

Legend

- Site Boundary
- Development Envelope
- Proposed Clearing Area (14.52 ha)
- No Clearing (5.93 ha)

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2022
- OTHER DATA SOURCED LANDGATE 2022
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2022
(© Western Australian Land Information Authority 2022)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 50 100 150 N
Meters
1:4,215 @ A4

LOCALITY MAP



PROJECT ID	DATE
4755	07/04/2022

HORIZONTAL DATUM AND PROJECTION
GDA2020 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	GA	GA	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure
Indicative Clearing Area

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9,0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F01 Indicative Clearing Area.mxd

360 environmental

Onslow Township Village

Environmental Assessment Report

Prepared for

Mineral Resources Limited

May 2022

people • planet • professional

Document Reference	Revision	Prepared by	Reviewed by	Admin Review	Submitted to Client	
					Copies	Date
4755AA_Rev0	Internal Draft	V. Mugabe / G. Abolis	T. Smith	-	-	-
4755AA_Rev1	Client Draft	V. Mugabe / G. Abolis	T. Smith	LI	1x electronic	06/08/2021
4755AA_Rev2	Client Report	V. Mugabe / G. Abolis	T. Smith	LI	1 X Electronic	27/08/2021
4755AA_Rev3	Internal Draft	G.Abolis	T.Smith	NC	1 x electronic	25/11/2021
4755AA_Rev 4	Client Report	G. Abolis	T.Smith	RH	1 x electronic	08/04/2022

Disclaimer

This report is issued in accordance with, and is subject to, the terms of the contract between the Client and 360 Environmental Pty Ltd, including, without limitation, the agreed scope of the report. To the extent permitted by law, 360 Environmental Pty Ltd shall not be liable in contract, tort (including, without limitation, negligence) or otherwise for any use of, or reliance on, parts of this report without taking into account the report in its entirety and all previous and subsequent reports. 360 Environmental Pty Ltd considers the contents of this report to be current as at the date it was produced. This report, including each opinion, conclusion, and recommendation it contains, should be considered in the context of the report as a whole. The opinions, conclusions and recommendations in this report are limited by its agreed scope. More extensive, or different, investigation, sampling and testing may have produced different results and therefore different opinions, conclusions, and recommendations. Subject to the terms of the contract between the Client and 360 Environmental Pty Ltd, copying, reproducing, disclosing, or disseminating parts of this report is prohibited (except to the extent required by law) unless the report is produced in its entirety including this cover page, without the prior written consent of 360 Environmental Pty Ltd.

© Copyright 2022 360 Environmental Pty Ltd ACN 109 499 041

Executive Summary

360 Environmental Pty Ltd (360 Environmental) was commissioned by Mineral Resources Limited (MRL) to provide environmental and bushfire support for the development of short stay worker accommodation at Lot 300 Back Beach Road, Onslow (referred within as Onslow Township Village). Onslow Township Village is referred within as the site. The site covers 20.45 hectares and is located within the Onslow townsite in the Pilbara Region of Western Australia.

This Environmental Assessment Report (EAR) is supplemented with a Preliminary Contamination Assessment, Flora and Fauna Survey and Urban Water Management Plan (UWMP) prepared by 360 Environmental and a Bushfire Management Plan (BMP) and Bushfire Emergency Management Plan (BEMP) to demonstrate the opportunities and constraints to development of Onslow Township Village.

Onslow Township Village is currently undergoing extensive master planning to consider design and environmental impacts associated with the proposed development in this locality.

The site will be cleared and constructed for the purpose of short stay workforce accommodation. Preliminary investigations identified that some native vegetation would be cleared to facilitate the proposed development however native vegetation is proposed to be retained for open space and surrounding accommodation pods. The EAR focuses on the environmental issues and management measures associated with the proposed development and its relationship to Onslow townsite and surrounding land uses.

The environmental issues identified in the EAR do not pose a significant constraint to development of the site. All environmental features can be managed through further technical investigations and/or the implementation of a Construction Environmental Management Plan (CEMP) for the proposed development during the construction phases of the development. Aboriginal heritage approvals are being sought separately to the development approval process.

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Environmental Assessment Objectives 1
1.3 Scope of Works 1
2 Key Environmental Legislation 3
2.1 International Agreements 3
2.2 Commonwealth Legislation 3
2.3 State Legislation 3
2.4 Relevant Standards, Guidelines and Policies 4
2.5 Planning 6
3 Site Environmental Features 7
3.1 Climate 7
3.2 Surrounding Land Uses 8
3.3 Topography 8
3.4 Regional Geology and Soils 8
3.5 Hydrogeology 10
3.6 Hydrology 11
3.7 Environmentally Sensitive Areas 11
3.8 Conservation Areas 11
3.9 Flora and Vegetation 11
3.10 Fauna 15
3.11 Heritage 17
3.12 Bushfire Risk 18
4 Environmental Constraints and Management 19
4.1 Key Environmental Issues, Factors and Objectives 19
4.2 Vegetation and Flora 19
4.3 Terrestrial Fauna 21
4.4 Hydrological Processes 22
4.5 Aboriginal Heritage 25
4.6 Acid Sulfate Soils 26
4.7 Contamination 26
4.8 Bushfire Management 28
5 Key Environmental Constraints and Management Review 32
6 Summary and Conclusion 36
6.1 Summary of Key Findings 36
6.2 Conclusions 38
7 Limitations 39
8 References 40

List of Tables

Table 1: Key State Legislation and Regulations 3
Table 2: Relevant Standards, Guidelines and Policies 5
Table 3: Surrounding Land Uses 8
Table 4: Broad Vegetation Types within the State, Regional and Local Representation (Government of Western Australia, 2019) 12
Table 5: Introduced Flora Species within the Site 15
Table 6: Overview of Vertebrate Fauna Species Recorded 16
Table 7: Aboriginal Heritage Locations 17
Table 8: Other Heritage Locations 18
Table 9: EPA Environmental Factors and Objectives 19
Table 10: Key Environmental Aspects 32

List of Graphs

Graph 1: Climate Statistics for Onslow Airport Station (005017) 1940-2021 (BOM 2021).... 7

List of Figures (out of text)

Figure 1: Study Area Location
Figure 2: Proposed Master Plan
Figure 3: Soil Land Systems
Figure 4: Acid Sulphate Soils
Figure 5: Areas of Potential Concern
Figure 6: Hydrography
Figure 7: Vegetation Associations
Figure 8: Vegetation Types
Figure 9: Vegetation Condition
Figure 10: Aboriginal Heritage Sites

List of Appendices

Appendix A Lot 300 Back Beach Road Development Approval (Conditions)
Appendix B Lot 300 Back Beach Road, Onslow, Contamination Review
Appendix C Lot 300 Back Beach Road, Onslow, Flora and Fauna Survey
Appendix D Likelihood of Occurrence – Marine Species
Appendix E Onslow Township Resort Bushfire Management Plan
Appendix F Onslow Township Resort Bushfire Emergency Management Plan
Appendix G Urban Water Management Plan for Lot 300 Back Beach Road, Onslow
Appendix H Urban Water Management Plan Technical Note for Lot 300 Back Beach Road, Onslow

1 Introduction

1.1 Background

360 Environmental Pty Ltd (360 Environmental) was commissioned by Mineral Resources Limited (MRL) to provide environmental and bushfire support for the development of short stay worker accommodation at Lot 300 Back Beach Road, Onslow (referred within the Onslow Township Village). Onslow Township Village is referred within as the site. The site covers approximately 20.45 hectares and is located within Onslow townsite in the Pilbara Region of Western Australia (Figure 1).

This environmental assessment report (EAR) is supplemented by the following:

- Preliminary Contamination Assessment (360 Environmental)
- Detailed Flora and Fauna Assessment (360 Environmental)
- Urban Water Management Plan (360 Environmental) (including Technical Note)
- Bushfire Management Plan (BMP) (Linfire Consultancy)
- Bushfire Emergency Management Plan (BEMP) (Linfire Consultancy).

1.2 Environmental Assessment Objectives

The EAR highlights the key environmental and bushfire issues associated with the proposed short stay workforce accommodation at the site. High level environmental advice will be incorporated into the EAR to support the proposed master plan for the short stay workforce accommodation at Onslow Township Village.

1.3 Scope of Works

The scope of work includes a review of desktop information for the site including government databases and search tools and online reports available for the site. The desktop environmental assessment included the following:

- NatureMap database search.
- Searches of the Federal Department of Agriculture, Water and Environment's (DAWEs) *Environment Protection and Biodiversity Conservation Act 1999* Protected Matters Search Tool.
- Review of publicly listed ecological information where available (previous reports and any relevant scientific literature).
- Review of applicable environmental legislation, policies and guidelines and their relevance to the site.
- Topography, soil, and potential acid sulfate soils.
- Groundwater levels, groundwater protection areas, surface water and geomorphic wetlands.
- Review of regional vegetation association and complex mapping (Beard and Heddle).

- Fauna and habitats: Desktop and habitat assessment, DBCA NatureMap and DAWE MNES PMST databases for recorded species and their habitats within the vicinity of the site and a likelihood assessment (based on mapped habitat) of these species potentially occurring on site.
- Heritage sites (Aboriginal and non-Aboriginal) that may be located within or nearby the site. Search of the Department of Planning Lands and Heritage (DPLH) Aboriginal and State and Local Heritage databases.
- Identification of environmental constraints and opportunities associated with the site.
- Site inspection familiarization and identification of environmental constraints and opportunities associated with the site.
- Preparation of this report summarizing the existing ecological and heritage information for the site.
- Preparation of figures supporting the desktop information.

Further assessments and surveys to address bushfire management, contamination, flora and vegetation, fauna, and urban water management applicable to the proposed development have been undertaken. The recommendations and environmental issues and associated mitigation measures raised in these reports have been included within the EAR.

2 Key Environmental Legislation

2.1 International Agreements

Australia has three bilateral agreements for migratory birds, including the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA) and the Republic of Korea-Australia Migratory Bird Agreement (RoKAMBA). Each of these agreements provides for the protection and conservation of migratory birds and their important habitats.

2.2 Commonwealth Legislation

2.2.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the central piece of environmental legislation which protects Matters of National Environmental Significance (MNES). Environmental Assessments under the EPBC Act are undertaken to enable environment and heritage protection and biodiversity conservation. An action should not be undertaken that has, will have or is likely to have a significant impact on any MNES, or other protected matters without a pre-action referral to the Australian Government's Minister for the Environment.

2.3 State Legislation

The *Environmental Protection Act 1986* (EP Act) is the key legislative tool for environmental protection in Western Australia. It is administered by EPA and the Minister for the Environment. Under Part IV of the EP Act, the EPA undertakes environmental impact assessment of development proposal and schemes. The environmental impact assessment process provides an orderly and systematic evaluation of a proposal and its potential impact on the environment. A critical component of the assessment is the consideration of ways in which the proposal, if implemented, could avoid, or reduce any potential impact on the environment.

Table 1 provides a summary of the key State legislation and regulations relevant to the site.

Table 1: Key State Legislation and Regulations

Key Legislation	Responsible Government Agency	Aspect
Aboriginal Heritage Act 1972	Department of Aboriginal Affairs	Archaeological and ethnographic heritage
Biodiversity Conservation Act 2016	Department of Biodiversity Conservation and Attractions	Listing of and protection of native species, threatened species, ecological communities, fauna, critical habitat, and threatening processes
Biosecurity and Agriculture Management Act 2007	Department of Primary Industries and Regional Development	Weeds/pests/diseases

Key Legislation	Responsible Government Agency	Aspect
Bush Fires Act 1954	Department of Fires and Emergency Services	Bush fire control
Conservation and Land Management Act 1984	Department of Biodiversity Conservation and Attractions Department of Agriculture	Flora and fauna/habitat/weeds /pests/diseases
Conservation and Land Management Regulations 2002	Department of Biodiversity Conservation and Attractions Department of Agriculture	Flora and fauna/habitat/weeds /pests/diseases
Contaminated Sites Act 2003	Department of Water and Environmental Regulation	Management of contaminated soils and water
Environmental Protection Act 1986	Environmental Protection Authority Department of Water and Environmental Regulation	Part IV – Environmental Impact Assessment Part V – Works Approvals and Licences, Clearing Permits
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Department of Water and Environmental Regulation	Clearing of native vegetation
Heritage Act 2018		Provides for the identification and documentation of places of cultural heritage significance in Western Australia, and for the conservation, use, development, and adaption of such places.
Planning and Development Act 2005	Department of Planning, Lands and Heritage	Structure planning and subdivision approval
Rights in Water and Irrigation Act 1914	Department of Water and Environmental Regulation	Governs management of the use, service and health of water and watercourses (including beds and banks) Water licensing is required in all proclaimed areas and for all artesian groundwater wells throughout the state.

2.4 Relevant Standards, Guidelines and Policies

Clearing and development is subject to compliance with applicable standards, guidelines and policies developed by the State's regulators to assist proponents in understanding the minimum requirements for environmental protection. Table 2 details the key standards, guidelines, and State Planning Policies relevant to clearing and development of the site.

Table 2: Relevant Standards, Guidelines and Policies

Document	Description
EPA Policies and Guidance	
Statement of Environmental Principles, Factors and Objectives (EPA 2016a)	This statement communicates the EPA considers the object and principles of the EP Act, uses environmental factors and objectives to organise and systemise environmental impact assessment, taking a holistic view of the environment and considering significance of a proposal.
Environmental Factor Guideline – Flora and Vegetation (EPA 2016b)	Provides guidance to protect flora and vegetation so that biological diversity and ecological integrity are maintained.
Environmental Factor Guideline – Terrestrial Environmental Quality (EPA 2016c)	Provides guidance with the objective to maintain the quality of land and soils so that environmental values are protected.
Environmental Factor Guideline – Terrestrial Fauna (EPA 2016d)	Provides guidance with the objective to protect terrestrial fauna so that biological diversity and ecological integrity at maintained.
Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016e)	Provides technical guidance to ensure adequate flora and vegetation data of an appropriate standard are obtained and used in environmental impact assessment.
Technical Guidance – Terrestrial Fauna Surveys (EPA 2016f)	Provides technical on the direction and information on general standards and protocols for terrestrial fauna surveys for environmental impact assessment.
Environmental Factor Guideline: Costal Processes (EPA, 2016g)	The EPA's environmental objectives for the factor Coastal Processes is to maintain the geophysical processes that shape coastal morphology so that the environmental values of the coast are protected.
Guidance Statement No. 33: *Environmental Guidance for Planning and Development* (EPA 2008)	Provides information and advice to assist land use planning and development processes to protect, conserve and enhance the environment.
WA Environmental Offsets Policy (EPA 2011)	Seeks to protect and conserve environmental and biodiversity values for present and future generations. The policy ensures that economic and social development may occur while supporting long term environmental and conservation values.
Department of Water and Environmental Regulation (DWER) Guidelines	
Assessment and Management of Contaminated Sites Guideline (DER 2014)	Provides guidance on the assessment and management of contaminated sites in Western Australian within legislative framework of the *Contaminated Sites Act 2003* and the Contaminated Sites Regulations 2006.

2.5 Planning

2.5.1 Development Assessment Panel (JDAP)

If a Development Application is considered to be a 'Significant Development' by the Shire of Ashburton, the Local Government will recommend that a Development Application be assessed by a Development Assessment Panels (DAP). The Regional Joint Development Assessment Panel (JDAP) would assess a Development Application of this type. Development Assessment Panels have operated since 2011 and are intended to enhance planning expertise in decision making by improving the balance between technical advice and local knowledge (Department of Planning Lands and Heritage, 2021).

The Onslow Township Village received conditional development approval by JDAP on the 24 December 2021 (Figure 2). The conditional development approval is attached to this report (Appendix A). Minor amendments to the conditional development approval are currently being progressed with JDAP to address timing and further clarification on specific conditions of approval applicable to the development.

2.5.2 Shire of Ashburton Town Planning Scheme No.7

The site is zoned 'Conservation, Recreation and Nature Landscape' by the Shire of Ashburton Town Planning Scheme No 7 (TPS7).

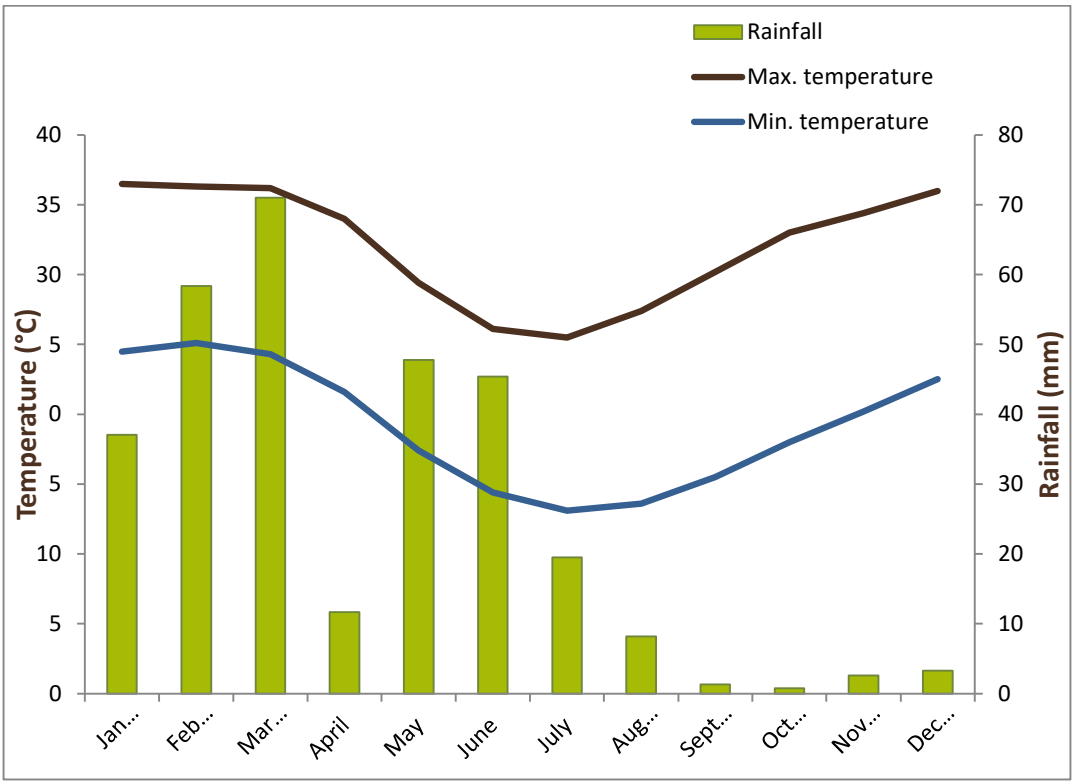
2.5.3 Onslow Townsite Expansion

The site is identified within the Onslow Townsite Expansion forming part of the Local Structure Plan (Shire of Ashburton,2019). The site is identified as an 'Area Subject of Further Investigation'. Further investigations and subsequent designs need to consider environmental and heritage values applicable to this site in conjunction with the Local Structure Plan requirements.

3 Site Environmental Features

3.1 Climate

The Onslow climate is described warm, sunny climate with wet season and subjectivity to cyclones and storm surge. The nearest Bureau of Meteorology (BOM) weather station to the Study Area is Onslow Airport (Station No: 005017) located approximately 3.6 km away. The data statistics have been collected since 1940 to date. The long-term mean minimum temperature for Onslow Airport Station is 19.2° and the mean maximum is 32.1°. Onslow area receives rainfall 29.3 days annually with an average annual mean rain of 304.2 ° (Graph 1).



Graph 1: Climate Statistics for Onslow Airport Station (005017) 1940-2021 (BOM 2021).

3.2 Surrounding Land Uses

The site is located at the edge of the Onslow townsite and is immediately north and west of the Indian Ocean. The surrounding land uses are detailed in Table 3.

Table 3: Surrounding Land Uses

Direction from site	Current land use(s)
North	The site is immediately abutted by the former location of the furnace oil above ground storage tanks (ASTs), now vacant land used for tourism purposes (i.e., Lookout Point and Onslow Memorial Park), then beach followed by waters of the Indian Ocean.
East	Some residential properties are located to the east of the site and bordering First St, Third Ave, or Simpson St. Also to the east are community facilities including Onslow Primary School, the Onslow Community Garden, a church, and police station. The location of the former diesel line/water storage AST is vacant.
South	The site is bound by Back Beach Rd and small area of residential development, followed by a vacant portion of the site operated by Onslow Salt, then infrastructure of Onslow Salt.
West	The site is immediately abutted by vacant land with a memorial boardwalk, then Sunset Beach and the Indian Ocean (with a loading jetty associated with Onslow Salt). The former aviation spirit AST is still present, approximately 210m to the south of the site, having been converted to residential use.

3.3 Topography

The topography varies across the site and ranges from 9 m Australian Height Datum (AHD) to 16m AHD. The site has a low point of approximately 6m AHD in the southwestern corner and rises to a high of approximately 16m AHD near the north-eastern corner, before falling to 9m AHD near Third Avenue. The site tends to undulate gently from southeast to southwest through the centre of the site, before falling away along the northwestern boundary (Landgate, 2021).

3.4 Regional Geology and Soils

3.4.1 Soil Landscape and Land Systems

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, and has been captured at scales ranging from 1:20,000 to 1:250,000 (Department of Primary Industries and Regional Development, 2019). The site intercepts one soil land system, Dune System 201 DU described as 'Dune fields supporting soft spinifex and minor hard spinifex grasslands' (Figure 3).

3.4.2 Regional Geology

Onslow is located in the Carnarvon Geological Region and within the Exmouth Province of the Western Coastlands Physiographic (AECOM, 2010). The Exmouth Province is characterised by sandy or alluvial plans associated with drainage systems such as the Ashburton River. Coastland adjacent to the river is characterised by sand beaches and dunal systems of the Quartenary shoreline and coastal eolian deposits. Onslow is situated on a large sandy island, with the most seaward point located over an old coral, forming Beadon Point (AECOM 2010). Regional soils are predominately red sands in the dune fields and red soils in the plains (AECOM 2010) (Figure 3).

3.4.3 Local Geology

The site is expected to reflect the regional geology and comprise coastal dunes, being calcareous and siliceous sands, locally shelly and/or cemented (beach rock) (360 Environmental 2021).

3.4.4 Acid Sulfate Soils

The DWER Acid Sulfate Soil (ASS) mapping indicates that part of the site (central portion running to the southwest site boundary at Back Beach Road) is mapped as having 'Moderate to Low' risk of ASS within the first 3 m of natural soil surface (Figure 4). The western side of the site is mapped as having 'Moderate to Low' risk of ASS within the first 3 m of natural soil surface. There is 'High to moderate' risk of ASS occurring within 3m of natural soil surface on the northwestern side of the site heading to the north outside the site boundary (DWER, 2021a).

3.4.5 Contaminated Sites

A desktop review of the DWER Contaminated Sites Records identified no Contaminated Sites within the site. The nearest identified site is a Restricted Use site approximately 1.6 km northeast of the site (DWER, 2021b).

360 Environmental conducted a Desktop Contamination Assessment to identify areas of potential concern (AOPC) associated with onsite or offsite contamination, identify data gaps associated with contamination and provide advice on potential future works to address those data gaps. (Appendix B). The assessment concluded that that there have been no significant historical contaminating activities at the site, as the site has been vacant and undeveloped.

There were six (6) AOPCs identified within close proximity to the site including the following:

- AOPC 1 – Part of the site is located adjacent to the former furnace oil aboveground storage tanks (ASTs) and associated fuel pipelines and pumps (the offsite former furnace oil AST area) to the north of the site. This is classified as Contaminated – Remediation Required.
- AOPC 2 – Part of the site located adjacent to the former historical bulk fuel storage to the east (diesel line) of the site and associated fuel pipelines and pumps.
- AOPC 3 – Part of the site located adjacent to the former historical bulk fuel storage to the south (aviation spirit) of the site, and associated fuel pipelines and pumps.
- AOPC 4 - Part of the site with a moderate to low risk of acid sulfate soils (ASS) being present within 3 meters of the soils surface.

- AOPC 5 - Potential unexploded ordnance (UXO) from activities during WWII (whole of site and Onslow Townsite).
- AOPC 6 - Potential asbestos from illegal fly-tipping or associated with offsite sources (whole of site) (Figure 5).

The following data gaps were identified associated with the above identified AOPCs:

- No soil or groundwater investigations have been undertaken at the site however it is understood offsite contamination (and possible remediation) associated with former fuel infrastructure located to the north has previously occurred
- It is not known if the soils in the area marked as having a 'moderate to low risk of ASS' being present are potential or actual ASS
- It is not known if a detailed UXO survey has been undertaken at the site, or if records exist of any historical UXO searches or recovery operations in relation to the site
- Without a hazardous materials (HAZMAT) survey of the site or previous site investigations, it is not known if asbestos containing materials (ACM), asbestos fines (AF) or fibrous asbestos (FA) are present at the site.

3.5 Hydrogeology

3.5.1 Groundwater

Groundwater and surface water in WA is protected under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The site is within the RIWI Act Groundwater Proclaimed Area Pilbara. The site lies within the Pilbara groundwater area and Ashburton sub-area. Carnarvon superficial aquifer and the Carnarvon Birdrong artesian aquifer are present within site. Water drawn from the Birdrong Aquifer is the primary local bore water source. It is the principal artesian aquifer for the Carnarvon Artesian Basin (360 Environmental,2021c).

The groundwater flows from the south to north towards the shoreline (360 Environmental, 2021).

The groundwater salinity is reported to be less than 3,000 mg/L on average, which is considered moderately salty and suggests groundwater is unsuitable for garden bores (Landcorp,2012).

3.5.2 Public Drinking Water Sources

The site is not identified within a Public Drinking Water Source Areas (PDWSA).

3.6 Hydrology

3.6.1 Surface Water

The site is mapped within the Pilbara Surface Water Area (SWA) under the RIWI Act Surface Water Proclamation Areas. It is located within the Ashburton River surface water area, and the Ashburton River is 20 km southwest of the site. The closest surface water features are located outside of the site approximately 2.5 km east (Beadon Creek).

A review of available surface water feature mapping did not identify any surface watercourses, rivers, creeks, or streams that intersect the site (DWER, 2021c). A natural lake area is present approximately 200m to the southwest and is associated with the Onslow Salt site and operations (i.e., it is assumed to be saline) (360 Environmental 2021).

The site is located adjacent to the Indian Ocean which covers the west and northern side of the site (Figure 6).

3.6.2 Wetlands

The Geomorphic Wetlands database search did not identify any wetlands to be occurring within the site. No Ramsar wetlands were identified on site or within 10 km of the site.

3.7 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are identified and protected under the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005*. Under the Notice it is an offence to kill or destroy vegetation within an ESA.

DWER mapping identifies that the site is not located within an ESA and no ESA was identified within the 10km of the site (DWER, 2021d).

3.8 Conservation Areas

There is no Regional Parks or Department of Biodiversity Conservation and Attractions (DBCA) Managed Lands intersecting the site.

3.9 Flora and Vegetation

3.9.1 Interim Biogeographical Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) divides Australia into 89 bioregions based on major biological, geographical, and geological attributes. These bioregions are subdivided into 419 subregions as part of a refinement of the IBRA framework (Department of the Environment and Energy, 2016).

The entire site is mapped within the Carnarvon bioregion and the Cape Range (CAR01) subregion. The Carnarvon bioregion is composed of quaternary alluvial, aeolian and marine sediments overlying Cretaceous strata. A mosaic of saline alluvial plains with samphire and saltbush low shrublands, Bowgada low woodland on sandy ridges and plains, Snakewood scrub on clay flats, and tree to shrub steppe over hummock grasslands on and between red sand dune fields. Limestone strata with *Acacia stuartii* or *A. bivenosa* shrubland outcrop in the north, where extensive tidal flats in sheltered embayments support mangal (Kendrick and Mau, 2002).

3.9.2 Broad Vegetation Types

Mapping of the vegetation of the Perth region of WA was completed on a broad scale by Beard (1981). These vegetation units were re-assessed by Shepherd et al (2001) to account for clearing in the intensive land use zone, dividing some larger vegetation units into smaller units. Together, this pre-European database contains a total of 819 vegetation types within Western Australia.

