Harvest Road Aquaculture Facility
Lot 501 Swarbrick Street, Emu Point
Development Application

May 2021 | 20-232

HARVEST ROAD

Roberts Gardiner Architects

element.
the art and science of place

We acknowledge the custodians of this land, the Minang/Menang Noongar and their Elders past, present and emerging.

We wish to acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

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Contents

1. Introduction

This development application has been prepared by **element** on behalf of Harvest Road, in support of an Aquaculture Facility for Harvest Road's Leeuwin Coast brand, on the northern portion of Lot 501 Swarbrick Street, Emu Point (the subject site). The Aquaculture Facility will pack shellfish from a number of seabed leases in the vicinity.

This report provides an overview of the subject site, proposed development and land use, and an assessment of the proposal against the applicable planning framework.

1.1 About Harvest Road

Harvest Road is one of Western Australia's largest integrated agriculture businesses and is a part of Tattarang, one of Australia's largest private investment groups. Harvest Road is an agricultural investment business with a growing portfolio of fine food brands for domestic and international markets, spanning over 40 countries. The company has been run by the Forrest family for over six generations with experience and understanding of the region running deep. This has enabled the company to produce a diverse range of high quality foods exclusively in Western Australia, including beef, honey, horticultural and now aquaculture products.

This aquaculture venture will produce uniquely Western Australian seafood that is as clean and pure as the pristine waters in which it is grown. A vision statement from the company is as follows:

> *'But as we share a taste of home with the world, we are working towards something greater. We believe in oceans that flourish. Where marine life is abundant and healthy. Where we give more than we take.*
>
> *We have built our aquaculture business on sustaining this vision. Through regenerative practices we are closing the loop and are creating solutions to prevent climate breakdown, enhance food security and revitalise local ecosystems.'*

The proposal will focus on the production of mussels, Rock Oysters and the hidden local gem that is the Akoya oyster, the particulars of which as detailed in the report below.

1.2 Planning Approval Required

The development application requires the approval of the City of Albany. Owing to the estimated cost of development of $9 million, this application is an 'optional' Development Assessment Panel (DAP) application. The applicant elects for the City of Albany to determine this application rather than the DAP.

2. Subject Site

2.1 Legal Description

The subject site is described as Lot 501 Swarbrick Street, Emu Point, which has a total land area of 35,175m^2. This application applies to the northern-most portion of Lot 501, encompassing an area of approximately 8,430m^2.

The particulars of the Certificate of Title are summarised in Table 1 below.

Table 1: Site Particulars

Lot	Deposited Plan	Vol/Fol	Area	Landowner
501	64940	LR3159/265	3.518ha	Crown Land City of Albany (primary interest holder)

Refer to Appendix A – Certificate of Title.

2.1.1 Tenure Arrangements

The subject site is Crown Land, however is subject to a Management Order to the City of Albany. The Management Order is understood to be for 'marine and associated purposes'. Part of the site subject of this application is subject of a Lease from the City of Albany to Harvest Road and discussions are ongoing regarding an expansion of this Lease area to reflect the extent of the proposed development area.

2.2 Site Context

The site is located within the Emu Point locality, an urban enclave located on a peninsula accessed by a single road (Emu Point Drive – Swarbrick Street), approximately 8.5km driving distance, east of the Albany city centre. Emu Point is an established marine facility, that comprises marine servicing, jetties, hardstand, boat-trailer and public car parking, a café, and the sea rescue squadron base. Broadly it comprises a marina, public boat ramp and carpark. The site is located at the northern-most extent of the Emu Point foreshore reserve, remote from the nearest neighbouring residential area, approximately 220m to the south.

The site is surrounded by remnant vegetation to the west and Oyster Harbour to the east.

The site has previously been used for aquaculture operations, as an oyster processing facility. Recent demolition works have occurred on the northern portion of the development area, and the remaining building is proposed to be demolished (and replaced) as part of this application.

2.3 Environmental and Heritage Considerations

2.3.1 Heritage

A desktop search of the Department of Planning Lands and Heritage's Aboriginal Heritage Inquiry System indicates that the site abuts a Registered Aboriginal Heritage Site, this being the waterbody of Oyster Harbour itself. It is understood that this does not impact the subject site itself.

Further searches of the Heritage Council's State Heritage Register and the City's records indicate that this development will not impact any historic heritage sites.

2.3.2 Contamination

A desktop review of the Department of Water Environmental Regulations (DWER) Contaminated Sites Database identifies that the site is not currently classified as a contaminated site, however it is identified as "remediated for restricted use" (as of 24 September 2015).

A basic summary of records from the DWER database reveals that the contamination was identified as Hydrocarbons (such as oil), which were found in soils beneath a generator shed.

As part of the recent demolition works, recent remediation testing has been completed to confirm that the site is suitable for the proposed development. This will form the basis of a separate application to DWER to seek a reclassification of the subject site (eg. to "decontaminated").

2.3.3 Acid Sulphate Soils

It is noted that there is potential for acid sulphate soils to exist in the locality, which will be appropriately managed via a standard ASS management plan that could be appropriately conditioned as part of any approval.

2.3.4 Bushfire Prone Site

A desktop search of the Department of Fire and Emergency Services' Map of Bushfire Prone Areas indicates that the site is located within a Bush Fire Prone Area, this is discussed in more detail later in the report. A Bushfire Management Plan has also been prepared in support of the proposed development.

Refer to Appendix C – Bushfire Attack Level Assessment

3. Proposed Development

3.1 Overview

The proposed development comprises a marine base/aquaculture facility for the packing of shellfish and associated car parking.

The marine base will include a packing building, nursery shed and a workshop, within three separate buildings.

The proposed development represents a significant improvement to the current arrangements and state of buildings and fixtures on the site, seeking to capitalise on the desirable water-front location and befitting of Emu Point as an existing tourist attractor in its own right.

Refer to Appendix B – Architectural Plans

3.2 Key Components and Staging of Development

Stage One:

- Nursery
- Oyster and mussel shed
- Pump station
- Sea water intake and discharge
- Hardstand and stormwater infrastructure
- Access to the hardstand from the car park

Stage Two:

- Demolition of the existing brick building
- Packing facility
- Amenities & office
- Workshop
- Car parking bays (within the current lease boundary)
- Loading apron (within the proposed expanded lease boundary)
- Fencing
- Potential improvements to existing sea wall (if required)

3.3 Land Use and Activities

3.3.1 Aquaculture Facility

The aquaculture packing facility will be farming Native Rock Oysters, Akoya Oysters and mussels. Rock Oysters will be grown from larvae to spat size (the juvenile age of an oyster) within one of the proposed warehouses on the site. Once they have grown to 5mm they are large enough to be grown in open water and are filled into oyster baskets. They remain on water for the grow-out period and are graded for size every 6-8 weeks to find the fully grown oysters, which are then transferred to the packing facility.

Akoya Oysters and mussels both follow the same process. Juvenile spat are grown in a land-based hatchery and are then seeded onto ropes hanging in water to grow for 12 to 15 months. They are then stripped off the ropes and collected in 400kg bulk bins. These bins are stored for dispatch.

The key activities of the seafood facility have been summarised below:

- Rock Oysters spat is received at the facility to grow in the nursery. Akoya and mussels, ropes seeded with spat are received at Emu Point ready for transfer to grow.
- Rock oysters are filled into baskets prior to transfer. Baskets (Rock oysters) and ropes (Akoya, mussels) are loaded onto truck boats at the berthing platform and transferred to areas to grow.
- Rock Oysters are graded every 6 to 8 weeks throughout their lifecycle, with grading planned to occur on water for the first 18 months and on land for the final 12 months.
- Harvested mussels and oysters are filled into ~400kg bulk bins on-water and transferred to Emu Point.
- Product will be stored in cool rooms for up to two days before being dispatched from site. Live Rock Oysters are stored at 15^{oC}, while Akoya and Mussels are stored at 4^{oC}.

The packing facility is made up of two main operations, farming and packing.

Farming

The farming operation is proposed to operate 12 hours per day, six days a week. Some of the key activities will be the operations of barges, boats, nursery attendants and general farm management.

Packing

The packing of the shellfish will occur on land at the proposed facility that is expected to operate up to 16 hours per day, 6 days a week during peak periods.

Production output of the site will vary throughout the year due to seasonal variation in growing cycles and market demand. At full scale, the operation is expected to pack up to approximately 2,000 tonnes per annum, including Rock Oysters, Akoya Oysters and mussels.

3.4 Built Form and Design

The proposal has been designed by Roberts Gardiner Architects, and the suite of architectural documents provide 3D visuals of the proposed development. The proposal has been designed to respect the existing surrounding built form and is at a scale that complements the landscape. The proposed buildings reflect a contemporary interpretation of the old Western Australian timber jetty kiosks. Sustainability is a key design factor the for the choice of materials and construction.

An existing boat shed, not subject of this application or part of the development site, is currently the most prominent structure at in the Emu Point precinct, standing at approximately two and a half storeys (11-12m). The proposed bulk and scale of the oyster and mussel nursery/shed is the largest of the three warehouses at 9.7m in height, the packing shed is proposed to be 9.64m and the workshop 9.4m in height. These building heights are indicative, with the final heights to be determined at detailed design building permit stage, however ultiamtely will complement the existing surrounding improvements and buildings in the precinct.

3.5 Landscaping

Landscaping is proposed at the southern portion of the site that interfaces with the existing car park and boat ramps. A landscaping strip will frame the face of the buildings facing the public area with a biofiltration basin through the middle of the car park to break-up the vehicle circulation area. This will act as a pollution control technique using living material to capture and biologically degrade pollutants produced by the proposed development.

3.6 Vehicle and Pedestrian Movement

The workshop buildings are the main structures visible to and defining the edge of the publicly accessible area of Emu Point, with the oyster nursery located beyond this. A gate is proposed to separate the rest of the facility for bio-security purposes, and will only be accessible to staff members.

Trucks delivering goods and transporting produce are expected to access the site, along with forklifts operating internal to the site. Due to seasonality of each harvested species, required transport frequency will vary each month. Table 3 below shows estimated daily truck departures based on a refrigerated truck with capacity of 20 bulk bins (~12 pallets).

Table 2 – Truck Departures

Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Truck Departures	2	1	2	2	4	4	4	4	4	3	3	2

During low seasons (June to October), it is estimated only two total truck departures will be required for daily production volumes (total truck movements of four per day, two arrival and two departure). Across peak months (November to May), up to four daily truck departures are anticipated (total truck movements of eight per day). Infrequent inbound supply receivals are also expected to provide the site with consumables and other operational equipment. One to two deliveries per week are expected. The proposed traffic volumes are not considered to result in a material impact on the road network, or unreasonably impact on the amenity of the existing residential area, noting that the Emu Point precinct is a long established marine facility that already involves daily truck/heavy vehicle movement, along with the previous aquaculture operations on the subject site.

The use of a forklift internal to the site will be required to service the proposed development and is limited to loading of bulk bins of shellfish from storage onto trucks and unloading one off or irregular delivery of equipment or seeded ropes.

3.7 Staff and Car Parking

Harvest Road Ocean's proposed shore base has been designed to create a net positive impact on the surrounding parking facilities, including the provision of new public parking for precinct visitors. Overall, the proposed facility will actively contribute to a safer environment for all visitors including neighbouring commercial tenants, recreational users and residents. This will be achieved through the co-working of a number of interrelated factors:

- The proposed facility will see a net increase of 13 new parking bays within the Emu Point precinct.
- The proposed facility has been designed to incorporate staff parking requirements within the site with new 38 bays created, eliminating the need for staff to use public parking. This number exceeds the total employees numbers expected on-site, even during peak production.
- Harvest Road will employ a range of strategies to reduce single occupancy vehicle travel by encouraging greater use of car sharing, public transport, walking and cycling where practical. This includes, but is not limited to incentivising employees to carpool, and the investment in end-of-trip facilities.
- Total on-site employee numbers will be managed in relation to staffing requirements at off-site facilities.
- The proposed facility design also includes new standard and disabled parking for the public to conveniently access Emu Point's commercial jetty. New parking bays will be clearly marked for general public use to eliminate confusion around correct parking zones.
- The proposed design will help improve public safety by ensuring that operational vehicles and equipment movements occur within the site boundary.
- It is also noted that the number of bays now exceeds the City's parking requirements under the City's Planning Scheme.

4. Planning Discussion

4.1 Strategic Planning Framework

4.1.1 Great Southern Tourism Strategy

The Great Southern Tourism Strategy (the Strategy) provides a coordinated approach that will ensure better planning for the development of future services and infrastructure and lead to more efficient long-term management of existing outdoor recreation activities, programs, events and infrastructure. The Strategy's target area extends 350km along the Southern Ocean from Nornalup (west) to Bremer Bay (east) north along the Wheatbelt to the regional hub of Katanning. This area covers 11 local governments, including the City of Albany and approximately 60,000 people.

The aims of the Strategy are:

- *Establish strong partnerships that will guide infrastructure development and management.*
- *Build and manage world-class trails and facilities.*
- *Promote the Great Southern as an adventure tourism destination.*
- *Build capacity and capability amongst outdoor recreation providers.*
- *Ensure all people have more opportunities to participate in outdoor recreation.*

This proposal builds on one of Albany's biggest assets, the ocean and associated waterbodies, and has been developed in order to take advantage of the benefits of the location and promote outdoors-based Great Southern, fresh produce and provide a boost to the local economy.

4.1.2 State Planning Policy 2.6 State Coastal Planning

State Planning Policy 2.6 – State Coastal Planning (SPP2.6) sets out a range of Policy Measures to ensure that development in coastal locations appropriately takes into account coastal risk and environmental considerations.

The objectives of the policy are listed below:

1. *ensure that development and the location of coastal facilities takes into account coastal processes, landform stability, coastal hazards, climate change and biophysical criteria;*
2. *ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities;*
3. *provide for public coastal foreshore reserves and access to them on the coast; and*
4. *protect, conserve and enhance coastal zone values, particularly in areas of landscape, biodiversity and ecosystem integrity, indigenous and cultural significance.*

Owing to the location, the proposed development will have regard to the provisions and objectives of SPP2.6. A Coastal Hazard Assessment has been prepared for the site in support of the proposed development and is discussed below.

4.1.3 Coastal Hazard Risk Management and Adaptation Planning Guidelines

The Coastal Hazard Risk Management and Adaptation Planning Guidelines (CHRMAP) is designed to support the implementation of SPP 2.6 and assist the decision makers to:

a) *Consider the risks arising from coastal hazards through evaluating their consequence and likelihood, and the vulnerability of specific assets;*

b) *Identify risk management responses to those risks arising from coastal hazards; and*

c) *Prioritising and implement the risk management responses.*

This guideline encourages and guides decision-makers and landholders to address these differing responsibilities through the preparation of CHRMAP plans.

4.1.4 State Planning Policy 3.7 Planning for Bushfire Prone Areas

The site is within an identified bushfire prone area. Accordingly, the proposal is to be assessed for compliance with State Planning Policy 3.7 Planning in Bushfire Prone Areas ('SPP 3.7') *"to preserve life and reduce the impact of bushfire on property and infrastructure"*. A Bushfire Management Plan and Bushfire Emergency Evacuation Plan have been prepared for the site in support of the proposed development and are discussed below.

4.1.5 City of Albany Local Planning Strategy 2019

The City's Local Planning Strategy (the Strategy) is a strategic document, which provides direction over the next 10-15 years with the aim to deliver a more compact city where residents have improved access to local shops, services, employment and transportation. The Strategy was designed to guide the City's progress towards its vision to be Western Australia's most sought after and unique regional city to work, live and visit.

This aquaculture project realises the ambitions of the City of Albany's 2019 Local Planning Strategy. Specific to aquaculture, the Strategy identifies the City of Albany region as the single largest producer of mussels and oysters in the State, and a premium producer of Rock Oysters and Blue Mussels for local and export consumption.

The Strategy recognises the prime conditions that exist at Oyster Harbour and Emu Point as an oyster hatchery location, and the opportunity for the City of Albany to capitalise on these conditions, and strengthen its leading position in this market.

This project at Emu Point delivers on these aquaculture ambitions, with Rock Oysters, Akoya and Mussels.

4.1.6 Local Planning Policy Development in Flood Prone Areas

The Local Planning Policy Development in Flood Prone Areas provides requirements for development in areas subject to periodic inundation or flooding. The objective for the policy is as follows:

> *To ensure development adjacent to water bodies and land prone to flooding is appropriately located and positioned at an established finished floor level to reduce the potential for property damage.*

The subject site is located adjacent to Oyster Harbour, and as a result the Coastal Hazard Assessment has been prepared for the site in support of the proposed development and is discussed below.

4.2 Land Use

There is no region planning scheme applicable to the site.

The site is reserved 'Parks and Recreation' under the City of Albany's Local Planning Scheme No. 1 (LPS1), with a 'Restricted Use' overlay specific to the site, restricting the land uses that can be undertaken at the site.

The objective of the 'Parks and Recreation' reserve is as follows:

> *"Public Purposes which specifically provide for a range of public recreational facilities."*

The proposed aquaculture facility is entirely consistent with the 'Aquaculture' land use, which is included in the list of Restricted Uses for the site and is defined as per the *Fish Resource Management Act 1994* as follows:

> *"means the keeping, breeding, hatching, culturing or harvesting of fish"*

The proposed development is considered to be consistent with the intent of the 'Parks and Recreation' objective as the development will be providing a much-needed upgrade to the existing site conditions, will reactivate the currently underutilised area. The proposal is entirely consistent with the marine operations already undertaken at Emu Point, and consistent with the previous use, being an oyster packing facility.

4.3 Public Art

The City's Local Planning Policy Public Art has been established to ensure private commercial, non-residential or mixed use developments valued over $1.5 million are required to provide 1% of the estimated total project cost for the development of public artwork which reflect or enhance local cultural identity.

Noting that stages one and two of the proposed development are effectively industrial in nature, and not readily visible to the public, or accessible to the public, it is proposed that no public art requirement be imposed on the development.

4.4 Bushfire Management

Envision Bushfire Protection has prepared a Bushfire Management Plan (BMP) in accordance with State Planning Policy 3.7 (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas V1.3 (the Guidelines) in order to identify appropriate mitigation measures and can be found at Appendix C.

Refer to Appendix C – Bushfire Management Plan

Table 4 – Current and Proposed BAL Ratings

Built Environment	Current BAL	Proposed BAL
Packing/Amenities Building	**BAL FZ**	**BAL-19/12.5**
Bulk Fuel Store	**NA**	**BAL-19**
Oyster and Mussel Shed/Nursery	**BAL FZ**	**BAL-FZ**
Marine Workshop	**Undefined**	**BAL-FZ**

The site will be developed predominantly with hardstand, and buildings, and therefore it will not provide a continuity of bushfire fuels that may act as a wick leading to ignite the adjacent vegetated reserve, or spread from the adjacent reserve to the habitable buildings. The proposal therefore presents a low risk of ignition and spread of a bushfire from the site into the adjacent reserve.

4.5 Servicing and Site Suitability Considerations

4.5.1 Traffic Movement and Parking

Stantec has reviewed the proposal to ensure that it can accommodate the required truck movements to service the facility.

Refer to Appendix F – Truck Turning Template

With respect to car parking for the aquaculture facility, this is considered to best be described as 'Industry – General' with respect to the projected demand for car parking, given the packing activities that will be primarily undertaken. Table 5 of LPS1 would require the following parking for the use:

Car parking - '1 per 100m^2 NLA'

Bicycle parking - '1 per 20 car bays'

Based on a combined Net Lettable Area (NLA) for the workshop, shed and packing warehouse of approximately 3,172m^2 (ie. stages one and two), approximately 32 car bays and two bicycle bays would be required. However the definition of NLA is fairly broad and all-encompassing, and is not well suited for determining areas of the buildings that will be occupied by employees in the context of this proposal. Of the 3,172m^2 NLA, 570m^2 of this within the packing building is occupied by freezers and forklift maneuvering space, 110m^2 of this within the nursery building is occupied by the footprint of upweller machinery, and 400sqm of this within the shed is storage. In this regard, 1080m^2 of the NLA is uninhabitable space, that will not be occupied by employees, and therefore will not contribute towards the demand for car parking bays.

Based on the inhabitable NLA of 2032m^2, 20.3 (21) car parking bays would be required.

A total of 44 car bays are proposed as part of the stage one and stage two development, plus a number of bicycle parking bays, with 6 of these being available to the public and provided beyond the current and proposed extended lease area.

In this regard there will be a sufficiency of car parking.

Separate to this application there is an opportunity for the City of Albany to establish a more efficient layout of the wider Emu Point car park, which is included as Appendix I, that would deliver additional public car parking in the precinct. Separate to this application, the City is encouraged to consider the additional car parking opportunities presented at Appendix I.

Refer to Appendix I – Additional Parking Concept

4.5.2 Waste Management

A waste management plan has been prepared by Encycle Consulting for the servicing of waste and recyclables by a private waste service provider from the proposed shellfish packing facility.

Refer to Appendix D – Waste Management Plan

The development will have a bin store to allow for the storage and collection of seafood packing shell waste, general waste from bio-secure area, and general waste and recyclables from administration areas.

The bin store will be located north of the packing facility. The bin store is located along the northern boundary of the packing facility and is screened from view of the public, although it is not enclosed bins will have lids to mitigate vermin and flies. Hot and cold water services are to be made available for washing bins.

A commercial waste service provider will service the general waste and recycling bins. On collection days rear lift vehicles for each waste and recycling stream will enter the site. the vehicle will drive in forward motion and park adjacent to the bin store. The operatives will enter the bin store to retrieve and service the bins. The empty bins will be returned to the bin store.

A staff member will be responsible for overseeing the waste management and will maintain the stores, keeping them clean and tidy. All staff will be made aware of the waste and recycling systems and how to use them.

4.5.3 Erosion and Flood Prone Area

A preliminary Coastal Hazard Assessment (CHA) has been prepared by M P Rogers & Associates in accordance with State Planning Policy 2.6 State Coastal Planning (SPP 2.6) and Coastal Hazard Risk Management and Adaptation Planning Guidelines (CHRMAP). The CHA has provided appropriate adaptation or management measures which may be implemented as part of the development.

Refer to Appendix E – Coastal Hazard Assessment

The CHA identifies that the beach section of the site is at risk of erosion in the long term, and therefore a coastal management strategy is necessary for the site. Table 5 in the following is provided by the CHA and outlines SPP 2.6's hierarchy of risk and mitigation options for coastal erosion and coastal inundation hazards, and the appropriateness of each strategy for the subject site.

Table 5 - Risk Adaptation & Mitigation Options for Coastal Erosion and Inundation

Risk Mitigation and Adaption Options	Appropriateness for site	
	Coastal Erosion	**Coastal Inundation**
Avoid	The option to avoid is not viable for Emu Point Boat Harbour. The development site exists at the harbour and is dependent on the harbour frontage.	The option to avoid is not viable for Emu Point Boat Harbour. The whole site sits below this level and it is impractical to locally fill and develop above this level.
Planned or managed retreat	Planned or managed retreat is not appropriate. The development needs to service Emu Point boat harbour, therefore relocating the development inland is not an option.	Planned or managed retreat is not appropriate. The development needs to service Emu Point Boat Harbour, therefore relocating the development inland is not an option.

Risk Mitigation and Adaption Options	Appropriateness for site	
	Coastal Erosion	**Coastal Inundation**
Accommodate	This strategy is not appropriate. The development would not be economically viable to be designed to withstand the impacts of significant shoreline recession.	This strategy is most appropriate for the site. This would involve taking measures through the design, construction and management of the site to acknowledge the risk of flooding and inundation.
Protect	This option of coastal erosion mitigation is the most effective for the site. It is recommended that the existing seawall is inspected to confirm its condition and suitability to protect the site. Furthermore, it is recommended that the remainder of the shoreline is protected. The most appropriate form of this protection would be an extension to the existing seawall.	

The "accommodate" strategy is appropriate for coastal inundation as the nature of the proposed shellfish packing facility operations are coastally dependent and the proposal does not include any habitable buildings. This means the development can be designed and managed to accommodate short term inundation.

Noting the broader precinct is under the management of the City of Albany, as a publicly accessible tourism/ recreation area, it is considered appropriate that the City appropriately consider its response to the risk of coastal erosion, as it is to be acknowledged that this development application applies to an existing developed area of Emu Point, and the construction/extension of a seawall is a broader public matter.

Refer to Appendix E – Coastal Hazard Assessment

4.5.4 Urban/Stormwater Management

An Urban Water Management Plan has been prepared by Stantec and included at Appendix H. This outlines the stormwater management principles and design criteria, along with the bio-filter proposal, to demonstrate the appropriateness of the development in terms of managing stormwater adjacent Oyster Harbour.

Refer to Appendix H – Urban Water Management Plan

4.5.5 Servicing

The power and sewer servicing concepts prepared by Stantec and included at Appendix G demonstrate that the proposed development can be appropriately provided with essential services.

Refer to Appendix G – Servicing Concepts

5. Conclusion

This report has been prepared in support of the proposed Aquaculture Facility for Harvest Road's Leeuwin Coast brand, on the northern portion of Lot 501 Swarbrick Street, Emu Point.

Based on the discussion above it is considered that the proposed development is consistent with the strategic and statutory planning framework provisions that apply to the site. In conclusion, the proposal is considered appropriate having regard to the following:

- The proposed use of the site for 'Aquaculture' is appropriate under the Restricted Uses that apply.
- The development will be built in two stages:
  - The oyster and mussel nursery shed and associated infrastructure; and
  - The packing facility, workshop and associated infrastructure.
- The development will revitalize the under-utilized northern portion of the Emu Point precinct;
- The project realises the ambitions of the City of Albany's 2019 Local Planning Strategy, and builds upon the identified strengths of the region as the single largest producer of mussels and oysters in the State, and a premium producer of Rock Oysters and Blue Mussels for local and export consumption.

In this regard the approval of the City of Albany is respectfully requested.

6. Appendices

Appendix A – Certificate of Title

WESTERN AUSTRALIA

REGISTER NUMBER	
501/DP64940	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	**N/A**

VOLUME **LR3159** FOLIO **265**

RECORD OF QUALIFIED CERTIFICATE OF CROWN LAND TITLE

UNDER THE TRANSFER OF LAND ACT 1893
AND THE LAND ADMINISTRATION ACT 1997

NO DUPLICATE CREATED

The undermentioned land is Crown land in the name of the STATE OF WESTERN AUSTRALIA, subject to the interests and Status Orders shown in the first schedule which are in turn subject to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 501 ON DEPOSITED PLAN 64940

STATUS ORDER AND PRIMARY INTEREST HOLDER:
(FIRST SCHEDULE)

STATUS ORDER/INTEREST: RESERVE UNDER MANAGEMENT ORDER

PRIMARY INTEREST HOLDER: CITY OF ALBANY OF YORK STREET, ALBANY
(XE H755179) REGISTERED 22/5/2001

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. L325852 RESERVE 42964 FOR THE PURPOSE OF MARINE & ASSOCIATED PURPOSES REGISTERED 25/5/2010.
   - H755179 MANAGEMENT ORDER. CONTAINS CONDITIONS TO BE OBSERVED. WITH POWER TO LEASE FOR ANY TERM NOT EXCEEDING 50 YEARS, SUBJECT TO THE CONSENT OF THE MINISTER FOR LANDS. REGISTERED 22/5/2001.
     - L012753 THE CORRECT ADDRESS OF THE MANAGEMENT BODY IS NOW 102 NORTH ROAD, YAKAMIA. REGISTERED 20/7/2009.
   - L643697 THE CORRECT ADDRESS OF THE MANAGEMENT BODY IS NOW 102 NORTH ROAD, ALBANY. REGISTERED 2/6/2011.
2. H368667 CAVEAT BY BANK OF WESTERN AUSTRALIA LTD AS TO PORTION ONLY LODGED 22/2/2000.
3. L012753 LEASE TO ALBANY SEA RESCUE SQUAD INC OF POST OFFICE BOX 1031, ALBANY EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 20/7/2009.
4. L643697 LEASE TO EMU POINT BOAT STORAGE PTY LTD OF POST OFFICE BOX 805, ALBANY EXPIRES: SEE LEASE. AS TO PORTION ONLY. REGISTERED 2/6/2011.
   - L643698 SUB-LEASE OF LEASE L643697 TO GLENN ROBERT KEYMER, SUSAN MICHELLE KEYMER, BOTH OF POST OFFICE BOX 5103, ALBANY, AS JOINT TENANTS EXPIRES: SEE SUB LEASE. AS TO PORTION ONLY. REGISTERED 2/6/2011.
   - N567798 TRANSFER OF LEASE L643697, LESSEE NOW DARREN WYNNE RUSSELL, LINDA JANE RUSSELL, BOTH OF PO BOX 5216 ALBANY WA 6332, AS JOINT TENANTS REGISTERED

END OF PAGE 1 - CONTINUED OVER

2/3/2017.

5. N154567 MEMORIAL. CONTAMINATED SITES ACT 2003 REGISTERED 22/10/2015.

Warning: (1) A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.
(2) The land and interests etc. shown hereon may be affected by interests etc. that can be, but are not, shown on the register.
(3) The interests etc. shown hereon may have a different priority than shown.

