CONDITION	T24
A notification, pursuant to Section 165 of the *Planning and Development Act 2005* is to be placed on the certificate(s) of title of the proposed lot(s). Notice of this notification is to be included on the diagram or plan of survey (deposited plan). The notification is to state as follows: *This lot is situated in the vicinity of a transport corridor and is currently affected, or may in the future be affected by transport noise. Additional planning and building requirements may apply to development on this land to achieve an acceptable level of noise reduction. (Western Australian Planning Commission)*	
JUSTIFICATION:	*SPP 5.4 Road and Rail Noise*

Water and sewer conditions

CONDITION	W1
For all lots apply a): a) Arrangements being made with a licensed water provider for the provision of a suitable water supply service to each lot shown on the approved plan of subdivision. (Water Corporation/ Aqwest/ Busselton Water) [DELETE / INSERT LICENSED SERVICE PROVIDER AS APPLICABLE] For applications for survey strata or vacant strata schemes also include b): b) Additionally, arrangements are to include the provisions of a suitable water supply service to each lot in the scheme (plan) (Western Australian Planning Commission)	
JUSTIFICATION:	*SPP 2.5 Rural Planning; DC 1.1 Subdivision of Land – General Principles; DC 3.4 Subdivision of Rural Land; Liveable Neighbourhoods Element 6*

CONDITION	W3
The provision of easements for existing or planned future water, sewerage and/or drainage infrastructure as may be required by [INSERT SERVICE PROVIDER] being granted free of cost to that body. [INSERT SERVICE PROVIDER]	
JUSTIFICATION:	*Planning and Development Act 2005 s.167; DC 1.1 Subdivision of Land General Principles*

Standard Advice

Ea1 In regard to Condition E1, [DELETE /INSERT LICENSED SERVICE PROVIDER AS APPLICABLE] provides only one underground point of electricity supply per freehold lot.

Ta2. The landowner/applicant and the local government are advised to refer to the Institute of Public Works Engineering Australia Local Government Guidelines for Subdivisional Development (current edition). The guidelines set out the minimum best practice requirements recommended for subdivision construction and granting clearance of engineering conditions imposed.

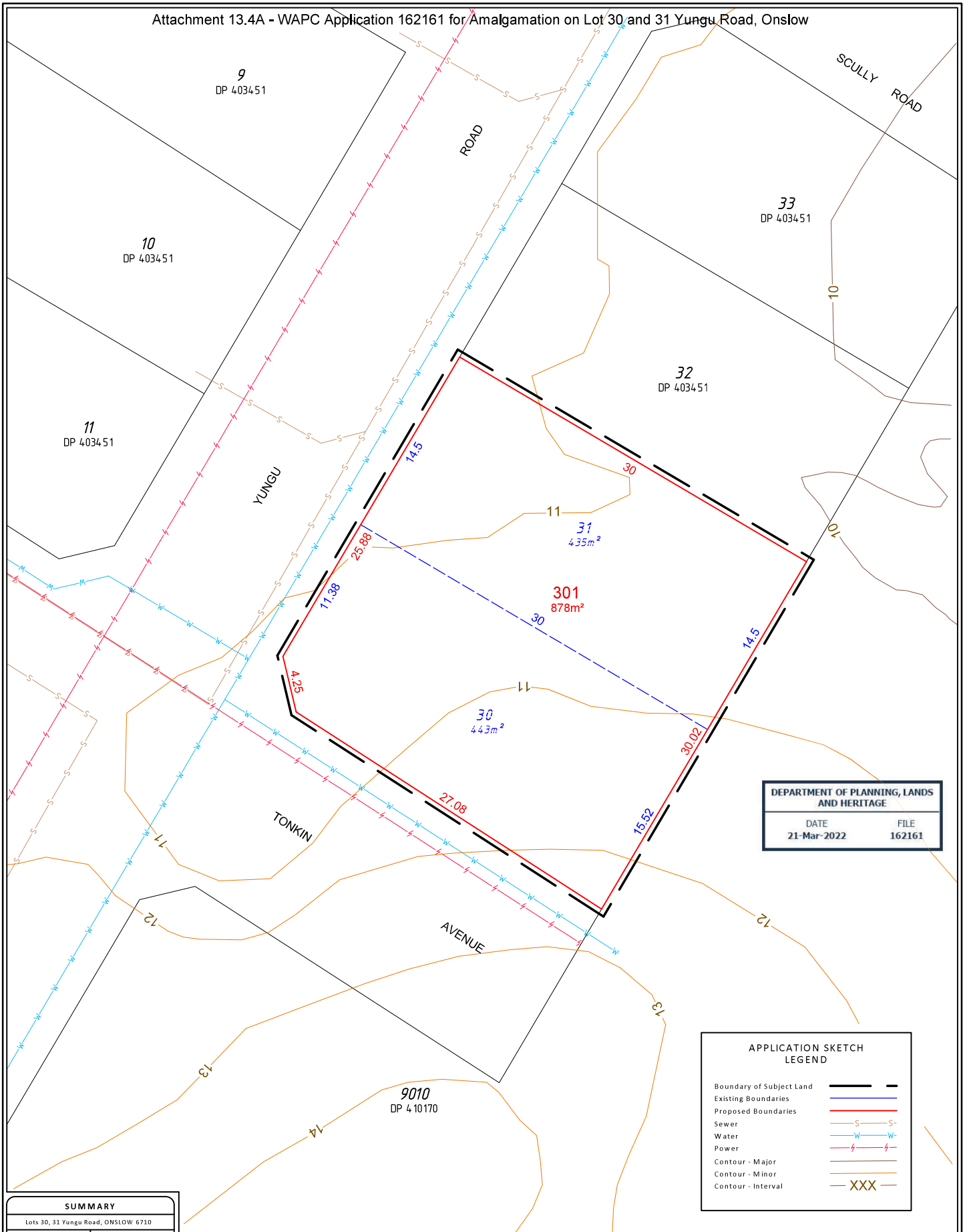
Ta3. In regard to Condition (T1), the landowner/applicant is advised that the road reserves, including the constructed carriageways, laneways, truncations, footpaths/dual use paths and car embayments, are to be generally consistent with the approved plan of subdivision.

Tea1. The applicant/landowner is advised that pursuant to the Commonwealth Telecommunications Act 1997 there will generally be a requirement for the installation of

fibre-ready telecommunications infrastructure. Exemptions can be sought for certain types of development. Further information is available from the Australian Government Department of Infrastructure, Transport, Regional Development and Communications website at www.infrastructure.gov.au

13.4A - WAPC Application 162161 | Lot 30 & Lot 31 Yungu Road, Onslow

Attachment 13.4A - WAPC Application 162161 for Amalgamation on Lot 30 and 31 Yungu Road, Onslow



SUMMARY	
Lots 30, 31 Yungu Road, ONSLOW 6710	
Application Type	*Amalgamation*
Parent Lot A	*30*
Parent Graphic	*DP 403451*
Certificate of Title	*Volume 2867 Folio 76*
Total Area	*443m²*
Parent Lot B	*31*
Parent Graphic	*DP 403451*
Certificate of Title	*Volume 2867 Folio 77*
Total Area	*435m²*
Local Authority	*Shire of Ashburton*
TPS	*Urban Development*
Zoning	*N/A*
Original No. of Lots	*2*
Proposed No. of Lots	*1*

This plan, which was prepared by MNG for AUSTRALIAN EXECUTOR TRUSTEES, shows the proposed amalgation of LOTS 30, 31 YUNGU ROAD, ONSLOW and is intended to accompany an application to the Western Australian Planning Commission (WAPC) for approval to subdivide. All information relating to the subdivision, including lot dimensions and areas are subject to approval by the WAPC, the Local Authority and other servicing authorities having an interest in the land.

Existing boundaries shown hereon are a graphical representation only, they have been extracted from Landgate's Spatial Cadastral Database, which is only a model of the cadastre, and has not been re-established by survey. MNG does not guarantee position unless stated otherwise.

Existing easements, encumberances and interests are not necessarily depicted on the planand a current title search is recommended to check this information prior to sale and development of proposed lot(s).

The use of this plan for other than the purpose for which it is commissioned is strictly prohibited. In particular, the information shown on the plan in not relied upon for financial dealings involving the land either in the whole or in the part.

The contents of this plan are current and correct as of the date stated within the revision panel. All consultants and persons wishing to utilise this data should satisfy themselves of this plans currency by contacting the McMullen Nolan Group.

Contours are compiled from MNG Survey Data and Landgate SLIP Data and are subject to change without notice.

This plan is not to be distributed without this note, which is an integral part of the plan.

SCALE 1 : 250 @ A3

ALL DISTANCES ARE IN METRES

for a true to scale reproduction of this plan, plot it to A3 with the Paging Scaling set to None.

FILES
mapCOGO:- 001
Control Register:- 98376
File Name:- 104718ap-001a.dgn

334

PROPOSED SUBDIVISION
LOTS 30, 31 YUNGU ROAD, ONSLOW
(AMALGAMATION)

CLIENT:
Australian Executor Trustees

MCMULLEN NOLAN GROUP
Level 1, 2 Sabre Crescent
Jandakot, W.A. 6164
PO Box 3526, Success
W.A. 6964, Australia
Tel: (08) 6436 1599
Fax: (08) 6436 1500
info@mngsurvey.com.au
www.mngsurvey.com.au
ABN 90 089 363 315
Offices in: Broome, Bunbury, Kununurra, Newman, Port Hedland

Project Mngr	Nigel Simpson	Datum	BIOS4

104718 - 001 - A
Job Number | Plan Number | Version

13.4B - WAPC Application 162161 | Lot 30 & Lot 31 Yungu Road, Onslow

APPLICATION WAPC 162161 – LOT 30 AND LOT 31 YUNGU ROAD, ONSLOW

Fire and Emergency condition

CONDITION	**F1**
Information is to be provided to demonstrate that the measures contained in Section 6; Table X (INSERT TABLE NUMBER THAT RELATES TO DEVELOPER IMPLEMENTATION RESPONSIBILITIES] of the bushfire management plan [RENAME/ INSERT VERSION/ DATE] have been implemented during subdivisional works. This information should include a completed 'Certification by Bushfire Consultant' from the bushfire management plan. (Local Government) Or Information is to be provided to demonstrate that the measures contained in the bushfire management plan (insert version/date) [RENAME/DELETE AS APPLICABLE] that address the following: (a) (b) (c) Have been implemented during subdivisional works. This information should include a notice of 'Certification by Bushfire Consultant'.	
JUSTIFICATION:	*SPP 3.7 - Planning in Bushfire Prone Areas; Guidelines for Planning in Bushfire Prone Areas*

CONDITION	**F2**
A notification, pursuant to Section 165 of the Planning and Development Act 2005, is to be placed on the certificate(s) of title of the proposed lot(s) with a Bushfire Attack Level (BAL) rating of 12.5 or above, 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). The notification is to state as follows: "This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner and is/ may be subject to a Bushfire Management Plan [RENAME/DELETE AS APPLICABLE]. Additional planning and building requirements may apply to development on this land" (Western Australian Planning Commission)	
JUSTIFICATION:	*SPP 3.7 - Planning in Bushfire Prone Areas; Guidelines for Planning in Bushfire Prone Areas; PB 3 Notifications on Titles (Memorials)*

Transport and road conditions

CONDITION	**T20**
Suitable arrangements being made with the local government for the provision of vehicular crossover(s) to service the lot(s) shown on the approved plan of subdivision. (Local Government)	
JUSTIFICATION:	*DC 1.1 Subdivision of Land – General Principles;*

Water and sewer conditions

CONDITION	W1
For all lots apply a): a) Arrangements being made with a licensed water provider for the provision of a suitable water supply service to each lot shown on the approved plan of subdivision. (Water Corporation/ Aqwest/ Busselton Water) [DELETE / INSERT LICENSED SERVICE PROVIDER AS APPLICABLE] For applications for survey strata or vacant strata schemes also include b): b) Additionally, arrangements are to include the provisions of a suitable water supply service to each lot in the scheme (plan) (Western Australian Planning Commission)	
JUSTIFICATION:	*SPP 2.5 Rural Planning; DC 1.1 Subdivision of Land – General Principles; DC 3.4 Subdivision of Rural Land; Liveable Neighbourhoods Element 6*

CONDITION	W3
The provision of easements for existing or planned future water, sewerage and/or drainage infrastructure as may be required by [INSERT SERVICE PROVIDER] being granted free of cost to that body. [INSERT SERVICE PROVIDER]	
JUSTIFICATION:	*Planning and Development Act 2005 s.167; DC 1.1 Subdivision of Land General Principles*

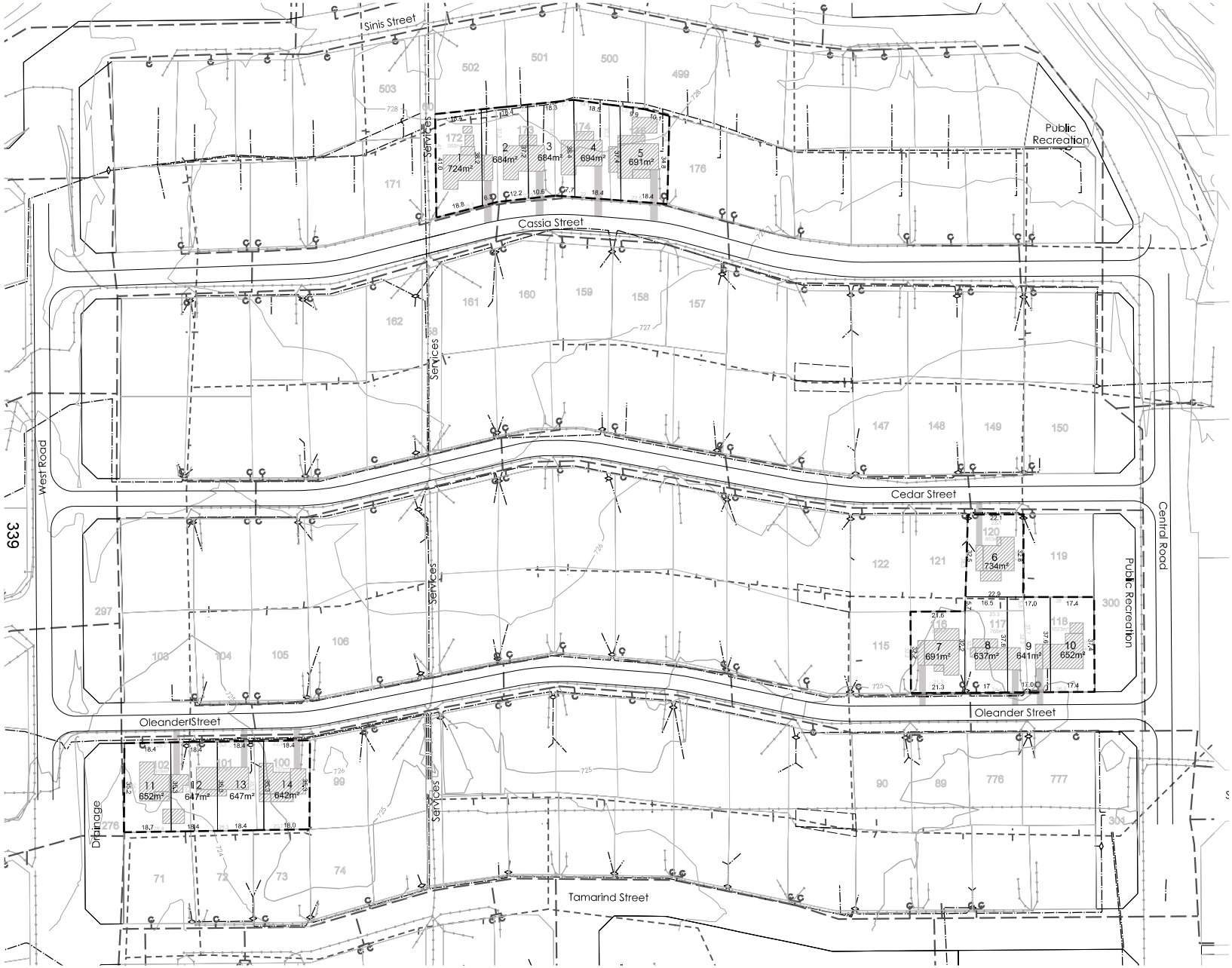
Standard Advice

Ta2. The landowner/applicant and the local government are advised to refer to the Institute of Public Works Engineering Australia Local Government Guidelines for Subdivisional Development (current edition). The guidelines set out the minimum best practice requirements recommended for subdivision construction and granting clearance of engineering conditions imposed.

Ta3. In regard to Condition (T1), the landowner/applicant is advised that the road reserves, including the constructed carriageways, laneways, truncations, footpaths/dual use paths and car embayments, are to be generally consistent with the approved plan of subdivision.

Tea1. The applicant/landowner is advised that pursuant to the Commonwealth Telecommunications Act 1997 there will generally be a requirement for the installation of fibre-ready telecommunications infrastructure. Exemptions can be sought for certain types of development. Further information is available from the Australian Government Department of Infrastructure, Transport, Regional Development and Communications website at www.infrastructure.gov.au

13.5A - WAPC Application 162169 | Lot 100 -102 And Lot 116 -118 Oleander Street, Lot 120 Cedar Street And Lot 172-175 Cassia Street, Tom Price



LEGEND

- TOTAL APPLICATION AREA (0.9420ha)
- EXISTING EASEMENT - TP & D 27A Reg 8
- CONTOURS (1M INTERVALS)
- EXISTING LOT BOUNDARY
- EXISTING BUILDINGS
- EXISTING DRIVEWAYS AND CROSSOVERS

SERVICES

WATER
- PIPE

SEWER
- GRAVITY PIPE

ELECTRICAL
- UNDERGROUND DISTRIBUTION LINE
- PILLAR

COMMUNICATIONS
- UNDERGROUND FIBRE OPTIC CABLE

LOT SUMMARY

LOT SUMMARY				
Original Number of Lots	**11**			
Size	No. Lots	% Total Lots	Average Size	% of Total Area
600m² - 699m²	12	85.71%	663m²	84.52%
700m² - 799m²	2	14.29%	729m²	15.48%
Total Number of Lots	**14**			

Minimum Lot Size 637m² — Average Lot Size 672m²
Maximum Lot Size 734m² — Total Lot Area 9420m²

DEPARTMENT OF PLANNING, LANDS AND HERITAGE

DATE 23-Mar-2022 — FILE 162169

Attachment 13.5A - WAPC Application 162169 for Amalgamation and Subdivision

339

Plan of Subdivision - Freehold (Refer Addendum 1-3 for existing lot detail)

TOM PRICE HOUSING REDEVELOPMENT SUBDIVISION

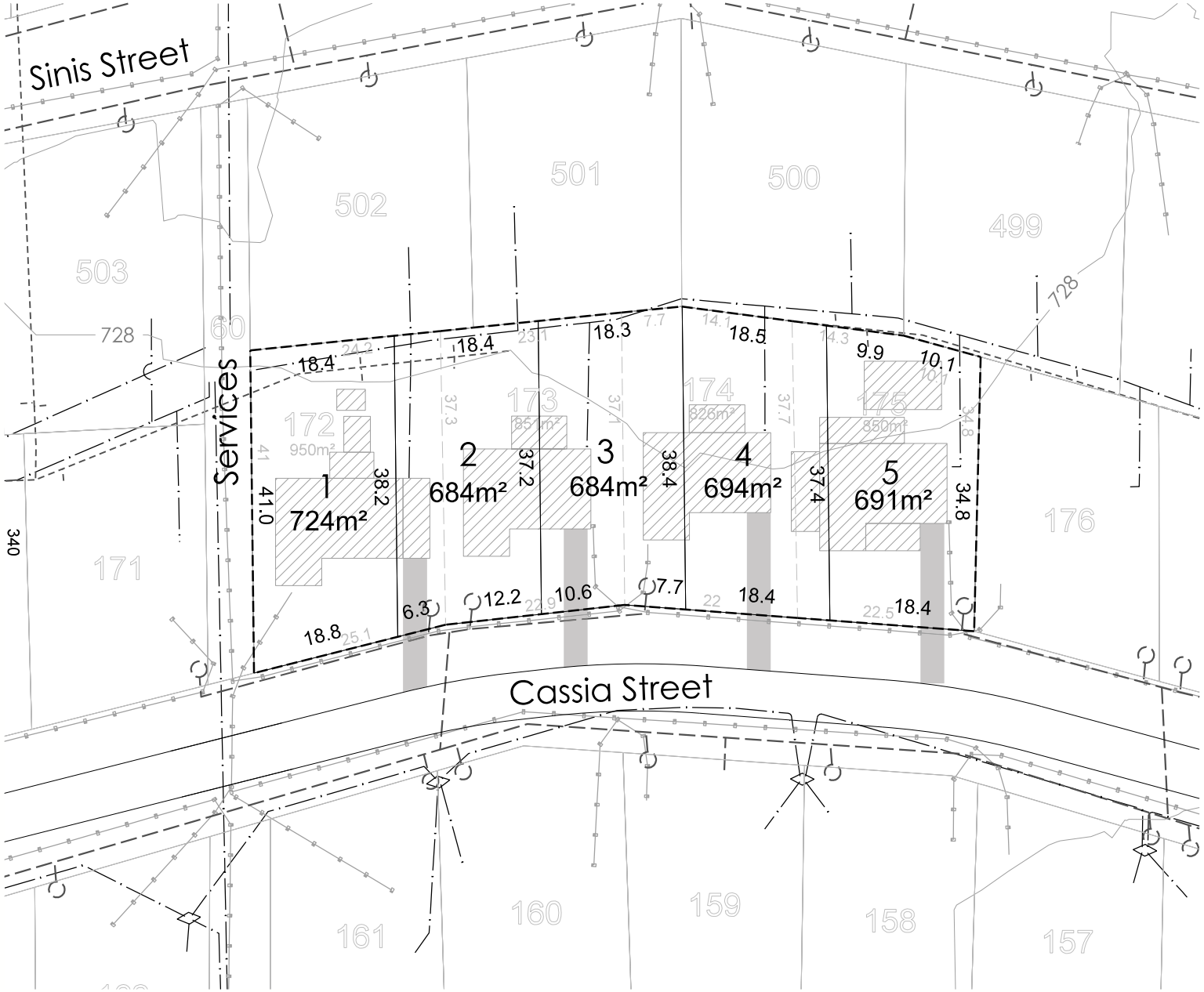
A Hamersley Iron Pty Ltd Project

plan: 11/064/034A | date: 21/02/22 | designed: ME
scale: 1:1500@A3 | 1:3000@A1 | grid: MGA 94 | checked: ME
0 15 30m | drawn: MM

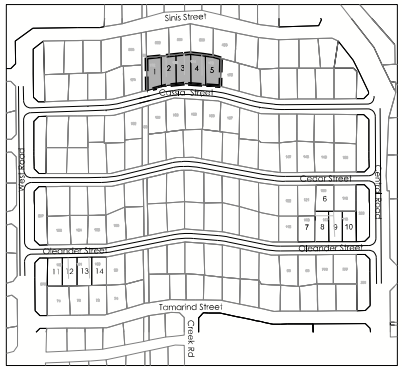
Taylor Burrell Barnett Town Planning & Design
Level 7, 160 St Georges Terrace, Perth WA 6000
e: admin@tbbplanning.com.au
p: (08) 9226 4276

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LOCATION PLAN



LEGEND

LOT 1-5 EXTRACT OF TOTAL APPLICATION AREA (0.3478ha)
CONTOURS (1m INTERVAL)
EXISTING LOT BOUNDARY
EXISTING BUILDINGS (TO BE DEMOLISHED)
EXISTING DRIVEWAYS AND CROSSOVERS (TO BE DEMOLISHED)

SERVICES

WATER
PIPE

SEWER
GRAVITY PIPE

ELECTRICAL
UNDERGROUND DISTRIBUTION LINE
PILLAR

COMMUNICATIONS
UNDERGROUND FIBRE OPTIC CABLE

Attachment 13.5A - WAPC Application 162169 for Amalgamation and Subdivision

Addendum 1 - Existing and Proposed Subdivision Details

TOM PRICE HOUSING REDEVELOPMENT SUBDIVISION

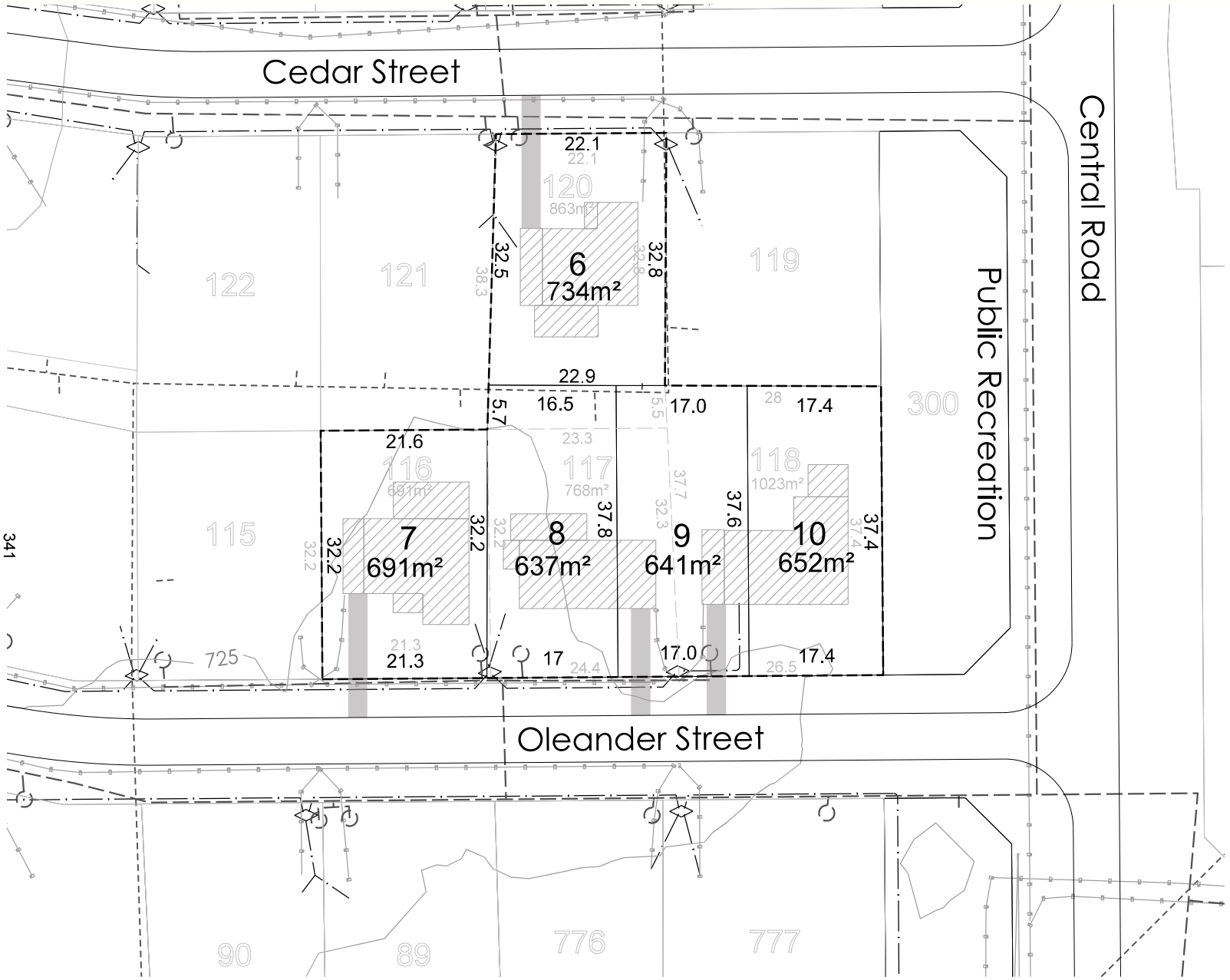
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plan: 11/064/035A
date: 21/02/2022
designed: ME
scale: 1:500@A3 | 1:250@A1
grid: MGA 94
checked: MB
drawn: MM
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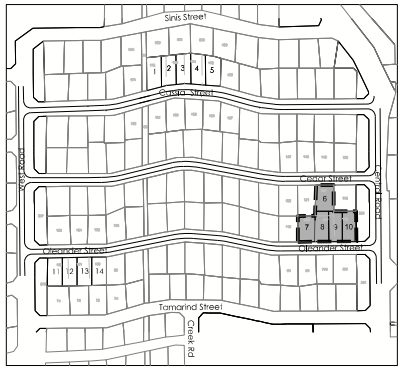
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LOCATION PLAN



LEGEND

- LOT 6-10 EXTRACT OF TOTAL APPLICATION AREA (0.3354ha)
- CONTOURS (1m INTERVAL)
- EXISTING LOT BOUNDARY
- EXISTING BUILDINGS (TO BE DEMOLISHED)
- EXISTING DRIVEWAYS AND CROSSOVERS (TO BE DEMOLISHED)

SERVICES

WATER
- PIPE

SEWER
- GRAVITY PIPE

ELECTRICAL
- UNDERGROUND DISTRIBUTION LINE
- PILLAR

COMMUNICATIONS
- UNDERGROUND FIBRE OPTIC CABLE

Attachment 13.5A - WAPC Application 162169 for Amalgamation and Subdivision

Addendum 2 - Existing and Proposed Subdivision Details

TOM PRICE HOUSING REDEVELOPMENT SUBDIVISION

A Hamersley Iron Pty Ltd Project

plan: 11/064/036A
date: 21/02/2022
designed: ME
scale: 1:500@A3 | 1:250@A1
grid: MGA 94
checked: MB
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drawn: MM

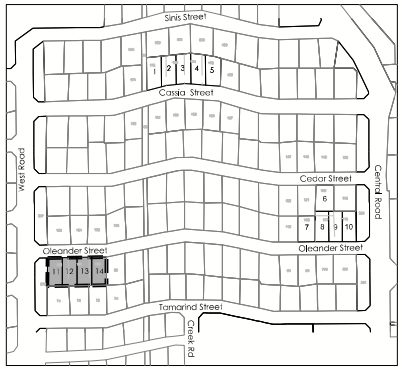
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LOCATION PLAN



LEGEND

LOT 11-14 EXTRACT OF TOTAL APPLICATION AREA (0.2588ha)

CONTOURS (1m INTERVAL)

EXISTING LOT BOUNDARY

EXISTING BUILDINGS (TO BE DEMOLISHED)

EXISTING DRIVEWAYS AND CROSSOVERS (TO BE DEMOLISHED)

SERVICES

WATER

PIPE

SEWER

GRAVITY PIPE

ELECTRICAL

UNDERGROUND DISTRIBUTION LINE

PILLAR

COMMUNICATIONS

UNDERGROUND FIBRE OPTIC CABLE

Attachment 13.5A - WAPC Application 162169 for Amalgamation and Subdivision

Addendum 3 - Existing and Proposed Subdivision Details

TOM PRICE HOUSING REDEVELOPMENT SUBDIVISION

A Hamersley Iron Pty Ltd Project

plan: 11/064/037A | date: 21/02/2022 | designed: ME

scale: 1:500@A3 | 1:250@A1 | grid: MGA 94 | checked: MB

0 5 10m | drawn: MM

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13.5B - WAPC Application 162169 | Lot 100 -102 And Lot 116 -118 Oleander Street, Lot 120 Cedar Street And Lot 172-175 Cassia Street, Tom Price

APPLICATION WAPC 162169 – LOT 100 - 102 AND LOT 116 - 118 OLEANDER STREET, LOT 120 CEDAR STREET AND LOT 172 - 175 CASSIA STREET, TOM PRICE

Building and use advice conditions

CONDITION	**B5**
Other than buildings, outbuildings and/or structures shown on the approved plan for retention, all buildings, outbuildings and/or structures present on lot(s) [INSERT VALUE] at the time of subdivision approval being demolished and materials removed from the lot(s). (Local Government)	
JUSTIFICATION:	*SPP 7.3 Residential Design Codes; OP 1.1 Subdivision of Land – General Principles*

Drainage and site work conditions

CONDITION	**D1**
Engineering drawings and specifications are to be submitted, approved, and works undertaken in accordance with the approved engineering drawings, specifications and approved plan of subdivision, for grading and/or stabilisation of the site to ensure that: a) lots can accommodate their intended use; and b) finished ground levels at the boundaries of the lot(s) the subject of this approval match or otherwise coordinate with the existing and/or proposed finished ground levels of the land abutting. (Local Government)	
JUSTIFICATION:	*Engineering drawings required by Planning and Development Act 2005 s.170; OP 1.1 Subdivision of Land – General Principles*

CONDITION	**D3**
Engineering drawings and specifications are to be submitted and approved, and works undertaken in accordance with the approved engineering drawings and specifications and approved plan of subdivision, for the filling and/or draining of the land, including ensuring that stormwater is contained on-site, or appropriately treated and connected to the local drainage system. Engineering drawings and specifications are to be in accordance with an approved Urban Water Management Plan (UWMP) for the site, or where no UWMP exists, to the satisfaction of the Western Australian Planning Commission. (Local Government)	
JUSTIFICATION:	*OP 1.1 Subdivision of Land – General Principles; Liveable Neighbourhoods Element 5; Better Urban Water Management Manual and Guidelines; Engineering drawings required by Planning and Development Act 2005 s.170*

Electricity and gas pipeline conditions

CONDITION	**E1**
Arrangements being made with a licensed electricity network operator for the provision of an underground electricity distribution system that can supply electricity to each lot shown on the approved plan of subdivision. (Western Power / Horizon Power) [DELETE / INSERT LICENSED SERVICE PROVIDER AS APPLICABLE]	
JUSTIFICATION:	*OP 1.1 Subdivision of Land – General Principles; DC 2.2 – Residential Subdivision; Liveable Neighbourhoods Element 6*

Transport and road conditions

CONDITION	**T20**
Suitable arrangements being made with the local government for the provision of vehicular crossover(s) to service the lot(s) shown on the approved plan of subdivision. (Local Government)	
JUSTIFICATION:	*DC 1.1 Subdivision of Land – General Principles;*

Water and sewer conditions

CONDITION	**W1**
For all lots apply a): a) Arrangements being made with a licensed water provider for the provision of a suitable water supply service to each lot shown on the approved plan of subdivision. (Water Corporation/ Aqwest/ Busselton Water) [DELETE / INSERT LICENSED SERVICE PROVIDER AS APPLICABLE]	
JUSTIFICATION:	*SPP 2.5 Rural Planning; DC 1.1 Subdivision of Land – General Principles; DC 3.4 Subdivision of Rural Land; Liveable Neighbourhoods Element 6*

CONDITION	**W3**
The provision of easements for existing or planned future water, sewerage and/or drainage infrastructure as may be required by [INSERT SERVICE PROVIDER] being granted free of cost to that body. [INSERT SERVICE PROVIDER]	
JUSTIFICATION:	*Planning and Development Act 2005 s.167; DC 1.1 Subdivision of Land General Principles*

Standard Advice

Ba2. In regard to Condition [INSERT VALUE], a demolition permit may be required to be obtained from the local government prior to the commencement of demolition works.