The site is mapped within the Cape Yannare Coastal Plain 117 broad vegetation type (Figure 7). Cape Yannare Coastal Plain 117 is described as (Department of Primary Industries and Regional Development, 2018). The representation at a state, regional and local level is identified in Table 4.

Table 4: Broad Vegetation Types within the State, Regional and Local Representation (Government of Western Australia, 2019)

Vegetation Type	Pre-European Extent (ha)	Current Extent (ha)	Remaining (%)	Current Extent Managed in DBCA Lands (%)
Representation across Western Australia				
Cape Yannare Coastal Plain 117	919,517.05	886,005.79	96.36	14.79
Representation across the Carnavon Bioregion				
Cape Yannare Coastal Plain 117	12,424.35	10,907.99	87.80	27.48
Representation across the Cape Range Subregion				
Cape Yannare Coastal Plain 117	12,424.35	10,907.99	87.80	27.48
Representation across the Shire of Ashburton				
Cape Yannare Coastal Plain 117	14,506.04	9,073.90	62.55	19.13

The Environmental Protection Authority's (EPA) *Guidance Statement No. 33 – Environmental Guidance for Planning and Development* has set out a threshold for the retention of 10% of the pre-existing extent of native vegetation within constrained areas (EPA 2008). The Cape Yannare Coastal Plain vegetation meets the recommendation, it has 96.36% representation remaining within the State.

3.9.3 Flora and Vegetation Desktop Assessment

Database searches identified nine (9) conservation significant flora species occurring within 50 km of the site comprising of:

- No Threatened species
- Three Priority 1 species
- No priority 2 species
- Six priority 3 species
- No priority 4 species.

No State or Commonwealth listed TECs were identified within the site by the database searches. The State listed PEC Peedamulla (Cane River) Swamp Community occurs 24 km east of the site, however its listing category has not been evaluated during the site survey (360 Environmental, 2021).

3.9.4 Likelihood of Occurrence

The likelihood of occurrence assessment identified that of the nine (9) conservation significant flora species identified by the desktop assessment:

- No Threaten or Priority Listed Flora have been recorded within the site
- Two taxa were considered to have a high likelihood of occurrence based on habitat preference
- Three were considered to have a medium likelihood of occurrence based on habitat preference
- Four were considered to have a low likelihood of occurrence based on habitat preference.

An additional thirty (30) species were identified by the literature review; however, these were not included in the flora likelihood assessment as all were considered highly unlikely to occur within the site (360 Environmental,2021) (Appendix C).

3.9.5 Vegetation Survey Results

3.9.5.1 Vegetation Association

The Flora and Vegetation survey undertaken by 360 Environmental (June 2021) identified that there is one (1) vegetation association mapped across one broad landform (low coastal dune systems with mixed laterite sands) (Appendix B) .The vegetation within the site, VT1, was described as *Acacia coriacea* subsp. *coriacea* and *Acacia tetragonophylla* (with *Crotalaria cunninghamii* subsp. *sturtii*) mid to low sparse shrubland over *Cenchrus ciliaris* and *Eulalia aurea* low tussock grassland with *Triodia epactia* low sparse hummock grassland over *Euphorbia myrtoides* low sparse herb land (Figure 8).

3.9.5.2 Vegetation Condition

The vegetation condition within the site was determined to be Very Good, comprising of 100% of the site. Evidence of disturbance within the site include old vehicle tracks, littering and weeds (particularly infestations of *Cenchrus ciliaris*) (Figure 9).

3.9.5.3 Vegetation of Conservation Significance

No vegetation representative of any Commonwealth or State listed TECs or DBCA listed PECs were recorded within the site.

Of the vegetation within the site, none is considered to be of other conservation significance.

3.9.6 Flora Survey Results

3.9.6.1 Flora Composition

The Flora and Vegetation survey recorded a total of 33 taxa from 15 genera across 13 families. The dominant families were:

- Fabaceae (seven species, 24% of all taxa)
- Poaceae (five species, 17 % of all taxa)
- Chenopodiaceae (three species, 10% of all taxa).

One (1) species was not able to be positively identified and has been tentatively listed as *Flueggea virosa*. Additionally, two (2) *Tephrosia* collections were not able to be positively identified due to species variability with the morphology based on the WAH reference collection. None of these taxa resemble any potentially occurring Threatened and Priority Flora, or flora of Conservation significance (360 Environmental, 2021).

3.9.6.2 Threatened or Priority Flora

No Threatened flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened pursuant to the BC Act 2016 were recorded during the survey.

No DBCA listed Priority flora species were recorded within the site.

3.9.6.3 Flora of Other Conservation Significance

Flora may be considered of other conservation significance if it represents a range extension, novel taxon, species that play a keystone role in a community, has relic status, is locally endemic, or represents the extent of a species range.

No taxa recorded within the site was considered to be of other conservation significance.

3.9.7 Introduced Flora

Four (4) introduced species were recorded within the site, representing 10% of the total taxa recorded. One of these, *Tamarix aphylla*, is listed as a Declared Pest under the BAM Act (Department of Primary Industries and Regional Development, 2018) and WoNS (Department of Agriculture Water and the Environment, 2020) (Table 5).

Table 5: Introduced Flora Species within the Site

Species	Common Name	Environmental Status	WONS
Cenchrus ciliaris	Buffel Grass		Not Listed
Aerva javanica	Kapok Bush		Not Listed
Tamarix aphylla	Athel Pine	Declared Pest – (DPIRD)	Listed
Washingtonia filifera	California Palm		Not Listed

3.10 Fauna

3.10.1 Desktop Assessment

The desktop assessment for the site identified fifty-nine (59) conservation significant terrestrial vertebrate fauna species potentially occurring within the site, comprising of:

- 47 bird species
- Four (4) mammal species
- Eight (8) reptile species (includes five turtle species known to breed in the Pilbara region)
- No amphibian species.

A review of the Department of Agriculture, Water and the Environment (DAWE) Protected Matter Search Tool (PMST) identified 75 listed marine species to be potentially occurring within a 5 km radius of the site. The listed species listed species include:

- 31 Birds
- 20 Reptiles
- 23 Fish
- 1 Mammal.

Of the marine species identified as potentially occurring within a 5km radius of the site, 4 species are considered as Critically Endangered, 5 are Endangered and 5 are considered vulnerable under the EPBC conservation category status.

Species listed as Marine only under the EPBC Act, such as the Little Egret (*Egretta garzetta*), White-bellied Sea-Eagle (*Haliaeetus leucogaster*), Silver Gull (*Larus novaehollandiae*), as well as marine dependent species including sea snakes, whales and dolphins have been excluded from the likelihood of occurrence list as there is no marine habitat present within the site.

3.10.2 Conservation Significant Fauna Likelihood of Occurrence

The likelihood of occurrence assessment within the site for conservation significant fauna species identified by the desktop assessment identified that:

- No species had a high likelihood of occurrence
- 20 species had a medium likelihood of occurrence (19 bird species, one (1) reptile species)
- 39 species had a low likelihood of occurrence (28 bird species, four (4) mammal species, seven (7) reptile species).

The results of the likelihood of occurrence are presented in Appendix C.

A likelihood assessment of the marine species presence within a 5 km radius of the site identifies a total of 14 species as known to be occurring in the area. The other species identified during the PMST review are either likely or may occur in the area.

The results of the likelihood of occurrence are presented in Appendix D.

3.10.3 Fauna Habitat

One (1) broad fauna habitat was identified and mapped within the site. The coastal dune Fauna Habitat was continuous throughout the site and is analogous with the Coastal Dune (VT1) vegetation type. The habitat quality was identified to be good throughout the site.

3.10.4 Fauna Assemblage

The terrestrial vertebrate fauna survey recorded a total of 18 fauna species from 13 families, summarised in Table 6.

Table 6: Overview of Vertebrate Fauna Species Recorded

Fauna Group	Number of Species	Number of Families
Birds	14	9
Mammals	3	3
Reptiles	1	1
Amphibians	0	0
Total	**18**	**13**

3.10.4.1 Sightings

A total of fourteen (14) bird species from nine (9) families were recorded throughout the site. The most recorded species was the Zebra Finch (*Taeniopygia guttata)* followed by the White-plumed Honeyeater (*Ptilotula penicillata*) and the White-breasted Woodswallow (*Artamus leucorynchus).* The most speciose avifauna family was *Meliphagidae* (three taxa).

One (1) reptile species was tentatively identified, the Dune Dragon (*Ctenophorus femoralis),* with other dragon sightings representing the same genus, but the fast nature of these animals made positive identification difficult (360 Environmental,2021).

3.10.4.2 Tracks

Bird tracks were observed throughout the site, as were cat tracks. Small mammal and reptile tracks were also identified, most often occurring between clumps of thicker vegetation.

3.10.5 Conservation Significant Fauna

No fauna species of conservation significance (Threatened or Priority), or evidence of these species such as tracks, scats, nest, diggings, burrows, or direct sightings were recorded within or directly surrounding the site.

3.11 Heritage

3.11.1 Aboriginal Heritage

In Western Australia, the *Aboriginal Heritage Act 1972* protects places and objects customarily used by or traditional to the original habitants of Australia. A register of such places and objects is maintained under the Act, however, all sites are protected under the Act whether they are registered or not.

A search of the Department of Planning, Lands and Heritage's (DPLH) Aboriginal Heritage Inquiry System identified three registered Aboriginal Heritage sites within the site (Figure 10).

A search of the AHIS identified three (3) listed heritage locations associated with the site and one (1) additional location within 500 m of the site. These are described in Table 7.

Table 7: Aboriginal Heritage Locations

ID	Name	Type / Description
Onsite		
6617	Burubarladji	Mythological; not a protected area (extending from the south-eastern side of the site to the townsite)
6618	DEW TALU	Ceremonial, Water Source; not a protected area (covers the entire site)
8920	Onslow 1	Artefacts / Scatter, Midden / Scatter; not a protected area (covering at least a third of the southeastern side of the site)
Offsite		
6575	Jinta 1 Midden	Artefacts / Scatter, Midden / Scatter; not a protected area (500m metres from the site)

3.11.2 European Heritage

A search of State and Local Government heritage databases and available reports identified several heritage locations within 500m of the site. These are further described in Table 8. No European Heritage locations occur on the subject site.

Table 8: Other Heritage Locations

HCWA No.	Name	Type / Description
Heritage Council of WA Website (inHerit)		
15366	Police Residence (fmr)	3 First St, Onslow. The former police residence has aesthetic, historic, social, and representative cultural heritage significance and is a relic of Onslow's early settlement
15392	St Nicholas Church	19 Third Ave, Onslow. St Nicholas Church has significant aesthetic, historic, social and rarity heritage value.
15377	Residence - Sweeting	18 Third Ave, Onslow. The residence on Lot 326 has historic cultural heritage significance, being a remnant of the Old Onslow town site that has survived numerous storms.
15376	Residence	26 Third Ave, Onslow. The residence has aesthetic, historic and representative cultural heritage significance.
15367	Onslow Post Office and Residence	19-21 Second Ave, Onslow. The former Post Office and residence have aesthetic, historic and representative cultural heritage significance
15364	Beadon Hotel	22-26 Second Ave, Onslow. The Beadon Hotel has significant aesthetic, historic, social and rarity cultural heritage value.
Shire of Ashburton Local Government Heritage Inventory		
-	Fuel Storage Tanks	Includes the former Aviation Spirit tank, dieseline tank and furnace oil tanks 1 and 2, and the pump outstation and hose locker. These were present across several lots, with several (furnace oil tanks, dieseline tank and pump stations) immediately adjacent to the site. These were listed as having heritage value based on their physical form and their role in defence activities in World War II.
26612	Beadon Point Rear Navigational Leading Light	2 Second Ave, Onslow. Cultural significance as provided evidence of when Onslow was the major port for the Ashburton district. Demolished in 2019.

3.12 Bushfire Risk

As the site is mapped within a Bushfire Prone Area, *State Planning Policy (SPP) No. 3.7 Planning in Bushfire Prone areas* applies. The intent of this policy is to implement effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure.

The whole site is mapped within a Bushfire Prone Area. Development of the site requires a BMP and BEMP setting out risk management strategies for the life the development to satisfy the requirements of the SPP 3.7 (Appendix E and F).

4 Environmental Constraints and Management

4.1 Key Environmental Issues, Factors and Objectives

The potential impacts that may result from implementation of the proposed development and the site's key environmental features are discussed in this section. Management measures based on key legislation, guidelines, and policies are also outlined with the intent to mitigate the potential impacts.

The principles, factors, and objectives used by the EPA in assessing projects have been used in considering the environmental impact posed by the development and how these will be managed. The relevant factors and objectives of this proposal are outlined in Table 9 below and are addressed within this section.

Table 9: EPA Environmental Factors and Objectives

Theme	Factor	Objectives
Land	Flora and Vegetation	To protect flora and vegetation so that biological diversity and ecological integrity are maintained.
	Terrestrial Fauna	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained.
Water	Hydrological Process	To maintain the hydrological regimes of groundwater and surface water so that environmental values are protected.
	Inland Waters Environmental Quality	To maintain the quality of groundwater and surface water so that environmental values are protected.

4.2 Vegetation and Flora

4.2.1 Background

The overall vegetation condition within the site was considered to be Very Good. The species diversity and abundance are consistent with the ecology and diversity of the Cape Range IBRA Subregion, and previous surveys of this level within the local area. *Tamarax aphyllla* is the only weed of conservation significance, listed as both a Declared Pest and a Weed of National Significance. No PECs or TECs were recorded with the site.

Flora of Conservation Significance

One (1) species was not able to be positively identified and has been tentatively listed as Flueggea *virosa*. Additionally, two (2) *Tephrosia* collections were not able to be positively identified due to species variability with the morphology based on the WAH reference collection. None of these taxa resemble any potentially occurring Threatened and Priority Flora, or flora of Conservation significance.

Introduced Flora

Four (4) weed species were recorded in the site, *Tamarix aphylla* (Declared Pest, WoNS) was the only declared weed identified on site. Based on the location relevant to the proposed development area and population extent, no addition action would be required.

Two (2) additional weed species *Cenchrus ciliaris, Washingtonia filifera* were also present, with *Cenchrus ciliaris* covering approximately 70% of the site.

Vegetation Types

Vegetation mapping within the site was representative of existing broad scale vegetation and soil and land system mapping for the locality.

The vegetation of the Coastal Dunes (VT1) is broadly representative of Cape Yannare Coastal Plain 117, described as grass-steppe hummock grassland *Triodia* spp. The vegetation type described in this report is not representative of any listed PEC or TEC.

4.2.2 Potential Impacts within the Site

The key potential impacts on terrestrial flora and vegetation from development of the site include:

- Degradation and disturbances of the adjacent vegetation, including rubbish dumping, and uncontrolled access
- Edge effects on native vegetation caused by the interaction with urban land uses, causing a decline in vegetation condition
- Dieback diseases
- Introduction and distribution of invasive weed species
- Hydrological changes.

4.2.3 Management Measures

Potential environmental impacts associated with the proposed development will be addressed through implementation of the following environmental management measures to ensure the environmental objectives for flora and vegetation are met:

- Careful control of the clearing of vegetation within the site during the construction phase
- Control of access between the uncleared area and the campsite development both during and after the construction phase
- Weed control
- Dieback control and management
- Fire management
- Establishment of open space will maintain the presents of native vegetation within the site.

This will ensure the long-term protection and viability of the vegetation and associated flora and fauna retained within the site. Implementation of a Construction Environmental Management Plan (CEMP) will be required to address management and protection of flora and vegetation on the site during the construction phase.

The proposed development has been designed to retain some native vegetation within the site and areas surrounding. The proposed master plan for the site is identified in Figure 2.

4.3 Terrestrial Fauna

4.3.1 Background

One (1) broad fauna habitat was observed within the site, consisting of Coastal Dunes. The coastal dune habitat contains limited microhabitat opportunities and is of low value to most conservation significant fauna species and overall fauna assemblages that occur in the broader area.

One (1) conservation significant fauna species, *Lerista planiventralis maryani* (P1), utilises dune habitat in the bioregion and records indicate that it historically occurred within 1 km of the site. A targeted terrestrial vertebrate survey utilising pitfall traps would be required to assess its presence or absence in the site with greater certainty.

Shorebirds, including conservation significant species, may use coastal dune areas within the site, however, these species are highly mobile and would not be reliant on the habitats within the site.

Clearing of vegetation within the site is unlikely to significantly impact most fauna species due to the abundance of similar habitat south of the site. However, if *Lerista planiventralis maryani* (P1) are inhabiting the site, clearing will have a significant impact on the local population.

4.3.2 Potential Impacts

The key potential impacts on terrestrial fauna and its habitat from development of the site include:

- Fauna deaths
- Habitat degradation
- Migration of fauna species.

4.3.3 Management Measures

Potential environmental impacts to terrestrial fauna and its habitat can be managed by implementing the following strategies:

- Careful control of the clearing of vegetation within the site during the development phase
- Fauna trapping and relocation of fauna
- Weed control
- Dieback control and management
- Fire management.

These actions will assist in ensuring the areas supporting fauna and fauna habitat area will be protected and maintained. Implementation of a CEMP would be required to address the management and protection of vertebrae fauna and fauna habitats. The conditional approval identified that a Target Terrestrial Fauna Survey is required to confirm the presence and significance of *Lerista planiventralis maryani* on the site. The conditional approval also identified that a Targeted Fauna Survey is required to confirm the presence and significance of 'Marine' and 'Shorebirds' on the site. Both of these targeted surveys shall be undertaken prior to construction of the proposed development. A Relocation Management Plan may also be required subject to the findings from the abovementioned surveys.

4.4 Hydrological Processes

4.4.1 Background

EPA's Environmental Factor Guideline for Hydrological Processes defines hydrological processes as the occurrence, distribution, connectivity, movement, and quantity of water. Altering hydrological regimes can significantly impact on water dependent ecosystems and other values supported by groundwater and surface water.

The site is hydrologically unconstrained with free draining sandy soils, clearance to groundwater, moderate to low risk of ASS (with some parts of the site with medium to high risk of ASS) and there are no regional service water features (DWER, 2021b).

A natural lake area is present approximately 200m to the southwest and is associated with the Onslow Salt site and operations (i.e it is assumed to be saline) (360 Environmental 2021). The site is located adjacent to the Indian Ocean. The proposed development might affect the coastal processes within the Onslow townsite and surrounding locality.

4.4.2 Potential Impacts

Potential impacts to hydrological processes from the proposed development include:

- Groundwater level changes from changes in land use and clearing. The development of the proposed accommodation and associated outbuildings has the potential to increase recharge of rainfall into groundwater through increased surface area of roofs, driveways, carparks, and roads.
- Increased runoff from hard surfaces into surrounding retained environments.

- Impact on coastal environment.
- Pollution from urban surfaces into surrounding environments.

4.4.3 Management Measures

A Local Water Management Strategy (LWMS) was prepared for the Onslow townsite by Hydro2 Hydrology and Josh Byrne and Associates on behalf of Landcorp in support of a Development Guide Plan developed for the expansion of Onslow townsite (Landcorp, 2012). The LWMS describes how the issues of surface and groundwater management associated with the proposed development will be managed. Key issues addressed in the LWMS include:

- **Storm Water Management Strategy:** The system will consist of minimizing piped drainage and using swales and overland flow paths in road reserves and linear multiple use corridors to retain and infiltrate minor events and safely convey flood flows. Area where natural topography precludes offsite conveyance will be designed to retain and infiltrate stormwater.
- **Groundwater Management Strategy:** Water quality aspects of groundwater management will be achieved via biofiltration in road swales and POS drainage corridors to treat and infiltrate storm water and reduce flow velocities to minimise erosion.
- **Coastal Inundation Management Strategy:** To assist in removing floodwaters in the existing townsite following a coastal inundation event, it is recommended the existing watercourse/drain which flows to the Beadon Creek Harbour be extended towards the town and graded appropriately to enable drainage from the townsite to access this outlet.
- **Urban Water Management Plans:** Urban Water Management Plans (UWMPs) will be a required to support subdivision applications for various stages of development within Onslow townsite.
- **Monitoring:** It is not envisaged any further additional predevelopment groundwater or surface water monitoring will be required to inform the UWMP and subdivision process. An alternative monitoring program of system performance is recommended for the site against a standardized proforma which will assess the performance of the system against its design. The program will consider processes such as vegetation health, scour, erosion, and deposition to inform the design of subsequent stages of development.

Monitoring outcomes will be used in a continual improvement capacity to review the implemented WSUD within the Onslow townsite and inform the planning and design approaches for subsequent stages of development. Any modification required to the LWMS would be identified through the review process of monitoring data and would require the agreement of all parties which are DWER, Shire of Ashburton and the developer (Landcorp, 2012)

The LWMS focuses on reducing nutrient loads in stormwater and onsite stormwater infiltration. Amended soils and ephemeral bioretention systems are stormwater. No management of groundwater levels is proposed.

An Urban Water Management Plan (UWMP) has been prepared by 360 Environmental to address the management of water associated with the proposed development and surrounding locality (Appendix G). The UWMP describes in detail how the water management issues described in the LWMS will be addressed. This will need to be approved by DWER as part of the Development Application.

The UWMP describes how water will be managed on site in the context of the site and overall surrounding locality. The management measures applicable to the proposed development include:

- **Stormwater management**: the main aim for stormwater management for the site is to mimic, as closely as possible, the predevelopment environment, post development. This will be achieved by maintaining where possible the natural topography of the site. Runoff throughout the site will be conveyed via overland flow, using the natural topography, to depression storage within the site. A Storm Water Management Strategy (SWMS) has been developed to identify that the site can effectively manage stormwater generated during minor and major rainfall events and meet design criteria.
- **Groundwater management**: Groundwater management focuses on groundwater levels, groundwater quality and acid sulphate soil management. For the site the following measures have been recommended:
    - **Groundwater levels:** The site's floor levels will be required to be raised to a minimum elevation of 6.4 m AHD, which will provide enough clearance to the AAMGL plus sea-level rise (approximately 2.7 m). Therefore, subsoil drainage is not proposed.
    - **Groundwater quality:** The proposed storm water management will ensure the quality of groundwater is maintained. The two key strategies include infiltrating the first flush of rainfall at the source and minimising the development footprint to replicate current (pre-development) conditions and natural groundwater recharge. In addition, maximizing native and waterwise vegetation within landscape areas and minimizing the use of fertilizers and pesticides onsite will help in maintaining water quality.
    - **Groundwater quality:** Groundwater investigations shall be undertaken to ascertain if there have been any potential contaminants beneath the site from previous fuel station use in the north.
    - **Acid Sulphate Soil Management:** ASS investigations are commonly required as part of the conditions of a development application. As the site has been identified as having moderate to low risk of ASS and natural landform is to be used i.e. no excavation or earthworks will be required around the ASS identified area within the site.
- **Flood Management:** Overland flow will be safely conveyed to the natural depressions and the site will use natural flow paths. The site's development floor level has been designed to be at a minimum of 6.4 m AHD. This provides an adequate freeboard to the 100year return period cyclonic storm surge allowing for climate change as specified in the coastal strategy.

The SWMS shall be implemented pre and post construction of the development. During the construction phase, water management requires considering direct impacts from any construction activities and maintaining the pre-development hydrological regime at post-development. Following the completion of construction activities, maintenance of any the stormwater management infrastructure and assessment of their performance will be required. As there is no drainage pipes and pits system constructed on-site, swales near roads and car parks would be the key maintenance features. The UWMP is further detailed in Appendix G.

A Technical Note has been prepared by 360 Environmental to demonstrate that the revised Master Plan for the Onslow Township Village will have no implications for the approved UWMP and SWMS for the development (Appendix H).

4.5 Aboriginal Heritage

4.5.1 Background

The *Aboriginal Heritage Act 1972* of Western Australia protects places and objects customarily used by or traditional to the original habitants of Australia. A register of such places and objects is maintained under the Act, however, all sites are protected under the Act whether they are registered or not.

The entire site is mapped within Aboriginal heritage sites including the following:

- Site ID.6618: is a ceremonial, water source type of site
- Site ID. 6617: is a mythological site which extends from the south-eastern side of the Study Area into the town
- Site ID. 8920: is an artefact/scatter, Midden registered site
- Site ID. 6575: is an artefacts/scatter, midden not a protected area.

4.5.2 Potential Impacts

Potential impacts to Aboriginal Heritage sites from the proposed development include:

- Disturbance or removal of unknown cultural heritage within the subsurface construction works
- Loss of value to Aboriginal Heritage sites caused by machinery, human interaction with sites.

4.5.3 Management Response

An ethnographic and archaeological survey of the site will be required to be undertaken by a suitably qualified consultant prior to development on the site. The survey will be undertaken in accordance with the provisions of the *Aboriginal Heritage Act 1972*. Approval for works within the registered Aboriginal Site may be conditional upon a heritage survey or Aboriginal Heritage due diligence being undertaken for the site (DPLH 2018).

These applications or surveys are being separately pursued forthe proposed development.

4.6 Acid Sulfate Soils

4.6.1 Background

DWER Acid Sulfate Soils mapping identifies that a portion southern part of the site is mapped as having 'Moderate to Low' risk of ASS within the first 3 m of natural soil surface. The western side of the site is mapped as having 'Moderate to Low' risk of ASS within the first 3 m of natural soil surface and a 'High to moderate' risk of ASS occurring within 3 m of natural soil surface on the northwest side going to the north.

4.6.2 Potential Impacts

ASS is naturally occurring soils that contain iron sulfides that are generally found in a layer of waterlogged soil or sediment which are gentle in their natural state. When these soils are disturbed and exposed to air, they oxidise and produce sulphuric acid, iron precipitates and concentrations of dissolved heavy metals (WAPC 2008).

4.6.3 Management Response

A Preliminary Site Self-Assessment is required as a condition of approval for the proposed development. This assessment willbe undertaken to assess the presence and extent of ASS in accordance with the DER guidelines. . Depending upon the results of the preliminary assessment, and whether ASS will be disturbed in the construction phase of the development, an ASS Assessment and Dewatering Management Plan may be required prior to construction of the development.

4.7 Contamination

4.7.1 Background

DWER Contaminated Sites Records identified that no contaminated sites occur within the site. The nearest identified site is a Restricted Use site approximately 1.6 km northeast of the site.

The desktop contamination assessment for the site concluded that that there have been no significant historical contaminating activities at the site, as the site has been vacant and undeveloped. However, six (6) AOPCs were identified, namely:

- AOPC 1 – Part of the site located adjacent to the former furnace oil aboveground storage tanks (ASTs) to the north of the site, and associated fuel pipelines and pumps (the offsite former furnace oil AST area. It was formerly classified as Contaminated – Remediation Required).
- AOPC 2 – Part of the site located adjacent to the former historical bulk fuel storage to the east (diesel line) of the site, and associated fuel pipelines and pumps.
- AOPC 3 – Part of the site located adjacent to the former historical bulk fuel storage to the south (aviation spirit) of the site, and associated fuel pipelines and pumps.
- AOPC 4 - Part of the site with a moderate to low risk of acid sulfate soils (ASS) being present within 3 metres of the soils surface.
- AOPC 5 - Potential unexploded ordnance (UXO) from activities during WWII (whole of site and Onslow Townsite).

- AOPC 6 - Potential asbestos from illegal fly-tipping or associated with offsite sources (whole of site).

4.7.2 Potential Impacts

The potential impacts for contamination from the site or surrounding sites include:

- Ground water pollution
- Human health and safety put at risk
- Air pollution
- Fauna habitat poisoning.

4.7.3 Management Response

Based on the conclusions from the desktop contamination assessment and gaps identified, the following management response is recommended.