----------END OF CERTIFICATE OF CROWN LAND TITLE----------

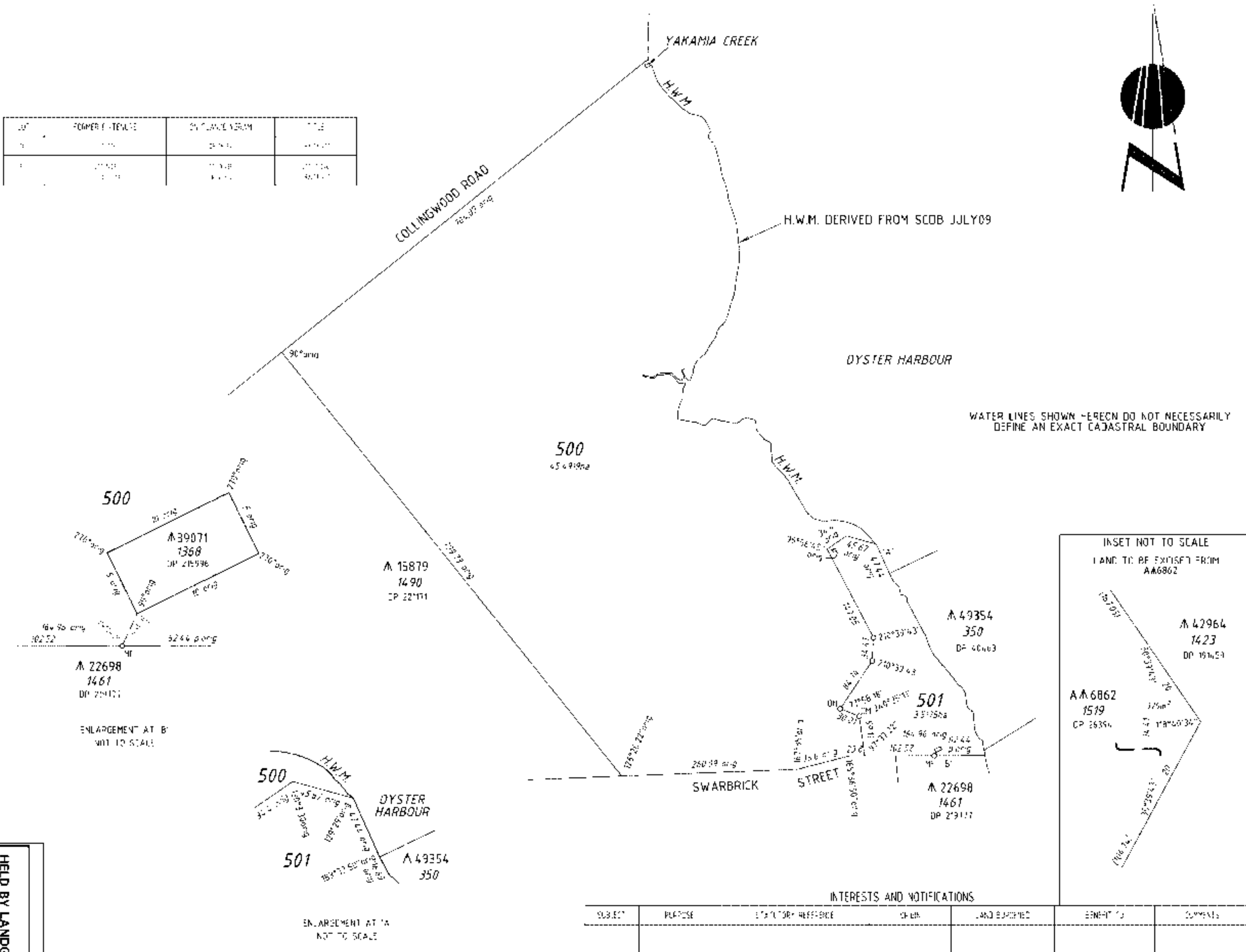
STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP64940
PREVIOUS TITLE:	LR3078-477, LR3117-246
PROPERTY STREET ADDRESS:	NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY:	CITY OF ALBANY
RESPONSIBLE AGENCY:	DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)

NOTE 1: A000001A CORRESPONDENCE FILE 00401-1994-03RO

VER	AMENDMENT	AUTHORISED BY	DATE
2	INSET ADDED	A.W. CALDWELL	24/07/09
3	AUDIT REQUIREMENTS	A.W. CALDWELL	24/08/09



TYPE CROWN

PURPOSE SUBDIVISION

PLAN OF

LOTS 500 AND 501

DISTRICT PLANTAGENET
TOWNSITE ALBANY
FILE 11213-1899-0
LOCAL AUTHORITY CITY OF ALBANY
LOCALITY EMU POINT
INDEX BK2512:14 OE

FORMER TENURE SEE TABLE

SCALE @ A2 1:4000

A.W. CALDWELL

harley

Harley Survey Group

21-Jul-09

LJF

2956-2007v8

Nil

N/A

EXEMPT FROM WAPC APPROVAL

IN ORDER FOR DEALINGS

- Reserve action

10-Sept-2009

APPROVED

25/5/2010

Landgate

Western Australian Land Information Authority

DEPOSITED PLAN

64940

SHEET 1 OF 1

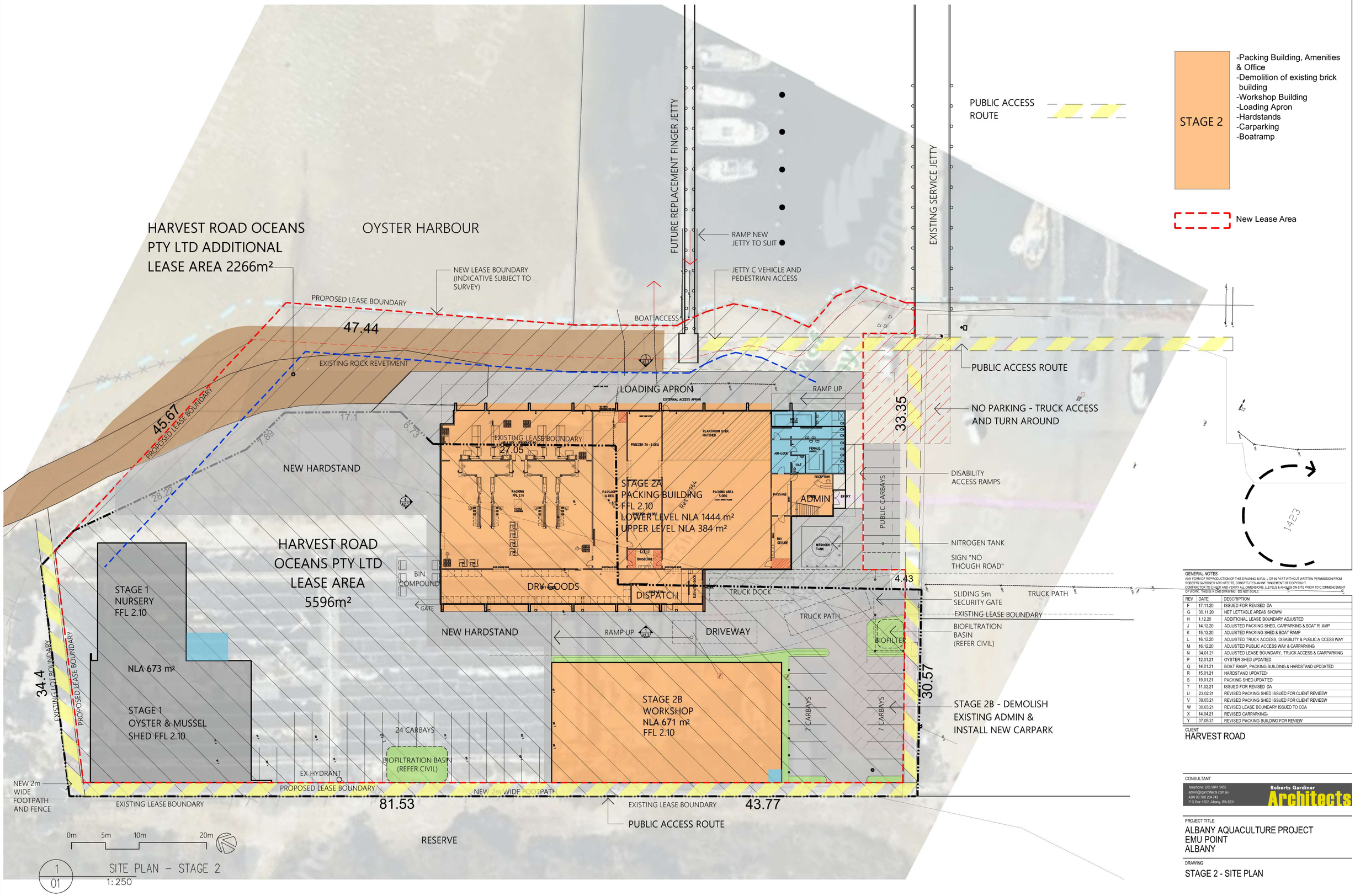
VERSION 3

INTERESTS AND NOTIFICATIONS

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BURDENED	BENEFIT TO	COMMENTS

HELD BY LANDGATE IN DIGITAL FORM ONLY.

Appendix B – Architectural Plans



GENERAL NOTES

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS, LEVELS & ANGLES ON SITE PRIOR TO COMMENCEMENT OF WORK. THIS IS A CAD DRAWING. DO NOT SCALE.

REV	DATE	DESCRIPTION
F	17.11.20	ISSUED FOR REVISED DA
G	30.11.20	NET LETTABLE AREAS SHOWN
H	1.12.20	ADDITIONAL LEASE BOUNDARY ADJUSTED
J	14.12.20	ADJUSTED PACKING SHED, CARPARKING & BOAT R AMP
K	15.12.20	ADJUSTED PACKING SHED & BOAT RAMP
L	16.12.20	ADJUSTED TRUCK ACCESS, DISABILITY & PUBLIC A CCESS WAY
M	16.12.20	ADJUSTED PUBLIC ACCESS WAY & CARPARKING
N	04.01.21	ADJUSTED LEASE BOUNDARY, TRUCK ACCESS & CARPARKING
P	12.01.21	OYSTER SHED UPDATED
Q	14.01.21	BOAT RAMP, PACKING BUILDING & HARDSTAND UPDATED
R	15.01.21	HARDSTAND UPDATED!
S	19.01.21	PACKING SHED UPDATED
T	11.02.21	ISSUED FOR REVISED DA
U	23.02.21	REVISED PACKING SHED ISSUED FOR CLIENT REVIEW
V	09.03.21	REVISED PACKING SHED ISSUED FOR CLIENT REVIEW
W	30.03.21	REVISED LEASE BOUNDARY ISSUED TO COA
X	14.04.21	REVISED CARPARKING
Y	07.05.21	REVISED PACKING BUILDING FOR REVIEW

CLIENT
HARVEST ROAD

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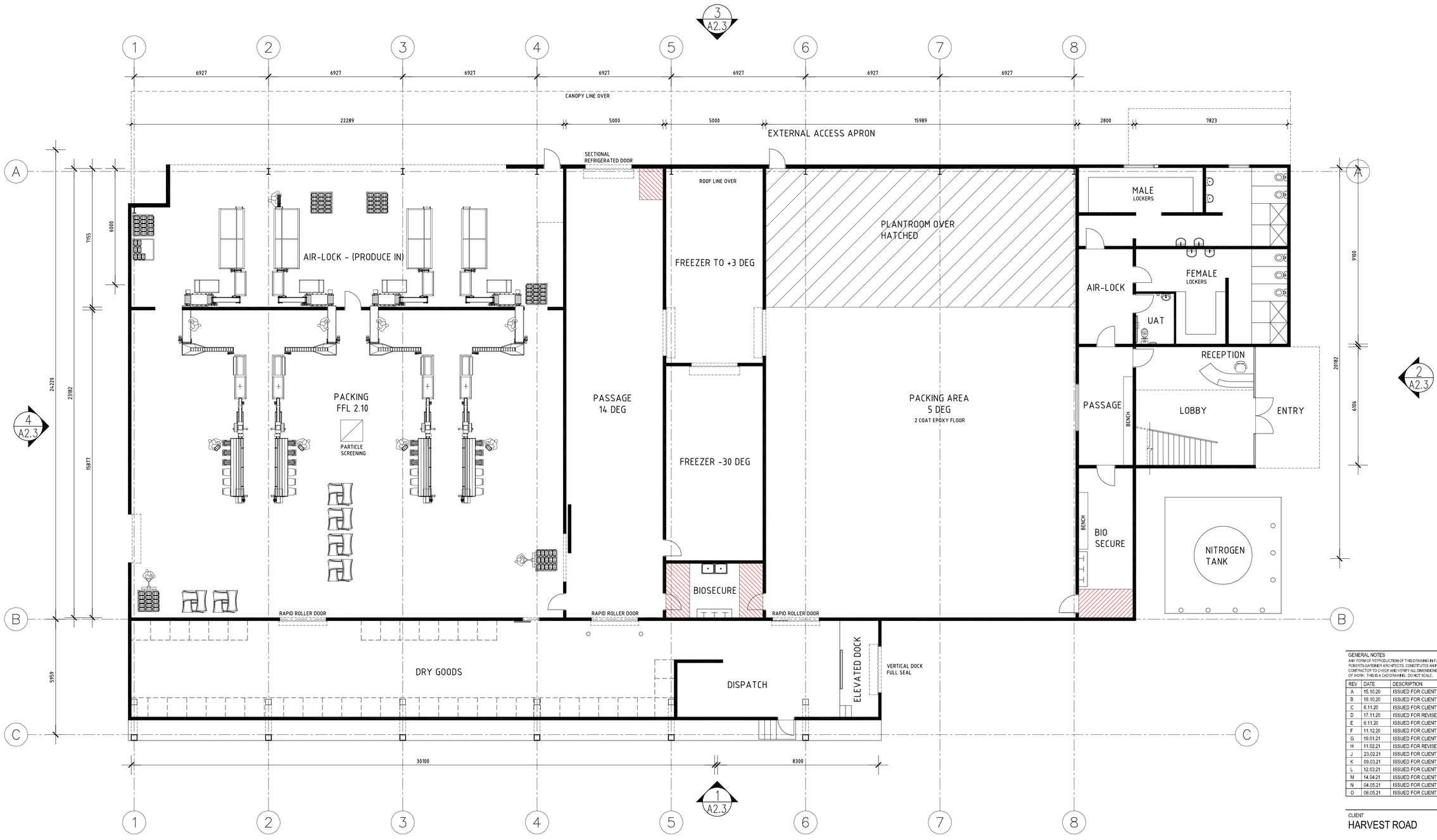
admin@grarchitects.com.au
ABN 90 308 204 743
P.O.Box 1502, Albany, WA 6331
Roberts Gardiner Architects

PROJECT TITLE
ALBANY AQUACULTURE PROJECT
EMU POINT
ALBANY

DRAWING
STAGE 2 - SITE PLAN

DESIGNED MR	DRAWN DG	SCALE 1:250 @ A1 (1:500 @ A3)	
VERIFIED	APPROVED MR	DATE MAY-21	
PROJECT NUMBER 20-021		DRAWING NUMBER A-2.0	REVISION Y
CAD FILE STAGE2-DA.DWG			



0m 5m 10m 20m

1 / A01 GROUND FLOOR PLAN
1:100

GENERAL NOTES

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REV	DATE	DESCRIPTION
A	15.10.20	ISSUED FOR CLIENT REVIEW
B	19.10.20	ISSUED FOR CLIENT REVIEW
C	6.11.20	ISSUED FOR CLIENT REVIEW
D	17.11.20	ISSUED FOR REVISED DA
E	6.11.20	ISSUED FOR CLIENT REVIEW
F	11.12.20	ISSUED FOR CLIENT REVIEW
G	19.01.21	ISSUED FOR CLIENT REVIEW
H	11.02.21	ISSUED FOR REVISED DA
J	23.02.21	ISSUED FOR CLIENT REVIEW
K	09.03.21	ISSUED FOR CLIENT REVIEW
L	12.03.21	ISSUED FOR CLIENT REVIEW
M	14.04.21	ISSUED FOR CLIENT REVIEW
N	04.05.21	ISSUED FOR CLIENT REVIEW
O	06.05.21	ISSUED FOR CLIENT REVIEW

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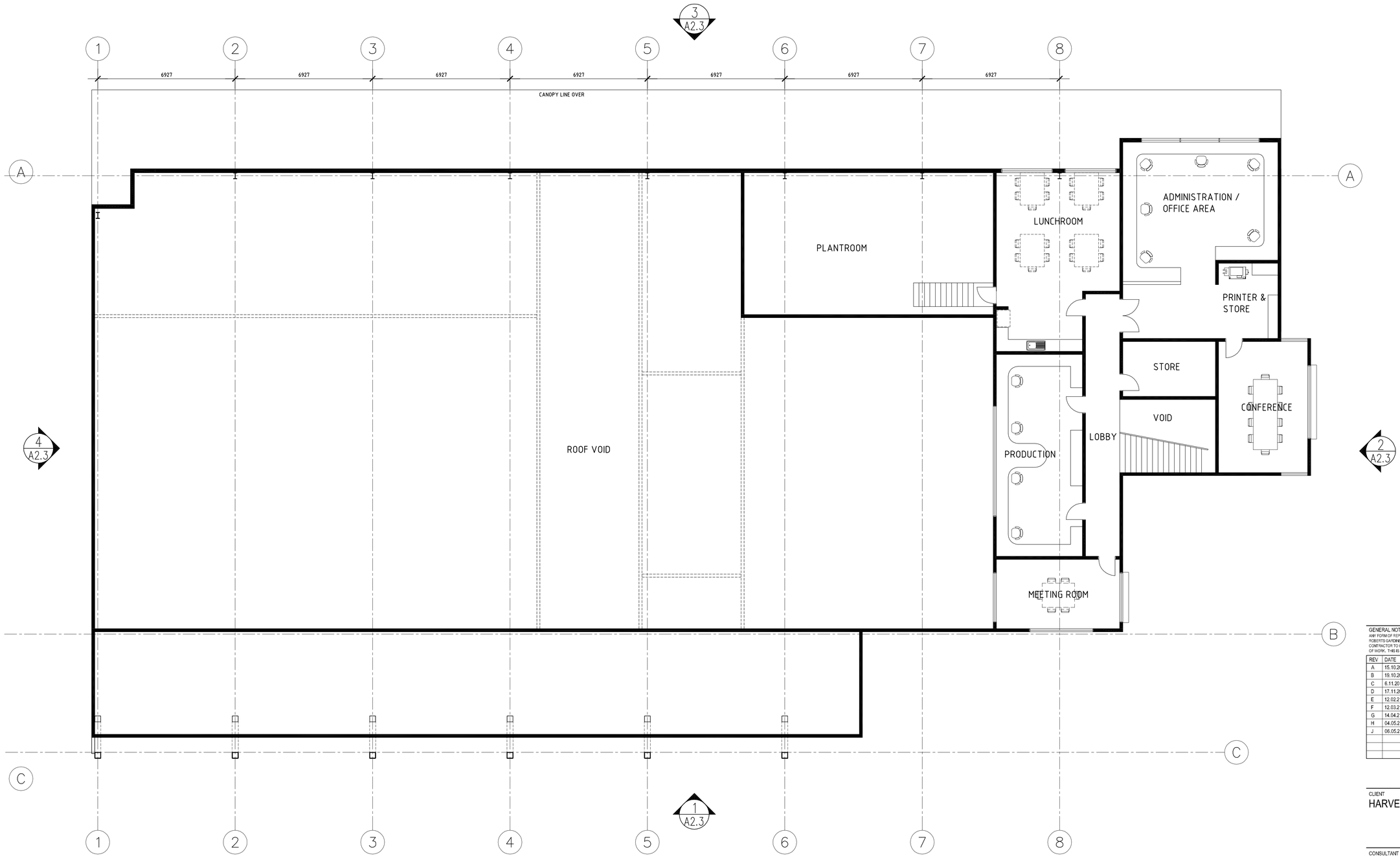
PROJECT TITLE
ALBANY AQUACULTURE PROJECT
EMU POINT
ALBANY

DRAWING
STAGE 2 - PACKING & OFFICE

GROUND FLOOR PLAN

DESIGNED MR	DRAWN DG	SCALE 1:100	
VERIFIED	APPROVED MR	DATE MAY-2021	
PROJECT NUMBER 20-021		DRAWING NUMBER A-2.1	REVISION O
CAD FILE PACKING OPT 1.DWG			



1 / A01 UPPER FLOOR PLAN
1:100

0m 5m 10m 20m

GENERAL NOTES

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REV	DATE	DESCRIPTION
A	15.10.20	ISSUED FOR CLIENT REVIEW
B	19.10.20	ISSUED FOR CLIENT REVIEW
C	6.11.20	ISSUED FOR CLIENT REVIEW
D	17.11.20	ISSUED FOR REVISED DA
E	12.02.21	ISSUED FOR REVISED DA
F	12.03.21	ISSUED FOR CLIENT REVIEW
G	14.04.21	ISSUED FOR CLIENT REVIEW
H	04.05.21	ISSUED FOR CLIENT REVIEW
J	06.05.21	ISSUED FOR CLIENT REVIEW

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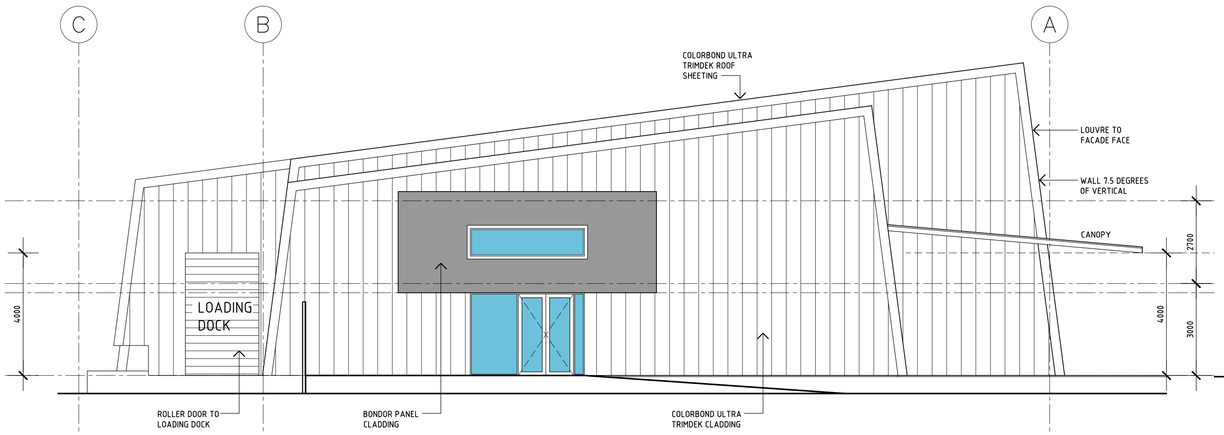
PROJECT TITLE
ALBANY AQUACULTURE PROJECT
EMU POINT
ALBANY

DRAWING
STAGE 2A - PACKING & OFFICE

UPPER FLOOR PLAN

DESIGNED MR	DRAWN DG	SCALE 1:100	
VERIFIED	APPROVED MR	DATE MAY-21	
PROJECT NUMBER 20-021		DRAWING NUMBER A-2.2	REVISION J
CAD FILE PACKING OPT 1.DWG			



2 A01 SOUTH ELEVATION
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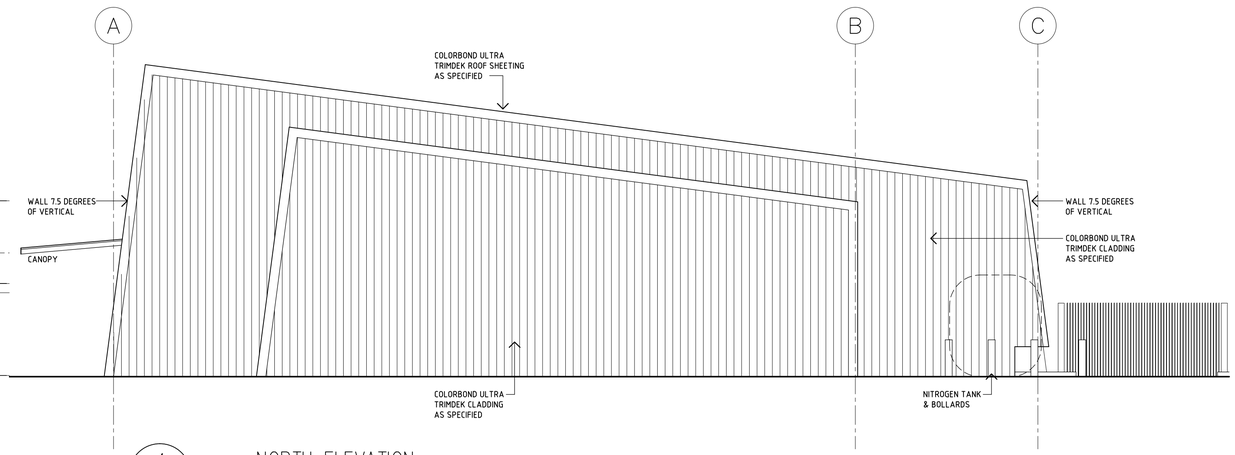

4 A01 NORTH ELEVATION
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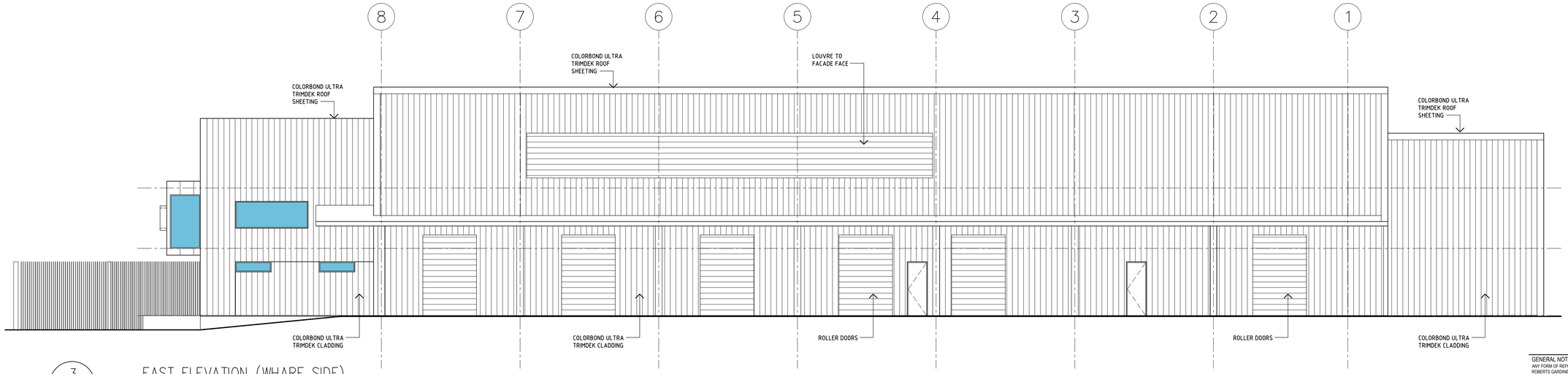
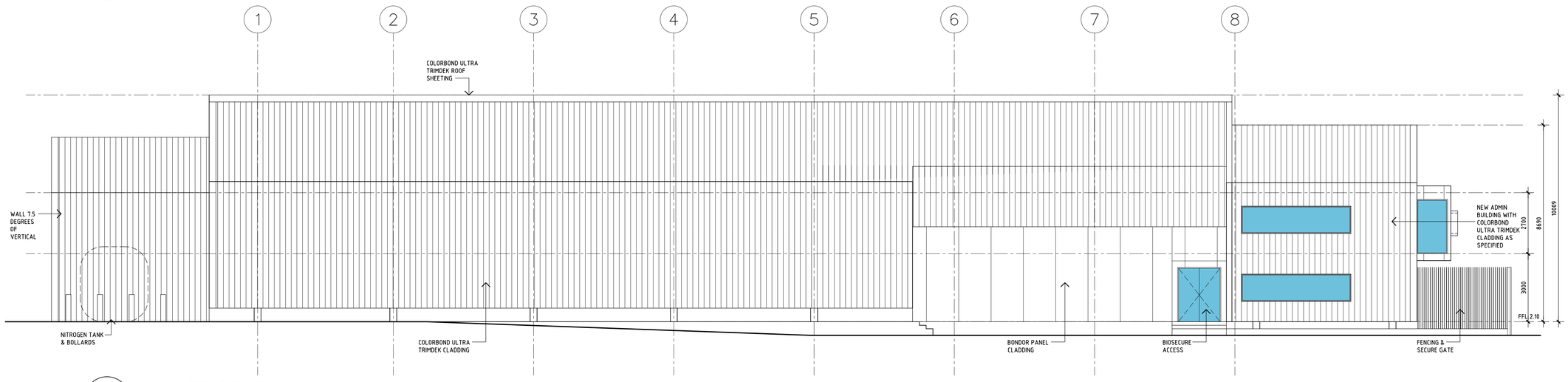


3 A01 EAST ELEVATION (WHARF SIDE)
1:100



1 A01 WEST ELEVATION
1:100

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REV	DATE	DESCRIPTION
A	17.11.20	ISSUED FOR REVISED DA
B	12.02.21	ISSUED FOR REVISED DA

CLIENT
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Roberts Gardiner Architects

PROJECT TITLE
ALBANY AQUACULTURE PROJECT
EMU POINT
ALBANY

DRAWING
STAGE 2A - PACKING & OFFICE

ELEVATIONS

DESIGNED MR	DRAWN DG	SCALE 1:100	
VERIFIED	APPROVED MR	DATE 12-02-21	
PROJECT NUMBER 20-021		DRAWING NUMBER A-2.3	REVISION B
CAD FILE PACKING OPT 1.DWG			


Roberts Gardiner
Architects


LEEUWIN
COAST
Roberts Gardiner
Architects


Roberts Gardiner
Architects


Roberts Gardiner
Architects


Roberts Gardiner
Architects


Roberts Gardiner
Architects

Appendix C – Bushfire Management Plan

Bushfire Management Plan

Aquaculture Maintenance and Seafood Processing Facility

Lot 501 Emu Point

Client – Tattarang Pty Ltd

January 2021

envision
bushfire protection

LIMITATIONS STATEMENT

This Bushfire Management Plan ('BMP') has been solely prepared for Tattarang Pty Ltd. It proposes to develop a food processing facility at Lot 501 Emu Point (**the Site**) within the City of Albany.

Envision Bushfire Protection

ABN: 90958370365

124 Derby Road SHENTON PARK WA 6008

P: 0439 112 179

Email: admin@envisionbp.com.au

Version Control

Lot 501 Emu Point WA			
Version	**Date**	**Author**	
V1	10 August 2020	Anthony Rowe	Draft
V2	14 August 2020	Anthony Rowe	Revision of BAL Report included
V3	27 January 2020	Anthony Rowe	Enlarged processing plant and deletion of vulnerable landuse

Disclaimer

In undertaking this work, the authors have made every effort to accurately apply the available information **at the time of writing** following the instructions of the regulatory authorities and applying best practice as described by the Fire Protection Association Australia. Any conclusions drawn or recommendations made in the report are made in good faith, and the consultants take no responsibility for how this information and the report are subsequently used.

Envision Bushfire Protection accepts no liability for a third party's use of, or reliance upon, this specific report.

Importantly the measures contained in this report cannot guarantee human safety or an absence of harm or that the building will not be damaged or would survive a bushfire event on every occasion. This is due to the unpredictable nature of fire behaviour (knowledge in this field continues to develop) and the unpredictable nature of extreme weather conditions.

This report has been prepared, in Part utilising the WALGA Environmental Planning Tool ('**EPT**'). The author agrees that at all times, copyright in the material on the EPT website remains with WALGA and the Contributors as the case may be and has cited the EPT as being the source of information and acknowledges the contributor's copyright in the Information.

Scope of this report

Envision Bushfire Protection has been engaged to provide expert bushfire safety and planning advice.

The scope of the advice has been to assess the proposal for compliance with the policy measures described in State Planning Policy 3.7 and identify appropriate mitigation measures to be considered by the determining authority. This is described in a Bushfire Management Plan and prepared with regard to the Department of Planning Lands and Heritage templates.

The investigations and mitigation measures identified in the BMP, has, in turn, formed the basis for the preparation of a Bushfire Emergency Evacuation Plan.

Client relationship

I was engaged to provide expert bushfire safety and planning advice. My relationship with the client is a standard commercial contract, and no private, personal, or other matter has influenced the content of the BMP or my findings.

STATEMENT OF CONFORMITY – PLANNING AND DEVELOPMENT ACT 2005

Anthony Rowe Level 3 - BPAD36690

Principal

The signatory declares that this Bushfire Management Plan meets the requirements of State Planning Policy 3.7 and the Guidelines for Planning in Bushfire Prone Areas V1.3.

EXECUTIVE SUMMARY

Preface

The applicant, Tattarang Pty Ltd., proposes to rearrange its Aquaculture facility, at Lot 501 Emu Point (the Site) within the City of Albany. The Site is located at Emu Point and is situated between a Forest reserve (west) and the coast.

The development proposal comprises the replacement of the existing buildings with the following:

- Processing/Amenities Building - consolidate and replace existing administration and process building;
- Bulk Fuel >500 L portable store (new to the Site);
- Oyster and Mussel Shed/Nursery - replacement and consolidation of the existing facility;
- Marine workshop - activity consolidation; and
- A 2 m wide public access way along the northern and western boundary.

The Site is within a declared bushfire prone area. Accordingly, the proposal is to be assessed for compliance with State Planning Policy 3.7 *Planning in Bushfire Prone Areas* ('SPP 3.7') "*to preserve life and reduce the impact of bushfire on property and infrastructure*" in meeting the supporting elements described in the Guidelines for Planning in Bushfire Prone Areas V1.3 (the Guidelines).

The proposal will require an assessment of the works against the bushfire siting and design provisions, to minimise the impact of bushfire on buildings. The proposal will also require an assessment of the suitability of the Site for a tourism facility and measures to minimise the exposure of visitors to the effects of bushfire: to preserve life.

Proposal details (addressed in Section 1)

The Site is located within the Emu Point community, an urban enclave located on a peninsula accessed by a single road (Emu Point Drive – Swarbrick Street) and 7 km (8.4 km by road) east of the Albany town centre. The Site is 0.83 ha and located in a small industrial precinct on the foreshore of Emu Point (Zoned Reserve Parks and Recreation). The precinct comprises marine servicing facilities, a café, and the sea rescue squadron base. It adjoins a marina, public boat ramp and car-park. It is located at the northern extent of the Emu Point foreshore reserve and residential area, which extends for a further 450 m south to the coast. The Site is provided with a reticulated water supply, a hydrant is located at its southern boundary, and is within 4G telecommunication coverage.

The Site is joined at its west and north boundaries by forest vegetation. The forest extends from a distance greater than 150 m to the west of the Site and 50 m to the north of the Site before becoming coast. Oyster Harbour connects to the ocean by a 160 m wide channel east of the Site. The channel opposite the Site connects to a peninsula and forest.

The proposal will augment the existing (authorised) aquaculture industry at the Site. The approved land use comprises the open storage of aquaculture equipment, an oyster nursery, a machinery servicing area, product processing/Nursery and an administration building.

The proposal will replace the open-air storage with undercover storage and provide an enlarged workshop and Nursery to accommodate an expansion of the industry.

The proposal has been arranged to place the habitable buildings and fuel store furthest from the adjacent forest (in the lowest Bushfire Attack Level areas on the Site).

Environmental considerations (addressed in Section 2)

The development site, the portion of the lot that is subject to the proposed land use, has been historically cleared of vegetation since 1977 (Landgate).

No further clearing of regulated vegetation is proposed.

Future land management and landscaping must ensure the hazard level at the development site is not increased.

Bushfire assessment results (addressed in Section 3)

The Bushfire Attack Level across the Site has been determined, BioDiverse Solutions (Kathryn Kinnear BPAD 30-794) BAL report 14/08/20. It illustrates the BAL levels (BAL Contours) extending into the Site from adjacent Forest located north and west of the Site.

The following summarises the present BAL ratings and the proposals BAL ratings at the various buildings upon completion.