Ea1 In regard to Condition E1, [DELETE /INSERT LICENSED SERVICE PROVIDER AS APPLICABLE] provides only one underground point of electricity supply per freehold lot.

Ta2. The landowner/applicant and the local government are advised to refer to the Institute of Public Works Engineering Australia Local Government Guidelines for Subdivisional Development (current edition). The guidelines set out the minimum best practice requirements recommended for subdivision construction and granting clearance of engineering conditions imposed.

Ta3. In regard to Condition (T1), the landowner/applicant is advised that the road reserves, including the constructed carriageways, laneways, truncations, footpaths/dual use paths and car embayments, are to be generally consistent with the approved plan of subdivision.

Tea1. The applicant/landowner is advised that pursuant to the Commonwealth Telecommunications Act 1997 there will generally be a requirement for the installation of fibre-ready telecommunications infrastructure. Exemptions can be sought for certain types of development. Further information is available from the Australian Government Department of Infrastructure, Transport, Regional Development and Communications website at www.infrastructure.gov.au

14.1A – Application to Amend Restricted Access Vehicle Network - Hamersley Road, Mt Sheila

Application and Road Owner Support to Add or Amend a Road on a Restricted Access Vehicle Network

Main Roads Heavy Vehicle Services will consider adding a road to the Restricted Access Vehicle (RAV) Network provided support from the relevant road owner is obtained . This application must be completed by the applicant and forwarded to Main Roads who will liaise directly with the relevant road owner to ensure they have no objections to the access.

Applicant Details

Operator Name / Company	Toll Mining Services		
Contact Name	Anthony Hughes	**Contact Phone Number**	0460350929
Mobile Phone Number	0460350929	**Contact Fax Number**	
Email Address	Anthony.Hughes@tollgroup.com		

RAV Length Category to be assessed

Tandem Drive RAV Categories 2-10 Refer to the **Prime Mover, Trailer** or **Truck, Trailer Operating Conditions** for approved combinations on our website.

RAV Category 10 (53.5m)

Tri Drive Categories 1-5 Refer to the **Tri Drive Prime Mover, Trailer** or **Tri Drive Truck, Trailer Operating Conditions** for approved combinations on our website.

Tri Drive Category 5 (53.5m)

PBS Categories Refer to the **WA Performance Based Standards (PBS) Scheme – Access Levels & Principles** on the **PBS** page on our website.

Other Categories (i.e. Oversize Road Train) Refer to the operating conditions of the particular **Permit Product** for approved combinations on our website

Concessional Mass Level to be assessed

Level 1 concessional mass is automatically applied when a road is approved on the relevant base Tandem Drive, Tri Drive or PBS Networks listed in the above section.

For Level 2 and 3 concessional mass, please select the requested level below. Refer to the **Operating Conditions** on the AMMS page on our website for approved combinations.

Concessional Mass Levels

	Tandem Axle Group	Tri Axle Group	Quad Axle Group (PBS)
Level 1	17.0t	21.5t	24.0t
Level 2	17.0t	22.5t	27.0t
Level 3	17.5t	23.5t	28.5t

Requested Mass Level

Level 3

Transport Task Details

Estimated Annual Tonnage (t) **Estimated Loaded Movements** 3 per day (Please Select)

Roads to be assessed Please list all requested roads where RAV Access is required (including start and end points) and attach maps.

Currently M029 Nanutarra-Munjina Road Start SLK 288.3 End SLK 328.19 is approved as a TD3.3 road & also approved as a N10.3 road to connect to Road No 8110038 Hamersley Rd
Hamersley Rd is currently approved with condition for tandem drive N10.2 configurations. The road is also currently approved for only tri-drive TD1.3 and N4.3 for Level 3 AMMS tandem drive network.
Toll Mining Services seek road owner approval and MRWA approval for M029 Nanutarra-Munjina Rd Start SLK 288.3 End SLK 328.19 to be amended to allow TD5.3 operations on this section of road to link to road no 8110038 Hamersley Rd Start SLK 0 End SLK 16.10
Toll request for Hamersley Rd be amended to allow N10.3 movements as it holds a current Level 3 AMMS rating (N4.3) and for inclusion of TD5.3 also for operations on this section of road, to allow access at AMMS Level 3 into Solomon Mine.

mainroads WESTERN AUSTRALIA

Application and Road Owner Support to Add or Amend a Road on a Restricted Access Vehicle Network

Main Roads will liaise directly with the relevant road owner to complete this section.

Road Owner			
Road Name		**Road Number**	

Contact Details

Contact Name		**Position**	
Contact Phone Number		**Contact Fax Number**	
Mobile Phone Number		**Email Address**	

Required Traffic Data

Please provide the AADT, Speed Limit and if the road is on a School Bus Route. If the application is for more than one road, please provide the AADT, speed limit and if the roads are on a School Bus Route for each road in comments box provided below.

Posted Speed Limit ____ **School Bus Route ?** ◯ Yes ◯ No

AADT

Annual Average Daily Traffic is determined by the total yearly two-way traffic volume divided by 365, expressed as vehicles per day(VPD). Please tick box below.

◯ 0 to 15 vpd	◯ 16 to 30 vpd	◯ 31 to 50 vpd	◯ 51 to 75 vpd	◯ 75 to 150 vpd	◯ 150 to 500 vpd	◯ 500 to 1000 vpd	◯ 1000+ vpd

Comments:

Please detail any community concerns, required conditions and other relevant information.
If RAV access is endorsed, as the road owner please specify any access conditions that you would like Main Roads to consider (i.e. No operation on unsealed road when visibly wet, without road owner's approval, Headlights to be switch on at all times etc.)
If RAV access is not endorsed please provide reasoning behind your decision.
NOTE - If condition CA07 (Current written support from the Road Asset Owner, endorsing use of the road, must be obtained, carried in the vehicle and produced upon request.) is required, the road owner is responsible for the administration of condition CA07.

Road Owner Support

As the road owner you are required to conduct a preliminary assessment of the requested road/s to ensure there are no obvious issues that would deem RAV access unsuitable.

I _____ On behalf of _____

support the above decisions, subject to Main Roads final approval.

Signature _____ Date _____

Email completed form to: hvsrouteassessments@mainroads.wa.gov.au
Heavy Vehicle Services Main Roads WA
PO Box 374 | WELSHPOOL DC | WA 6986 | Telephone 138 HVO (486) | Fax (08) 9475 8455
www.mainroads.wa.gov.au

14.1B – Application to Amend Restricted Access Vehicle Network - Hamersley Road, Mt Sheila

Category 10 RAVs				
Category	Vehicle Description	Length	Max. Mass	Approved Network
10A	A-Triple (Prime Mover, Semi Trailer & 2 Dog Trailers)	>36.5 m ≤53.5 m	128.5 t	RAV Network 10
10B	Double B-Double	>36.5 m ≤53.5 m	128.5 t	RAV Network 10
10C	ABB-Quad (Prime Mover, Semi Trailer & B-Triple)	>36.5 m ≤53.5 m	128.5 t	RAV Network 10
10D	BAA-Quad (B-Double & 2 Dog Trailers)	>36.5 m ≤53.5 m	148.5 t	RAV Network 10
10E	AAB-Quad (A-Double & B-Double)	>36.5 m ≤53.5 m	148.5 t	RAV Network 10
10F	A-Double towing a Dolly	36.5 m + dolly	88.5 t + dolly	RAV Network 10

Likely Configuration of Proponent's Vehicles 10D and / or 10E



RAV 10.2 Network around Tom Price

Category 5 RAVs				
Category	Vehicle Description	Length	Max. Mass	Approved Network
5A	A-Triple (Prime Mover, Semi Trailer & 2 Dog Trailers)	>36.5 m ≤53.5 m	132 t	Tri Drive Network 5
5B	Double B-Double	>36.5 m ≤53.5 m	132 t	Tri Drive Network 5
5C	AAB-Quad (A-Double & B-Double)	>36.5 m ≤53.5 m	152 t	Tri Drive Network 5
5D	ABB-Quad (Prime Mover, Semi Trailer & B-Triple)	>36.5 m ≤53.5 m	132 t	Tri Drive Network 5
5E	A-Double towing a Dolly	36.5 m + dolly	92 t + dolly	Tri Drive Network 5

Likely Configuration of Proponent's Vehicles 5C



Tri Drive RAV Network around Tom Price

14.1C – Application to Amend Restricted Access Vehicle Network - Hamersley Road, Mt Sheila

mainroads WESTERN AUSTRALIA

Standard Restricted Access Vehicle (RAV) Route Assessment Guidelines

November 2019

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1	May 2016	Removed Appendix G 'Turning Radii' Removed Appendix K 'Assessment Form Template' Updated Appendix H 'Low Volume Condition 7' Updated Appendix D to include the wording 'with dedicated cycle lane' Updated contact details	Appendices & 1.5
2	July 2016	Updated to include revised minimum road widths for RAV Categories 2-7 and 9-10 & moved Type B traffic volume / road length table Added Type B traffic volume / road length table	Appendix C and 2.4.4
3	October 2016	Amended list of standard turning templates Updated web location for turning templates Amended low volume condition 1	Appendix G & H, 2.92
4	March 2017	Remove section	2.9.5
5	April 2017	Updated Main Roads website details	1.4
6	May 2017	Amended low volume condition 6	Appendix H
7	July 2017	Note added relating to private driveways	1.2
8	December 2017	Amended stopping sight distances Amended entering sight distances Amended wording relating to road parking Amended wording to include load/vehicle height being 4.6m	Appendix E, F, D, 2.3
9	August 2018	Amended wording relating to provision for overtaking Amended wording relating to turning at intersections Amended wording and requirements for railway level crossing Amended wording relating to off-road parking Amended appendices Appendix E, G (Templates) & I removed Added Figure 1 to 8 Incorporated concessional assessment requirements Amended section 2.4.1 Signage, 2.8.1 Acceleration Lanes, 2.9.1 Signage & 2.9.4 Rail Crossings	2.6, 2.9, 2.10, 2.11, Appendix A, B, C, D, E 1.1, 2.21

10	September 2018	Amended wording relating to turning at intersections Amended wording relating to provision of overtaking and removed Figure 1. Amended wording relating to Approach Sight Distance and Entering Sight Distance	2.6, 2.8, 2.84, 2.85
11	November 2019	Amended introduction to clarify the intent of the guidelines.	Page 6.

DEFINITIONS

The following are definitions for terms used in these Guidelines. Refer to the definitions in the Road Traffic (Vehicles) Act 2012 and any subsidiary legislation to this Act for the meanings of any terms not defined in this section.

Term	Definition
AADT	Annual Average Daily Traffic (AADT) the daily number of vehicles travelling on a road, averaged over one year. It is determined by the total yearly two-way traffic volume divided by 365, expressed as vehicles per day.
Approach Sight Distance (ASD)	The distance required for a driver of a RAV, travelling at a given speed, to observe the approaching intersection, and react or stop if necessary.
Bridge	A structure (with the exception of gantries) having a clear opening in any span of greater than 3 metres measured between the faces of piers and/or abutments or structures of a lesser span with a deck supported on timber stringers.
Carriageway Width	That portion of a road or structure devoted particularly to the use of vehicles that is between guide posts, kerbs or barriers where these are provided, inclusive of shoulders and auxiliary lanes.
Culvert	A structure under a road having only clear openings of less than or equal to 3 metres measured between the faces of piers and/or abutments or a pipe shaped structure of any diameter.
Entering Sight Distance (ESD)	The required sight distance for a RAV driver to see a sufficient gap in oncoming traffic that will allow a RAV, with greater length and lower acceleration capacity, to clear the intersection safely.
HVS	Main Roads Heavy Vehicle Services.
Main Roads website	www.mainroads.wa.gov.au
Passenger Car Equivalence	Passenger Car Equivalence (PCE) factors are a relative measure of the traffic flow impedance effects of different vehicle types. The PCE factor for a particular vehicle type is the equivalent number of passenger cars (AUSTROADS Vehicle Class 1) that would have the same impedance effect as a single vehicle of that type.
Order	An Order issued under the Road Traffic (Vehicles) Act 2012.
RAV	Restricted Access Vehicles (RAV) consists of all combinations of vehicles exceeding 19 metres in length or 42.5 tonnes gross mass including B-Doubles, road trains and truck-and-trailer combinations.
Remote Road	A general term for a main arterial road carrying mostly long distance traffic.

Term	Definition
Rural Road	All roads that provide a secondary network of National, State and local government roads connecting cities and towns.
Seal Width	Width between edges of sealed surface or between edge lines (where installed on undivided carriageways), whichever is less.
Structure	A bridge or culvert.
TPA	Tonnes per annum.
Urban and Town Site Road	All roads within a populated area of established dwellings, a central place of trade and recognised as a distinct place. Generally the area will act as a central hub of activity for the community.
VPD	Vehicles Per Day (VPD) is the number of vehicles observed passing a point on a road in both directions for 24 hours. It is a measure of daily traffic volume, often more relevant to low volume, local government roads, typically rural roads in these guidelines. VPD can differ from AADT in being a better measure of traffic volume during periods of more intensive RAV usage or seasonal tourist traffic.
Vehicle Regulations	The *Road Traffic (Vehicles) Regulations 2014*.

Related Documents

Document #	Title
D16#198414	Guidelines for Approving RAV Access
D16#374056	Tri Drive Route Assessment Guidelines
NA	RAV Route Assessment Form

1 INTRODUCTION

1.1 Purpose

These guidelines have been prepared to provide guidance to a person conducting an onsite assessment, on an existing road, for the purpose of assisting Main Roads Heavy Vehicle Services (HVS) in making an informed decision as to whether or not a road is suitable for use by a particular category of Restricted Access Vehicle (RAV).

These guidelines are to be read in conjunction with the following documents, available on the Road Access page on the Main Roads website:

- Framework for Adding Roads on the RAV Networks;
- Framework for Downgrading Local Roads on the RAV Networks;
- Framework for Using Consultants to Assess Local Government Roads for Inclusion on the RAV Network; and
- Guidelines for Approving RAV Access.

The RAV Route Assessment Form is also available on the Main Roads website to further assist in ensuring the required information is captured during the onsite assessment.

These RAV Route Assessment Guidelines form part of the overall RAV access assessment process, as outlined in Appendix F, to enable HVS to make an informed decision on behalf of the Commissioner of Main Roads, in accordance with the Commissioner's authority to approve RAV access under provisions of the *Road Traffic (Vehicles) Act 2012*.

These guidelines are not road design standards. However, if a road is constructed to the appropriate road design standards and approved by Main Roads, the road will pass the RAV access assessment process.

1.2 Application

For the purpose of these guidelines, "standard" RAVs are those vehicle combinations specified as Category 1 to 10 vehicle combinations under the *Prime Mover, Trailers Combinations Order 2017 and Truck, Trailer Combinations Order 2017.*

The standard RAV Categories have been grouped into four (4) assessment levels, as follows:

- Level 1 - RAVs Categories 2-4 (e.g. pocket road train, B-Double, and other RAVs with a maximum length of either 25.0 m or 27.5 m);
- Level 2 - RAVs Categories 5-6 (e.g. RAVs with a maximum length of 36.5 m and a maximum mass of 87.5T);
- Level 3 - RAVs Categories 7-8 (e.g. RAVs with a maximum length of 36.5 m and a maximum mass of 107.5T); and
- Level 4 - RAVs Categories 9-10 (e.g. RAVs with a maximum length of 53.5 m).

Note 1: A road approved for one of the base RAV networks listed above, means the road is also approved and added to AMMS level one (1) for the equivalent network.

Note 2: Where a RAV assessment is for operations under a concessional loading scheme such as the Accredited Mass Management Scheme (AMMS), the assessor must take into account the additional mass when requesting a structures assessment as per Section 2.2.

Where quantitative limits are recommended, they are intended as a guide only and are no substitute for common sense and judgement based on experience. In certain cases, routes which do not meet the requirements outlined in this document can be accepted as RAV routes by imposing additional conditions, such as speed restrictions, curfew etc. Refer to the *Guidelines for Approving RAV Access*.

1.3 Assessment Requirements

Route assessments will only be accepted from a suitably qualified person, approved by Main Roads. The assessor should have experience and knowledge of the following:

- The principles of heavy vehicle operation, including vehicle configurations, maximum dimensions and axle load limits;
- Heavy vehicle dynamic performance characteristics, including limitations on the ability of heavy vehicles to accelerate, brake, ascend grades and negotiate corners;
- Heavy transport issues, legal requirements and permit systems; and
- Road safety concepts and principles.

When considering a potential route, the assessor is advised to initially perform a desktop assessment using all available information. In some cases this initial assessment will identify particular physical constraints, such as posted bridge load limits and road width deficiencies, which may render the route unacceptable without the need for further assessment.

If the applicant is willing to pursue upgrades to the road, then a full assessment is required to identify all deficiencies. This is to alleviate any problems with some upgrades being carried out and then the full assessment conducted only to identify additional deficiencies. The assessment will only identify the deficiencies and will not provide upgrade design requirements.

Heavy vehicle use on a particular route may have some negative impacts on the environment, community and traffic. Assessors must first determine if the proposed route is the most appropriate route for the particular operations and recommend variations to the initially proposed route to reduce such impacts.

As part of any route assessment for a Restricted Access Vehicle (RAV), HVS does not assess any access for driveways adjoining a RAV network road. It remains the responsibility of the property owner to ensure safe ingress and egress to the property.

Before making a decision on an application for route access, Main Roads may deem it necessary to do any or all of the following:

- Perform a further assessment of the route;
- Assess the suitability of the road pavement;
- Assess the suitability of all structures on the proposed route to accommodate the specific vehicle;
- Specify conditions of access such as speed limits, hours of operation or accreditation requirements;
- Obtain local government agreement for the proposed route (for all operators);
- Recommend a number of road improvements as conditions of approval; and
- PBS assessment to assess vehicle performance.

To ensure network continuity, when assessing a road, all connection points to existing RAV networks must be assessed for suitability and a holistic approach should be taken to ensure overall network connectivity in the area.

1.4 Planning Evaluation

Assessment of a proposed route should be checked against any future planning proposals to evaluate the potential impact of RAVs. The relevant Local Government and Regions should be consulted as part of the process.

1.5 Further Assistance

Additional information and guidance is available from HVS via telephone 138 486 or hvsrouteassessments@mainroads.wa.gov.au

2 ASSESSMENT CRITERIA

2.1 Traffic Data

2.1.1 Traffic Counts

In order to determine the suitability of a road for RAV access, it is essential to obtain current traffic counts for the particular road. The traffic counts must be considered when determining appropriate road widths, potential congestion issues and relevant operating conditions.

2.1.2 Accident Statistics

Appropriate research must be conducted prior to progressing with a route assessment to establish if there is an accident history on the particular road that may be exacerbated by the introduction of RAVs on the road.

Safety is the primary factor for consideration. If crash history data is available, it may be useful to investigate whether certain times of the day cause particular risks, while at other times the risk is significantly lower. In these cases, it may be warranted to recommend that the RAV only use the route during low-risk hours.

2.2 Structures

2.2.1 Load Capacity

All bridges and load restrictive culverts on the requested route will be assessed for the relevant level of RAV Network access by Main Roads Structures Engineering Branch, via HVS. When carrying out an assessment for Network 2, ensure a separate Structures Engineering assessment is carried out for the Short B Triple combination.

Any bridge restrictions for the Short B triple combination must be listed in the Operating Conditions in the relevant vehicle category section and a notation included in the conditions for the relevant road.

Consultation with local governments is required to ensure all culverts on local government roads have been appropriately considered.

2.2.2 Structure Width Requirements

Table 1: Minimum Width between Kerbs/Carriageway on a Structure

AADT	Minimum Width Between Kerbs/carriageway (m)	Quality of Approaches
Less than 75	3.5*	Structures with adequate Approach Sight Distance (ASD)**.
75 to 150	5.3	Structures with adequate ASD, clearly signed and road clearly marked.
	7.0	Structures that have inadequate ASD, inadequate signage or no road markings.
150 to 500	5.8	Structures with adequate ASD, clearly signed and road clearly marked.
	7.2	Structures that have inadequate ASD, inadequate signage or no road markings.
More than 500	7.2	All structures at this traffic volume

*Conditions apply; refer to 2.4.2 and Appendix B;
**RAV ASD should be measured from a truck driver's eye height of 2.4 m. Minimum requirements for ASD refer to Appendix D.

2.3 Overhead Clearance

Although applicable for all vehicles, RAVs with high loads are particularly vulnerable to striking low overhead obstructions. Route assessments must confirm that adequate overhead clearances are available to safely accommodate a load/vehicle height of 4.6m, as follows:

- Overhead obstructions (except power lines) - 300 mm clearance; and
- Power lines - at least the minimum clearance required by telecommunications and electrical transmission cable providers.

Where telecommunications and/or electrical transmission cables cross the route, approval for a load/vehicle height of 4.6m must be obtained from the relevant controller/s listed in the "*Contact Details for Other Agency Approvals*" located on the Oversize Over-mass Permits page of the Main Roads website.

Where the required load/vehicle height of 4.6m is not approved by the cable provider, the cable provider must specify the maximum approved load/vehicle height and the location of the restricting power line. RAV access may still be considered with appropriate height conditions.

2.4 Rural Road Widths

When the hauling unit of a RAV travels along a straight path over an uneven surface, the trailing units do not necessarily follow along the same path as the lead unit. This is defined as "off-tracking" and depends on several factors, including:

- The steering actions of the driver;
- Vehicle configuration and coupling arrangements between units;
- Misalignment of the axles;
- Suspension (geometry, bump and roll steer effects) and tyre characteristics;
- Vehicle length;
- External disturbances that include road roughness, cross-slope and side loading from wind-gusts; and
- Speed of travel.

The maximum deviation in tracking over a straight section of road, when added to the width of the RAV, is termed the 'swept width'. To safely accommodate the swept width of RAVs, adequate road width must be provided.

To assess the widths of rural roads, tables of minimum carriageway widths and sealed widths to accommodate the swept width are listed at Appendix A.

To be suitable for RAV access, a road should be sealed if AADT is over 150 and annual freight tonnage is over 300,000 tonnes per annum. The requirement for the road to be sealed is partly for safety reasons, but more so for road sustainability.

In the absence of any traffic data, the following parameters may enable a judgement as to whether a road needs to be sealed:

- If the road is unlikely to be used by more than 10 RAVs per day; or
- If the road is unlikely to be used by more than 60 RAVs per day over a seasonal two month period.

When considering whether a road has adequate width, an assessment should also be made in relation to any potential risks posed by:

- Crests;
- Pronounced cambers;
- Poor shoulder condition;
- Surface roughness; and
- Reduced sight distances.

Despite a road's width being above the specified minimum in Appendix A, these factors may require additional width, application of additional RAV operating conditions, or in extreme cases, mean the route is unsuitable for RAV access.

Minor width deficiencies are acceptable, particularly if it is only for a small portion of the road. If width requirements are relaxed, a risk assessment should be undertaken to consider other factors to ensure safe operation.

Off-tracking of a vehicle combination is more severe at high speeds; therefore minimum seal width may be reduced where speeds are controlled to 60 or 70 km/h.

Minimum seal widths may also be reduced on roads where all other users are familiar with the operator of multi combination vehicles, e.g. farm access roads and mine access roads.

2.4.1 Sight Distance Considerations at Curves and Tight Bends

When the hauling unit of a RAV travels around a curve or tight bend, the trailing units may take up considerable additional road with. This is defined as "swept width" and depends on several factors, including:

- Radius of the curve or tight bend;
- Length of vehicle combination;
- Number and type of articulation points; and
- Road surface and geometry.

In instances where it is identified the RAV would be required to utilise additional road width and potentially encroach onto the opposite side of the road, the assessor must ensure on approach to the curve or tight bend, there is sufficient visibility to observe oncoming vehicles, and react or stop if necessary. The table in Appendix D shows the required sight distance for RAVs, given the speed and the gradient of the road.

It will be necessary for the assessor to conduct swept path assessments on curves to determine if the RAV is likes to encroach onto the opposite side of the road.

Note: Access should be declined if the RAV crosses a solid white line.

2.4.2 Low Volume Road Width

When assessing road width for Network 2 to 7 or 9 to 10 RAV access, where traffic volume is less than 75 vehicles per day, the width of the road may be assessed in accordance with the width requirement in Appendix B. Appendix E conditions must be applied. If the road width meets the requirements in Appendix A, the conditions as per Appendix E are not necessary.

2.4.3 Traffic Volume Consideration

It is important to use the most appropriate measure of traffic volume when applying Appendix A and Appendix B.

For medium to high traffic roads, where AADT is more than 500, AADT will usually be a suitable measure of traffic volume. For low to medium traffic roads, where AADT is from 150 to 500, higher seasonal traffic volume may be a more appropriate measure of traffic volume. For these roads, the widths in Appendix A are the relevant guidelines.
For low traffic volume roads, where AADT is less than 75, with higher seasonal variations, obtaining a best estimate of such higher daily volumes (VPD) is recommended. Appendix B only applies if AADT and any higher seasonal traffic volumes (VPD) are both less than 75. Otherwise, road width must be assessed using Appendix A.

2.4.4 Assessing a Road in Sections

The road may be composed of a number of sections that vary in their standard and that would fall into different categories of RAV suitability, or require different operating conditions (e.g. for low volume roads). Width variation is a typical example of this principle. Where differing sections are reasonably long, it can be beneficial to separately assess each section as to its category of RAV access and any applicable operating conditions. Assessors should only consider applying this method of assessment where there is a likely benefit and a practical start and finish point.

2.4.5 Short Sections of Reduced Width

There may be short narrow sections along the road due to narrow structures, roadside vegetation or short narrow sections of pavement. Provided narrow sections meet certain criteria, the minimum road width does not need to be considered the actual width of the entire road for assessment purposes. In the absence of any clearly identified other risk factors, clauses (a) and (b) below can be applied to assess the width deficiencies of narrow sections.

(a) Traffic Volume Less than 75 Vehicles per Day

This clause only applies to low volume rural roads that do not meet the width requirement in Appendix A, and for which the operating conditions in Appendix E will apply to RAVs.

