Encycle Consulting services and publications shall remain vested in and the property of Encycle Consulting. Advice and material contained within this document may be used exclusively by the Company named as the recipient of this work solely for use as specified in this document. Reproduction, publication or distribution of this work without prior written permission from Encycle Consulting is strictly prohibited.

Disclaimer

While steps have been taken to ensure the accuracy of this document, Encycle Consulting cannot accept responsibility or be held liable to any person for any loss or damage arising out of or in connection with this information being accurate, incomplete or misleading.

Table of contents

| | | |
|----------|--|-----------|
| 1 | Development details | 1 |
| 1.1 | Context | 1 |
| 1.2 | Key components of the Waste Management Plan..... | 1 |
| 2 | Estimated waste and recycling volumes..... | 3 |
| 2.1 | Project parameters..... | 3 |
| 2.2 | Waste generation rates..... | 3 |
| 2.3 | Number of bin stores required..... | 4 |
| 2.4 | Bin store 1 – clubhouse | 4 |
| 2.1 | Bin store 2 – workshop | 5 |
| 3 | Bin stores location and amenity..... | 7 |
| 3.1 | Bin store location..... | 7 |
| 3.2 | Bin store amenity | 7 |
| 4 | Internal transfer | 9 |
| 4.1 | Internal transfer routes | 9 |
| 4.2 | Bin transfer requirements | 10 |
| 5 | Collection and vehicle access | 11 |
| 6 | Ongoing communication and management | 13 |
| 6.1 | Management..... | 13 |
| 6.2 | Communication | 13 |
| | Appendix A: Glossary of terms and acronyms..... | 14 |

1 Development details

This Waste Management Plan (WMP) has been prepared for the following project:

| | |
|--|--|
| Project name / address | Ningaloo Reef Resort |
| Principle | RAC |
| Client | Architectus |
| Architect | Architectus |
| Main point of contact | Chris Johnson, Architectus |
| Planning status | DA submission June 2023 |
| Overview of development | Redevelopment including a clubhouse, function space, 1, 2 and 3 bedroom visitor accommodation, workshop, office space, retail, and staff accommodation. |
| Architectural plans / area schedule | Architectural plans received from Architectus, 17 and 30 May, and 1 and 2 June, 2023 Area schedule received from Architectus, 18 May 2023 |
| Local Government discussions | Conversation with Colin Burnett, Shire of Carnarvon regarding council waste management, 6 May 2022 Conversation with John Farne, Coral Bay Contracting regarding waste collection and management in Coral Bay, 6 May 2022 |

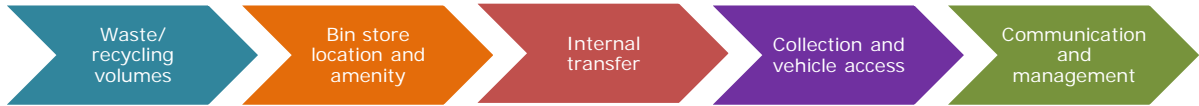
1.1 Context

For efficient and effective waste management, the collection and centralisation of waste and recyclables has been carefully considered at the building design phase. Key factors considered at the design phase include:

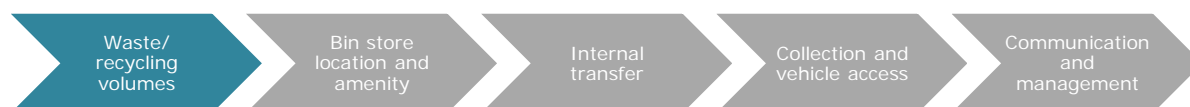
- Local government requirements for determining waste generation rates
- Waste and recycling volumes likely to be generated during building operation
- Number and types of bins required
- Bin stores size, location and amenity (odours and noise)
- Internal transfer and access to bins and storage areas from within the building
- Access for vehicles for waste collection
- Safety for all operatives involved in waste management
- Communication and ongoing management of waste and recycling services

1.2 Key components of the Waste Management Plan

This Waste Management Plan (WMP) consists of five core components. It will present detailed information on each of the following components.



2 Estimated waste and recycling volumes



2.1 Project parameters

The development when operational will include the following areas:

- Clubhouse (bar/restaurant/dining) – 390 m²
- Function space – 174 m²
- Workshop – 48 m²
- Office space – 140m² (workshop office – 13 m², staff meeting/kitchen 25 m², reception – 51 m², admin/staff area – 41 m², managers office – 10 m²)
- Retail – 32 m²
- 1 bedroom guest accommodation – 61
- 2 bedroom guest accommodation – 20
- 3 bedroom guest accommodation – 9
- 2 bedroom staff accommodation – 2
- 3 bedroom staff accommodation – 1

2.2 Waste generation rates

The WALGA Commercial and Industrial Waste Management Plan Guidelines (2018) have been used as a basis for estimating waste generation rates for this redevelopment, in addition to Encycle's experience and knowledge of the use of the building.