Built Element	Current BAL	Proposed BAL
Processing/Amenities Building	**BAL FZ**	**BAL-19/12.5**
Bulk fuel container	**Ad-hoc**	**BAL-19**
Open materials store/enclosed materials store	**BAL FZ**	**BAL FZ**
Oyster and Mussel Shed/Nursery	**BAL FZ**	**BAL-FZ**
Marine workshop	**undefined**	**BAL-FZ**

Identification of bushfire hazard issues (addressed in Section 4)

Bushfire behaviour is affected by the weather conditions (Forest Fire Danger Index), the fuel mass of the vegetation type (Forest is the highest), and the slope under vegetation (speed doubles for any 10.0^0 increase in slope).

An assessment of the Forest Fire Danger Index ('FFDI') suggests a high individual variability in FFDI 50+ in the second half of December and the second half of March. Severe conditions (FFDI 50-74) are generally between mid-December to mid-March. FFDI 60+ is generally restricted to occurring in mid-January through February and is typically the period when Extreme days may occur. The Site's location adjacent to the coast may moderate the FFDI, due to a reduced temperature and higher humidity, although wind strength may be greater nearer the coast.

Since 1972 Bureau of Meteorology data for Albany has identified only one day has been classed as Extreme Fire Danger Rating and twelve days have been classed as Severe. No days have been classed as Catastrophic. The projected FFDI, accounting for climate change remains within an FFDI 80; as is presently applied in AS 3959:2018, method 1, across WA.

Severe to Extreme fire danger levels are infrequent across the bushfire season. None were declared in the vicinity of the area in 2019/20. In the past five years, the average number of Total Fire Ban days declared per fire season in Albany is three days, although eight days were declared in 2014/15.

The prevailing wind directions during the fire season have a strong bias from the east through to the south-west.

The possible threat scenarios are:

- A fire front arriving under south-westerly winds from the continuous forest west of the Site. Regrettably, human interaction is the source of the majority of bushfire ignitions. The continuous forest west of the Site has a high surface exposure to human interaction, and a fire from this aspect is likely (1 in 10 years).
- Ember attack from extreme fire behaviour in a forest fire, across the water channel, and east of the Site. The forest is National Park, and natural causes, a lightning strike is considered a most likely cause (1 in 10 years).

- A fire arriving from the north, northeast direction is unlikely because it would be against the prevailing wind conditions.
- The area immediately south of the Site is a low threat land condition that cannot sustain a bushfire.

Assessment against the bushfire protection criteria (addressed in Section 5)

Compliance Table (Addressed in 5.1)

The proposal was compared with the four Bushfire Protection Criteria and the acceptable Solutions for the Elements addressing Location, Siting and Design, Access, and Water.

Element 1: Location. *To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure*

And

Element 2: Siting and Design of Development. *To ensure that the siting and design of development minimises the level of bushfire impact*

Element 1 has been clarified to be applicable to strategic planning considerations, future land zoning, whereas Element 2 is applicable to development applications following the intentions of the land use zone but ameliorating the potential bushfire impacts affecting the Site.

The Site has been historically (since 1996) used for industry. This includes the development within BAL-40 and BAL-FZ.

Given the Site adjoins the sea, the current functions and habitable buildings have been located at the inland boundary nearest the adjoining classified vegetation (Forest). This has included the open storage (open bins) of large volumes of plastics used for the aquaculture function.

The proposal provides the Processing/Amenities Building, and bulk fuel container, are located with an indicative BAL exposure of BAL-19 (shielded side BAL-12.5) and comply with the acceptable solution.

The components that will remain within BAL-40 and BAL-FZ are the Marine workshop and Oyster and Mussel Shed/Nursery. It is necessary to leave a large hardstand area at the base of the boat ramp for the launch and retrieval of vessels associated with the facility. No practical alternative is therefore available for the location of the Marine workshop and Oyster and Mussel Shed/Nursery other than along the western boundary.

These components are, therefore, to be assessed by Performance Principle, and in particular whether the proposal represents a reduced risk to damage from bushfire and would reduce the risk of igniting a bushfire.

<u>Performance Principle</u>

The WASAT considered a similar situation at a Bunning Store (Bunnings Group Limited and Presiding Member of the Metro North-West Joint Development Assessment Panel [2019]). That involved enclosing the open store area (BAL FZ) within a building, that amongst other things would improve its protection from the effects of a bushfire, notwithstanding it did not comply with the acceptable solution because the building would exceed BAL 29 at its face.

The WASAT found that SPP 3.7 should not be inflexibly applied, the acceptable solution is only one treatment of the risk, others can be considered, and that SPP 3.7 is a risk-based implementation to land use planning and development, and treatments that can reduce a present risk can comply with the Policy, namely Objective 5.1, to avoid any increase, and Objective 2, to reduce vulnerability to bushfire

The proposal represents a reduced risk on the present authorisation because:

1. The present open-air storage of the plastic oyster baskets is vulnerable to bushfire attack and has the potential to burn intensely and produce toxic smoke.

   The proposal is to consolidate this storage in an enclosed out-building (floor areas 670 m^2) located furthest from the high occupancy buildings. The building has a vertical wall located 2m from the

northern and western boundary with a non-combustible construction specified (see condition of approval).

Steel sheeting can transfer radiant heat internally. A Fire Rating Level, which includes an insulation performance, has been specified (BAL FZ FRL 30/30/30). These measures will reduce the risk of damage to stored materials.

2. The present marine workshop activity is spread across the Site. Materials are stored against the western boundary.

   The proposal will consolidate Site works into a single Marine Workshop placed 2 m the western boundary, with a building designed to a construction standard comparable to BAL FZ (FRL 30/30/30) for walls and BAL FZ requirements for roof construction, penetrations, wall openings ie. garage doors, and to windows facing to the north and west. The Marine workshop will minimise the need to undertake work externally to the building, and any work outside the building will also be governed by the Total Fire Ban day declarations although the adjacent vegetation can be ignited any time during a fire season. A general restriction on hot works, is proposed within 20 metres of the west boundary, during the bushfire season.

   Fire hoses are also positioned on the west boundary to reduce the spread of fire from the Site, and the improve building defence when safe to operate the equipment.

The consolidation of buildings, replacing the ad hoc storage of potentially flammable items, also improves the orderly movement within the Site during an emergency.

A fire break of 4 m in the adjacent reserve, which has been provided since 1996, requires regular maintenance by the City, but it provides access to the reserve, and also reduces a continuation of flame contact upon the buildings after the peak flame residency (2 minutes)[1]. The firebreak serves all business in the precinct; it is not exclusive to the proposal. In addition, the proposal includes a 2 m wide footpath within the existing lease boundary, to provide a 6 m separation.

Element 3: Vehicular Access. *To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.*

The Acceptable Solution requires development to have through road access providing alternative destination options for evacuation outside of the fire ground and for emergency services to attend and retreat.

Performance Principle

The road network and present land use is dependent upon a single access. There is no practical means of providing secondary vehicle access.

The Site is classed as a single aspect threat, that the bushfire threat comes primarily from vegetation to the west. To the east of the Site is the coast/sea which is low threat and it is a low wave energy beach.

Access to the Site is rated at BAL 19, at a peak intensity of the fire (2 minutes) and is unlikely to be blocked by fallen trees for the extent that it is a single access. Brigade access may therefore only be temporarily restricted, and whilst not advocated as a preference the coast is a low threat potentially providing safe refuge for employees at the Site. The coast is identified by the State Emergency Management Committee[2] as a potential refuge.

Element 4: Water. *To ensure that water is available to the subdivision, development or land use to enable people, property, and infrastructure to be defended from bushfire.*

The acceptable solution is satisfied if a proposal has access to a reticulated water supply, and hydrant system. The Site has access to the Albany township reticulated water supply network and has a hydrant at its southern

[1] Gould JS et al. *Project Vesta: fire in dry eucalypt forest: fuel structure, fuel dynamics and fire behaviour*. CSIRO Publishing, 2008 and cited in ABCB Bushfire Verification Method 2019 for building construction.

[2]

boundary. Internal hydrants are also to be supplied following the requirements of the *Building Act 2011.* The proposal is compliant with Element 4, but it is recommended, to aid suppression both of fire on the hardstand and in the adjacent forest, that additional fire hoses are provided at along the western and northern boundary.

Additional Bushfire Management Strategies (addressed in section 5.2)

Additional management strategies, further to the Bushfire Protection Criteria, includes additional measures relating to the construction of the buildings in BAL-40 – BAL-FZ as risk treatments following r.78E (1) LPS 2015 Deemed Provisions).

Spatial representation of the bushfire management strategies (Figure EX 1)

Further to the Assessment against the bushfire protection criteria, the key features demonstrating compliance should be represented spatially in the Spatial representation of the bushfire management strategies. It represents the required bushfire risk management measures that must be implemented and maintained

Responsibilities for implementation and management of the bushfire measures

Owner

1.	The marine workshop is to be constructed to a standard comparable with or exceeding the BAL-FZ standards identified in AS 3959:2018 at Section 9 or by a National Construction Code Performance Requirement. Walls: s.9.4 – Non-combustible insulation FRL min 30/30/30 External glazed elements, assemblies and doors: s.9.5 – Windows located to the south and east building elevation – Garage Doors in accordance with s.9.5.6 Roofs……: s.9.6 Verandahs……: s.9.7 Water and Gas Supply Pipes:s.9.8	**Prior to occupation and ongoing**
2.	The Oyster and Mussel Shed/Nursery is to be enclosed and constructed to a standard comparable with or exceeding the BAL-FZ standards identified in AS 3959:2018 at Section 9 or by a National Construction Code Performance Requirement. Walls: s.9.4 – Non-combustible insulation FRL min 30/30/30 External glazed elements, assemblies, and doors: s.9.5 – Ventilation and Access doors in accordance with s.9.5.6 Roofs……: s.9.6 Verandahs……: s.9.7 Water and Gas Supply Pipes:s.9.8	Prior to occupation and ongoing
3.	Any form of 'hot works' are restricted from being undertaken outside of the marine workshop during the declared bushfire season. *This includes welding, gas cutting, soldering, power-operated cutting or grinding discs and any activities that due to the risk of creating sparks could start a fire.* It excludes the undertaking of any hot works, outside of a total fire ban day, that are associated with building maintenance and the installation of plant and equipment, undertaken prior 1.00 pm during the declared bushfire season.	Ongoing
4.	Landscaping is to be maintained as a reticulated garden consistent with low threat vegetation excluded by cl. 2.2.3.2(f).	Prior to occupation and ongoing

5.	Internal site vehicle access is to be provided in accordance with Element 3 Table 6 column 3 in the Guidelines for Planning in Bushfire Prone Areas V1.3.	Prior to occupation and ongoing
6.	The provision of external water (fire) hoses shielded from radiant heat and capable of applying water safely onto all external surfaces of the building without reliance on a reticulated power supply.	Prior to occupation
7.	The provision of external water (fire) hoses along the west (between buildings) and north boundary, shielded from radiant heat and capable of applying water 30 m onto the adjacent vegetation. *To attend to any small ignitions from the Site or an open fire within the Site and near the boundary. This is in addition to any chemical fire extinguishers specified for the Site.*	Prior to occupation

The City of Albany

1.	Maintain the fire break (4 m clear mineral surface) at the western and northern boundary with Boronia Reserve	Ongoing
2.	Administering the requirements of the *Planning and Development Act 2005* by ensuring the facility closure in accordance with the terms of the Development approval.	Ongoing
3.	Administering the requirements of the *Planning and Development Act 2005* and the *Building Act 2011*.	Ongoing

State Government

1.	Notification of Emergency Alerts - Website and Telecommunication Media	Ongoing
2.	Policing operations to minimise the deliberate ignition of bushfires.	Ongoing
3.	Maintain fuel reduction on public lands	Ongoing

Advisory notes

1. The landowner acknowledges any materials located against or near adjacent to the buildings, should they ignite, will expose the buildings to flame contact and will increase the risk of building ignition.

2. The landowner acknowledges that any buildings or combustible structures located within 6 m of the building may affect its BAL rating – the advice of the City should be obtained prior to placing any building or structure within 6 m of a building.

3. The landowner acknowledges that external building materials can be damaged, perish or distort over time and that can, in turn, provide a point of vulnerability for bushfire attack. The landowner acknowledges their responsibility to undertake an inspection of the building's external surfaces prior to each fire season, to eliminate any externally visible gaps greater than 2 mm.

4. The landowner is responsible for availing themselves of any promotions and information to assist owners in preparing for and responding to a bushfire event as may be made by the Shire or the Department Fire and Emergency Services.

Acknowledgement - Proponent

The proponent acknowledges the responsibilities as listed above and the requirement to ensure that should the land transfer to a new owner, that the new owner is aware of the BMP and their ongoing responsibility.

Figure EX 1 - Spatial representation of the proposed risk management strategies

Notes

1. Mandatory BAL construction standards (red) FRL 30/30/30.
2. Recommended (advisory only) BAL construction standard (blue).
3. Site landscaping is to be maintained as a reticulated garden consistent with low threat vegetation excluded by cl. 2.2.3.2(f).
4. Hot works are not to be undertaken in the restricted area during the annual bushfire season
5. Internal site vehicle access is to be provided in accordance with Element 3 Table 6 column 3 in the Guidelines for Planning in Bushfire Prone Areas V1.3.
6. Internal hydrants (six) are to be provided to the site as per the Hydrant plan.
7. The provision of external water (fire) hoses shielded from radiant heat and capable of applying water safely onto all external surfaces of the building without reliance on a reticulated power supply.
8. The provision of external water (fire) hoses along the west (between buildings) and north boundary, shielded from radiant heat and capable of applying water 30 m onto the adjacent vegetation.

Site Boundary and internal hardstand area

Hot works restricted area

24 m marked turning areas to remain clear

2 m wide footpath

Hydrant

City reserve firebreak 4 m wide

PROPERTY ASSESSMENT DETAILS

Lot 501 Emu Point

Prepared by: Anthony Rowe

Accreditation Level: Level 3

Accreditation Number: 36690

Date: 27 January 2021

Table of Contents

1. PROPOSAL DETAILS

1.1 Introduction

The applicant Tattarang Pty Ltd. proposes to build an Aquaculture Project facility, at Lot 501 Emu Point (the Site) within the City of Albany.

The proposal will augment the existing industry at the Site, which is for aquaculture processing and associated storage of aquaculture equipment and machinery servicing.

The additional development includes undercover storage and an administration building. Additional uses at the Site will include a food processing plant, oyster and mussel nursery building, workshop and a portable bulk fuel container (>500 L).

The Site is in the Southern region of Western Australia within the township of Albany **(Plate 1)** and is located within a bushfire prone area (OBRM 2019) **Plate 2.**

Development, buildings, and land use, located within a bushfire prone area, are required to demonstrate compliance with the requirements of State Planning Policy 3.7.

The policy intent is ***to preserve life and reduce the impact of bushfire on property and infrastructure***, and compliance is achieved where a proposal incorporates the Acceptable Solutions as described under each Element in the Bushfire Protection Criteria or can satisfy the intent of each Element by performance principle and the Precautionary Principle.

This document presents an assessment of a proposed vulnerable class of development "visitation uses that may involve people who are unaware of their surroundings" with the requirements of State Planning Policy 3.7 and *Guidelines for Planning in Bushfire Prone Areas* (WAPC, V1.3 December 2017) including assessment against each of the Bushfire Protection Criteria and the requirement for an Emergency Evacuation Plan.

1.2 Background

The Site has an approval for use for aquaculture productions, and the Site is occupied by Oyster and Mussel bays, a workshop and an administration building.

1.3 Proposal details

The proposal and its context comprises:

Landowner	**Tattarang Pty Ltd**
Address	Lot 501 Emu Point
Local Government Area	City of Albany
Local Planning Scheme Zone	Parks and Recreation City of Albany Local Planning Scheme No. 1 (LPS 1), Restricted Use
Bushfire Season	1 November to 14 May 2020 (may vary each year)
Lot size	0.83 ha
Landscape context (5 km)	The Site is adjoined on the west by forest vegetation extending from greater than 150 m west of the Site and less than 50 m north of the Site before becoming coast. The coast adjoins the eastern boundary as part of a bay. The area to the south of the Site is low threat (AS 3959:2018). Located south from the Site and extending 730m to the coast is a marina hardstand area, public boat ramp, and an urban residential area (enclave) 450 m wide. The residential area is on a peninsula and is separated from the forest located on an opposite peninsula by a waterway of 160 m wide.

	North	East	South	West
	Coast	Coast then 160 m to Forest	Residential the coast	Forest
Land description site **Existing buildings** **Topography** **Site Vegetation**	The Site is 0.83 ha in area comprising hardstand and buildings with a single row of sporadic trees and shrubs located inside the north and west boundary. The Site is otherwise classed as low threat by AS 3959:2018, cl. 2.2.3.2 (e) and the immediate area is flat although the forest is located in a shallow depression that runs east to west The development proposal comprises replacing the existing buildings with the following: • Processing/Amenities/administration Building, consolidate and replace existing administration and process building; • Bulk Fuel container, new; • Oyster and Mussel Shed/Nursery, replacement and consolidation of the existing facility; and • Marine workshop, replacement and extension.			
Building Class	6, 8 and 10a			
Adjoining Landuses	North	East	South	West
	coast	coast	Public recreation and residential	Forest
Road Access **Road compliance**	The Site is located 7 km east of the Albany Town centre, and serviced by a single road (Emu Point Drive - Swarbrick Street) that services the residential area, a public boat ramp and the Site. Safer place option destinations include • Albany township urban area • Emu Point residential area			
Nearest town centre	Albany town centre is 7 km from the Site (8.4 km by road)			
Water supply	The Site has access to the Albany Township reticulated water supply, and a hydrant is located 20 m from the site entry			
Tele communications	The Site is within the 4G Telstra network, but may require a network extension amplifier at the Site.			
Emergency services	The nearest rural fire brigade is located in the Albany township (7.6 km).			
Minor Development	N/A			
Unavoidable development	Yes			
Vulnerable Development	Yes			
High-risk land use	N/A			

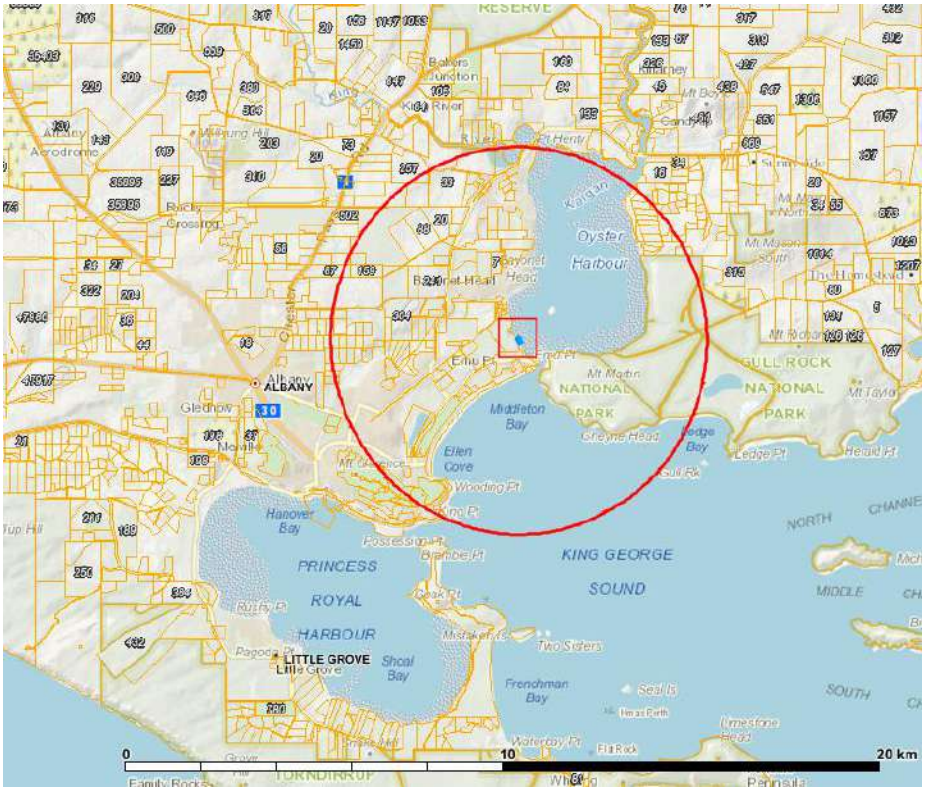


Plate 1:Site in Locality

Plate 2: OBRM Bushfire Prone Area (Pink area*)*

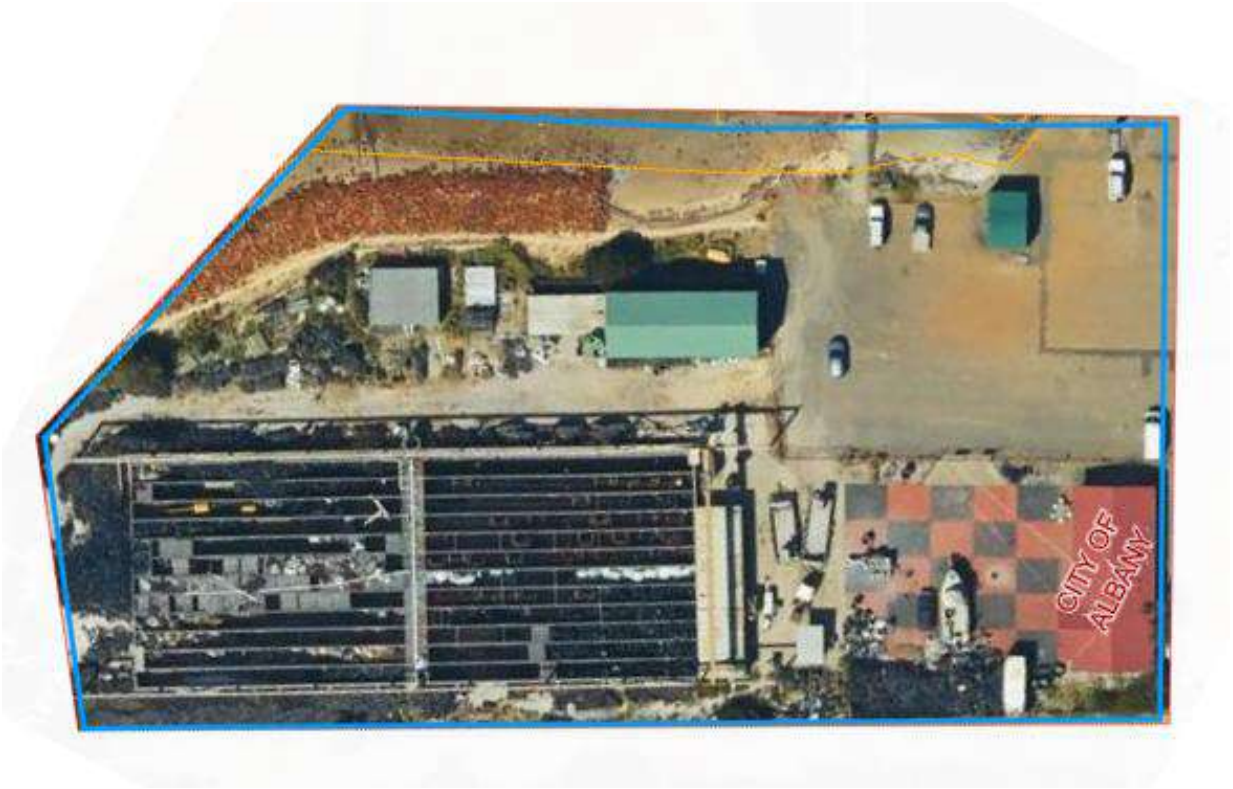


Plate 3: Authorised site use.

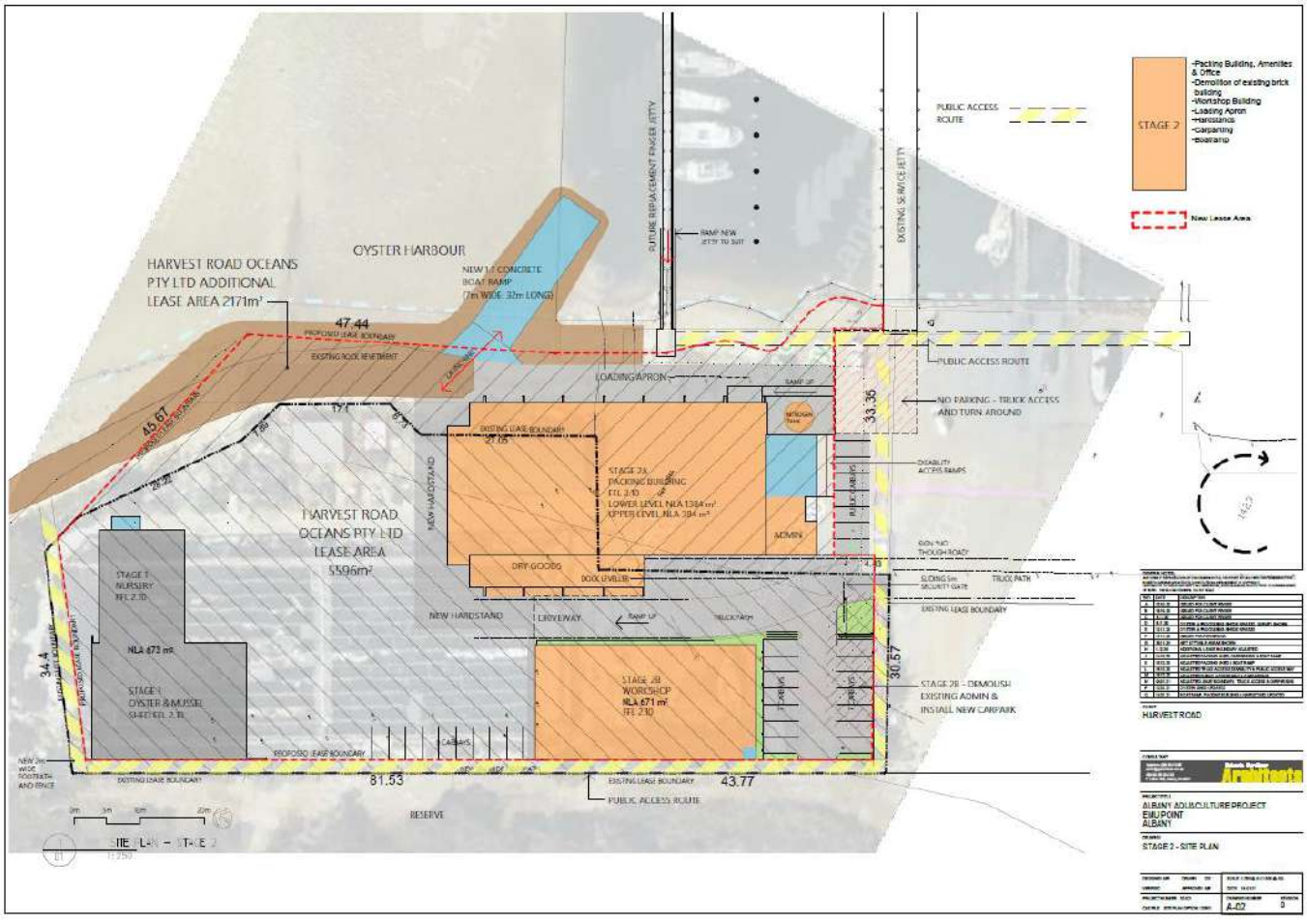


Plate 4: Proposed development

1.4 Regulatory Compliance Requirements

The following regulations have been applied to this Assessment.

Planning and Development Act 2005 - SPP 3.7

On 7 December 2015, the State Government introduced a state map of Bushfire Prone Areas by order under the *Fire and Emergency Services Act 1998* and introduced development controls in Bushfire Prone Areas through the *Planning and Development Act 2005*. These controls were authorised by State Planning Policy 3.7 (Planning in Bushfire Prone Areas) regulations introduced under Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* and guided by the *Guidelines for Planning in Bushfire Prone Areas (Guidelines V1.3)*.

The State Planning Policy, Regulations, and Guidelines now form the foundation for fire risk management planning in WA at a community and land development level. The Policy Intent of SPP 3.7 is a risk-based land-use planning and development ***to preserve life and reduce the impact of bushfire on property and infrastructure***.

5. Policy Objectives

5.1 Avoid any increase in the threat of bushfire to people, property and infrastructure. The preservation of life and the management of bushfire impact are paramount.

Examples of increasing a threat of bushfire may include a high-frequency ignition (increased likelihood) or converting a low bushfire hazard to an extreme bushfire hazard (converting pasture to forest).

5.2 Reduce vulnerability to bushfire through the identification and consideration of bushfire risks in decision-making at all stages of the planning and development process.

Take action to ameliorate the effects of a bushfire, reduce the likelihood, reduce human exposure (provide an opportunity to evacuate or shelter (minor injuries), reduce BAL at the building or increase construction stands or both.

Clause 6.7 Development applications in areas where an extreme BHL and/or BAL-40 or BAL-FZ applies

Clause 6.7 provides that where a development application will result in the introduction or intensification of a development or a land-use that on completion, have a BAL-40 or BAL-FZ, it will not be supported unless it is a 'minor development' or an 'unavoidable development'.

The proposal involves development, at the boundary of the Site, which is adjacent to classified bushfire-prone vegetation. On completion, the proposal will have elements exposed to BAL-40 or BAL-FZ.

In the recent BUNNINGS GROUP LIMITED and PRESIDING MEMBER OF THE METRO NORTHWEST JOINT DEVELOPMENT ASSESSMENT PANEL [2019] WASAT 121 (26 November 2019), the WASAT affirmed the intent of the Policy Measures are not to be applied inflexibly but instead should be approached on the basis of risk and the individual circumstance. It determined that a proposal need not be either 'minor development' or an 'unavoidable development' but can still be approved as a non-complying development, to be considered on its merits where it can demonstrate a reduced risk and therein satisfaction of the precautionary principle.

Analogous with this proposal, the WASAT Bunnings case involved an authorised activity. The Bunning' proposal involved its outdoor storage of timbers and building materials yard that bordered a reserve (DoT) classified as having forest vegetation. The outdoor storage area therefore falling within BAL FZ. No adjoining land management was supposed in this instance (DoT do not provide firebreaks). The proposal involved enclosing the outdoor store, and notwithstanding it was a building addition extending into BAL FZ, it was acknowledged by DFES that it represented a reduced risk compared to the current authorisation involving the open storage of flammable materials within the BAL FZ area. It was acknowledged that it reduced the risk by enclosing the flammable materials within a non-combustible structure and conversely provided a barrier to a fire escaping the Bunning's Site to enter the adjacent forest.

Furth to the WAST findings it was presented that Cl. 5.6 *Proposing A High risk Landuse in a Bushfire Prone area*, (Guidelines V1.3) recognises appropriate storage of on-site flammable material 'would be required to reduce the threat among other considerations'.

***Clause 6.6 Vulnerable or High-Risk land uses Land Uses* (Guidelines for Planning in Bushfire Prone Areas cl.5.5.1**

High-risk development

SPP 3.7 defines high-risk land use as a land-use which may lead to the potential ignition, prolong the duration and/or increase the intensity of a bushfire. Examples of high-risk land use are provided in the Guidelines. They are activities that may also expose the community, firefighters and the surrounding environment to dangerous, uncontrolled substances during a bushfire event. Generally, these are activities are those involving heat or spark generation as a production process.

The role of SPP 3.7 is to consider the consequence of bushfire, either the proposal igniting one and the community risk, to threaten external assets, or any particular considerations of a bushfire arriving at the Site, and the precautions to be taken to stop it becoming a structural fire or interfering with suppression of a structural fire.

Associated legislation acknowledged but not addressed in this BMP includes:

- Dangerous Goods Safety Act 2007
- Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007 (bulk >500 L)

DMIRS Accredited Compliance Consultant WA Dangerous Goods Storage and Handling Licensing assessment are responsible for the facility design and submission of applications for licencing this applies to bulk fuel storage greater than 500 L

The proposal is to include a bulk fuel container, a mobile facility (sea container/double bunded arrangement) to be used with the operation.

The scale and site location within a hardstand area, is unlikely to contribute to the ignition of the adjacent vegetation or expose firefighters and the surrounding environment to dangerous, uncontrolled substances during a bushfire event. It is not considered to constitute a 'high risk' as defined by SPP 3.7.

Plastic oyster baskets, presently stored in the open air, have the potential to be ignited by a bushfire and plastic, has the potential to create potentially hazardous fumes. The store is distant to habitable buildings enabling fumes to dissipate, but measures should be taken to reduce the propensity for widespread ignition and fume generation.

The proposed workshops activities are enclosed within buildings on a surrounding hardstand. Notwithstanding, there may be an occasional requirement for hot works to be undertaken on the Site outside of the workshop; the proposal is not considered to constitute a high-risk land use. Measures should ensure such activity will avoid the entry of flames or sparks into the adjacent vegetation.