Where all narrow sections of the low volume rural road meet the following criteria, the minimum width of the road can be considered to be the width of the road, excluding the narrow sections, when assessing suitability in accordance with Appendix B:

- Narrow sections must not be less than 3.5 m wide;
- Each narrow section must not be more than 100 m long;
- A combination of narrow points that are all within a single 100 m length of road can be considered to be one single narrow section;
- Two adjacent narrow sections must not be within 150 m of each other;
- Continuous unbroken sight distance must extend from a point at least 150 m from each end of any narrow section through the narrow section to a point at least 150 m beyond the section, in both directions; and
- Combined length of narrow sections is no more than 10% of total road length. All narrow sections shorter than 50 m shall be considered to have an effective length of 50 m.

If any narrow section fails to meet the 3.5 m minimum width criteria, the route shall be considered unsuitable for RAV access.

Where all narrow sections meet the 3.5 m minimum width criteria, but do not meet all the remaining criteria, the route shall be considered unsuitable for RAV access on a two-way RAV traffic basis. However, the route may still be suitable for one-way RAV traffic only, provided

operating conditions as per Appendix B for a Type B road are applied. Type B roads suitability is also subject to traffic volume and road length requirements outlined in Table 2.

Table 2: Maximum allowable road length for Type B suitability

Daily Traffic Volume	0 to15 VPD	16 to 30 VPD	31 to 50 VPD	51 to 75 VPD
Max Road Length	5.0 km	2.0 km	1.5 km	1.0 km

(b) Traffic Volume from 75 to 500 Vehicles per Day

This clause only applies to medium volume roads that generally meet the width requirements in Appendix A.

Where all narrow sections of a medium volume road meet the following criteria, the minimum width of the road can be considered to be the width of the road, excluding the narrow sections, when assessing suitability in accordance with Appendix A:

- Narrow sections should not have carriageway width more than 1.3 m below Appendix A values;
- For sealed road, narrow sections should not have sealed width more than 0.2 m below Appendix A values;
- Each narrow section should not be more than 2 km long; and
- The combined length of narrow sections should not be more than 15% of total road length.

Similar principles may logically carry over to assessment of higher traffic volume roads; however the width deficiencies will need to be assessed on a case-by-case basis.

2.5 Urban and Town Site Road Widths

There are a number of width requirements to be considered for RAVs travelling in urban and town site areas. As well as accommodating the additional swept width of RAVs, the width requirements for activities such as cycling and kerbside parking also need to be taken into account. The minimum road width requirements in town site areas are listed in Appendix C.

2.6 Provision for Overtaking

RAVs tend to operate at lower average speeds than light vehicles. If the road does not have sufficient overtaking opportunities, drivers of light vehicles may experience delays behind slower moving RAVs and in some cases may form “queues” of vehicles waiting to overtake. This may cause driver frustration and thereby increase the risk of drivers attempting to overtake when it is not safe. Therefore it is essential, from a road safety perspective, to have adequate overtaking opportunities on a RAV route.

It is recommended that AADT figures are used to assess overtaking opportunities, however the assessor should consider the impact of seasonal traffic during the assessment, as the AADT could be less than seasonal peak traffic volume.

The volume of traffic and percentage of RAVs on the route affects the requirement for overtaking opportunities. To assess suitability of overtaking, an AADT derived using the Passenger Car Equivalence (PCE) factors (Table 3) shall be used. The derived AADT is calculated by multiplying the AADT for each of the Austroads vehicle Class by the PCE factor based on the road’s terrain as per Table 3. This derived ADDT is the AADT figure to use in Table 4 below.

An example of calculating the derived AADT is listed below:

	Sum of AVG AADT	PCE Flat Terrain	AADT Flat Terrain
Austroads 1 & 2	3,180	1	3,180
Austroads 3, 4 & 5	1,893	2	3,786
Austroads 6, 7 8 & 9	285	2.5	713
Austroads 10 (RAV 2 - 4)	120	4	480
Austroads 11 (RAV 5 - 8)	117	4	468
Austroads 12 (RAV 9 -10)	2	9	14
		AADT derived	**8,640**

PCE factors represent the equivalent number of light vehicles for a particular type of RAV or general access heavy vehicle. The use of PCE factors provides a derived AADT value that can then be used to better assess overtaking opportunities.

Table 3: Passenger Car Equivalence Factors for RAVs

Vehicle Types		PCE Factors on Flat Terrain	PCE Factors on Rolling Terrain
Austroads Class 1		1	1.3
Austroads Class 2		1	1.3
Austroads Class 3 to 5		2	3.5
Austroads Class 6 to 9		2.5	5
Austroads Class 10	RAVs Categories 2-4	4	10
Austroads Class 11	RAVs Categories 5-8	4	10
Austroads Class 12	RAVs Categories 9-10	9	22

The maximum distances between overtaking opportunities are shown in Table 4. In all cases, the assessment of steep ascending grades in Section 2.7.1 must be performed separately.

Table 4: Maximum Distances between Overtaking Opportunities

AADT (Derived using PCE Factors)	**Maximum AVERAGE distance between overtaking opportunities**	**Maximum distance between any two overtaking opportunities**	**Notes**
500 or below	N/A	N/A	Provision of additional opportunities is usually not justified.
501 to 1000	15 km	30 km	
1001 to 1800	8 km	15 km	
1801 and above	5 km	10 km	At AADT > 2700, additional opportunities that exceed the criteria may be necessary.

For each overtaking opportunity, the portion of road available to complete the overtaking opportunity should meet the minimum length shown in Table 5.

Table 5: Minimum Length for Overtaking Opportunities

Road Section Operating Speed (km/h)	Assumed Truck Speed (km/h)	Length (m)		
		RAVs Categories 2-4	RAVs Categories 5-8	RAVs Categories 9-10
70	60	600	640	690
80	69	740	790	860
90	77	890	950	1040
100	86	1070	1130	1240
110	94	1290	1310	1440

Note: The above lengths are generally determined by measuring the length of the divided line where overtaking is permitted for the particular lane.

2.7 Steep Ascending Grades

2.7.1 RAVs Losing Speed on Grades

The speed of RAVs ascending long and steep grades can be reduced to the extent that the speed differential is hazardous for vehicles approaching from behind. If possible, steep ascending grades should have overtaking lanes.

In some cases where an overtaking lane is not provided, the drivers of faster following vehicles may become frustrated and attempt an overtaking manoeuvre when unsafe to do so. A RAV speed reduction to 40 km/h is considered the threshold point at which drivers will seek to overtake a slower vehicle, regardless of whether or not adequate sight distance is available.

Table 6 outlines the maximum distance required for a laden RAV travelling up a grade to slow down to 40 km/h. For grades or consecutive combinations of varying grades exceeding these distances, it is recommended that the grade should have an additional climbing lane for RAVs to mitigate the risk of other road users overtaking without appropriate sight distances.

Table 6: Maximum distances (m) of uphill travel before RAV speeds are reduced to 40 km/h

Grade %	RAVs Categories 2-6		RAVs Categories 7-8		RAVs Categories 9-10	
	80 km/h Approach Speed	100 km/h Approach Speed	80 km/h Approach Speed	100 km/h Approach Speed	80 km/h Approach Speed	100 km/h Approach Speed
3	*	*	*	*	1080	1650
4	950	1410	900	1350	690	1110
5	640	980	610	960	520	840
6	480	760	470	750	410	680
7	390	630	380	620	340	570
8	330	530	320	530	290	490

* RAV can maintain a higher speed than 40 km/h on these grades.

2.7.2 Maximum Grades Requirements for RAVs

For a route to be suitable for RAV access there must be no steep grades that are in excess of the limits in Table 7.

Table 7: Grades Limits for RAVs

	Sealed Roads	Gravel Roads
RAVs Categories 2-6	8%	5%
RAVs Categories 7-8	6%	4%
RAVs Categories 9-10	5%	3%

2.8 Turning at Intersections

It is essential that intersections can be safely negotiated, with minimal or no interference to other traffic.

2.8.1 Vehicle Speed While Negotiating the Turn

The vehicle turning radius is directly related to the maximum turning speed of the vehicle:

- For intersections where the vehicle must always stop before turning (e.g.: at a Stop sign), a turning speed of 5-15 km/h is generally sufficient;
- For intersections where the vehicle rarely or never needs to stop before turning, a speed of 20 km/h or 30 km/h could be assumed; and
- Where following traffic is likely to be slowed as a result of the RAV turning off a high traffic road, a high turning speed (30 km/h or greater) is desirable, to minimise disturbance to traffic.

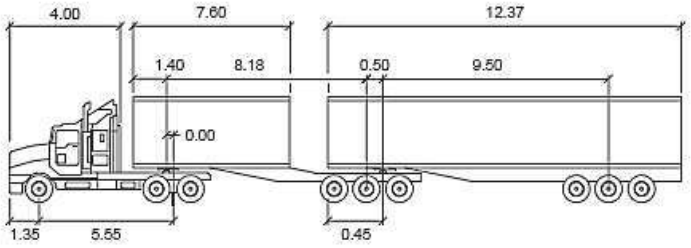
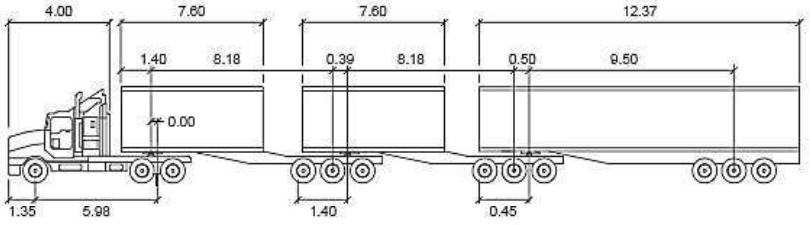
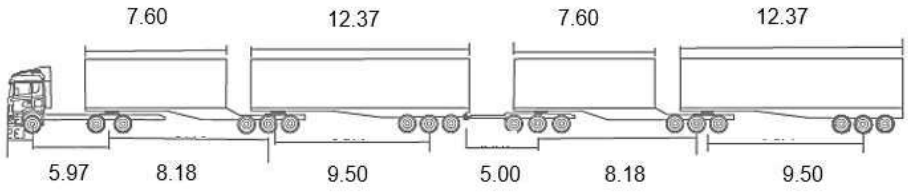
2.8.2 Turning Clearances

Where there is any possibility that the RAV may have insufficient clearance from kerbs or other nearby objects, standard turning templates shall be used to accurately check the swept path of the RAV.

Using AutoTurn, the appropriate vehicle combination must be used to check all turning movements at all required intersections and any clearance problems should be noted on the *RAV Route Assessment Form*. As a rule:

- The wheel paths of the rear trailer of the RAV must not come any closer than 200 mm from the face of any kerb, unless the kerb is designed to be mounted, in which case the 200 mm clearance is not applied.
- If there is no kerb (such as a gravel road), the edge of the road formation can be taken as the kerb.
- The overhang path must not come any closer than 200 mm to a nearby object.
- For a left or right turn, the wheel paths must not cross over the centreline of the road, unless the sight distances in all directions of the intersection are adequate according to Appendix D.

Table 8: Vehicle combinations for completing swept path assessments

RAV Categories	Assessment Vehicle	Maximum Length (m)
2-4	**B-double**  B-Double HVS meters Tractor Width : 2.50 Trailer Width : 2.50 Tractor Track : 2.50 Trailer Track : 2.50 Lock to Lock Time : 6.0 Steering Angle : 35.0 Articulating Angle : 70.0	27.5
5-7	**B-triple**  B-Triple HVS meters Tractor Width : 2.50 Trailer Width : 2.50 Tractor Track : 2.50 Trailer Track : 2.50 Lock to Lock Time : 6.0 Steering Angle : 35.0 Articulating Angle : 70.0	36.5
9-10	**Double B Double**  Double B-Double HVS Track Width 2.50m Trailer Width 2.50m Tractor Width 2.50m Trailer Track 2.50m Lock to Lock Time 6.0 Steering Angle 35.0 Articulating Angle 70.0	53.5

2.8.3 Intersection Layout

To assist in ensuring network performance levels are maintained, the assessor needs to identify if acceleration lanes and turn pockets are present at intersections and the length of these treatments.

Capturing this information in the assessment will assist in determining if network improvements are necessary, in consultation with the road manager.

2.8.4 Approach Sight Distance (ASD)

The route shall be rejected if the driver of a RAV, approaching the intersection has insufficient visibility to observe the intersection, or advance intersection warning, and react or stop if necessary. The table in Appendix D shows the required sight distances for RAVs, given the vehicle type, speed and the gradient of the road. When measuring the available approach sight distance, the measurement must be taken from a truck driver's eye height of 2.4 m.

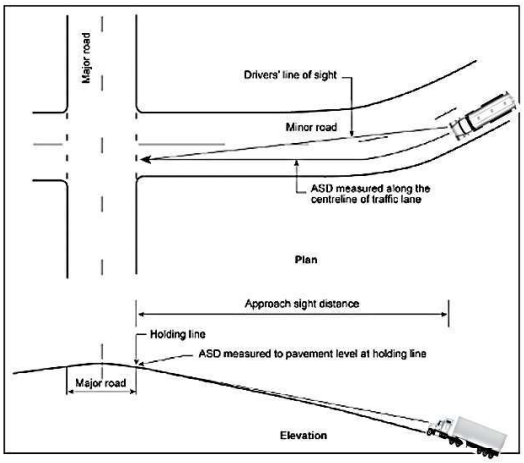


Figure 1: Example of Approach Sight Distance

2.8.5 Entering Sight Distance

The route shall be rejected if the driver of a RAV, entering a through road, does not have appropriate sight distance to see a sufficient gap in oncoming traffic that will allow a RAV, with greater length and lower acceleration capacity, to clear the intersection safely. The table in Appendix D shows the required sight distances for RAVs, given the vehicle type, speed and the gradient of the road. When measuring the available entering sight distance, the measurement must be taken from a truck driver's eye height of 2.4 m to a height that considers all traffic.

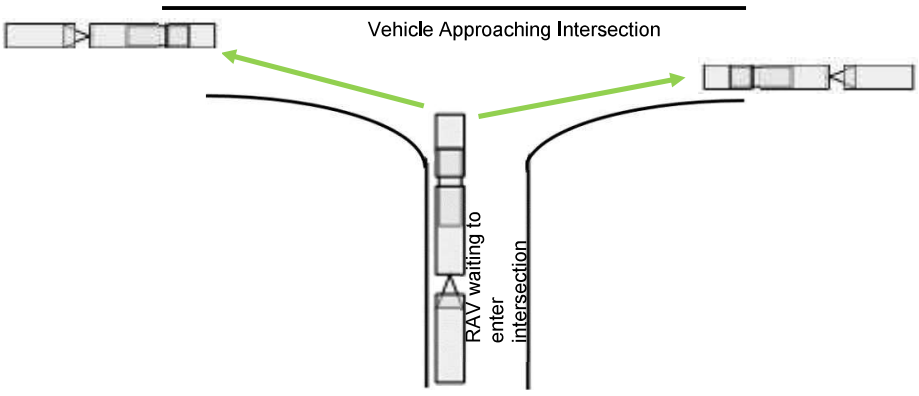


Figure 2: Example of Entering Sight Distance

The angle and gradient of the intersection should also be considered to determine if additional time is required for a RAV to manoeuvre the intersection, for instance a steep upgrade in the direction of travel will adversely affect the RAV's start up and acceleration when entering the through road.

Note: The entering sight distance requirement is only required for intersections that are not controlled by traffic signals, with the exception of a right turning movement with no right turn arrow.

2.9 Railway Level Crossings

The various operational requirements at railway crossings are described in Main Roads *'Railway Crossing Control in Western Australia Policy and Guidelines'* found on the Railway Crossing page of the Main Roads website.

The following points highlight the main considerations for RAVs at railway crossings for the various levels of protection.

2.9.1 Inadequate Approach Stacking Distance

Inadequate approach stacking distance occurs where the distance between the railway and a nearby intersection is insufficient to enable a vehicle to stop at the crossing without impeding the traffic flow at the intersection.

Approach stacking distance is measured from the vehicle stopping line at the railway crossing to the nearest shoulder edge of the crossroad. The vehicle stopping line at a railway crossing is normally indicated by a painted line or, in the absence of a marked line, assumed to be 3.5 m back from the nearest rail.

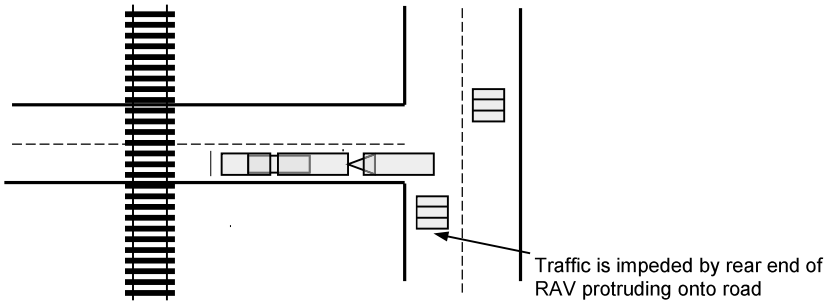


Figure 3: Examples of Inadequate Approach Stacking Distance

2.9.2 Inadequate Departure Stacking Distance

Inadequate departure stacking distance occurs when part of a vehicle would encroach within 3.5 m of the railway track while stopped to give way to traffic on the priority road of an intersection located beyond the crossing. A possible exception is in cases where the intersection is controlled by traffic signals that are coordinated with the operation of the railway crossing signals.

Departure Stacking Distance is measured from the vehicle stopping line at the intersection to within 3.5 m of the nearest railway track. In the absence of marked lines, the measurement is to be taken from the edge of the through lane (if there are edge lines) or the edge of the seal.

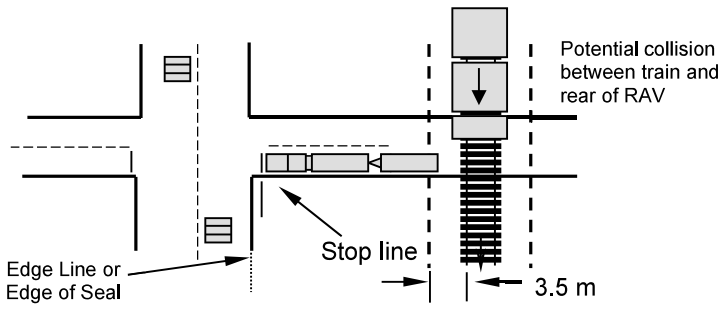


Figure 4: Examples of Inadequate Departure Stacking Distance

2.9.3 Criterion for Assessing Whether Stacking Distance is Adequate

Figure 5 shows the methodology for measuring approach (2.9.1) and departure (2.9.2) stacking distance. Ideally, a clearance of 3.5 m should be applied when assessing the available approach stacking distance. However, if the approach stacking distance is at least the length of the RAV and there is sufficient ESD for other vehicles departing the intersection while there is a RAV stopped at the rail, a lesser clearance is acceptable.

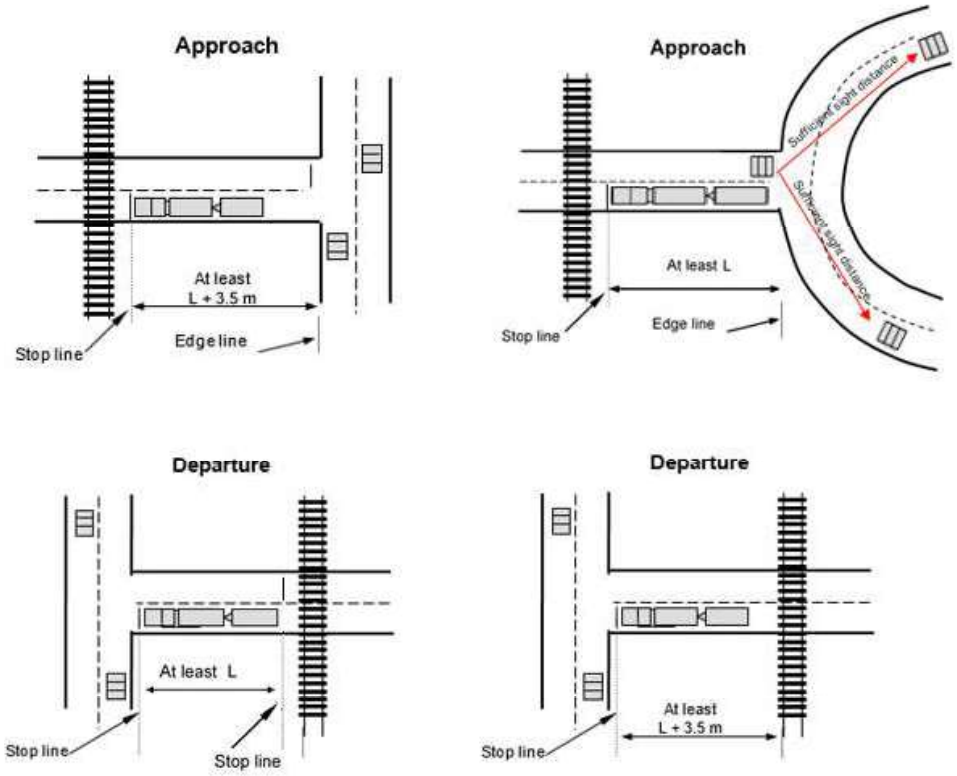


Figure 5: Examples of Adequate Stacking Distances

2.9.4 RAVs at Crossings Protected by Give Way or Stop Signs

The driver of a RAV approaching a railway crossing protected by a GIVE WAY or a STOP sign needs to be able to see the crossing from a sufficient distance to allow enough time to stop the RAV if required. The ASD to a railway crossing must meet Appendix D.

There also needs to be sufficient sight distance for the driver of a RAV, after having stopped at a railway crossing with a GIVE WAY or STOP sign, to see an oncoming train and allow adequate time to safely cross. The required sight distances for RAVs at railway crossings must meet:

- The S3 formula for STOP signs of the Australian Standards AS1742.7-2016 – Manual of Uniform Traffic Control Devices – part 7: Railway Crossings.

The S3 formula determines the minimum distance required for the driver of a vehicle stopped at the railway crossing to be able to see an oncoming train in order to safely cross.

When measuring the available sight distance to all directions at rail crossings, a truck driver's eye height of 2.4 m is recommended.

Where railway crossings with STOP signs are located along the proposed route, the assessor must record the information shown below in Figure 6 on the *RAV Route Assessment Form*. This information is then used to calculate the S3 formula.

Note: A Track Access Permit must be obtained from the relevant rail provider to access the rail corridor (outside the 3 metre zone).

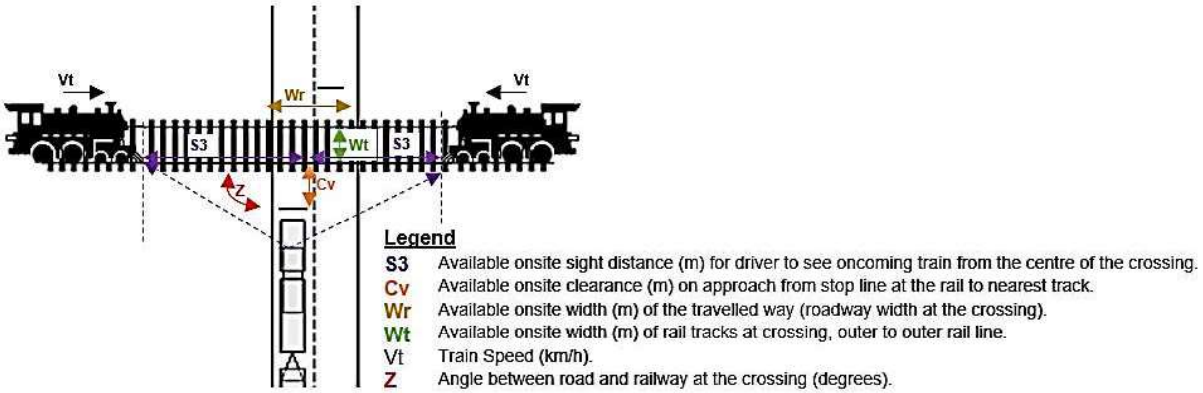


Figure 6: Required Information from Onsite Assessment for S3 Calculation

2.9.5 RAVs at Railway Crossings Protected by Flashing Lights

The visibility of the primary flashing lights and advance flashing yellow warning signs displays on the approach to crossings must be assessed so that the driver can safely stop if required. The sight distance to the flashing lights, or alternatively the advance flashing yellow warning signs must meet the minimum requirements in Appendix D.

When measuring the available sight distance to all directions at rail crossings, a truck driver's eye height of 2.4 m is recommended.

2.10 Off-road Parking

In rural and remote areas, the route should have adequate off-road truck parking facilities at sufficient spacing along the route.

In any one direction of travel, the maximum spacing for off-road parking facilities is:

- Rural Area roads 80 km
- Remote Area roads 120 km

Adequate off-road parking facility is defined as any:

- Service station or roadhouse, (or other commercial establishment), with provision for public truck parking;
- Signed parking bay, truck bay, rest area; or
- Designated road train assembly area;

Which meets the following criteria:

- Minimum approach sight distance (measured from a truck driver's eye height of 2.4 m) to the entry/exit point for traffic travelling on the through road are in accordance with Appendix D; and
- Minimum entering sight distance (measure from a truck driver's eye height of 2.4 m to a height that considers all traffic.) from the entry/exit point in accordance with Appendix D; and
- The full length of the RAV can be parked without encroachment onto the carriageway. Minimum safe clearance distance of the RAV parked parallel to the road are shown in Table 9.

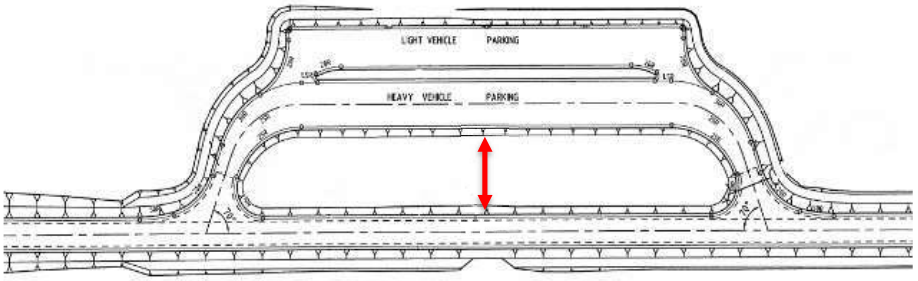


Figure 7: Minimum clearance between road pavement and parking bay

Table 9: Minimum safe clearance distance of parked RAV from road

Speed Limit (km/h)	Minimum Clearance from edge of pavement * (m)
60	5
70	5.7
80	6.2
90	7.6
100	8.8
110	11

* For parking facilities located on the outside of a curve, add a further 1.6 m to the normal minimum clearance.

Depending on the frequency of trucks using the truck parking bays or road train assembly areas, the requirement of other facilities such as rubbish bins, tables and chairs and toilets needs to be considered. The assessor should also consider the likelihood of more than one RAV using the parking facility at any given time. This will depend on the volume of heavy vehicles on the proposed route. More information about off-road parking facilities can be obtained from Rest Areas page on the Main Roads website.

2.11 Other Road Users

The key issues here are whether RAV operation will be highly incompatible with, or pose new risks to other road users that may not be familiar with or could be more vulnerable to RAVs. Road users that should be considered when assessing suitability include:

- Pedestrians (especially where there are school crossings);
- Cyclists;
- Tourists and recreational users (who may be unfamiliar with the conditions);
- School buses (where the frequent stopping and turning by buses and the presence of children on or adjacent to the road can pose potential hazards); and
- Farmers moving farm machinery and implements.

Safety is the primary factor for consideration. If crash history data is available, it may be useful to investigate whether certain times of the day engender particular risks, while at other times the risk is significantly lower. In these cases, it may be warranted to recommend that the RAV only use the route during the low-risk hours.

RAVs can affect the flow of other traffic and contribute to congestion issues. Numbers of RAVs can reduce the speed of other traffic and in worst cases frustrate other motorists. Assessors should examine the traffic flow on the route and recommend solutions to reduce risks resulting from traffic disruption.

Vehicles towing caravans or trailers are a significant issue in that they can find it difficult to pass RAVs. This situation is more prevalent during school holidays. Therefore the assessor should consider the impact of seasonal traffic changes during the assessment.

If safety issues for other road users, which would result from RAV operation, are identified as major and cannot be suitably addressed, the route should be considered unsuitable for RAV access.

2.12 Slowing and Stopping

The ability of vehicles to safely pull off the carriageway, e.g. to allow following vehicles to pass or to make repairs, should be examined. Continuous sections of the route with narrow shoulders and/or deep drains should be noted and comments made on any safety implications.

3 COMMUNITY CONSIDERATIONS

Assessors need to consider potential community impacts as part of assessing route suitability.

3.1 Noise

The assessor shall consider whether the introduction of the RAVs onto the route has potential to cause a significant noise impact by considering the following:

- Areas sensitive to road traffic noise, including residences, schools and hospitals;
- The likely number of RAVs in comparison to existing number of large trucks (3 or more axles);
- Factors contributing to noise generated by RAVs such as gradients (higher speeds or use of engine braking systems), acceleration/deceleration areas (higher engine speeds, gear changing or use of engine braking systems), and road pavement irregularities (body rattle); and
- Factors mitigating the impact of noise from RAVs such as distance to residences and any screening of residences by hills, cuttings or walls.

The main criterion for noise impact assessment is the change in the numbers of large trucks (3 or more axles) on the route. Doubling RAV numbers can be considered as the start of a significant noise change while quadrupling can be considered as very significant change.

On very low volume roads, introducing RAVs may significantly increase numbers of large trucks, but overall truck numbers may still remain low enough so as not to cause a significant noise impact.

Conversely, if the road is an existing heavy vehicle route, introducing RAVs or larger RAVs may reduce the number of trips required for a given freight task and improve noise issues.

Consideration should also be given to potential noise impacts near a truck parking area. In particular, the noise generated by refrigerated trailers should be taken into account as these trucks are required to keep their cooling compressors running all night.

Where noise impacts are expected to be significant the assessor shall consider options for mitigating noise impact, such as:

- Approved noise reduction request signs;
- A curfew for RAVs during night time hours;
- Consideration of alternative routes;
- Noise certification of RAVs as a condition of access; and

- Speed restrictions.

Where noise impacts are expected to remain significant and mitigation actions have been implemented, Main Roads will consult with the relevant Local Government and may undertake a noise impact study of the route.

3.2 Vibration

Where the RAV route passes close to abutting development there may be adverse impacts upon people and property due to vibration. The assessor shall consider whether the introduction of the RAVs onto the route has potential to cause significant vibration impact by considering:

- Distance to buildings and their use and condition;
- Road roughness; and
- Uneven drainage gullies and manhole covers.