For staff and guest accommodation waste and recycling, the rates outlined in Table 1 have been applied.

Table 1: Waste and recycling rates for staff and guest accommodation

| No. of bedrooms | Waste rate justification | Waste requirement | Recycling requirement |
|--|--|--|--|
| 2 bedroom staff accommodation | Expect similar volume/composition to residential rates | Apartment rates: 80 L/unit/week | Apartment rates: 40 L/unit/fortnight |
| 3 Bedroom staff accommodation | Expect similar volume/composition to residential rates | Apartment rates: 80 L/unit/week | Apartment rates: 40 L/unit/fortnight |
| 1 bedroom visitor accommodation | Limited self-catering facilities; expect hotel room volume/composition | Hotel accommodation rates: 5 L /1m ² /day | Hotel accommodation rates: 2 L /1m ² /day |

| No. of bedrooms | Waste rate justification | Waste requirement | Recycling requirement |
|--|--|--|--|
| 2 bedroom visitor accommodation | Self-catering facilities; expect hotel room volume/composition plus additional waste from food/packaging | Guesthouse/backpackers occupants: 40 L/unit/week | Guesthouse/backpackers occupants: 20 L/unit/week |
| 3 bedroom visitor accommodation | Self-catering facilities; expect hotel room volume/composition plus additional waste from food/packaging | Guesthouse/backpackers occupants: 40 L/unit/week | Guesthouse/backpackers occupants: 20 L/unit/week |

For the office, workshop, restaurant, function and retail areas, the generation rates that have been used are presented in Table 2. The waste generation rates do not include a breakdown of material streams included in the 'recycling' stream. The final column presents Encycle Consulting's in-house estimate of the material streams present in the recycling stream based on our working experience of operational buildings.

Table 2: Commercial waste generation rates

| Premises type/ building use | Waste generation rate | Recycling generation rate | Percentage breakdown of recycling stream by material |
|---|-----------------------------|------------------------------|---|
| Restaurant – 390 m ² | 6.7 L /1m ² /day | 1.3 L /1m ² /day | 40% commingled 50% cardboard 100% glass (in addition, as licenced) 10% used cooking oil 10% soft plastics 20% of waste is organics |
| Function rooms – 174 m ² | 2.0 L /1m ² /day | 1.0 L /1m ² /day | 40% commingled 50% cardboard 100% glass (in addition, as licenced) 10% used cooking oil 10% soft plastics 20% of waste is organics |
| Office – 188 m ² (incl. workshop) | 0.1 L /1m ² /day | 0.1 L /1m ² /day | 7% commingled 79% paper 14% cardboard 10% soft plastics 20% of waste is organics |
| Retail <100m ² – 32 m ² | 0.5 L /1m ² /day | 0.25 L /1m ² /day | 25% commingled 50% cardboard 25% soft plastics |

2.3 Number of bin stores required

One main and one secondary bin store will be required to service the resort:

- i. Bin store 1 – clubhouse (main bin store)
- ii. Bin store 2 – workshop (secondary bin store)

2.4 Bin store 1 – clubhouse

The number of bins to be stored in bin store 1 are set out in Table 3 and as per Figure 1.

Table 3: Number of bins to be stored in bin store 1

| Waste stream | Bin size (L) | Number of bins | Collection frequency | Colour code |
|------------------|--------------|----------------|----------------------|-------------|
| General waste | 240 | 16 | Daily | W |
| CDS recycling* | 240 | 2 | Daily | CDS |
| Used cooking oil | 1,000 | 1 | As required | CO |
| Cardboard | Baler | | As required | CB |