6.11 Precautionary principle

Where the responsible decision-maker (as applicable to the application either the WAPC, Local Government, JDAP) considers a proposal has not satisfied the relevant policy measures the application may not be approved

The accompanying note for the decision-maker provides:

> *In this context, "should" is to be read as a strong recommendation. In relation to strategic planning proposals, subdivisions and development applications, this policy also recognises that each Site is to be assessed on merit and that the determination of an application may involve the use of discretion in planning decision making to support innovative bushfire risk management solutions.*

The policy measures, therefore, should not be applied inflexibly.

The Building Act 2011

The *Building Act 2011*, and *Building Regulations 2012*, applies the construction standards of the Building Code of Australia, where it relates to an 'applicable' building.

A building permit as a demonstration of compliance with the requirements of the National Construction Code is required for new habitable buildings, unless expressly exempted.

Specific bushfire construction standards are only applied in Western Australia to class 1-3 and 10a buildings, in accordance with the risk and construction response provided by AS3959:2018.

Other building classes are subject to the siting conditions under the *Planning and Development Act* 2005 and a discretionary application of construction standards, where they are not in conflict with the requirements of the National Construction Code ('NCC').

A Building Permit will be required consistent with the planning authorisation but will be addressed separately to this report under the *Building Act 2011*.

Part 10A Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015*

The *Planning and Development Act 2005* and the consideration of development within bushfire prone area requires that all classes of development comply with the siting requirement consideration, notionally the acceptable solution or by performance principle.

Whilst the bushfire construction standard do not apply through the NCC, to classes other than 1-3 and 10a, the *Planning and Development Act 2005* can apply construction requirement where not in conflict with the *Building Act 2011*. Clause 78E(1) provides that:

> ***78E Matters to be considered for development approval***
>
> *(1) In considering an application for development approval for development to which this Part applies, the local government is to have regard to the bushfire resistant construction requirements of the Building Code.*

This enables through the performance principle considerations as an alternative to the acceptable solution, siting to achieve BAL -29, that construction requirements can be applied at planning to achieve the SPP 3.7 Policy Intent.

Bushfires Act 1954

Section 33 of the *Bushfires Act 1954* recognises the responsibility of all landowners to prevent the spread of bushfire. Local government, at any time, may give notice in writing to an owner or occupier of land within the district of the local government. The Notice may specify works to be undertaken, including the management of grasses on the property usually to be maintained at less than 10cm during the fire season. It also provides that the identified works can be undertaken as a separate operation or in coordination with the neighbouring land.

Environment Protection Act 1986 and Environmental Protection (clearing native vegetation) Regulation 2004

It is an offence to clear native vegetation without the authority of a permit or an exemption. The act of clearing native vegetation, requires a permit from either the Department of Water and Environmental Regulation (DWER) or the Department of Mines, Industry Regulation and Safety (DMIRS), unless an exemption applies.

Exemptions include:

Environment Protection Act 1986

- Clearing of regulated vegetation required by local Government Section 33 *Bushfire Act 1954.*
- Clearing of regulated vegetation in accordance with the terms of a subdivision approval.

- Clearing of regulated vegetation in accordance with a permit (for prescribed burning) under the *Bushfires Act 1954*.

Environmental Protection (clearing native vegetation) Regulation 2004 (exemptions do not apply in Environmentally Sensitive Areas, and clearing > than 5ha)

https://www.der.wa.gov.au/your-environment/environmentally-sensitive-areas

- Clearing of regulated vegetation to the extent necessary to construct an approved building.
- Clearing of regulated vegetation that is for fire hazard reduction burning.
- Clearing of regulated vegetation to maintain an area cleared in the last ten years.

(WA) Bio-diversity Conservation Act 2016 and Bio-diversity Conservation Regulations 2018

The *Biodiversity Conservation Act, 2016*, replaces the *Wildlife Conservation Act, 1950*, and the *Sandalwood Act, 1929*, it became operational with the *Bio-diversity Conservation Regulations 2018*, on 1 January 2019.

The Act provides for listing species, threatened ecological communities (TECs), key threatening processes and critical habitats. It introduces criteria for listing species' endangered', 'critically endangered' or 'vulnerable', to align with the *Environment Conservation and Biodiversity Conservation Act 1999* (Cth).

The subject land is not presently affected by a TEC.

Commonwealth Environment Protection Biodiversity Conservation Act 1999

The Commonwealth Environment Protection Biodiversity Conservation Act 1999 provides for the protection of matters of national environmental significance. National environment law does not generally regulate fire prevention measures taken by state and territory governments, but no specific exemptions are provided.

2. ENVIRONMENTAL CONSIDERATIONS

2.1 Native Vegetation – Modification and Clearing

A fundamental consideration in the assessment of development under SPP 3.7 is to avoid instances where bushfire risk management measures would conflict with or be limited by other biodiversity management measures.

In accordance with the Department of Planning Lands and Heritage template (BMP template to support a BAL Contour Assessment) a review of the listed databases has been undertaken as Part of this Assessment to identify whether restrictions or other specific considerations may apply that would affect the implementation of any bushfire protection initiatives that may otherwise be identified.

Table 2: Ecology datasets

Is the land affected by:	**Affected by the proposal**	**If yes - describe**
Conservation Wetland or buffer (DBCA-019 DBCA-017)	No	
RAMSAR Wetland (DBCA-010)	No	
Threatened and Priority Flora (DBCA-036)	Nearby	
Threatened and Priority Fauna (DBCA-037)	Nearby	A potential roosting area for the Carnaby Black Cockatoo is located east of the Site
Threatened Ecological Communities (DBCA-038)	No	
Bush Forever (COP-071)	No	
Environmentally Sensitive Area (DWER-046)	No	
Regionally Significant Natural Areas (DWER-070)	Nearby	Remnant vegetation corridors are identified outside of the Site.
Conservation Covenant (DPIRD-023)	No	
South West Ecological Linkages	No	
Does the proposal require the removal of restricted vegetation?		**No**

No clearing of land or land management is proposed outside of the Site. The Site is a paved/clear surface and contains no restricted vegetation that is classified as a bushfire threat, AS 3959:2018 cl. 2.2.3.

In accordance with the *Bushfire Act 1954,* neither the site condition nor the proposed land-use is likely to be conducive of the spread of bushfire from the Site into the adjacent forest.

Site drainage can be employed to ensure stormwater, the proceeds of firefighting or chemical spill (fuel store) does not drain to the adjacent forest.

2.2 Re-Vegetation/Landscape Plans

The Site is to be retained in a low threat condition (AS 3959:2018 cl.2.2.3).

Individual landscaping, immediate to buildings, will comprise irrigated lawns and gardens (non-curing), incorporating high moisture low flammability species.

3. BUSHFIRE ASSESSMENT

3.1 Bushfire Attack Level Assessment (Inputs)

The Bushfire Attack Level across the Site has been determined by BioDiverse Solutions (Katheryn Kinnear BPAD 30794) BAL report 14/08/20.

The Assessment was been undertaken on 21 July 2020 in accordance with the methodologies described in AS3959:2018 and in accordance with the Guidelines and the Fire Protection Association accredited practitioner methodology.

All vegetation within 150 m **(context)** of the subject building has been classified (AS 3959:2018 Clause 2.2.3) to determine the Bushfire Hazard Level at the locality;

The BAL rating has been determined through site inspection and Assessment of the following parameters:

- Fire Danger Index (FDI) rating; assumed to be FDI - 80 for Western Australia; *Note for the purpose of planning for a shelter an FFDI with 1:200 APE is used. This equates to an FFDI of 100.*
- A separation distance between the building and the classified vegetation source(s) within 100 m (for BAL impact) the separation distance is measured from the wall face (receiver) to the unmanaged understory rather than the canopy edge (dripline) *see plate 6*; and
- Slope of the land under the classified vegetation.

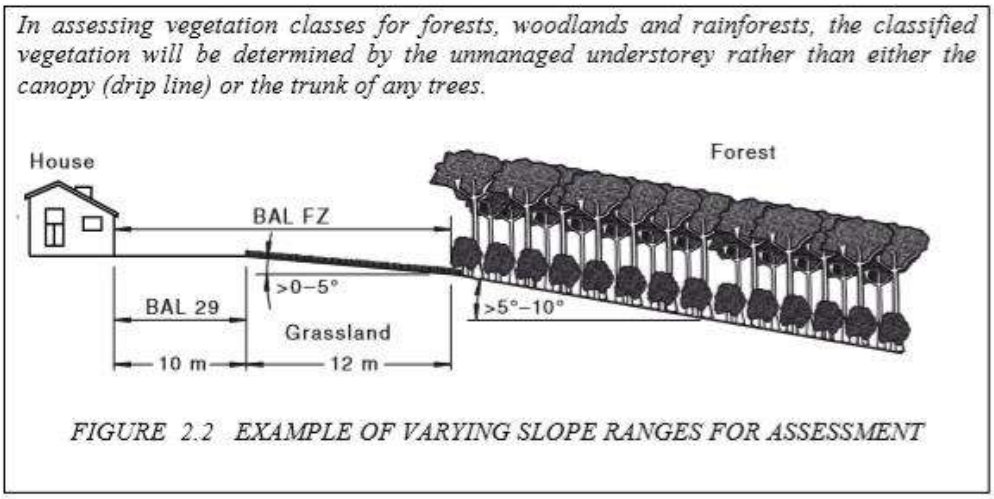


Plate 11: Arrangement of inputs for the determination of a BAL.

The BAL Assessment, prepared in accordance with the FPAA Guidelines, is attached (Appendix 1). It illustrates the Bushfire Attack levels across the Site and tables the BAL level indicative at each proposed building.

The BAL Assessment has assumed the adjoining vegetation to the Site will be retained and that the Site itself as a hardstand surface, is not classified as a bushfire threat.

3.2 Indicative Bushfire Attack Level (Outputs) Method 1

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development is based upon the conditions and classified vegetation present at the time of inspection; it does not represent the state upon completion, but only the requirement for bushfire protection measures. Determined Bushfire Attack Level has been derived in accordance with clause 2.2.6 (Method 1) of AS 3959:2018.

Table 3: Indicative BAL Level at proposed buildings

Processing/Amenities Building	**BAL-19/12.5**
Bulk fuel container	**BAL-19**
Oyster and Mussel Shed/Nursery	**BAL-FZ**
Materials store	**BAL-FZ**
Marine workshop	**BAL-FZ**

4. IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

4.1 Bushfire Behaviour

Bushfire behaviour is the primary determinant of the bushfire risk and the design fire as a basis for identifying appropriate treatments. Bushfire behaviour is affected by three factors;

- Climate (drought and season) & weather (temperature, humidity, wind, atmospheric instability) – determines the intensity of a fire, the speed and direction, and potential for advanced spotting. Measured as an FDI in AS 3959.
- Topography (slope of the ground, aspect, and wind influences) – fire travels faster uphill, the flame length is increased uphill, landforms can channel and increase local windspeed and create turbulence. Measured as 0.0^0 or a degree downslope in AS 3959 (Method 1).
- Vegetation (horizontal and vertical structure, flammability, mass, and availability). Measured as a vegetation classification, or an exclusion, in AS 3959 (Method 1).

It is assumed that a bushfire will achieve a steady-state and be fully developed to maximum intensity over a 100 m (minimum fire run). Grass fires travel faster (GFDI) than a forest canopy fire, but a forest canopy fire can eject a higher level of embers and also eject them over a greater distance. Crown fires occur when the ground fire is intense, and conversely, when ground fuels are managed, the resultant fire intensity may not be sufficient to involve the crown, and a crown fire cannot be sustained. Separating the vertical structure, so there is no direct connection between the ground and the crown, reduces the likelihood of a crown fire.

The arrangement of fuel has a greater effect upon the intensity of the fire than just its mass; its exposure to oxygen is referred to as its availability in a bushfire.

Climate

The climate in Albany (from the Bureau of Meteorology Albany Weather Station) can be described as Mediterranean with wet winters and warm summers from December through to March. Summers are typically very warm with a mean daily temperature max 22.9 degrees, min 15.6 degrees in February although the Southern Ocean provides a cooling effect on temperature in the coastal areas of the City, providing for a milder climate than inland areas. The average number of rain days per year for Albany is 103 days, but summers are dry with a monthly average of less than 24 mm of rain.

Bushfires generally travel in the direction of the prevailing wind. Prevailing wind conditions are most likely to be extreme in the afternoon in February, and there is little variation in the wind roses from December to March). The direction of the prevailing wind conditions can affect the options for evacuation and anticipated fire intensity depending upon the slope and fuel.

The wind roses below for February (averaged) recorded at 9 am, and 3 pm illustrate the winds are strongest and most frequent from the south-east and east in the afternoon.

The hot, dry summers and strong seasonal winds create an environment where there is a significant risk of bushfire.

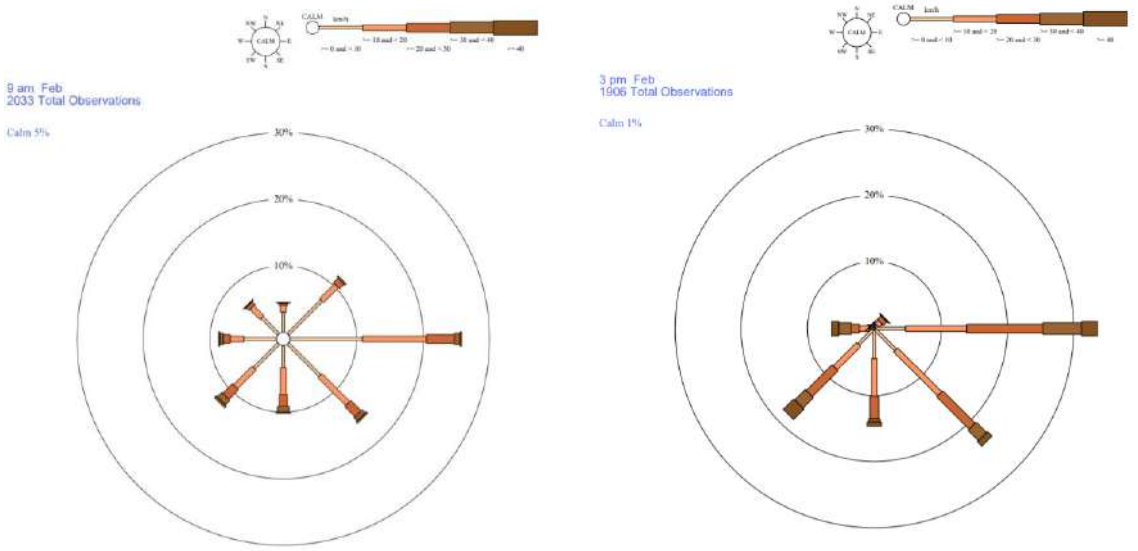


Plate 12: Wind roses (Feb 9 am and 3 pm), Bureau of Meteorology, Albany.

Fire Danger Weather

The above FFDI data is provided from the Bureau of Meteorology Albany Weather Station, which is the nearest recording location to the Site.

The FFDI is calculated from temperature, wind speed, relative humidity, drought factor(time since last rain) and Keetch-Byram Drought Index (soil moisture) index which is a measure of soil moisture

The last twenty years are mapped as that incorporates the trends of climate change.

An assessment of the FFDI suggests a high individual variability in FFDI 50+ in the second half of December and the second half of March.

Severe conditions (FFDI 50-74) are generally between mid-December to mid-March, although FFDI 60+ is generally restricted to mid-January through February and typically the period when Extreme days may occur. The Site's location adjacent to the coast may moderate the FFDI, due to a reduced temperature and higher humidity although wind strength may be greater nearer the coast.

Since 1972 Bureau of Meteorology data for Albany has identified only one day has been classed as Extreme Fire Danger Rating and twelve days have been classed as Severe. No days have been classed as Catastrophic. The projected FFDI, accounting for climate change, remains within an FFDI 80; which is the present nominal level that is used in AS 3959:2018 method 1 BAL determinations in WA.

In the past five years the average number of Total Fire Ban days declared per fire season in Albany is three days, although eight days were declared in 2014/15.

The prevailing wind directions during the fire season have a strong bias from the east through to the south-west.

Table 4: Ranking of highest FFDI since 1972

Ranking	Date	Month	Year	FFDI	FDR
1	9	March	1996	75	Extreme
2	17	February	1987	69	Severe
3	28	January	1976	64	Severe
4	23	February	1991	62	Severe
5	5	February	2001	58	Severe

6	16	January	1973	57	Severe
7	6	March	2012	56	Severe
8	20	December	1974	55	Severe
9	9	February	1998	54	Severe
10	19	April	1994	53	Severe
11	11	January	1981	52	Severe
12	1	February	2003	52	Severe
13	12	March	2010	50	Severe
14	7	January	1998	48	Very High
15	31	January	1991	47	Very high

Landscape context risk

Plate 13: Landscape context 5Km from Site.

The landscape context risk illustrates the potential fire runs, prevailing wind directions and bushfire attack exposure.

The prevailing wind conditions are from the southern hemisphere. Winds from the north are rare during the bushfire season.

Notable features are a bushfire from the south-east is separated from the Site by a body of water, but forest fires can eject embers and smoke a sufficient distance to bridge the water separation. A fire from the east would, however, permit an evacuation in the opposite direction.

The Site is located east from a continuity of Forest vegetation. A low threat area is available to the east of the Site, a shallow low wave beach.

The possible threat scenarios are:

- A fire arriving under south-westerly winds from the continuous forest west of the Site. Regrettably, human interaction is the source of the majority of bushfire ignitions. The continuous forest west of the Site has a high surface exposure to human interaction, and a fire from this aspect is likely (1 in 10 years).
- Ember attack from extreme fire behaviour in a forest fire, across the water channel, and east of the Site. The forest is National Park, and natural causes, a lightning strike is considered a most likely cause (1 in 10 years).
- A fire arriving from the north, northeast direction is unlikely because it would be against the prevailing wind conditions.
- The area immediately south of the Site is a low threat land condition that cannot sustain a bushfire.

5. BUSHFIRE PROTECTION MEASURES

5.1 Bushfire Protection Criteria Compliance

For each of the elements listed within Appendix 4 of the Guidelines for Planning in bushfire-prone areas, the 'intent' must be achieved either by the proposal meeting the acceptable solutions; or where these acceptable solutions cannot be fully met, then by a performance-based solution that can achieve the 'intent.'

Table 3: Compliance Table

✓	Acceptable solution provided	C	An Acceptable Solution to be conditioned
N/A	Not Applicable	P	Performance Principle solution see 5.2

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 1: location To ensure that strategic planning proposals, subdivision, and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property, and infrastructure	**A1.1 Development location** The strategic planning proposal, subdivision, and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL–29 or below.	N/A		The proposal is an augmentation of an existing use; the proposal is not a strategic planning proposal requiring a determination of the suitability of an area for an individual development. Following the WAPC Position Statement: *Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design* November 2019, a development application is to assess compliance with Acceptable Solution A2.1, or where a proposal does not satisfy the interpretation a performance principle-based solution is to be applied. The proposal does not comply with the Acceptable Solution, to achieve development with a BAL not exceeding BAL-29, because buildings are proposed in BAL-40-BAL-FZ. The proposal, therefore, is to be is addressed by a Performance Principle method. **See section 5.2 of this Assessment.**

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 2: Siting and Design To ensure that the siting and design of development minimises the level of bushfire impact	**A2.1 Asset Protection Zone** Every habitable building is surrounded by, and every proposed lot can achieve, and APZ depicted on submitted plans, which meets the following requirements: • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones.' (see Schedule 1).		P	The Site adjoins forest to its west and north boundary. The adjoining vegetation casts BAL levels of declining intensity into the Site. Existing development at the Site is located within BAL-40- BAL-FZ. The proposed development will result in development placed within BAL-40 -BAL-FZ. The proposal does not comply with the Acceptable Solution, to achieve development with a BAL not exceeding BAL-29, because buildings are proposed in BAL-40-BAL-FZ. The proposal, therefore, is to be is addressed by a Performance Principle method. **See section 5.2 of this Assessment.**
Element 3: Vehicular Access To ensure that the vehicular access serving a subdivision/ development is	**A3.1 Two access routes** Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations, and are available to all residents/the public at all times and under all weather conditions.		P	The Site is serviced by a single access (Troode Street - Emu Point Drive – Swarbrick Street) that extends from the Albany Town centre to the Emu Point residential area and includes the Site. The Site is adjacent to the coast and at the terminus of the road access to Emu Point. This matter is to be addressed as a Performance Principle. **See section 5.2 of this Assessment.**

<table>
<tr><th>Bushfire Protection Criteria</th><th>Method of Compliance</th><th>AS</th><th>PP</th><th>Proposed Bushfire Management Strategies</th></tr>
<tr><td rowspan="3">available and safe during a bushfire event</td><td>A3.2 Public road

A public road is to meet the requirements in Table 6, Column 1.

Table 6: Vehicular access technical requirements
<table><tr><th>TECHNICAL REQUIREMENTS</th><th>1 Public road</th><th>2 Cul-de-sac</th><th>3 Private driveway</th><th>4 Emergency access way</th><th>5 Fire service access routes</th></tr><tr><td>Minimum trafficable surface (m)</td><td>6*</td><td>6</td><td>4</td><td>6*</td><td>6*</td></tr><tr><td>Horizontal clearance (m)</td><td>6</td><td>6</td><td>6</td><td>6</td><td>6</td></tr><tr><td>Vertical clearance (m)</td><td>4.5</td><td>N/A</td><td>4.5</td><td>4.5</td><td>4.5</td></tr><tr><td>Maximum grade <50 metres</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td><td>1 in 10</td></tr><tr><td>Minimum weight capacity (t)</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>Maximum crossfall</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td><td>1 in 33</td></tr><tr><td>Curves minimum inner radius (m)</td><td>8.5</td><td>8.5</td><td>8.5</td><td>8.5</td><td>8.5</td></tr><tr><td colspan="6">*Refer to E3.2 Public roads: Trafficable surface</td></tr></table></td><td>✓</td><td></td><td>The singe access is a public road compliant with the DPLH interpretation of Table 6 Column 1.</td></tr>
<tr><td>A3.3 Cul-de-sac (including a dead-end road)

Requirements in Table 6, Column 2;

• Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres); and
• Turn-around area requirements, including a minimum 17.5 metre diameter head.</td><td></td><td>P</td><td>The Site's location is not compliant with the Acceptable Solution requirements for a cul-de-sac, because the Site is more than 200 m from a road providing access in two directions.

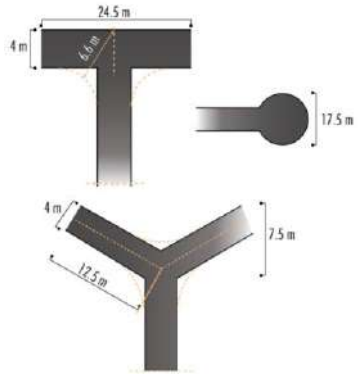
The terminus of the road access, public car park and boat ramp accommodated is of sufficient size to accommodate the turning of a type 3.4 fire brigade appliance.

This matter is to be addressed as a Performance Principle.

See section 5.2 of this Assessment.</td></tr>
<tr><td>A3.4 Battle-axe

Requirements in Table 6, Column 3;

• Maximum length: 600 metres; and Minimum width: six metres.</td><td>N/A</td><td></td><td></td></tr>
</table>

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.5 Private driveway longer than 50 m Requirements in Table 6, Column 3; • Required where a house site is more than 50 metres from a public road; • Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres); • Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and • Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes. • All-weather surface (i.e. compacted gravel, limestone or sealed)  **Figure 22**: Design requirements for a private driveway longer than 50 metres Turning areas should allow type 3.4 fire appliances to turn safely	C		The internal accessway, longer than 50 m, is required to reach the Nursery and Oyster and Mussel shed, the Site is approximately 100 m from the entry to the north boundary. The Site is a hard stand surface, and the buildings are separated from one another. Access is to be provided around the Processing building to future berthing platform; this access will take vehicles to the northern extent of the Site. Whilst the Site is to be hardstand, it is indicated to be utilised for forklift operation, and the existing site use shows that vehicles and stores, trailers etc. may be present over much of the space. The site operation and attending emergency services would benefit from a marked accessway provided in accordance with Column 3 (Private Driveway) in Table 6 *Vehicular access technical requirements* in Element 3 *Guidelines for planning in bushfire prone areas V1.*3

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
	A3.6 Emergency access way Requirements in Table 6, Column 4; • No further than 600 metres from a public road; • Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and • Must be signposted.	N/A		
	A3.7 Fire service access routes (perimeter roads) Requirements Table 6, Column 5; • Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency; • Surface: all-weather (i.e. compacted gravel, limestone or sealed) Dead end roads are not permitted; • Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres); • No further than 600 metres from a public road; • Allow for two-way traffic and; • Must be signposted	N/A		
	A3.8 Firebreak width, in accordance with the City of Armadale Fire Break Notice Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government.	C		The Oyster and Mussel Shed/Nursery and the Marine OPS workshop buildings *are proposed to be constructed* at the western boundary of the Site. The Built Environment Branch DFES may have setback requirements at Building Permit which may be satisfied by an access arranged on the adjoining land.

Bushfire Protection Criteria	Method of Compliance	AS	PP	Proposed Bushfire Management Strategies
Element 4: Water To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire	**A4.1 Reticulated areas** The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services. **E4.1**: The Water Corporation's 'No. 63 Water Reticulation Standard' is deemed to be the baseline criterion for developments and should be applied unless local water supply authorities' conditions apply.	N/A		A public hydrant is located 14 m within the expanded site area. It is slightly further than the recommended 120 m (Watercorp DS 63) from the furthest building on Site, but an internal on-site hydrant network is proposed as Part of the *Building Act 2011* approval requirements for a commercial development. The context for the Watercorp standards DS 63, is the planning of a residential subdivision, the context is not applicable to the development proposal. An indicative hydrant layout within the Site has been provided in the BAL Report 14/08/20. Additional fire hoses are recommended to be placed along the western and northern boundary to assist suppression of fire on the hardstand area and a fire in the adjacent forest.
	A4.2 Non-reticulated areas • Volume: minimum 50,000 litres per tank; Ratio of tanks to lots: minimum one tank per 25 lots (or Part thereof); • Tank location: no more than two kilometres to the furthermost house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds; • Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and • Water tanks and associated facilities are vested in the relevant local government	N/A		
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively) Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres.	N/A		

Performance Principles – (Clause 4.5.2.2 Guidelines)

A Performance Principle may be used where a proposal cannot comply with the Acceptable Solution. Clause 4.5.2.2 identifies a series of submission requirements; however, all the requirements listed are not applicable where they are subordinate to proper planning administration, as may have been clarified by the State Administrative Tribunal. It is also to be noted that other than a statement to which the proposal conforms or deviates from the acceptable solution the other criteria is only relevant to a use of material, it does not, therefore, address a performance principle solution for vehicular access.

A statement of the extent of deviation from the acceptable solution

The proposed development will include buildings located in areas exceeding BAL-29. The proposal, therefore, does not comply with the Acceptable Solutions for Elements 1 and 2.

The Performance Principle for Element 1 instead provides:

> "The strategic planning proposal, subdivision and development application is located in an area where the bushfire hazard assessment is or will, on completion, be moderate or low, or a BAL–29 or below, and the risk can be managed. For unavoidable development in areas where BAL–40 or BAL–FZ applies, demonstrating that the risk can be managed to the satisfaction of the Department of Fire and Emergency Services and the decision-maker."

The Performance Principle for Element 2 instead provides:

> "The siting and design of the strategic planning proposal, subdivision or development application, including roads, paths and landscaping, is appropriate to the level of bushfire threat that applies to the Site. That it incorporates a defendable space and significantly reduces the heat intensities at the building surface thereby minimising the bushfire risk to people, property and infrastructure, including compliance with AS 3959 if appropriate."

The Performance Principle for Element 3 instead provides:

> "The internal layout, design, and construction of public and private vehicular access and egress in the subdivision/ development allow emergency and other vehicles to move through it easily and safely at all times."

Element 1 Location and Element 2 Siting and Design

In approaching this Assessment, regard has been given to the recent WASAT matter:

Following the WASAT Bunnings Group Limited and Presiding Member of the Metro North-West Joint Development Assessment Panel [2019] the proposal has been compared to reducing the threat of bushfire from the Site into the classified vegetation and reducing the vulnerability of development on the Site, from a bushfire impacting upon the Site. In essence, to also demonstrate the proposal can satisfy SPP 3.7 cl. 5.1 and 5.2, respectively.

The proposal represents a reduced risk on the current authorisation because:

1. The present open-air storage of the plastic oyster baskets is vulnerable to bushfire attack and has the potential to burn intensely and produce toxic smoke. Whilst a fire initiated in this storage is unlikely, if it occurred, it could spread to the adjacent forest to cause a bushfire.

   The proposal is to consolidate this storage in an enclosed out-building (floor areas 670 m^2) located furthest from the high occupancy buildings. The building has a vertical wall located 2 m from the north and western boundary. This is further to the 4 m firebreak that has been maintained by the City of Albany, since 1996, for the benefit of the commercial development in this precinct. This will therefore provide the proposed Oyster/Mussel storage and the Nursery with a 6 m separation from the adjacent forest. The enclosure of the Oyster/Mussel storage (potentially flammable

material) within a non-combustible construction, is consistent with the risk treatment at cl.5.6 in the Guidelines V1.3, an appropriate storage of material to reduce the threat from bushfire but also to reduce the threat of a transfer of fire to the adjacent forest and w restrict the escape of fire from the storage area into the forest.

It is to be noted that steel sheeting can transfer radiant heat internally. A Fire Rating Level, which includes an insulation performance, has been specified (BAL FZ FRL 30/30/30) (Various methods are described to achieve fire rated walls in the NCC). These measures will reduce the risk of damage to stored materials and have been conditioned in this report in accordance with Regulation 78E(1) LPS Regulations 2015 Deemed Provisions.

2. The present marine workshop activity is spread across the Site. Materials are stored against the western boundary.

   The proposal will consolidate Site works into a single marine workshop placed on the western boundary, with a building designed to a construction standard comparable to BAL FZ (FRL 30/30/30) for walls and BAL FZ requirements for roof construction, penetrations, wall openings i.e. garage doors, and to windows facing to the north and west (These have been conditioned in this report in accordance with Regulation 78E(1) LPS Regulations 2015 Deemed Provisions). The marine workshop will minimise the need to undertake work externally to the building, and any work outside the building will be restricted by the Total Fire Ban day declarations although the adjacent vegetation can be ignited any time during a fire season.

   A general restriction on welding and grinding activity (spark generation and the use of open flame (hot works) should apply within 20 m of the west boundary, during the bushfire season. Fire hose should also be positioned on the west boundary.

   This will reduce the risk of spread of fire from the Site and the improved building resilience, by BAL FZ construction, will reduce the risk of ignition and therein building loss (adverse economic consequence) and potentially toxic emissions.

The consolidation of buildings on-site also promotes the opportunity for an orderly arrangement of the Site, rather than an ad hoc storage of potentially flammable items at the boundary with the forest.

The fuel store container also represents a consolidation of the current arrangement and a safer placement away from the adjacent vegetation and within BAL-19.

Element 3: Vehicular Access. To ensure that the vehicular access serving a subdivision/development is available and safe during a bushfire event.

The Acceptable Solution requires development to have through road access or be located within 200 m to a public road providing alternative destination options for evacuation outside of the fire ground and for emergency services to be able to attend the Site and retreat if necessary.

The road network and present land use is dependent upon a single access.

There is no practical means of providing a secondary vehicle access, and the Site is at the extent of a coastal reserve comprising remnant forest and scrub extending north.

SPP 3.7 does not apply retrospectively and allowance is made in the guideline that the technical requirements, including the 200 m do not apply where the lot layout already exists.

"A3.3 Cul-de-sac (including a dead-end road)

A cul-de-sac and/or a dead-end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), the following requirements are to be achieved:"

Notwithstanding this, the Policy Intent is vehicular access serving a subdivision/development is available and safe during a bushfire event The access route is between an area of low threat, coast with a low wave energy beach, and within BAL-19. The road for the extent that it extends beyond a through road is unlikely to be closed by fallen objects such as trees, so it is only likely to be impassable during the fire peak, 2 minutes. In the interim the coast can provide pedestrian access to a BAL Low area for refuge and retreat before returning to attend to any small fires, assisted by an on-site network of fire hoses.

In consideration of the locational attributes, the proposal is able to demonstrate safety is available to the occupants at the Site.

The foreshore at Emu Point is a natural and practical destination to shelter from a bushfire approaching from the west and is recognised (page 11) in the SEMC Western Australia Community Evacuation in Emergencies Guideline 18 December 2020.

Plate 15: Foreshore Emergency Assembly

Plate 16: Albany Sea Rescue at carpark

5.2 Additional Bushfire Management Strategies

Additional management strategies, further to the Bushfire Protection Criteria, are addressed in the performance principles.