Where vibration impacts are expected to be significant the assessor shall consider options to mitigate the impacts, such as road surface improvements and alternative routes.

3.3 Dust and dirt

Where the RAV route passes close to abutting development there may be adverse impacts upon people and property due to dust, especially where a route is unsealed. The assessor shall consider whether the introduction of the RAVs onto the route has potential to cause significant dust impact by considering:

- Distance to buildings and their use;
- Likely numbers of RAVs using the route; and
- Likelihood of significant amounts of dust being produced by RAVs.

RAVs entering onto a seal road from a dirt road will potentially carry the dirt onto the sealed road, particularly in wetter conditions. This results in dirt building up and spreading on the road, which impacts on other motorists.
Where dust and dirt impacts are expected to be significant the assessor shall consider options to mitigate the impacts, such as alternative routes, speed restrictions and possibly sealing road sections, particularly on the approach to a sealed road.

3.4 Community Consultation

In line with Government policy, Main Roads may require a route that has been given a favourable assessment using these guidelines to undergo a community consultation phase. Main Roads, with input from the relevant local government, will determine the need for community consultation on a case-by-case basis.

3.5 Alternative Transport Modes

Alternative transport modes need to be considered to ensure RAV road transport is the most effective form of transport available for the particular operation.

4 APPENDICES

Appendix	Title
A	Rural Road Minimum Widths
B	Low Volume Rural Road Minimum Widths
C	Townsite Road Minimum Widths
D	Required Sight Distance
E	Operating Conditions
F	RAV Access Assessment Process

Appendix A: Rural Road Minimum Width

	60 to 70 km/h		80 to 100 km/h	
	Carriageway Width* (m)	Sealed Width** (m)	Carriageway Width* (m)	Sealed Width** (m)
0 to 150 AADT / VPD*				
RAVs Categories 2-4	7.6	3.3	7.9	3.4
RAVs Categories 5-7	7.7	3.4	8.0	3.5
RAVs Categories 8-10	8.2	3.8	8.6	3.9
150 to 500 AADT / VPD				
RAVs Categories 2-4	7.6	5.6	7.9	5.9
RAVs Categories 5-7	7.7	5.7	8.0	6.0
RAVs Categories 8-10	8.2	6.1	8.6	6.4
500 to 1 000 AADT				
RAVs Categories 2-4	7.9	6.1	8.2	6.4
RAVs Categories 5-7	8.0	6.2	8.3	6.5
RAVs Categories 8-10	8.6	6.6	9.0	6.9
More than 1 000 AADT				
RAVs Categories 2-4	9.6	6.8	9.9	7.1
RAVs Categories 5-7	9.7	6.9	10.0	7.2
RAVs Categories 8-10	10.6	7.6	11.0	8.0

* The carriageway widths given in the above table should be used for assessing usable width on gravel roads.

** A road should be sealed if AADT over 150 and annual freight tonnage over 300,000 TPA.
In the absence of any data, the following parameters may be a guide:

- uniform annual loaded RAV traffic volume more than 10 vehicles per day; or
- loaded RAV traffic volume more than 60 vehicles per day over a seasonal two month period.

*** When the road width is below the above values and traffic volume is no more than 75 VPD, the route may be suitable for RAVs Categories 2-10 (excluding 8) access as a low volume road. Refer to Appendix B on the following page.

Appendix B: Low Volume Rural Road Minimum Widths

NB: This section is not to be used for assessing routes for RAV Category 8.

Type A Road (suitable for two-way RAV traffic)

	40 km/h	60 km/h
	Carriageway Width (m)	**Carriageway Width (m)**
RAVs Categories 2-7	5.8	6.1*
RAVs Categories 9-10	5.9	6.3*

For Type A low volume roads, Appendix E operating conditions 1, 2, 3, 4, 5, 7 and 8 may be applied as a condition;

*If a road is at least 1.0 m wider than these widths, an 80km/h speed restriction should be considered. A speed restriction above 80km/h should only be considered if the road is sealed, has good sight distance and presents no significant safety concern.

Type B Road (unsuitable for two-way RAV traffic)

	40 km/h
	Carriageway Width (m)
RAVs Categories 2-7	3.5*
RAVs Categories 9-10	3.5*

For type B low volume roads, Appendix E operating conditions 1, 2, 3, 4, 5, 6, 7 and 8 may be applied as a condition.

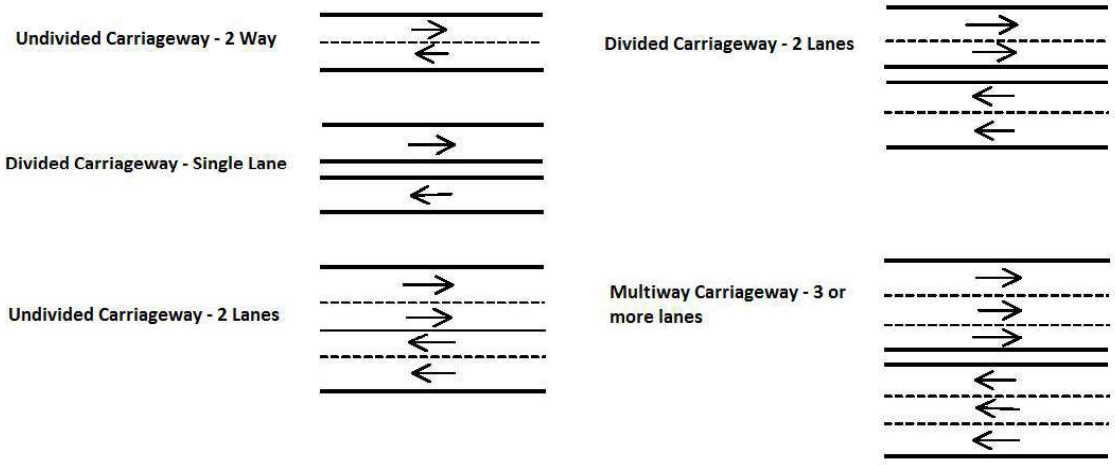
*Maximum road length limits apply, refer to Table 2 in Section 2.4.

Appendix C: Town Site Road Minimum Widths

Feature	RAVs Categories 2-4		RAVs Categories 5-8		RAVs Categories 9-10	
	60 - 70 km/h	80-100 km/h	60 - 70 km/h	80-100 km/h	60 - 70 km/h	80-100 km/h
(Undivided carriageway – 2 Way) Width between sealed edge and road centre (m)						
Basic / unmarked	3.2	3.5	3.3	3.7	3.6	4.1
with marked separation line	3.5	3.8	3.6	4.0	3.9	4.4
with dedicated cycle lane	4.7	5.5	4.8	5.7	5.1	6.1
with dedicated or regular parallel parking	5.7	NA	5.8	NA	6.1	NA
with dedicated angle (45°) parking	9.2	NA	9.3	NA	9.6	NA
(Divided carriageway – single lane) Width between sealed edge and edge of median or traffic island (m)						
Basic / unmarked	3.5	3.8	3.6	4.0	3.9	4.4
with dedicated cycle lane	5.0	5.8	5.1	6.0	5.4	6.4
with dedicated or regular parallel parking	6.0	NA	6.1	NA	6.4	NA
with dedicated angle (45°) parking	9.5	NA	9.6	NA	9.9	NA
(Undivided carriageway – 2 lanes) Width between sealed edge and road centre (m)						
Basic / unmarked	6.6	7.0	6.7	7.1	7.0	7.5
with dedicated cycle lane	8.1	9.0	8.2	9.1	8.5	9.5
with dedicated or regular parallel parking	9.1	NA	9.2	NA	9.5	NA
(Divided carriageway – 2 lanes) Width between sealed edge and edge of median or traffic island (m)						
Basic / unmarked	6.6	7.0	6.7	7.1	7.0	7.5
with dedicated cycle lane	8.1	9.0	8.2	9.1	8.5	9.5
with dedicated or regular parallel parking	9.1	NA	9.2	NA	9.5	NA
(Multiple Lane Carriageways – 3 or more lanes) Width of additional through lane (m)						
basic	3.2	3.4	3.3	3.5	3.4	3.6

Notes:

1) Speed refers to the prevailing speed limit for the road
2) An explanation of road type descriptors follows:



Appendix D: Required Sight Distances

Posted Speed km/h	Downhill				Level	Uphill			
	-8%	*-6%*	*-4%*	*-2%*		*2%*	*4%*	*6%*	*8%*
40	74	72	70	68	66	65	64	62	61
50	102	98	95	92	89	87	85	84	82
60	134	128	123	119	116	112	110	107	105
70	170	162	155	149	144	140	136	133	130
80	209	198	190	182	176	170	165	161	157
90	252	239	228	218	210	203	197	191	186
100	308	290	275	263	252	242	234	227	220

The above values have been derived using the formula given in Austroads Guidelines with following factors:

Reaction Time	4.0 s

(Deceleration rate of 0.29g up to 90 km/h, 0.28g at 100 km/h.)

Appendix E: Operating Conditions

Main Roads will apply the operating conditions below, as a condition of permit, to very low traffic volume roads when the road's width does not meet the minimum requirements in Appendix A.

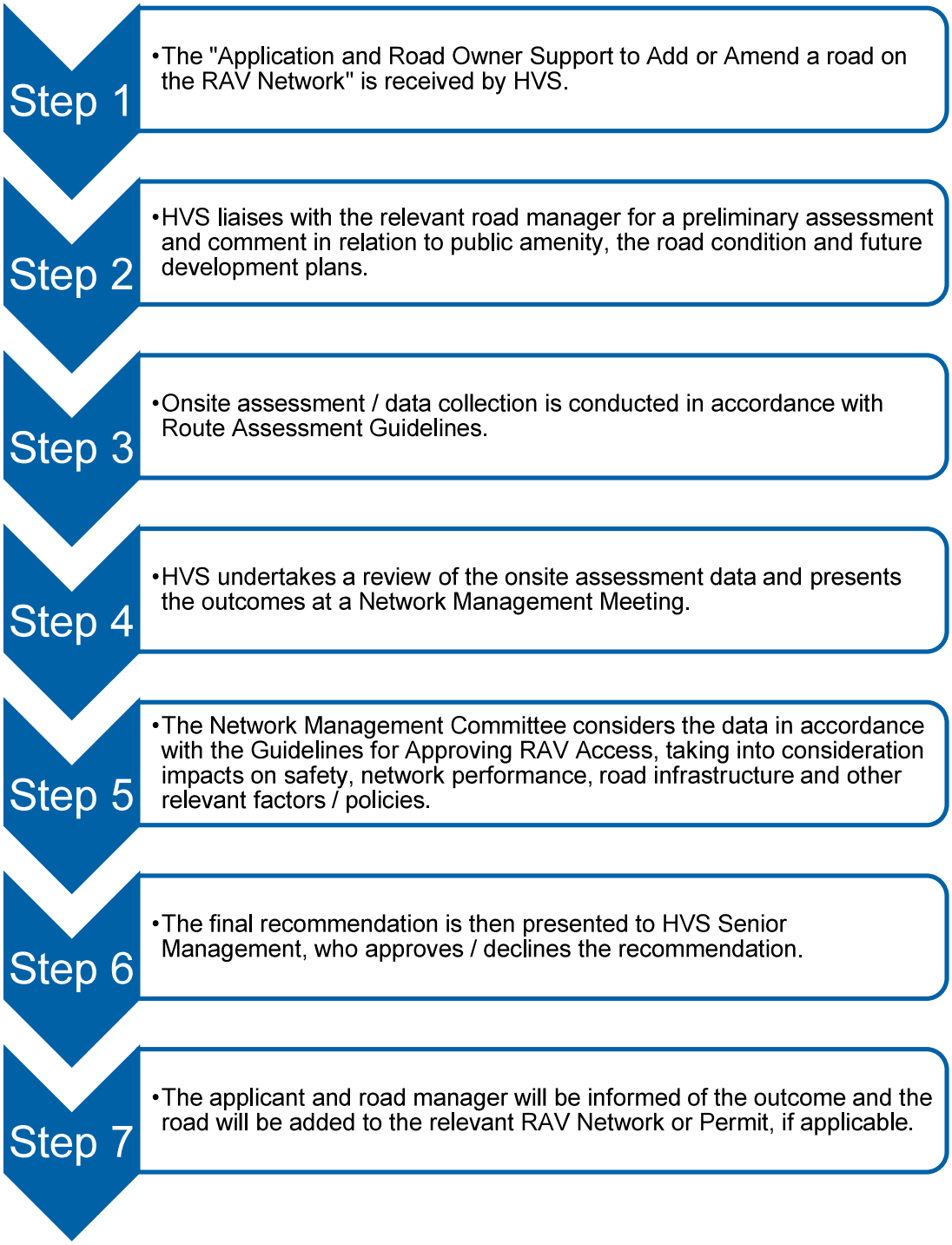
These and other similar operating conditions may be applied to the assessment of other roads.

1. When travelling at night, the RAV must travel at a maximum speed of 40km/h and display an amber flashing warning light on the prime mover.
2. No operation on unsealed road segment when visibly wet, without road owner's approval.
3. Headlights must be switched on at all times.
4. Speed restrictions. *
5. Direct radio contact must be maintained with other RAVs to establish their position on or near the road (suggested UHF Ch 40).
6. For a single lane road, the road must not be entered until the driver has established via radio contact that there is no other RAV on the road travelling in the oncoming direction.
7. Operation is not permitted while the school bus is operating on the road. Operators must contact the relevant schools directly and obtain school bus timetables; or where direct contact can be made with the school bus driver, operation is permitted once the school bus driver confirms all school drop-offs/ pick-ups have been completed on the road.
8. Current written support from the road asset owner, endorsing use of the road, must be obtained, carried in the vehicle and produced upon request.

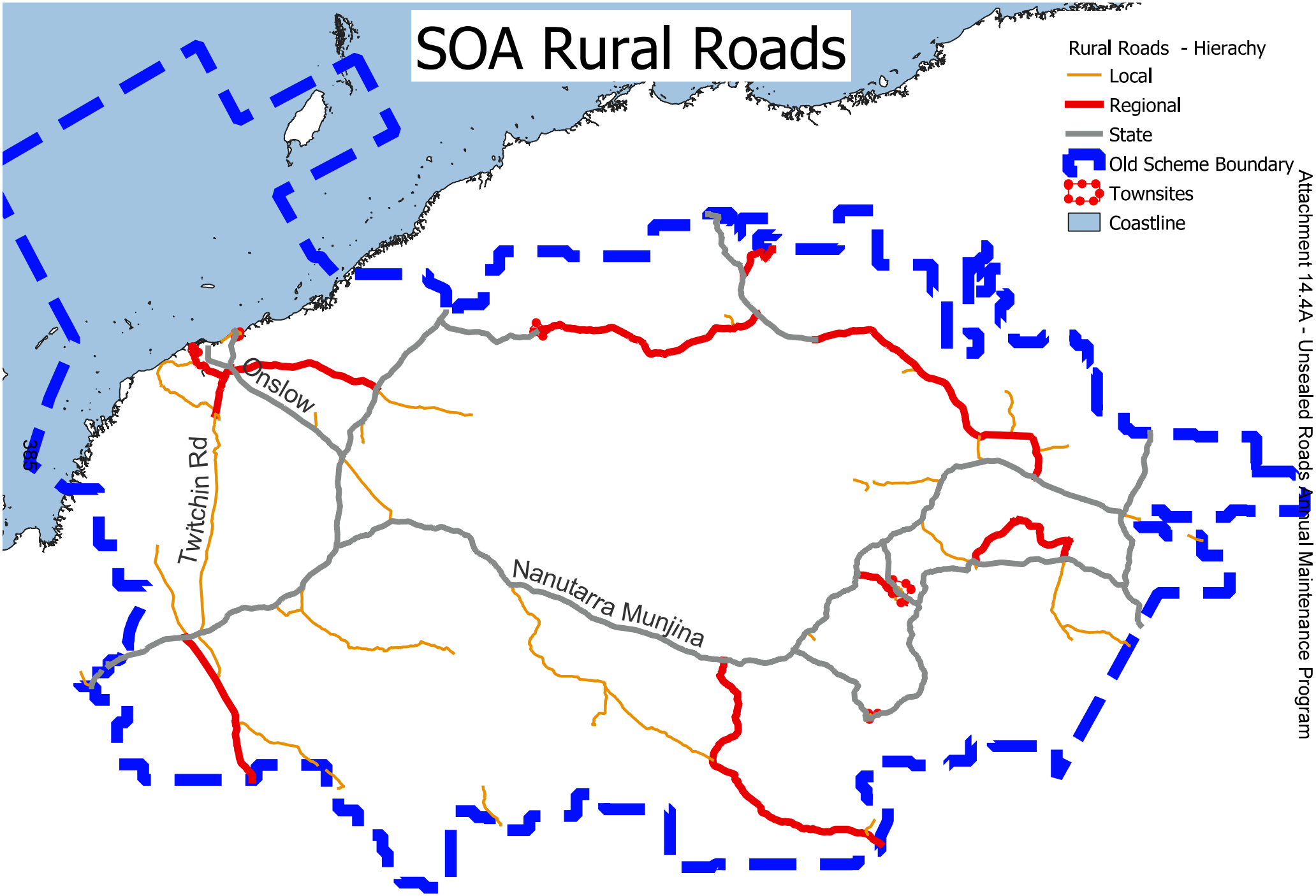
These conditions are applied in the Prime Mover, Trailer Combinations and Truck, Trailer Combinations Operating Conditions. The applicable roads must be clearly identified as either a "Type A" Low Volume Road or a "Type B" Low Volume Road or appropriate conditions listed separately as a road condition.

*40 km/h or 60 km/h as determined from Appendix B.

Appendix F: RAV Access Assessment Process



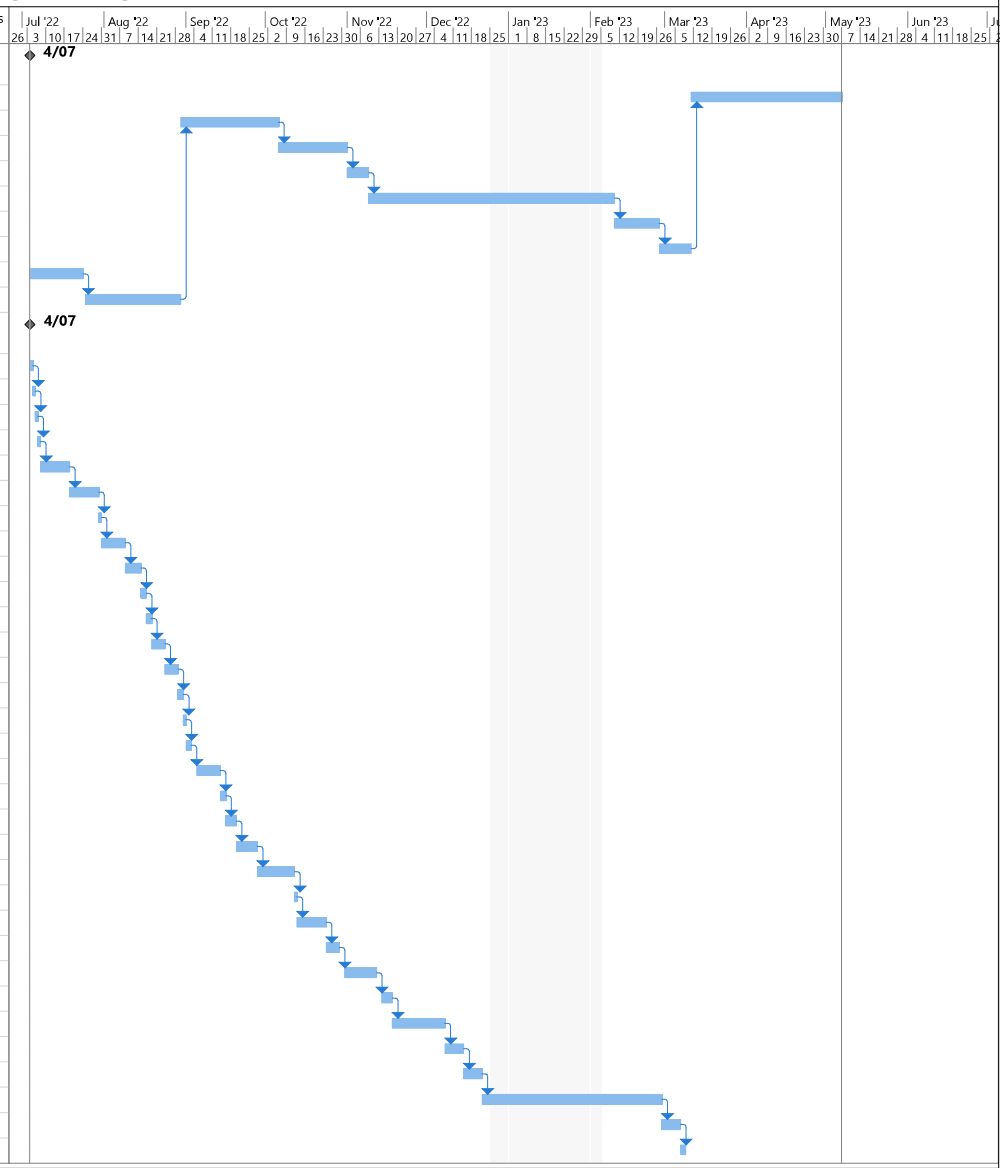
14.4A – Unsealed Roads Annual Maintenance Program


SOA Rural Roads
Rural Roads - Hierachy
Local
Regional
State
Old Scheme Boundary
Townsites
Coastline
Onslow
Twitchin Rd
Nanutarra Munjina
385
Attachment 14.4A - Unsealed Roads Annual Maintenance Program

14.4B – Unsealed Roads Annual Maintenance Program

Shire Roads Grading Program 2022-23

ID	Task Name	Duration	Start	Finish	End SLK	Total Km	Predecessors
1	**Regional Roads**	0 days	Mon 4/07/22	Mon 4/07/22		#ERROR	
2	ROEBOURNE - WITTENOOM RD	49 days	Sat 11/03/23	Sat 6/05/23	144.43	144.43	8
3	MILLSTREAM - PANNAWONICA RD	31 days	Tue 30/08/22	Wed 5/10/22	91.43	91.43	10
4	ONSLOW - PEEDAMULLA RD	22 days	Thu 6/10/22	Mon 31/10/22	64.17	64.17	3
5	OLD ONSLOW RD	8 days	Tue 1/11/22	Tue 8/11/22	22.51	22.51	4
6	TWITCHIN RD	42 days	Wed 9/11/22	Thu 9/02/23	123.74	123.74	5
7	TOWERA RD	15 days	Fri 10/02/23	Sun 26/02/23	44.34	44.34	6
8	TOWERA - LYNDON RD	10 days	Mon 27/02/23	Fri 10/03/23	27.6	27.6	7
9	ASHBURTON DOWNS RD	17 days	Mon 4/07/22	Sat 23/07/22	55.48	55.48	
10	ASHBURTON DOWNS - MEEKATHARRA RD	32 days	Mon 25/07/22	Mon 29/08/22	88.52	88.52	9
11	**Local Roads**	0 days	Mon 4/07/22	Mon 4/07/22		#ERROR	
12	ROCKLEA RD	1 day	Mon 4/07/22	Mon 4/07/22	4.62	4.62	
13	EL CABALLO RD	1 day	Tue 5/07/22	Tue 5/07/22	3.17	3.17	12
14	QUINDALUP ST	1 day	Wed 6/07/22	Wed 6/07/22	1.06	1.06	13
15	LOOKOUT RD	1 day	Thu 7/07/22	Thu 7/07/22	0.25	0.25	14
16	PACKSADDLE RD	9 days	Fri 8/07/22	Mon 18/07/22	43.33	43.33	15
17	JUNA DOWNS RD	9 days	Tue 19/07/22	Fri 29/07/22	40.03	40.03	16
18	MT BRUCE RD	1 day	Sat 30/07/22	Sat 30/07/22	3.42	3.42	17
19	HAMERSLEY - MOUNT BRUCE RD	7 days	Sun 31/07/22	Mon 8/08/22	30.71	30.71	18
20	HAMERSLEY RD	6 days	Tue 9/08/22	Sun 14/08/22	29.6	29.6	19
21	MT SHEILA RD	2 days	Mon 15/08/22	Tue 16/08/22	8.8	8.8	20
22	FORTESCUE CROSSING RD	2 days	Wed 17/08/22	Thu 18/08/22	9.05	9.05	21
23	MULGA DOWNS RD	3 days	Fri 19/08/22	Tue 23/08/22	13.4	13.4	22
24	HOOLEY RD	5 days	Wed 24/08/22	Sun 28/08/22	22.21	22.21	23
25	COOLAWANYAH RD	2 days	Mon 29/08/22	Tue 30/08/22	6.23	6.23	24
26	MOUNT FLORENCE ROAD	1 day	Wed 31/08/22	Wed 31/08/22	1.33	1.33	25
27	DAWSON CREEK RD	2 days	Thu 1/09/22	Fri 2/09/22	7.76	7.76	26
28	RED HILL RD	9 days	Mon 5/09/22	Tue 13/09/22	43	43	27
29	CANE RIVER ACCESS	2 days	Wed 14/09/22	Thu 15/09/22	9.72	9.72	28
30	MT.MINNIE STATION RD	2 days	Fri 16/09/22	Mon 19/09/22	7.1	7.1	29
31	MT STUART RD	8 days	Tue 20/09/22	Tue 27/09/22	36.06	36.06	30
32	URALA RD	12 days	Wed 28/09/22	Tue 11/10/22	57.39	57.39	31
33	MINDEROO RD	1 day	Wed 12/10/22	Wed 12/10/22	3.02	3.02	32
34	YANREY RD	9 days	Thu 13/10/22	Sun 23/10/22	44.1	44.1	33
35	NYANG RD	5 days	Mon 24/10/22	Fri 28/10/22	22	22	34
36	MAROONAH RD	12 days	Mon 31/10/22	Fri 11/11/22	56.7	56.7	35
37	UAROO - GLENFLORRIE RD	4 days	Mon 14/11/22	Thu 17/11/22	15.14	15.14	36
38	GLENFLORRIE RD	18 days	Fri 18/11/22	Wed 7/12/22	88	88	37
39	ULLAWARRA RD	5 days	Thu 8/12/22	Wed 14/12/22	20.2	20.2	38
40	WYLOO - KOOLINE RD	7 days	Thu 15/12/22	Wed 21/12/22	33.43	33.43	39
41	KOOLINE - ASHBURTON DOWNS RD	21 days	Thu 22/12/22	Mon 27/02/23	100.38	100.38	40
42	Gorge Mine RD	5 days	Tue 28/02/23	Mon 6/03/23	21.8	21.8	41
43	MININER RD	2 days	Tue 7/03/23	Wed 8/03/23	8.1	8.1	42



Project: Project Schedule-Rural
Date: Tue 31/05/22

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

14.4C – Unsealed Roads Annual Maintenance Program

Regional Roads - Wet Grading Estimate

Road Name	Total SLK	Duration (days)	Grader x2	Water Carts x2	Smooth Roller	2x Padfoot	Acc	Labour	Labour Oheads	Contract Labour	Kitchen	Total
ASHBURTON DOWNS - MEEKATHARRA RD	88.52	30	$ 57,600	$ 54,000	$ 11,520	$ 23,040	$ 41,040	$ 58,320	$ 67,068	$ 50,400	$ 6,840	**$ 369,828**
ASHBURTON DOWNS RD	55.48	19	$ 36,480	$ 34,200	$ 7,296	$ 14,592	$ 25,992	$ 36,936	$ 42,476	$ 31,920	$ 4,332	**$ 234,224**
MILLSTREAM - PANNAWONICA RD	91.43	31	$ 59,520	$ 55,800	$ 11,904	$ 23,808	$ 42,408	$ 60,264	$ 69,304	$ 52,080	$ 7,068	**$ 382,156**
OLD ONSLOW RD	22.51	8	$ 15,360	$ 14,400	$ 3,072	$ 6,144	$ 10,944	$ 15,552	$ 17,885	$ 13,440	$ 1,824	**$ 98,621**
ONSLOW - PEEDAMULLA RD	64.17	22	$ 42,240	$ 39,600	$ 8,448	$ 16,896	$ 30,096	$ 42,768	$ 49,183	$ 36,960	$ 5,016	**$ 271,207**
ROEBOURNE - WITTENOOM RD *	144.43	49	$ 94,080	$ 88,200	$ 18,816	$ 37,632	$ 67,032	$ 95,256	$ 109,544	$ 82,320	$ 11,172	**$ 604,052**
TOWERA - LYNDON RD	27.6	10	$ 19,200	$ 18,000	$ 3,840	$ 7,680	$ 13,680	$ 19,440	$ 22,356	$ 16,800	$ 2,280	**$ 123,276**
TOWERA RD	44.34	15	$ 28,800	$ 27,000	$ 5,760	$ 11,520	$ 20,520	$ 29,160	$ 33,534	$ 25,200	$ 3,420	**$ 184,914**
TWITCHIN RD	123.74	42	$ 80,640	$ 75,600	$ 16,128	$ 32,256	$ 57,456	$ 81,648	$ 93,895	$ 70,560	$ 9,576	**$ 517,759**
Total			$ 433,920	$ 406,800	$ 86,784	$ 173,568	$ 309,168	$ 439,344	$ 505,246	$ 379,680	$ 51,528	**$ 2,786,038**
Total Duration	226											