- A UXO survey of the site should be considered prior to any site works commencing
- A HAZMAT site survey should be considered to evaluate the potential presence of asbestos at the site
- Conduct a review of any available contamination investigation and/or remediation reports describing works associated with former bulk fuel infrastructure (i.e. AOPC 1, AOPC 2 and AOPC 3) to determine the requirement for investigation onsite
- Site development plans should be reviewed to determine if ASS may be disturbed by development activities or if dewatering is to occur, and thereby determine the requirement for an ASSMP/DMP
- Depending on the findings of the above, consideration should be given to intrusive site investigations to:
    - Investigate the contamination status of soils (and potentially groundwater) onsite at AOPC 1, AOPC 2 and AOPC 3, to confirm there are no hydrocarbon impacts.
    - Assess the potential presence of asbestos (ACM, AF, or FA) in soils at the site. If identified to be present, asbestos remediation should be undertaken in accordance with Department of Health guidelines.
    - In the absence of any site investigations associated with AOPC 1, AOPC 2 or AOPC 3, an unexpected finds protocol (UFP) is recommended to be developed prior to site development works. The protocol should detail the management requirements should any of the contaminants of potential concern (COPCs) for the site be encountered during site development works.

The desktop contamination assessment report details these management measures (Appendix B). The conditional approval has identified that additional contamination investigations are required prior to commencement of construction of the proposed development.

4.8 Bushfire Management

4.8.1 Background

The DLPH identifies the site within a Bushfire Prone Area. The proposed development is considered to be a vulnerable land use which triggers the requirements for the preparation of a BMP and BEMP to satisfy the provisions of the SPP No. 3.7 - Planning for Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas (WAPC 2017).

The BMP describes the specific BAL ratings applicable to the proposed development and identifies appropriate fire management measures to be implemented for the overall development. Additionally, a BEMP details the emergency and evacuation procedures applicable the site and its overall relationship to the Onslow Townsite.

4.8.2 Potential Impacts

The potential impacts of bushfire for the site and surrounding locality include:

- Loss of flora and fauna habitats
- Loss of infrastructure and services
- Destruction to coastal environment
- Destruction of personal property
- Destruction to townsite and surrounding locality
- Limited access within the entire townsite for fire purposes.

4.8.3 Management Measures

A BMP and BEMP was developed by Linfire Consultancy as part of the proposed Master Plan for the site. The BMP describes the measures that need to be implemented to minimise the impact of fire on the site and surrounding locality. The BEMP provides procedures to assist with the management of occupants during a bushfire emergency as well detailed site-specific information in order to assess the vulnerability of the development and location and extent of the hazard. These are summarised below:

Bushfire Management Plan

- **Onsite Landscaping and Staging Buffers:** If the development (and therefore clearing) is to occur on a staged basis, clearing in advance will need to occur to ensure building construction is not inhibited by a temporary vegetation extent located within adjacent development stages yet to be cleared. This can be achieved by ensuring that each approved stage subject to construction is surrounded by a suitably sized, on-site cleared, or low threat buffer to development (not including vegetation proposed to be retained Once the buffers are created, they will need to be maintained on a regular and ongoing basis. Management will include slashing of grassland at 100 mm or lower, to achieve a low threat minimal fuel condition all year round, until such time that the buffer area is developed as part of the next development stage. This will assist in managing the current on-site temporary vegetation hazards.

- **Emergency Pedestrian Gates:** Emergency pedestrian gates are proposed in the fence surrounding the project area, to permit egress by on-site occupants to Onslow townsite, should offsite evacuation from the development be required. The gates are to have a minimum width of no less than 3.6 m to enable 2-3 people to pass through simultaneously. Both gates should be locked to restrict access, however a common key system is to be used with keys made available to on site Emergency Response Team and to local fire brigade personnel.
- **Road Verge Fuel Management:** Existing and proposed road verges that have been excluded as low threat are to be managed to ensure the understorey and surface fuels remain in a low threat. Ongoing road verge management will be the responsibility of the Shire.
- **Staging of Access:** If development is to occur on a staged basis, vehicular access arrangements will need to ensure that all occupants are provided with compliant public access and internal driveways at all stages. This can be achieved via construction of access in advance of stages.
- **BAL Compliance and/or BAL Assessment Report:** A BAL compliance and/or BAL assessment report may be prepared at the discretion of the Shire following completion of construction works and prior to issue of certificate of occupancy to validate and confirm the accuracy of the BAL contour assessment; or demonstrate any change in the assessed BAL or other management measures documented in this BMP. This may occur as a result of changes in building location, vegetation class or bushfire management approach. The Shire or Building Certifier may also require a revised BAL assessment to confirm the BAL rating to buildings, prior to submission of building license.
- **Building Construction Standards:** Bushfire construction provisions of the National Construction Code require that Class 1, 2, 3 and associated Class 10a buildings comply with the Bushfire specific construction requirements of AS3959, in accordance with the assessed BAL. The accommodation buildings within the proposed development are required to comply with AS3959 to the assessed BAL rating as identified on Figure 4 or through a subsequent BAL assessment (Appendix E).
- **Notification on Title:** Notification is to be placed on the Title of proposed lots subject to BAL-12.5 or higher (either through condition of subdivision or other head of power) to ensure landowners/proponents and prospective purchasers are aware that their lot is subject to an approved BMP and BAL assessment.
- **Compliance with Annual Firebreak Notice:** MRL is to comply with the current Shire of Ashburton annual firebreak notice, including any approved variations (should they exists). The firebreak notice requires that perimeter firebreaks are implemented on all properties within the town site that exceed 2000 m². The perimeter mineral earth firebreak is to be no less than 5 m wide and 4 m high and must be immediately inside the external property boundary (Appendix E).

Bushfire Emergency Management Plan

The BEMP is for the entire Onsite Townsite and has been designed to assist management to protect life and property in the event of a bushfire. The proposed development and occupant details include:

- Vulnerable occupants
- Communication Equipment and Strategy
- Vehicular access
- Pedestrian Access
- Firefighting and other emergency equipment
- Vegetation Management and Building Bushfire Construction.

The BEMP provides the following:

- **Emergency Contacts:** Identifies the onsite response team and emergency services and other organizations responsible for fire response.
- **Bushfire Emergency Warnings and Forecast Bushfire Information:** Details the bushfire emergence status information, the fire danger ratings, total fire ban days and the DFES emergency warning.
- **Bushfire Preparedness:** Details ongoing year-round and daily actions throughout the bushfire season preparation. These actions focus on management of onsite combustible material, maintenance of buildings, access routes and fire and emergency systems and ensuring emergency management preparedness, to not only reduce the intensity of bushfire impact but also to maximise the chance for successful occupant evacuation or refuge.
- **Awareness and Pre-emptive Procedures:** Details the procedures focus on forecast fire danger rating and the forecast total fire ban. It also outlines when and what monitoring actions are to be undertaken to ensure the facility maintains awareness of any forecast elevated bushfire weather days, and the associated pre-emptive procedures the facility can implement to respond to heightened risk.
- **Bushfire Emergency Triggers and Decisions Making:** Highlights that decision making is the responsibility of the onsite Chief Fire Warden in the case of a bushfire. There are two main response options for the Onslow facility which are offsite evacuation and onsite shelter in place. These response actions will be subsequent to the standby and control shutdown action or an emergency shutdown.
- **Standby and Controlled Shutdown Procedures:** Details that where a bushfire is sufficiently far away that it is not clear whether it will impact the facility or vehicular access routes but is close enough to trigger a heightened level of awareness by occupants which may also include commencing a shutdown response by the facility. There is still considered adequate time for shutdown to be conducted in a controlled way in preparation for safe offsite evacuation.

- **Offsite Evacuation Response:** Details that where a bushfire is close enough to the facility and/or egress routes to require rapid shutdown of the development, with the intention of getting occupants to a place of relative safety. Priority shall be on ensuring occupants are evacuated offsite to safety, with a focus on egress routes, however if this unsafe to conduct, they shall be relocated to the onsite location to shelter-in-place.
- **Onsite Shelter-in-Place Response (Last Resort Action Only):** Identifies an alternative to offsite evacuation is for occupants to shelter-in-place within the facility. This would typically be expected to occur if there is insufficient time to conduct a safe offsite evacuation or the risk associated with offsite evacuation otherwise considered to be greater than sheltering in place on-site (Appendix F).

The conditional approval identifies that the BMP and BEMP is required to be implemented prior to construction of the proposed development.

5 Key Environmental Constraints and Management Review

Any potential environmental impacts that may result from change in land use and development of the Onslow Township Village are discussed below, along with management measures intended to mitigate any possible impacts (Table 10)

Table 10: Key Environmental Aspects

Environmental Aspect	Site Relevance	Approval and Management Considerations
Contamination	A desktop contamination assessment for the site concluded that there have been no significant historical contaminating activities at the site, as the site has been vacant and undeveloped. Six areas of potential concern (AOPC) were identified within the site.	A HAZMAT assessment to evaluate the potential presence of asbestos at the site. In the absence of contamination investigations associated with the identified AOPCs an unexpected finds protocol (UFP) is recommended to be developed prior to site development works. The conditional approval identifies that additional assessments are required to be undertaken prior to construction commencement of the proposed development.
Acid Sulfate Soils	A desktop assessment identified that a portion of the site is identified as 'moderate to low risk of ASS, with a portion of the site to the north identified as 'moderate to high risk of ASS'.	A Preliminary Site Assessment will be undertaken to assess the presence and extent of ASS in accordance with DER guidelines. Depending on the results of the preliminary assessment, and whether ASS will be disturbed in the construction phase of the development, an ASS Assessment and Dewatering Management Plan may be required prior to construction commencement for the proposed development.
Surface Water and Groundwater	The site is located within Ashburton River surface water area and the closest water surface feature is 2.5 km east of the site. The Water Register indicates that the site lies within the Pilbara groundwater area and Ashburton subarea. Impacts on surface water and ground water include: • Groundwater level changes from changes in land use and clearing. The development of the proposed accommodation and associated outbuildings has the potential to increase recharge of rainfall into groundwater through increased surface area of roofs, driveways, carparks, and roads.	Implementation of the UWMP will be required to cater for development that will be proposed for the site. Two winters of surface water monitoring will be required. The revised Master Plan will have no implications for the approved UWMP and SWMS for the development (Appendix H). The conditional approval identifies a Stormwater and Drainage Management Plan be prepared and implemented prior to construction of the proposed development.

Environmental Aspect	Site Relevance	Approval and Management Considerations
	• Habitat modification (invasion of exotic species, clearing, introduction of feral and domestic animals, weed and pathogen introduction or spread). • Impact on costal processes. • Diminished water quality (nutrients, organic compounds, suspended solids, toxic compounds, and salinity) as a consequence of discharges. The UWMP identified appropriate measures and strategies to manage groundwater and surface water within the site and surrounding locality. The following measures have been suggested: • Stormwater management • Groundwater management • Flood management. The SWMS shall be implemented pre and post construction for the proposed development.	
Flora and Vegetation	A detailed flora and vegetation survey of the site identified 30 native taxa were recorded from 15 families. No Threatened flora species pursuant to the Environment Protection and Biodiversity Conservation Act 1999 and/or gazetted as Threatened pursuant to the Biodiversity Conservation Act 2016, or DBCA listed Priority flora species were recorded within the site. The *Tamarix aphylla* is the only weed listed as both a Declared Pest and Weed of National Significance by the Commonwealth Department Agriculture, Water, and the Environment found within the site.	Potential impacts to vegetation and flora are considered unlikely to be significant due to the type of vegetation on site. The vegetation has been considered insignificant locally and regionally. Management measures include weed control, fire management, dieback management and control and establishment of culture centre to retain native vegetation within the site. Preparation of a CEMP is recommended prior to construction of the development.
Fauna	One (1) fauna habitat was mapped within the site, with Coastal Dunes representing the most value to conservation significant fauna and overall fauna assemblages. No conservation significant species were recorded during the fauna survey. Fourteen (14) bird species and one (1) reptile species were confirmed to be using the site.	Potential impacts to fauna habitats and conservation of fauna species. No conservation significant fauna was found in the survey. Fauna habitat could be protected. Careful control of the clearing of vegetation within the site during the development phase by careful control of the clearing of vegetation within the site during the development phase. Having a fire management plan and controlling weeds around within retained areas and site surroundings. Relocation and

Environmental Aspect	Site Relevance	Approval and Management Considerations
		trapping of vertebrae fauna will be necessary prior to construction commencing on the site. A Relocation Management Plan may be required as a condition of Development Approval for the proposed development. Preparation of a CEMP is recommended prior to construction of the development. A condition of approval identifies that a Target Terrestrial Fauna Survey shall be undertaken to confirm the presence and significance of *Lerista planiventralis maryani on the site.* It also identifies that a Targeted Fauna Survey shall be undertaken to confirm the presence and significance of 'Marine' and 'Shorebirds' on the site Both these surveys shall be undertaken prior to construction of the development. A Relocation Management Plan may be required subject to the findings from the abovementioned surveys.
Heritage	A search of the Department of Planning, Lands and Heritage's (DPLH) Aboriginal Heritage Inquiry System identified three registered Aboriginal Heritage sites within the site (Figure 10). • Site ID: 6618 -is a ceremonial, water source type of site. This site covers the whole Study area. It is named DEW TALU. • Site ID: 6617- is a mythological site which extends from the south-eastern side of the Study Area into the town. The site is named BURUBARLADJI. • Site ID: 8920- is an artefact/scatter, Midden registered site. The site is within the Study area, covering at least a third of the southeast side of the site. • Add 4 one off site.	An ethnographic and archaeological survey of the site will be required by a suitably qualified consultant prior to any development. Preparation of a Cultural Heritage Management Plan in consultation with the Aboriginal knowledge holders for the area may be required to identify appropriate management measures and provisions for heritage areas to be retained and managed on site. A Section 18 Application will be required prior to construction. The additional surveys or applications are being separately sought to the development approval process for the development.
Bushfire Risk	The whole site is mapped within a Bush Fire Prone Area.	A BMP and BEMP) has been prepared for the site to satisfy the provisions of the SPP No. 3.7 - Planning for Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas. The conditional approval identifies that theBMP and BEMP are required to be updated and

Environmental Aspect	Site Relevance	Approval and Management Considerations
		implemented prior to construction of the proposed development.

6 Summary and Conclusion

6.1 Summary of Key Findings

An assessment of environmental aspects of the Onslow Township Village has determined the following are relevant:

Contamination

A desktop contamination assessment for the site concluded that there have been no significant historical contaminating activities at the site, as the site has been vacant and undeveloped. However, six areas of potential concern (AOPC) were identified within the site. These AOPCs have been associated with the lack of soil or groundwater investigations undertaken at the site. It is understood offsite contamination (and possible remediation) associated with former fuel infrastructure located to the north has previously occurred. The nature and extent of existing and/or residual contamination in soil or groundwater is not known. The risk to the site is considered to be low.

Recommendations from the site contamination assessment include having a HAZMAT site to evaluate the potential presence of asbestos at the site. A review of any available contamination investigation and/or remediation reports describing works associated with former bulk fuel infrastructure to determine the requirement for investigation onsite would be required. In the absence of contamination investigations associated with the identified AOPCs an unexpected finds protocol (UFP) is recommended to be developed prior to site development works. The conditional approval identifies that additional contamination assessments are requiredprior to construction commencement of the proposed development.

Acid Sulfate Soils

Acid Sulfate Soils (ASS) mapping undertaken by DWER indicates that a portion southern part of the site is mapped as having 'Moderate to Low' risk of ASS within the first 3 m of natural soil surface. An ASS investigation may be required if the works within the site will involve lowering the water table and earthworks beyond 3 m below the natural ground surface. An ASS Self-Assessment form should be filled out to identify the need of an ASS investigation. If required, prior to ground disturbing activities an ASS and Dewatering Management Plan (ASSDMP) can be developed to manage the ASS risk within the site.

A Preliminary Site ASS assessment is required toe undertaken prior to construction of the development. Depending upon the results of the preliminary assessment, and whether ASS will be disturbed in the construction phase of the development, an Acid Sulfate Soil Assessment and Dewatering Management Plan may be required prior to construction commencement of the proposed development.

Flora and vegetation

No Threatened flora species pursuant to the Environment Protection and Biodiversity Conservation Act 1999 and/or gazetted as Threatened pursuant to the Biodiversity Conservation Act 2016, or DBCA listed Priority flora species were recorded within the site.

Four (4) introduced flora species were recorded during the survey; including *Tamarix aphylla*, listed as both a Declared Pest and Weed of National Significance by the Commonwealth Department Agriculture, Water, and the Environment.

One (1) native vegetation type was mapped within the site, comprising mid to low *Acacia* trees, low shrubs, and grass lands. The vegetation type identified by the survey is predominantly uncleared and widespread within the bioregion. The vegetation mapped within the site is not considered to be locally or regionally significant. Vegetation condition within the site was concluded to be Very Good, with evidence of disturbance including vehicle tracks and weeds.

The retention of flora and vegetation for open space and surrounding accommodation buildings is recommended where possible. The conditional approval identified that a CEMP would be required to be prepared prior to construction to address flora and vegetation significance for the site. **Fauna**

One (1) fauna habitat was identified within the site, with Coastal Dunes representing the most value to conservation significant fauna and overall fauna assemblages. No conservation significant species were recorded during the fauna survey. Fourteen (14) bird species and one (1) reptile species were recorded within the site.

A CEMP would also be required to be prepared prior to construction to address fauna and fauna habitat significance for the site.

The conditional approval identified that a Targeted Terrestrial fauna survey isrequired to confirm the presence and significance 'Marine' and 'Shoreline' and *Lerista planiventralis maryani* species during the months of September to April prior to construction of thedevelopment. A Relocation Management Plan may be required subject to findings from the abovementioned surveys.

Surface water and Ground water

An Urban Water Management Plan (UWMP) has been developed by 360 Environment for the site. The UWMP details the measures and strategies to manage surface water and groundwater associated with the proposed development and surrounding locality. The UWMP will be implemented as a condition of approval. The revised Master Plan has no implications for the approved UWMP and SWMS (Appendix H). The conditional approval identifies that a Stormwater and Drainage Management Plan shall be prepared prior to construction commencement of the development.

ESA and Conservation Areas

The site is not mapped within a conservation reserve or DBCA managed land. Mapping undertaken by DWER shows the site is not located within an ESA and no ESA was identified within the 10 km of the site. There will be no impact associated with ESA or Conservation Areas resultant from the proposed development of the site.

Aboriginal Heritage

Three Aboriginal sites have been identified within the site and one Aboriginal site is located within close proximity to the site.

An ethnographic and archaeological survey of the sitehas been prepared by a suitably qualified consultant and this survey will inform on the approval works requiredfor the site.

Additional surveys and application are being sought separate to this development approval process for the proposed development.

Bushfire Management

The whole site is identified within a Bushfire Prone Area as per SPP No. 3.7 - Planning for Bushfire Prone Areas. A BMP and BEMP has been prepared for the site to satisfy the provisions of the State Planning Policy No. 3.7 - Planning for Bushfire Prone Areas and Guidelines for Planning in Bushfire Prone Areas. The BMP and BEMP will be implementedprior to the construction commencement of the development.

6.2 Conclusions

The key environmental issues identified in the EAR do not pose a significant constraint to development of the short stay workforce accommodation of the Onslow Township Village. Avoidance of important environmental assets during the master planning phase has resulted in the development having limited potential impact.

Where the environment could possibly be impacted, environmental management measures, additional investigations, surveys, or assessments (including additional approvals) are proposed to avoid or mitigate these impacts. Those issues not addressed through the development approval process will be addressed in detail in the development and construction approval phases accordingly.

Attachment 13.2A -DAP Application – DAP-21-02078_DA 22-40 L300 Back Beach Road, Onslow

7 Limitations

This report is produced strictly in accordance with the scope of services set out in the contract or otherwise agreed in accordance with the contract. 360 Environmental makes no representations or warranties in relation to the nature and quality of soil and water other than the visual observation and analytical data in this report.

In the preparation of this report, 360 Environmental has relied upon documents, information, data, and analyses ('client's information') provided by the client and other individuals and entities. In most cases where client's information has been relied upon, such reliance has been indicated in this report. Unless expressly set out in this report, 360 Environmental has not verified that the client's information is accurate, exhaustive, or current and the validity and accuracy of any aspect of the report including, or based upon, any part of the client's information is contingent upon the accuracy, exhaustiveness, and currency of the client's information. 360 Environmental shall not be liable to the client or any other person in connection with any invalid or inaccurate aspect of this report where that invalidity or inaccuracy arose because the client's information was not accurate, exhaustive, and current or arose because of any information or condition that was concealed, withheld, misrepresented, or otherwise not fully disclosed or available to 360 Environmental.

Aspects of this report, including the opinions, conclusions, and recommendations it contains, are based on the results of the investigation, sampling and testing set out in the contract and otherwise in accordance with normal practices and standards. The investigation, sampling and testing are designed to produce results that represent a reasonable interpretation of the general conditions of the site that is the subject of this report. However, due to the characteristics of the site, including natural variations in site conditions, the results of the investigation, sampling and testing may not accurately represent the actual state of the whole site at all points.

It is important to recognise that site conditions, including the extent and concentration of contaminants, can change with time. This is particularly relevant if this report, including the data, opinions, conclusions, and recommendations it contains, are to be used a considerable time after it was prepared. In these circumstances, further investigation of the site may be necessary.

Subject to the terms of the contract between the Client and 360 Environmental Pty Ltd, copying, reproducing, disclosing, or disseminating parts of this report is prohibited (except to the extent required by law) unless the report is produced in its entirety including this page, without the prior written consent of 360 Environmental Pty Ltd.

8 References

360 Environmental Pty Ltd, 2021. Lot 300 Back Beach Road, Onslow, Flora and Fauna Survey, Perth

360 Environmental Pty Ltd, 2021. Lot 300 Back Beach Road, Onslow, Desktop Contamination Assessment, Perth

360 Environmental Pty Ltd, 2021. Lot 300 Back Beach Road, Onslow, Urban Water Management Plan, Perth

360 Environmental Pty Ltd, 2022, Lot 300 Back Beach Road, Onslow, Technical Note on Urban Water Management Plan, Perth

AECOM, 2010. Environmental Due Diligence, Onslow Townsite Strategy, Report prepared for Landcorp

Beard, J.S. 1972-80. Vegetation Survey of Western Australia: The Vegetation of the Perth Area, Western Australia. Perth: Vegmap Publications.

Bureau of Meteorology (BoM) 2021. Weather and Climate Data, accessed [28/07/2021] from http://www.bom.gov.au/climate/data-services/

Department of Aboriginal Affairs (DAA) Aboriginal Heritage Inquiry System, accessed [3/07/2021] from http://maps.dia.wa.gov.au/AHIS2/

Department of Agriculture and Food Western Australia (DAFWA) 2017. Western Australian Organism List accessed [23/07/2021] from https://www.agric.wa.gov.au/bam/western-australian-organism-list-waol, Government of Western Australia.

Department of Agriculture and Food Western Australia (DAFWA). 2012. Soil Subsystems of Western Australia, GIS dataset, Government of Western Australia.

Department of Environment and Energy (DoEE) 2017. Protected Matters Search Tool, accessed [20/7/2021] from http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf , Commonwealth of Australia.

Department of Food and Agriculture Western Australia (DAFWA). 2012. Soil Subsystems of Western Australia, GIS dataset, Government of Western Australia.

Department of Parks and Wildlife (DPaW) 2017. Geomorphic Wetlands, GIS dataset, Government of Western Australia.

Department of Planning Lands Heritage (DPLH) 2021. Bush Forever Sites, GIS Dataset, Government of Western Australia. Department of Planning Lands and Heritage, 2021. Development Assessment Panels, DPLH.

Department of Planning Lands and Heritage, 2021. Plan WA Interactive tool, DPLH.

Department of Planning, Lands and Heritage (DPLH). 2021. *Aboriginal Heritage Inquiry System*, available from http://maps.dia.wa.gov.au/AHIS2/.Government of Western Australia.

Department of Water and Environment Regulation (DWER) 2021a. Environmentally Sensitive Areas (ESA), GIS Dataset, Government of Western Australia.

Department of Water and Environment Regulation (DWER) 2021b. Acid Sulfate Soils (ASS), GIS dataset, Government of Western Australia

Department of Water and Environmental Regulation (DWER), 2021c. Public Drinking Water *Source Areas. GIS Dataset. Government of Western Australia.*

Department of Water and Environmental Regulation (DWER), 2021d. Perth Groundwater Map. Available at https://maps.water.wa.gov.au/#/webmap/gwm. Government of Western Australia.

Department of Water and Environmental Regulation (DWER), 2021e. Clearing Permit System Map. Accessed from https://cps.der.wa.gov.au/. Government of Western Australia.

Environment Protection Authority (EPA) 2008. Guidance Statement No. 33, Environmental Guidance for Planning and Development, Government of Western Australia.

Heddle, E.M., Loneragan, O.W. and Havel, J.J., 1980. 'Vegetation of the Darling System, Department of Environment and Conservation (south of Moore River)', Department of Environment and Conservation.

Linfire Consultant , 2022. Updated Onslow Township Resort Bushfire Emergency Management Plan, Perth

Linfire Consultant , 2022. Updated Onslow Township Resort Bushfire Management Plan, Perth

Mitchell, D., Williams, K., Desmond, A. 2002. Swan Coastal Plain 2 (SWA2 – Swan Coastal Plain subregion) in A Biodiversity Audit of Western Australia's 53 Biogeographic Subregions in 2002. Department of Parks and Wildlife (DPaW), Government of Western Australia.

Shepherd, D. P., Beeston, G. R., and Hopkins, A. J. M. 2001. Native Vegetation in Western Australia (Technical Report 249). Perth: Department of Agriculture.

State Heritage Office (SHO) 2021. State Register of Heritage Places. Available at http://inherit.stateheritage.wa.gov.au/public. Department of Planning, Lands and Heritage. Government of Western Australia.

Shire of Ashburton, 2019. Living Life, Strategic Community Plan 2017-2027, 2019 Desktop Review, Shire of Ashburton.