* Provision has been made for this service to be adopted as a future opportunity

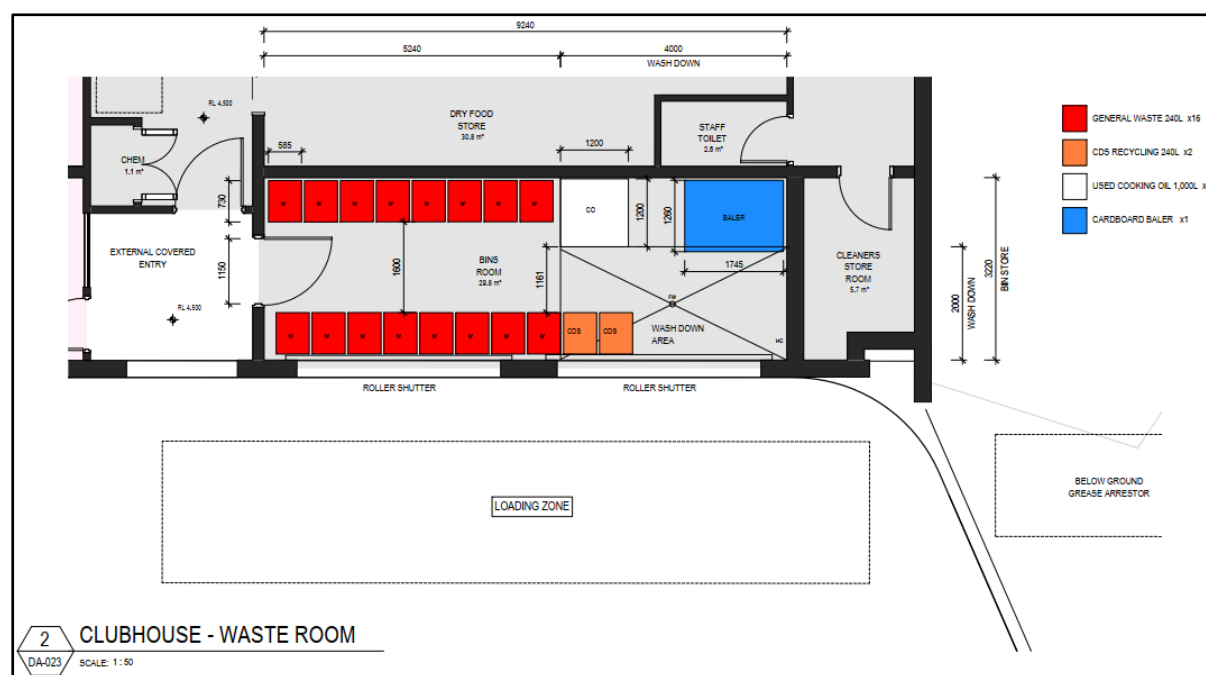


Figure 1: Layout of bins in bin store 1

2.1 Bin store 2 – workshop

The number of bins to be stored in bin store 2 are set out in Table 4 and as per Figure 2.

Table 4: Number of bins to be stored in bin store 2

| Waste stream | Bin size (L) | Number of bins | Collection frequency | Colour code |
|--------------------|--------------|----------------|----------------------|-------------|
| General waste | 240 | 9 | Daily | W |
| Cardboard | 660 | 1 | As required | CB |
| Bulk general waste | 10 m² area | 1 | As required | B |