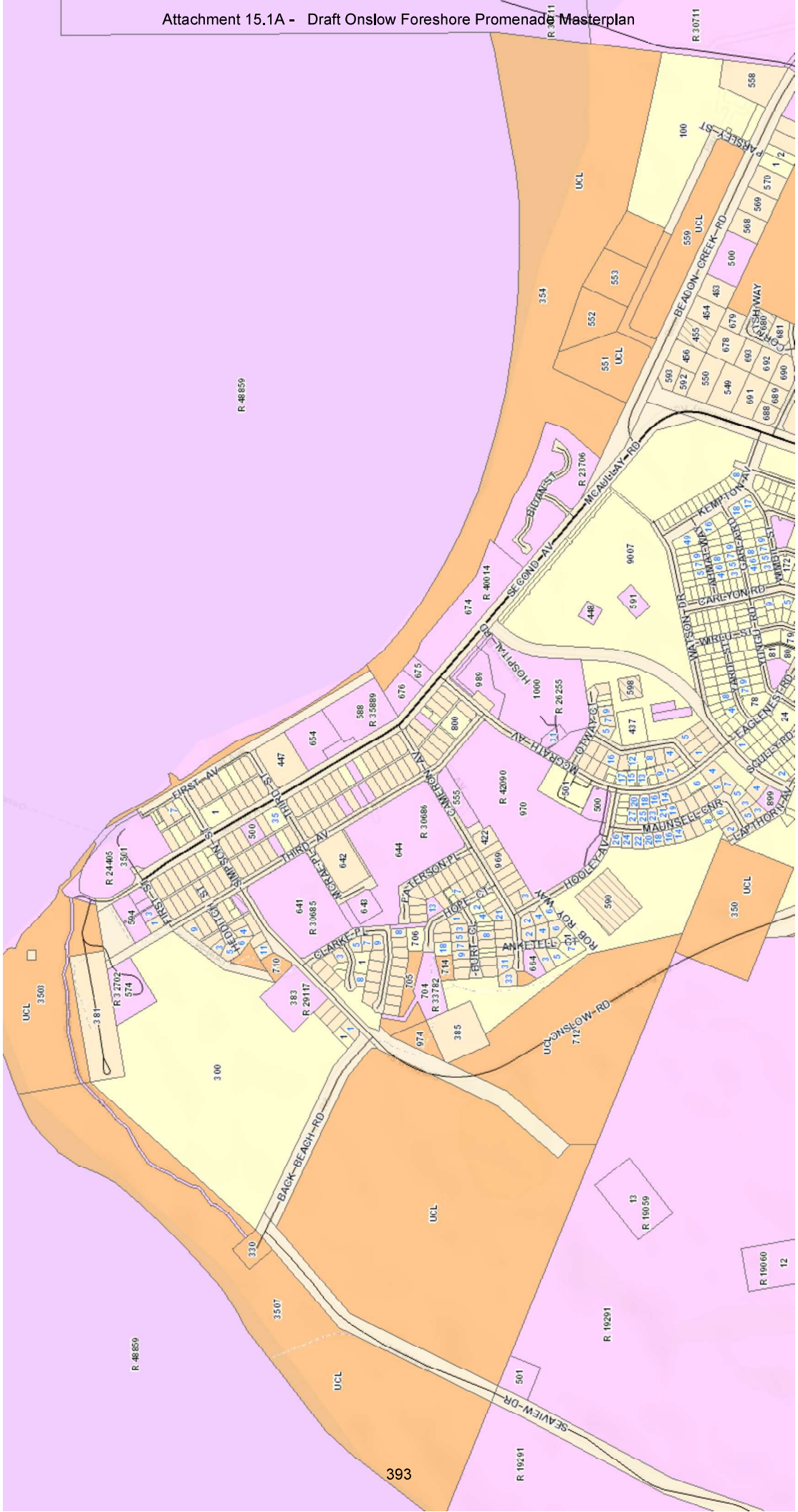
** Note: Roebourne Wittenoom Rd estimate does not include Asbestos Management*

14.4D – Unsealed Roads Annual Maintenance Program

Local Roads - Dry Grading Estimate

Road Name	Total SLK	Total Duration	Grader	Accomodation	Labour	labour oncost	Total
CANE RIVER ACCESS	9.7	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
COOLAWANYAH RD	6.23	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
DAWSON CREEK RD	7.76	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
EL CABALLO RD	3.17	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
FORTESCUE CROSSING RD	9.05	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
GLENFLORRIE RD	88	18	$ 17,280	$ 4,104	$ 8,208	$ 9,439	**$ 39,031**
GORGE MINE RD	21.8	5	$ 4,800	$ 1,140	$ 2,280	$ 2,622	**$ 10,842**
HAMERSLEY - MOUNT BRUCE RD	30.71	7	$ 6,720	$ 1,596	$ 3,192	$ 3,671	**$ 15,179**
HAMERSLEY RD	29.6	6	$ 5,760	$ 1,368	$ 2,736	$ 3,146	**$ 13,010**
HOOLEY RD	22.21	5	$ 4,800	$ 1,140	$ 2,280	$ 2,622	**$ 10,842**
JUNA DOWNS RD	40.03	9	$ 8,640	$ 2,052	$ 4,104	$ 4,720	**$ 19,516**
KOOLINE - ASHBURTON DOWNS I	100.38	21	$ 20,160	$ 4,788	$ 9,576	$ 11,012	**$ 45,536**
LOOKOUT RD	0.25	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
MAROONAH RD	56.7	12	$ 11,520	$ 2,736	$ 5,472	$ 6,293	**$ 26,021**
MINDEROO RD	3.02	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
MININER RD	8.1	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
MOUNT FLORENCE ROAD	1.33	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
MT BRUCE RD	3.42	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
MT STUART RD	36.06	8	$ 7,680	$ 1,824	$ 3,648	$ 4,195	**$ 17,347**
MT.MINNIE STATION RD	7.1	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
MT.SHIELA RD	8.8	2	$ 1,920	$ 456	$ 912	$ 1,049	**$ 4,337**
MULGA DOWNS RD	13.4	3	$ 2,880	$ 684	$ 1,368	$ 1,573	**$ 6,505**
NYANG RD	22	5	$ 4,800	$ 1,140	$ 2,280	$ 2,622	**$ 10,842**
PACKSADDLE RD	43.33	9	$ 8,640	$ 2,052	$ 4,104	$ 4,720	**$ 19,516**
QUINDALUP ST	1.06	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
RED HILL RD	43	9	$ 8,640	$ 2,052	$ 4,104	$ 4,720	**$ 19,516**
ROCKLEA ROAD	4.62	1	$ 960	$ 228	$ 456	$ 524	**$ 2,168**
UAROO - GLENFLORRIE RD	15.14	4	$ 3,840	$ 912	$ 1,824	$ 2,098	**$ 8,674**
ULLAWARRA RD	20.2	5	$ 4,800	$ 1,140	$ 2,280	$ 2,622	**$ 10,842**
URALA RD	57.39	12	$ 11,520	$ 2,736	$ 5,472	$ 6,293	**$ 26,021**
WYLOO - KOOLINE RD	33.43	7	$ 6,720	$ 1,596	$ 3,192	$ 3,671	**$ 15,179**
YANREY RD	44.1	9	$ 8,640	$ 2,052	$ 4,104	$ 4,720	**$ 19,516**
Total	791.09		**$ 168,000**	**$ 39,900**	**$ 79,800**	**$ 91,770**	**$ 379,470**
	Total Duration	**175**					

15.1A – Draft Onslow Foreshore Promenade Masterplan


R 30711
R 30711
UCL
BEACON CREEK RD
PARSLEY ST
558
100
559
UCL
553
552
551
UCL
500
454
453
455
456
678
679
680
681
693
692
690
691
689
688
593
592
550
549
354
R 48859
R 23706
BIDANS ST
MCAULIFFE WAY
KEMPTON AV
CARLYON RD
WATSON DR
WIRLU ST
YONGU RD
EAGLENES RD
SCULLY RD
LAPTHORN AL
R 40014
674
675
676
R 35889
588
654
447
448
591
9007
986
1000
R 26255
598
437
800
SECOND AV
HOSPITAL RD
OTWAY CT
MCGRATH AV
501
500
R 42090
970
555
CAMERON AV
422
969
590
MAUNSELL CNR
ROS ROY WAY
HOOLEY AV
PATERSON PL
HOPE CT
BURT CT
ANKETELL ST
644
R 30686
642
641
R 30685
648
706
705
704
R 33782
714
664
710
CLARKE PL
383
R 29117
974
385
350
UCL
FIRST AV
THIRD AV
SWAMPSOUTH ST
REDDITCH ST
FIRST ST
R 24405
3501
594
574
R 3702
3503
381
300
UCL ONSLOW RD
712
BACK BEACH RD
330
3507
UCL
R 48859
R 19291
R 19059
13
R 19060
12
501
SEAVIEW DR
R 19291

15.1B – Draft Onslow Foreshore Promenade Masterplan

REQUEST FOR QUOTATION

ONSLOW FORESHORE PROMENADE – ANZAC Memorial Park to Beadon Creek – Place activation and landscape concept development consultancy services

September 2021

1. INTRODUCTION

The Shire is seeking quotations from a suitably experienced consultant for the development of landscape concept plans for a proposed promenade project in Onslow, WA.

The key project objective is to improve public amenity and activate the Onslow foreshore, between Onslow Salt Jetty in the north and Beadon Creek in the south.

2. PROJECT BACKGROUND AND SCOPE

A Concept Masterplan (attached) has been developed that describes a coastal path in three sections (northern section, central section, and Beadon Creek section). It includes three "nodes" that will provide activation and route destination:

1. Northern Node: An area adjacent to the existing Anzac Memorial.
2. Central Node: An area on Lot 675 and / or Lot 676, Second Avenue.
3. Southern Node: Location to be determined but either at the Beadon Creek Groin, or close to it.

At this point it is anticipated that the path will be textured concrete in the north and central sections, and an elevated, pre-fabricated boardwalk in the Beadon Creek Section. The development of the promenade will be divided into phases once the scope and budget costings have been ascertained. The path must cater for pedestrians and cyclists and any lighting should be solar / wind powered.

Scope exclusions

1. There is an opportunity to provide a return loop past the Boating Precinct back into town along Beadon Creek Rd and Second Avenue. This is not currently in scope.
2. A new seawall north of ANZAC Memorial will be delivered as a separate project through the Infrastructure Department , with construction anticipated by approx. June 2022.

3. SCOPE OF SERVICES

A drone-based feature survey is currently being undertaken and will be provided to the Consultant on award.

The Client is seeking the following to be done / prepared by the Consultant:

1. Review of existing Masterplan and feature survey.
2. Site visit
3. Development of a Concept Design for the Northern Node, Central Node and Southern Node.
4. Development of a Concept Design for the Three path sections.

4. SPECIFIC REQUIREMENTS OF THE CONTRACT / SPECIFICATION

4.1 Theme

The nodes and footpath are to be linked by a common theme, relating to Onslow's heritage, possibly Pearling / Pastoralist / Aboriginal Heritage or Wartime Shipwrecks. The theme is to be continuous and repeated throughout the promenade.

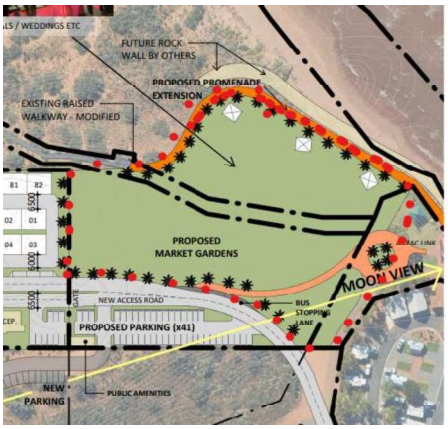
The theme could be expressed through artwork, materials, historical artifacts and other means. Information signage and wayfinding signage should also be considered.

4.2 Activation

The Client is seeking to activate the foreshore by providing infrastructure and facilities that provide access and amenity, impressive views, a strong sense of place and a sense of destination at each node.

4.3 Northern Node

Area is enclosed in red dots below.



A copy of the Caravan Park Stage 3 and POS is provided with this RFQ (see ***Whitehaus Architects, Locality Plan, Onslow POS and CP3 Drawing A002 Rev A*** *attached*).

This is to be a high-end public space for medium sized public functions that provides strong interaction with the coast. This area should provide an open area for outdoor functions (weddings, small concerts, connection to the Moon view POS, etc) with playgrounds, open park, public amenities and ample parking. The existing boardwalk will be modified to suit the new area. Constructed behind a new seawall (delivered separately), this area must also consider the access

road to Ocean View Caravan Park (Phase 3) and Dreamers Hill. Future access to Lot 300 should also be considered.

4.4 Footpath - Northern section – (Northern Node to Onslow Beach Resort)
A 1.5m wide footpath currently exists in this section. The redeveloped footpath should be approx. 3m width, include feature / textured concrete, (utilising the existing concrete footpath where possible). Handrails and retaining walls may be required adjacent the Caravan Park and other locations. Furniture is to include antivandal measures and consider the harsh coastal environment. All works to meet relevant codes including AS1428.

4.5 Central node
This is to be a usable public space that provides park amenity, picnic, playground, public amenities and lookouts between the sun chalets and proposed future caravan park.



4.6 Footpath – Central (Onslow Beach Resort to Central Node)
This section of footpath should be approx. 3m width, include feature / textured concrete. Handrails and retaining walls are not anticipated. Furniture is to include antivandal measures and consider the harsh coastal environment. All works to meet relevant codes including AS1428.

4.7 Footpath - Beadon Creek Section (Central Node to Beadon Creek)
This section of footpath should comprise pre-manufactured decks (~ 6m x 3m), with a recycled plastic type decking, secured using “Mega Anchors” or similar to form an elevated boardwalk. Furniture is to include antivandal measures and consider the harsh coastal environment. All works to meet relevant codes including AS1428.

The boardwalk is to be sensitive to the existing landform and vegetation.

4.8 Beadon Creek Node
This is to be a usable public space that provides a sense of destination, picnic and rest facilities, public amenities (if possible) and it should provide a lookouts. Located adjacent to historical shipwrecks at the entrance to Beadon Creek, or higher up on the hill overlooking Beadon Creek entrance.



5. DELIVERABLES

5.1 Node Concepts (Three A3 pages)

Concept design for each node, each on a separate, A3 sized pdf page, in colour, including:

a) General Arrangement / site plan - to sufficient detail and scale that it is suitable for use by a QS to generate an Opinion of Probable Cost Estimate.
b) Insert of cross sections as applicable,
c) Insert of pictures showing sample materials and textures,
d) Insert of pictures showing sample furniture and sample public artwork.

5.2 Path Sections (Three A3 pages)

Concept design for each path section, each on a separate, A3 sized pdf page, in colour, including:

a) General Arrangement / site plan - to sufficient detail and scale that it is suitable for use by a QS to generate an Opinion of Probable Cost Estimate.
b) Insert of cross sections as applicable,
c) Insert of pictures showing sample materials and textures,
d) Insert of pictures showing sample furniture and sample public artwork.

5.3 Lookouts (One A3 page)

One typical concept design for the lookouts along the boardwalk promenade. These will essentially be a widening of the path, two bench seats, a guardrail and some signage to reinforce the theme etc. One A3 sized pdf page, in colour, including:

a) General Arrangement / site plan - to sufficient detail and scale that it is suitable for use by a QS to generate an Opinion of Probable Cost Estimate.
b) Insert of cross sections as applicable,
c) Insert of pictures showing sample materials and textures,
d) Insert of pictures showing sample furniture and sample public artwork.

5.4 Sample

A sample of another concept plan is attached to this RFQ showing the type of layout that could be considered.

6. DESIRED TIME FRAME

The desired timeframe for the scope of work is 4 weeks from issue of Purchase order, however, the consultant is requested to provide a schedule in section 8 below.

7. INSURANCE REQUIREMENTS

Please confirm that your company meets the minimum insurance requirements below. Should respondents fail to meet the minimum requirement of insurance, please provide details of existing policies and limits.

Public Liability Insurance	$5 Million

8. PROPOSAL REQUIREMENTS

8.1 Please submit a CV or capability statement or a paragraph demonstrating your relevant experience and suitability for undertaking this work.

8.2 Please demonstrate your availability to undertake the works by completing a schedule in the table below.

8.3 Please include a recommendation of any works not included in Section 5 Deliverables, that the Shire might consider doing at this stage of the project.

8.4 Please submit your fee proposal showing a total fee, broken down as below, together with proposed milestone dates:

	Task	Price ex GST	Schedule
A1	Site Visit incl travel and all other costs		_____ weeks from PO
A2	Review of existing documents, development of all 6 concepts and plans and submission to Client for review		_____ weeks from PO
A3	Client Review		__1__ week
A4	Incorporate Client feedback and finalise documents and resubmit		_____ week(s) after client review
A5	Total Fee ex GST		_____ weeks in Total
A6	GST		
A7	Total Incl GST		
B	Hourly rate for additional works	$_____ /hr ex GST	

9. FURTHER INFORMATION

Proposals will be assessed on best overall value for money for the proposed services

All enquires relating to this Request can be sent to Rob Penfold, rob@a4projects.com.au

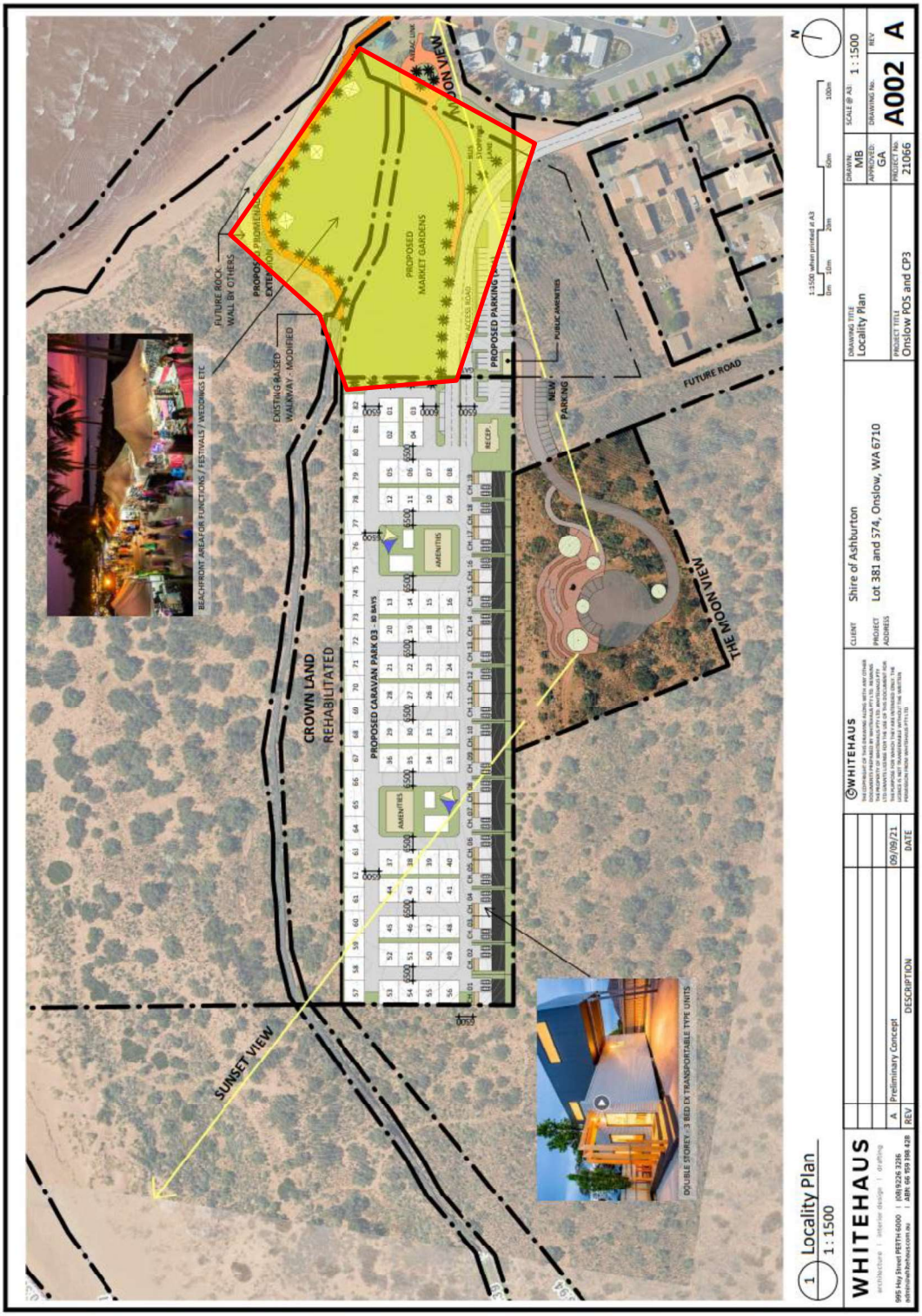
10. LODGEMENT OF QUOTATION

Please submit your response for this Request for Quotation by email on or before by 2pm (WST) Mon 27 September 2021.

11. ATTACHMENTS AND REFERENCE DOCUMENTS

- Att 1: Whitehaus Architects, Locality Plan, Onslow POS and CP3 Drawing A002 Rev A
- Att 2: Sample A3 Drawing
- Att 3: Urbanism, Onslow Coastal Footpath Concept Masterplan August 2021
- Att 4 : Platinum Survey – Drone based feature survey – Not attached. To be provided when available.

Att 1: Whitehaus Architects, Locality Plan, Onslow POS and CP3 Drawing A002 Rev A



Att 2: Sample Drawing



ONSLOW COASTAL FOOTPATH CONCEPT MASTER PLAN

August 2021

shire of Ashburton
reef to range

PLAN INDEX:

Development Plan:

Describing the overall approach of a coastal path between the Salt Jetty (north) and Beadon Creek in the south.

Northern Coastal Path:

Identifying the existing boardwalk and paths along the coast between Salt Jetty to the Anzac Memorial and along First Avenue.

Central Coastal Path:

This coastal path is extended along First Avenue past the drainage basin along the primary dune to the Bindi Bindi community.

Beadon Creek Paths

An elevated boardwalk along the primary dune connects the coastal path to Beadon Creek, where it vonnects to the training wall and the Community Boating Precinct.



Figure 1: Onslow Foreshore (Urbanism)

PURPOSE:

The Shire of Ashburton appointed Urbanism to prepare a high-level public domain plan for the Onslow foreshore. This plan considers the alignment and future design of a public promenade to activate the foreshore between the existing Salt Jetty and Beadon Creek.

NOTES TO PLANS:

Development Plan:

The development plan considers the improvement and extension of the coastal path to create a continuous path network between Salt Jetty and Beadon Creek. The plan provides a schematic alignment for the path and the notation identifies materials (concrete path/ boardwalk/ gravel), basic design parameters, activity nodes and beach access opportunities. The plan also details coastal protection structures, which will be discussed further in the precinct plans.

PRECINCT PLANS:

Northern Coastal Path:

The plan identifies the existing boardwalk between the Salt Jetty picnic area and the Anzac Memorial. This 2m wide elevated boardwalk contains lookouts and connections to ground level to facilitate access into this coastal area.



Figure 2: Anzac Memorial (Urbanism)

From the Anzac Memorial, a 1.5m wide concrete path follows the coast, mainly on top of an existing revetment and at a an elevation of approximately 3m AHD.

Additional coastal protection will be required to protect this infrastructure from potential longer term coastal erosion and sea level rise. The plan proposes that the revetment be raised between the Anzac Memorial and the drainage basin off Cameron Avenue. The pathway could then be widened to 3m within its current alignment.

Central Coastal Path:

The path will be extended along First Avenue as a 3m wide path to the drainage basin near the intersection of Cameron and Second Avenues. The path crosses the berm to the basin into a new pocket park and beach lookout, which could accommodate seating, shelter and BBQ facilities.

Coastal protection is required to extend the path along the foreshore southwards. A new revetment seawall is proposed to stabilise the path corridor and the existing vegetation. This revetment should tie into the drainage outfall of the basin and increase in design standard until it aligns parallel to the ocean.



Figure 3: Port Beach Buried Revetment (Urbanism)

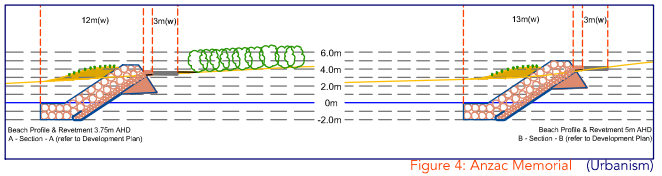


Figure 4: Anzac Memorial (Urbanism)

Along the beach, the revetment should be constructed as rock armour, extending from the toe at -2m AHD. The armour is to be placed on 2 layers of underlaying rock bed, protected by geotextile (Cardno Drawing CW1055700-SKE). The height of the revetment may vary to approximately 500mm above the pathway.

The revetment seawall will be largely buried and excavated sand should be backfilled to reshape a dune over the base of the revetment. This dune could be stabilised with revegetaion of this backfilled area.

The revetment seawall and dune will terminate at an elevated lookout point near the Bindi Bindi community. From this lookout, the path continues on the back of beach area a an elevated boardwalk to follow the primary dune towards Beadon Creek.

Beadon Creek Coastal Path

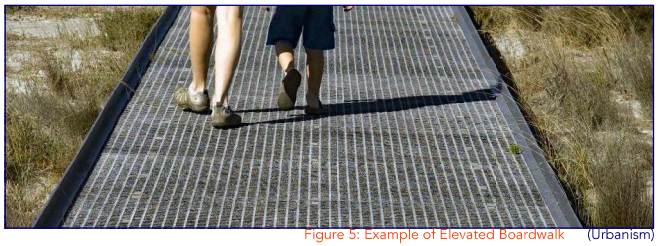
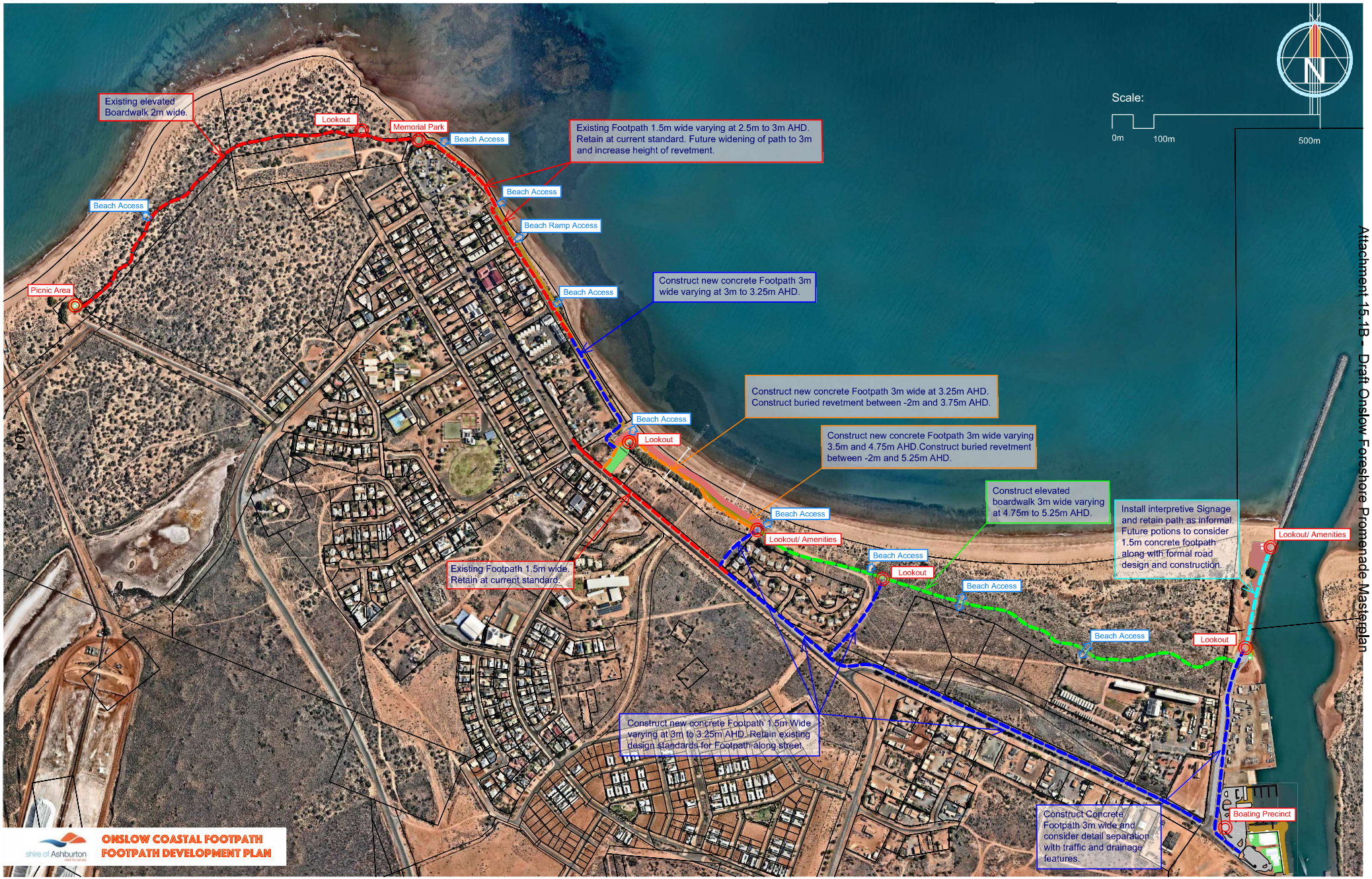


Figure 5: Example of Elevated Boardwalk (Urbanism)

The elevated boardwalk has several connections to the beach and terminates at an unconstructed road along Beadon Creek. It is proposed that this road be constructed as a formal cul-de-sac - the creek offers a small beach area near the cul-de-sac head and a small pocket park could be developed here to provide parking, seating and shelter. Some tidying of this beach area will be required and rocks could be placed as additional armour to protect this pocket park.

The path will follow the gravel road towards the training wall; no formal path is proposed. Some facilities in the form of shelter, seating and ablution facilities are proposed at the gravel parking area to serve the needs of beach and fishing users.

A 3m wide concrete path is proposed to extend south along this road to terminate at the proposed Beadon Creek Commmunity Boating Facility. The path should also be extended along Beadon Creek Road to connect back to existing paths along Second Avenue.


Existing elevated Boardwalk 2m wide.
Lookout
Memorial Park
Beach Access
Existing Footpath 1.5m wide varying at 2.5m to 3m AHD. Retain at current standard. Future widening of path to 3m and increase height of revetment.
Beach Access
Beach Access
Beach Ramp Access
Picnic Area
Beach Access
Construct new concrete Footpath 3m wide varying at 3m to 3.25m AHD.
Construct new concrete Footpath 3m wide at 3.25m AHD. Construct buried revetment between -2m and 3.75m AHD.
Beach Access
Lookout
Construct new concrete Footpath 3m wide varying 3.5m and 4.75m AHD.Construct buried revetment between -2m and 5.25m AHD.
Construct elevated boardwalk 3m wide varying at 4.75m to 5.25m AHD.
Beach Access
Lookout/ Amenities
Install interpretive Signage and retain path as informal. Future potions to consider 1.5m concrete footpath along with formal road design and construction.
Lookout/ Amenities
Beach Access
Lookout
Beach Access
Existing Footpath 1.5m wide. Retain at current standard.
Beach Access
Lookout
Construct new concrete Footpath 1.5m Wide varying at 3m to 3.25m AHD. Retain existing design standards for Footpath along street.
Construct Concrete Footpath 3m wide and consider detail separation with traffic and drainage features.
Boating Precinct
Scale:
0m
100m
500m
N
404
ONSLOW COASTAL FOOTPATH
FOOTPATH DEVELOPMENT PLAN
shire of Ashburton


Scale 1 : 2,000
0m
50m
100m
ONSLOW COASTAL FOOTPATH
NORTHERN COASTAL PATH
shire of Ashburton


Scale 1 : 2,000
0m
50m
100m
ONSLOW COASTAL FOOTPATH
CENTRAL COASTAL PATH
shire of Ashburton


Scale 1 : 4,000
0m 50m 300m
ONSLOW COASTAL FOOTPATH
BEADON CREEK COASTAL PATHS
shire of Ashburton

15.1C – Draft Onslow Foreshore Promenade Masterplan

ONSLOW PROMENADE

Landscape Concept Design

NOVEMBER 2021



PLACE LABORATORY

PLACE LABORATORY

PREPARED FOR

shire of Ashburton
reef to range

DOCUMENT CONTROL

NAME OF PROJECT	Onslow Promenade
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DOCUMENT SIZE	A3 and double sided prints
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REVISION	DATE ISSUED	ISSUED FOR	PREPARED BY	APPROVED BY	SIGNATURE	DATE APPROVED
A	29-11-2021	REVIEW	AC,NP, CS	SS		29-11-2021

Acknowledgment of Country

PLACE Laboratory acknowledges the People of Thalanyji country as the Traditional Custodians of the land and waters on which the project is located. We pay our respect to their Elders, past, present, and emerging and thank them for their continuing connection to country, culture and community.

