

Site Inspection Report

Dinah Beach Cruising Yacht Association

23 June 2022



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Contents

1. Introduction	1
1.1 Purpose of this report	1
2. Inspection Findings and recommendations	1
2.1 Workshop	1
2.1.1 Workshop recommendations	2
2.2 Berthing and boat ramp	2
2.2.1 Berthing and boat ramp recommendations	3
2.3 Children's playground	3
2.3.1 Children's playground recommendations	3
2.4 Concrete Wharf	3
2.4.1 Concrete Wharf recommendations	4
2.5 Pontoon	4
2.5.1 Pontoon recommendations	5
2.6 Kitchen	5
2.6.1 Kitchen recommendations	6
2.7 Bar and Alfresco area	6
2.7.1 Bar and Alfresco area recommendations	6
2.8 Office	7
2.8.1 Office recommendations	7
2.9 Waste Storage/Transfer Facility	7
2.9.1 Waste Transfer Facility recommendations	8
2.10 Boat Park	8
2.10.1 Boat Park recommendations	8
Appendix A - Concrete Wharf Options	1
Introduction	2
Challenges	2
Options	2
Potential Assessment Methodology	2
Appendix B - Figures	
Figure 1 Workshop Location	6
Figure 2 Berthing and Boat Ramp Location	7
Figure 3 Playground Location	8
Figure 4 Concrete Wharf Location	9
Figure 5 Pontoon Location	11
Figure 6 Kitchen Location	12
Figure 7 Bar and Alfresco area Location	13
Figure 8 Office Location	14
Figure 9 Waste Storage/Transfer facility Location	15
Figure 10 Boat Park Location	15

1. Introduction

A site inspection was conducted on 23 June 2022 at Dinah Beach Yacht Club (Club), Darwin (Lot 6475) to identify areas of infrastructure concern. The below areas were reviewed during the inspection.

- Workshop
- Boat Ramp
- Berthing
- Playground
- Concrete Wharf
- Pontoon
- Kitchen
- Bar
- Office
- Waste facility
- Boat Park

A selection of pictures from the inspection can be found in the Appendix.

1.1 Purpose of this report

The purpose of this report is to document the visual observations made by the inspection team and to collate observations made, concerns noted by the Club representatives to inform a subsequent plan for works aligned with the Club's Strategic Plan.

Once the Club's preferred approach and priorities are confirmed, it is anticipated that a detailed masterplan and project plan for long term implementation can be developed.

2. Inspection Findings and recommendations

2.1 Workshop

The workshop area is a communal facility to the north of the site, consisting of two 20' shipping containers with a shade structure between these two shipping containers.



Figure 1 Workshop Location

Power and water are available to the site.

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- Access to the site is unrestricted, as such it does present a safety concern for general patrons of the facility, including children.
- Designation of use and areas unclear.
- As part of the shared material/parts systems, there is material left with little or no understanding of its usefulness or owner.
- The two existing shipping containers are in poor condition.

2.1.1 Workshop recommendations

Recommendations for the workshop area are as follows:

- A physical barrier and/or fence and gate installed to limit access to the public.
- Increased education to Club members such they are aware of the consideration of use and safety considerations for the Workshop Facility.
- Increased and compliant signage to assist with designation of hazardous/flammable goods areas (solvents and paints etc), hot work areas, tool storage, general working and storage areas.
- Development of, education and implementation of governance around the use of the facility. This should include:
 - Storage and use of solvents and paints
 - Leaving and usage of items left in the shared area.
 - Weekly or fortnightly clean and check of equipment.
- Long term solution is to replace the existing shipping containers and provide a load-supporting shade structure

2.2 Berthing and boat ramp

The berthing and boat ramp area is used for the short-term mooring of member's boats and for the launching and retrieval of boats via the boat ramp for via the crane from the nearby wharf.