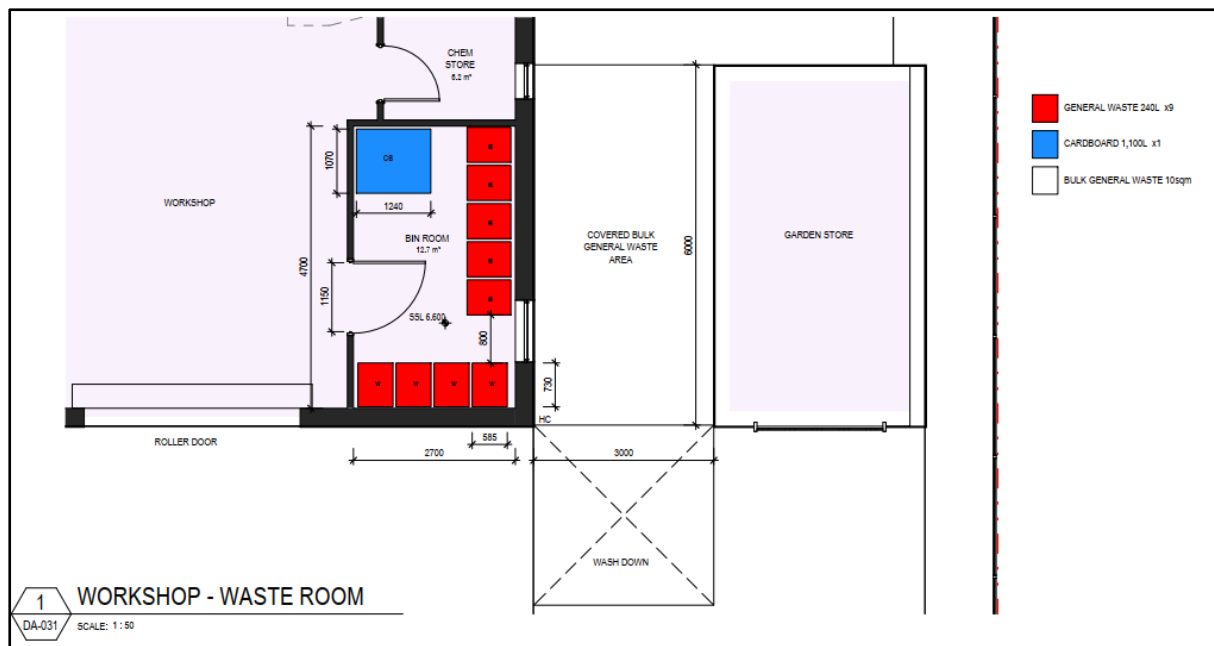


Figure 2: Layout of bins in bin store 2

3 Bin stores location and amenity



3.1 Bin store location

Most of the waste at the site will be created in the clubhouse area and will be stored in bin store 1. Bin store 2 will house bins from the workshop and accommodation\housekeeping.

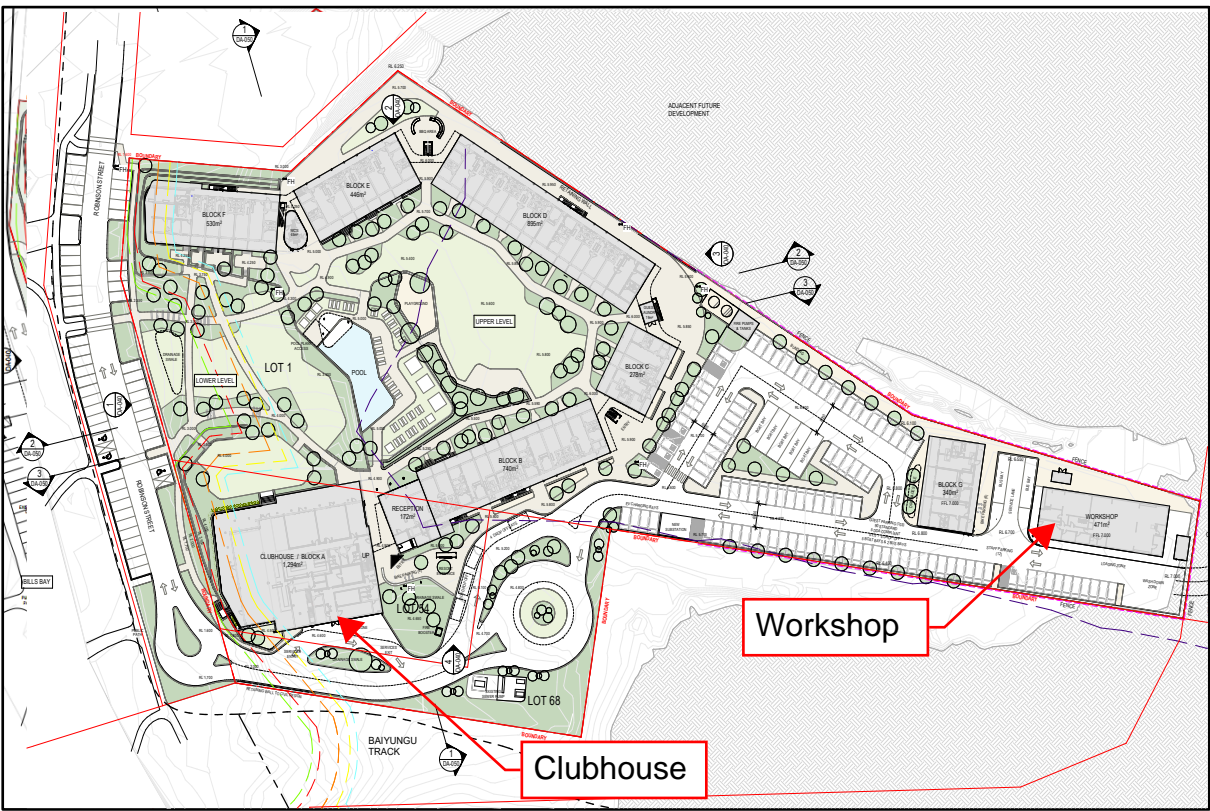


Figure 3: Site plan showing location of bin stores

3.2 Bin store amenity

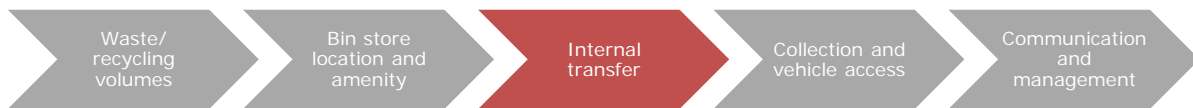
The bin stores have been designed to include the following requirements in Table 5.