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Site History + Background

Living Culture

The Thalanyji, Nhuwala and Burama people have lived in the Onslow area for thousand of years. Onslow is also a special place for other indigenous people from the inland Pilbara. Their groups, with their own language, stories, spiritual beliefs and social relationships, trace their heritage and culture through a connection to the land over this time.

Amongst the coast and plains, rivers and ranges are places of special significance – sites of birth and burial, and camping, hunting, law and ceremony grounds.

In 2008 the Federal Court recognised the Thalanyji people's native title rights over 11,120km2 of pastoral land and places in and around the Onslow townsite and port.

Their culture is alive and thriving in Onslow and will continue to be apart of life and culture in Onslow. The Thalanyji basketball carnival is a prominent annual event in the community which promotes social inclusion and fosters community spirit.





Thalanyji basketball carnival



Aerial shot of the Bindi Bindi Aboriginal community area in town

Old Onslow

The original town of Onslow stood about 20 km south west. The town was heavily affected by flood and cyclones so it was relocated. Camels and donkeys were used to relocate timber and iron buildings, one of which still stands and is now known as the Goods Shed Museum and Visitor Centre Buildings of stone had to stay behind. Now, little remains in Old Onslow apart from the police station's walls and a cemetery.

In 1925 a 659 meter long jetty was build, over the years it was destroyed from cyclones and rebuilt The Australian Army demolished the jetty in an explosives exercise in 1982.

During World War 2, Onslow became the southernmost town in Australia to be bombed. Thankfully there was no damage and no loss of life. In 952 Britain detonated its first atomic bomb on the Montebello Islands.



Engineer Batemna, view of the coming townsite of new Onslow



The relocated Goods Shed Museum and Visitor centre



The current remains of old Onslow



The old jetty before its demolition during an Australian Army explosives exercise



1943 personnel of the RAAF embarking from Onslow



1952 British atomic bomb tests just off the coast of Onslow on the Monte Bello Islands

Local Trade

In the 1890s the Ashburton Goldfield was proclaimed. Prospectors made their way 150 miles inland to the upper Ashburton and prospected for alluvial gold.

Oysters breed in the waters of Onslow and their shells and pearls have been a valuable commodity since aboriginal people harvested them from the shallows for trade. Pearl shell remained a highly sought after commodity until buttons began to be produced with plastic the pearl shell market largely disappeared by the 1950s and 1960s.

Onslow's hot dry climate makes it an ideal location for salt production. The salt mounds you can see represent a part of a $300 million a year industry.

Onslow has been exporting gas and oil since 1964. In 2011 Chevron built $29M liquefied natural gas just off the coast of Onslow.



Onslow's past pearling trading



Onslow Salt salt-fields



Drone shot of the Chevron Wheatstone site just south of Onslow

Ecology + Landform

Onslow is dominated by topography of undulating dunes, sand plains and low-lying coastal systems supporting samphire communities, salt flats, claypans, tidal creeks and regionally significant mangrove communities. The Ashburton River is one of the region's most significant river systems. The major soil types present in the shallow soil profile of the Onslow region are coastal mudflats, sand plains and red sand dunes.

The Mackerel Islands surround Onslow and they act as significant breeding grounds and an important refuge for many threatened species.

210 native vertebrate fauna species including reptiles, amphibians, birds and mammals. Onslow is perfect for fishing and prawns. Significant migrating stop over spot for migratory shorebirds travelling the East Asian - Australasian Flyway.

The Onslow region experiences an arid-tropical climate, with hot summers and mild winters. The town of Onslow is located in one of the most cyclone-prone regions in Australia. Despite extreme rainfall during storm events, Onslow also experiences periods of extreme drought.



Landform and river system



Onslow dunal system



Mackerel Islands



Endemic Smooth Knob-tail Gecko



Ashburton river



1999 Cyclone over Onslow

Tourism Assets

Rich Indigenous Culture

The region has a rich Indigenous culture that spans through the entire Shire across numerous language groups.

The Warlu Way passes through the region providing a foundation for further Indigenous tourism product. There are a variety of planned and potential Indigenous tourism projects across the Shire that could come to fruition in the near future.

Natural tourism Assets

Islands and reefs: Onslow is the closest town to the Mackerel Islands which offer a range of opportunities including snorkelling/ diving, whale watching and some of the best fishing in Australia. These assets are largely underutilised.

Expansive and rugged outback landscape: beyond the national parks, the region has an expansive and rugged landscape that is attractive for caravanning and camping.

Oldest geological structures on the planet: the Shire has some of the oldest geological structures on the planet, dating back to 3.4 to 3.6 billion years ago, making the area a huge potential for geo-tourism.

Heritage Tourism Assets

Old Onslow represents a unique story in the Australian outback, where an entire town was relocated. The museum at the Onslow Visitor Centre has a large collection of artefacts and there are other displays of the mining history and heritage in the area.

The Shire is actively pursuing the Onslow Water Tank Mural Project and seeking support from stakeholders to develop a regional mural trail.

Built Tourism Environment

There have been a number of recent investments in new tourism infrastructure including the Beadon Bay Hotel, Onslow Beach Resort, Ocean View Caravan Park and others. Onslow in particular now has a lot to offer visitors to the area.

The mine tours in Tom Price are regularly full during peak season and tours of the Wheatstone LNG precinct in Onslow have also commenced.

Tourism Trends

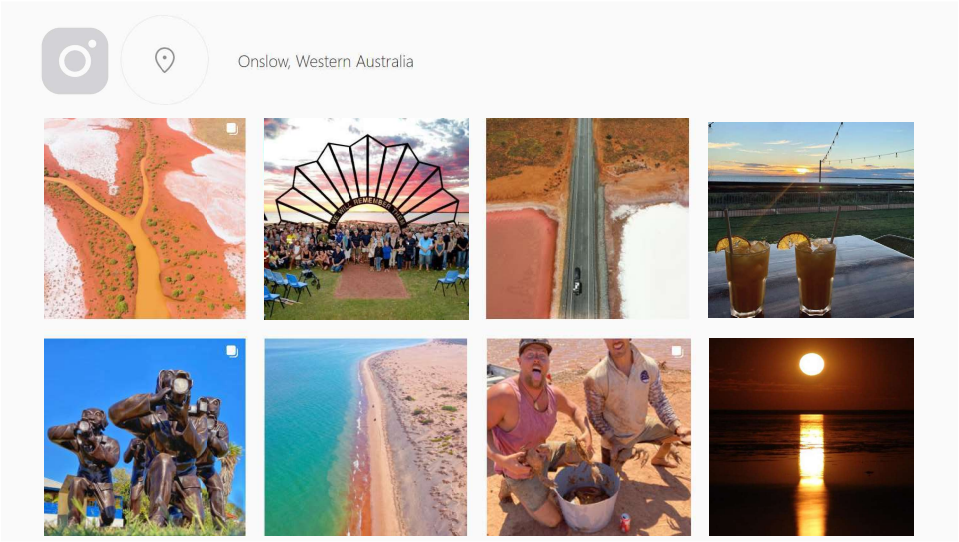
Digital Tourism

The rapid adoption of smart technology, and the growing prominence of social media, has resulted in the changing expectations and requirements of our visitors. We need to understand how they discover our area, where they go, what they ask, what they value, and how they make decisions.

Australia is now a top 10 global destination and digital technologies are increasingly used by both travel operators and consumers at all stages of the travel experience. Tourist operators all over the world have invested in cutting edge virtual reality and 360 degree mobile technologies. Consumers are increasingly planning and booking travel online and then rating their experiences. It is important that the Shire, its visitor centres, local business and operators stay abreast of the key trends in digital tourism and invest in this space to capture a greater market share as well as provide a better experience for our visitors.

Geo Tourism + Astro Tourism

Geo Tourism and Astro Tourism have been identified as an area of potential tourism development, with external stakeholders (NASA, Universities, astronomy organisations) wanting to further develop these concepts at a regional level – therefore Shire's involvement and support is crucial.



Site Photos + Surrounds

























User Groups

Grey Nomads

Mature travellers aged 55+



Mindset:

From WA travelling with a caravan and are long stay visitors.

Needs:

- Frequent spots to rest
- Accessible pedestrian connections
- Street furniture with support
- Shade
- Historic interpretation

Neighbours

Visitors from neighbouring areas



Mindset:

Residents from neighbouring areas, likely spending weekends camping in the Shire.

Needs:

- Picnic areas
- Informative place signage
- Wayfinding signage
- Historic interpretation

Families

Families travelling for holidays



Mindset:

Families from Perth and beyond, likely spending school holidays.

Needs:

- Play spaces
- Picnic areas
- Informative place signage
- Wayfinding signage
- Historic interpretation

Backpackers

Europeans travellers aged 20-34



Mindset:

Younger (20-34) international visitors, predominantly from Europe.

Needs:

- Informative place signage
- Wayfinding signage
- WIFI
- Historic interpretation

Residents

Permanent local residents



Mindset:

Travelling through town for work or community purposes.

Needs:

- Local connections and pathways
- Parks + Picnic Areas
- Places to socialise
- Meeting places
- Local significance

FIFO Workers

Semi-permanent mining workers



Mindset:

Fly in fly out workers who spend time in the town to relax and unwind.

Needs:

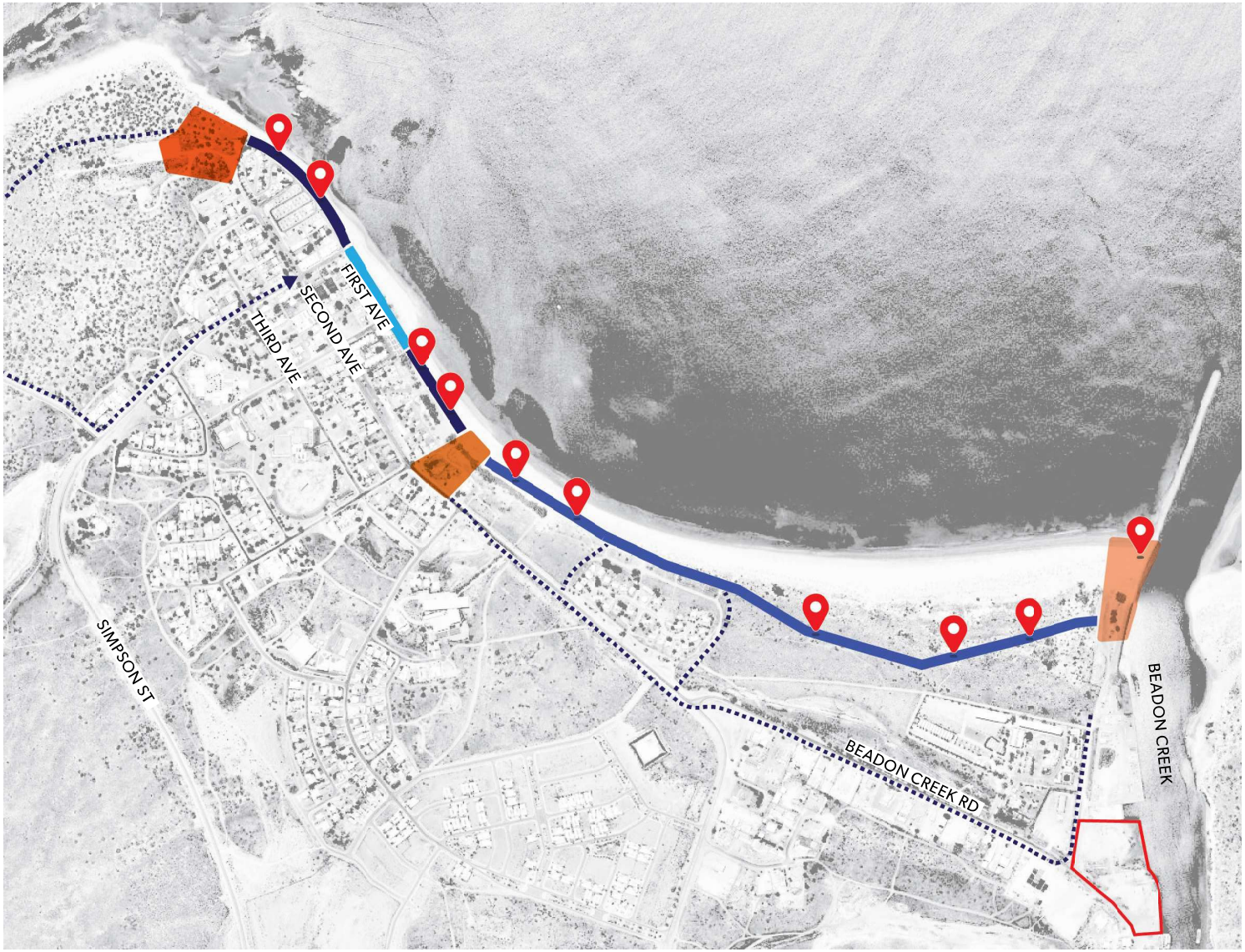
- Places to socialise
- WIFI
- Places to exercise

Overall Masterplan

KEY NODE

KEY CONNECTION

SECONDARY CONNECTION



Precedent Examples

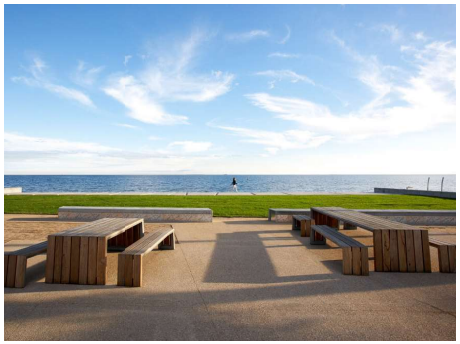
ESPERANCE WATERFRONT






ELWOOD FORESHORE






BUSSELTON WA






Concept + Thematic Planning

Establishing an overarching theme that threads along the promenade and walkways, embedding itself into the parklands, nodes and lookouts is integral to the ongoing success of the project and will be fundamental in ensuring ongoing community engagement and tourist attraction.

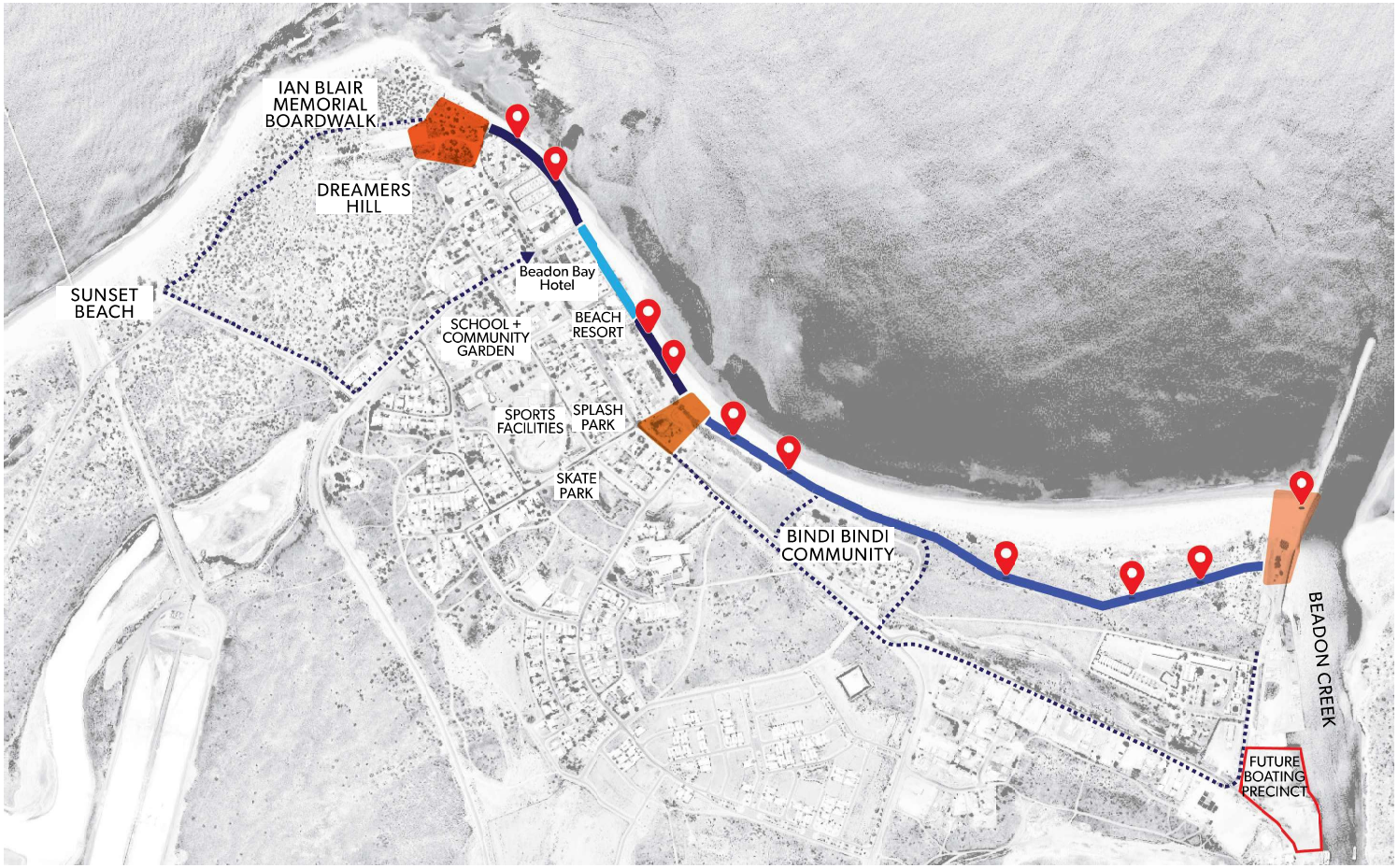
The following concept plans establish how the unique narrative of Onslow, including its rich maritime past as a pearling hub, historical presence and contemporary evolution can be entwined with the regions Living Culture as well as the distinctive ecology and landform found both inland and in the surrounding waters. The concept plans establish a framework for this narrative to be depicted and built upon through bespoke detailing and material selection as well thematic curation of elements such as playground equipment and shelters. The next stage of this project will further develop this theme ensuring complete integration of the narrative and delivering a project that is as unique as Onslow.



Mackarel islands



Pearling history



KEY:

- Memorial Parklands
- Family Parklands
- Beadon Creek Point
- Onslow Promenade
- The Backyard
- Elevated Dunescape Walk
- Existing + Future Local Pathways
- Lookout

Memorial Parkland

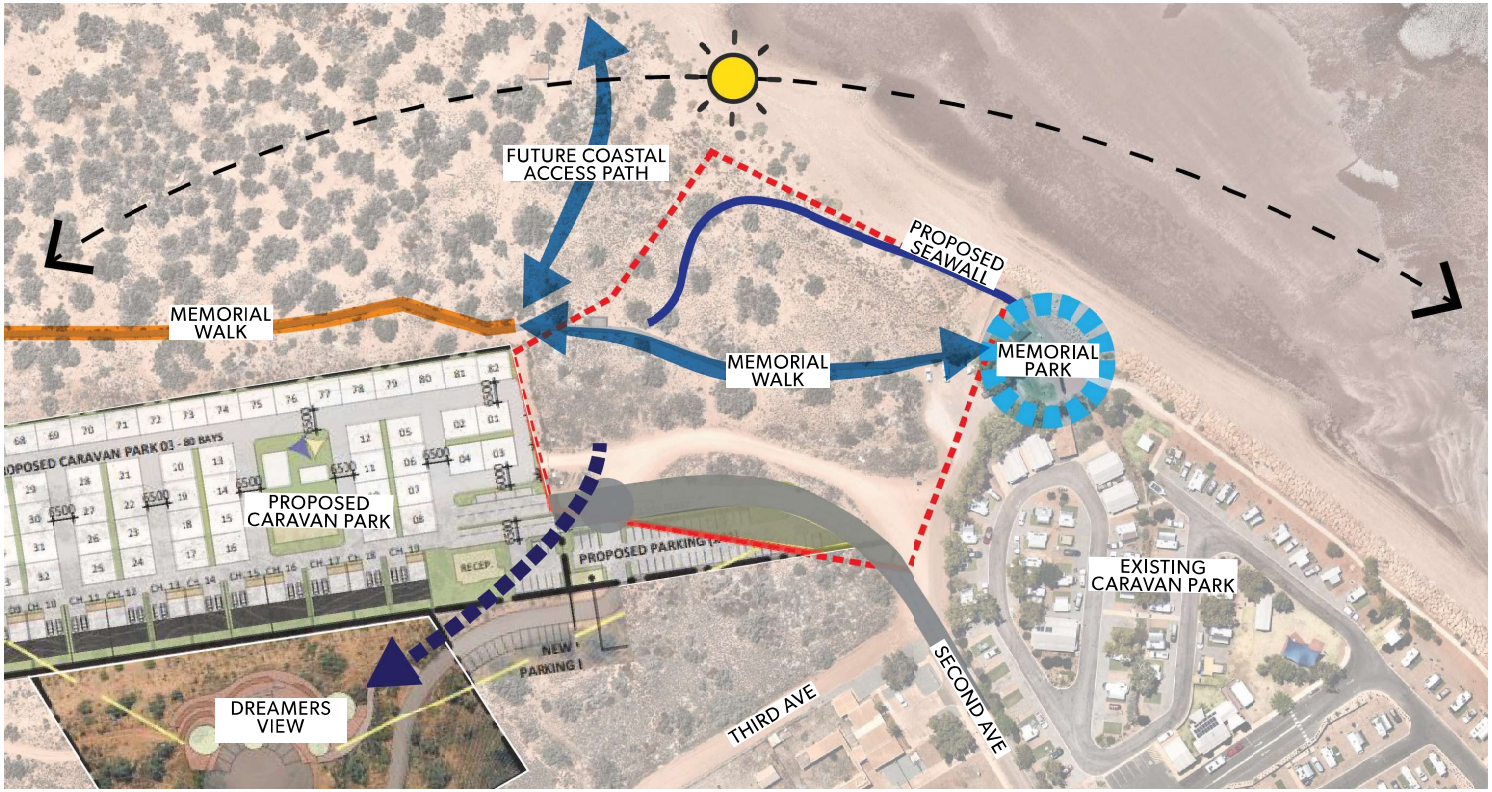
The Opportunity:

The Northern Node is a unique opportunity to create an iconic destination parkland that provides a strong connection with coast line capturing the dramatic views and the unique landscape of Onslow.

The parkland can provide a high-end setting for outdoor functions including concerts, markets, food vans and memorial ceremonies through the provision of insitu seating, stage, power connections, water and defined gathering spaces.

The inclusion of a destination all ages, all abilities playground with shade, seating and BBQ features will ensure year-round interest for both locals and visitors alike.

The concept plan will establish the framework for the parkland and establish areas where local stories and the narrative of Onslow can be embedded in the design to create a identity that resonates with the local community.



Outcomes:

- Dedicated stage and insitu amphitheatre seating
- Bespoke shade structures with integrated are work / narrative opportunities
- Tree lined extension of the Ian Blair Memorial Walk
- Provision of power, water and public amenities
- All ages, all abilities shaded playground







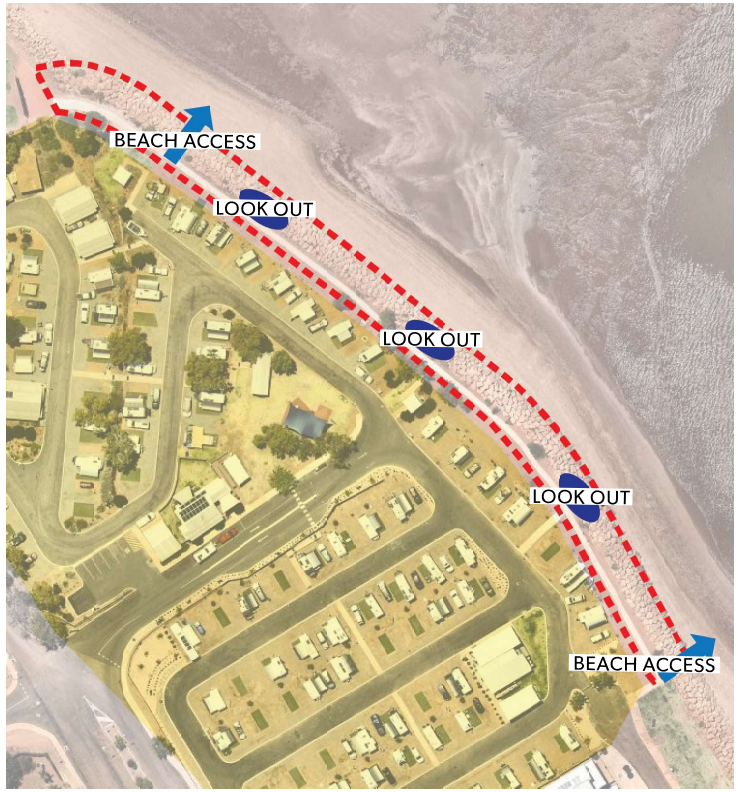
Tourist Backyard

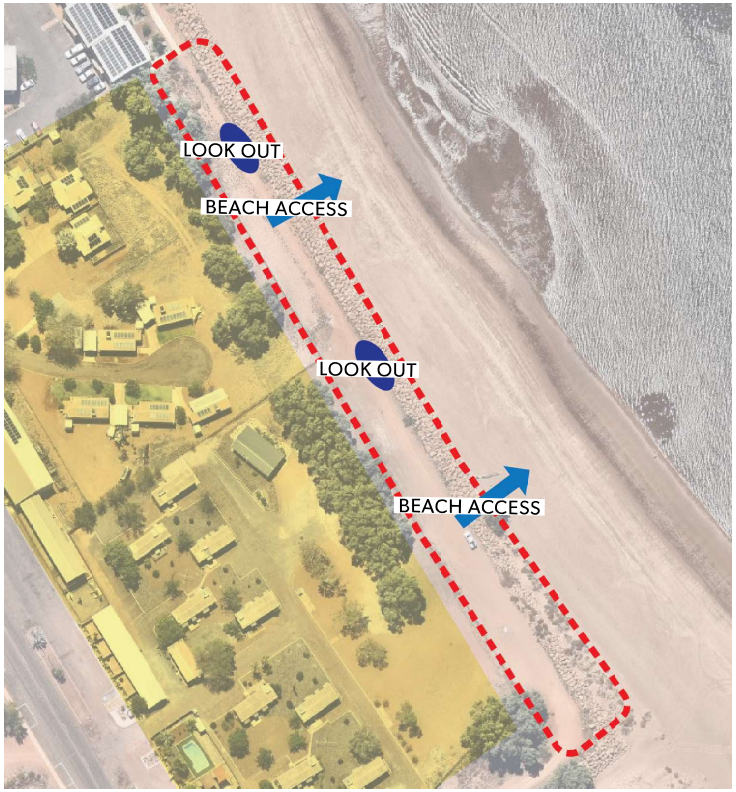
The Opportunity:

There is an opportunity to create better amenity for the existing caravan park concurrent with the proposed promenade extension from the town centre along the revetment wall to the proposed Memorial Parklands. The current height separation creates a physical and visual separation from the expansive views of Beadon Bay. The provision of seating nodes, open viewing pods and dedicated access points to the promenade and beach access will create a truly unique experience for visitors and locals. The robust materiality also presents an opportunity for celebrating the identity both historic and contemporary for the townsite through the use of bespoke finishes such as salt rock exposure or shell seeding.

Outcomes:

- Hangout spaces along the coast for visitors including seating nodes and lookout pods
- Better connectivity with the caravan park through defined ramps and stairs
- Activation of the foreshore
- Increased amenity for tourism
- Pedestrian access to foreshore
- Retained and planted edge along the caravan park better establishes access points and embeds the caravan park











Onslow Promenade

The Opportunity:

The central foreshore from the Onslow Beach resort to the northern caravan parks presents as an opportunity to create a vibrant hub of Onslow celebrating the coastal lifestyle, stunning views and public amenity that is on offer for the community and visiting tourists. The reimagined promenade will maximise the views of Beadon Bay, creating defined market, fitness and gathering nodes. The concept plan will create opportunities through material selections and finishes to entwine the local character and narrative into the site which will be further defined and detailed in the next stage of the project.