Figure 2 Berthing and Boat Ramp Location

Club members currently use private crane contractors to lift their boats out of the water for maintenance. The crane is normally positioned on the wharf adjacent the mooring pylons and the access ladders on the northern side of the boat ramp. This is a critical function of the Club and generates good revenue

The mooring pylons have recently been “refurbished” and in serviceable condition.

The wharf structure has never been certified and construction details are not available. The crane operators currently make their own call about how close to the edge of the platform to make a lift. The potential total lift mass may exceed 150 t.

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Boat ramp eastern wall is progressively subsiding towards the water line. The wall is constructed of large concrete blocks, each approximately 2.4 m in height. This wall retains the filled area used as the alfresco dining area. A design has been previously completed by a member of the Club, however at time of inspection unclear of the standard and also overall usability. No documentation exists for the original wall design or construction. The wall is located close to a tree of significance

The boat ramp area has irregular portions of concrete laid in order to increase the serviceability of the boat ramp, however the placement has been piecemeal and elements such as reinforcing, dowling between sections and reinforcing steel coverage are not known.

2.2.1 Berthing and boat ramp recommendations

- The alfresco dining area retaining wall design be reviewed for functionality requirements by the Club, to refine the needs and constraints.
- Following confirmation of the retaining wall requirements, a re-design of the wall be undertaken, followed by market testing to understand budgetary needs for removal of the old wall and construction of the new wall.
- The concrete treatment be replaced with a purpose-designed boat ramp, complete with anti-slip/skid treatment for vehicular use.

2.3 Children's playground

A small children's playground is located to the northern side of the dining area. The playground consists of the basic swing set within a sand filled, concrete wall bound area.



Figure 3 Playground Location

At time of inspection, it is not clear if the playground complies with relevant standards.

2.3.1 Children's playground recommendations

It is proposed that the Club undertake an upgrade to the children's playground to improve the patron experience.

Compliance with relevant Australian Standards can be achieved through the sourcing the playground through a suitable proprietary vendor.

2.4 Concrete Wharf

A concrete decked wharf runs alongside the northern side of the boat ramp. The wharf is utilised to provide access to the locating pontoon, personnel disembarking and embarking to moored boats and access for craning of boats from and to the boat park.



Figure 4 Concrete Wharf Location

The following items were noted during the inspection:

- Little obvious designation was noted for activities such as lift zones, pedestrian movement, crane limits, emergency response gear (fire hydrant/s)
- Climbing ladders, wheel stops, and bollards don't appear fit-for-purpose
- There appears to be some longitudinal cracking and some very early evidence of concrete spalling in the concrete slabs.

2.4.1 Concrete Wharf recommendations

The following actions are recommended:

- A further detailed people/safety compliance review be undertaken to identify for rectification those personnel safety items in order to minimise Club liability.
- General signage and line-marking improvements
- Replacement of the access ladders
- Suggest inspection by structural engineer be undertaken then potential additional investigation activities for the purpose of self-informing (not certification) could include:
 - Ground penetrating radar (quite cheap) to inform where low densities (cavities) may or may not exist
 - Survey surface (baseline for monitoring) and installation of movement gauges
 - More destructive investigation (core-drilling etc):
 - This process is unlikely to lead to a certification and is more a self-assurance outcome for the Club

Further details on potential approaches to confirming wharf suitability for the intended uses may be found in the Appendix.

2.5 Pontoon

This asset is key to the ongoing operational aspects of the Club, particularly those who may reside on their boat and utilise the Club for access to onshore facilities and activities.

Recently the access gangway has been refurbished and walkways updated to FRP, as such is in good and serviceable condition.

The Club is seeking to replace the existing pontoons with two, shorter pontoons, moving on approximately three new pylons. The replacement pontoons are stored on site adjacent the southern car park.



Figure 5 Pontoon Location

It appeared that there were conflicting views on the usability of the pontoon system through tidal movements and possibility of siltation incrementally reducing access for users.