Notably these provide for a construction standard to be applied to buildings that are not a class 1-3 or 10a (following regulation 78E(1) LPS 2015 Deemed Provisions, and the provision of fire hoses at the west and north boundary to assist with fire suppression when safe to do so.

The maintenance of the firebreak by the City of Albany is of longstanding and a benefit. The design and construction standard of the buildings is not dependent upon the condition of the firebreak.

5.3 Spatial representation of the bushfire management strategies

Further to the assessment against the bushfire protection criteria, the key features demonstrating compliance should be represented spatially in the Spatial representation of the bushfire management strategies. It represents the required bushfire risk management measures that must be implemented and maintained.

The Spatial representation of the bushfire management strategies is provided in Figure EX1.

6. RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT OF THE BUSHFIRE MEASURES

The responsibilities for implementation and management of the bushfire measures, summarises the measures identified to achieve compliance with the bushfire protection measure following SPP 3.7. This has been provided in the Executive Summary. The details contained within the planning application authorised by the responsible decision-maker are enforceable under section 214 of the *Planning and Development Act 2005*. The items addressed in the table responsibilities for implementation and management of the bushfire measures form Part of the planning authorisation and where there is conflict supersede the detail of the planning application.

The responsibilities assigned to the City of Albany reflect the current activities of the City and are not to be relied upon nor are binding upon the City as a consequence of this Bushfire Management Plan.

APPENDIX 1 - BAL Assessment

AS3959 Bushfire Attack Level (BAL) Contour Plan

Site Details			
Address:	Lot 501 Emu Point		
Suburb:	Emu Point	**State:**	W.A.
Local Government Area:	City of Albany		
Description of Building Works:	Proposed aquaculture maintenance and seafood processing facility		
Stage of WAPC Planning	Development application		

BAL Contour Plan Details			
Report / Job Number:	MSC00296	**Report Version:**	FINAL Vers 1.0
Assessment Date:	21/07/2020	**Report Date:**	14/08/2020
BPAD Practitioner	Kathryn Kinnear	**Accreditation No.**	BPAD 30794

BIO DIVERSE SOLUTIONS

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

SECTION 1: PROPOSAL DETAILS

The proponent, Tattarang proposes to develop Lot 501 Emu Point to build the Albany Aquaculture Project facility (herein referred to as "the Subject Site"). The subject site is located within the suburb of Emu Point within the City of Albany (CoA). Refer to the Development Plan (Figure 1) and Locality Plan (Figure 2). The subject site is located in the WA bushfire prone area mapping (OBRM, 2019), due to bushfire prone vegetation adjacent to the site, refer to Figure 3.

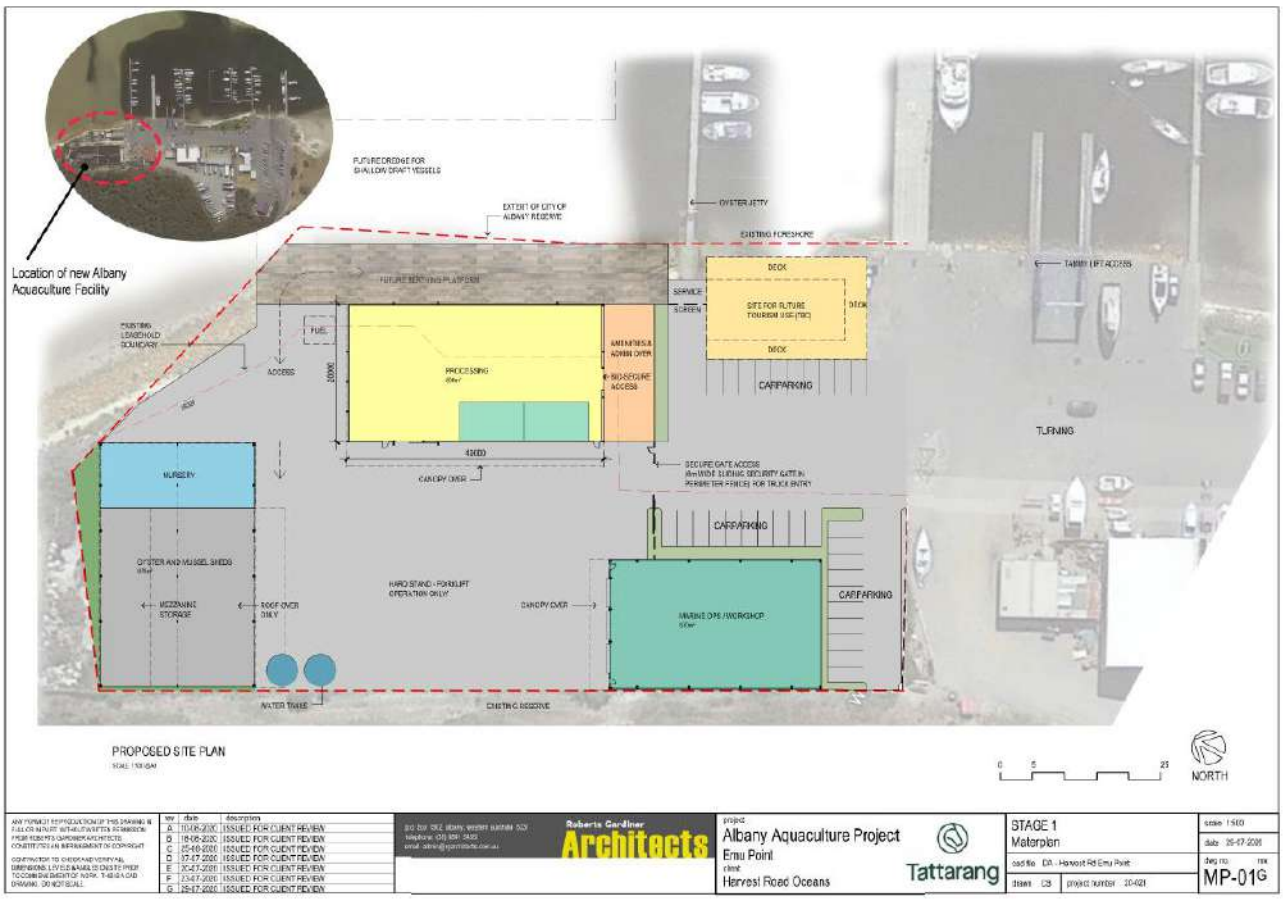


Figure 1: Master Plan (Revision G)

<u>Development proposal</u>

The Harvest Road Seafood Processing Facility is proposed to produce up to 83m Oysters and 1700 Tonnes of mussels per annum. The development at full scale is expected to have approximately 90 staff including farming, processing and administration staff. A tourism facility in the site is proposed as shown the on the Master plan (Figure 1) and may entertain an 110 person capacity restaurant/café style development. The proponent will be seeking an extension to the lease boundary and will be sought with the CoA through the Development Approval Process.

The site is reserved 'Parks and Recreation' under the City of Albany Local Planning Scheme No. 1 (LPS 1), with a Restricted Use overlay specific to the site. There is no region planning scheme in force.The specific Restricted Uses for the site are:

- Aquaculture
- Club Premises
- Harbour Installations
- Marina
- Marine Filling Station
- Restaurant

The LPS 1 Objective for the 'Parks and Recreation' reserve is:

- Public Purposes which specifically provide for a range of public recreational facilities.

Figure 2: Location Plan

Figure 3: State Bushfire Prone Area Mapping (OBRM, 2019)

SECTION 2 - ENVIRONMENTAL CONSIDERATIONS

Vegetation modification proposed:

Some vegetation will be removed which has grown along the fence line in the north of the site. New security fencing is proposed in the development footprint similar to the cyclone fencing on site. Any works associated with the new fencing will be commensurate with the current policy of 1.5m adjacent to CoA reserves.

Re-vegetation/landscape plans:

Some localised landscaping associated with visual amenity and stormwater management is proposed, however will be to WAPC guidelines Asset Protection Zone (APZ) standards, refer to Appendix A for these standards.

SECTION 3: ASSESSMENT RESULTS

SECTION 3.1 – Assessment Inputs

Vegetation Classification (Bushfire Fuels)

Bushfire Assessment inputs for the site has been calculated using the Method 1 procedure as outlined in AS3959. This incorporates the following factors:

- WA adopted Fire Danger Index (FDI), being FDI 80;
- Vegetation Classes to with Table 2.3 and Exclusion clauses 2.2.3.2;
- Slope under classified vegetation; and
- Distance between proposed development site and classified vegetation.

Site assessment was undertaken by Kathryn Kinnear (BPAD 30794) on the 21st July 2020. Photographs of the Subject Site and surrounding areas were taken and have been presented in this report. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified in the following pages and shown on the Vegetation Classes Map (Figure 4). A summary of the vegetation types is shown in Table 1.

Table 1: Vegetation Classification to AS3959

Plot No.	Vegetation Type (Table 2.3)	Slope (Table 2.4.3)
Plot 1	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (e)	N/A
Plot 2	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (f)	N/A
Plot 3	Forest Type A	Downslope >0-5 Degrees
Plot 4	Shrubland Type C	Downslope >0-5 Degrees
Plot 5	Scrub Type D	Flat/upslope
Plot 6	Forest Type A	Downslope >0-5 Degrees

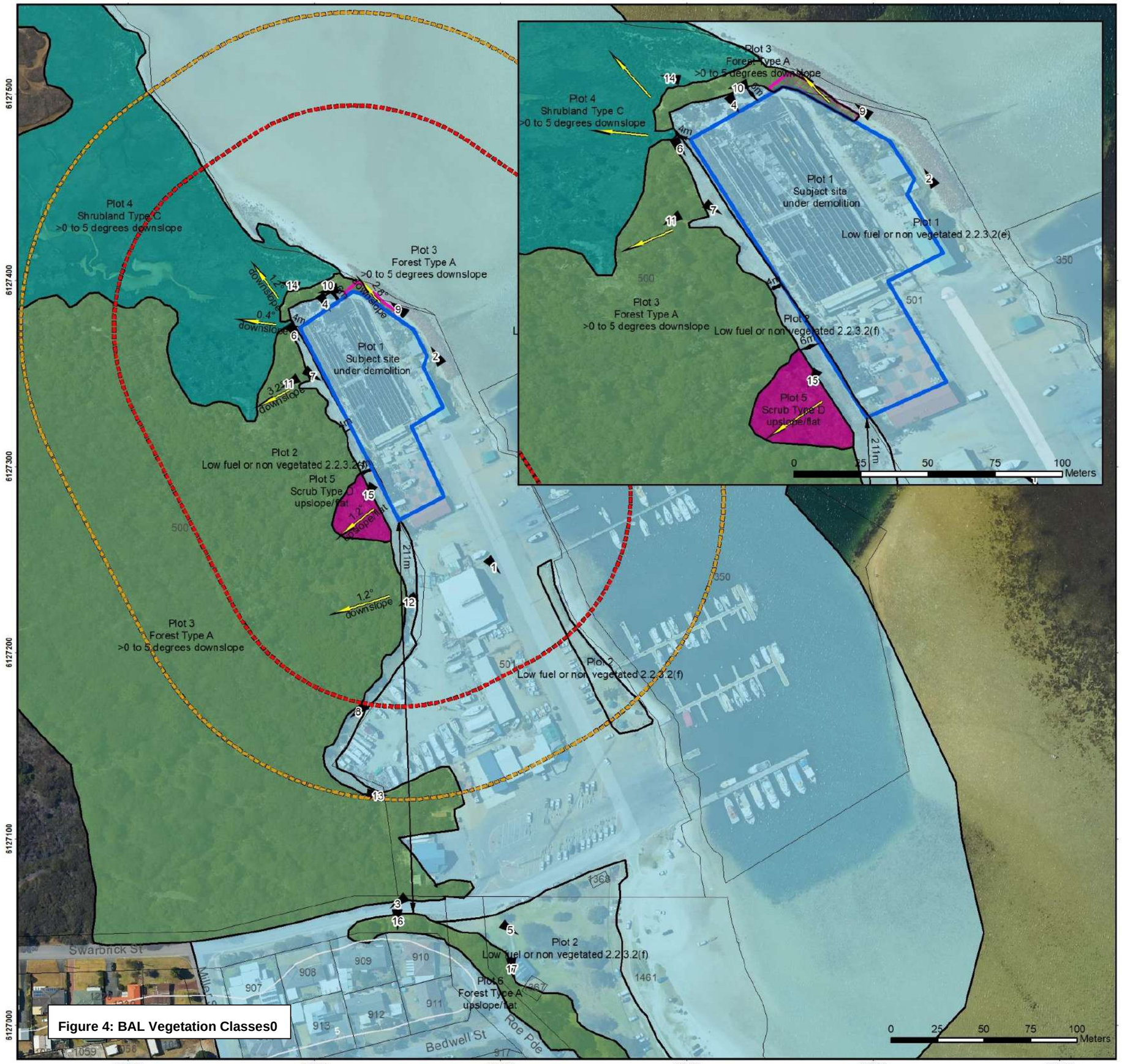


Figure 4: BAL Vegetation Classes0

This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

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Overview Map Scale 1:100,000

Legend

- Subject Site
- 100m Assessment Boundary
- 150m Assessment Boundary
- Cadastre
- 5m Contours
- Separation Distance
- Slopes Degrees
- Photo Point
- Future Low Fuel
- Vegetation/Plot Boundary

Vegetation

- Forest Type A
- Shrubland Type C
- Scrub Type D
- Low fuel or non vegetated 2.2.3.2

Scale
1:2,000 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Tattarang
Emu Point Oyster Farm
Emu Point, WA 6330

Figure 4: Vegetation Classes

BAL Assessor	*QA Check*	*Drawn by*
KK	**BT**	**CV**
STATUS	*FILE*	*DATE*
FINAL	**MSC0296**	**23/07/2020**

Plot	1	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (e)
			**Location:** Located internal to subject site and north-east, east, south and south-east of subject site. **Dominant species & description:** Bare hardstand areas, Oyster Harbour, parking, demolition site. As per exclusion clause 2.2.3.2 (e) of AS3959.
Photo Id 1: View of parking lot, to the south of the subject site.			
Plot	**1 cont.**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas Exclusion 2.2.3.2 (e)**
			**Additional photo of Plot 1.**
Photo Id 2: View of groin to the east of the subject site.			

Plot	1 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (e)
			**Additional photo of Plot 1.**
Photo Id 3: South of the subject site. View of Swarbrick Street looking west.			
Plot	**1 cont.**	**Classification or Exclusion Clause**	**Low fuel or non-vegetated areas Exclusion 2.2.3.2 (e)**
			**Additional photo of Plot 1.**
Photo Id 4: View of demolition site, internal to the subject site.			

Plot	2	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (f)
			**Location:** Located west and south of the subject site. **Dominant species & description:** Mowed grasses and POS areas managed by CoA. Managed firebreaks. As per exclusion clause 2.2.3.2 (f) of AS3959. **Available fuel loading:** <2t/ha.

Photo Id 5: View of low fuel area situated south of the subject site, outside 150m assessment area.

Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (f)
			**Additional photo of Plot 2.** CoA have confirmed a regular maintenance program along the western/south western interface to the site.

Photo Id 6: View of 4m firebreak located to the west of the subject site.

Plot	2 cont.	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (f)
			**Additional photo of Plot 2.**
Photo Id 7: View of 4m firebreak located to the west of the subject site.			

Plot	2	Classification or Exclusion Clause	Low fuel or non-vegetated areas Exclusion 2.2.3.2 (f)
			**Additional photo of Plot 2.**
Photo Id 8: View of firebreak situated to the south-west of the subject site.			

Plot	3	Classification or Exclusion Clause	Forest Type A
			**Location:** North and east of the subject site. **Separation distance:** 0-6m. **Dominant species & description:** Peppermint trees grading to paperbarks in the west. Multilayered grasses, juvenile trees, *Acacia longifolia*, *Asparagus asparagoides* (Bridal creeper) and buffalo grass. **Average vegetation height:** 4-6m. **Foliage cover:** >30-70% Foliage cover. **Fuel loading:** 25-35t/ha. **Effective Slope:** Downslope >0-5 degrees. Note: new fencing around site, vegetation assumed to be future low fuel along fence line.

Photo Id 9: View of Forest Type A along eastern fence line adjacent to Harbour.

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			**Additional photo of Plot 3.** Note: new fencing around site, vegetation assumed to be future low fuel along fence line. Not presently slashed however forms part of the proposed development footprint.

Photo Id 10: View of Forest Type A located along northern fence line.

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			**Location:** West of the subject site. **Separation distance:** 0-6m. **Dominant species & description:** Paperbark, Hibbertia, *Spiridium globulosum*, Cape tulip, Bridal creeper, *Acacia longifolia,* Melaleuca sp., herbs and rushes. Multilayered. **Average vegetation height:** 4-6m. **Foliage cover:** >30-70% foliage cover. **Fuel loading:** 25-35t/ha. **Effective Slope:** Downslope >0-5 degrees.
Photo Id 11: View to the south-west through Plot 3.			

Plot	3 cont.	Classification or Exclusion Clause	Forest Type A
			**Additional photo of Plot 3.**
Photo Id 12: View to the west south-west through Plot 3.			

Plot	3. cont.	Classification or Exclusion Clause	Forest Type A
			**Additional photo of Plot 3.**
Photo Id 13: South of the subject site. View to the east through Plot 3 showing thick vegetation adjacent to fencing.			
Plot	**4**	**Classification or Exclusion Clause**	**Shrubland Type C**
			**Location:** North of subject site in the tidal flats. **Separation distance:** 4m. **Dominant species & description:** Herbs and rushes and *Melaleuca* sp., *Atriplex sp*. (saltmarsh species) and various low swamp tidal species. **Average vegetation height:** 1-1.5m. **Foliage cover:** >30% Foliage cover. **Fuel loading:** 15t/ha. **Effective Slope:** Downslope >0-5 degrees.
Photo Id 14: View to the north west through Plot 4. Note: 1.7m person in photo.			

Plot	5	Classification or Exclusion Clause	Scrub Type D
			**Location:** South west of the subject site. **Separation distance:** 4m. **Dominant species & description:** Dead *Melaleuca cuticularis* (Salt water paperbark), rushes, *Asparagus asparagoides* (Bridal creeper), and *Polygala myrtifolia* (myrtle-leaf milkwort). **Average vegetation height:** 2.5m. **Foliage cover:** >30% Foliage cover. **Fuel loading:** 25t/ha. **Effective Slope:** Flat/upslope.
Photo Id 15: View to the south west through Plot 5. Note: 1.7m person in photo.			
Plot	**6**	**Classification or Exclusion Clause**	**Forest Type A**
			**Location:** South of the subject site. Outside 150m assessment boundary. **Separation distance:** 211m. **Dominant species & description:** *Agonis flexuosa*, connected crowns, juvenile trees, *Hibbertia* sp., *Pelargonium sp.* (Geranium), *Watsonia*, *Moraea flaccida* (Cape Tulip), kikuyu grass and *Adenanthos sericeus* (Albany Woolly Bush). Multilayered. **Average vegetation height:** 4-6m. **Foliage cover:** >30-70% foliage cover. **Fuel loading:** 25-35t/ha. **Effective Slope:** Flat/upslope.
Photo Id 16: View to the south through Plot 6.			

Plot	6	Classification or Exclusion Clause	Forest Type A
			**Additional photo of Plot 6.**
Photo Id 17: View to the south through Plot 6.			

COMMENTS ON VEGETATION CLASSIFCATIONS:

- Distances from vegetation were made based on surface fuels to edge of Lot (subject site) boundary;
- Effective slopes were measured in the field using a Nikon Forestry Pro and represented on the respective plots;
- Method 1 (AS3959) Simplified procedure was used for vegetation classification and BAL Assessment process;
- All vegetation was classified within the subject site and within 150m of the lot boundaries to AS3959 Table 2.3, noting the assessment area was extended to the south (200m) to assess vegetation for any performance-based assessment; and
- The perimeter of the vegetation was measured using field GPS and notations on field GIS maps.

SECTION 3.2 Assessment Outputs

A Method 1 BAL calculation (in the form of BAL contours) has been completed for the proposed development. The BAL Contours are depicted in accordance with AS3959 (Method 1) and WAPC defined methodology (WAPC, 2017). The BAL rating gives an indication of the level of bushfire attack (i.e. the radiant heat flux) that may be received by proposed buildings and subsequently informs the standard of building construction required to increase building tolerance to potentially withstand such impacts in line with the assessed BAL.

The potential bushfire impact to the proposed development from each of the identified vegetation plots are identified below in Table 2 and shown in the BAL Contour Plan, Figure 5.

Table 2: Potential Bushfire impacts to the Albany Aquaculture Project

Vegetation Type (Table 2.3)	Slope (Table 2.4.3)	Distance to Vegetation (m)	Highest BAL Contour to lot	BAL to proposed buildings
Low fuel or non-vegetated areas Exclusion 2.2.3.2 (e) (Plot 1)	N/A	N/A	BAL Low	Low
Low fuel or non-vegetated areas Exclusion 2.2.3.2 (f) (Plot 2)	N/A	N/A	BAL Low	Low
Forest Type A (Plot 3)	Downslope >0-5 Degrees	0-6m	BAL- FZ	Fuel Storage & office/reception BAL 19 (Class 8)
				Oyster & mussel sheds, Nursery BAL FZ (Class 10a)
				Tourism facility BAL 12.5 (Class 6)
Shrubland Type C (Plot 4)	Downslope >0-5 Degrees	4m	BAL- FZ	N/A overridden by Plot 3.
Scrub Type D (Plot 5)	Flat/upslope	4m	BAL- FZ	BAL FZ to workshop (Class 8)
Forest Type A (Plot 6)	Downslope upslope	211m	BAL-Low	BAL -Low

NOTES ON BAL ASSESSMENT

- The BAL Contour Plan was prepared by an Accredited Level 2 Bushfire Planning Practitioner (BPAD30794).
- The BAL Contour Map has been prepared in accordance with Department of Planning (WAPC) Guidelines for Planning in Bushfire Prone Areas Version 1.3 (WAPC, 2017).
- Vegetation is assumed to be cleared along the fence line for the development to 1.5m for the new fencing.
- Development based on the Master Plan as supplied by Roberts Gardiner Architects (Figure 1) (Revision G).

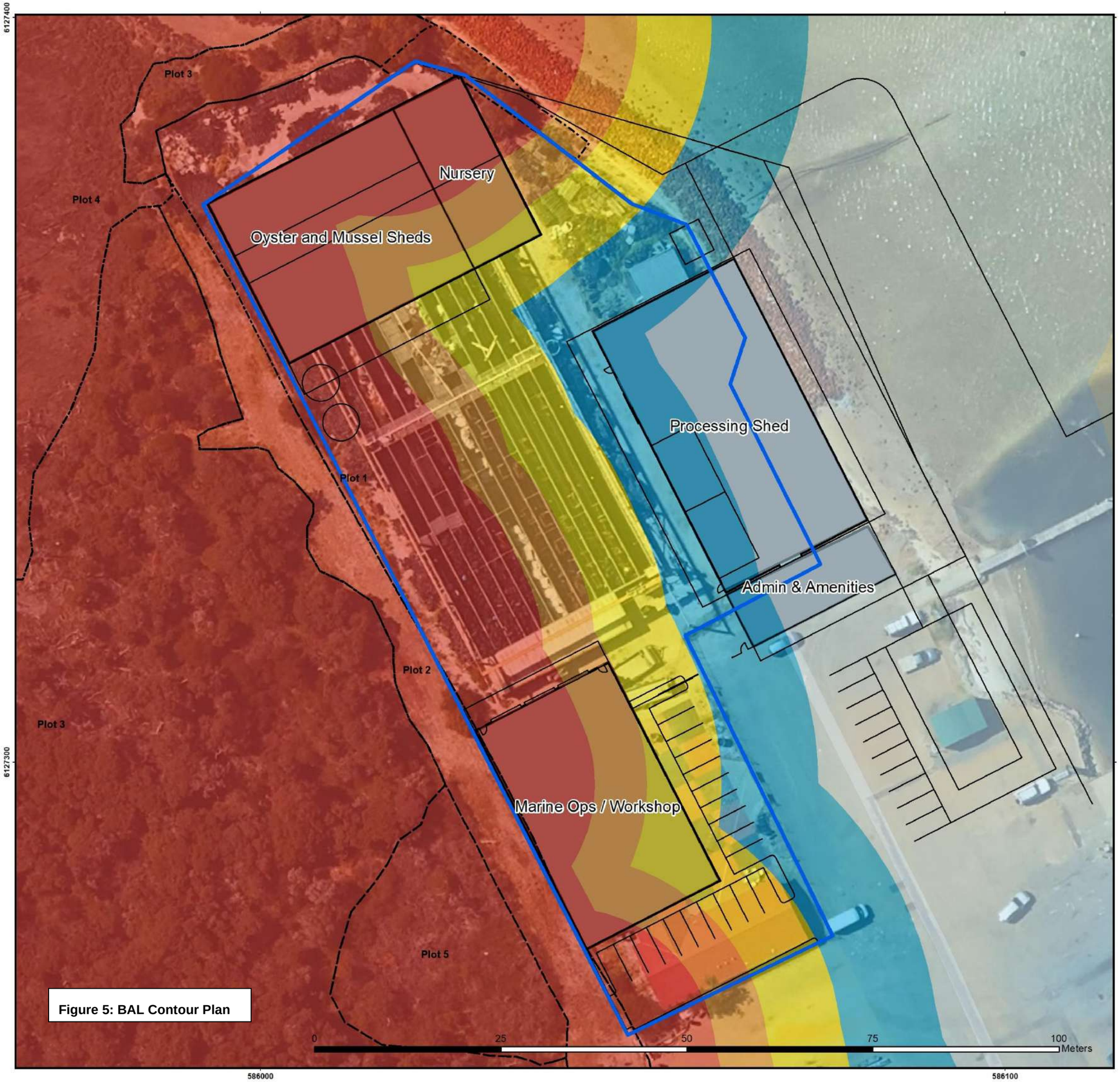


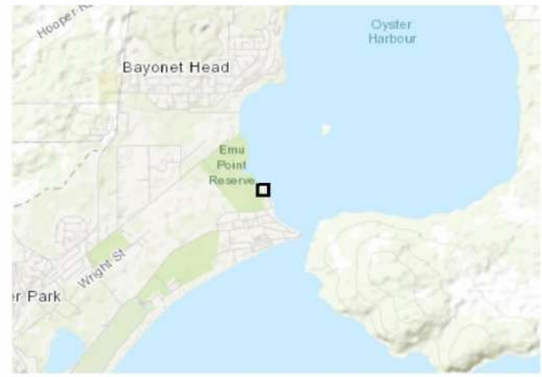
Figure 5: BAL Contour Plan

This BAL Plan was prepared by:
Kathryn Kinnear, Bio Diverse Solutions
Accreditation No: BPAD30794
Jurisdiction: Level 2 - WA

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

BIO DIVERSE SOLUTIONS

29 Hercules Crescent
Albany, WA 6330
Australia
Tel: 08 9842 1575
Fax: 08 9842 1575



Overview Map Scale 1:100,000

Legend

- Subject Site
- Vegetation/Plot Boundary
- Proposed Building
- Site plan revision G

BAL Contours

- BAL-FZ
- BAL-40
- BAL-29
- BAL-19
- BAL-12.5
- BAL-LOW

Scale
1:500 @ A3
GDA MGA 94 Zone 50

Data Sources
Aerial Imagery: WA Now, Landgate Subscription Imagery
Cadastre, Relief Contours and Roads: Landgate 2017
IRIS Road Network: Main Roads Western Australia 2017
Overview Map: World Topographic map service, ESRI 2012

CLIENT
Tattarang
Emu Point Oyster Farm
Emu Point, WA 6330

BAL Contour Plan

BAL Assessor	*QA Check*	*Drawn by*
KK	BT	SA
STATUS	*FILE*	*DATE*
FINAL	MSC0296	31/07/2020

SECTION 4: IDENTIFICATION OF BUSHFIRE IMPACTS

Bushfire risks/hazards

The bushfire prone mapping over the site is due to the remnant vegetation in the City of Albany reserve to the north, west and south west of the subject site. This reserve is to protect the tidal interface of Oyster Harbour and the native vegetation associated with the tidal flats. Bushfire hazards are described in the WAPC *Guidelines for planning in a bushfire prone area* (WAPC, 2017) as "Bushfire Hazards Levels (BHL) and the vegetation types mapped for the site and adjacent 150m is shown in Figure 1. The vegetation presents as Forest Type A (extreme Bushfire Hazard Level (BHL)), Shrubland Type C (Moderate BHL) and a small area of Scrub Type D (Extreme BHL). The subject site was previously used for sheds and hardstand areas whereby demolition is currently in progress, presenting as a Low BHL. To the east is Oyster Harbour which presents as Low BHL.

Vegetation clearing for the development is not proposed as the site is already developed (brown field site). The CoA reserve for parks and recreation is directly adjacent the site. A 4m-6m firebreak separates the development to the CoA reserve which is managed by the CoA maintenance team. Some minor removal of vegetation will be required when new fencing is erected and this is not anticipated to be more than 1.5m from the boundary. Some localised landscaping associated with visual amenity and stormwater management is proposed, however will be to WAPC guidelines Asset Protection Zone (APZ) standards, refer to Appendix A for these standards. Any plans pertaining to the site should be reviewed by the Bushfire practitioner prior to submission to the City of Albany to ensure compliance to the WAPC guidelines.

BAL contours emanating onto the site allocate BAL FZ on the subject site as a whole. The development of the site for the reception/office and the tourism facility are located in BAL 19 and BAL 12.5 respectively. A detailed Bushfire Management Plan (BMP) is required to assist the project through the development approvals process, this is to be prepared by Envision due to the reasons outlined below.

It is to be noted by the project team that any air conditioning/cooling units proposed for the aquaculture facility will need to be fitted with non-combustible material and comply with the Building Commission requirements (See Appendix B). It is noted the requirements for residential areas, however compliance by the proponent is recommended for this site/development.

Access

The site is accessed from Emu Point Drive, onto Clark Street onto Swarbrick Street to the south of the subject site. Access terminates at the carparking areas to the south creating a cul-de-sac. WAPC guidelines (WAPC, 2017) outline the "Acceptable solutions" (A3.1) to have alternative access in opposite directions available to the public at all times. The development is non-compliant to this aspect and therefore will require a "Performance based assessment" by Level 3 Bushfire Practitioners. A detailed BMP is presently being prepared by Envision to address the access issue.

Vulnerable land use

A tourism development is defined as a "Vulnerable land use" under State Planning Policy (SPP) 3.7 and the intent of this policy is to have a planning response to recognise that persons attending a tourism venture may be less able to respond to a bushfire emergency. A detailed Bushfire Management Plan and an Emergency Evacuation Plan (EEP) is being prepared by Level 3 Bushfire Practitioner Anthony Rowe (Envision). The EEP forms a comprehensive action plan to guide the tourism aspect of the development and employees at the seafood processing facility in a bushfire emergency. As access in alternative directions is not available

to all people attending the site, a “Performance based” assessment is required. A detailed BMP is presently being prepared by Envision to address the access issue.

High risk industry

Fuel storage is defined as a “High risk industry” under State Planning Policy (SPP) 3.7 and is not recommended in BAL FZ or Bal 40. It is noted the fuel storage is to be a mobile facility in a sea container/double bunded arrangement and located in BAL 19 zones. Internal to the site will be maintained in a low fuel state, (APZ standards to apply see Appendix A). A reduction in on-site flammable material and the moveable nature of the fuel storage may deem this a low risk. A detailed BMP is presently being prepared by Envision to address the fuel storage issue.

Water supply

Water supply will be through the existing water connections to the site and hydrants are to be provided to the site as per the Hydrant Site Plan below, refer to Figure 6.