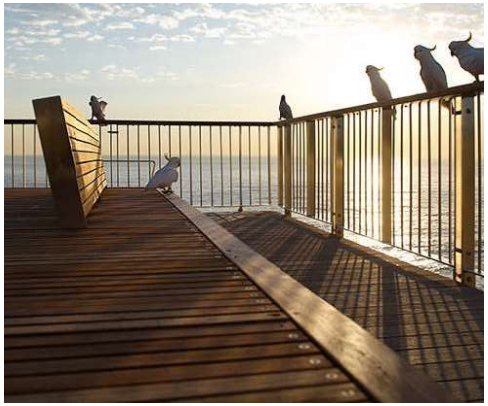
Opportunities:

- Activate the foreshore as a tourist hot spot
- Create market breakout spaces
- Capitalise on the activity coming from the beach resort
- Enhance and celebrate view lines along Simpson St and Third St to the water
- Enhance beach connections





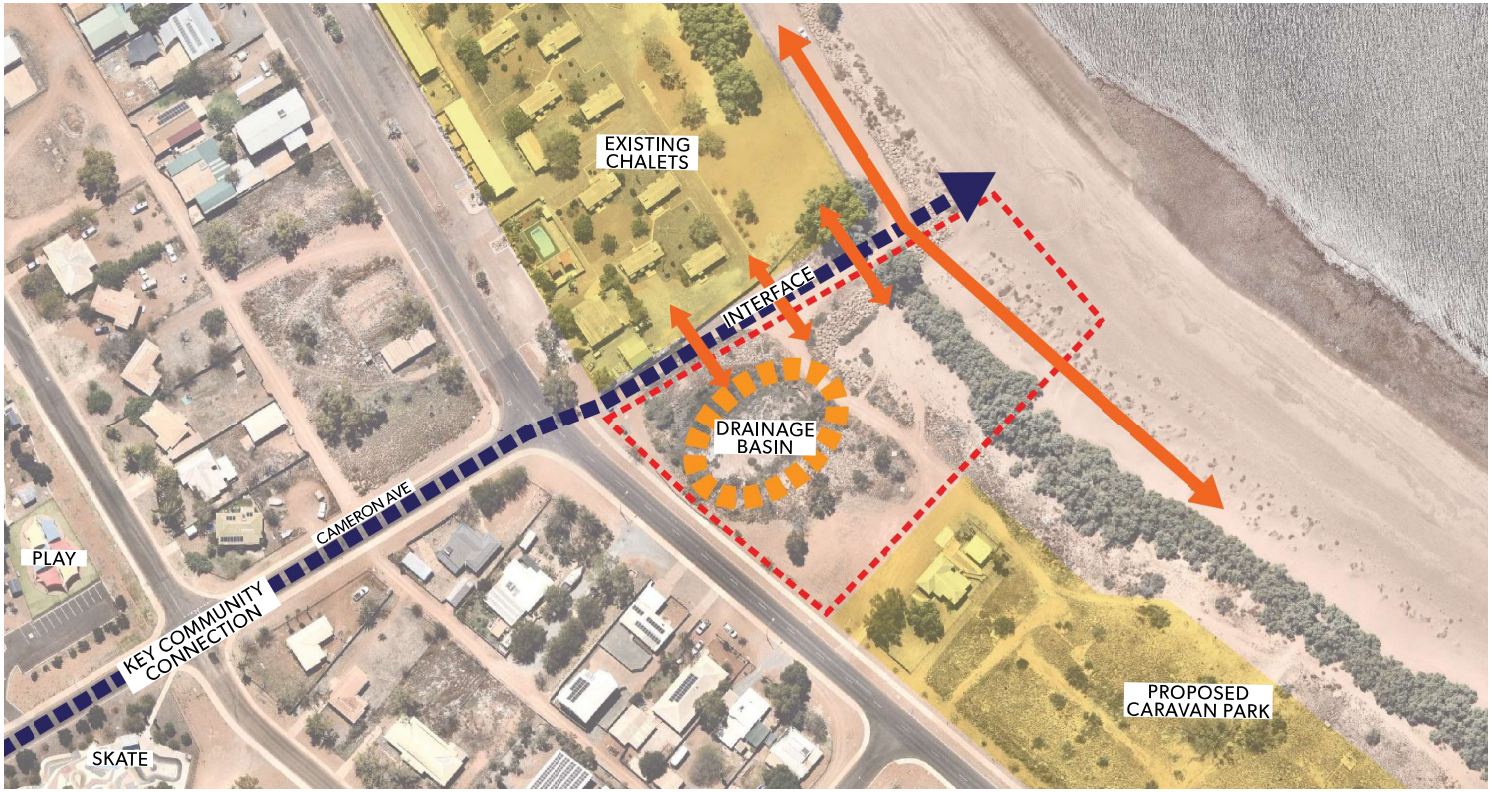




Family Parkland

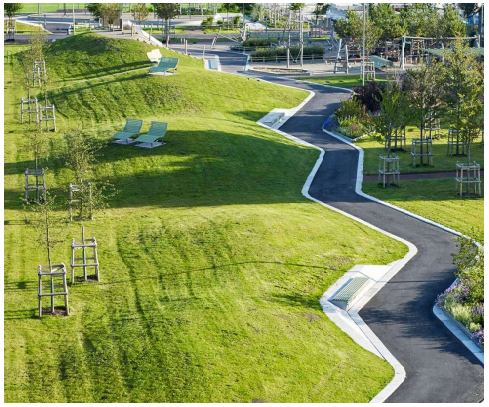
The Opportunity:

The extension of the existing seawall and the infill of the existing drainage basins creates an opportunity to nestle a family parkland between the existing Sun Chalets & proposed caravan park. The proposed pathway connections through the central parkland will connect users to the promenade extension & create a link to the community facilities via Cameron Avenue to Third Avenue. Contouring of the ground plane, careful curation of planting and the location of shade structures will define pockets for picnics, community gatherings and kick-about zones whilst creating a sense of revelation through controlled view lines and subtle manipulation of topography. The proposed lookout structure will bookend the central promenade zone and offer a point of respite capturing views over the bay.



Opportunities:

- Create community open space with direct access to the foreshore
- Use ground plane contouring and curated planting to create pockets within the greater parkland
- Bespoke shade & lookout structures embedded with local artwork and narrative
- Palm grove planting and selected species to create a unique identity to the parkland







Elevated Dunescape Walk

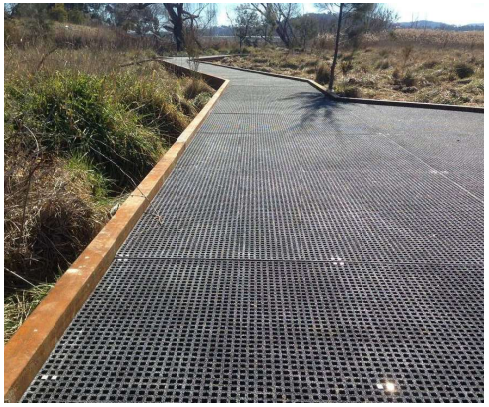
The Opportunity:

An elevated walkway through the dunal landscape of Onslow is an opportunity provide a unique sensory and education experience of not only the coastal environment of Onslow but also an opportunity to engage further with the history of stories of the Traditional Owners. Lookout nodes / shelters designed to suit the local climatic conditions create storytelling and yarning circles with star gazing opportunities. Sensitive material selection and placement of the walkway and shelters will give users the opportunity to interact with the natural environment.

Opportunities:

- Realign the track to work with natural contours and locating the shelters to be integrated sensitively into the landscape
- Create standalone lookout shelters with opportunity for local stories and star gazing
- Connection to the foreshore promenade and Beadon Creek
- Integration of local narrative & traditional stories through interpretive artwork and wayfinding to be detailed in the next stage of the project









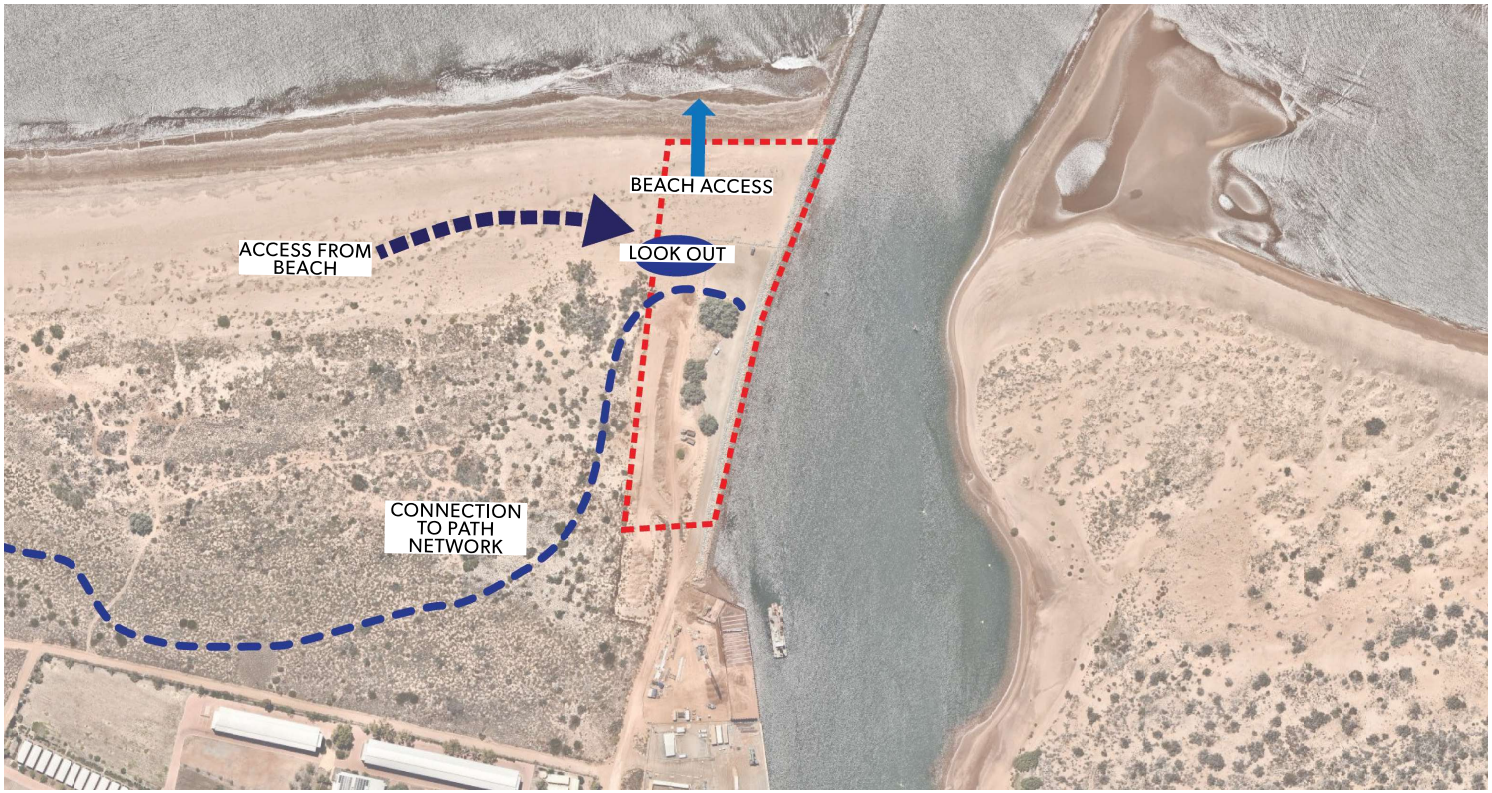
Beadon Creek Point

The Opportunity:

Located adjacent to historical shipwrecks at the entrance to Beadon Creek, the Beadon Creek Node is the final destination of the coastal walk and will provide a respite node capturing views over the river mouth offering a point of rest where users can access the beach or the walkway as their starting point of their return journey.

Opportunities:

- Interface with Beadon Creek
- Have a central connection to elevated dunescape walk
- Have a permeable edge which allows pedestrians travelling along the shoreline to enter the site
- Have beach access to the north of the site









Memorial Parkland



Memorial Parkland Vibe Imagery

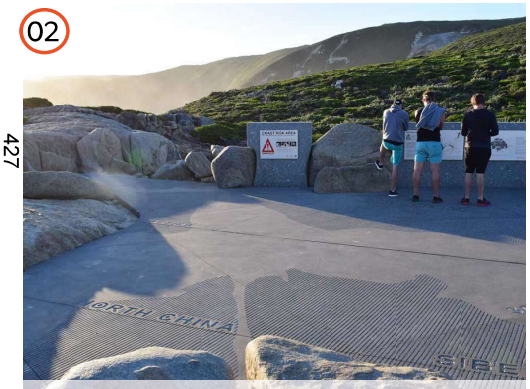


Open turf area with shade trees and designed areas for food trucks and markets along central spine & paths





Terraced seating walls capturing key site lines with graded turf to surrounding parkland



Opportunity for interpretative concrete telling stories of place





Feature concrete treatment to key paths referencing local industry & narrative with salt rock & seashell finishes



Hardy & waterwise native planting in select areas to articulate & buffer the parkland





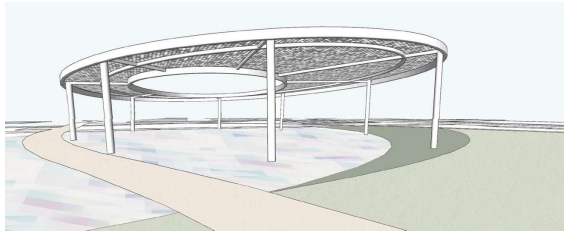
Feature Shade canopies with perforated or laser cut artwork to create dappled shade & airflow. Canopy detail will be consistent throughout the project & is an opportunity to engage with traditional owners or local arts community



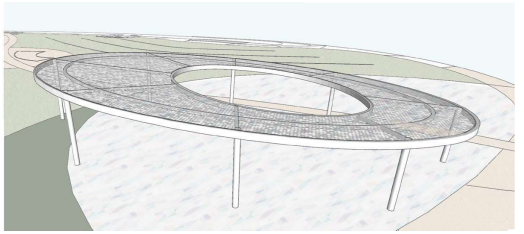
All ages, inclusive playground that features unique play elements drawing inspiration from the rich Onslow history including industrial & maritime heritage. The playground is designed to integrate with surrounding parkland and function beneath the shade structure.

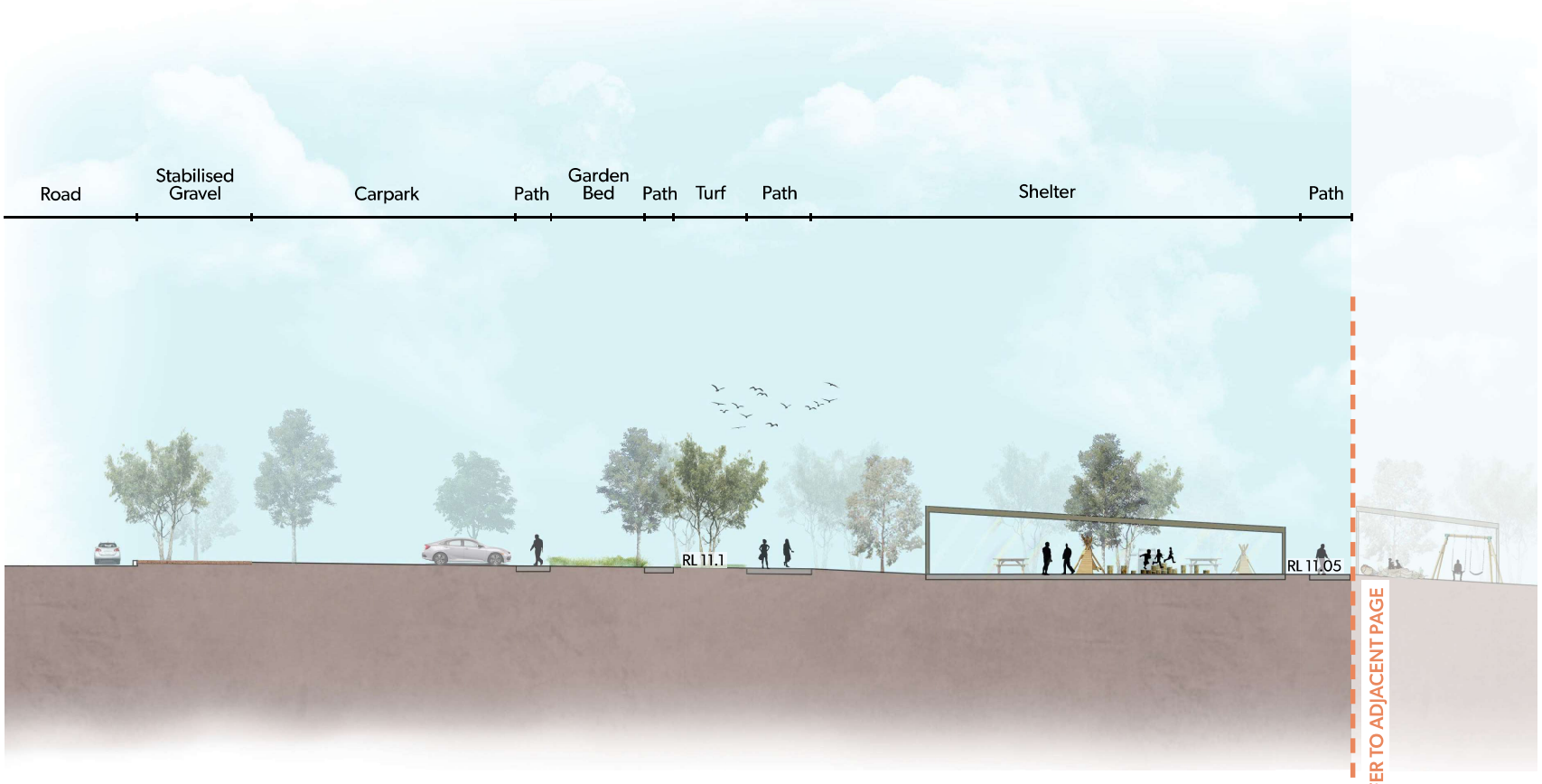
Memorial Parkland Section



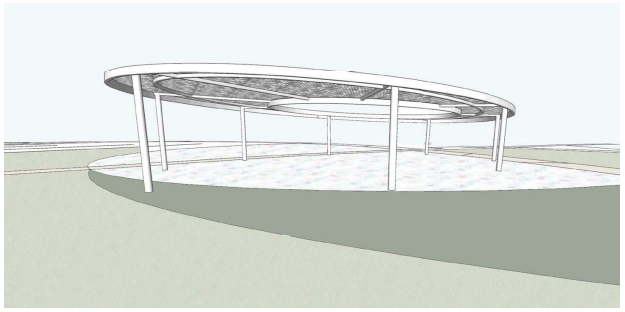


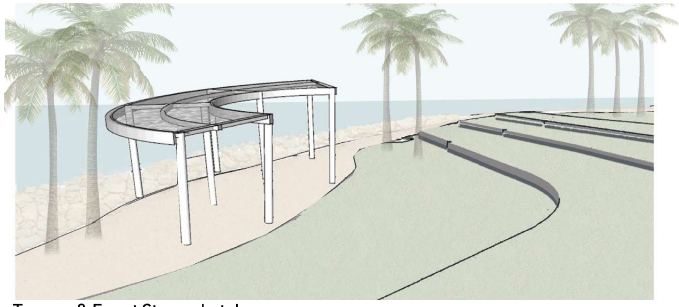
Playground shelter sketch



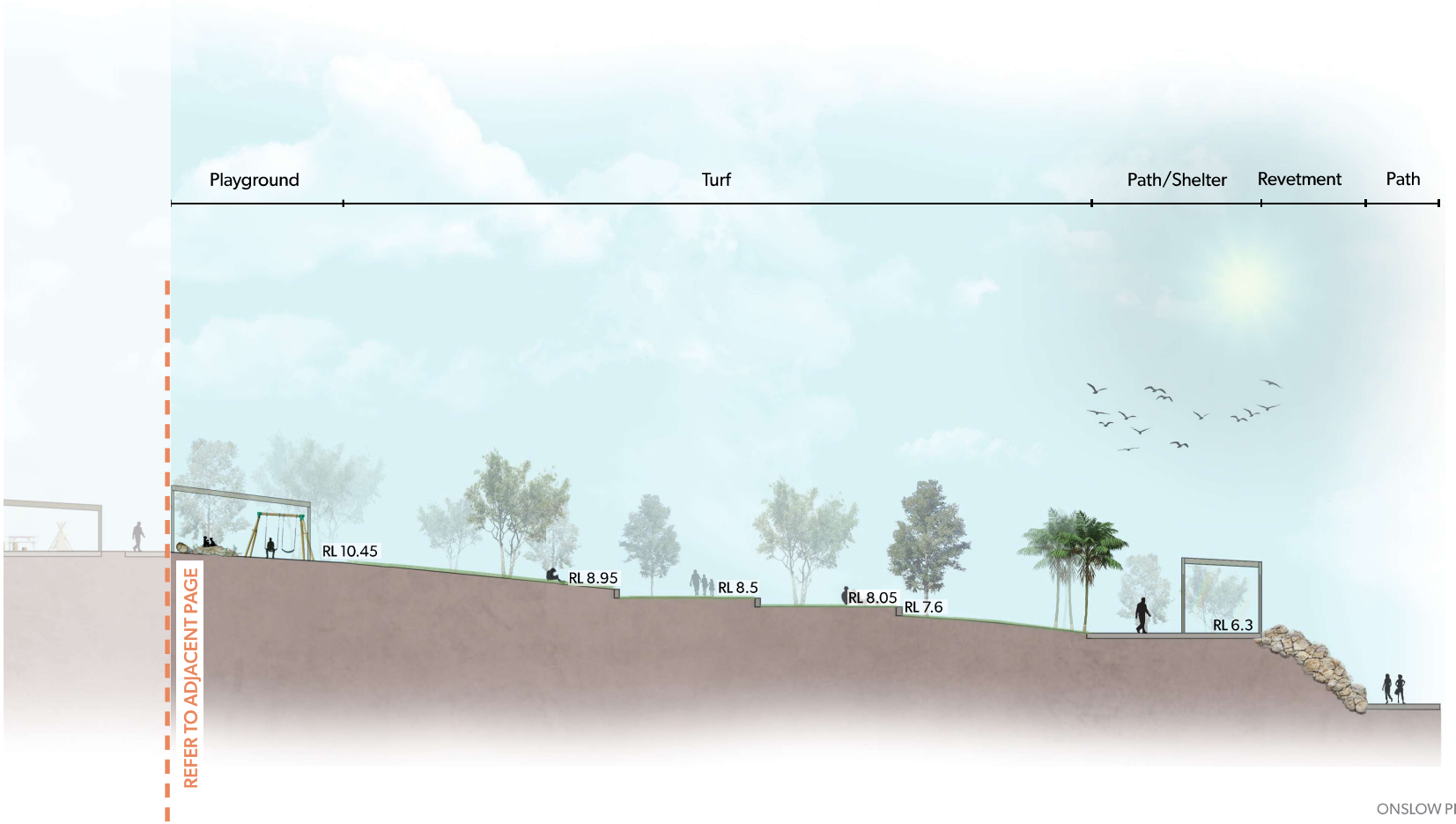


Memorial Parkland Section





Terrace & Event Stage sketch



Family Parkland

LEGEND

01 Open and undulating turf open space

02 Parallel street parking

03 Overflow parking (not in scope)

04 Palm Grove

05 Stabilised gravel with tree planting and concrete bench seating

06 Irrigated garden beds

07 Bespoke shelter with amenities & power connection

08 Drinking fountain with dog bowl along path

09 Concrete pathways with seating nodes and lined with palm trees & tropical planting

10 Seating nodes looking out towards the ocean

11 Coastal promenade

12 Coastal node lookout with a mesh platform raising over the revetment wall

13 Remnant trees and vegetation

14 Universal toilets block to match shelters



Family Parkland Vibe Imagery



Undulating open parkland sculpted to capture key sight lines


Opportunity for local art installations to be integrated within site



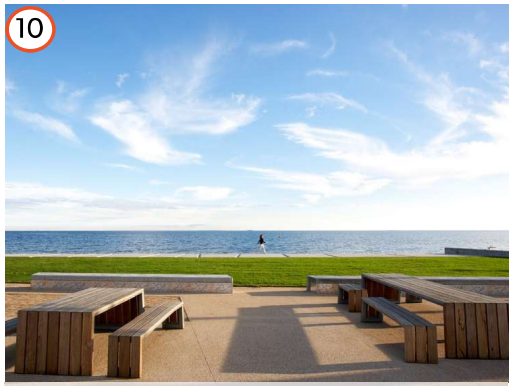
Hardy & waterwise native planting in select areas to articulate & buffer the parkland



Feature Shade canopies with perforated or laser cut artwork to create dappled shade & airflow.



Palm tree & tropical planting along key paths



Seating nodes capturing coastal views



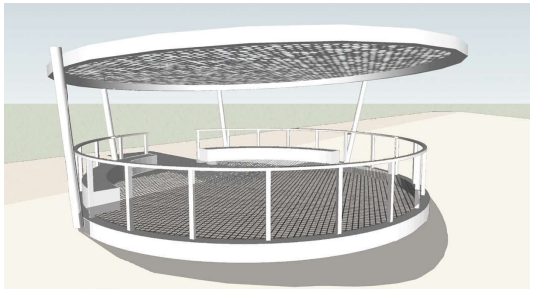
Coastal node lookout with a mesh platform raising over the revetment wall

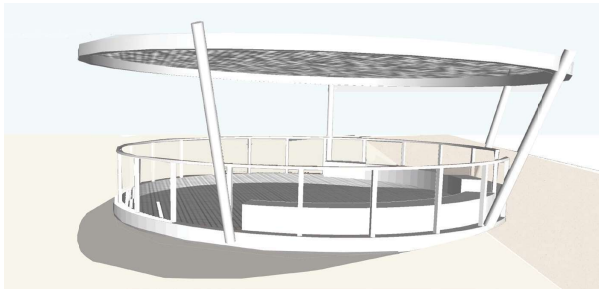


Remnant vegetation pruned and thinned out to maintain protection whilst creating view lines

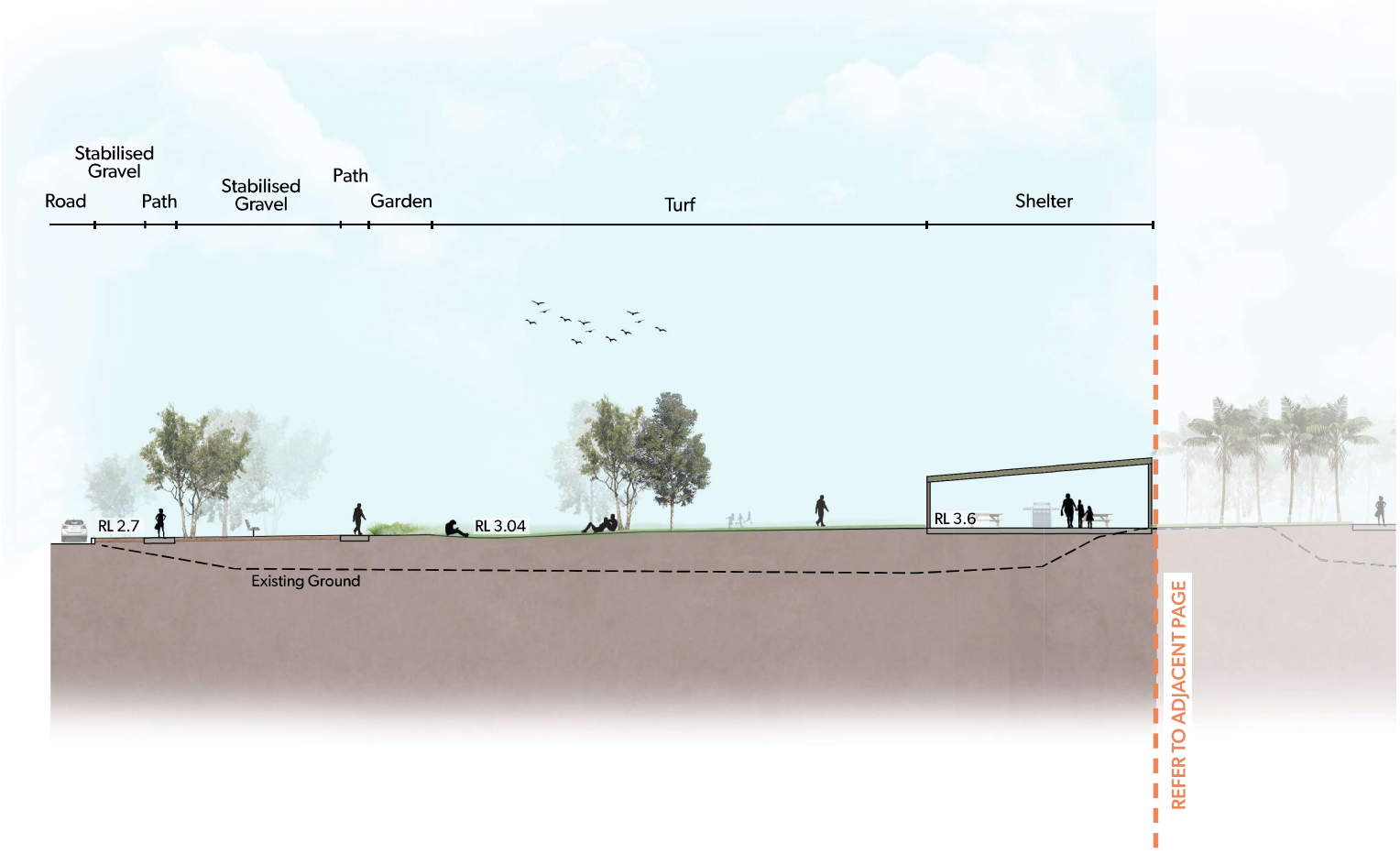

Seating & signage to use robust materials that reflect the local conditions & colour palette