2.5.1 Pontoon recommendations

It is suggested:

- A detailed survey of the usability be undertaken with pontoon users to consolidate relevant themes to inform a forward plan of works.
- Rudimentary bathymetric measurements be undertaken to understand extent of siltation.
- Engagement of a suitable marine engineer to assess, scope and cost the replacement of the pontoons.

2.6 Kitchen

The kitchen is utilised by a sub-entity who provide meal cooking services to the patrons of the Club.

The internal aspects of the facility were not inspected during the site visit, however externally the building looks a poor condition and unlikely to meet safety compliance standards.

The grease trap system is currently acceptable to the Power and Water Corporation, however any modifications to the system will likely result in subsequent additional expenditure on the waste system.

Access to the kitchen would not comply with disabled access standards and patron safety is at risk with the low-mounted awnings along the access pathway.

The kitchen presents an uncovered path between the alfresco eating area and the point of meal collection, creating a less comfortable patron experience during the wet season.

It is likely that a focussed architectural and compliance audit against Australian Standards and the Building Code of Australia would reveal significant issues.



Figure 6 Kitchen Location

2.6.1 Kitchen recommendations

It is recommended that the kitchen undergo an architectural and building code compliance assessment, after which the Club can determine appropriate next steps, timing and costs.

Whilst clearly the facility is serving a purpose currently, it is very likely that a full replacement of the facility will be required in the medium term.

The kitchen would be better located adjacent the bar and the alfresco area, where the office is currently located.

2.7 Bar and Alfresco area

The bar, cold storage and alfresco dining area provide a coastal, rustic feel to the patrons. The elements reflect the development of the area in stages, with perhaps less consideration of the overall planning, functionality and flow of the facility for employees and patrons.



Figure 7 Bar and Alfresco area Location

2.7.1 Bar and Alfresco area recommendations

The following actions are recommended:

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- Complete a detailed architectural and building code compliance review of the facilities.
- Quote and subsequent replacement of the cool room flooring.

2.8 Office

The Club office consists of a demountable building mounted on blocks/pavers adjacent the primary patron entry to the alfresco area.

The office is not fixed securely and would be susceptible to movement in the event of strong winds.

The entry/exit is via a door without landing or compliant steps.



Figure 8 Office Location

2.8.1 Office recommendations

The following actions are recommended:

- Relocation of the office to the current location of the kitchen.
- Securing of the office using proprietary portable footings
- Manufacture and installation of a compliant landing/stairs to the office access.

2.9 Waste Storage/Transfer Facility

The communal waste storage/transfer facility serves as the point for collection prior to disposal for the Club and member activities.

The observed usage shows mixed levels of compliance with appropriate separation of wastes, with opportunities to improve the compliance through increased signage, training, and governance.



Figure 9 Waste Storage/Transfer facility Location

2.9.1 Waste Transfer Facility recommendations

The following actions are recommended:

- Signage review and update as appropriate
- Training provided via written instructions
- Implementation of the regular inspection and rectification routine

2.10 Boat Park

Members of the Club utilise the remaining areas of the land parcel to store and maintain privately owned boats and is an important part of the services offered by the Club and generates further revenue to reinvest back into the Club facilities.

It is not known if there are any applicable standards pertaining to the compliance of the tying down of boats undergoing maintenance.



Figure 10 Boat Park Location

2.10.1 Boat Park recommendations

No recommendations.

Appendices

Appendix A

Concrete Wharf Assessment Options

Introduction

It is understood that the Club are seeking to understand if the existing operational practices (commercial and public) are completed in a safe manner.

It is common practice to utilise the wharf to lifting yachts/boats in and out of the water with a Franna (and pick and carry over wharf to the Boat Park).

The Club's preference would be to achieve a formal engineering certification of existing facilities, if possible. However, it is undesirable for the Club to have restriction of operations cascade out of an attempt to secure validation of capacity.

Challenges

It is understood:

- There is limited to no information for the facility regarding as-built configuration or condition.
- The structure is a gravity type structure (with concealed elements relevant to capacity, and geotechnically dependent)
- Adjacent structures built at similar time are showing signs of instability / movement.