Figures



Legend

- Development Envelope
- Cadastral Lines

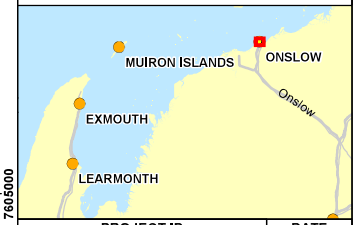
- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 250 500 750 N
Meters
1:20,000 @ A4

LOCALITY MAP



PROJECT ID	DATE
4755	09/02/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

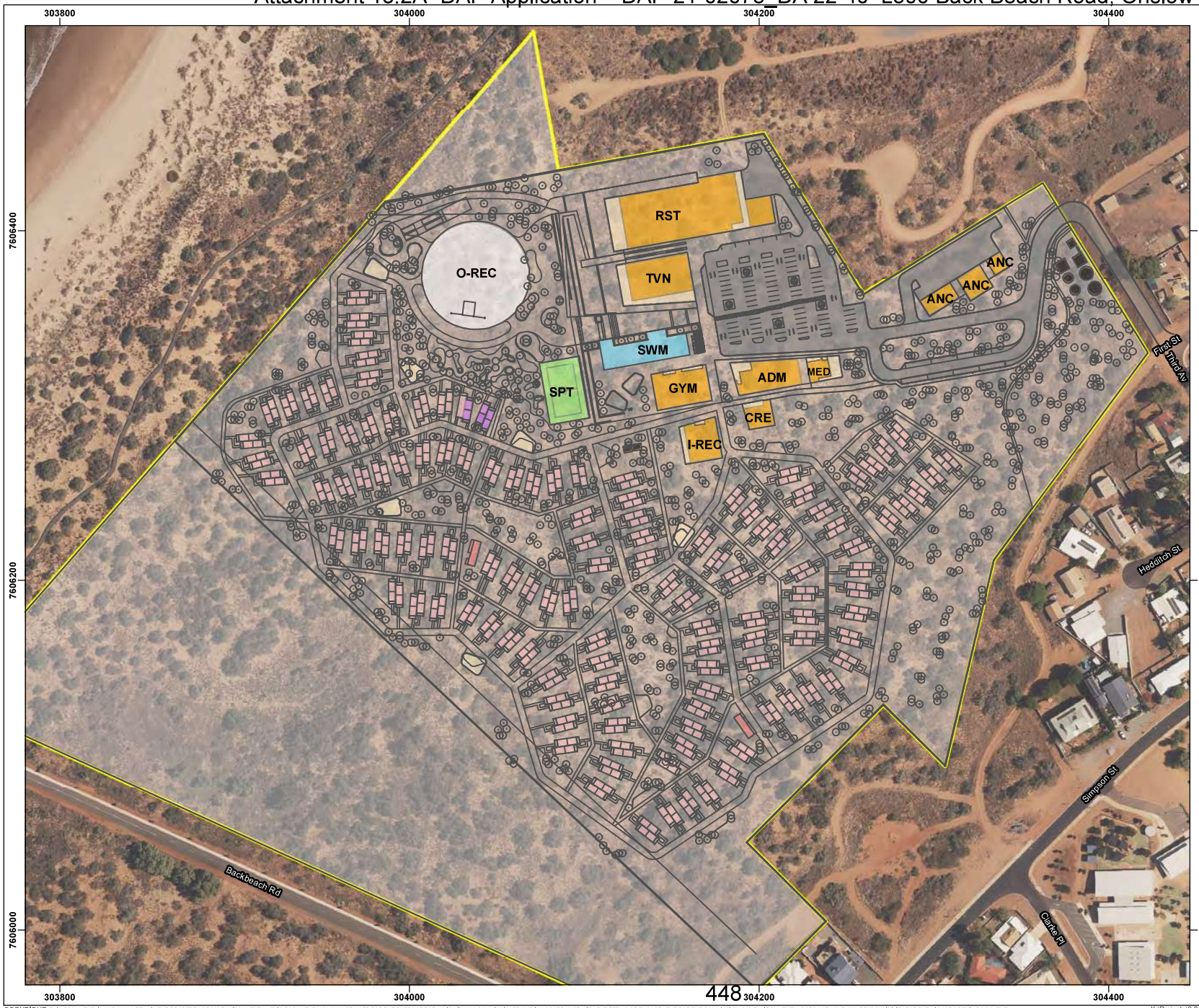
Environmental Assessment Report

Figure 1

Proposal Location and Development Envelope

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9.0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F01 Proposal Location and Development Envelope .mxd



Legend

- Site_Boundary
- Accessible Accomodation Pods (Sleeps 2)
- Accomodation Pods (Sleeps 4)
- Buildings
- Covered Outdoor Space
- Field Store (With Laundry)
- Road/Car Park
- Service
- Sport
- Uncovered Outdoor Space
- Water Body

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

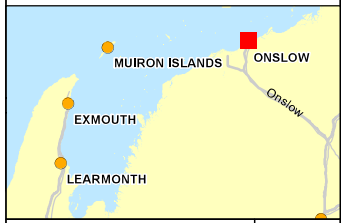
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 12.5 25 50 75 Meters

1:2,935 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
4755	11/05/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	GA	GA	0

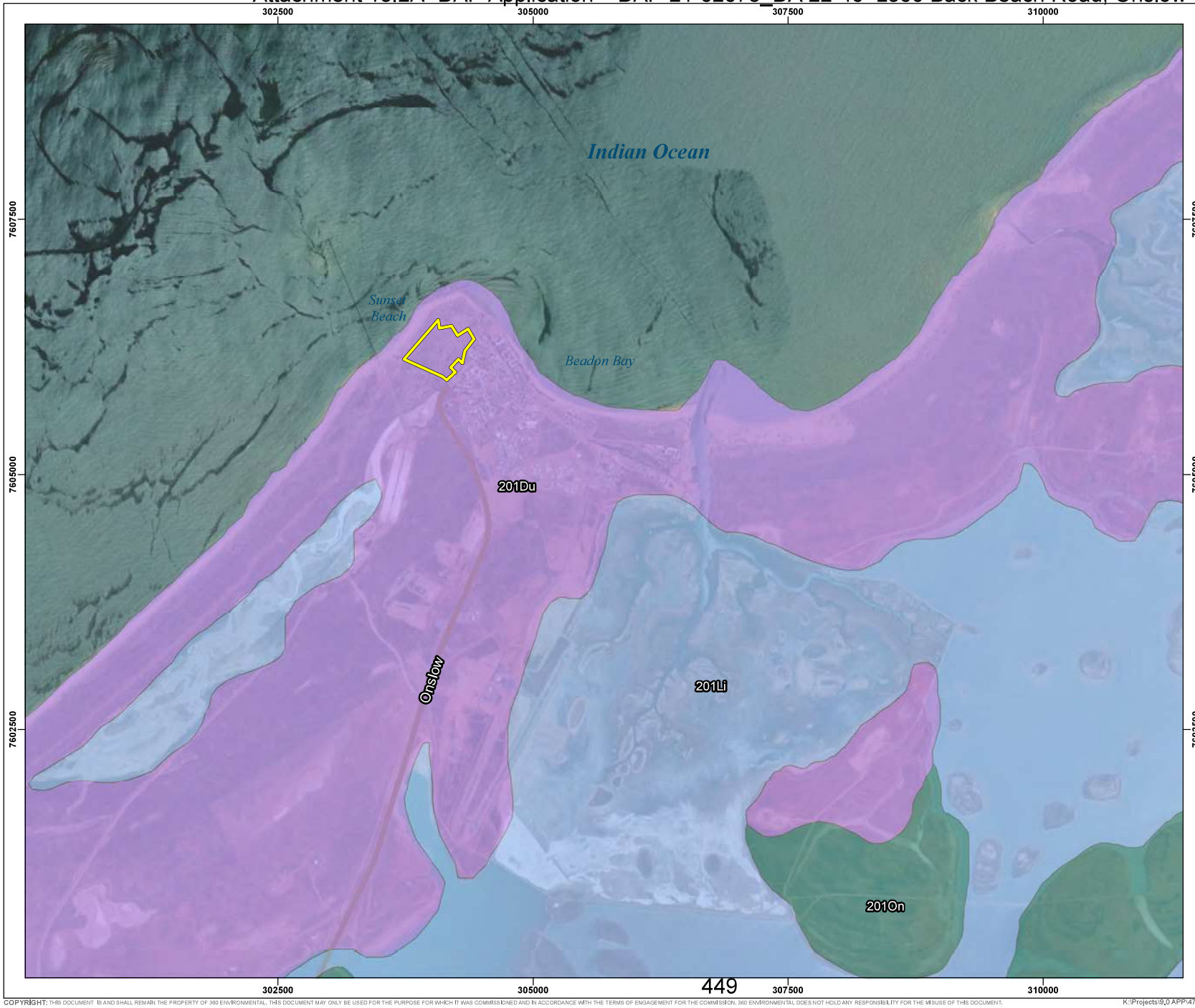
Rowe Group c/o Mineral Resources Limited
Lot 300 Back Beach Road, Onslow

Environmental Assessment Report

Figure 2
Conceptual Master Plan

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9.0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4757 F02 Master Plan.mxd



Legend

Development Envelope

Soil Land System

201Du: Dune fields supporting soft spinifex and minor hard spinifex grasslands.

201Li: Bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests.

201On: Undulating sandplains, dunes and level clay plains supporting soft spinifex grasslands and minor tussock grasslands.

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020

(© Western Australian Land Information Authority 2020)

SLIP ENABLER

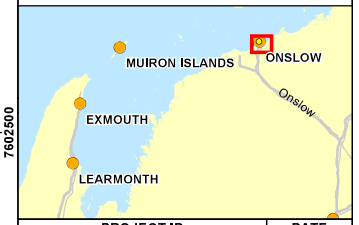
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 610 1,220 1,830 Meters

1:50,000 @ A4

N

LOCALITY MAP



PROJECT ID	DATE
4755	28/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 3

Soil Land Systems

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9.0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F04 Soil Land Systems.mxd



Legend

- Development Envelope

Acid Sulfate Soils Risk

- High to moderate risk
- Moderate to low risk

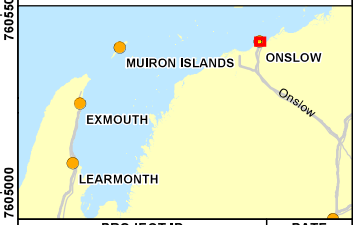
- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 250 500 750 N
Meters
1:20,000 @ A4

LOCALITY MAP



PROJECT ID	DATE
4755	28/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

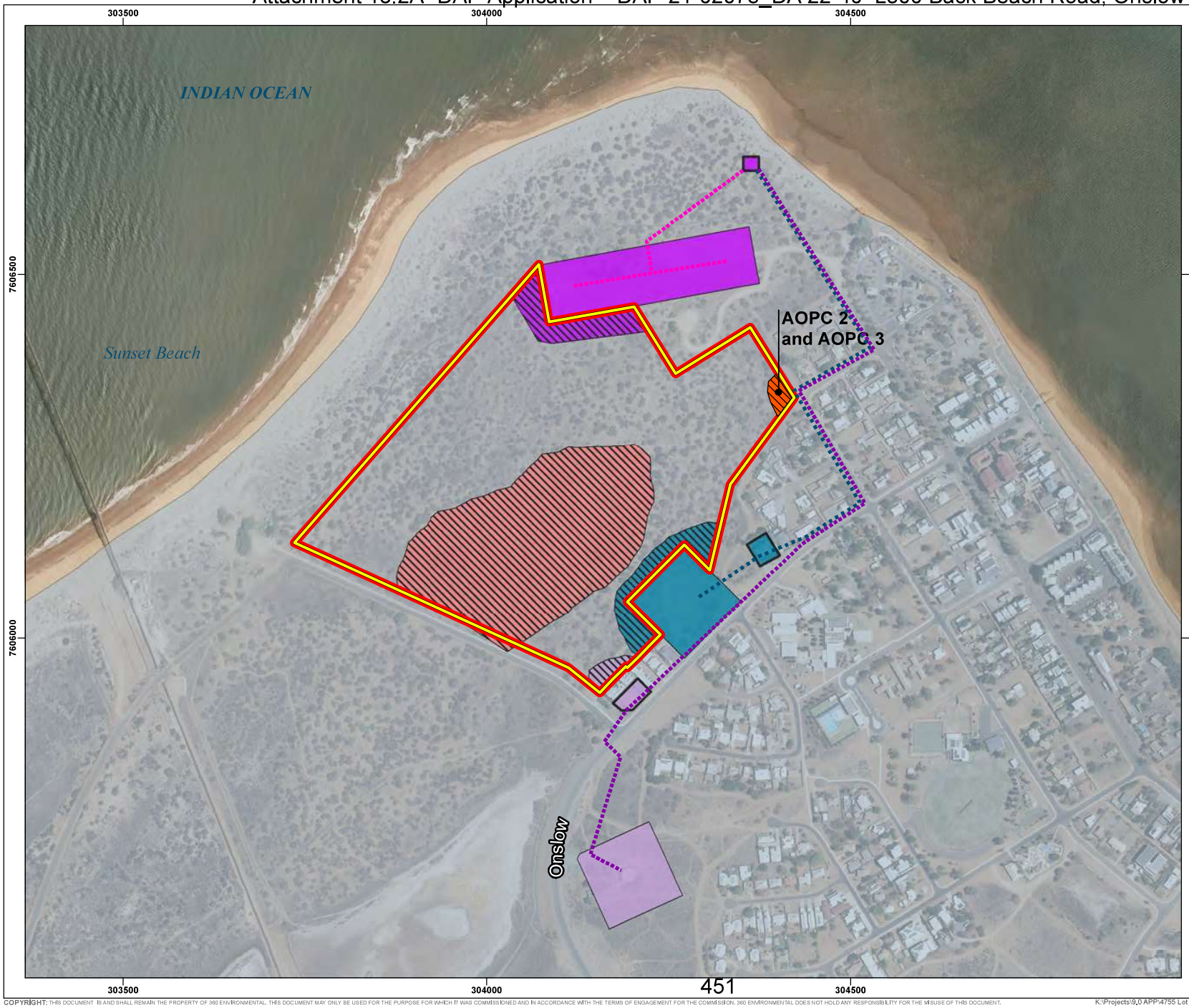
Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 4
Acid Sulfate Soils

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\8,0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F05 Acid Sulfate Soils.mxd



Legend

- Development Envelope

Areas of Potential Concern

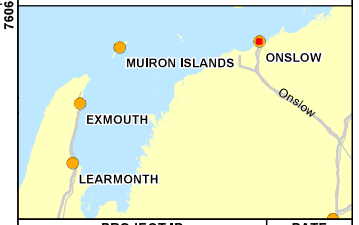
- Former Aviation Spirit Pump
- Former Dieseline Pump Station
- Former Pump Out Station for bulk fuel ASTs
- Lot 381 Former Furnace Oil
- Lot 383 Former Dieseline
- Lot 658 - Former Aviation Spirit
- AOPC 1 - parts of site adjacent the former Furnace Oil ASTs and/or associated infrastructure
- AOPC 2 - parts of site adjacent the former Dieseline AST and/or associated infrastructure
- AOPC 3 - parts of site adjacent the former Aviation Spirit AST and/or associated infrastructure
- AOPC 4 - part of site with Moderate to Low risk of ASS within 3m of site surface
- AOPC 5 - UXO risk for whole of site (and Onslow Townsite)
- AOPC 6 - Potential asbestos (whole of site)

NOTE:
dashed lines = approximate fuel lines associated with former bulk fuel infrastructure

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 80 160 240 Meters
1:7,000 @ A4
N

LOCALITY MAP



PROJECT ID	DATE
4755	28/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 5
Areas of Potential Concern

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9,0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F06 Areas of Potential Concern.mxd



Legend

- Development Envelope

Hydrography

- Watercourse - minor
- Lake
- Area Subject to Inundation
- Marine Construction - wharf/jetty
- Tidal Flat
- Reef Area
- Coastal Waterline

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

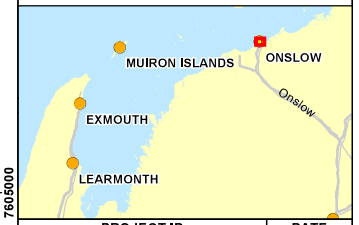
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 250 500 750 N

Meters

1:20,000 @ A4

LOCALITY MAP



PROJECT ID	DATE
4755	28/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

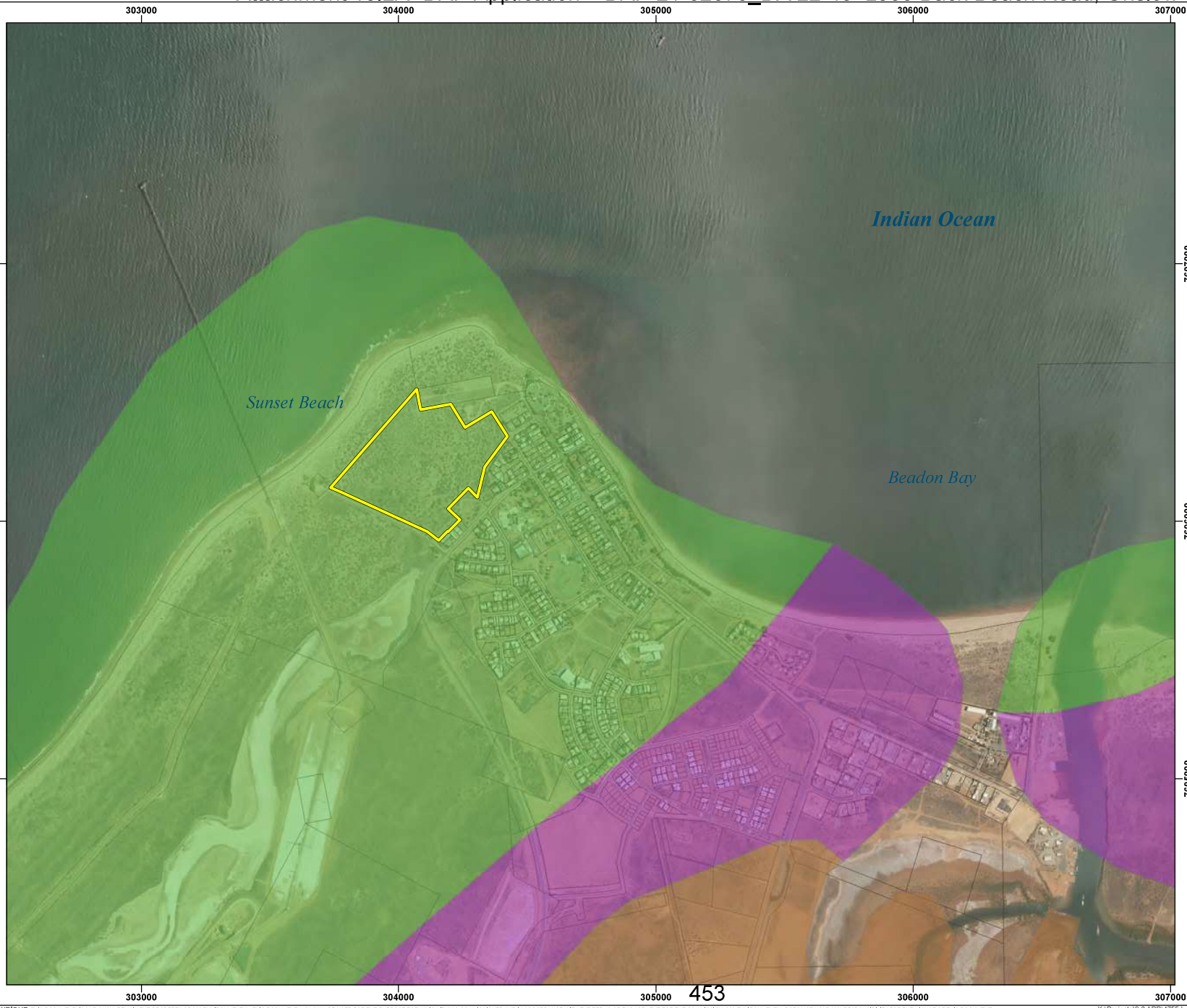
Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 6
Hydrography

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9.0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F07 Hydrography.mxd



Legend

- Development Envelope
- Cadastral Lines

Broad Vegetation Types

- CAPE YANNARE COASTAL PLAIN_117: Grass-steppe
- CAPE YANNARE COASTAL PLAIN_127: Tidal mud flat
- CAPE YANNARE COASTAL PLAIN_676: Samphire

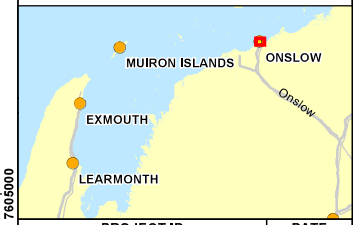
- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 250 500 750 N
Meters
1:20,000 @ A4

LOCALITY MAP



PROJECT ID	DATE
4755	28/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 7
Vegetation Associations

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9,0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F08 Vegetation Associations.mxd



Legend

- Survey Area Boundary
- Cadastral Lines

Vegetation Types

- Ac

Weed of National Significance

- *Tamarix aphylla*

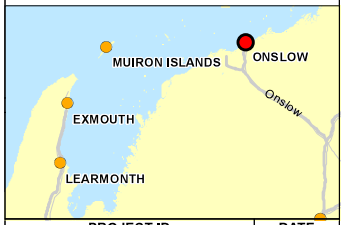
- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 40 80 120 Meters
1:3,500 @ A4
N

LOCALITY MAP



PROJECT ID	DATE
4755	27/07/2021

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
LF	VM	FJ	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Onslow
Environmental Assessment Report

Figure 8
Vegetation Types

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9.0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F08 Vegetation Types.mxd



Legend

- Development Envelope
- Cadastral Lines

Vegetation Condition

- Very Good (VG)

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 40 80 120 Meters
1:3,500 @ A4
N

LOCALITY MAP



PROJECT ID	DATE
4733	28/03/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 9
Vegetation Condition

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9,0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F09 Vegetation Condition.mxd



Legend

- Development Envelope

Aboriginal Heritage

- Registered Sites
- Lodged Sites

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS
- LOCALITY MAP SOURCED LANDGATE 2020
- OTHER DATA SOURCED LANDGATE 2020
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2020
(© Western Australian Land Information Authority 2020)

SLIP ENABLER

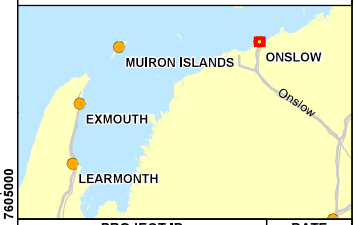
360 environmental
a 10 Bermondsey St, West Leederville, 6007 WA
t (08) 9388 8360
f (08) 9381 2360
w www.360environmental.com.au

0 250 500 750 N

Meters

1:20,000 @ A4

LOCALITY MAP



PROJECT ID	DATE
4755	10/02/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

CREATED	CHECKED	APPROVED	REVISION
CL	AC	TS	0

Mineral Resources Limited
Lot 300 Back Beach Road Onslow

Environmental Assessment Report

Figure 10
Aboriginal Heritage Sites

COPYRIGHT: THIS DOCUMENT IS AND SHALL REMAIN THE PROPERTY OF 360 ENVIRONMENTAL. THIS DOCUMENT MAY ONLY BE USED FOR THE PURPOSE FOR WHICH IT WAS COMMISSIONED AND IN ACCORDANCE WITH THE TERMS OF ENGAGEMENT FOR THE COMMISSION. 360 ENVIRONMENTAL DOES NOT HOLD ANY RESPONSIBILITY FOR THE MISUSE OF THIS DOCUMENT.

K:\Projects\9.0 APP\4755 Lot 300 Back Beach Road Onslow EAR\4755 F10 Aboriginal Heritage Sites.mxd

Appendices

Appendix A
Lot 300 Back Beach Road
Development Approval (Conditions)

Government of **Western Australia**
Development Assessment Panels

LG Ref: DA 21-67
DAP Ref: DAP/21/02078
Enquiries: (08) 6551 9919

Mr Daniel Hollingworth
Rowe Group
Level 3
369 Newcastle Street
Northbridge WA 6003

Dear Mr Hollingworth

REGIONAL JDAP - SHIRE OF ASHBURTON - DAP APPLICATION - DA 21-67 - DETERMINATION

Property Location:	Lot 300 Back Beach Road, Onslow
Application Details:	Transient Workforce Accommodation

Thank you for your Form 1 Development Assessment Panel (DAP) application and plans submitted to the Shire of Ashburton on 10 September 2021 for the above-mentioned development.

This application was considered by the Regional JDAP at its meeting held on 23 December 2021, where in accordance with the provisions of the Shire of Ashburton Local Planning Scheme No.7, it was resolved to **approve** the application as per the attached notice of determination.

Should the applicant not be satisfied by this decision, an application may be made to amend or cancel this planning approval in accordance with regulation 17 and 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

Please also be advised that there is a right of review by the State Administrative Tribunal in accordance with Part 14 of the *Planning and Development Act 2005*. Such an application must be made within 28 days of the determination, in accordance with the *State Administrative Tribunal Act 2004*.

Should you have any queries with respect to the conditions of approval, please contact Mr Benjamin Leavy on behalf of the Shire of Ashburton on 9188 4404.

Yours sincerely,

DAP Secretariat

24 December 2021

Encl. DAP Determination Notice
Approved Plans

Cc: Mr Benjamin Leavy
Shire of Ashburton

Government of **Western Australia**
Development Assessment Panels

Planning and Development Act 2005

Shire of Ashburton Local Planning Scheme No.7

Regional Joint Development Assessment Panel

Determination on Development Assessment Panel Application for Planning Approval

Property Location: Lot 300 Back Beach Road, Onslow
Application Details: Transient Workforce Accommodation

In accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, the above application for planning approval was **granted** on 23 December 2021, subject to the following:

1. **Accept** that the DAP Application reference DAP/21/02078 is appropriate for consideration as a "Transient Workforce Accommodation" land use and compatible with the objectives of the zoning table in accordance with Clause 3.2 and 4.2 of the Shire of Ashburton Local Planning Scheme No.7.

2. **Approve** DAP Application reference DAP/21/02078 and accompanying plans in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the Shire of Ashburton Local Planning Scheme No. 7, subject to the following details:

   DA002 – Site master plan - Rev. E
   DA003 – Site plan – North East_Rev. E
   DA004 – Site Sections. C
   DA100 – ADM, IND, CRE & MED – Floor plan and elevations. F
   DA101 – ADM, IND, CRE & MED – Roof plan. E
   DA200 – RST & TVN – Floor plan. F
   DA201 – RST & TVN – Elevations. F
   DA202 – RST & TVN – Roof plan. D
   DA300 – GYM & SPT – Floor plan & elevations. F
   DA301 – I-REC – Floor plan & elevations. F
   DA302 – GYM, SPT &I-REC – Roof plan. D
   DA400 – ACCOM & LDRY POD – Floor plan & elevations. E
   DA500 – ANC – Floor plan & elevations. C
   DA600 – Visualisations. B

CONDITIONS

1. This decision constitutes planning approval only and is valid for a period of 4 years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.

2. The approval is time limited to a period of not more than 30 years from the date of approval for development within the proposed 30m coastal foreshore reserve, at which point the approval for this portion of the development will lapse and:

   a. the development within the 30m foreshore reserve shall be removed; and
   b. the land shall be rehabilitated to its pre-development conditions,

   in accordance with the specifications and provisions of a site 'Decommissioning and Rehabilitation Plan' submitted to and approved by the Shire of Ashburton not earlier than 12 months and implemented to the satisfaction of the Shire of Ashburton

3. Prior to lodging an application for a building permit, a detailed fauna survey (targeted terrestrial vertebrate survey to determine the presence and significance of the Lerista planiventralis maryani, a Priority 1 listed reptile shall be undertaken and report for the site shall be prepared by a qualified zoologist to the satisfaction of the Shire and submitted to and approved by the Shire of Ashburton. If any of these species are found, an environmental management Plan, addressing any impact and mitigation measures, shall be submitted and implemented to the satisfaction of the Shire of Ashburton

4. Prior to lodging an application for a building permit, a targeted survey is to be undertaken to determine the presence and significance of 'Marine' and 'Shorebirds shall be undertaken and report for the site shall be prepared by a qualified zoologist to the satisfaction of the Shire and submitted to and approved by the Shire of Ashburton.

5. Prior to lodging an application for a building permit, a HAZMAT site survey is required to confirm whether asbestos containing materials (ACM), asbestos fines (AF) or fibrous asbestos (FA) are present at the site shall be undertaken for the site shall be prepared to the satisfaction of the Shire and submitted to and approved by the Shire of Ashburton.
   a. if no evidence of ACM, AF or FA is found, no further action is required.
   b. if evidence of ACM, AF or FA is found, asbestos remediation or asbestos management is to be undertaken in accordance with Department of Health guidelines.

6. Prior to lodging an application for a building permit, an Unexploded Ordinance (UXO) survey of the site shall be undertaken to the whole of the site to determine if a remediation survey required as this property is on a site where records confirm a history of UXO finds or heavy residual fragmentation to the satisfaction of the Shire and submitted to and approved by the Shire of Ashburton.
   a. If no evidence of UXO is found, no further action is required.
   b. If evidence of UXO is found, a remediation survey is to be completed to locate and remove any UXO.
   c. if a remediation survey is completed, a notification pursuant to Section 70A of the Transfer of Land Act 1893 (WA) is to be placed on the Certificate of Title advising of the existence of a hazard or other factor. Notice of this notification is to be included on the diagram or plan of survey (deposited plan) as it to state as follows:

"Anti-aircraft artillery live firing practices using high explosive ammunition during WW (World War) II. Aerial bombing also highly likely. For land use planning advice contact the WA Department of Fire and Emergency Services (advice@dfes.wa.gov.au) and quote location number N26 and page number C-275. Where a Defence report is available, it will be listed below and can be found on the Defence UXO Website at https://defence.gov.au/UXO/Where/Default.asp".

7. An acid sulphate soils self-assessment form and, if required as a result of the self-assessment, an acid sulphate soils report and an acid sulphate soils management plan, shall be submitted to and approved by the Department of Water and Environmental Regulation before any earthworks beyond 3m below the natural ground surface of the Area of Potential Concern 4 described in the 'Desktop Contamination Assessment' (July 2021) (prepared by 360 Environmental) are commenced. Where an acid sulphate soils management plan is required to be submitted, all earthworks shall be carried out in accordance with the approved management plan.