Table 5: Bin store amenity requirements

| | |
|----------------|--|
| Aesthetics | The bin stores are consistent with the overall aesthetics of the development. |
| Fully enclosed | The bin stores are fully enclosed and weatherproof, and only accessible by cleaners, staff, facilities management, and waste service provider. |

| | |
|-----------------------|--|
| Spatial requirements | <p>The bin stores allow sufficient space to accommodate, manoeuvre and wash the bins and equipment specified.</p> <p>Bins are stored in single rows.</p> <p>Space for personnel access way between rows of bins is included.</p> |
| Bin wash | <p>The bin stores have impermeable walls and floors grading to an industrial floor waste (including a charged 'water-trap' connected to sewer/an approved septic system), with a hose cock to enable bins and/or the enclosure to be washed out. A 100 mm floor waste gully to waste outlet is included. Both hot and cold water is available.</p> |
| Doors | <p>Ventilated doors are specified both internally for each bin stores.</p> <p>External doors to waste rooms are roller doors.</p> <p>Doors from the bin stores to the servicing/collection area can be locked open.</p> <p>Doors are designed to fit the largest bin to enable bins to be easily wheeled into and out of the bin stores.</p> |
| Walls and ceilings | <p>Internal walls are cement rendered (solid and impervious) to enable easy cleaning. Ceilings are finished with a smooth faced, non-absorbent material that can be easily cleaned. Walls and ceilings are finished or painted in a light colour.</p> |
| Floors | <p>Floors are constructed in concrete in accordance with AS 2870.</p> <p>Floors are evenly graded to an approved liquid refuse disposal system.</p> <p>Slab thickness is a minimum of 100 mm, impervious and with a brush finish treatment.</p> |
| Ventilation and odour | <p>The design of the bin stores provides for adequate separate ventilation with a system that complies with Australian Standard 1668 (AS1668).</p> <p>The ventilation outlet is not in the vicinity of windows or intake vents associated with other ventilation systems.</p> |
| Lighting | <p>Bin stores are provided with artificial lighting, with sensor or switch controls both internal/external to the bin stores.</p> <p>Artificial lighting in and around the bin stores, including access walkways ensure staff safety and decrease antisocial behaviour.</p> |
| Noise | <p>Noise is minimised through considering the location of the bin stores and collection point and the timing of collections to prevent disruption to occupants or neighbours.</p> |
| Signage | <p>Visual aids and signage will be provided when the bin stores are operational to ensure that the areas work as intended.</p> |
| Cooking oils | <p>Used cooking oil storage will be banded.</p> |

4 Internal transfer



4.1 Internal transfer routes

General waste and recycling streams will be collected from around the resort (including accommodation, communal areas, office, workshop, and retail areas) by resort staff using 240 L bins. Bins will be transported around the site via golf cart (i.e. bins are loaded onto a trailer attached to the back of a golf cart) to bin store 2 at the workshop.

Bulk cardboard collected from the workshop will be taken to the cardboard baler in the clubhouse bin store for baling.

General waste and recycling streams from the clubhouse, function space and bar will be taken by clubhouse staff directly to bin store 1 via the kitchen or bar areas and back-of-house (BOH) corridors (Figure 4).