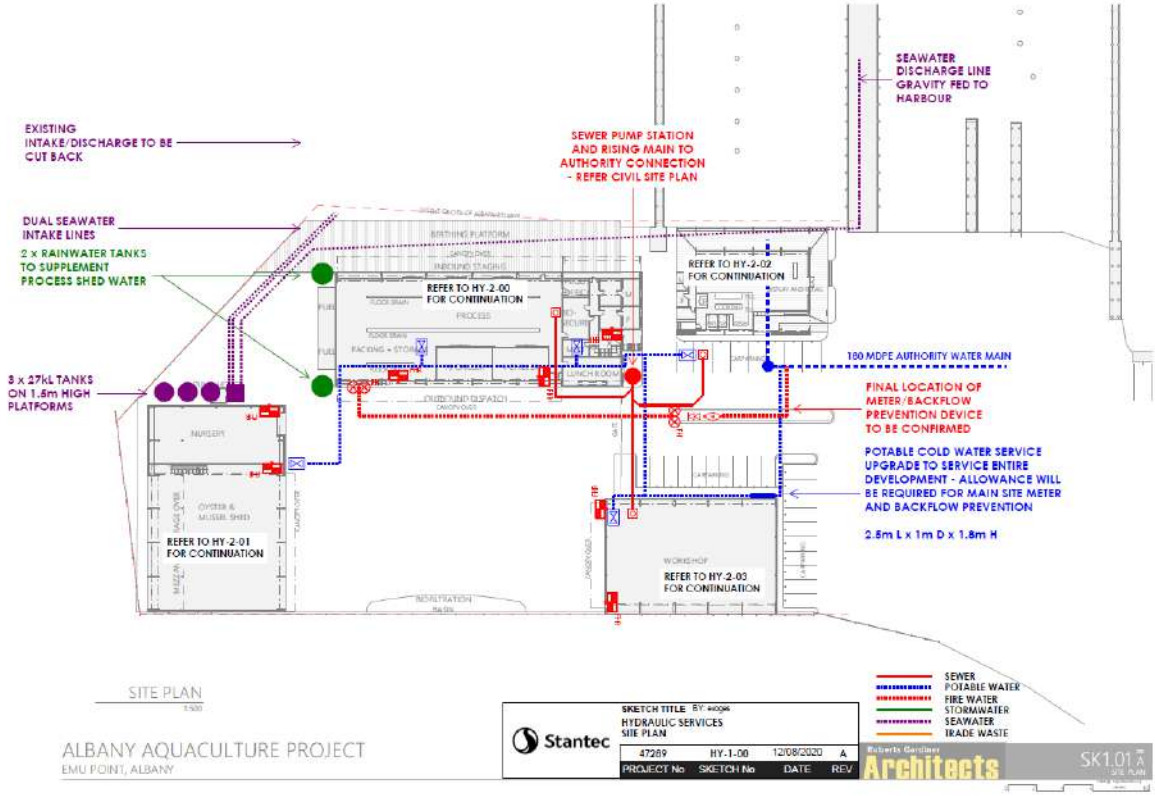


Figure 6: Hydrant Site Plan

SECTION 5: DISCLAIMER

The recommendations and measures contained in this assessment report are based on the requirements of the Australian Standards 3959 – Building in Bushfire Prone Areas, WAPC State Planning Policy 3.7 (WAPC, 2015), WAPC Guidelines for Planning in Bushfire Prone Areas (WAPC, 2017), and CSIRO's research into Bushfire behaviour. These are considered the minimum standards required to balance the protection of the proposed dwelling and occupants with the aesthetic and environmental conditions required by local, state and federal government authorities. They DO NOT guarantee that a building will not be destroyed or damaged by a bushfire. All surveys and forecasts, projections and recommendations made in this assessment report and associated with this proposed dwelling are made in good faith on the basis of the information available to the fire protection consultant at the time of assessment. The achievement of the level of implementation of fire precautions will depend amongst other things on actions of the landowner or occupiers of the land, over which the fire protection consultant has no control. Notwithstanding anything contained within, the fire consultant/s or local government authority will not, except as the law may require, be liable for any loss or other consequences (whether or not due to negligence of the fire consultant/s and the local government authority, their servants or agents) arising out of the services rendered by the fire consultant/s or local government authority.

SECTION 6: Certification

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS3959 and the Guidelines for Planning in Bushfire Prone Areas Ver 1.3 (WAPC, 2017).

SIGNED, ASSESSOR: .... DATE: 14/08/2020

Kathryn Kinnear, Bio Diverse Solutions
Accredited Level 2 Bushfire Practitioner (Accreditation No: BPAD30794)

References

Western Australian Planning Commission (WAPC) (2017) Guidelines for Planning in Bushfire Prone Areas Version 1.3. Western Australian Planning Commission and Department of Planning WA, Government of Western Australia.

Western Australian Planning Commission (WAPC) (2015) State Planning Policy 3.7 Planning in Bushfire Prone Areas. Department of Planning WA and Western Australian Planning Commission.

Office of Bushfire Risk management (OBRM) (2019) Map of Bushfire Prone Areas. Data retrieved from State Land Information Portal (SLIP): https://maps.slip.wa.gov.au/landgate/bushfireprone/

REVISION RECORD

Revision	Summary	Prepared by	Reviewed by:	Date
Draft Id 27/7/2020	Draft report internal QA review	K. Kinnear	B.Theyer	27/07/2020
Draft 1 28/07/20	Draft issued to client and A.Rowe.	K.Kinnear	J.Benson	28/07/2020
Final Vers1.0 14/08/2020	Issued to client & Envision	K.Kinnear		14/08/2020

Appendix A

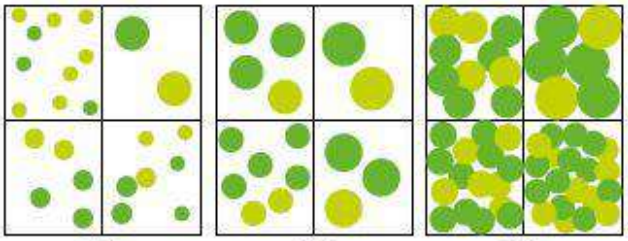
WAPC APZ standards to apply

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m² in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):** can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

Appendix B

Building Commission Advice note

Roof mounted evaporative coolers in bushfire prone areas

Government of **Western Australia**
Department of **Mines, Industry Regulation and Safety**
Building and Energy

Roof-mounted evaporative coolers

From 8 April 2016, new roof-mounted evaporative coolers being installed on residential buildings that are located in a designated bush fire prone area must be fitted with non-combustible covers.

It is important to be aware of these requirements before purchasing this type of cooling unit for your home.

To find out if you live in a designated bush fire prone area, go to the Department of Fire and Emergency Services website at www.dfes.wa.gov.au, navigate to "Regulation and Compliance" and view the *Map of Bush Fire Prone Areas* or simply do an internet search for *'Map of Bush Fire Prone Areas'*.

Existing evaporative coolers

It isn't mandatory to upgrade an existing roof-mounted evaporative cooler that is in a designated bush fire prone area, however it is recommended you discuss retrofitting options for non-combustible covers with the retailer or manufacturer.

Risks with evaporative coolers

The Department of Fire and Emergency Services has identified that roof-mounted evaporative coolers can catch fire if burning embers enter through unprotected gaps and ignite the cooling pads. This can result in fire burning into the ceiling and spreading to the rest of the building.

Complying with the requirements

The installation of a roof-mounted evaporative cooler in a designated bush fire prone area is captured under the State's building laws and must therefore comply with the performance requirements of the Building Code of Australia (the Building Code). This generally requires compliance with Australian Standard AS 3959-2009-Construction of buildings in bushfire-prone areas.

If you are considering installing a roof-mounted evaporative cooler in a designated bush fire prone area you need to have your property assessed for its level of bush fire risk as this will determine the appropriate level of protection that your evaporative cooler will require.

Bush fire construction requirements have been in the Building Code since the 1990s but only apply in designated bush fire prone areas.

Assessing the level of bush fire risk

The Building Code recognises the assessment method of AS 3959-2009 as an acceptable way of assigning a Bushfire Attack Level (BAL) for the site. BALs are a measure of the intensity of the potential bush fire attack for a building and provide a basis for establishing appropriate bush fire construction requirements. There are six different BALs: BAL-LOW, BAL-12.5, BAL-19, BAL-29, BAL-40 and BAL-FZ (Flame zone).

Who determines the BAL?

The Fire Protection Association (FPA) Australia can provide guidance on accredited BAL Assessors and suitably qualified consultants offering services in Western Australia. Further information is available at www.fpaa.com.au.

The following table outlines the requirements for a roof-mounted evaporative cooler in accordance with the assessed BAL of your site.

Assessed BAL	Bush fire requirements for roof-mounted evaporative coolers
BAL-LOW **Low bush fire risk**	None.
BAL-12.5 – BAL-29 **Moderate to high bush fire risk**	Must be fitted with non- combustible butterfly closers as close as practicable to the roof level; or alternatively be fitted with non-combustible covers with a mesh or perforated sheet with a maximum aperture of 2mm, made of corrosion resistant steel, bronze or aluminium. Additionally the unit must be adequately sealed to the roof with non-combustible material to prevent gaps greater than 3mm.
BAL-40 and BAL-FZ **Very high to extreme bush fire risk**	Obtain a building permit from the permit authority to install a roof-mounted evaporative cooler. This is because the Building Code does not permit the installation of a roof- mounted evaporative cooler unless it has met certain test criteria or an alternative solution has been developed. **Please note:** you should discuss these requirements with a registered building surveying contractor or the relevant permit authority.

Acceptable covers

The type of cover that is acceptable depends on the material the body of the evaporative cooling unit is constructed from, typically either moulded plastic, which would be combustible, or metal which would be non-combustible.

Plastic units

If the plastic unit doesn't have a butterfly closer it must be fully encased in non-combustible covers, not just covering the air intake areas.

A butterfly closer is a type of valve fitted inside the unit which opens when the unit is running and closes when the unit's fan is turned off and helps to prevent any fire from an ignited evaporative cooler entering the roof.

Metal units

An evaporative cooler made of metal, and not otherwise fitted with a butterfly closer, must be fitted with non-combustible ember protection screens covering the air intake areas.

Where you are unsure if the roof-mounted evaporative cooler you are thinking of purchasing will comply with the requirements for your location, you should raise your concerns with the retailer.

If you do not wish to have your site assessed for a BAL, or obtain a building permit, you need to consider an alternative method for cooling your home that does not involve the installation of a roof-mounted evaporative cooler.

Test criteria

AS 3959-2009 provides another compliance option, where any element of construction or system of an evaporative cooler that satisfies the test criteria of Australian Standard AS 1530.8.1 (BAL-12.5 to BAL-40) or AS 1530.8.2 (BAL-FZ) may be used in lieu, essentially overriding the prescriptive requirements of AS 3959 – such tests are normally instigated by the manufacturer and are carried out in National Association of Testing Authorities Australia registered laboratories.

Who is responsible for compliance?

For sites assessed as BAL-12.5 to BAL-29, where the installation is not part of a building permit, the home owner (registered proprietor) is responsible for ensuring the evaporative cooler complies with the Building Code as outlined in "Complying with the requirements" above. In high risk areas (BAL-40 and BAL-FZ) where a building permit would generally be required and in other areas if the installation is part of a building permit, the person named as "builder" on the building permit is responsible for ensuring compliance. There are substantial penalties for installing evaporative coolers in designated bush fire prone areas that do not comply.

Also, the Australian Consumer Law may allocate liability to builders, suppliers, installers, and manufacturers in some circumstances, including where the cooler or its installation is not fit for its usual purpose or a purpose made known by a consumer.

In 2011 the government wrote to manufacturers about the risks associated with roof-mounted evaporative coolers in bush fire prone areas and in 2015 further informed them that the proposed designation of bush fire prone areas will trigger a requirement for roof-mounted evaporative coolers to meet the minimum requirements of AS 3959.

Electrical appliance safety standard

Furthermore, manufacturers should ensure that the construction of an evaporative cooler that is intended to be installed in a designated bushfire prone area complies with Australian Standard AS/NZS 60335.2.98:2005 that deals with household and similar electrical appliance safety. This Standard requires fixed evaporative coolers to be tested under the conditions of AS 1530.8.1 (that deals with tests on elements of construction for buildings exposed to simulated bushfire attack—radiant heat and small flaming sources) and if ignition of an evaporative cooler has not occurred, it is deemed that the evaporative cooler is able to be used in BAL-12.5 to BAL-29 sites without a fire damper. Furthermore, if a fire damper is required as is proposed it must be tested and installed in accordance with AS/NZS 60335.2.98:2005.

What types of buildings need to comply?

The requirements apply to new installations of roof-mounted evaporative coolers on the following new or existing classes of residential buildings (as classified under the Building Code) that are located in a designated bush fire prone area. If you are unsure of your building's classification, contact the relevant permit authority (local government).

Class	General description
Class 1a	A single dwelling such as a house or one of a group of two or more attached dwellings, including a row house, town house, terrace house or villa unit.
Class 1b	Small scale boarding house, a guest house, hostel (in which not more than 12 persons would ordinarily be resident; or four or more single dwellings located on one allotment and used for short term holiday accommodation.
Class 2	A building containing two or more sole-occupancy units each being a separate dwelling (apartments, flats etc.).
Class 3	A residential building (other than a Class 1 or Class 2 building) for a number of persons, such as a large scale boarding house; guest house; hostel; a residential part of a hotel; motel; school; accommodation for the aged, children or people with disabilities.
Or an associated Class 10a building or deck that is or is proposed to be, located less than 6 metres from any of the above classes of buildings. (A Class 10a is a non-habitable building such as a private garage, carport or shed).	

Other classes of buildings, whilst not captured by the Building Code provisions for roof-mounted evaporative coolers in bush fire prone areas, are also subject to similar risk of ignition and building owners, designers and property managers may wish to consider taking mitigating actions against that risk which could include compliance with AS 3959.

Further information

Find an accredited BAL assessor	www.fpaa.com.au Navigate to "Accreditation and Licensing", "Bushfire Planning and Design".
Verify registration status of a building surveying contractor	www.commerce.wa.gov.au/building-and-energy/building-and-energy-licence-search
Building for better protection in bush fire areas – A homeowner's guide	www.commerce.wa.gov.au/publications/building-better-protection-bushfire-areas or contact Building and Energy on 1300 489 099 or email be.info@dmirs.wa.gov.au
Map of Bush Fire Prone Areas	www.dfes.wa.gov.au Navigate to "Regulation and Compliance", or simply do an internet search for "Map of Bush Fire Prone Areas".
View a copy of AS 3959-2009 – Construction of buildings in bushfire-prone areas	Your local government or local library should have a hard copy of AS 3959-2009 that you can view, or you can purchase a copy at www.saiglobal.com
View the State's building laws: Building Regulations 2012 and *Building Act 2011*	www.legislation.wa.gov.au

Building and Energy | Department of Mines, Industry Regulation and Safety
1300 489 099
8.30am – 4.30pm
Level 1 Mason Bird Building
303 Sevenoaks Street (entrance Grose Avenue)
Cannington Western Australia 6107
M: **Locked Bag 100, East Perth WA 6892**
W: **www.dmirs.wa.gov.au/building-and-energy**
E: **be.info@dmirs.wa.gov.au**

Regional Offices

Goldfields/Esperance	(08) 9021 9494
Great Southern	(08) 9842 8366
Kimberley	(08) 9191 8400
Mid-West	(08) 9920 9800
North-West	(08) 9185 0900
South-West	(08) 9722 2888

National Relay Service: 13 36 77
Translating and Interpreting Service (TIS): 13 14 50
This publication is available in other formats on request to assist people with special needs.

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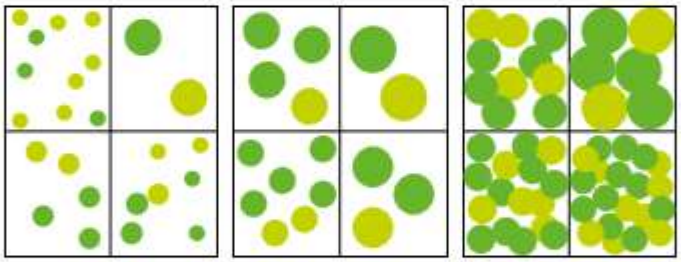
APPENDIX 2- APZ Guidelines

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

- **Fences**: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects**: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load**: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height)**: trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height)**: should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m^2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height)**: can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass**: should be managed to maintain a height of 100 millimetres or less.

APPENDIX 4 – Access Standard

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5

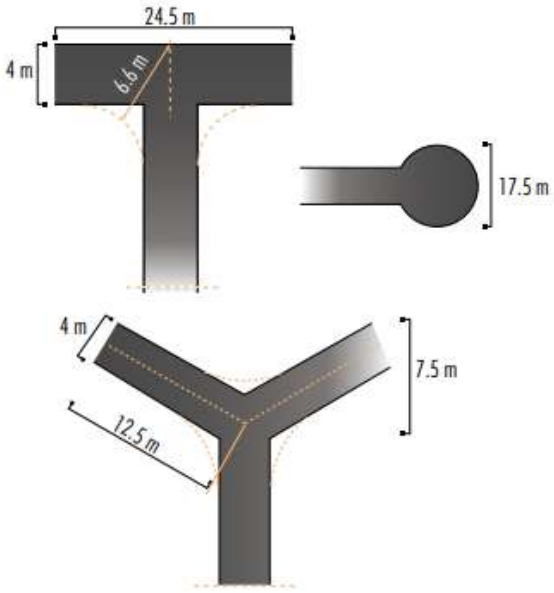


Figure 22: Design requirements for a private driveway longer than 50 metres

Turning areas should allow type 3.4 fire appliances to turn safely

APPENDIX 5 – Water Tank

Specification for Water Tanks

A capacity of not less than 10,000 L is maintained solely for fire-fighting purposes.

The water supply must be stored in an above ground water tank constructed of concrete, steel or corrugated iron.

The water supply outlet/s must be fixed to the water tank.

The outlets should provide a gate valve with 100 mm cam loc fitting, with a 50 mm adaptor for use by the brigade.

All fixed above-ground water pipelines and fittings must be of non-corrodible and non-combustible materials.

Be located so that fire brigade vehicles are able to get to within 4 metres of the water supply outlet

The water supply must be readily identifiable.

APPENDIX 6 – References

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Appendix D – Waste Management Plan

encycle consulting

waste less, achieve more

Lot 501 25 Swarbrick St, Emu Point

Waste Management Plan

11 February 2021

Project No. 20-1067-1

Rev_3

Harvest Road Oceans (Tattarang Pty Ltd)

11 February 2021

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Revision	Drafted	Reviewed	Date issued
Rev_0	G Busby	J Campbell	27 August 2020
Rev_1	G Busby	J Campbell	28 August 2020
Rev_2	G Busby	J Campbell	31 August 2020
Rev_3	G Busby	J Campbell	11 February 2021

Table of contents

Glossary of terms and acronyms

Biofoul	Biofoul refers to the spread of marine pests to new areas. Seaweeds, fish, invertebrates, parasites and pathogens can be spread to new areas by release of ballast water from commercial ships, biofouling of vessels and equipment, accidental or deliberate release of imported species, and for the purposes of this project, the translocation of biofouling on aquaculture stock and equipment.
Cart	Wheeled, open top bin often used for bulky items such as cardboard.
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.
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.
MGB	Mobile Garbage Bin – A wheeled bin with a lid often used for kerbside collection of waste or recyclables. (Often called a 'wheelie bin').
MRB	Mobile Recycling Bin – A wheeled bin ("wheelie" bin) with a lid often used for kerbside collection of recyclables (similar to an MGB). Generally have a different colour body and/or lid to MGBs.
Organic waste	Separated food and/or 'green' material (e.g. grass clippings or vegetation prunings).
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	The transfer of a product to another user, with no major dismantling or processing required. The term "reuse" can also be applied in circumstances where an otherwise disposable item is replaced by a more durable item hence avoiding the creation of waste (e.g. using a ceramic coffee mug in place of disposable cups).
Spat	Oyster larvae attached to a surface, such as other oyster shells, is known as spat. After several generations and growing into adults, dense oyster clusters are formed known as oyster reefs or beds.
tpa	Tonnes per annum.

1 Introduction

This Waste Management Plan (WMP) has been prepared for Harvest Road Oceans for the Development Application for the proposed seafood processing facility for oysters, akoya and mussels; inclusive of processing areas, amenities, nursery, sheds, workshops and the proposed 'future tourism facility' at Lot 501 25 Swarbrick Street, Emu Point, Albany.

This WMP has been prepared based on the following information:

- Architectural plans provided by RG Architects A-2.0T on 11 February 2021
- Review of 'Waste Management Design Brief' (Encycle, August 2020)
- Emu Point proposed aquaculture facility, August 2020 (presented by Harvest Road Oceans to City of Albany on 13 August 2020)
- City of Sydney Policy for Waste Management in New Developments (2018)
- Correspondence with Mark Allsopp, Harvest Road Oceans regarding processing operations
- Correspondence with NSW Department of Planning and Infrastructure regarding mortality rates of oysters / mussels (note: general discussion on industrial facility)
- Conversation with Jan Van Der Mescht – City of Albany regarding council waste management requirements on 29 June 2020
- City of Albany 'Local Planning Scheme No.1', section 4.8.8

The WMP has been developed for the servicing of waste and recyclables by a private waste service provider from the proposed seafood processing, administration and packing facility.

1.1 Context

For efficient and effective waste management, the collection of seafood processing waste, general waste and recyclables has been considered at the facility design phase. Key factors considered include:

- The types and volumes of processing wastes that will be produced from operations
- The volumes of general waste and recyclables likely to be generated during administration operations
- Size of bin storage areas
- Access to bins and storage areas from within the building
- Safety for all operatives involved in waste management
- Access for trucks for waste collection
- Secure from unauthorised access
- Amenity (odours, noise and traffic movements)
- The ongoing management of waste and recycling services

Section 4.8.8 of the City of Albany 'Local Planning Scheme No.1' has also been considered in this WMP with relevance to:

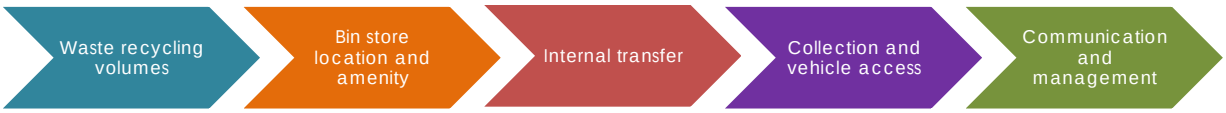
- The City requiring areas for bin and refuse storage
- Bin store areas to be:
    - Located, constructed / drained, paved and screened from public view to the satisfaction of the local government
    - Permanently retained for that exclusive use
- No person shall alter any bin store forming part of an approved development without having first obtained the subsequent planning approval of the local government

Further to the above, 'Development Control Guidelines: Operational Waste Management – for Industries' (Lake Macquarie City Council, 2019) for 'Sustainable Aquaculture' were reviewed for management of shell waste from processing operations. Additional factors considered in the design of the seafood processing facility for best practice waste management included:

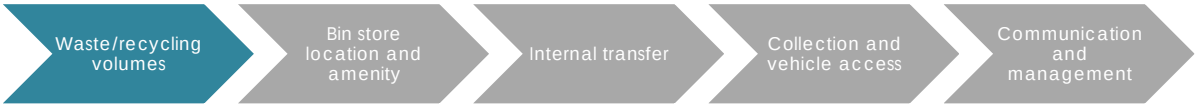
- Enclosed design of bins / bin stores to prevent access by rodents and / or insects with the potential to be disease vectors
- Shell waste that includes dead animals / shell meat is not to be left lying around, buried or cremated on site (with the exception of waste to energy, waste treatment, hot composting systems or similar)

1.2 Key components of the WMP

This WMP consists of five core components. This report presents detailed information on each of the following components.



2 Estimated waste and recycling volumes



2.1 Aquaculture facility packing, administration waste and recycling quantities

The City of Sydney Policy for Waste Management in New Developments (2018) and Encycle's experience and knowledge of the potential use of the buildings have been used as a basis for estimating waste generation rates for the proposed packing and administrative areas of the aquaculture facility.

The last column in Table 1 presents Encycle Consulting's in-house estimate of the material streams present in the recycling stream based on our working experience of operational buildings across Australia.

Table 1: Waste & recycling volumes - aquaculture administration

Premises type	Waste generation rate	Recycling generation rate	Percentage breakdown of recycling stream by material
Production admin office	0.1 L /1m^2/day	0.1 L /1m^2/day	79% paper 14% cardboard 2% soft plastics 7% commingled
Production meeting space	0.1 L /1m^2/day	0.1 L /1m^2/day	79% paper 14% cardboard 2% soft plastics 7% commingled
Production lunch room	0.1 L /1m^2/day	0.1 L /1m^2/day	79% paper 14% cardboard 2% soft plastics 7% commingled
Packing	0.1 L /1m^2/day	0.1 L /1m^2/day	79% paper 14% cardboard 2% soft plastics 7% commingled

2.2 Aquaculture processing facility – 'on land' waste generation

To assess solid waste streams and estimate waste generation rates for the aquaculture activities 'on land', Encycle contacted NSW Department of Planning and Infrastructure (DPI) and the WA Department of Planning Industries and Primary Research (DPIRD) to:

- Determine types of waste produced from an industrial aquaculture facility and how it is generally managed (i.e. shell waste and biofoul)
- Ascertain average rates for mortality of oysters, akoya and mussels from industrial scale production (i.e. production at 700 hectares (ha))
- Obtain general shell weights and conversion factors (tonnes to cubic metres) for oyster shells

The sections below discuss seafood processing waste streams and their management.

Shell waste

Processing of the oysters, akoya and mussels 'on land' will involve predominantly a bulk handling process for shipment of shell fish to end markets and for packaging at an upstream facility, thereby minimising generation of shell waste at the proposed aquaculture facility.

The shellfish that does not meet grade (i.e. oysters, akoya and mussels that are undersized) will be re-deployed into baskets and grown to market size. Discussion with Harvest Road Oceans and DPIRD indicated that there would be insignificant amounts of broken shells with meat remaining, as the meat will be consumed by other marine life prior to extraction from the water. Shellfish that have been damaged and partially consumed by other marine life will be disposed at sea at the Tattarang 'leases' when baskets are being brought out of the water and checked.

Discussion with NSW DPI and DPIRD indicated that for an industrial aquaculture facility a 1% mortality on production for market size oysters (i.e. 50 grams) could be attributed to calculate shell waste weight. Consequently, 1% of mortality on production tonnes has been applied for oysters and akoya to derive the shell waste weight (at 700 ha). Whilst waste oyster shells will be lighter given that biomass will probably be consumed by other marine life prior to being processed 'on land', using 1% provides for a conservative estimate for the adequate provision of waste management receptacles.

Discussion with NSW DPI and Harvest Road Oceans indicated that mussel shell generation rates would comprise higher shell waste rates than oysters, given that they have more brittle shells than oysters. Given that best practice is to be implemented in terms of the aquaculture operations, and given that other marine life will consume the biomass prior to being processed 'on land', a 3% estimate has been applied for mussel shells to the overall production tonnes (at 700 ha).

Bio-foul

Bio-foul refers to the spread of marine pests to new areas. Mussel and akoya bio-fouling will be stripped off the crop by equipment at sea and mussel and akoya crop will also be washed at sea. Rock oysters will be grown in an intertidal system that enables the oyster baskets to be lifted out of the water each day, therefore minimising any bio-fouling and allowing it to be washed into the sea. Harvest Road Oceans propose to employ best practice processing and harvesting equipment and techniques; thereby reducing mortality rates, and mitigating generation of bio-foul and shell waste.

Non-sterilised waste

Any non-sterilisable items contaminated with contagious or zoonotic pathogens (such as contaminated gloves, eyewear, masks, gowns, head covers, earplugs and other personal protective equipment) are to be separated into containers or suitable bags in the bio-secure area, clearly labelled and separately stored in a 660 L MGB in the bin compound.

Packing

The mussels will be transported in bulk fish bins and the akoya and oysters in hessian oyster bags within refrigerated transportation vehicles. Shellfish is to be marketed directly from outlets and / or packaged in an upstream facility located closer to metropolitan Perth. Consequently, there will be no packaging waste streams generated from processing or transport activities.

Workshop

The function of the workshop will be for the storage of processing and marine equipment. No maintenance, boat repair or building activities will be undertaken and consequently no generation of hydrocarbons or other waste streams will be produced.

2.3 Number and type of bins required for development

The development will be undertaken in a staged approach as follows:

- Stage 1: Nursery and oyster and mussel shed
- Stage 2A: Packing and admin and Stage 2B: Workshop

The number and types of bins to be stored in the bin compound are detailed in table 2. The number and types of bins are to accommodate twice-weekly collections, as per the following considerations:

- Variances in production rates at the aquaculture processing facility
- Current collection frequencies by commercial service provider/s to the Emu Point location are twice-weekly
- Increased heavy vehicle movements to the Emu Point location if daily collections occurred
- Reduced likelihood of odours given the nature of bulk processing activities and consumption of shell meat by other marine life from damaged / broken shells prior to being brought to 'land'
- By designing for twice-weekly collections, the design will accommodate more frequent collections if required, thus future-proofing the facility

More frequent collections are possible (i.e. daily collections). Increased collections for the seafood processing shell waste may be required in the event of any extreme weather events or disease impacts, or any potential odour management requirements.

Table 2: Total number & size of bins to be stored in bin compound

Waste stream	Bin size (L)	Number of bins	Collection frequency
General waste	660	2	Twice weekly
General waste (seafood processing shell waste – refer table 3)*	660	2	Twice weekly
Commingled recycling	1,100	1	Twice weekly

*Separate general waste bin for bagged, non-sterilised items from bio secure area (i.e. shells, gloves, eyewear, masks, gowns, head covers, earplugs and other personal protective equipment).

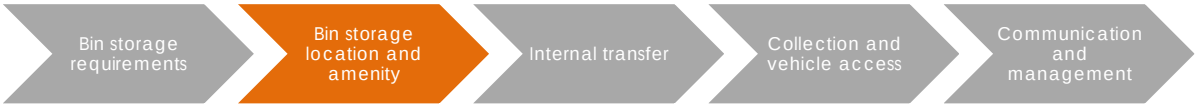
Table 3 details the calculations used to derive waste generation rates of the shell fish.

Table 3: Seafood processing shell waste

Production species	Total shell weight	Mortality rate	Total waste shells	
Unit measure	*tpa*	*% production tpa*	*tpa*	*Litres (L)**
Rock oysters	2,285	1%	23	
Akoya	1,845	1%	18	
Mussels	1,705	3%	51	
Total	**5,835**		**92 tpa**	**92,000 L (approx.)**

Note: NSW DPI advised that 1 tn of oyster shells can fit adequately in 1 m^3 (1,000 L) 'bulka bag'.

3 Bin storage areas and amenity



3.1 Bin compound location

The development will have one (1) bin compound to allow for the storage and collection of:

1. General waste and recyclables from the administration and packing areas; and
2. Seafood processing shell waste, general waste from bio secure area, and general waste and recyclables from shell fish operational areas

The bin compound will be enclosed and screened from public view (in accordance with City of Albany, 'Local Planning Scheme No.1' section 4.8.8), and lidded bins will be provided at the processing facility. Hot and cold water services are to be made available for washing bins.