Options

In the absence of as-builts and for this structure type it will be challenging to provide an engineering certification of capacity that would reflect near full, or design capacity as inferred from visible data.

It is likely that the most likely positive outcome would be to receive engineering advice stating that existing practices appear to be acceptable.

This assessment would rely on conservative assumptions and a visual assessment and testing, and precedent loading practices.

A beneficial outcome is likely to be achievable if:

- current operating practice is comfortably within upper limits of the original design of the wharf, and
- the wharf does not exhibit significant structural deterioration or defect.

The Club should be prepared for the evaluation to determine that existing practices are potentially unsafe and recommendations that some current activities may be restricted or no longer permitted. As such, the Club should determine if they consider that an engineering opinion (in lieu of certification) supports reasonable due diligence with respect to their legal and insurance obligations.

Potential Assessment Methodology

Elements that may be considered that would support the outcome:

1. Topside evaluation of health and safety environment for the public
 - Site visit - Architectural or structural evaluation against HSE guidelines looking at inter alia:

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- Guardrails / lighting, trip/slip / pavement inconsistencies / firefighting / life rescue / ladders for shore recovery / hazardous materials.
- Provide a risk assessment and advice on remedial works required to make the environment safe(er) for access and use

Deliverable: report nominating site inspection outcomes and topside / public risk assessment and recommended remediation

2. Visual and Condition assessment to evaluate condition of the structure and evidence of structural defects against as-built configuration.
 - Maritime or structural visual condition assessment of the structure with limited testing
 - Site visit - visual condition assessment
 - Nominating key defects that may indicate or contribute to:
 - Structure defects - Structure instability / loss of capacity compared to as-built configuration.
 - Durability defects - Priority maintenance / remedial interventions recommended to prevent short- and medium-term loss of asset residual life or capacity

There are two possible outcomes of this approach, being:

- a. Structure is equivalent to as-built (i.e no major durability or structure defects leading to capacity reduction)
- b. Structural defects detected requiring remediation to reinstate as-built capacities

Deliverable: Condition assessment report nominating site inspection outcomes and key durability and structural defects with remedial recommendations

3. Structural / capacity evaluation (either inferred as built, or deteriorated residual capacity)

Assessment of the structures ability to support operational procedures (e.g. Crowd loading, Franna lifts, operations, storage, extreme wave and wind actions)

This will require the designer to establish / infer the as-built characterisation of the structure to some degree to assess capacity, via:

- Data Review – existing as-builts / condition data / loading requirements
- Preliminary structural capacity evaluation (to determine likely critical elements, inform necessary gap information requirements, and chances of demonstrating capacity / return on infill studies investment)
- Gap assessment and recommendation for supplementary data collection
- Site visit / data infills (as required)
 - geometry and measure-up key elements
 - geotechnical characterisation
 - Potentially intrusive testing (e.g. coring of panels or deck slabs for thickness, reinforcement detection)
 - Potentially Ground Penetrating Radar (GPR) work to evaluate and establish the existence and extent of voids under the deck / cause of any noted subsidence etc
- Structural evaluation
 - Inferred operational limits
 - Mechanism / risk profile of failure

Deliverable: Structural capacity evaluation report nominating evaluation outcomes, comment of safe operational practices, key risks and remedial works recommendations

The above studies could be done independently or staged as the Club determines to suit affordability and risk management.

Study 1 and 2 notes above are nominally business as usual activities.

Study 3 will require an experienced marine consultant who is prepared to assess the reasonable risks inherent in the structure based on incomplete data. There is a possibility that the consultant may certify the outcomes.

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However, the Club may expect the consultant to be more risk adverse and potentially exhibit increased conservatism in assumptions informing the capacity assessment (for certification vs professional opinion), as such current activities may be restricted or limited.