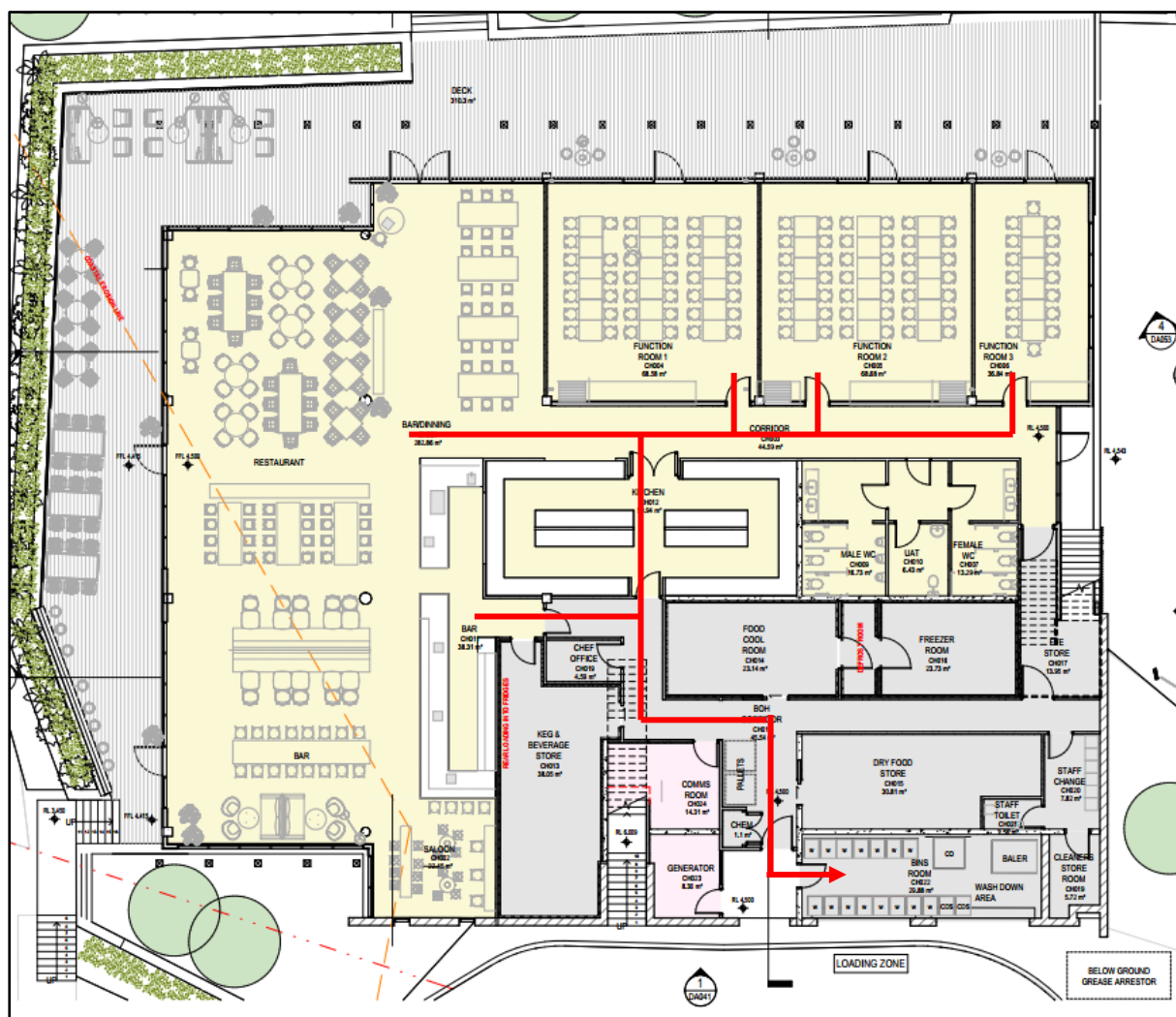


Figure 4: Internal transfer route to clubhouse bin store

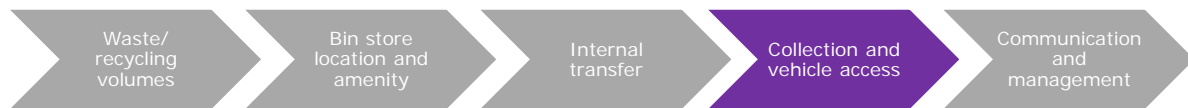
4.2 Bin transfer requirements

All bin transfer routes have been designed to include the following requirements in Table 6.

Table 6: Bin transfer requirements

| Bin transfer requirements | |
|--------------------------------------|--|
| User access route | <p>Waste transfer routes avoid stairs/steps and steep ramps (grade of slope <1:14) and other potential hazards between points of waste generation, storage and collection.</p> <p>Waste transfer routes are designed to ensure that bins (particularly when full) are not moved over any significant distances.</p> |
| Manual handling | <p>Manual handling of waste in garbage bags is excluded from the waste management systems wherever possible.</p> |
| Transfer route width | <p>All doors, corridors and lifts on the transfer route are designed to fit the largest bin.</p> |
| Access for waste collection vehicles | <p>Waste collection vehicles will safely enter, operate and exit the development with minimal reversing or manoeuvring.</p> |
| Walkways | <p>Safe access to waste collection vehicles have been provided to reduce the risk of accidents.</p> |

5 Collection and vehicle access



The existing private waste contractors will continue to service the waste and recycling at the resort. A rear-lift vehicle will service the general waste. Separate tanker vehicles will service the used cooking oil storage unit and grease traps. A flat bed vehicle will collect CDS recycling (when implemented) and cardboard from the cardboard baler.

Bin store 1 at the clubhouse is accessed from Robinson Street and bin store 2 at the workshop is accessed via the guest and staff parking. On collection days, a rear-lift vehicle will enter the resort from Robinson Street and reverse into the designated loading bay outside bin store 1 (Figure 5). Operatives will enter the bin store to retrieve and service the bins. The operatives will return the empty bins to the bin store. The clubhouse bin store is at the same level as the collection point.

The vehicle will then continue forward through the resort access roads and parking area before reversing into the service lane outside the workshop (Figure 6). Operatives will enter bin store 2 to retrieve and service the bins. The operatives will return the empty bins to the bin store. The warehouse bin store is at the same level as the collection point.