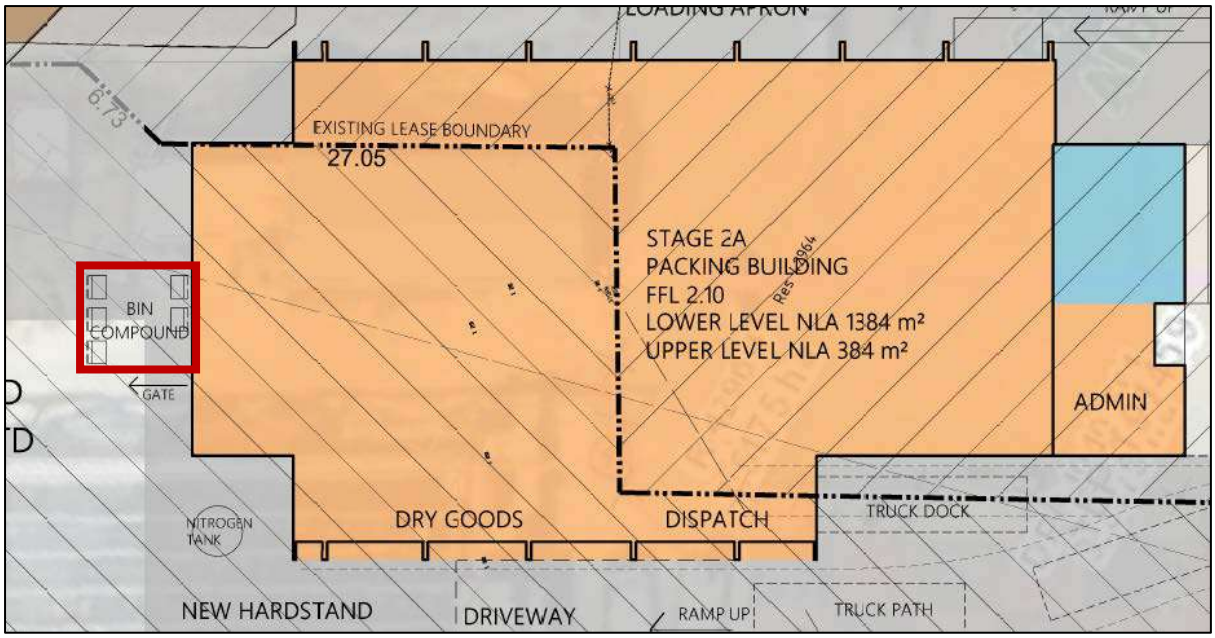
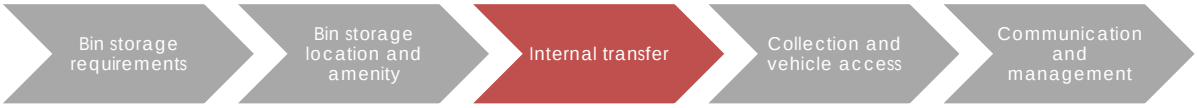


Figure 1: Location of bin compound and layout of bins

3.2 Bin compound amenity

Bin Transfer	
Aisle door and lift width:	All doors and corridors on the transfer route are designed for the largest bin to fit through.
General health and safety:	Waste systems are designed to ensure that bins (particularly when full) are not required to be moved over any significant distances, up/down steep ramps (grade of slope <1:20) and definitely avoid stairs or other potential hazards.
	Manual handling of waste in garbage bags is excluded from the waste management systems where possible.
Bin compound	
Washing bins and waste storage area:	Impermeable floors grading to an industrial floor waste (including a charged 'water-trap' connected to sewer or an approved septic system), with a hose cock to enable bins and /or the enclosure to be washed out. 100 mm floor waste gully to waste outlet. Both hot and cold water will be available.
Bin compound walls and ceilings:	All internal walls in bin compound will be designed to enable easy cleaning. Ceilings will be finished with a smooth faced, non-absorbent material capable of being easily cleaned. Walls and ceilings will be finished or painted in a light colour.
Ventilation and odour:	The design of bin compound will provide for adequate separate ventilation with a system that complies with Australian Standard 1668 (AS1668). The ventilation outlet is not in the vicinity of windows or intake vents associated with other ventilation systems.
Doors:	Ventilated roller doors will be specified both internally and externally to enable bins to be easily wheeled into and out of the bin compound.
Vermin:	Self-closing doors to the bin compound will be installed to eliminate access by vermin.
Lighting:	Bin compound will be provided with artificial lighting, sensor or switch controlled both internal/external to the room.
Fully enclosed:	Lidded bins will be stored at the bin storage areas. The bin compound will be fully enclosed and only be accessible by delegated staff, site supervisor (or similar) and the waste service provider.
Aesthetics:	The bin compound will be consistent with the overall aesthetics of the development.
Signage:	Visual aids and signage will be provided to ensure that the bin storage areas work as intended, and appropriate waste streams are disposed in correct bins.

4 Internal transfer

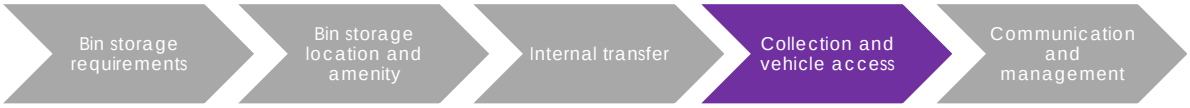


Operational staff assessing and handling processing of oysters, akoya and mussels will dispose of shell waste from the processing areas or directly from baskets and dispose of to 660 L MGBs stored north of processing building.

Any non-sterilisable items contaminated with contagious or zoonotic pathogens (such as contaminated gloves, eyewear, masks, gowns, head covers, earplugs and other personal protective equipment) will be separated into containers or suitable bags in the bio-secure area and transferred by a delegated staff member, to a designated and appropriately labelled general waste MGB stored north of processing building.

Cleaners and / or delegated staff will transfer waste and recyclables from the administration, lunch room and meeting space, and packing building to the relevant general waste or recycling MGBs stored in the bin compound.

5 Collection and vehicle access



5.1 Collection

A commercial service provider will service the general waste and recycling bins.

On collection days, rear lift vehicles for each waste and recycling stream will enter the site, driving in a forward motion and in accordance with the vehicle 'swept path'. It is recommended that bin collections are scheduled for the early morning (before 7am if possible). This collection regime will mitigate safety risks and minimise potential amenity impacts.

To service the bins at the bin compound, the vehicles will drive in a forwards motion and park adjacent to the bin compound area. The operatives will retrieve and service the bins and return empty bins to the bin compound.

5.2 Vehicle access

Figures 2 and 3 show the collection points and where the waste vehicles will stop to service the bins.

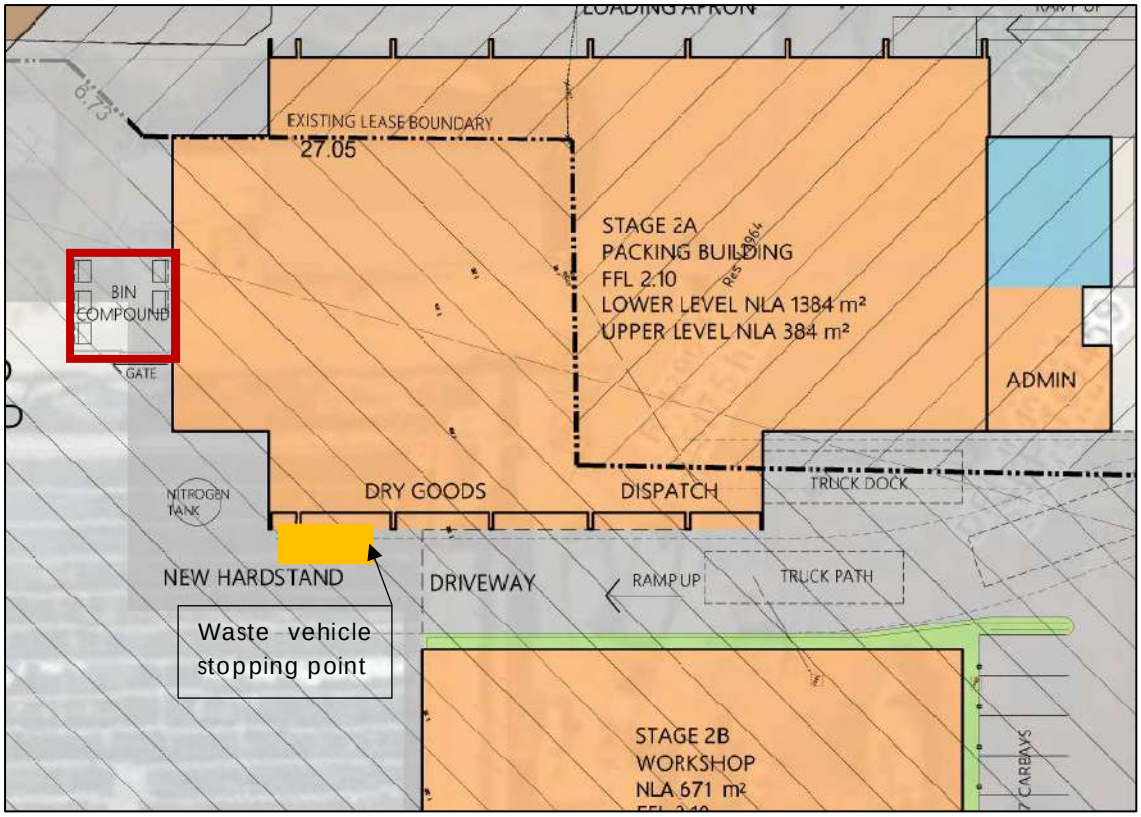


Figure 2: Waste collection vehicle stopping point

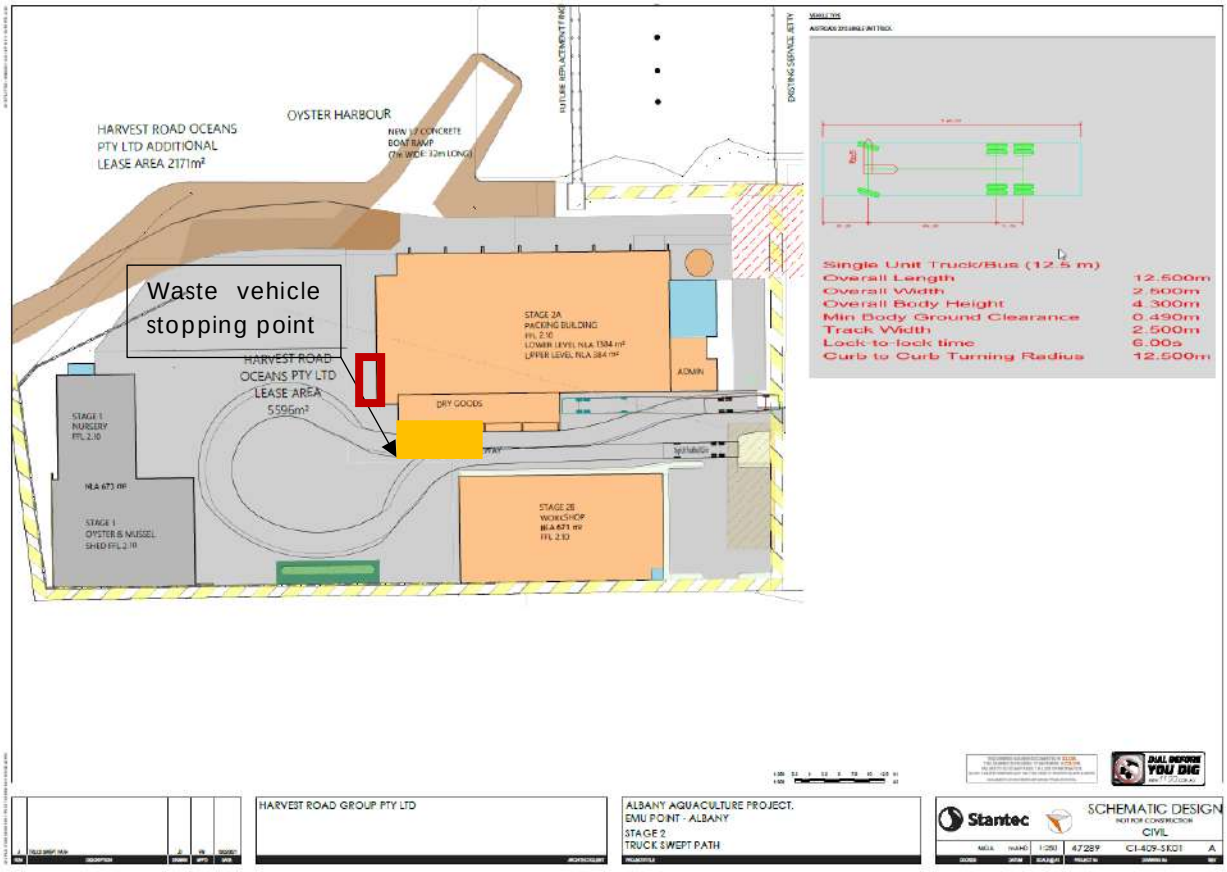
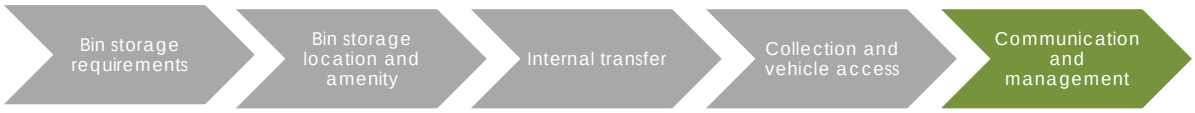


Figure 3: Waste vehicle stopping point on 'swept path' drawing

6 Ongoing communication and management



6.1 Management

A delegated staff member will be responsible for overseeing the waste management systems. Staff will be trained and informed about their responsibility to work closely with the waste service providers regarding the schedule for servicing of the bins. The staff member will be responsible for maintaining the bin compound and surrounds in a clean and tidy condition at all times and ensuring bins are washed regularly.

6.2 Communication

All staff will be made aware by management / aquaculture processing site supervisor (or equivalent) of the waste and recycling systems and how they should be used. Management / site supervisor will be responsible for the continuing education and communication of staff on correct segregation of waste and recyclables, general waste from the bio secure area and storage of shell waste from processing operations.

Appendix E – Coastal Hazard Assessment

m p rogers & associates pl ABN 14 062 681 252
creating better coasts and ports

R1419 Rev 1

February 2021

Harvest Road Oceans Pty Ltd

Emu Point
Preliminary Coastal Hazard Assessment

marinas
boat harbours
canals
breakwaters
jetties
seawalls
dredging
reclamation
climate change
waves
currents
tides
flood levels
water quality
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K1789/2, Report R1419 Rev 1
Record of Document Revisions

Rev	Purpose of Document	Prepared	Reviewed	Approved	Date
A	Draft for MRA review	K Worth	T Hunt	T Hunt	14/08/2020
0	Issued for Client use	K Worth	T Hunt	T Hunt	18/08/2020
1	Re-issued for Client use	K Worth	T Hunt	T Hunt	10/02/2021

Form 035 18/06/2013

Limitations of this Document

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1. Introduction

Emu Point is located to the east of the Albany town centre on the south coast of Western Australia. Tattarang are proposing to develop a packing and storage facility at the existing Emu Point boat harbour. Figure 1.1 presents the location of the development site.

Tattarang have engaged specialist coastal engineers M P Rogers & Associates Pty Ltd (MRA) to complete a preliminary coastal hazard assessment for the site. The requirement to complete a coastal hazard assessment for the site is driven by the requirements of the State Coastal Planning Policy (SPP2.6) and is the preliminary component of Coastal Hazard Risk Management and Adaptation Planning (CHRMAP).

Within Western Australia, SPP2.6 provides guidance on the assessment of coastal hazard risks for assets or infrastructure located in close proximity to the coast. This guidance is provided in the form of a methodology to assess the potential extent of coastal hazard impacts, as well as for the development of CHRMAP. Further details in this regard are also provided in the CHRMAP Guidelines (WAPC 2019).

To complement the Development Application for the site, MRA has completed a preliminary assessment of the coastal hazards at the site and the appropriate adaptation or management measures which may be implemented as part of the development or required for the site.

This report outlines the methods, data and outcomes of the assessment and forms the preliminary component of the CHRMAP.

Figure 1.1 Location Plan

2. Site Conditions

Emu Point Boat Harbour is located on the south west coast of Oyster Harbour. The majority of the existing development is protected by a seawall, however a section of unprotected beach exists at the site.

Figure 2.1 Emu Point Boat Harbour

2.1 Existing Site Conditions

A detailed inspection of the existing site, seawall and jetty structures was completed by MRA in November 2020. The existing seawall appeared to be in a moderate condition, with a significant percentage of rock being undersized. There were also loose rocks spread at the front of the structure indicating movement and instability, and the toe of the seawall was not embedded. Based on the condition of the seawall it is not appropriate to provide sufficient protection to the development under severe conditions.

An informal gravel boat ramp exists at the site. The ramp is not protected, and appears to be in poor condition.

Figure 2.2 Existing Seawall (Left) & Gravel Ramp (Right)

Survey of the site was completed by Caldwell in November 2020 and is included in Appendix A. This indicated that the site is typically low lying, mostly in the order of +1 mAHD. The nearshore area in front of the site is very shallow with depths of -0.1 mAHD in front of the seawall, and only reaching -0.35 mAHD approximately 40 m offshore.

The site is located within the estuary of Oyster Harbour and is therefore subject to both river and coastal influences. These will both be considered in the assessment.

3. Preliminary Coastal Hazard Assessment

Given the proximity of the development to the coastline, development planning requires consideration of coastal hazard risk in accordance with the requirements of SPP2.6 (WAPC 2019).

As per the requirements of SPP2.6, the following items are considered in order to assess the appropriate allowances for coastal processes and climate change over the relevant planning timeframes.

- Severe storm erosion (S1 Allowance).
- Historical shoreline movement (S2 Allowance).
- Climate change induced sea level rise (S3 Allowance).
- Storm surge inundation (S4 Allowance).

These criteria are discussed in further detail in the following sections of this report.

3.1 Coastal Erosion Hazards

3.1.1 Severe Storm Erosion (S1 Allowance)

SPP2.6 outlines that the S1 allowance should provide an adequate buffer to accommodate the potential erosion caused by a storm with an Annual Encounter Probability (AEP) of 1%. This is equivalent to a 100 year average recurrence interval (ARI) storm.

Estimation of the S1 allowance for Emu Point Boat Harbour requires the selection of an appropriate storm event. The selected storm is then modelled using an appropriate model to determine the extent of potential recession relative to the Horizontal Shoreline Datum (HSD).

Storm Event

The estuarine nature of the site means that the 100 year ARI storm will be caused by wind waves being generated across Oyster Harbour.

Locally generated wind waves are created when winds blow over an area of water often referred to as the fetch. The main mechanism for wind wave generation is the interaction of the wind stress with the surface tension of the water, creating waves in the general direction of the wind. The size of the waves created by the wind is determined by a number of factors, including the following.

- The size of the fetch.
- The length of time or duration the wind blows over the fetch.
- The speed of the wind.
- The water depth.

For example, a severe cyclone blowing for a number of days over a large fetch in deep water will create very large waves. Conversely, a light wind blowing over a small fetch in shallow water will create small wind waves.

Emu Point Boat Harbour is exposed to winds from approximately north to east. The fetch lengths are relatively short at the site, typically around 3 km. A local hindcast of wave heights was completed by MRA during 100 and 500 year ARI events. Table 3.1 provides a summary of the wind wave conditions expected at the site.

Table 3.1 Storm Event Conditions

ARI (years)	Design Waves	
	H_s (m)	T_p (s)
100	0.8	2.7
500	0.9	2.8

The 100 year ARI conditions determined above are consistent with previous modelling completed on the other side of Emu Point Boat Harbour by Royal Haskoning DHV (2017).

SBEACH Storm Modelling

The SBEACH computer model was developed by the Coastal Engineering Research Centre (CERC) to simulate beach profile evolution in response to storm events. It is described in detail by Larson & Kraus (1989). Since this time the model has been further developed, updated and verified based on field measurements (Wise et al 1996, Larson & Kraus 1998, Larson et al 2004).

MRA has validated SBEACH for use on sandy coasts in Western Australia (Rogers et al 2005). This validation has shown that SBEACH can provide useful and relevant predictions of storm induced erosion, provided the inputs are correctly applied and care is taken to ensure that the model is accurately reproducing the recorded wave heights and water levels. Primary inputs include time histories of wave height, period and water elevation, as well as pre-storm beach profile and median sediment grain size.

The input pre-storm beach profile used in the SBEACH modelling was developed using bathymetry based on DoT nautical charts as shown in Figure 3.1, and survey from site.

Figure 3.1 SBEACH Profile Location & Alignment

The estimated 100 year storm was synthesised from a record of a severe event experienced in Albany in 1984. This was known to cause considerable beach erosion in the area and appropriate for use. The waves from that event were scaled to peak at the estimated 100 year ARI wave height at the site.

The SBEACH model was run for the 100 year ARI storm. The results of the storm simulation are presented in Figure 3.2. This figure presents the pre and post storm beach profiles, the maximum water elevation and maximum wave height during the event.

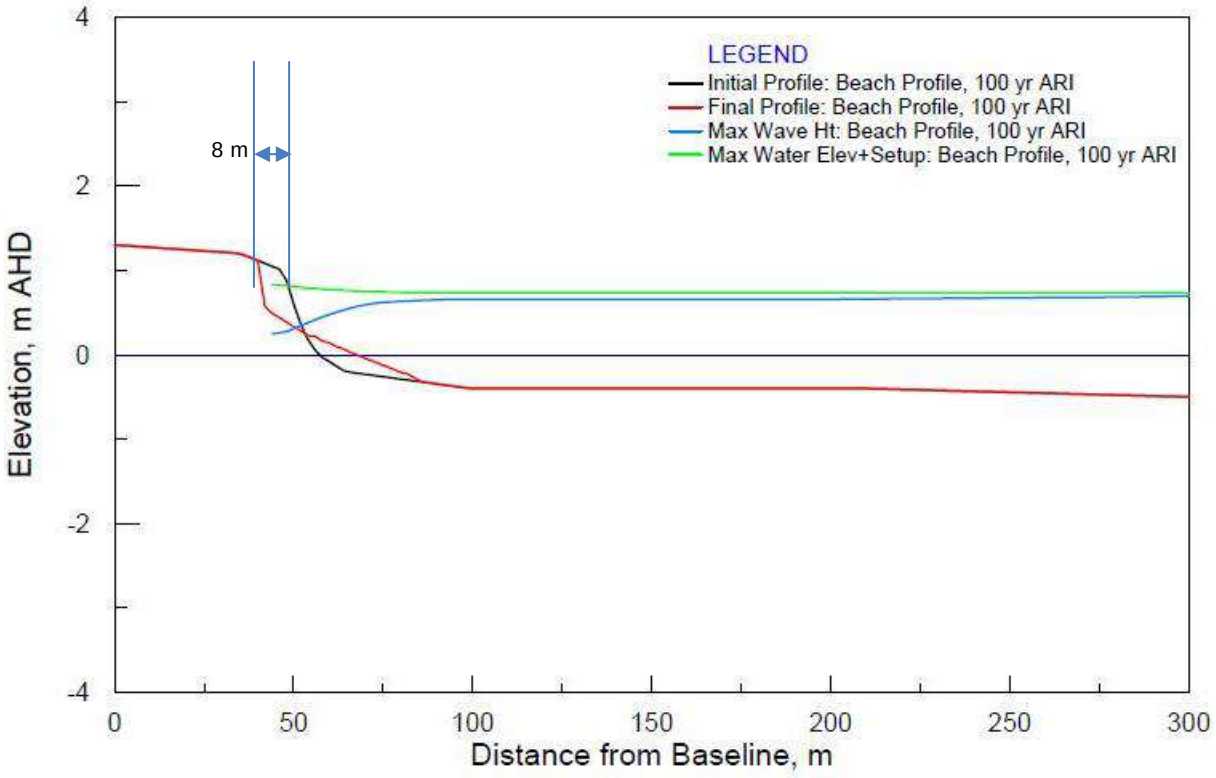

Figure 3.2 SBEACH Results

The S1 allowance is determined as the maximum extent of erosion behind the HSD. The HSD corresponds to the seaward shoreline contour representing the peak steady water level of the modelled event. The HSD was calculated from the modelling as the +0.8 mAHD contour.

The results of the modelling show that the severe storm erosion allowance for the site could be 8 m behind the HSD. This storm erosion allowance is similar to the 5 m allowance determined by Royal Haskoning DHV (2017) for the other side of the Boat Harbour.

Calculated S1 Allowance

The S1 allowance for each of the planning timeframes is therefore conservatively rounded to 10 m. Note that the same S1 allowance is required for each planning timeframe, as SPP2.6 requires a design storm with 1% AEP, regardless of the timeframe being considered.

3.1.2 Shoreline Movement (S2 Allowance)

Historically, changes in shoreline position occur on varying timescales from storm to post storm, seasonal and longer term (Short 1999). The severe storm erosion allowance accounts for the short term storm induced component of beach change. The long term trends allowed for in the Shoreline Movement (S2) Allowance account for the movement of the shoreline that may occur within the longer term planning timeframes. To estimate the S2 Allowance, historical shoreline movement trends are examined and likely future shoreline movements predicted.

Shoreline Movement

The majority of the site is protected by a seawall, with only a small section of unprotected beach. This small section of beach has shown minimal movement since the construction of the existing seawall, as shown in the figure below.

Figure 3.3 Emu Point Boat Harbour 2017 (Left) & 2020 (Right)

On the basis of minimal net movement an allowance of 20 m or 0.2 m/year has been allowed. This is consistent with the erosion rates determined by Royal Haskoning DHV (2017) for the other side of the Boat Harbour.

3.1.3 Sea Level Rise (S3 Allowance)

Climate change is believed to cause an increase in mean sea level as a result of two main processes:

- The melting of land based ice, increasing the volume and height of the ocean waters; and
- A decrease in ocean density through thermal expansion, which increases the volume and thus the ocean height (CSIRO 2007).

Observations of sea levels have been carried out for centuries, at some locations, allowing historical trends to be identified. The global mean sea level rose by between 0.12 to 0.22 m over the 20th century, which equates to an average of around 1.8 mm/yr (IPCC 2007).

Through review of this and other data and research, DoT released recommendations on the appropriate allowances for future climate change and sea level rise to be used for coastal planning and development in Western Australia (DoT 2010). These recommendations were adopted by SPP2.6 and are presented in Figure 3.4.

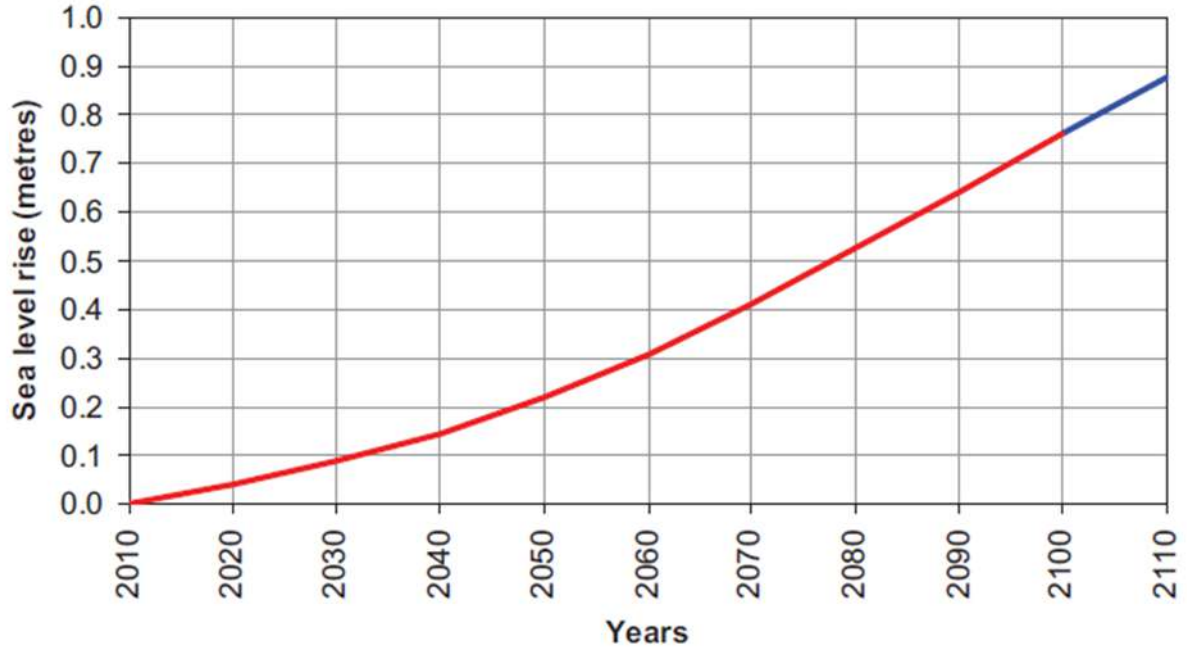

Figure 3.4 Recommended Allowance for Sea Level Rise (DoT 2010)

The recommended allowances for future sea level rise over each of the planning timeframes have been determined and are presented in Table 3.2. All of these increases in sea level are referenced to 2020.

Table 3.2 Sea Level Rise Allowances

Planning Timeframe	SLR Allowance (m)
Present Day (2020)	0.00
2045	0.14
2070	0.37
2095	0.66
2120	0.96

The effect of sea level rise on the coastline is difficult to predict. Komar (1998) provides a reasonable treatment for sandy shorelines, including examination of the Bruun Rule (Bruun 1962).

The Bruun Rule relates the recession of the shoreline to the sea level rise and slope of the nearshore sediment bed:

$$R = \frac{1}{\tan(\theta)} S$$

Where: R = recession of the shore.

θ = average slope of the nearshore sediment bed.

S = sea level rise.

Komar (1998) suggests that the general range for a sandy shoreline recession is 50S – 100S. SPP2.6 recommends that for sandy shorelines the recession be taken as 100 times the estimated rise in sea level. Therefore, the recommended allowances for shoreline recession due to sea level rise are presented in Table 3.3.

Table 3.3 S3 Shoreline Recession Due to Sea Level Rise Allowances

Planning Timeframe	Sea Level Rise Allowance (m)
Present day (2020)	0
2045	14
2070	37
2095	66
2120	96

3.1.4 Summary of Coastal Erosion Allowances

The allowances for coastal processes determined in the previous sections are presented in Table 3.4. As required by SPP2.6, a 0.2 m/year allowance for uncertainty has been included. The total vulnerability allowances should be measured from the HSD.

Table 3.4 Summary of Allowances for Coastal Erosion Hazards

Timeframe	S1 (m)	S2 (m)	S3 (m)	Uncertainty (0.2 m/yr)	Total Allowance (m)
2020	10	0	0	0	**10**
2045	10	5	14	5	**34**
2070	10	10	37	10	**67**
2095	10	15	66	15	**106**
2120	10	20	96	20	**146**

The sum of each of the allowances outlined in the above table provides an indication of the areas that may be at risk from coastal erosion in the respective planning timeframes. The location of the coastal erosion hazard lines for the various planning horizons are presented in Figure 3.5 and Appendix B.

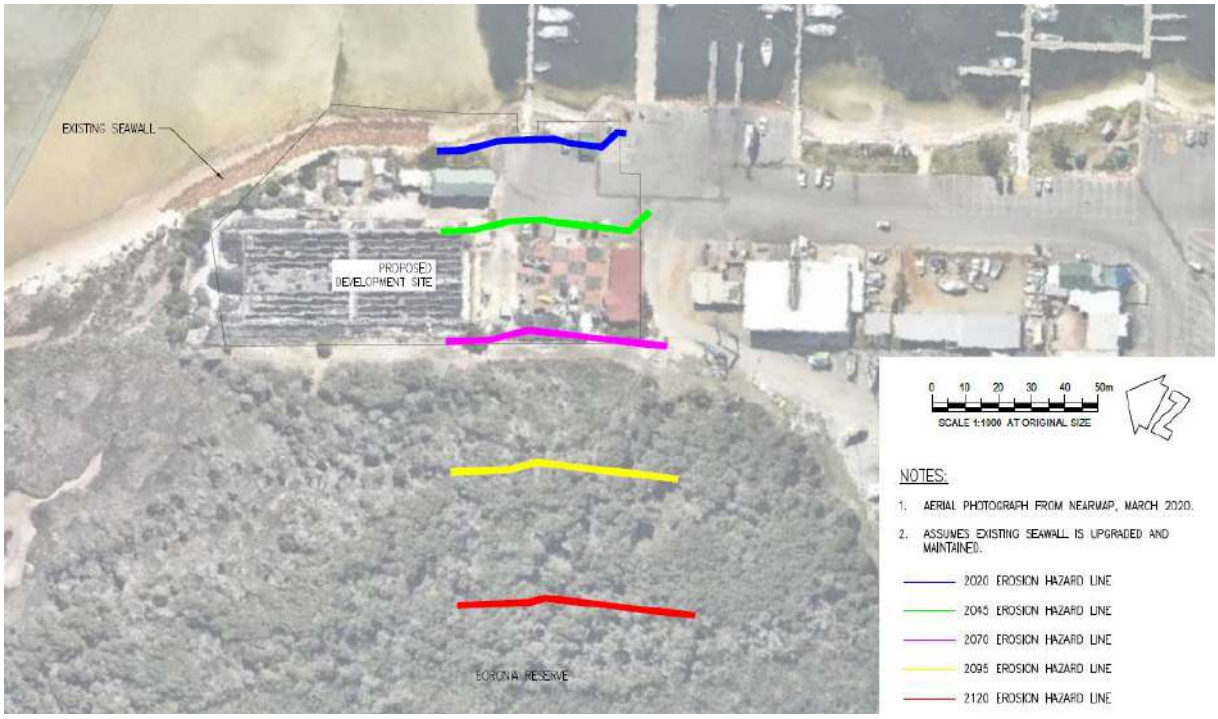

Figure 3.5 Coastal Erosion Hazard Lines

These indicate that without extension of the existing seawall, the proposed development site will be at risk to coastal erosion in the near future. This assessment has been completed on the basis that the existing seawall is appropriately upgraded.

3.2 Coastal Inundation Hazards (S4 Allowance)

With respect to coastal inundation hazards, SPP2.6 requires that development consider the potential effects of an event with an AEP of 0.2% per year. This is equivalent to an inundation event with an ARI of 500 years.

Assessment of the inundation level requires consideration of peak storm surge, including wave setup. A storm surge occurs when a storm with high winds and low pressures approaches the coastline (refer Figure 3.6). The strong, onshore winds and large waves push water against the coastline (wind and wave setup) and the barometric pressure difference creates a region of high water level. These factors acting in concert create the storm surge. The size of the storm surge is influenced by the following factors.

- Wind strength and direction.
- Pressure gradient.
- Seafloor bathymetry.
- Coastal topography.