8. Prior to lodging an application for a building permit, a Traffic Impact Assessment shall be prepared in accordance with the Western Australian Planning Commission's Transport Assessment Guidelines and to the satisfaction of the Shire of Ashburton. The TIA shall consider:
   a. the full extent of traffic impacts the development will have on the locality
   b. assess the full potential impact of the development
   c. include the likely post-development traffic volumes
   d. The impact is to be assessed for 10 years after full opening of the development.
   e. The application relies on the assumption that the majority of the 500 occupants will travel to and from the site by bus. The Shire expects that other scenarios are considered within the Traffic Impact Assessment document whereby the use of work and private vehicles is also factored into transport arrangements. This is typical of the operation of other significant sized workforce accommodation facilities in the Shire of Ashburton.

9. Prior to the commencement of the use, any road upgrades or contributions denoted in the Traffic Impact Assessment are to be undertaken to the satisfaction of the responsible local government. All costs shall be the responsibility of the proponent and responsibility for the road upgrades shall be agreed with the Shire of Ashburton, on the advice of the responsible local government.

10. Prior to lodging an application for a building permit, the landowner/applicant is to provide a pre-works geotechnical report certifying that the land is physically capable of development or advising how the land is to be remediated and compacted to ensure it is capable of development; and in the event that remediation works are required, the landowner/applicant is to provide a post geotechnical report certifying that all development works have been carried out in accordance with the pre-works geotechnical report.

11. Prior to lodging an application for a building permit, a Stormwater and Drainage Management Plan, prepared in accordance with the Department of Water and Environmental Regulation's Stormwater Management Manual, must be submitted for the approval of the Shire of Ashburton.

    The Stormwater and Drainage Management Plan will determine the drainage infrastructure required supporting the development and as a minimum it must address:
    a. proposed development;
    b. storm events to be managed;
    c. onsite-retention for 1:1 year events;
    d. onsite-detention for 1:25 year events;
    e. overland flow path for larger events, and impact the development will have on the surrounding neighbourhood;
    f. use of water sensitive urban design principles;
    g. water quality;
    h. protection of adjacent / nearby waterways; and
    i. conclusions / recommendations.

12. Prior to lodging an application for a building permit, the applicant must submit and have approved by the Local Government, and thereafter implement to the satisfaction of the Local Government, a Construction Environmental Management Plan addressing the following matters:
    a. How materials and equipment will be delivered and removed from the site;
    b. How materials and equipment will be stored on the site;
    c. Parking arrangements for contractors;
    d. Construction waste disposal strategy;
        (i) Recycling of demolition materials including concrete;
        (ii) Removal of hazardous materials and disposal at an approved waste disposal facility in accordance with the requirements of the relevant legislation, codes, standards and guidelines, prior to the commencement of any building works;
        (iii) Details demonstrating compliance with the relevant legislative requirements, associated with the removal of hazardous waste, particularly the method of containment and control of emission of fibres to the air, are to be submitted to the satisfaction of the Local Government prior to the removal of any hazardous materials.
    e. Details of cranes, large trucks or similar equipment which may block public thoroughfares during construction;
    f. How risks of wind and/or water borne erosion and sedimentation will be minimised during and after the works; and
    g. What noise mitigating provisions will be put in place to address impacts on neighbouring properties.
    h. Whether dune stabilisation will be required during the construction.
    i. How car parking, delivery vehicles and traffic impacts associated with construction will be managed so as not to jeopardise the safety of the school community, particularly during peak school drop off/ pick up times; and
    j. Other matters likely to impact on the surrounding properties.

13. Prior to lodging an application for a building permit, a Waste Management Plan must be submitted to and approved by the Local Government prior to lodging an application for a building permit. The plan must include the following details to the satisfaction and specification of the Local Government:
    a. the location of bin storage areas and bin collection areas;
    b. the number, volume and type of bins, and the type of waste to be placed in the bins;
    c. details on the future ongoing management of the bins and the bin storage areas, including cleaning, rotation and moving bins to and from the bin collection areas; and
    d. frequency of bin collections.

    The Waste Management Plan must be implemented at all times to the satisfaction of the Local Government.

14. Prior to lodging an application for a building permit, a detailed Landscaping and Reticulation Plan for the subject site and/or the road verge(s) must be submitted to, and approved to, the satisfaction of the Local Government, and must include the following:

    a. The location, number and type of proposed trees and shrubs including planter and/or tree pit sizes and planting density*;
    b. Any lawns to be established*;
    c. Any existing vegetation and/or landscaped areas to be retained*;
    d. Any verge treatments*;
    e. Evidence that the proposed landscaping will not, at maturity, negatively impact the development or adjoining properties*.
    f. a key or legend detailing proposed species type grouped under the subheadings of tree, shrub and groundcover;
    g. mulching or similar treatments of garden beds including edges;
    h. details of reticulation of landscaped areas including the source of the water supply and proposed responsibility for maintenance;
    i. treatment of paved areas (parking and pedestrian area);
    j. screening of car parking areas; and
    k. fence material, height and treatment.

15. Landscaping including verge planting shall be installed, reticulated and/or irrigated in accordance with the/an approved plan and maintained thereafter to the satisfaction of the Shire. The landscaping shall be implemented during the first available planting season post completion of development and any species which fail to establish within a period of 12 months from planting shall be replaced to the satisfaction of the Shire.

16. Prior to lodging an application for a building permit, a modified Bushfire Management Plan needs to be submitted and approved by the Shire of Ashburton, that addresses the following:
    a. Is amended to incorporate the extent of native vegetation clearing.
    b. The private driveway should be upgraded to meet the technical requirements of Column 1 Table 6 of the Guidelines.

17. Prior to lodging an application for a building permit, a modified Bushfire Emergency Evacuation Plan needs to be submitted and approved by the Shire of Ashburton, that addresses the following:
    a. Consideration should be given to the Guidelines Section 5.5.2 'Developing a Bushfire Emergency Evacuation Plan'. This contains detail regarding what should be included in a BEEP and will ensure the appropriate content is detailed when finalising the BEEP to the satisfaction of the Shire.

18. Prior to the installation of external lighting on the site, an External Lighting Plan is to be submitted to and approved by the Shire of Ashburton and shall incorporate any conditions derived from any of the environmental surveys undertaken and thereafter implemented to the satisfaction of the Shire of Ashburton.

19. Prior to the occupation of the development, all vehicle crossover are to be constructed to the specification and satisfaction of the Local Government:
    a. All crossovers to be constructed with concrete layback, not kerb returns
    b. Any path existing or to be constructed in vicinity of crossovers shall be constructed continuous through the crossover.

20. Prior to occupation or use of the development, the redundant crossover/s as shown on the approved plans, must be removed and the verge and kerb reinstated to the specification and satisfaction of the Local Government.

21. Prior to occupation or use of the development, an Operational Environmental Management Plan is to be submitted to and approved by the Shire of Ashburton and thereafter implemented to the satisfaction of the Shire of Ashburton.

22. Prior to occupation or use of the development, an Operational Management Plan is to be submitted to and approved by the Shire of Ashburton and thereafter implemented to the satisfaction of the Shire of Ashburton.

23. No fencing is permitted on the site, unless agreed to and approved by the Shire of Ashburton.

24. The development site must be connected to the reticulated sewerage system and reticulated water system of the Water Corporation before commencement of any use.

25. Existing trees located within the verge are a Local Government asset and as such must be retained except where otherwise approved for removal by the Local Government. Existing trees identified on the approved site plan must be retained and protected in accordance with AS 4970-2009 and to the satisfaction of the Local Government.

26. All vehicle parking, access ways, footpaths and external lighting shall be constructed and maintained in accordance with the Australian Standards AS2890 in the form and layout depicted on the approved plans to the satisfaction of the Shire of Ashburton.

27. Prior to occupation of the development, a Social Impact Management Plan, is to be submitted to and approved by the Shire of Ashburton.

28. In accordance with Shire of Ashburton Local Planning Policy 14 - Percent for Art the application is required to make a public art contribution of $1 million being one percent of the $100 million total cost of development.

    In order to comply with the Policy, the owner(s) or applicant, on behalf of the owner(s) shall submit a statutory declaration prior to the lodgement of a Building permit stipulating the choice of:

    Option 1: Owner/Applicant chooses to co-ordinate the Public Art project themselves or by engaging an art consultant; or
    Option 2: Owner/Applicant chooses to pay cash-in-lieu.

29. A Notification under Section 70A of the Transfer of Land Act 1983 shall be prepared and lodged with the Registrar of Titles for endorsement on the Certificate prior to the commencement of development. The notification shall advise of the existence of a hazard or other factor affecting use or enjoyment of the land to the satisfaction of the Shire and at the applicant's cost. The memorial shall state as follows:

    Vulnerable Coastal Area
    'This lot is located in an area likely to be subject to coastal erosion and/or inundation over the next 100 years.'

30. A Notification under Section 70A of the Transfer of Land Act 1983 shall be prepared and lodged with the Registrar of Titles for endorsement on the Certificate prior to the commencement of development. The notification shall advise of the existence of a hazard or other factor affecting use or enjoyment of the land to the satisfaction of the Shire and at the applicant's cost. The memorial shall state as follows:

    Bushfire Management (SPP3.7)
    'Registered proprietors and prospective purchasers of the land described above or any part thereof (land) are notified that the land is within a bushfire prone area and buildings shall be designed and constructed in accordance with Australian Standard 3959 - Construction of Buildings in Bushfire-Prone Areas (or superseded Australian Standard) and comply with any approved fire management plan prepared in respect of the land to minimise the risk of property damage.'

31. A Notification under Section 70A of the Transfer of Land Act 1983 shall be prepared and lodged with the Registrar of Titles for endorsement on the Certificate prior to the commencement of development. The notification shall advise of the existence of a hazard or other factor affecting use or enjoyment of the land to the satisfaction of the Shire and at the applicant's cost. The memorial shall state as follows:

    Onslow Salt Operational Noise
    'The land is located within an area identified as a potential noise source being the Onslow Salt operations'

32. A cyclone emergency shelter of adequate size shall be provided to accommodate all occupants on site at any time.

33. The maximum number of persons to be accommodated on the site at any one time is limited to 500.

34. No pets are to be kept on site.

ADVICE NOTES

A. This Determination Notice is not a Building Permit or Health Approval, nor authorise such works. All separate applications and approvals must be obtained prior to the commencement of construction on site, whichever occurs first.

B. No building or construction activities shall be carried out before 7.00am or after 4.00pm, Monday to Saturday, and not at all on Sunday or Public Holidays.

C. With regard to Condition 11, all stormwater drainage shall be designed in accordance with the document entitled "Australian Rainfall and Runoff" 1987 (where amended) produced by the Institute of Engineers, Australia, and the design is to be certified by a suitably qualified practicing Engineer or the like, to the satisfaction of the Shire of Ashburton, and to be designed on the basis of a 1:100 year storm event. This is to be provided with the associated Building Permit Application.

D. The Shire of Ashburton contains many places of Aboriginal Heritage significance. Proponents are advised to consider Aboriginal heritage issues and their obligations under the *Aboriginal Heritage Act 1972* at an early stage of planning. Further information can be obtained from the Department of Planning, Lands and Heritage on (08) 6551 8002 or at the following website www.dplh.wa.gov.au.

E. Please be advised that under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations). Consideration should also be given to the Department of Water and Environmental Regulation Draft Guidelines: Native vegetation referrals

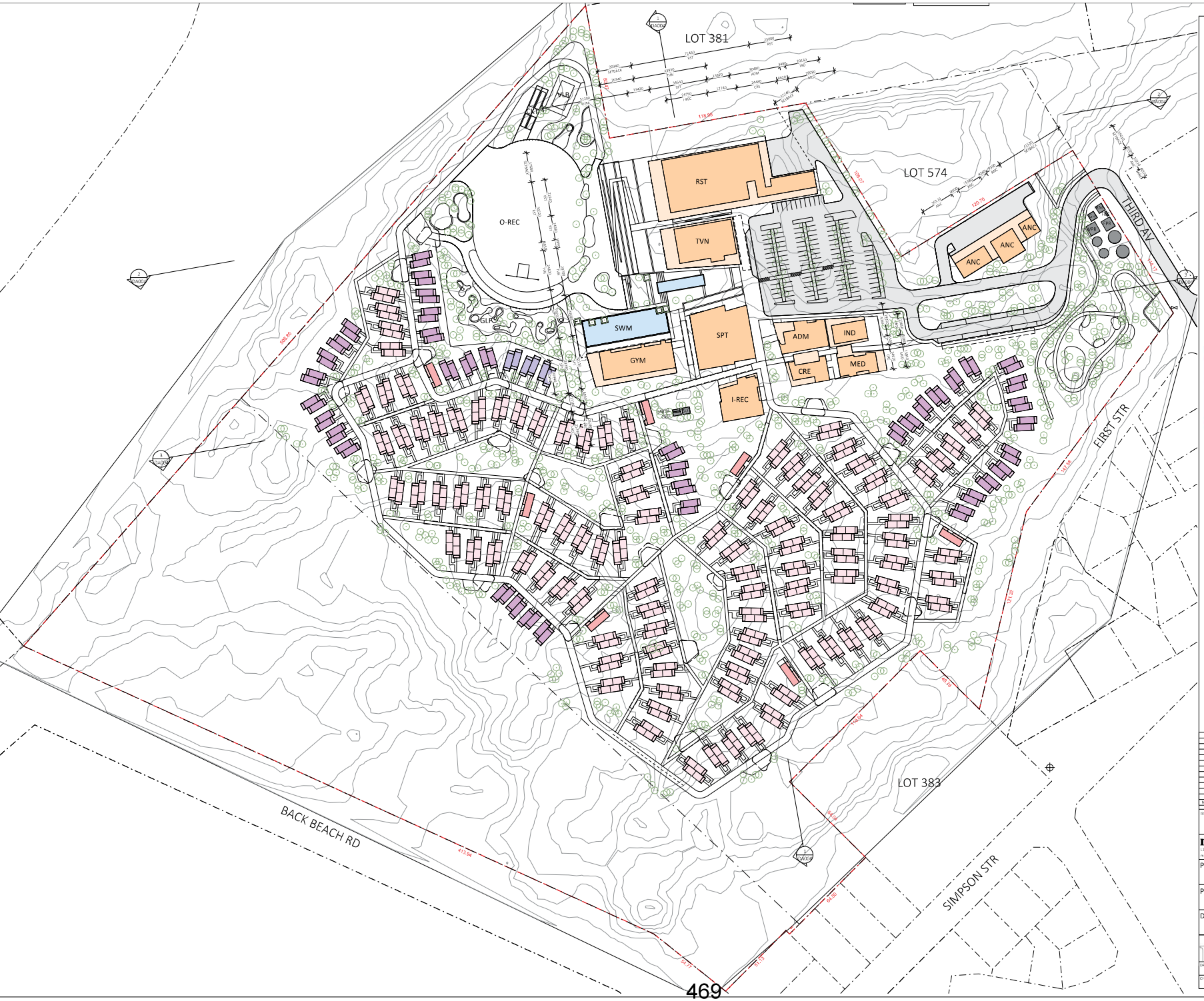
F. The proposed activities occur within the proclaimed Pilbara groundwater and surface water areas and are subject to licensing requirements under the *Rights in Water and Irrigation Act 1914* (RiWI). If the proponent needs to use groundwater or surface water for any purpose, including construction, onsite fire hydrants or groundwater dewatering, they will need to apply for a 5C licence to take water and a 26D licence to construct any new water supply bores.

G. The proponent is to be made aware of its obligations, as under section 11 of the Contaminated Sites Act 2003, site owners, occupiers or a person who knows or suspects that they have caused or contributed to contamination must report the site to the Department. If the proponent suspects a site to be contaminated it is to be reported as soon as reasonably practical, however, if the proponent knows a site is contaminated it must be reported within 21 days of the proponent first being aware of the contamination. Failure to do so is considered an offence under the Act.

H. The installation of outdoor lighting shall be in accordance with the requirements of Australian Standard AS 4282 - 1997 "Control of the Obtrusive Effects of Outdoor Lighting".

I. The applicant is responsible for securing all necessary approvals and tenure, providing statutory notifications and complying with all relevant laws. Nothing in this determination notice alleviates the need for the applicant to comply with all relevant local, State and Commonwealth laws and to ensure appropriate tenure arrangements have been made where the use of/reliance upon land other than that owned by the applicant is involved. Without this obligation, the applicant is responsible for:
   a. Obtaining all other/further necessary approvals, licences, permits, resource entitlements etc by whatever name called required by law before the development the subject of this development approval can be lawfully commenced and to carry out the activity for its duration;
   b. Providing any notifications;
   c. Securing tenure/permission from the relevant owner to use private or public land not owned by the applicant (including for access required by conditions of approval);
   d. Ensuring the correct siting of structure on the land. An identification survey demonstrating correct siting and setbacks of structures may be requested of the applicant to ensure compliance with this determination notices and applicable provisions.

Where an approval has so lapsed, no development shall be carried out without further approval having first been sought and obtained, unless the applicant has applied and obtained Development Assessment Panel approval to extend the approval term under regulation 17(1)(a) or local government approval under regulation 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.



Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and designs, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

SYMBOL LEGEND

- SITE BOUNDARY
- BUILDING
- COVERED OUTDOOR SPACE
- SERVICES
- WATER BODY
- ROAD/CAR PARK
- FIELD STORE (WITH LAUNDRY)
- ACCOMMODATION PODS (SLEEPS 4)
- ACCOMMODATION PODS (SLEEPS 2)
- ACCESSIBLE ACCOMMODATION PODS (SLEEPS 2)
- EXISTING WATER CONNECTION POINT
- EXISTING SEWER CONNECTION POINT
- PLANTING - REFER LANDSCAPE DRAWINGS FOR DETAILS

CODE LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CRT	OUTDOOR CRICKET
CRE	CRECHE & CONVAS
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	RETAIL RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

NO.	DR. BY	DESCRIPTION
E	31/08/21	DA ISSUE
D	20/08/21	ISSUE FOR INFORMATION
C	1 @ 08/21	ISSUE FOR PRICING
B	1 @ 08/21	DRAFT DA ISSUE
A	04/08/21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

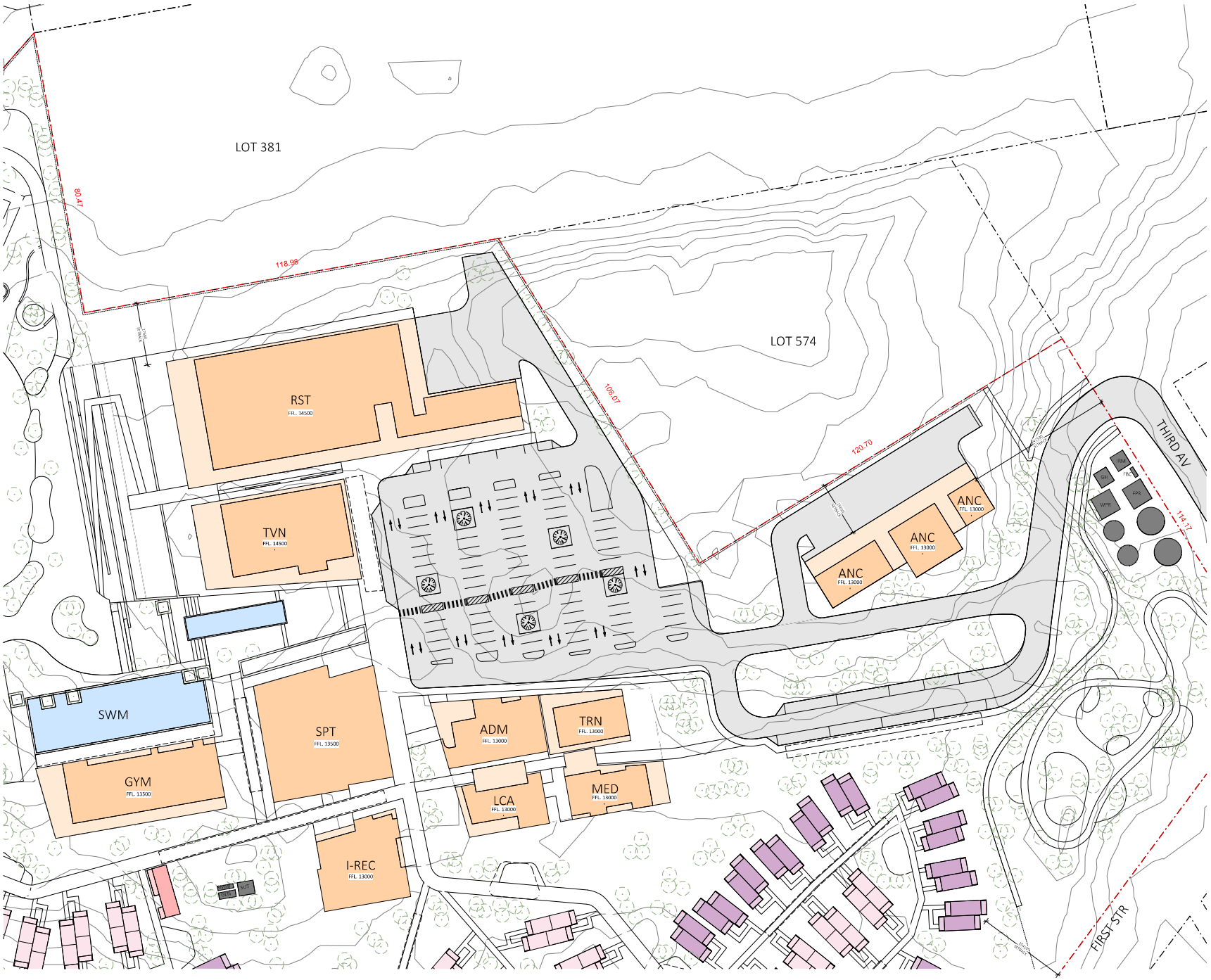
PROJECT
LOT 300, 9 BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
SITE MASTER PLAN

DRAWN	SCALE	DATE	REVISION
MC	1 : 1000	04/08/21	E
CHECKED	SHEET	PROJECT NO	
JP	A1	21040	

DA002



Copyright reserved, Mineral Resources Limited (ACN 118 549 910)
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910)

SYMBOL LEGEND

- SITE BOUNDARY
- BUILDING
- COVERED OUTDOOR SPACE
- SERVICES
- WATER BODY
- ROAD/CAR PARK
- FIELD STORE (WITH LAUNDRY)
- ACCOMMODATION PODS (SLEEPS 4)
- ACCOMMODATION PODS (SLEEPS 2)
- ACCESSIBLE ACCOMMODATION PODS (SLEEPS 2)
- EXISTING WATER CONNECTION POINT
- EXISTING SEWER CONNECTION POINT
- PLANTING - REFER LANDSCAPE DRAWINGS FOR DETAILS

CODE LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CKT	OUTDOOR CRICKET
CRE	CRECHE & COMMS
FBC	FIRE BOOSTER CABINET
FPP	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI-GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



NO.	DATE	DESCRIPTION
E	24/11/21	REVISED FOR DEVELOPMENT APPLICATION
D	31/08/21	DA ISSUE
C	10/08/21	ISSUE FOR INFORMATION
B	10/08/21	DRAFT DA ISSUE
A	04/08/21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieu creative
L1, 683 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

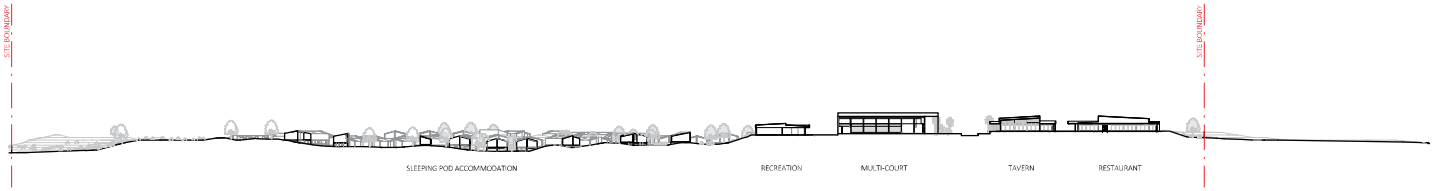
PROJECT
LOT 301, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

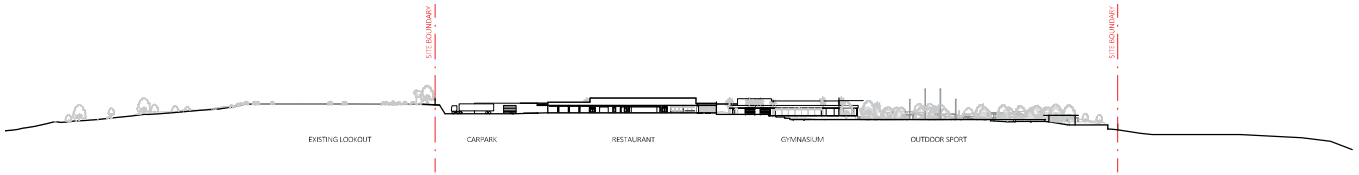
DRAWING
SITE PLAN - NORTH EAST

DRAWN	SCALE	DATE	REVISION
MJ	1:500	04/08/21	E
CHECKED	SHEET	PROJECT NO	
JJ	A1	210360	

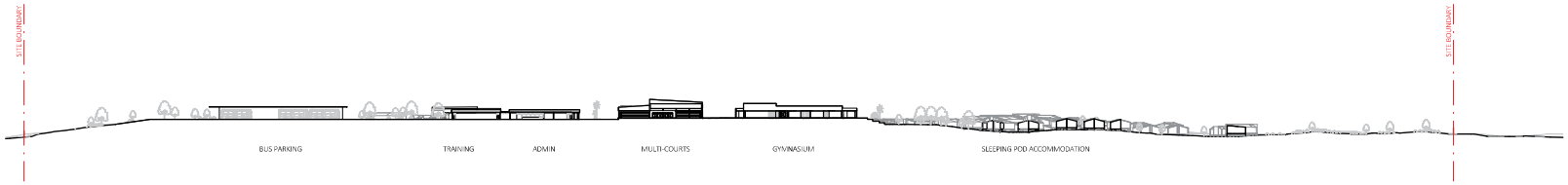
DA003



1 SITE SECTION 1
1 : 1000



2 SITE SECTION 2
1 : 1000

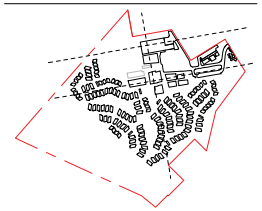


3 SITE SECTION 3
1 : 1000

Copyright reserved, Mineral Resources Limited (ACN 118 549 910)
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



NO.	DATE	DESCRIPTION
C	3 / 09 / 21	DA ISSUE
B	1 / 09 / 21	DRAFT DA ISSUE
A	04 / 08 / 21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