Tanker vehicles will enter the resort from Robinson Street to the area adjacent to bin store 1 to service the used cooking oil tanks and grease traps.

Swept path analysis for vehicle ingress and egress has been completed taking into consideration the specifications of a 12.5 m HRV.

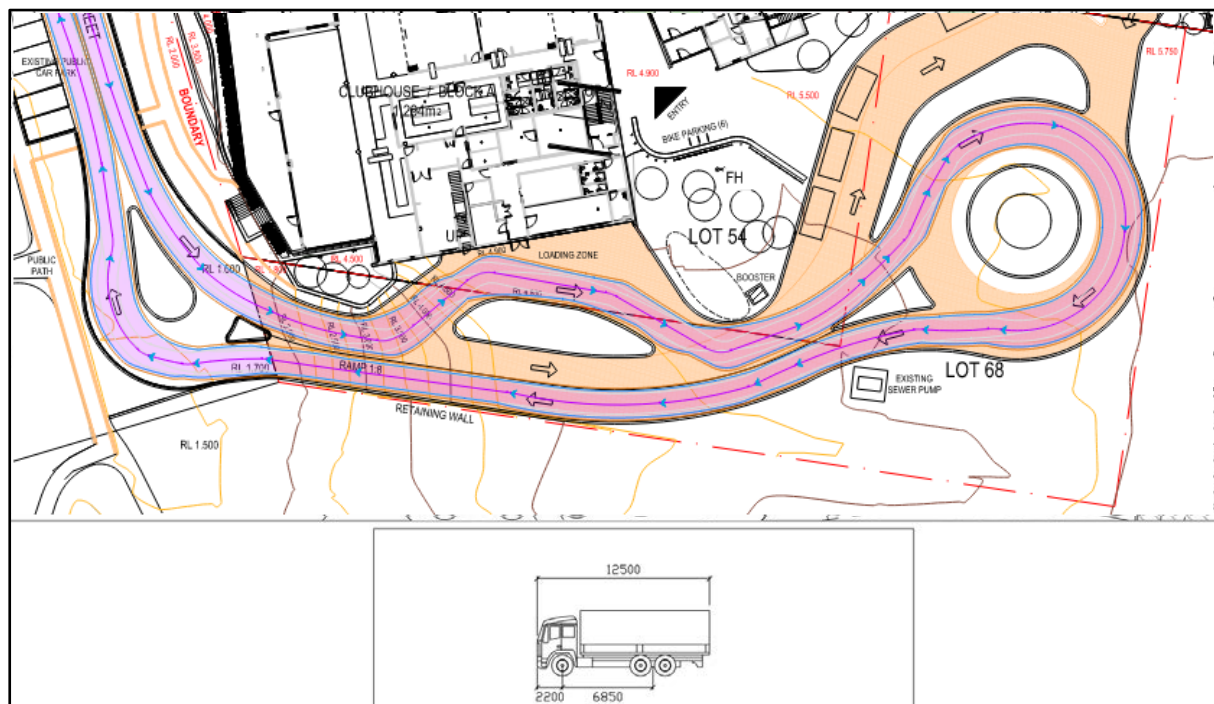


Figure 5: Swept path analysis showing access for waste collection vehicles to bin store 1