Appendix B

Site Inspection Photos

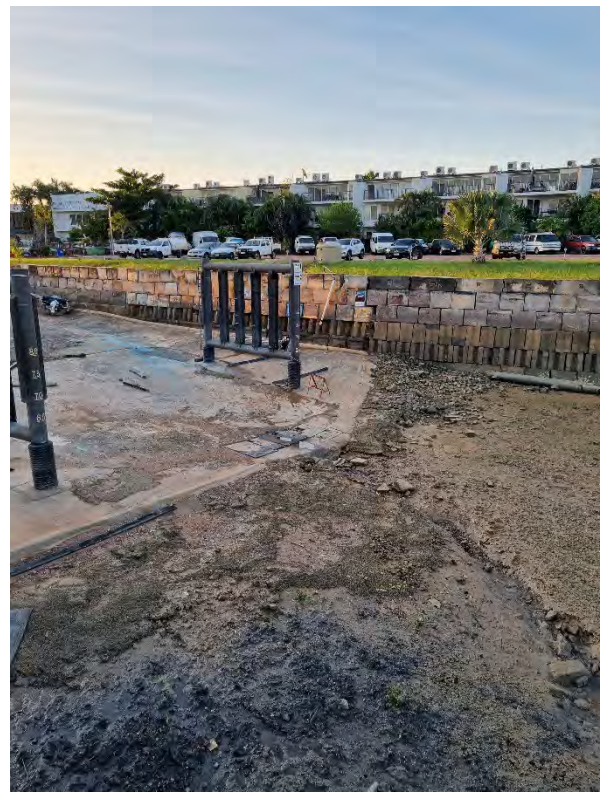
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Table 1 Workshop



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Table 2 *Boat Ramp and Berthing*



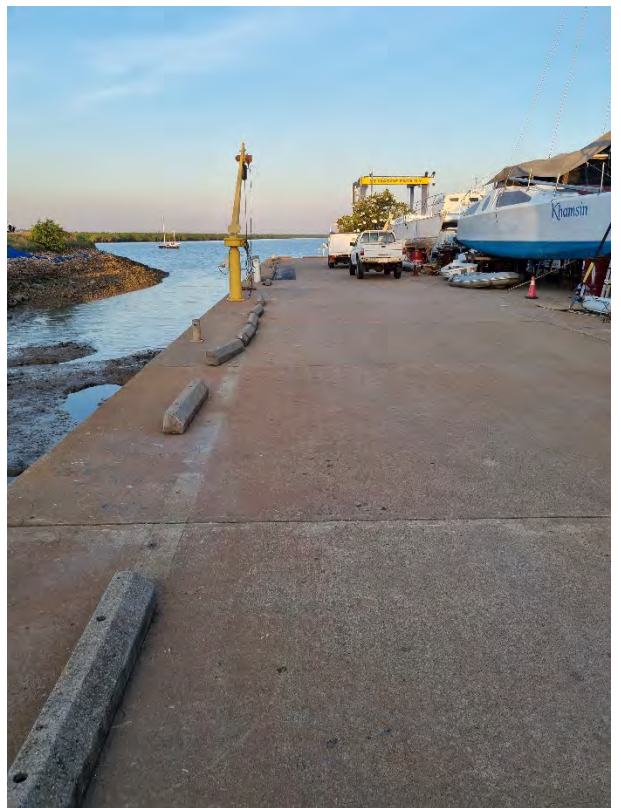
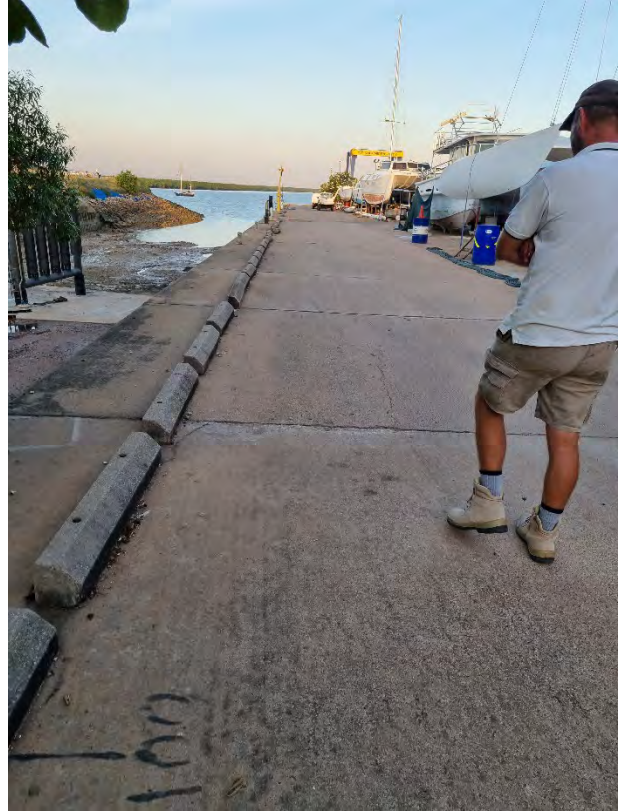
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Table 3 *Children's Playground*