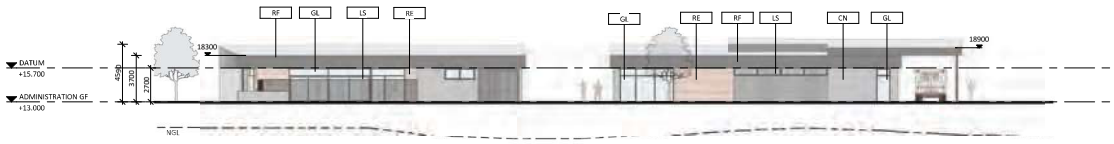
DRAWING
SITE SECTIONS

DRAWN	SCALE	DATE	REVISION
MC	1:1000	04/08/21	C
CHECKED	SHEET	PROJECT NO	
JH	A1	21050	

DA004

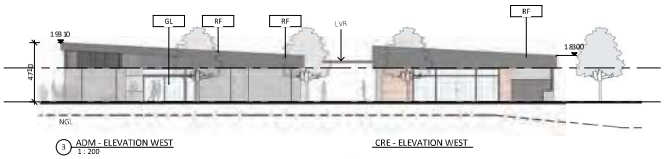


1 ADM, IND, LCA & MED - GROUND FLOOR PLAN
1 : 200



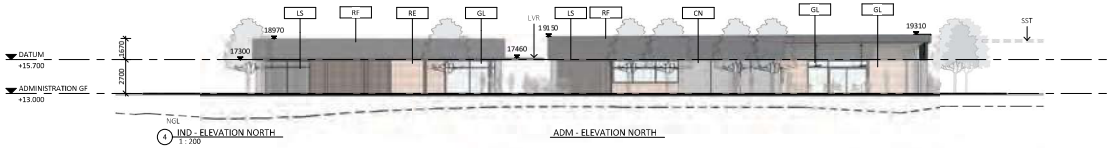
2 CRE - ELEVATION SOUTH
1 : 200

MED - ELEVATION SOUTH



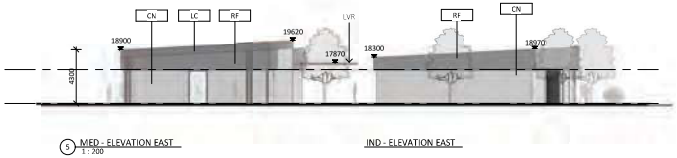
3 ADM - ELEVATION WEST
1 : 200

CRE - ELEVATION WEST



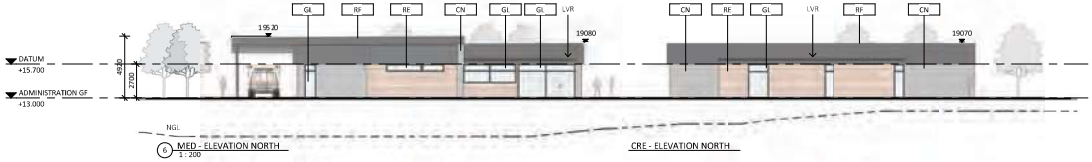
4 IND - ELEVATION NORTH
1 : 200

ADM - ELEVATION NORTH



5 MED - ELEVATION EAST
1 : 200

IND - ELEVATION EAST



6 MED - ELEVATION NORTH
1 : 200

CRE - ELEVATION NORTH



7 ADM - ELEVATION SOUTH
1 : 200

IND - ELEVATION SOUTH

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CKT	OUTDOOR CRICKET
CRE	CRECHE & COMMS
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TYN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE

AREA SCHEDULE

ROOM	AREA
ADMINISTRATION	355.29 m²
CRECHE & COMMS	340.02 m²
INDUCTION	205.16 m²
MEDICAL	326.75 m²

FECA & UCA AREAS

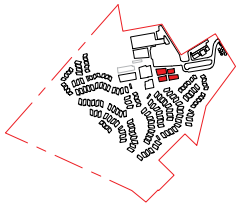
BUILDING	AREA TYPE	AREA
ADMINISTRATION	FECA	165.17 m²
ADMINISTRATION	UCA	85.71 m²
ADMINISTRATION	UCA	9.23 m²
ADMINISTRATION	UCA	15.31 m²
ADMINISTRATION		469.61 m²
CRECHE	UCA	11.77 m²
CRECHE	FECA	116.30 m²
CRECHE		37.07 m²
INDUCTION	UCA	117.76 m²
INDUCTION	FECA	101.31 m²
INDUCTION		329.65 m²
MEDICAL	UCA	11.31 m²
MEDICAL	FECA	327.61 m²
MEDICAL		349.60 m²
TOTAL 10		1475.87 m²

MATERIAL LEGEND

CODE	DESCRIPTION
CN	CONCRETE FINISH
GL	PHILOSOPHABLE GLAZING
LC	LIGHTWEIGHT CLADDING
LS	LIGHTWEIGHT SCREEN
RE	RAMMED EARTH
RF	METAL DECK ROOF SHEETING

FOH
BOH
Educational
Medical
Office
Service room
Amenities
Wet Area
Ceche

KEY PLAN



F	31/08/21	DA ISSUE
E	20/08/21	ISSUE FOR INFORMATION
D	18/08/21	ISSUE FOR PRICING
C	11/08/21	DRAFT DA ISSUE
B	04/08/21	ISSUE FOR INFORMATION
A	30/07/21	ISSUE FOR INFORMATION
NO.	DATE	DESCRIPTION

ISSUE
DEVELOPMENT APPLICATION

milieu creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

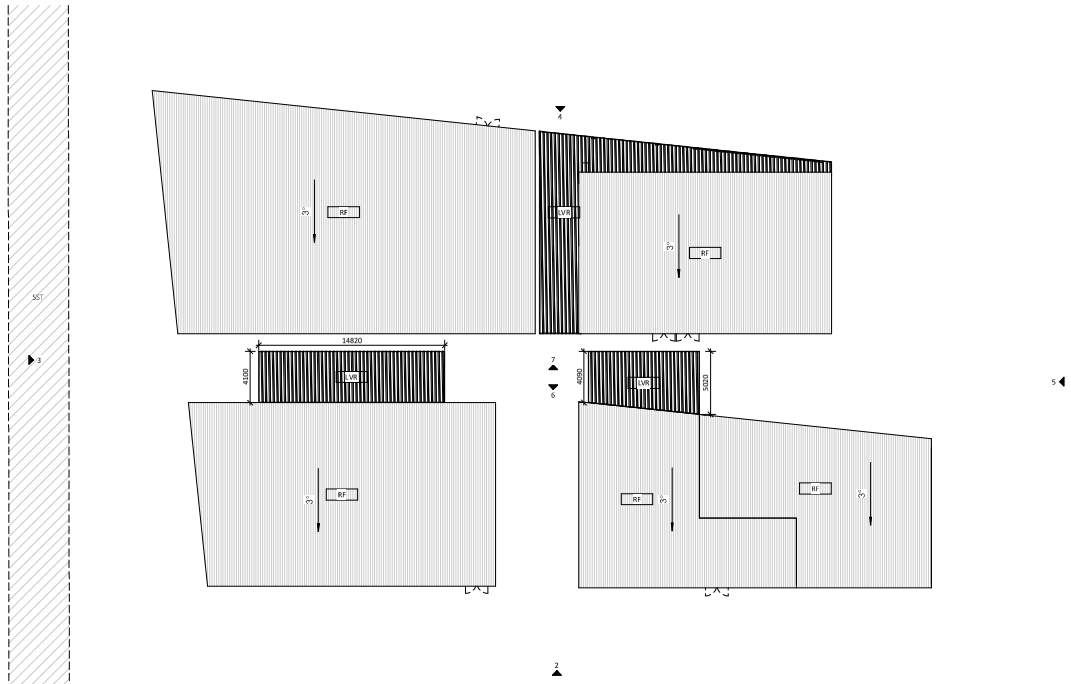
PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
ADM, IND, CRE & MED - FLOOR PLAN & ELEVATIONS

DRAWN	SCALE	DATE	REVISION
CD/N	As indicated	30/07/21	F
CHECKED	SHEET	PROJECT NO	
JP	A1	21060	

DA100

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021



1 ADM - ROOF PLAN
1 : 200

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

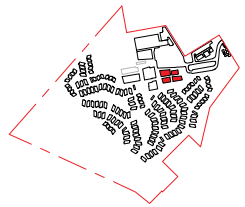
ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CRT	OUTDOOR CRICKET
CRE	CRECHE & COMMS
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
INM	INTAKE RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SSS	SHADE STRUCTURE

MATERIAL LEGEND

CODE	DESCRIPTION
LVR	LOUVRE SCREEN
RF	METAL DECK ROOF SHEETING

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



NO.	DATE	DESCRIPTION
E	31/08/21	DA ISSUE
D	20/08/21	ISSUE FOR INFORMATION
C	12/08/21	DRAFT DA ISSUE
B	04/08/21	ISSUE FOR INFORMATION
A	30/07/21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

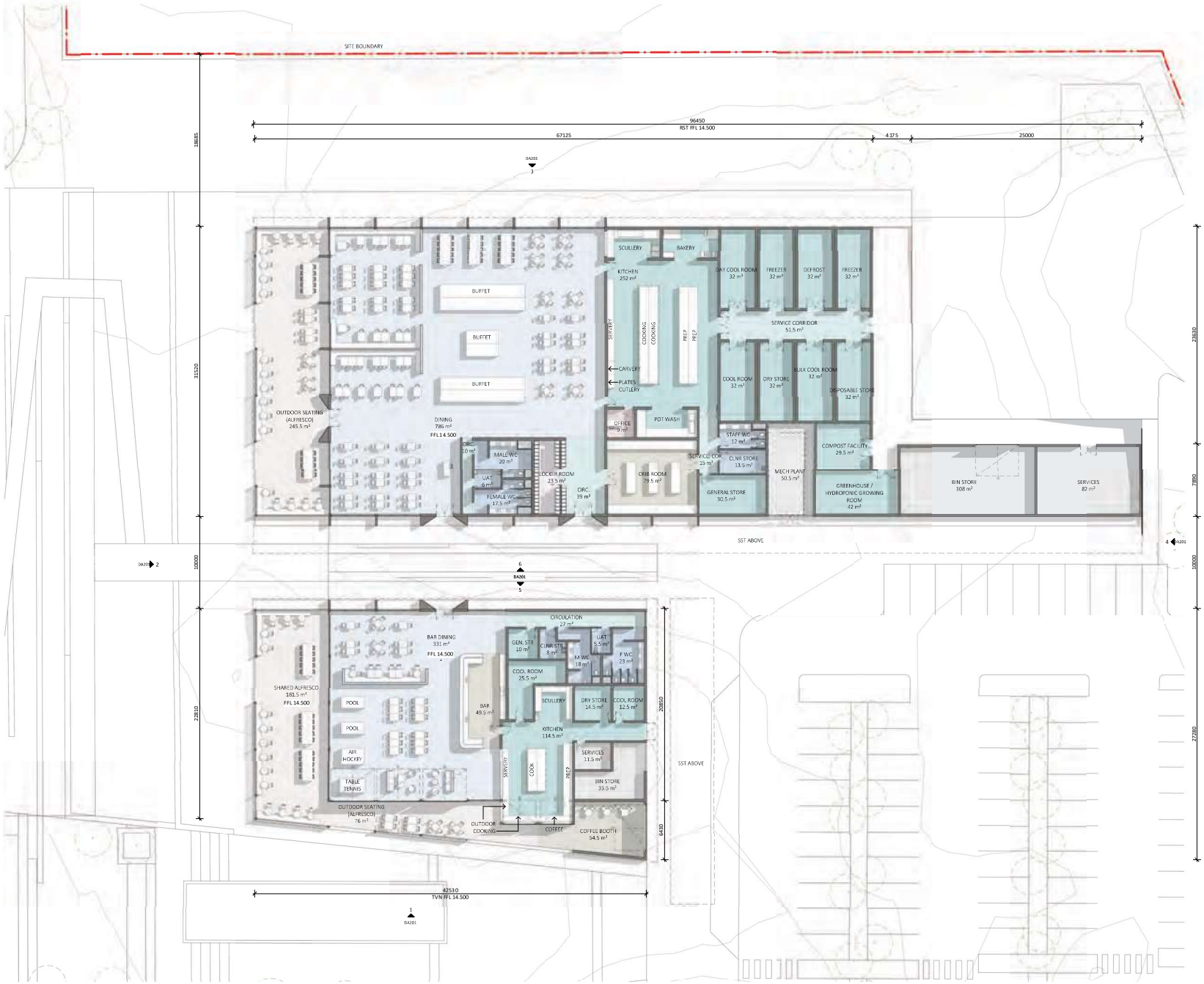
PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
ADM, IND, CRE & MED - ROOF PLAN

DRAWN	SCALE	DATE	REVISION
MC	As indicated	30/07/21	E
CHECKED	SHEET	PROJECT NO	
JF	A1	210601	

DA101



1 RST & TVN - GROUND FLOOR PLAN
1 : 200

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CKT	OUTDOOR CRICKET
CRE	CRECHE & CONNS
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE
LK	LOCKERS

AREA SCHEDULE

ROOM	AREA
RESTAURANT	1178.51 m²
TAVERN	996.36 m²

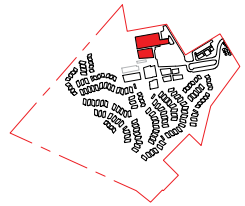
FCA & UCA AREAS

BUILDING	AREA TYPE	AREA
RESTAURANT	FECA	1972.61 m²
RESTAURANT	UCA	937.93 m²
RESTAURANT		2910.52 m²
TAVERN	FECA	411.82 m²
TAVERN	UCA	417.16 m²
TAVERN		1129.76 m²
TOTAL		4040.29 m²

- FOH
- BOH
- Circulation
- Food and Beverage
- Office
- Outdoor Seating
- Service room
- Amenities
- Wet Area

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



ISSUE	DATE	DESCRIPTION
F	31/08/21	DA ISSUE
E	20/08/21	ISSUE FOR INFORMATION
D	18/08/21	ISSUE FOR PRICING
C	13/08/21	DRAFT DA ISSUE
B	04/08/21	ISSUE FOR INFORMATION
A	30/07/21	ISSUE FOR INFORMATION
NO.	DATE	DESCRIPTION

ISSUE
DEVELOPMENT APPLICATION

milieu creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

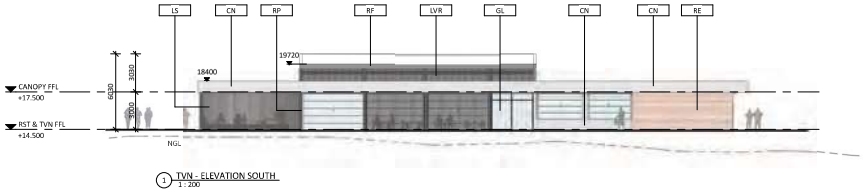
PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

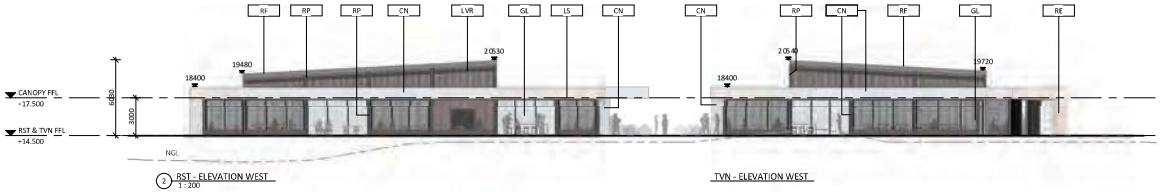
DRAWING
RST & TVN - FLOOR PLAN

DRAWN	SCALE	DATE	REVISION
MC	As indicated	30/07/21	F
CHECKED	SHEET	PROJECT NO	
JP	A1	210601	

DA200

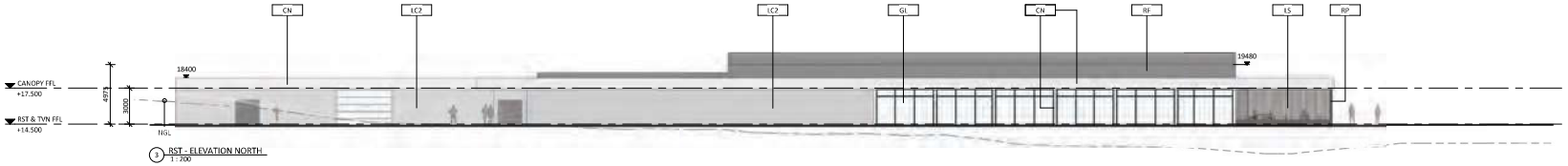


1 TVN - ELEVATION SOUTH
1 : 200

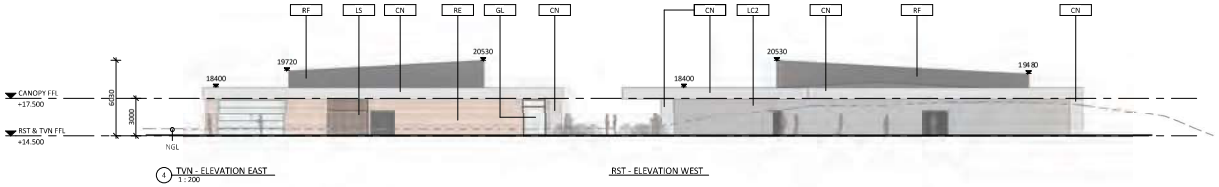


2 RST - ELEVATION WEST
1 : 200

TVN - ELEVATION WEST

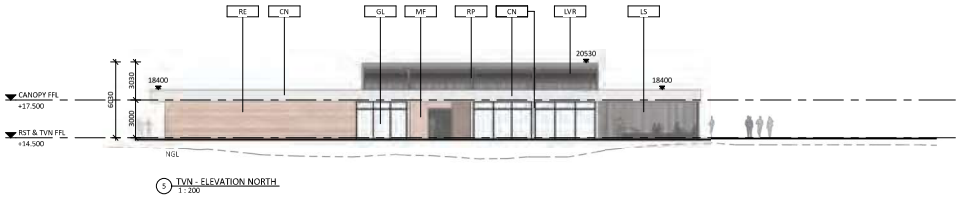


3 RST - ELEVATION NORTH
1 : 200

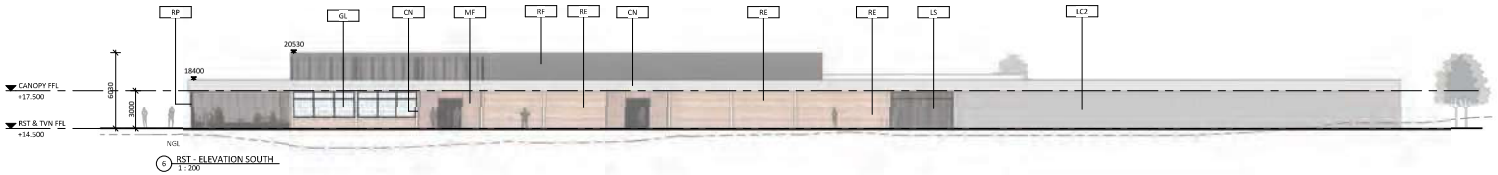


4 TVN - ELEVATION EAST
1 : 200

RST - ELEVATION WEST



5 TVN - ELEVATION NORTH
1 : 200



6 RST - ELEVATION SOUTH
1 : 200

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

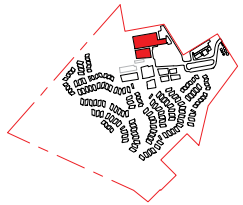
ADM	ADMINISTRATION
AMEN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CKT	OUTDOOR CRICKET
CRE	CRECHE & COMMS
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SWSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE
LK	LOCKERS

MATERIAL LEGEND

CODE	DESCRIPTION
CN	CONCRETE FINISH
GL	FIXED/OPERABLE GLAZING
LC2	LIGHTWEIGHT CLADDING - WALLABY
LS	LIGHTWEIGHT SCREEN
LVR	LOUVRE SCREEN
MF	METAL FINISH
RE	RAMMED EARTH
RF	METAL DECK ROOF SHEETING
RP	RENDER/PAINT FINISH

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



ISSUE	DATE	DESCRIPTION
F	31/08/21	DA ISSUE
E	20/08/21	ISSUE FOR INFORMATION
D	18/08/21	ISSUE FOR PRICING
C	13/08/21	DRAFT DA ISSUE
B	04/08/21	ISSUE FOR INFORMATION
A	30/07/21	ISSUE FOR INFORMATION
NO.	DATE	DESCRIPTION

ISSUE
DEVELOPMENT APPLICATION

milieu creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

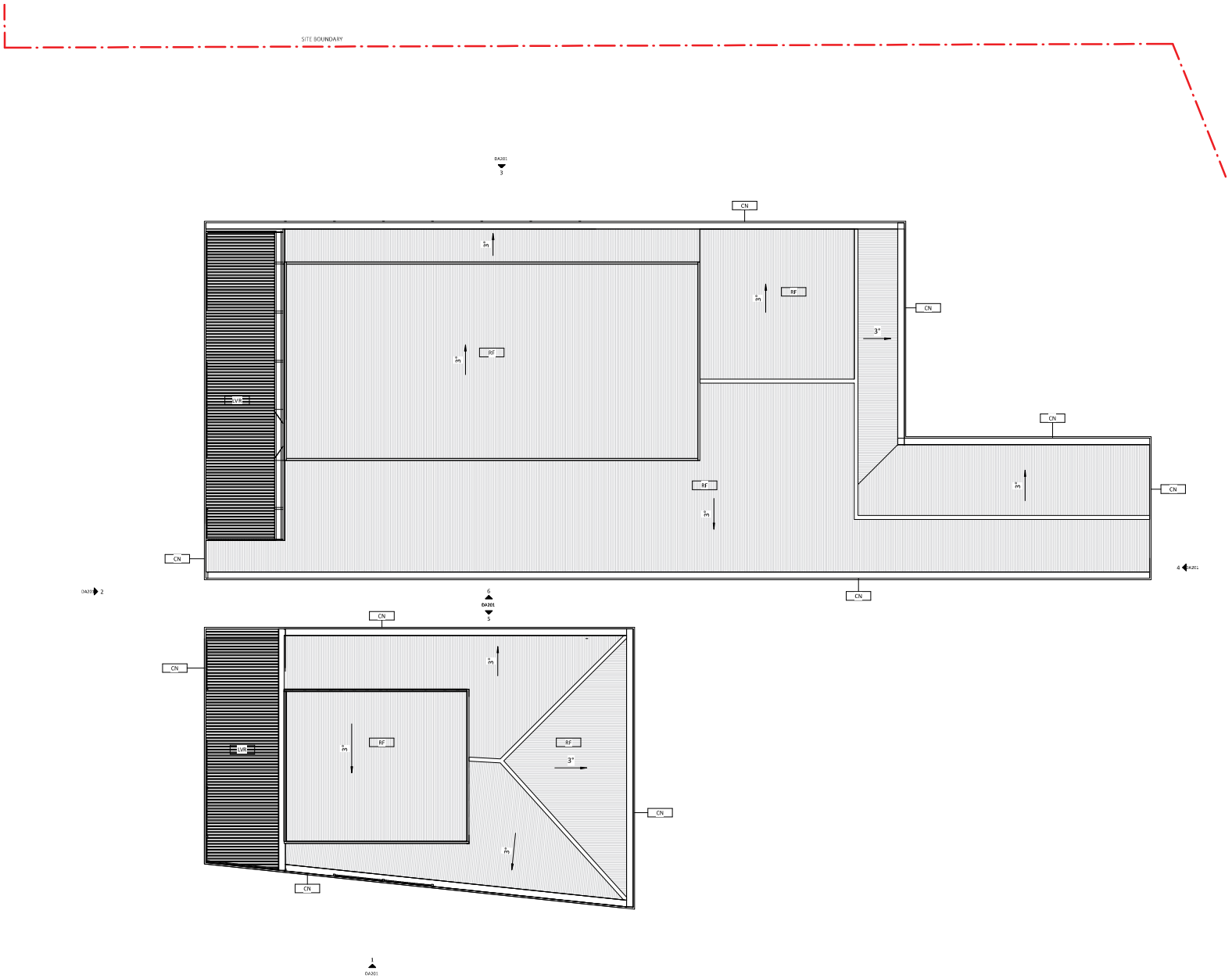
PROJECT
LOT 300 BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
RST & TVN - ELEVATIONS

DRAWN	SCALE	DATE	REVISION
MC	As indicated	30/07/21	F
CHECKED	SHEET	PROJECT NO	
JF	A1	210601	

DA201



1 RST & TVN - ROOF PLAN
1 : 200

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

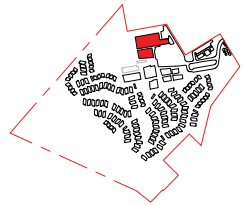
ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CRT	OUTDOOR CRICKET
CRE	CRECHE & COMMS
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I-REC	INDOOR RECREATION
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE
LK	LOCKERS

MATERIAL LEGEND

CODE	DESCRIPTION
CN	CONCRETE FINISH
LVR	LOUVRE SCREEN
RF	METAL DECK ROOF SHEETING

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



NO.	DATE	DESCRIPTION
D	31/08/21	DAI ISSUE
C	23/08/21	ISSUE FOR INFORMATION
B	17/08/21	DRAFT DAI ISSUE
A	04/08/21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

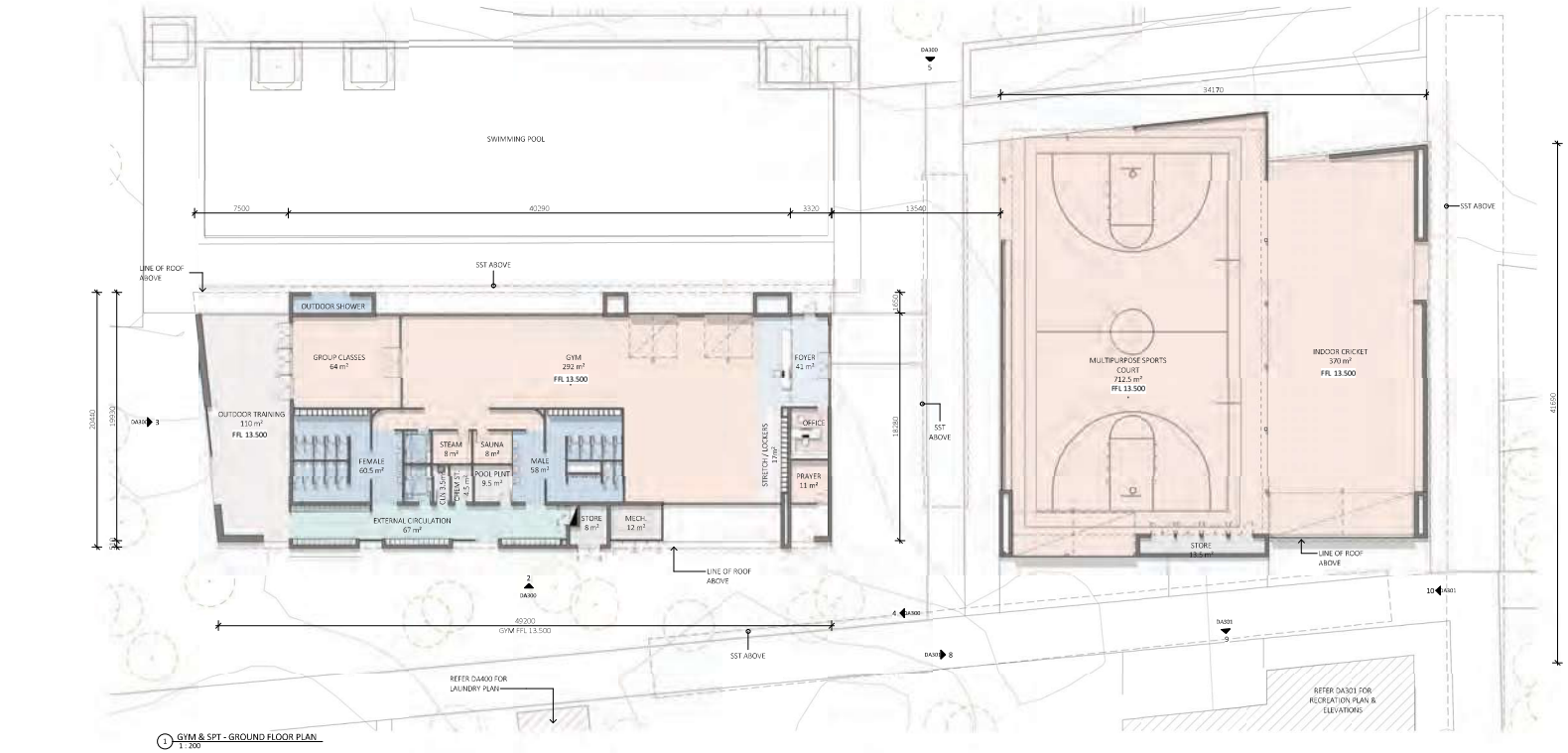
PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