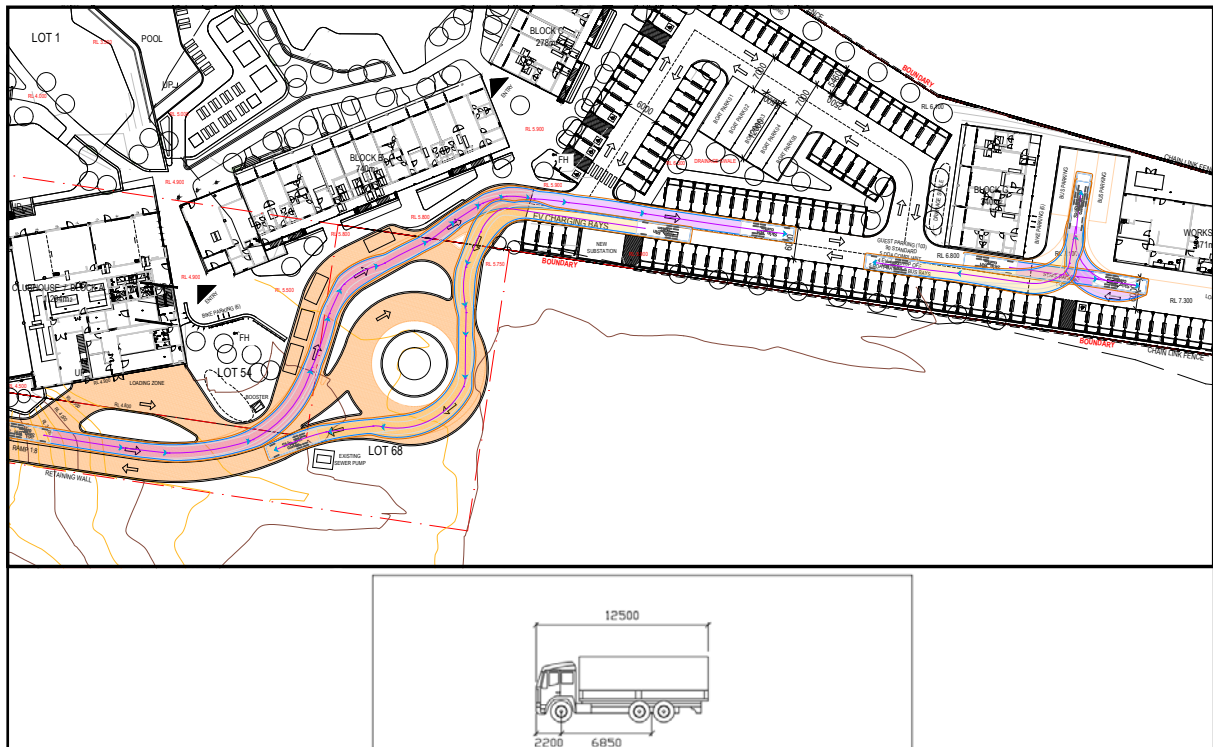


Figure 6: Swept path analysis showing access for waste collection vehicles to bin store 2

6 Ongoing communication and management



6.1 Management

The facilities manager will be responsible for overseeing the waste management systems. The facilities manager will be trained and informed about their responsibility to work closely with the private service provider regarding the schedule for collection and presentation of bins. They will be responsible for maintaining the bin stores in a clean and tidy condition at all times and ensuring bins are washed regularly.

6.2 Communication

All staff members will be made aware through a toolbox talk training session (or equivalent) of the waste and recycling systems and how they should be used. An Operational Waste Management Plan suitable for presenting to facilities management and other resort users, including how the plan should be communicated, will be developed and implemented during both the initial occupation and ongoing management of the resort.

Facilities management will be responsible for the education (through posters or similar) of visitors on correct segregation of waste and recyclables to ensure that only a minimal amount of waste is sent to landfill.

Appendix A: Glossary of terms and acronyms

| | |
|---------------------------------------|--|
| Bulk waste | Routine collection of items of furniture or other large refuse. Bulk waste collection is included in the Waste Management Plan where specified by the Local Government as part of the planning requirements. |
| Bulky waste storage | An area designed to store any unwanted bulky waste items. |
| Collection point | The permitted area on a footpath, roadway or private property (where applicable) that waste, recyclables and bulky waste are loaded into collection vehicles. |
| Commingled recycling | Common recyclables, mostly packaging; such as glass, plastics, aluminium, steel, liquid paper board (milk cartons). Commingled recycling may include paper but often, and particularly in offices, paper and cardboard are collected separately. |
| Container Deposit Scheme (CDS) | Also known as Containers for Change: In Western Australia 'eligible containers' (usually for soft and alcoholic drinks) have a 10 cent deposit which can be refunded when the container is redeemed at a refund facility. |
| General waste | Material that is intended for disposal to landfill (or in some States, incineration), normally what remains after the recyclables have been collected separately. |
| Grease trap | Collection of solid greases and oils in a tanker system to remove this material from water discharged to sewer from commercial kitchens or food processing facilities. Grease trap collection vehicle requirements can be included in the Waste Management Plan where relevant. Encycle are not hydraulics engineers and do not specify or advise on grease trap systems. |
| Organic waste | Waste derived from material that was once living (excluding petroleum-based materials). |
| Recyclable | Material that can be collected separately from the general waste and sent for recycling. The precise definition will vary, depending upon location (i.e. systems exist for the recycling of some materials in some areas and not in others). |
| Recycling | Where a material or product undergoes a form of processing to produce a feedstock suitable for the manufacture of new products. |
| Reuse | Replacing a 'disposable' or single-use item with one which can be used again (without needing to be processed or dismantled – i.e. 'recycled') e.g. using a washable ceramic coffee mug or travel cup in place of disposable cups. |
| Waste avoidance | Changing a service or process so that a waste that was previously generated can be eliminated from the system. An example would be changing from printed forms/tickets/invoices etc. to an online system that does not need any paper. |