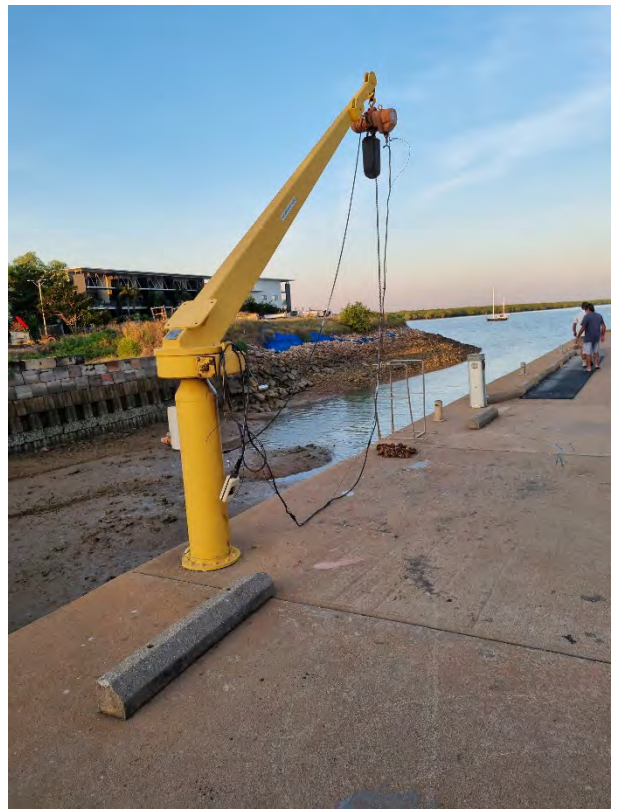
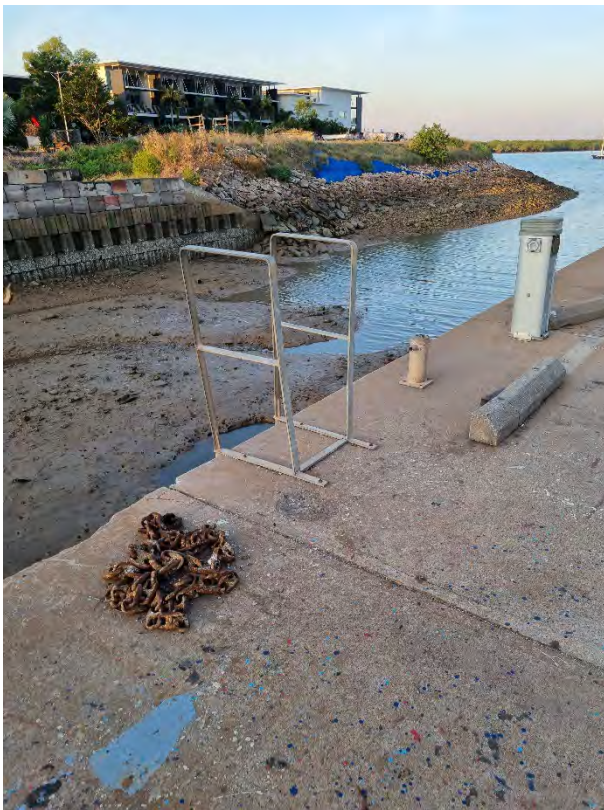