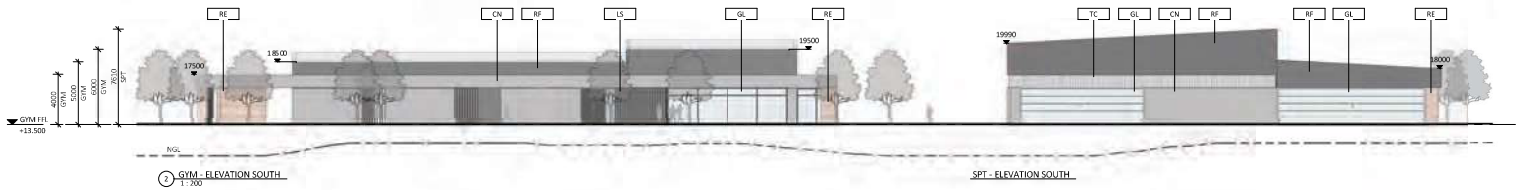
DRAWING
RST & TVN - ROOF PLAN

DRAWN	SCALE	DATE	REVISION
MC	As indicated	30/07/21	D
CHECKED	SHEET	PROJECT NO	
JP	A1	210401	

DA202

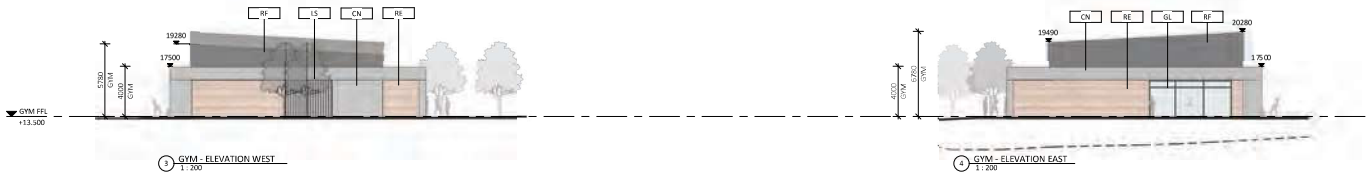


1 GYM & SPT - GROUND FLOOR PLAN
1 : 200



2 GYM - ELEVATION SOUTH
1 : 200

SPT - ELEVATION SOUTH



3 GYM - ELEVATION WEST
1 : 200

4 GYM - ELEVATION EAST
1 : 200



5 SPT - ELEVATION NORTH
1 : 200

GYM - ELEVATION NORTH

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CRT	OUTDOOR CRICKET
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I REC	INDOOR RECREATION
LCA	LOCKERS, CHANGEROOMS & ABLUTIONS
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE

AREA SCHEDULE

ROOM	AREA
AMENITIES	0.00 m²
GYMNASIUM	1540.77 m²
INDOOR RECREATION	471.80 m²
MULTI-PURPOSE COURTS	1086.04 m²

FECA & LICA AREAS

BUILDING	AREA TYPE	AREA
GYM	FECA	549.16 m²
GYM	LICA	139.23 m²
GYM	LICA	71.54 m²
GYM	LICA	50.61 m²
GYM	LICA	981.06 m²
INDOOR RECREATION	FECA	362.40 m²
INDOOR RECREATION	LICA	61.80 m²
INDOOR RECREATION	LICA	7.85 m²
INDOOR RECREATION	LICA	8.25 m²
INDOOR RECREATION	LICA	23.40 m²
INDOOR RECREATION	LICA	126.21 m²
MULTI-PURPOSE COURTS	LICA	1111.48 m²
MULTI-PURPOSE COURTS		1111.48 m²
TOTAL 10		2599.75 m²

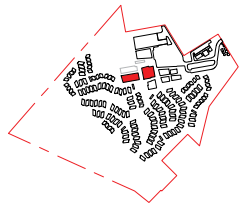
MATERIAL LEGEND

CODE	DESCRIPTION
CN	CONCRETE FINISH
GL	FIXED/OPERABLE GLAZING
LS	LIGHTWEIGHT SCREEN
RE	RAMMED EARTH
RF	METAL DECK ROOF SHEETING
TC	TRANSLUCENT CLADDING

ACH
Circulation
Recreational
Office
Outdoor
Service room
Amenities
Wet Areas

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



ISSUE	DATE	DESCRIPTION
F	31/08/21	DA ISSUE
E	20/08/21	ISSUE FOR INFORMATION
D	18/08/21	ISSUE FOR PRICING
C	11/08/21	DRAFT DA ISSUE
B	04/08/21	ISSUE FOR INFORMATION
A	30/07/21	ISSUE FOR INFORMATION
NO.	DATE	DESCRIPTION

DEVELOPMENT APPLICATION

milieu creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

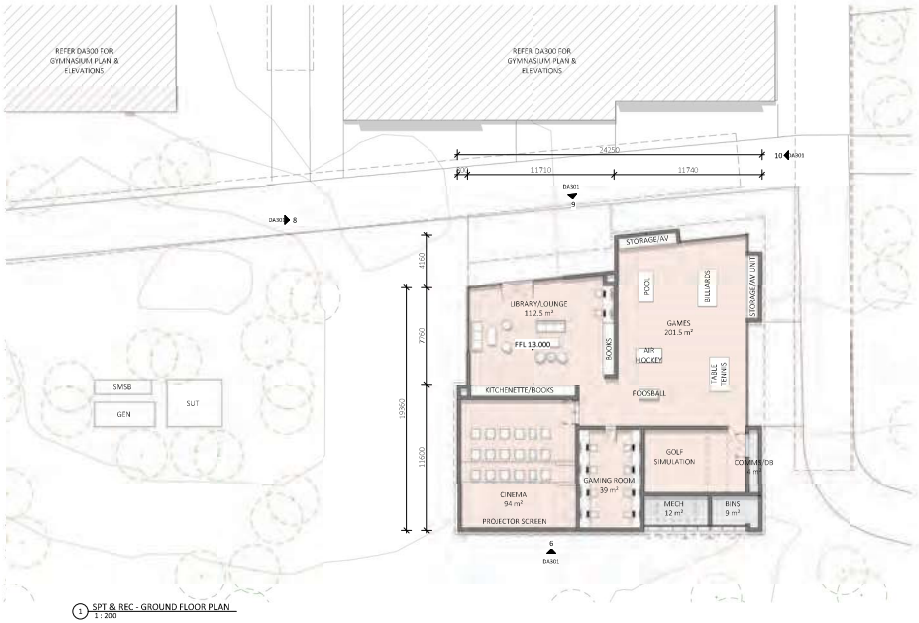
PROJECT
LOT 501 BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

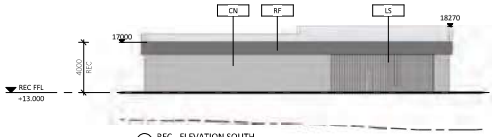
DRAWING
GYM & SPT - FLOOR PLAN & ELEVATIONS

DRAWN	SCALE	DATE	REVISION
MC	As indicated	30/07/21	F
CHECKED	SHEET	PROJECT NO	
JP	A1	210601	

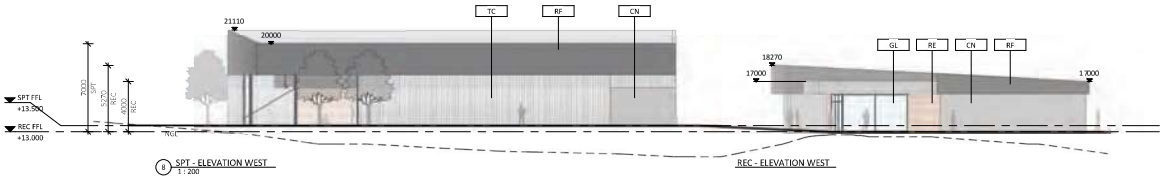
DA300



1 SPT & REC - GROUND FLOOR PLAN
1 : 200

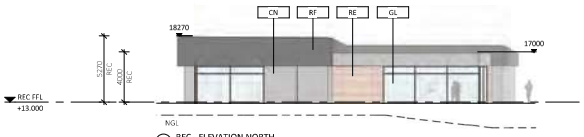


6 REC - ELEVATION SOUTH
1 : 200

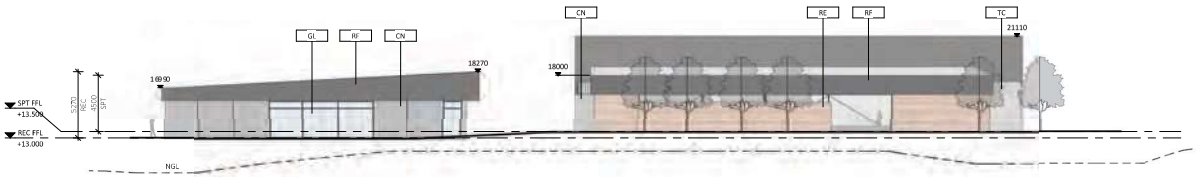


8 SPT - ELEVATION WEST
1 : 200

REC - ELEVATION WEST



9 REC - ELEVATION NORTH
1 : 200



10 REC - ELEVATION EAST
1 : 200

SPT - ELEVATION EAST

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CKT	OUTDOOR CRICKET
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RISING MAIN
I-REC	INDOOR RECREATION
LCA	LOCKERS, CHANGEROOMS & ABLUTIONS
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
TUB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE

AREA SCHEDULE

ROOM	AREA
AMENITIES	0.00 m²
GYMNASIUM	1540.7 m²
INDOOR RECREATION	471.80 m²
MULTI-PURPOSE COURTS	1096.0 m²

FECA & LCA AREAS

BUILDING	AREA TYPE	AREA
GYM	FECA	649.10 m²
GYM	LCA	170.21 m²
GYM	LCA	71.5 m²
GYM	LCA	70.84 m²
GYM		961.06 m²
INDOOR RECREATION	FECA	382.47 m²
INDOOR RECREATION	LCA	71.80 m²
INDOOR RECREATION	LCA	7.85 m²
INDOOR RECREATION	LCA	8.75 m²
INDOOR RECREATION	LCA	15.42 m²
INDOOR RECREATION		526.31 m²
MULTI-PURPOSE COURTS	LCA	1111.48 m²
MULTI-PURPOSE COURTS		1111.48 m²
TOTAL: 10		2599.75 m²

MATERIAL LEGEND

CODE	DESCRIPTION
CN	CONCRETE FINISH
GL	PHOTOVOLTAIC GLAZING
LS	LIGHTWEIGHT SCREEN
RE	RAINWATER TANK
RF	METAL DECK ROOF SHEETING
TC	TRANSLUCENT CLADDING

Recreational
Office
Service room
Amenities

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN

F	31/08/21	DA ISSUE
E	20/08/21	ISSUE FOR INFORMATION
D	18/08/21	ISSUE FOR PRICING
C	13/08/21	DRAFT DA ISSUE
B	04/08/21	ISSUE FOR INFORMATION
A	30/07/21	ISSUE FOR INFORMATION
NO.	DATE	DESCRIPTION

ISSUE
DEVELOPMENT APPLICATION

milieu creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

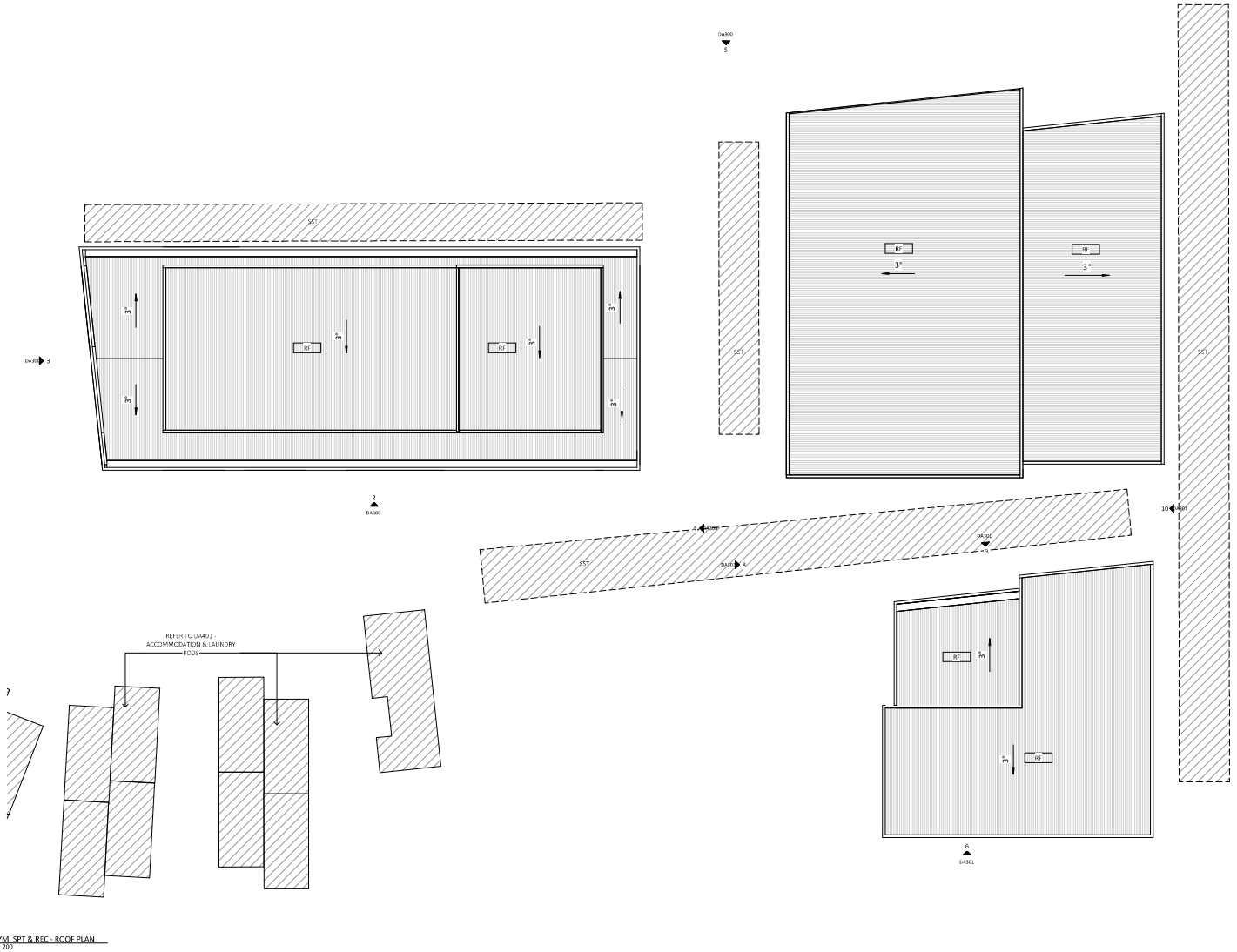
PROJECT
LOT 300 BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
I-REC - FLOOR PLAN & ELEVATIONS

DRAWN	SCALE	DATE	REVISION
MC	As indicated	30/07/21	F
CHECKED	SHEET	PROJECT NO	
JP	A1	210601	

DA301



1 GYM, SPT & REC - ROOF PLAN
1 : 200

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

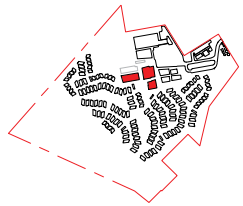
LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CKT	OUTDOOR CRICKET
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
IRM	INTAKE RING MAIN
I REC	INDOOR RECREATION
LCA	LOCKERS, CHANGEROOMS & ABLUTIONS
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O. REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCH BOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TVN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SHADE STRUCTURE

MATERIAL LEGEND	
CODE	DESCRIPTION
RF	METAL DECK ROOF SHEETING

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



NO.	DATE	DESCRIPTION
D	31/08/21	DA ISSUE
C	23/08/21	ISSUE FOR INFORMATION
B	10/08/21	DRAFT DA ISSUE
A	04/08/21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
GYM, SPT & I-REC - ROOF PLAN

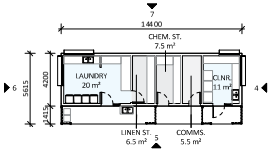
DRAWN	SCALE	DATE	REVISION
MC	As indicated	04/08/21	D
CHECKED	SHEET	PROJECT NO	
JF	A1	210401	

DA302

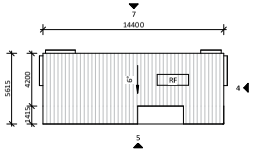
DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021



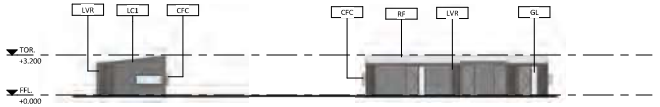
1 ACCOMMODATION PARTIAL PLAN
1 : 200



2 LAUNDRY FLOOR PLAN
1 : 200



3 LAUNDRY - ROOF PLAN
1 : 200



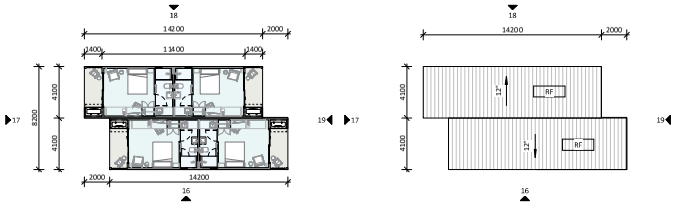
4 LAUNDRY ELEVATION EAST
1 : 200

5 LAUNDRY ELEVATION SOUTH
1 : 200



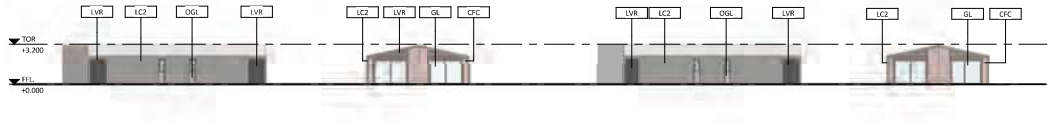
6 LAUNDRY ELEVATION WEST
1 : 200

7 LAUNDRY ELEVATION NORTH
1 : 200



14 ACCOMMODATION TYPE A (DUAL) - FLOOR PLAN
1 : 200

15 ACCOMMODATION TYPE A - ROOF PLAN
1 : 200

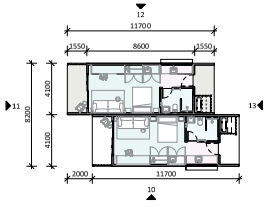


16 ACCOMMODATION TYPE A - ELEVATION SOUTH
1 : 200

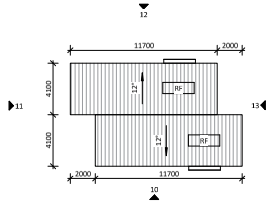
17 ACCOMMODATION TYPE A - ELEVATION WEST
1 : 200

18 ACCOMMODATION TYPE A - ELEVATION NORTH
1 : 200

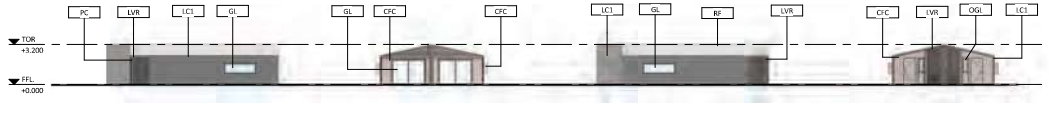
19 ACCOMMODATION TYPE A - ELEVATION EAST
1 : 200



8 ACCOMMODATION TYPE B (SINGLE) - FLOOR PLAN
1 : 200



9 ACCOMMODATION TYPE B - ROOF PLAN
1 : 200

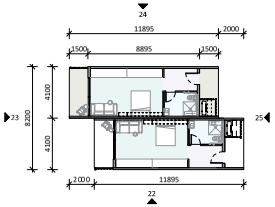


10 ACCOMMODATION TYPE B - ELEVATION SOUTH
1 : 200

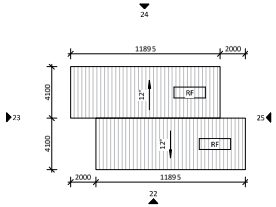
11 ACCOMMODATION TYPE B - ELEVATION WEST
1 : 200

12 ACCOMMODATION TYPE B - ELEVATION NORTH
1 : 200

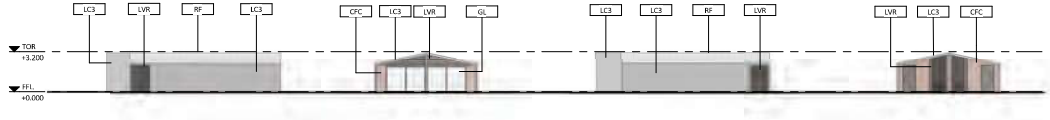
13 ACCOMMODATION TYPE B - ELEVATION EAST
1 : 200



20 ACCOMMODATION TYPE C (ACCESSIBLE) - FLOOR PLAN
1 : 200



21 ACCESSIBLE ACCOMMODATION - ROOF PLAN
1 : 200



22 ACCESSIBLE ACCOMMODATION - ELEVATION SOUTH
1 : 200

23 ACCESSIBLE ACCOMMODATION - ELEVATION WEST
1 : 200

24 ACCESSIBLE ACCOMMODATION - ELEVATION NORTH
1 : 200

25 ACCESSIBLE ACCOMMODATION - ELEVATION EAST
1 : 200

Copyright reserved, Mineral Resources Limited (ACN 118 549 910)
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

LEGEND

ADM	ADMINISTRATION	Other
AMN	AMENITIES	Service room
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT, STORES	
CKT	OUTDOOR CRICKET	Wet Area
FBC	FIRE BOOSTER CABINET	
FPR	FIRE PUMP ROOM	Alfresco
GEN	GENERATOR	
GH	GATE HOUSE	Entry
GLF	MINI GOLF	
GYM	GYMNASIUM & SWIMMING FACILITY	Living/Bedroom
IND	TRAINING & INDUCTIONS	
IRM	INTAKE RING MAIN	Wet Area
I-REC	INDOOR RECREATION	
LCK	LOCKERS, CHANGEROOMS & ABLUTIONS	
LDR	LAUNDRY, CLEANING & STORE	
MED	MEDICAL & WELLNESS	
O-REC	OUTDOOR RECREATION	
PST	PEST ALWAYS	
SMSB	SITE MAIN SWITCH BOARD	
SPT	MULTI PURPOSE COURTS	
SUT	STEP UP TRANSFORMER	
SWM	SWIMMING POOL	
TVN	TAVERN	
VLB	OUTDOOR VOLLEYBALL	
WPR	WATER PUMP ROOM	
SST	SHADING STRUCTURE	

MATERIAL LEGEND

CODE	DESCRIPTION
CFC	CARBON FIBRE REINFORCED CARBON
GL	FIXED/OPERABLE GLAZING
LC1	LIGHTWEIGHT CLADDING - WOODLAND GREY
LC2	LIGHTWEIGHT CLADDING - WALLABY
LC3	LIGHTWEIGHT CLADDING - DUNE
LVR	LOUVRE SCREEN
OGL	OBSCURE FIXED/OPERABLE GLAZING
PC	POWDER COAT
RF	METAL DECK ROOF SHEETING

PEGA ANDUCA AREAS

BUILDING	AREA TYPE	AREA
LAUNDRY	PEGA	53.20 m²
LAUNDRY	UCA	20.38 m²
LAUNDRY		73.58 m²
TYPE A	PEGA	20.81 m²
TYPE A	PEGA	20.81 m²
TYPE A	UCA	5.32 m²
TYPE A	UCA	5.42 m²
TYPE A		52.35 m²
TYPE B	PEGA	31.54 m²
TYPE B	UCA	5.89 m²
TYPE B	UCA	5.93 m²
TYPE B		43.35 m²
TYPE C	PEGA	32.28 m²
TYPE C	UCA	5.70 m²
TYPE C	UCA	5.73 m²
TYPE C		43.71 m²
TOTAL		213.00 m²

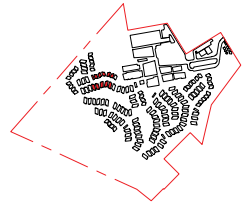
ACCOMMODATION CLADDING LOCATION PLAN

- LC1 - WOODLAND GREY CLADDING
- LC2 - WALLABY CLADDING
- LC3 - DUNE CLADDING



NOTE: CLADDING SHOWN ON ELEVATIONS NOT TYPICAL TO ACCOMMODATION TYPE. REFER TO ABOVE PLAN FOR CLADDING COLOUR ZONES

KEY PLAN



NO.	DATE	DESCRIPTION
E	31/08/21	DA ISSUE
D	21/08/21	ISSUE FOR INFORMATION
C	18/08/21	ISSUE FOR PRICING
B	17/08/21	DA DRAFT ISSUE
A	04.08.21	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

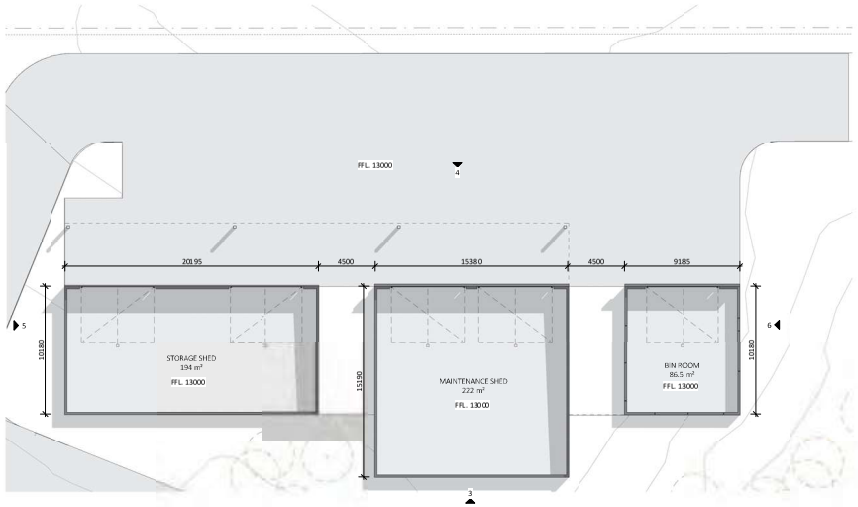
PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

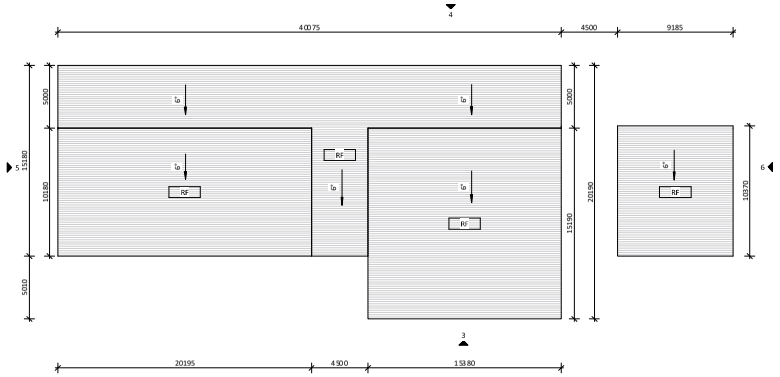
DRAWING
ACCOM & LDRY POD - FLOOR PLAN & ELEVATIONS

DRAWN	SCALE	DATE	REVISION
SW	As indicated	04.08.21	
CHECKED	SHEET	PROJECT NO	E
JH	A1	210501	

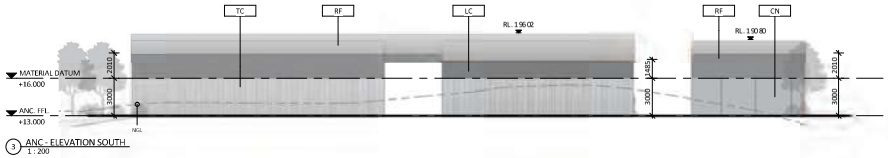
DA400



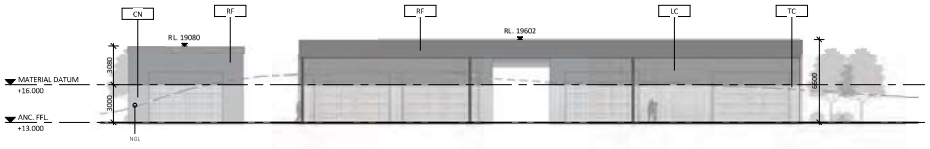
1 ANC - GROUND FLOOR PLAN
1 : 200



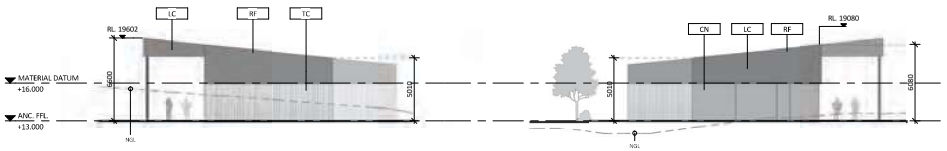
2 ANC - ROOF PLAN
1 : 200



3 ANC - ELEVATION SOUTH
1 : 200



4 ANC - ELEVATION NORTH
1 : 200



5 ANC - ELEVATION EAST
1 : 200

6 ANC - ELEVATION WEST
1 : 200

LEGEND

ADM	ADMINISTRATION
AMN	AMENITIES
ANC	ANCILLARY - GATE HOUSE, SURVEILLANCE HUT & STORES
CLT	OUTDOOR CRICKET
FBC	FIRE BOOSTER CABINET
FPR	FIRE PUMP ROOM
GEN	GENERATOR
GH	GATE HOUSE
GLF	MINI GOLF
GYM	GYMNASIUM & SWIMMING FACILITY
IND	TRAINING & INDUCTIONS
HSM	HOMES RISK MAN
I-REC	INDOOR RECREATION
LCA	LOCKERS, CHANGEROOMS & ABLUTIONS
LDR	LAUNDRY, CLEANING & STORE
MED	MEDICAL & WELLNESS
O-REC	OUTDOOR RECREATION
RST	RESTAURANT
SMSB	SITE MAIN SWITCHBOARD
SPT	MULTI-PURPOSE COURTS
SUT	STEP UP TRANSFORMER
SWM	SWIMMING POOL
TYN	TAVERN
VLB	OUTDOOR VOLLEYBALL
WPR	WATER PUMP ROOM
SST	SINGLE STRUCTURE

AREA SCHEDULE

ROOM	AREA
SERVICE ROOM	222.15 m²
SERVICE ROOM	194.09 m²
SERVICE ROOM	86.29 m²

TICA & UCA AREAS

BUILDING	AREA TYPE	AREA
BIN ROOM	TICA	86.29 m²
BIN ROOM		86.29 m²
MAINTENANCE SHED	TICA	222.15 m²
MAINTENANCE SHED		222.15 m²
SHED COVERED AREA	UCA	146.17 m²
SHED COVERED AREA		146.17 m²
STORAGE SHED	TICA	194.21 m²
STORAGE SHED		194.21 m²

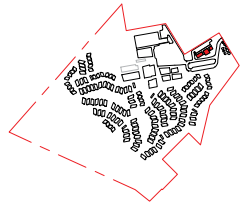
MATERIAL LEGEND

CODE	DESCRIPTION
CN	CONCRETE FINISH
LC	LIGHTWEIGHT CLADDING
RF	METAL DECK ROOF SHEETING
TC	TRANSLUCENT CLADDING

SERVICE ROOM

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

KEY PLAN



NO.	DATE	DESCRIPTION
C	2 2 09/21	DA ISSUE
B	06/08/2021	DRAFT DA ISSUE
A	04/08/2021	ISSUE FOR INFORMATION

ISSUE
DEVELOPMENT APPLICATION

milieū creative
LEVEL 1/488 STIRLING HIGHWAY, PEPPERMINT GROVE 6011
milieucreative.com

PROJECT
LOT 306, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
ANC - FLOOR PLAN & ELEVATIONS

DRAWN	SCALE	DATE	DIVISION
CS	As indicated	04.08.21	C
CHECKED	SHEET	PROJECT NO	
JH	A1	210901	

DA500



VIEW FROM MAIN CARPARK



VIEW ACROSS OVAL TO RESTAURANT & TAVERN



VIEW OF ACCOMMODATION PODS



AERIAL VIEW OF ACCOMMODATION VILLAGE

Copyright reserved, Mineral Resources Limited (ACN 118 549 910).
This plan and design is, and at all times remains, the exclusive property of Mineral Resources Limited (ACN 118 549 910) and cannot be used, copied and reproduced in any manner, format or media without the express written consent of Mineral Resources Limited (ACN 118 549 910).