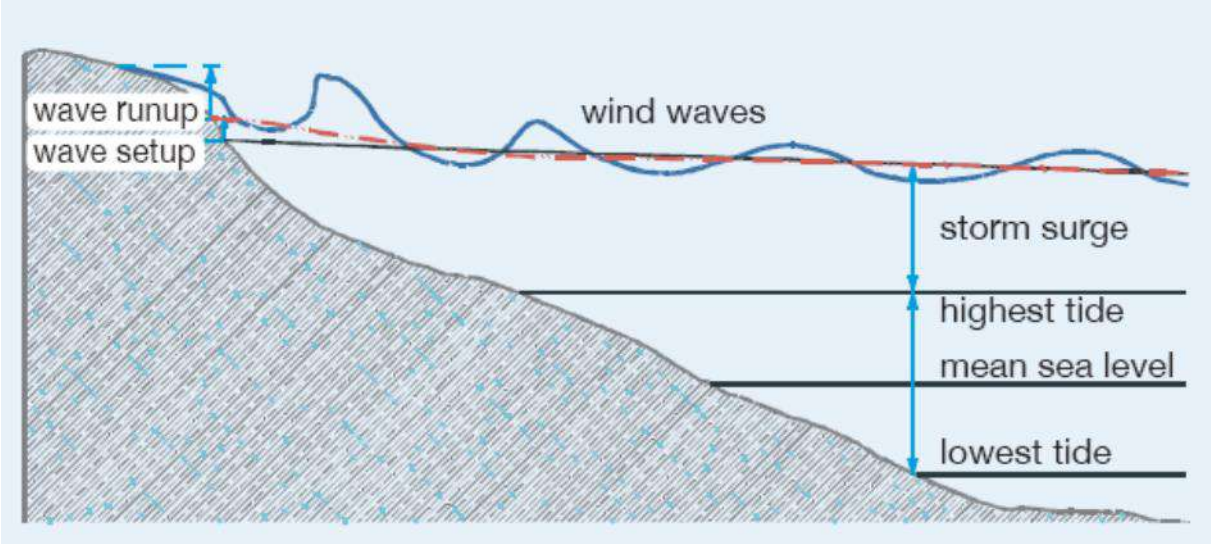

Figure 3.6 Storm Surge Components

MRA have previously completed an extreme analysis of the Albany water level record (MRA 2017). This analysis showed that the estimated 500 year ARI water level at the tide gauge is approximately 1.24 mAHD.

As indicated in Figure 3.6, closer to the shore wave setup can increase the water levels. Dean and Walton (2008) provide a comprehensive review of wave setup on beaches, which confirms that the majority of setup occurs on the beach face. This is not entirely accounted for in the measurements at the Albany tide gauge and therefore needs to be determined.

The SBEACH model was setup and run for the 500 year ARI water level, to translate the water level from the nearshore area to the shoreline to estimate the additional wind and wave setup. It was estimated that an additional setup in the order of 0.2 metres could be expected at the site. This has been included in estimates of the appropriate inundation levels for the various planning timeframes, presented in Table 3.5.

Table 3.5 S4 Inundation Levels

Component	Planning Timeframe				
	2020	2045	2070	2095	2120
500 year ARI peak steady water level at tide gauge (mAHD)	1.24	1.24	1.24	1.24	1.24
Allowance for nearshore setup - wind and wave (m)	0.2	0.2	0.2	0.2	0.2
Allowance for sea level rise (m)	0.00	0.14	0.37	0.66	0.96
Total Inundation Level (mAHD)	**1.44**	**1.58**	**1.81**	**2.10**	**2.40**

Development levels should consider an additional freeboard (typically around 0.3 m) above these levels.

In addition to the potential inundation hazards from coastal flooding, the site is also subject to flooding from riverine influences. The City's *Development in Flood Prone Areas* policy recommends a development level of 3.02 mAHD for development around Oyster Harbour. This indicates that river flooding of the estuary could be more extreme than coastal inundation and should be taken as the upper limit.

These potential inundation levels should be considered in the planning for the development at Emu Point. Further details regarding the management of coastal inundation risk are provided in the preliminary coastal risk management and adaptation strategy.

4. Coastal Risk Management & Adaption Strategy

SPP2.6 outlines a hierarchy of risk adaptation and mitigation options, where options that allow for a wide range of future strategies are considered more favourably. This hierarchy of options is reproduced in Figure 4.1.

Figure 4.1 Risk Management & Adaption Hierarchy

These options are generally outlined below.

- Avoid – avoid new development within the area impacted by the coastal hazard.
- Retreat – the relocation or removal of assets within an area identified as likely to be subject to intolerable risk of damage from coastal hazards.
- Accommodation – measures which suitably address the identified risks.
- Protect – used to preserve the foreshore reserve, public access and public safety, property and infrastructure.

The assessment of options is generally done in a progressive manner, moving through the various options until an appropriate mitigation option is found.

4.1 Proposed Coastal Management Strategy

The proposed coastal management strategy needs to take into account the hazards from coastal erosion and inundation.

4.1.1 Coastal Erosion

The coastal erosion hazard plan presented in Appendix B indicates that the beach section of the site is at risk of erosion in the longer term. This would significantly impact the proposed development. Therefore, it is necessary to determine a coastal management strategy for the site.

The table below outlines SPP2.6's hierarchy of risk and mitigation options for coastal erosion hazards, and the appropriateness of each strategy for the Emu Point Boat Harbour site.

Table 4.1 Risk Adaptation & Mitigation Options for Coastal Erosion

Risk mitigation & adaption option	Appropriateness for site
Avoid	The option to avoid is not viable for Emu Point Boat Harbour. The development site exists at the harbour and is dependent on the harbour frontage.
Planned or managed retreat	Planned or managed retreat is not appropriate. The development needs to service Emu Point boat harbour, therefore relocating the development inland is not an option.
Accommodate	This strategy is not appropriate. The development would not be economically viable to be designed to withstand the impacts of significant shoreline recession.
Protect	This option of coastal erosion mitigation is the most effective for the site. It is recommended that the existing seawall be upgraded to protect the entirety of the site, be tied into the future boat ramp and be extended past the finger jetty to the service jetty.

4.1.2 Coastal Inundation

The coastal inundation hazard assessment indicates that areas of the development below 2.40 mAHD are at risk of coastal flooding in the coming 100 years. River flooding may have as great or greater influence on the site. The table below outlines SPP2.6's hierarchy of risk and mitigation options for coastal inundation and the appropriateness of the strategy for the site.

Table 4.2 Risk Adaptation & Mitigation Options for Coastal Inundation

Risk Mitigation & Adaptation option	Appropriateness for Site
Avoid	The option to avoid is not viable for Emu Point Boat Harbour. The proposed development will sit below this level and it is impractical to locally fill and develop to 2.40 mAHD.
Planned or managed retreat	Planned or managed retreat is not appropriate. The development needs to service Emu Point Boat Harbour, therefore relocating the development inland is not an option.
Accommodate	This strategy is most appropriate for the site. This would involve taking measures through the design, construction and management of the site to acknowledge the risk of flooding and inundation.

The accommodation strategy is appropriate for this development due to the coastally dependent nature of the facility, and due to the development not including permanently habitable buildings (ie residential). The development can therefore be designed and managed to accommodate short term inundation. This is different to a freehold residential development.

Accommodation of flooding and inundation of the site would involve:

- Filling the site above existing levels to reduce the likelihood of flooding and inundation.
- Acknowledgement that the site would flood in severe river floods or storm surge events and preparing appropriate management plans and measures for these events.
- Designing buildings and structures to accommodate river and ocean flooding.
- Design of the facility's operations to cater for flood levels or short-term inundation.
- Appropriate interior design of buildings to accommodate flooding and short term inundation. This may include items such as lifting all services and power points and appropriate floor coverings.

5. Conclusion

This report has presented the results of a preliminary coastal hazard assessment for the proposed development at Emu Point Boat Harbour, within the City of Albany. The assessment has been completed against the requirements of the State Coastal Planning Policy (SPP2.6, WAPC 2013).

The results of this preliminary coastal hazard assessment show that the existing seawall that sits in front of the Emu Point Boat Harbour facility will need to be upgraded and extended to mitigate the potential coastal erosion hazards that may occur in the future. This means that the existing boat ramp will also need to be upgraded to tie into the extended seawall.

The assessment also highlights the risk of flooding and inundation of the site. This could be from both coastal and riverine sources. The proposed development will need to accommodate potential inundation hazards from coastal and riverine flooding by utilising design and management strategies which render the inundation risk as tolerable.

6. References

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Appendices

Appendix A Caldwell November 2020 Survey

CONTOUR INTERVAL 0.2m

CALDWELL LAND SURVEYS

email: aarron@caldwellsurveys.com.au

SCALE @ A0 1:200

Site Survey at Lot 501 Lease
EMU POINT, ALBANY

21-11-20

Horizontal Datum
MGA94
Level Datum
AHD

Drawing No.
2020-41-02C

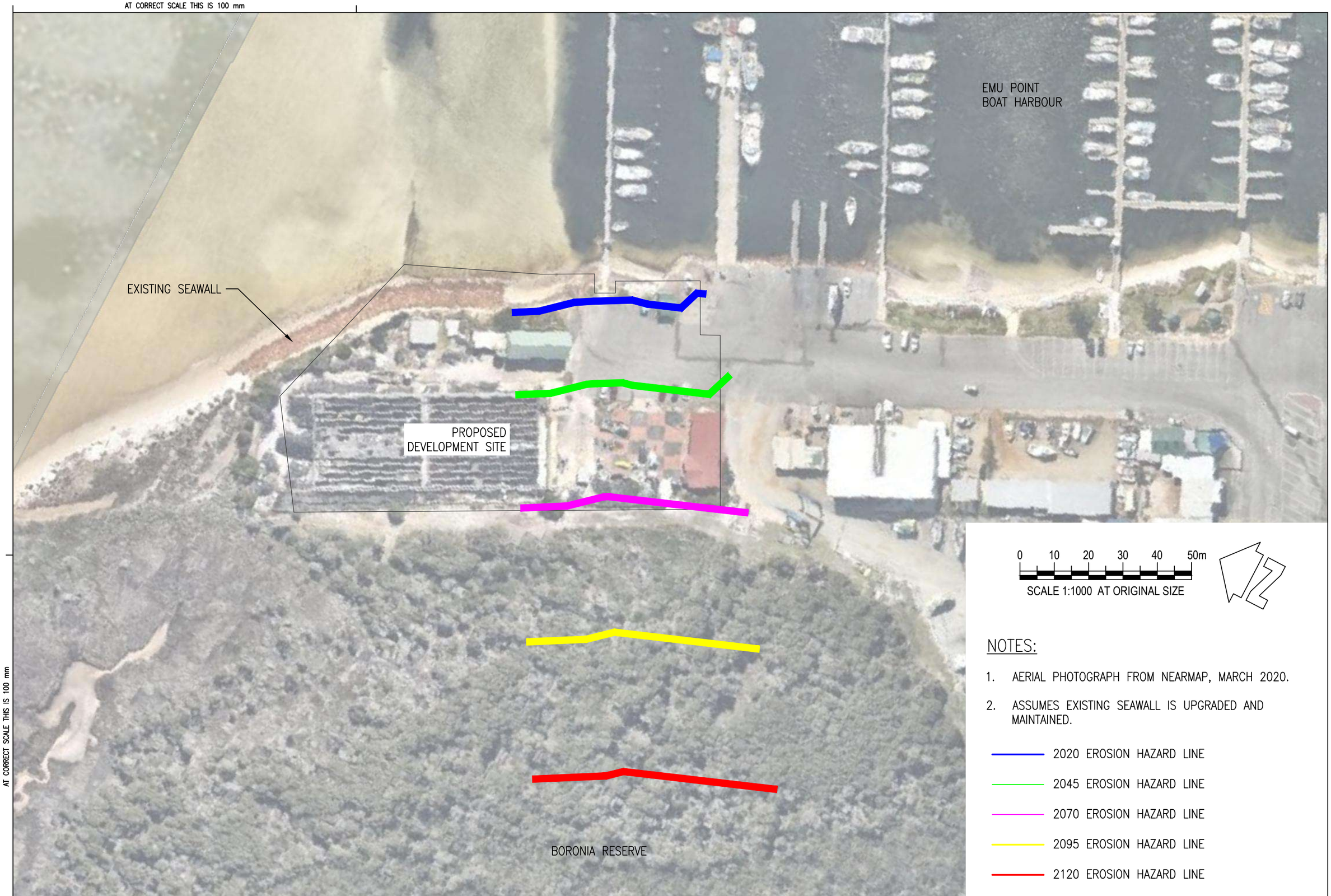
Lot Boundaries have NOT been re-established, plotted from SCDB only (+/-0.1m)
Adopted level for TBM from RTK VRS GNSS radiation only
Services Plotted are surface features located and
DBYD information received - approx. alignments only

SCALE 1:200 ON A0 SIZE PAPER

0 2 4 6 8 10

Appendix B Coastal Erosion Hazard Lines

AT CORRECT SCALE THIS IS 100 mm



0 10 20 30 40 50m

SCALE 1:1000 AT ORIGINAL SIZE

NOTES:

1. AERIAL PHOTOGRAPH FROM NEARMAP, MARCH 2020.
2. ASSUMES EXISTING SEAWALL IS UPGRADED AND MAINTAINED.

- 2020 EROSION HAZARD LINE
- 2045 EROSION HAZARD LINE
- 2070 EROSION HAZARD LINE
- 2095 EROSION HAZARD LINE
- 2120 EROSION HAZARD LINE

AT CORRECT SCALE THIS IS 100 mm

m p rogers & associates pl
coastal and port engineers

Suite 1, 128 Main Street
Osborne Park 6017 t: +61 8 9254 6600
Western Australia admin@coastsandports.com.au

DRAWN K WORTH

CHECKED T HUNT

COASTAL EROSION HAZARD LINES

EMU POINT TOURISM FACILITY

SCALE AT A3 1:1,000

FEBRUARY 2021

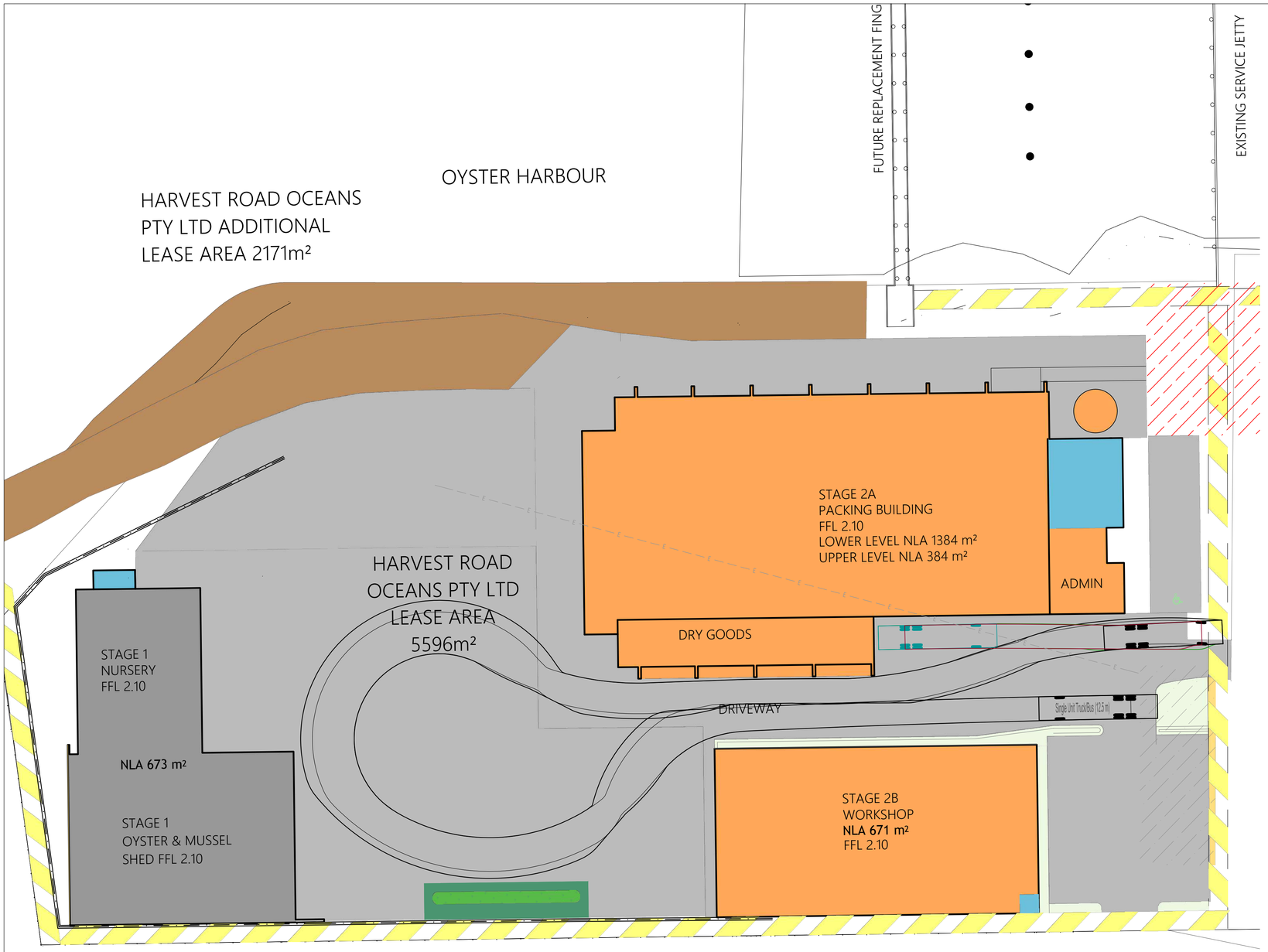
SK1789-02C

m p rogers & associates pl

www.coastsandports.com.au

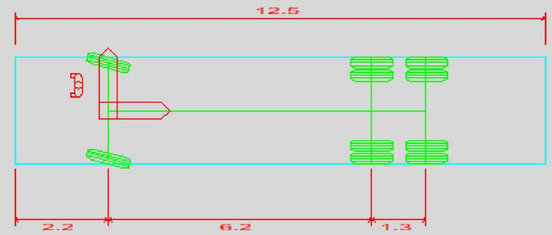
Appendix F – Truck Turning Template

DATE PLOTTED: 10/02/2021 3:36:55 PM BY: DURANTE, JULIA



VEHICLE TYPE

AUSTROADS 2013 SINGLE UNIT TRUCK.



Single Unit Truck/Bus (12.5 m)	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

THIS DRAWING HAS BEEN DOCUMENTED IN COLOUR.
THIS DRAWING IS REQUIRED TO BE PRINTED IN COLOUR.
FAILURE TO DO SO MAY RESULT IN LOSS OF INFORMATION.
BLACK & WHITE PRINTING MAY ONLY BE USED IF SPECIFIC BLACK & WHITE DOCUMENTS HAVE BEEN OBTAINED FROM STANTEC.

DIAL BEFORE YOU DIG www.1100.com.au

REV	DESCRIPTION	DRAWN	APP'D	DATE
A	TRUCK SWEPT PATH	JD	FW	10/02/2021

HARVEST ROAD GROUP PTY LTD

ARCHITECT/CLIENT

ALBANY AQUACULTURE PROJECT,
EMU POINT - ALBANY
STAGE 2
TRUCK SWEPT PATH

PROJECT/TITLE

Stantec

SCHEMATIC DESIGN
NOT FOR CONSTRUCTION
CIVIL

COORDS	DATUM	SCALE @ A1	PROJECT No	DRAWING No	REV
MGA	mAHD	1:250	47289	CI-409-SK01	A

CAD FILE: 47289_CI-409-SK01 TRUCK TURNING MOV STAGE 2.DWG

Appendix G – Servicing Concepts

WARNING

BEWARE OF UNDERGROUND SERVICES

The location of underground cables are approximate only and their exact position should be checked on site. No guarantee is given that all existing cables and services are shown. Locate all underground cables and services before commencement of work. Refer to Worksafe Regulation 3.21.

DIAL 1100 BEFORE YOU DIG

0 5 10 20 50

A1 @ 1:1000 (A3 @ 1:2000)

REV	DESCRIPTION	DRAWN	APP'D	DATE
A	PRELIMINARY ISSUE	MJH	RP	12/08/2020

KEYPLAN

HARVEST ROAD OCEANS PTY LTD
PO BOX 3155
BROADWAY NEDLANDS WA 6009

ARCHITECT/CLIENT

OYSTER FARM EMU POINT, ALBANY
HIGH VOLTAGE UPGRADE

PROJECT/TITLE

Stantec

PRELIMINARY
NOT FOR CONSTRUCTION
ELECTRICAL SERVICES

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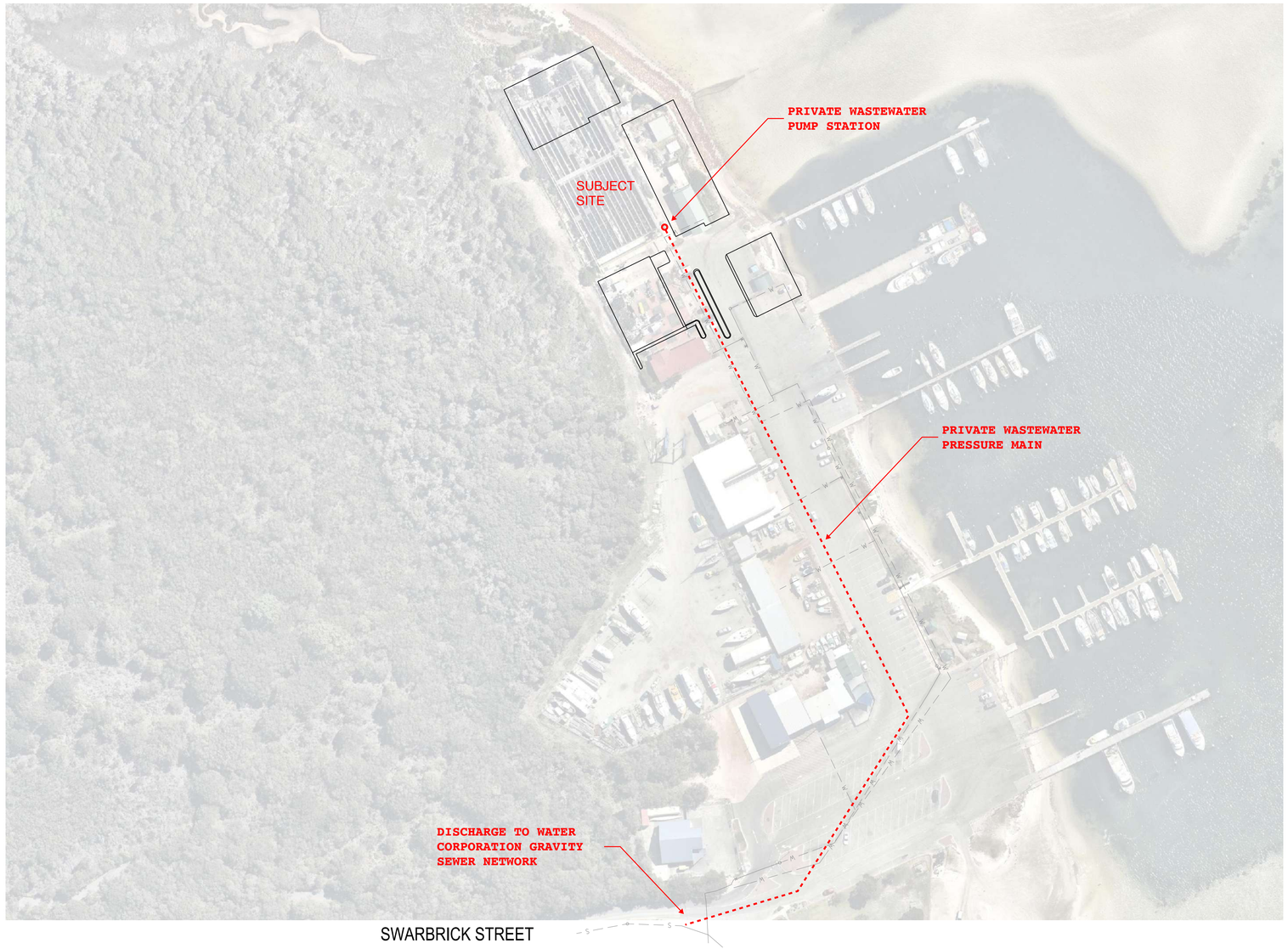

LEGEND

- PROPOSED WASTER WATER PRESSURE MAIN
- EXISTING SEWER
- EXISTING WATER

1:1000 10 0 10 20 30 40 50 A1
1:2000 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
A	PRELIMINARY SKETCH	JD	FW	12/08/2020

TATTARANG

ARCHITECT/CLIENT

OYSTER FARM EMU POINT, ALBANY
SEWER PRESSURE MAIN

PROJECT/TITLE

Stantec

SCHEMATIC DESIGN
NOT FOR CONSTRUCTION
CIVIL

COORDS	DATUM	SCALE @ A1	PROJECT No	DRAWING No	REV
MGA	mAHD	1:1000	47289	CI-309-WW-SK01	A

Appendix H – Urban Water Management Plan

LEGEND

- PERMEABLE PAVEMENT
- ASPHALT/CONCRETE PAVEMENT
- BIOFILTRATION BASIN
- PROPOSED PIT/PIPE NETWORK
- SURFACE FLOW PATHS


PERMEABLE PAVING


BIOFILTRATION BASIN

STORMWATER MANAGEMENT PRINCIPLES AND DESIGN CRITERIA

- Reduction of stormwater runoff through use of permeable pavements where appropriate.
- Flood routing, or 'topping out', of runoff and ponding from major storm events shall be directed around buildings to adjacent reserve and/or to the Harbour.
- Collection of stormwater runoff from hard stand and pavements in biofiltration basins for treatment and infiltration.
- Biofiltration basins to treat and infiltrate 'first flush events' from hard stand and pavements.
- Biofiltration basins to be shallow (~200mm) to mitigate adverse impact from high groundwater levels.
- Overflow, or lengthy ponding, of Biofiltration Basins to be mitigated by piped 'overflow' outlet to Harbour.
- Roof runoff to be collected where practical, for re-use onsite.
- Rainwater tank overflow and direct discharge of stormwater runoff from roofs to be directed to Harbour by piped discharge.
- Biofiltration basins to be densely vegetated with suitable endemic species, for guidance refer to the DWER Biofilter Vegetation Guideline for the south west of Western Australia.

HARVEST ROAD OCEANS PTY LTD ADDITIONAL LEASE AREA 2171m²

New Lease Area

PUBLIC ACCESS ROUTE

FUTURE REPLACEMENT FINGER JETTY

RAMP NEW JETTY TO SUIT

EXISTING SERVICE JETTY

DISCHARGE TO HARBOUR

47.44

PROPOSED LEASE BOUNDARY

EXISTING ROCK REVETMENT

BIOFILTER AREA (2% OF HARDSTAND CATCHMENT) = 27m2. OVERFLOW TO HARBOUR.

45.67

PROPOSED LEASE BOUNDARY

MAJOR EVENT FLOW

BIOFILTER

28.22

17.1

6.73

6.89

ROOF RUNOFF TO DISCHARGE DIRECT TO HARBOUR (TYP.)

NEW HARDSTAND

HARDSTAND AREA = 1,353m2

HARVEST ROAD OCEANS PTY LTD LEASE AREA 5596m²

LOADING APRON

RAMP UP

EXISTING LEASE BOUNDARY

27.05

STAGE 2A
PACKING BUILDING
FFL 2.10
LOWER LEVEL NLA 1384 m²
UPPER LEVEL NLA 384 m²

Res 0864

ADMIN

PUBLIC ACCESS ROUTE

NO PARKING - TRUCK ACCESS AND TURN AROUND

33.35

DISABILITY ACCESS RAMPS

PUBLIC CARBAYS

SIGN "NO THOUGH ROAD"

4.43

SLIDING 5m SECURITY GATE

TRUCK PATH

EXISTING LEASE BOUNDARY

STAGE 1
NURSERY
FFL 2.10

NLA 673 m²

NITROGEN TANK

DRY GOODS

DISPATCH

NEW HARDSTAND

DRIVEWAY

RAMP UP

TRUCK PATH

HARDSTAND AREA = 605m2

BIOFILTER

BIOFILTER AREA (2% OF HARDSTAND CATCHMENT) = 12m2. OVERFLOW TO HARBOUR.

34.4

EXISTING LOT BOUNDARY

PROPOSED LEASE BOUNDARY

STAGE 1
OYSTER & MUSSEL
SHED FFL 2.10

HARDSTAND AREA = 988m2

STAGE 2B
WORKSHOP
NLA 671 m²
FFL 2.10

7 CARBAYS

7 CARBAYS

30.57

STAGE 2B - DEMOLISH EXISTING ADMIN & INSTALL NEW CARPARK

9 CARBAYS

PROPOSED LEASE

BIOFILTER

NEW 2m WIDE FOOTPATH AND FENCE

EXISTING LEASE BOUNDARY

81.53

NEW 2m WIDE FOOTPATH

EXISTING LEASE BOUNDARY

43.77

MAJOR EVENT FLOW

RESERVE

1423

0m 5m 10m 20m

1/01 SITE PLAN – STAGE 2
1:250

BIOFILTER AREA (2% OF HARDSTAND CATCHMENT) = 20m2. OVERFLOW TO HARBOUR.

GENERAL NOTES

CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS, LEVELS & ANGLES ON SITE PRIOR TO COMMENCEMENT OF WORK. THIS IS A CAD DRAWING. DO NOT SCALE.

REV	DATE	DESCRIPTION
A	15.10.20	ISSUED FOR CLIENT REVIEW
B	19.10.20	ISSUED FOR CLIENT REVIEW
C	4.11.20	ISSUED FOR CLIENT REVIEW
D	6.11.20	OYSTER & PROCESSING SHEDS REVISED, SURVEY SHOWN
E	12.11.20	OYSTER & PROCESSING SHEDS REVISED
F	17.11.20	ISSUED FOR REVISED DA
G	30.11.20	NET LETTABLE AREAS SHOWN
H	1.12.20	ADDITIONAL LEASE BOUNDARY ADJUSTED
J	14.12.20	ADJUSTED PACKING SHED, CARPARKING & BOAT RAMP
K	15.12.20	ADJUSTED PACKING SHED & BOAT RAMP
L	16.12.20	ADJUSTED TRUCK ACCESS, DISABILITY & PUBLIC ACCESS WAY
M	16.12.20	ADJUSTED PUBLIC ACCESS WAY & CARPARKING
N	04.01.21	ADJUSTED LEASE BOUNDARY, TRUCK ACCESS & CARPARKING
P	12.01.21	OYSTER SHED UPDATED
Q	14.01.21	BOAT RAMP, PACKING BUILDING & HARDSTAND UPDATED
R	15.01.21	HARDSTAND UPDATED
S	19.01.21	PACKING SHED UPDATED

CLIENT
HARVEST ROAD

CONSULTANT
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Roberts Gardiner Architects

Urban Water Management Plan BY: Fred Wallefeld

ALBANY AQUACULTURE PROJECT

Stantec

47289	UWMP1	10/02/2021	
PROJECT No	SKETCH No	DATE	REV

PROJECT TITLE
ALBANY AQUACULTURE PROJECT
EMU POINT
ALBANY

DRAWING
STAGE 2 - SITE PLAN

DESIGNED MR	DRAWN DG	SCALE 1:250 @ A1 (1:500 @ A3)	
VERIFIED	APPROVED MR	DATE 19-01-21	
PROJECT NUMBER 20-021		DRAWING NUMBER A-02	REVISION S
CAD FILE SITE PLAN OPTION 1.DWG			

Appendix I – Additional Parking Concept

NOTES

1. PARKING BAY NUMBERS MAY REDUCE TO ALLOW FOR TRAFFIC CALMING AND LANDSCAPING.
2. FIRE TRUCK, AND OTHER HEAVY VEHICLE REQUIREMENTS, ARE TO BE CONFIRMED AND CONSIDERED IN DESIGN.
3. LAYOUT INDICATIVE AND SUBJECT TO FURTHER DESIGN DEVELOPMENT.

1:500 5 0 5 10 15 20 25 A1
1:1000 A3

REV	DESCRIPTION	DRAWN	APP'D	DATE
B	PRILIMINARY SKETCH WITH LAYOUT AMENDMENTS	JD	FW	12/08/2020
A	PRELIMINARY SKETCH	JD	FW	28/07/2020

TATTARANG

ARCHITECT/CLIENT

OYSTER FARM EMU POINT, ALBANY
CARPARK RECONFIGURATION CONCEPT

PROJECT/TITLE

Stantec

SCHEMATIC DESIGN
NOT FOR CONSTRUCTION
CIVIL

COORDS	DATUM	SCALE @ A1	PROJECT No	DRAWING No	REV
MGA	mAHD	1:500	47289	CI-059-SK01	B

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