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Table 4 Concrete Wharf



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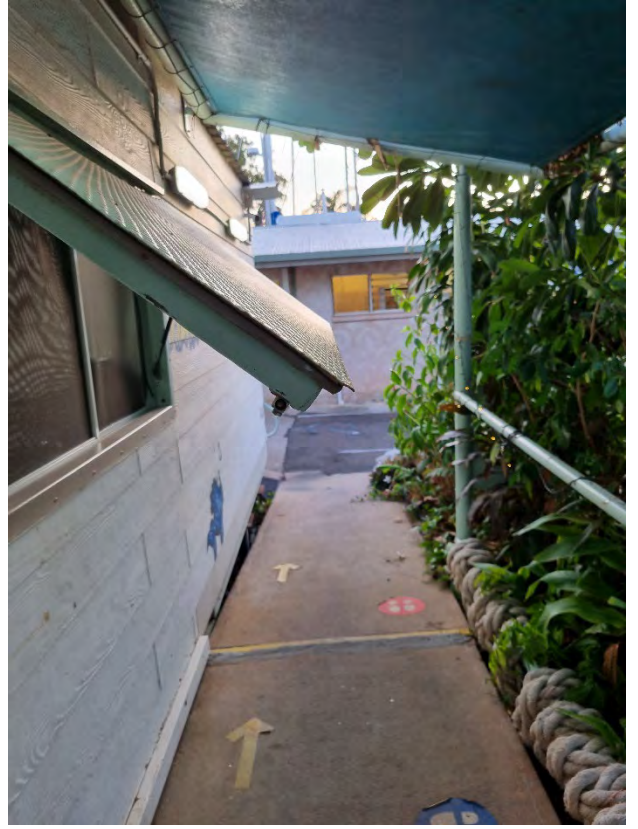
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Table 5 Pontoon



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Table 6 Kitchen



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Table 7 Bar and Alfresco Area

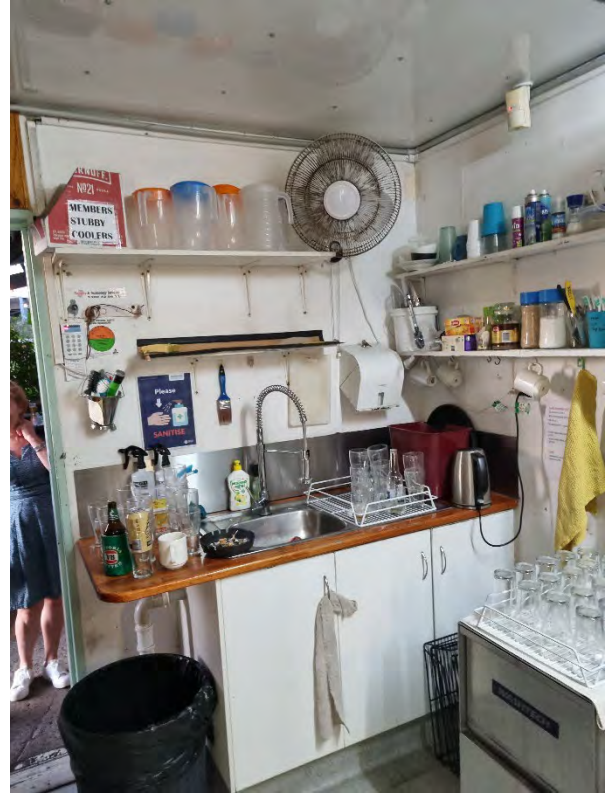


Table 8 Office