DEVELOPMENT ASSESSMENT PANEL
APPROVED
23-Dec-2021

NO.	DATE	DESCRIPTION
B	31/08/21	DA ISSUE
A	10/08/21	DRAFT DA ISSUE

ISSUE
DEVELOPMENT APPLICATION

milieu creative
L1, 488 STIRLING HIGHWAY, PEPPERMINT GROVE, WA 6011
milieucreative.com

PROJECT
LOT 300, BACK BEACH ROAD
ONSLOW WA 6710

PROJECT NAME
ONSLOW TOWNSHIP VILLAGE

DRAWING
VISUALISATIONS

DRAWN	SCALE	DATE	REVISION
MC		10/08/21	B
CHECKED	SHEET	PROJECT NO	
JF	A1	210901	

DA600

Appendix B
Lot 300 Back Beach Road, Onslow, Contamination Review

360 environmental

Lot 300 Back Beach Road, Onslow WA

Desktop Contamination Assessment

Prepared for

Mineral Resources Limited (MRL)

July 2021

people • planet • professional

Document Reference	Revision	Prepared by	Reviewed by	Admin Review	Submitted to Client	
					Copies	Date
4756AA_Rev0	Internal Draft	DO	RB	-		20/7/21
4756AA_Rev1	Client Draft	DO	RB	LI	1 x electronic	21/7/21
4756AA_Rev2	Client Final	DO	RB	LI	1 x electronic	27/7/21

Disclaimer

This report is issued in accordance with, and is subject to, the terms of the contract between the Client and 360 Environmental Pty Ltd, including, without limitation, the agreed scope of the report. To the extent permitted by law, 360 Environmental Pty Ltd shall not be liable in contract, tort (including, without limitation, negligence) or otherwise for any use of, or reliance on, parts of this report without taking into account the report in its entirety and all previous and subsequent reports. 360 Environmental Pty Ltd considers the contents of this report to be current as at the date it was produced. This report, including each opinion, conclusion and recommendation it contains, should be considered in the context of the report as a whole. The opinions, conclusions and recommendations in this report are limited by its agreed scope. More extensive, or different, investigation, sampling and testing may have produced different results and therefore different opinions, conclusions and recommendations. Subject to the terms of the contract between the Client and 360 Environmental Pty Ltd, copying, reproducing, disclosing or disseminating parts of this report is prohibited (except to the extent required by law) unless the report is produced in its entirety including this cover page, without the prior written consent of 360 Environmental Pty Ltd.

© Copyright 2021 360 Environmental Pty Ltd ACN 109 499 041

Executive Summary

360 Environmental Pty Ltd (360 Environmental) was commissioned by Mineral Resources Limited (MRL) to complete a desktop contamination assessment of the proposed development site located at Lot 300 Back Beach Road in Onslow, Western Australia.

The primary objectives of this desktop assessment are to identify areas of potential concern (AOPC) associated with onsite or offsite contamination, identify data gaps associated with contamination, and to provide advice on potential future works to address those data gaps.

Based on the findings of this desktop assessment and review of available information, it is concluded that there have been no significant historical contaminating activities at the site, as the site has been vacant and undeveloped. However, six (6) AOPC were identified, namely:

- AOPC 1 – Part of the site located adjacent to the former furnace oil aboveground storage tanks (ASTs) to the north of the site, and associated fuel pipelines and pumps (the offsite former furnace oil AST area was formerly classified as Contaminated – remediation required)
- AOPC 2 – Part of the site located adjacent to the former historical bulk fuel storage to the east (dieseline) of the site, and associated fuel pipelines and pumps
- AOPC 3 – Part of the site located adjacent to the former historical bulk fuel storage to the south (aviation spirit) of the site, and associated fuel pipelines and pumps
- AOPC 4 - Part of the site with a moderate to low risk of acid sulfate soils (ASS) being present within 3 metres of the soils surface
- AOPC 5 - Potential unexploded ordnance (UXO) from activities during WWII (whole of site and Onslow Townsite)
- AOPC 6 - Potential asbestos from illegal fly-tipping or associated with offsite sources (whole of site).

The following data gaps were identified associated with the above AOPCs:

- There have been no soil or groundwater investigations undertaken at the site however it is understood offsite contamination (and possible remediation) associated with former fuel infrastructure located to the north has previously occurred. Reports presenting details of investigation(s) and/or remediation offsite have not been identified and as such the specific scope and/or effectiveness of any remediation works is not well understood. In this regard the nature and extent of existing and/or residual contamination in soil or groundwater is not known. The risk to the site is considered to be LOW.
- It is not known if the soils in the area marked as having a moderate to low risk of ASS being present are potential or actual ASS. The requirement to investigate is dependent on whether development plans for the site involve disturbance of potential ASS material or if dewatering may be required. Management measures, such as development of an ASS management plan (ASSMP) or dewatering management plan (DMP), would be

dependent on the findings of any ASS investigation. The risk to the site is considered to be LOW.

- Onslow Townsite (including the site) is listed on the Department of Defence (DoD) UXO Mapping Application as having a Slight Potential for the presence of UXO. It is not known if a detailed UXO survey has been undertaken at the site, or if records exist of any historical UXO searches or recovery operations in relation to the site. Information on possible UXO presence in AECOM (2010) was anecdotal in nature. The risk to the site is considered to be LOW to MODERATE.
- Without a hazardous materials (HAZMAT) survey of the site or previous site investigations, it is not known if asbestos containing materials (ACM), asbestos fines (AF) or fibrous asbestos (FA) are present at the site. If these are present, they may be a source of potential contamination for onsite and offsite, current and future, receptors (human health). The risk to the site is considered to be LOW to MODERATE.

Based on the data gaps identified, the following recommendations are made:

- A UXO survey of the site should be considered prior to any site works commencing.
- A HAZMAT site survey should be considered to evaluate the potential presence of asbestos at the site.
- Conduct a review of any available contamination investigation and/or remediation reports describing works associated with former bulk fuel infrastructure (i.e. AOPC 1, AOPC 2 and AOPC 3) to determine the requirement for investigation onsite.
- Site development plans should be reviewed to determine if ASS may be disturbed by development activities or if dewatering is to occur, and thereby determine the requirement for an ASSMP/DMP.
- Depending on the findings of the above, consideration should be given to intrusive site investigations to:
  - Investigate the contamination status of soils (and potentially groundwater) onsite at AOPC 1, AOPC 2 and AOPC 3, to confirm there are no hydrocarbon impacts.
  - Assess the potential presence of asbestos (ACM, AF or FA) in soils at the site. If identified to be present, asbestos remediation should be undertaken in accordance with Department of Health guidelines.
  - In the absence of any site investigations associated with AOPC 1, AOPC 2 or AOPC 3, an unexpected finds protocol (UFP) is recommended to be developed prior to site development works. The protocol should detail the management requirements should any of the contaminants of potential concern (COPCs) for the site be encountered during site development works.

Table of Contents

1 Introduction 1
1.1 Objectives 1
1.2 Scope of Works 1
1.3 Information Sources 1
1.4 Regulatory Guidelines 2
2 Site Information and Setting 3
2.1 Site Identification 3
2.2 Surrounding Land Uses 3
2.3 Environmental Setting 4
2.4 Heritage Sites 8
3 Site History 10
3.1 Historical Aerial Review 10
3.2 Previous Environmental Investigations 11
4 AOPC and Data Gaps 12
4.1 AOPCs 12
4.2 Potential Receptors 13
4.3 Potential Migration Pathways 14
4.4 Source-Pathway-Receptor Linkages 15
4.5 Data Gaps 16
5 Conclusions and Recommendations 17
6 Limitations 19
7 References 20

List of Figures

Figure 1: Site Location
Figure 2: Areas of Potential Concern

List of Tables

Table 1: Databases and Information Sources 1
Table 2: Site Identification 3
Table 3: Surrounding Land Uses 4
Table 4: Environmental Setting 5
Table 5: Aboriginal Heritage Locations 8
Table 6: Other Heritage Locations 8
Table 7: Historical Aerial Photographs 10
Table 8: Previous Reports 11
Table 9: AOPC and COPC 12
Table 10: Potential Receptors 13
Table 11: Potential Migration Pathways 14
Table 12: Data Gaps 16

List of Appendices

Appendix A Basic Summary of Records Results
Appendix B Historical Aerial Photographs

1 Introduction

360 Environmental Pty Ltd (360 Environmental) was commissioned by Mineral Resources Limited (MRL) to complete a desktop contamination assessment of the proposed development site located at Lot 300 Back Beach Road in Onslow, Western Australia (herein referred to as the site).

1.1 Objectives

The primary objectives of this desktop assessment are to identify areas of potential concern (AOPCs) associated with onsite or offsite contamination, identify data gaps associated with contamination, and to provide advice on potential future works to address those data gaps.

1.2 Scope of Works

360 Environmental undertook the following scope of works as part of the desktop contamination assessment:

- Desktop review of publicly available information (online databases, websites, etc.)
- Desktop review of relevant client-provided investigation reports and design drawings
- Consideration of potential sources of contamination and identification of AOPCs
- Identification of data gaps associated with the potential contamination
- Provision of recommendations for further works to address data gaps.

1.3 Information Sources

The following information sources were utilised for the desktop review to identify critical environmental aspects relevant to the project.

Table 1: Databases and Information Sources

Aspect	Database Searches/Relevant Literature
Tenure and Land Uses	
Land Uses	• Department of Planning, Lands and Heritage (DPLH) PlanWA Interactive Map, https://espatial.dplh.wa.gov.au/PlanWA/Index.html?viewer=PlanWA (accessed online 15 July 2021) (DPLH 2021).
Aboriginal Heritage/Native Title	• Aboriginal Heritage Inquiry System, https://espatial.dplh.wa.gov.au/AHIS/index.html?viewer=AHIS (accessed online 16 July 2021) (DPLH 2021).
European Heritage	• Shire of Ashburton Local Government Heritage Inventory, October 2019 (Shire of Ashburton 2019). • inherit Heritage register (accessed online 15 July 2021) (HCWA 2021).
Reserves/Conservation Areas/ESAs	• Perth Regional Ecological Linkages, GIS Dataset. Perth Biodiversity Project (2008). • Bush Forever Sites, GIS Dataset. Department of Planning (2014). • Clearing Regulations - Environmentally Sensitive Areas, GIS Dataset. Department of Water and Environmental Regulation (2018a).

Aspect	Database Searches/Relevant Literature
Physical and Hydrological Aspects	
Acid Sulfate Soils	• Acid Sulfate Soils, Swan Coastal Plain, GIS Dataset. Department of Water and Environmental Regulation (2019a).
Contamination and Hazardous Substances	• Contaminated Sites DWER Records, GIS Dataset. Department of Water and Environmental Regulation (DWER) (accessed online 15 July 2021). • Department of Defence (DoD) UXO Mapping Application, https://www.whereisuxo.org.au/ (accessed online 17 July 2021).
Groundwater	• Water Register, https://maps.water.wa.gov.au/#/webmap/register. Department of Water and Environmental Regulation (accessed online 15 July 2021).
Surface Water/Drainage	• Hydrography – Swan Coastal Plain (Detailed Mapping) GIS Dataset, Department of Water and Environmental Regulation (2019b) • Hydrography Linear (Hydrography), GIS Dataset, Department of Water and Environmental Regulation (2018c).

1.4 Regulatory Guidelines

In Western Australia, suspected or known contamination is legislatively addressed under the Contaminated Sites Act and regulated by the DWER Contaminated Sites Branch. This PSI follows the approach to reporting, investigating and remediating suspected or known contaminated sites as guided by the assessment protocols defined in the revised (2013) *National Environmental Protection Measure (Assessment of Site Contamination)* [2013 NEPM ASC] schedules, the DWER *Assessment and Management of Contaminated Sites Guidelines*, dated December 2014 (DER, 2014) [AMCS Guideline] and Department of Health (2009) Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.

2 Site Information and Setting

2.1 Site Identification

Site identification and land use information is summarised in **Table 2.**

Table 2: Site Identification

Aspect	Detail
Primary address	Lot 300 Back Beach Road, Onslow WA 6710
Lot Details	Lot 300 on Deposited Plan 067927
Current Owner	Unallocated Crown Land
Property details (Vol/Fol)	3160/90
Local Government Authority	Shire of Ashburton
Zoning	Conservation, Recreation and Nature Landscape
Local Planning Scheme	Shire of Ashburton Scheme No. 7
Regional Planning Scheme	None
Structure Plans	Onslow Townsite Expansion Structure Plan
State Planning Policies	3.7 – Planning in Bushfire Prone Areas
Boundary Coordinates [Geographic Datum Australia (GDA 1994 MGA Zone 50)] (refer **Figure 1**)	**Reference** / **Easting (mE)** / **Northing (mN)** 1 / 303735 / 7606131 2 / 304071 / 7606513 3 / 304422 / 7606330 4 / 304154 / 7605925
Site Area	20.4485 hectares (ha)
Current Land Use	Vacant, undeveloped
Proposed Land Use	500 (TBC) resort-style fly-in fly-out accommodation facility
Contaminated Sites Status	The site is not shown as classified on the Contaminated Sites Database (CSD) (accessed online 15 July 2021). A Basic Summary of Records (BSR) search was undertaken with the results indicating that as of 27/07/2021 the site has not been reported as a known or suspected contaminated site, either prior to or after the commencement of the *Contaminated Sites Act 2003*. The BSR response is provided in **Appendix A**.

2.2 Surrounding Land Uses

Identified land uses in each direction from the site as identified during this desktop assessment are summarised in **Table 3**.

Table 3: Surrounding Land Uses

Direction from site	Current land use(s)
North	The site is immediately abutted by the former location of the furnace oil above ground storage tanks (ASTs), now vacant land used for tourism purposes (i.e. Lookout Point and Onslow Memorial Park), then beach followed by waters of the Indian Ocean.
East	Some residential properties are located to the east of the site and bordering First St, Third Ave or Simpson St. Also to the east are community facilities including Onslow Primary School, the Onslow Community Garden, a church and police station. The location of the former dieseline/water storage AST is vacant.
South	The site is bound by Back Beach Rd and small area of residential development, followed by a vacant portion of the site operated by Onslow Salt, then infrastructure of Onslow Salt.
West	The site is immediately abutted by vacant land with a memorial boardwalk, then Sunset Beach and the Indian Ocean (with a loading jetty associated with Onslow Salt). The former aviation spirit AST is still present, approximately 210m to the south of the site, having been converted to residential use.

2.3 Environmental Setting

2.3.1 Environmental Setting

The environmental setting of the site is summarised within **Table 4**.

Table 4: Environmental Setting

Attributes	Detail	Onsite	Offsite
Topography		The site has a low point of approximately 6 m above Australian Height datum (mAHD) in the southwest corner and rises to a high of approximately 16 mAHD near the northeast corner, before falling to 9 mAHD near Third Ave. The site tends to undulate gently from southeast to southwest through the centre of the site, before again falling away along the northwest boundary (GoogleEarthPro, accessed online 15 July 2021).	The ground level generally fluctuates around the dunal areas around the site and drops down towards beach areas. Salt mining areas to the southwest are topographic lows.
Geology and Soils	Regional geology	Onslow is located in the Carnarvon Geological Region and within the Exmouth Province of the Western Coastlands Physiographic Region (AECOM, 2010). The Exmouth Province is characterised by sandy or alluvial plans associated with drainage systems such as the Ashburton River. Coastland adjacent to the river is characterised by sandy beaches and dunal systems of the Quaternary shoreline and coastal eolian deposits. Onslow is situated on a large sandy island, with the most seaward point located over an old coral reef, forming Beadon Point (AECOM 2010). Regional soils are predominantly red sands in the dune fields and red soils in the plains (AECOM 2010).	
	Local geology	No site investigations are understood to have been undertaken. Based on the aerial photographs and the site location, the site is expected to reflect the regional geology and comprise coastal dunes, being calcareous and siliceous sands, locally shelly and/or cemented (beach rock).	
	Acid sulfate soils	Part of the site (central portion running to the southwest site boundary at Back Beach Rd) is mapped as having a moderate to low risk of acid sulfate soils (ASS) occurring within 3m of the natural soil surface but high to moderate risk of ASS below 3 m of the natural soil surface (ASS Risk Map, Pilbara Coastline, DWER-053).	
Hydrogeology	Regional hydrogeology	There is limited hydrogeological information for the site and Onslow area. AECOM (2010) notes that Onslow is located within the Ashburton Sub-Area of the Pilbara Groundwater Area. The freshwater aquifer beneath the townsite is understood to be of limited supply and is not extracted for human consumption, with town potable supplies sourced from bores approximately 30 km to the east (AECOM 2010)	
	Local hydrogeology	No groundwater investigations are understood to have been conducted at the site.	No nearby offsite groundwater investigations were identified in this investigation.
	Groundwater quality and protection	Groundwater is anticipated to range from fresh to saline. Potable water is sourced from approximately 30 km to the east and a large salt lake is present to the southwest of the site. Given the proximity of the site close to the Indian Ocean, groundwater beneath the site is likely to be saline. No groundwater investigation reports associated with the site were identified.	
	Groundwater abstraction licence(s)	There are no abstraction licences associated with the site.	A search of the Water Register indicates one groundwater abstraction licence within 500m of the site. The licence (181614) is registered to Onslow Development and applies to the property to the immediate north of the site (Lot 381 on Plan 205465) and has an annual allocation of 16,000kL. The use of this abstraction (and whether the allocation is utilised) is not provided.

Attributes	Detail	Onsite	Offsite
	Registered bores	A search of the Water Information Reporting (WIR) and the Australian Groundwater Explorer indicate there are no registered or licensed groundwater wells at the site.	A search of the WIR database identified three (3) registered bores while a search of the Australian Groundwater Explorer identified a total of four (4) sites within 500m of the site. The sites are summarised as follows: • 70610006 – Onslow Artesian No. 2, drilled in 1899, with a measured static water level in 1899 of 6 mbgl. • 70610297 – Onslow Oval • 70612248 – monitoring well installed in 1997 to a depth of 12.7 mbgl. • 70612247 – monitoring well installed in 1997 to a depth of 9.1 mbgl.
Surface Water	Surface water protection	The site and surrounds are not located within any surface water protection area.	
	Ambient surface water bodies, wetlands and flood plains	No natural, constructed water bodies or wetlands exist on the site.	A natural lake area, visible in the earliest aerial photograph, is present approximately 200m to the southwest and is associated with the Onslow Salt site and operations (i.e. it is assumed to be saline).
Contaminated Sites	Contaminated Sites Database (CSD)	The site is not a listed on the CSD and there are no classified properties adjoining the site. Note that it is possible properties classified as "possibly contaminated – investigation required" (PCIR) may be near the site. PCIR sites are not listed on the CSD.	There are currently no classified sites listed within 1 km of the site, with the nearest being more than 2 km to the southeast. 360 Environmental notes that AECOM (2010) reported nearby Lot 381, the site of the former 2,300kL furnace oil ATSs adjacent to the northern site boundary, as being classified as Contaminated – remediation required. That report noted the ASTs had been installed on an oil-saturated sand bed, and that anecdotal evidence indicated pipes containing oil had been uncovered during installation of a sewer pit. Those pipes were presumably associated with the tanks and may have run out to the former jetty to the north. Remediation was noted to be occurring in 2010 (AECOM 2010), the outcomes of which are not known. A search of the CSD in July 2021 did not identify the site as classified and the BSR search determined the site has not been reported as known or suspected contaminated site (refer **Appendix A**).
Environmental Protection	Environmental Sensitive Areas (ESA)	The site is not located in an ESA.	There are no ESAs located within a 500m radius of the site.

Attributes	Detail	Onsite	Offsite
Heritage	Aboriginal heritage	There are three (3) registered heritage sites associated with the site (Place IDs 6617, 6618 and 8920). These are described in Section 2.4.1.	There is one (1) registered heritage site within 500m of the site (Place ID 6575). This is described in Section 2.4.1.
	European heritage	There are no registered Historical Heritage locations at the site.	There are six (6) registered heritage locations within 500m of the site [and a further two (2) reported in Shire of Ashburton (2019)]. These are further described in Section 2.4.2.

2.4 Heritage Sites

2.4.1 Aboriginal Heritage

A search of the AHIS identified three (3) listed heritage locations associated with the site and one (1) additional location within 500m of the site. These are described in **Table 5**.

Table 5: Aboriginal Heritage Locations

ID	Name	Type / Description
Onsite		
6617	Burubarladji	Mythological; not a protected area
6618	DEW TALU	Ceremonial, Water Source; not a protected area
8920	Onslow 1	Artefacts / Scatter, Midden / Scatter; not a protected area
Offsite		
6575	Jinta 1 Midden	Artefacts / Scatter, Midden / Scatter; not a protected area

2.4.2 Other Heritage Sites

A search of state and local government heritage databases and available reports identified several heritage locations within 500m of the site. These are further described in **Table 6**.

Table 6: Other Heritage Locations

HCWA No.	Name	Type / Description
Heritage Council of WA Website (inHerit)		
15366	Police Residence (fmr)	3 First St, Onslow. The former police residence has aesthetic, historic, social and representative cultural heritage significance and is a relic of Onslow's early settlement
15392	St Nicholas Church	19 Third Ave, Onslow. St Nicholas Church has significant aesthetic, historic, social and rarity heritage value.
15377	Residence - Sweeting	18 Third Ave, Onslow. The residence on Lot 326 has historic cultural heritage significance, being a remnant of the Old Onslow town site that has survived numerous storms.
15376	Residence	26 Third Ave, Onslow. The residence has aesthetic, historic and representative cultural heritage significance.
15367	Onslow Post Office & Residence	19-21 Second Ave, Onslow. The former Post Office and residence have aesthetic, historic and representative cultural heritage significance
15364	Beadon Hotel	22-26 Second Ave, Onslow. The Beadon Hotel has significant aesthetic, historic, social and rarity cultural heritage value.
Shire of Ashburton Local Government Heritage Inventory		
-	Fuel Storage Tanks	Includes the former Aviation Spirit tank, dieseline tank and furnace oil tanks 1 and 2, and the pump outstation and hose locker. These were present across several lots, with several (furnace oil tanks, dieseline tank and pump stations) immediately adjacent to the site. These were

HCWA No.	Name	Type / Description
		listed as having heritage value based on their physical form and their role in defence activities in World War II.
26612	Beadon Point Rear Navigational Leading Light	2 Second Ave, Onslow. Cultural significance as provided evidence of when Onslow was the major port for the Ashburton district. Demolished in 2019.

3 Site History

3.1 Historical Aerial Review

A review of publicly available online historical aerial imagery (dating back to 1970) was undertaken on 15 July 2021. Observed changes to the site and surrounding area are described in **Table 7**. Copies of the historical aerial imagery reviewed are provided in **Appendix B**.

Table 7: Historical Aerial Photographs

Year	Photograph Description	
	Onsite	Offsite
1970	The site is undeveloped with natural ground cover.	• Fuel storage infrastructure is visible to the north [two furnace oil above ground storage tanks (ASTs)], east (dieseline AST and pump station) and south (aviation pump station and aviation spirit AST). • Residential properties are present to the east and southeast of the site and the jetty is present to the north at Beadon Point. • Land to the west is undeveloped.
2001	The site appears similar to the 1970 aerial photograph and remains undeveloped with natural ground cover.	• Most of the fuel storage infrastructure remains and appears generally similar to the 1970 aerial photograph. • Additional residential properties are present to the immediate east and south of the site, including across Simpson St. • The jetty to the north is no longer present however a jetty associated with Onslow Salt, present to the southwest of the site, is now present to the west of the site.
2010	The site appears similar to the 2001 aerial photograph and remains undeveloped with natural ground cover.	• The two furnace oil ASTs to the north have been removed and some bioremediation of impacted soil occurred. Other fuel infrastructure in the vicinity appears similar to the 2001 aerial photograph. • Minor changes are evident among the residential properties east and southeast of the site.
2017	The site appears similar to the 2010 aerial photograph and remains undeveloped with natural ground cover.	• The remaining small AST to the north of the site has been removed, as has the former dieseline AST east of the site (which historically had been converted to a water storage tank for the town). • The remainder of the area appears generally similar to the 2010 aerial photograph.
2020	The site appears similar to the 2017 aerial photograph and remains undeveloped with natural ground cover.	• Much of the surrounding area appears similar to the 2017 aerial photograph.