Family Parkland Section





Resting shelter



Family Parkland Section



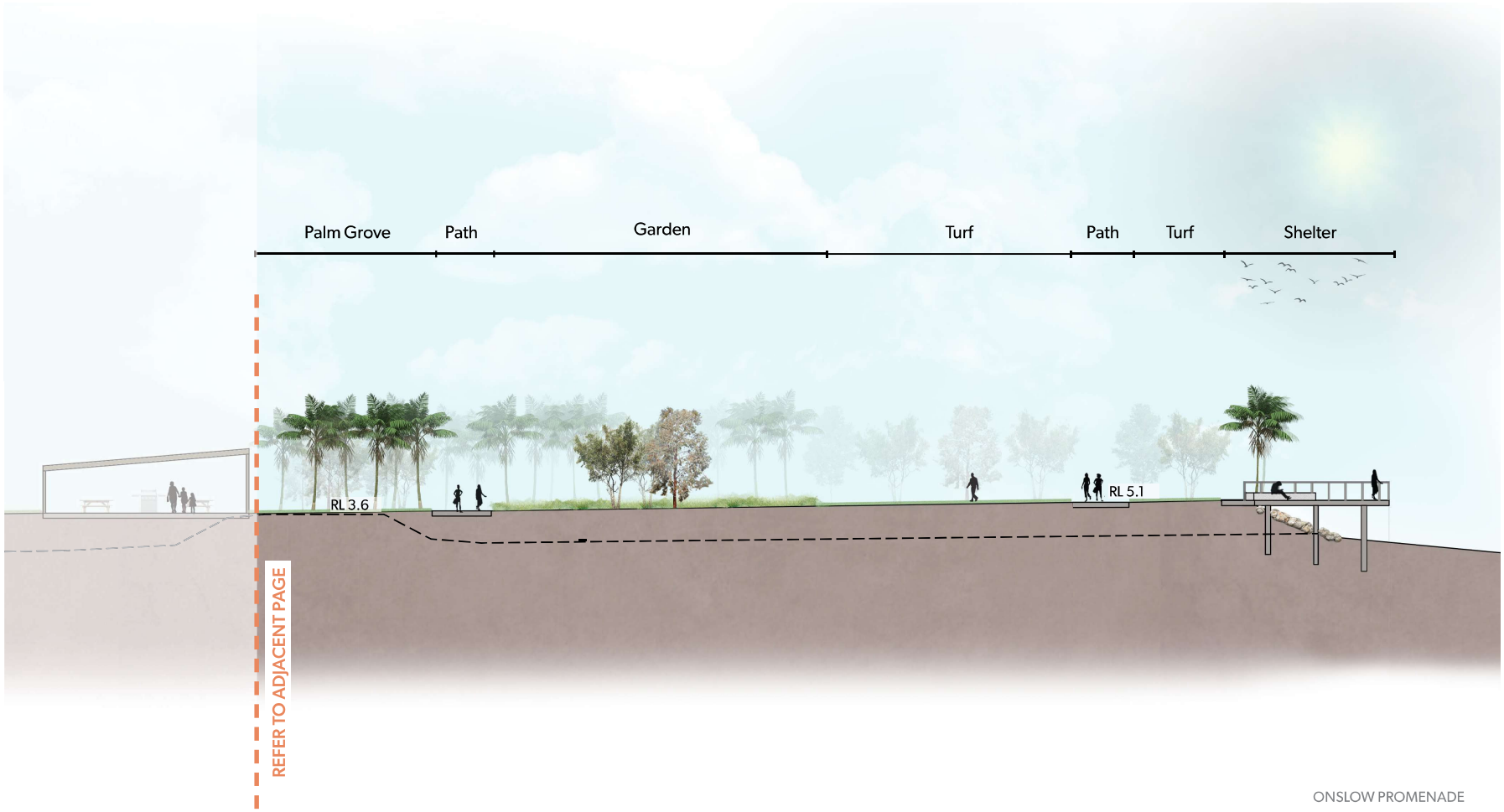
Palm Grove



Hardy & waterwise native planting in select areas to articulate & buffer the parkland



Section



Tourist Backyard



Coastal node lookout with a mesh platform raising over the revetment wall



Feature concrete treatment to key paths referencing local industry & narrative with salt rock & seashell finishes





LEGEND

01 Coastal promenade pathway - 3m wide

02 1:20 Ramp to connect into Promenade

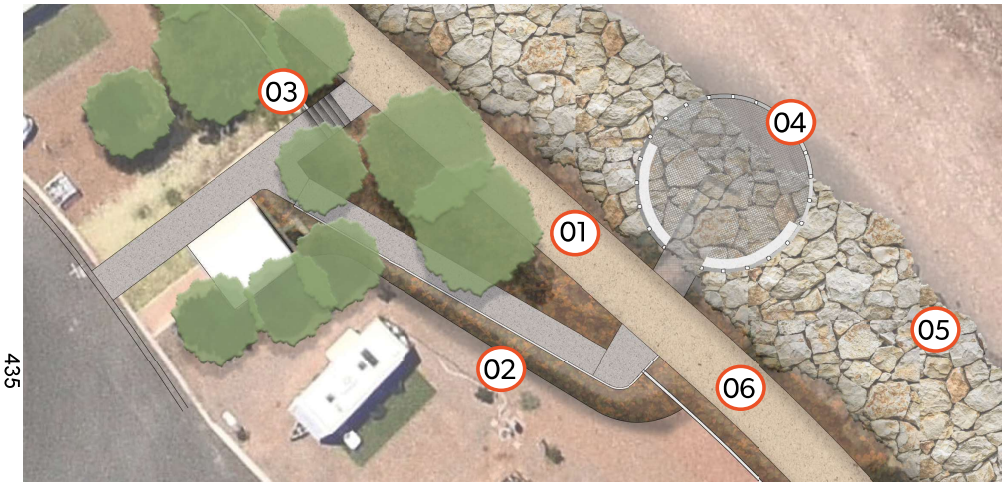
03 Stairs to maintain direct path of travel onto the Promenade

04 Coastal lookout node

05 Existing beach access stairway

06 Panel and post retaining wall

Tourist Backyard Detail Plan



LEGEND

01 Coastal promenade pathway - 3m wide

02 1:20 Ramp to connect into Promenade

03 Stairs to maintain direct path of travel onto the Promenade

04 Coastal lookout node

05 Revetment wall

06 Cycle speed calming measures



Coastal Promenade



Coastal Promenade Detail Plan



Coastal Promenade Plan

LEGEND

01 Coastal promenade pathway - 3m wide

02 Community Shelters with long table & BBQ facilities

03 Market spill out and gather zones

04 Upgraded fitness node

05 Tropical planting to reinforce resort atmosphere

06 Turf zones

Coastal Promenade Continued



Opportunity to use salvaged concrete to create path edge along main promenade





Coastal node lookout with a mesh platform raising over the revetment wall

LEGEND

01 Coastal promenade pathway - 3m wide

02 Existing vegetation underpruned and tidied with opportunity for connecting path

03 Coastal lookout node

04 Secondary path linking Family Parkland with proposed caravan park and boardwalk

05 Proposed revetment wall

06 Proposed boardwalk



Coastal Promenade Plan

Dune Boardwalk

LEGEND

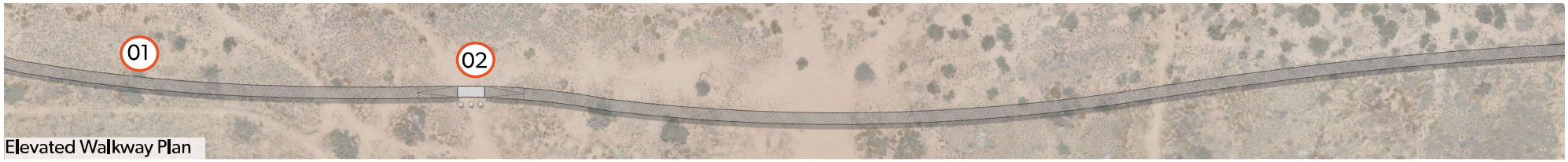
01 Elevated Boardwalk of FRP or similar with kick rail. Final location to be confirmed on site

02 Ramped access to existing ground level to maintain beach access with vehicle protection

03 Stabilised gravel pathway

04 Dune shelter node. Final location to be confirmed on site

05 Pathway to Beadon Creek



Elevated Walkway Plan

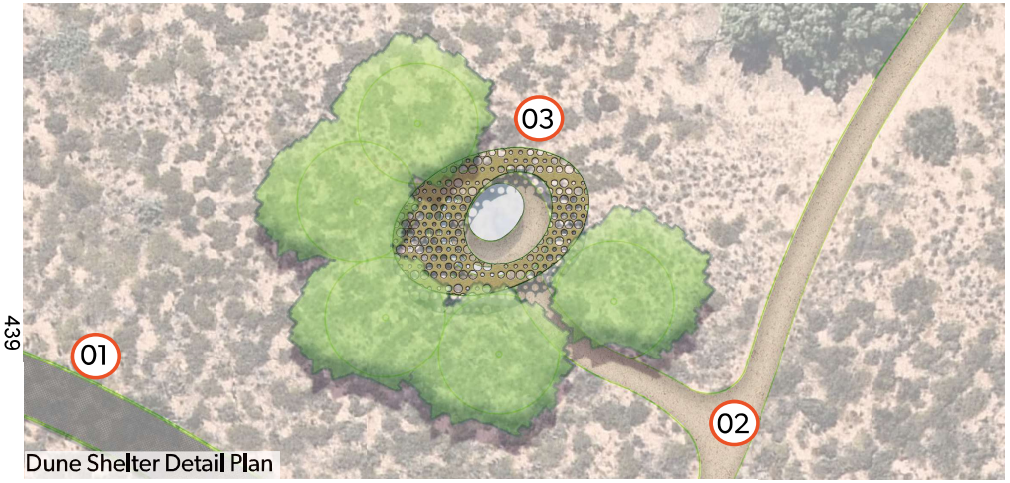


Elevated Walkway Plan



Elevated Walkway Plan

Dune Shelter Detail Plan & Section



Dune Shelter Detail Plan

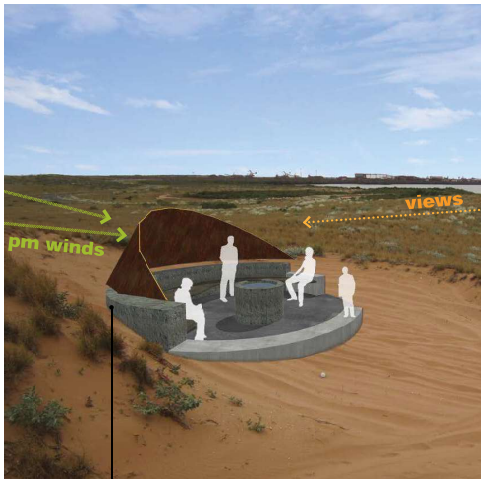
LEGEND

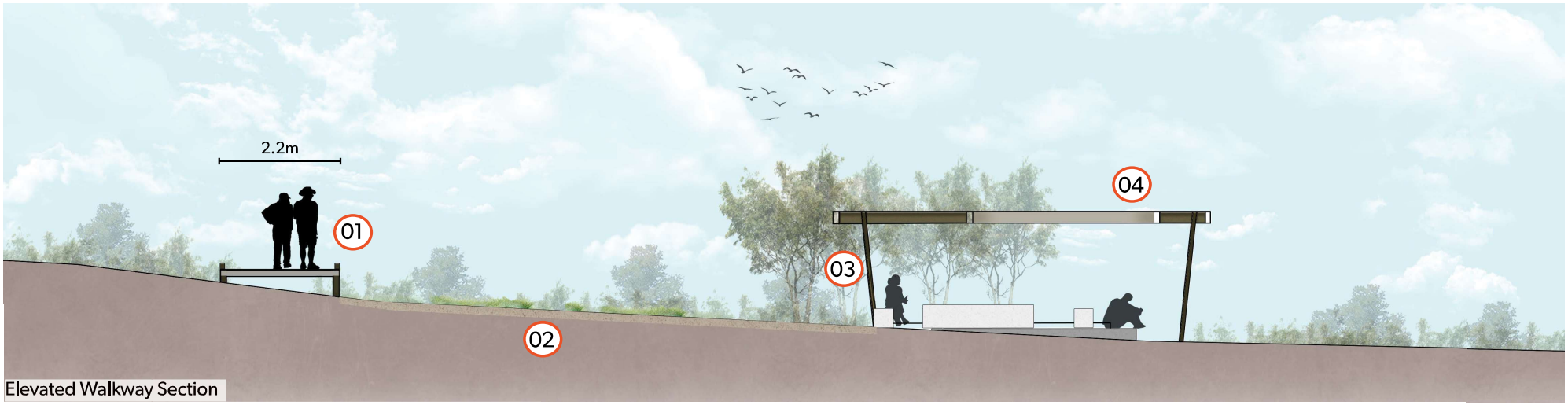
01 2.2m wide elevated Boardwalk FRP or similar with kick rail. Final location to be confirmed on site

02 Stabilised gravel pathway

03 Bespoke Dune Shelter with Interpretative wayfinding signage, integrated artwork & seating. Final location to be confirmed on site

04 Open roof for stargazing & dreamtime stories





Elevated Walkway Section

Beadon Creek Node



Existing Conditions



Existing Conditions



Coastal Shelter

LEGEND

01 Stabilised Gravel Pathway

02 Bespoke Coastal Shelter with Interpretative wayfinding signage, integrated artwork & seating. Final location to be confirmed on site

03 Existing informal carpark

04 Connection to elevated walkway

05 Beach access

06 Future pedestrian connection to future boating precinct



Beadon Creek Plan

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PLACE LABORATORY



PROPOSED ONSLOW CONFERENCE CENTRE

Onslow Conference Centre | SK00 | Cover Sheet | Rev. A

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Project No. 21094 |



VIEW TOWARDS CAFE OVER THE DREAM VIEW TERRACES. ROBUST AND LOW MAINTENANCE MATERIALS USED SUCH AS COLORBOND, ACCOYA TIMBER (50 YEAR WARRANTY) AND RAMMED EARTH. HIGH MAINTENANCE SURFACES LIKE PAINT COMPLETELY ELIMINATED



VIEW BACK TOWARDS FRONT ENTRANCE AND CAFE. BUILDING MASS HAS BEEN SCULPTED TO COMPLEMENT THE TOPOGRAPHY, TERRACING DESIGNED TO MINIMISE CIVIL WORKS AND PROVIDE AN ATTRACTIVE SETTING FOR THE CONFERENCE CENTRE.



444

SOLAR STUDY AT 5PM ON THE SUMMER SOLSTICE. NOTE THE DEEP VERANDAHS AND CAREFULLY DESIGNED SHADE STRUCTURES COMPLETELY ELIMINATE ANY DIRECT SOLAR PENETRATION TO INTERNAL AREAS. VIEW ACROSS THE GRASSED OUTDOOR FUNCTION AREA WHERE MARQUEES AND OUTDOOR CINEMA CAN BE LOCATED.



VIEW TOWARDS THE MAIN CONFERENCE CENTRE ARRIVAL AREA. COMBINATION OF PARKING AND BUS DROP OFF AREA. GUESTS CAN EITHER GO DIRECTLY INTO THE CONFERENCE CENTRE ON ARRIVAL (TO THE LEFT) OR THROUGH THE MAIN LOBBY (INDICATED BY THE RAMMED EARTH FEATURE WALL) IF THEY ARE ATTENDING MEETINGS OR FUNCTIONS IN THE SMALLER SEPERABLE SPACES.

Onslow Conference Centre | SK01 | 3D Views | Rev. A

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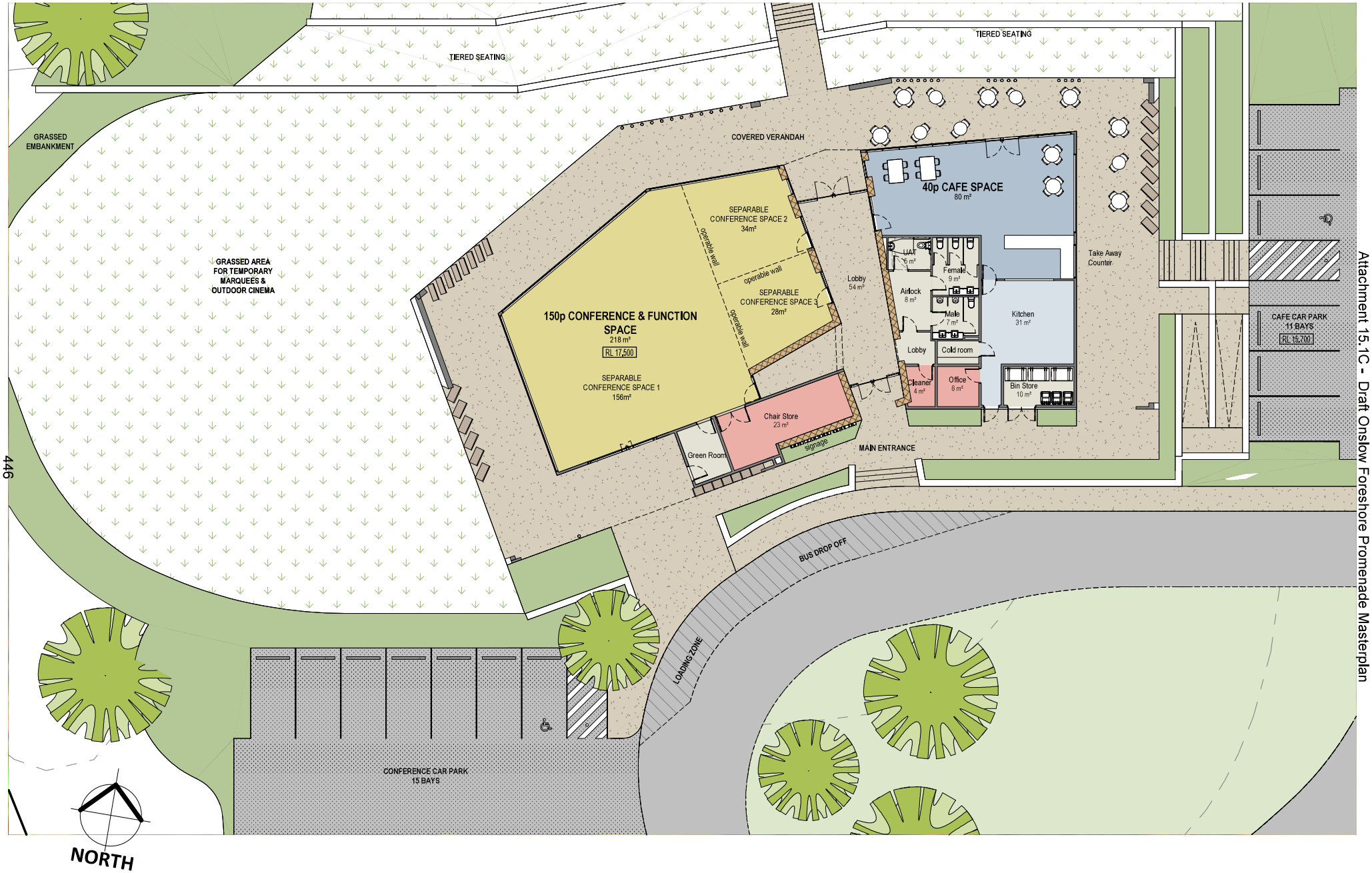
1 Site Plan

Onslow Conference Centre | SK02 | Site Plan | Rev. A

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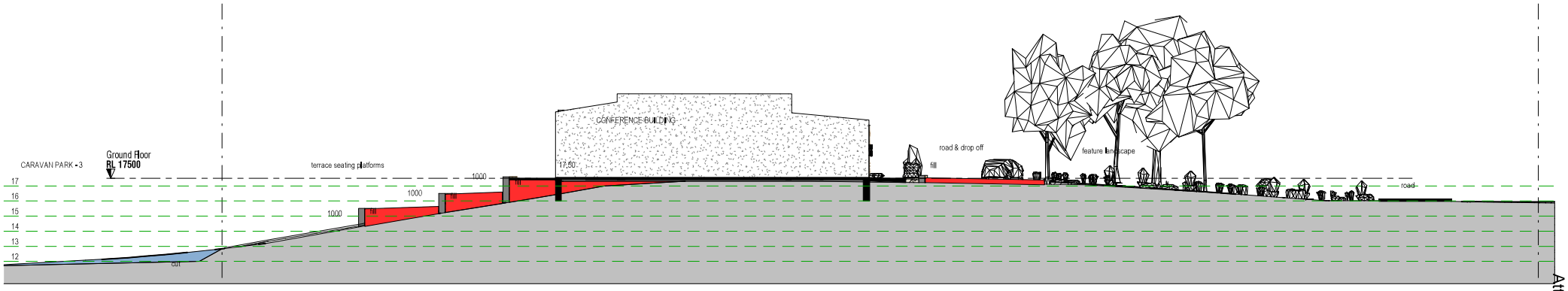
Attachment 15.1C - Draft Onslow Foreshore Promenade Masterplan

Onslow Conference Centre | SK10 | Ground Floor Plan | Rev. B

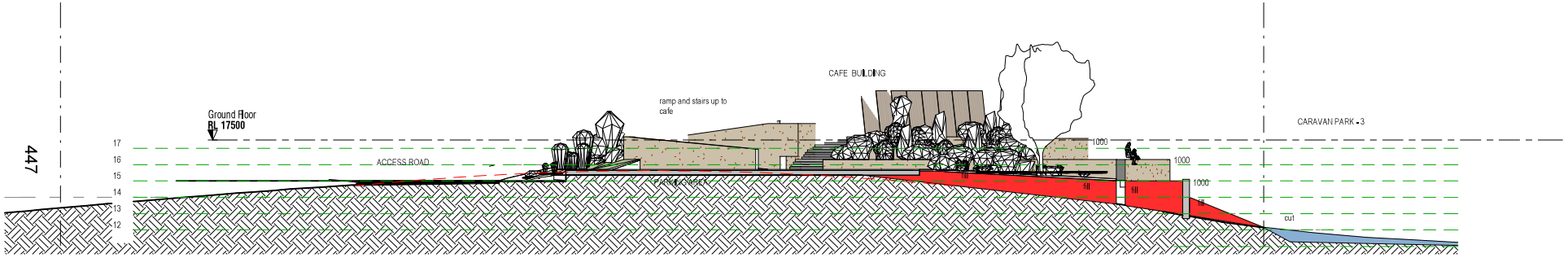
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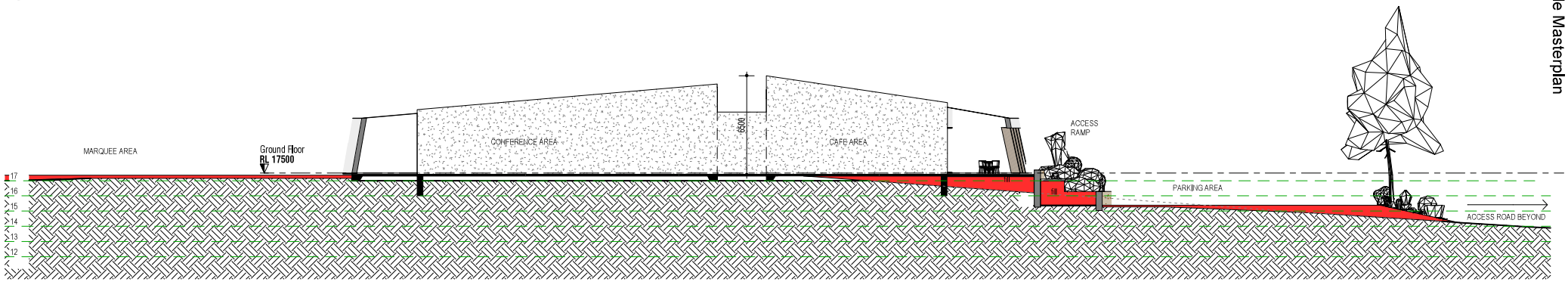
Project No. 21094 |



A Cross Section AA
1 : 250



B Section BB
1 : 250



C Section CC
1 : 250

1:250 When Printed at A3
0m 2m 5m 10m 20m

Onslow Conference Centre | SK30 | Sections |

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CAFE VIEW - DECEMBER 21ST AT 8:00AM IN THE MORNING



CAFE VIEW - DECEMBER 21ST AT 4:00PM IN THE AFTERNOON



FRONT VIEW - DECEMBER 21ST AT 8:00AM IN THE MORNING



FRONT VIEW - DECEMBER 21ST AT 4:00PM IN THE AFTERNOON

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CAFE VIEW - DECEMBER 21ST AT 8:00AM IN THE MORNING



CAFE VIEW - DECEMBER 21ST AT 4:00PM IN THE AFTERNOON



FRONT VIEW - DECEMBER 21ST AT 8:00AM IN THE MORNING



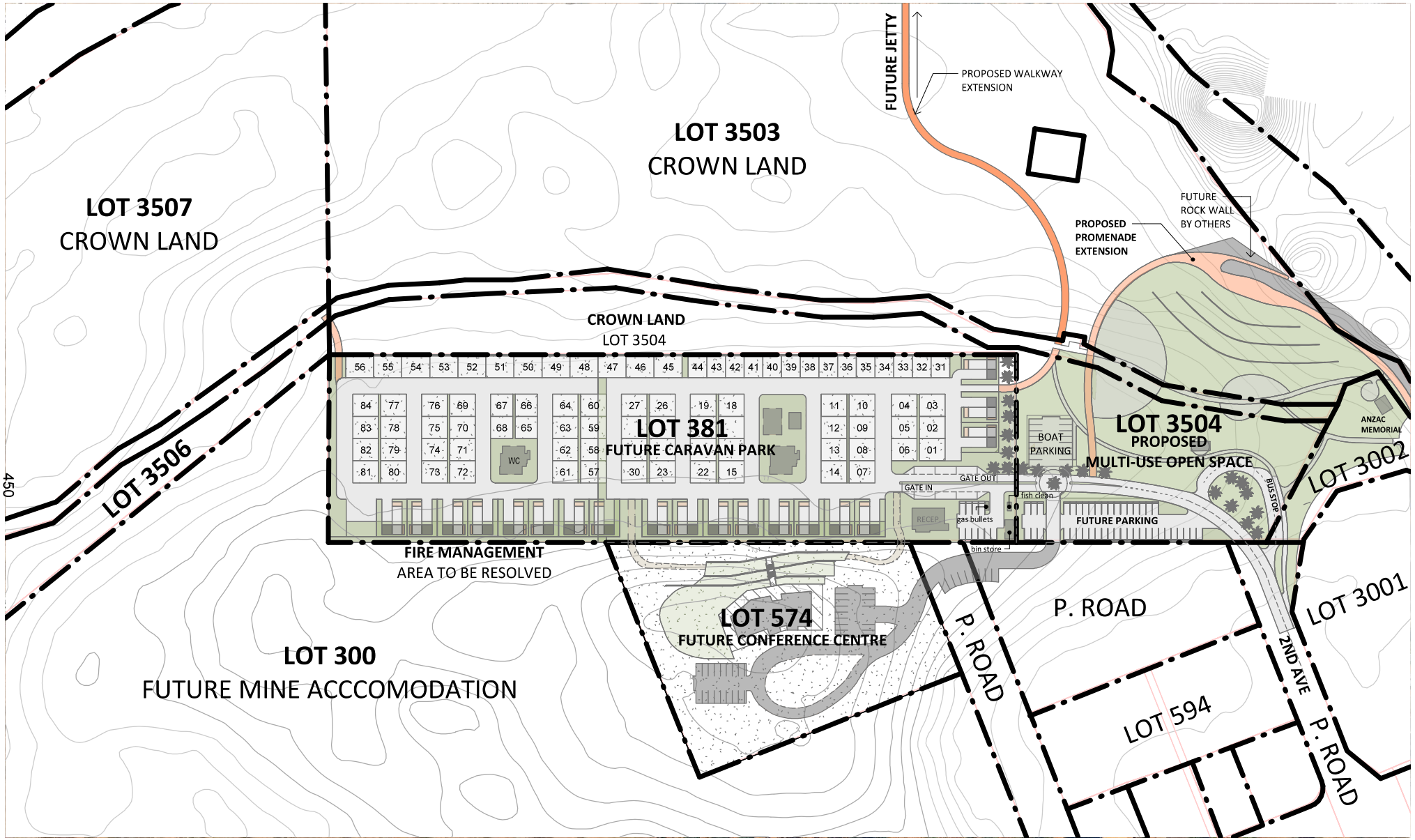
FRONT VIEW - DECEMBER 21ST AT 4:00PM IN THE AFTERNOON

Onslow Conference Centre | SK90 | Solar Study Perspectives | Rev. B

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Project No. 21094 |



1 MEMORIAL PRECINCT Development Master plan

1 : 1500

1:1500 when printed at A3

0m 10m 20m 60m 100m

N

WHITEHAUS
architecture | interior design | drafting
995 Hay Street PERTH 6000 | (08) 9226 3236
admin@whitehaus.com.au | ABN: 66 159 398 428

REV	DESCRIPTION	DATE
A	For Client Approval	12/01/22

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CLIENT Shire of Ashburton

PROJECT ADDRESS Lot 381 and 574, Onslow, WA 6710

DRAWING TITLE Development Master Plan

PROJECT TITLE Onslow POS and CP3

DRAWN: MB

APPROVED: GA

PROJECT No. 21066

SCALE @ A3: 1 : 1500

DRAWING No. A000

REV A

Attachment 15.1C - Draft Onslow Foreshore Promenade Masterplan

15.1D – Draft Onslow Foreshore Promenade Masterplan



ONSLOW FORESHORE

ORDER OF MAGNITUDE COST ESTIMATE

SHIRE OF ASHBURTON

RALPH & BEATTIE BOSWORTH PTY LTD
10 DECEMBER 2021

Celebrating over 50 Years

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PH: (08) 9321 2777

MELBOURNE
7/53 COPPIN ST RICHMOND VIC 3121
PH: (03) 8548 7888

Onslow Areas

Onslow Foreshore - Copy

SUMMARY

Quantity Surveyors & Cost Consultants

REF	DESCRIPTION				TOTAL $
1	**Onslow Foreshore**				
2	Memorial Parkland	14,686	m2	683.30	10,035,000
3	Family Parkland	13,297	m2	461.76	6,140,000
4	Tourist Backyard	3,043	m2	647.39	1,970,000
5	Coastal Promenade	20,984	m2	217.55	4,565,000
6	Dune Boardwalk	5,287	m2	1,510.31	7,985,000
7	Beadon Creek Node	579	m2	820.38	475,000
8	Public Art	1	Item		250,000
9	**Project Cost**				**31,420,000**
10	**Notes**				
11	All costs have been escalated to commencement circa January 2023				Note
12	Seawall costs -excluded (undertaken by other project)				Excluded
13	Costs Exclude GST				Excluded

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

RBB
Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Memorial Parkland				
	Site Preparation				
14	Demolition	1	Item		15,000
15	Clearance	14,686	m2	7.50	110,145
16	Cut to fill	10,000	m2	100.00	1,000,000
17	Seawall	170	m	0.00	EXCLUDED
18	Retaining walls	76	m	2,300.00	174,800
19	Water Supply	1	Item	20,000.00	20,000
20	Power Supply	1	Item	25,000.00	25,000
21	Sewer Waste	1	Item	20,000.00	20,000
	Structures and Landscaping				
22	1. Access Path Exposed (Shells, and salt rock)	873	m2	225.00	196,425
23	2. Event Stage	77	m2	3,750.00	288,750
24	3. Terrraced Seating walls (limestone block or similar)	207	m	1,250.00	258,750
25	4.Turf	7,321	m2	124.75	913,295
26	5. Canopy and playground	574	m2	2,500.00	1,435,003
27	6.Open Playgorund, BBQ, Seating	626	m2	1,000.00	625,999
28	7. Boardwalk and tree planting	552	m2	1,500.00	828,002
29	8. Shoreline Access	71	m2	500.00	35,500
30	9. Existing Vegetation retained and protected	1	Item		15,000
31	10. Irrigated Areas	1,180	m2	150.00	177,000
32	11. Shelter and Amenities	278	m2	1,900.00	528,201
33	12. Existing Anzac memorial (remove, store and reinstall)	1	Item	40,000.00	40,000
34	13.Bus Drop off loop	491	m2	300.00	147,300
35	14. Gravel and Tree Planting	905	m2	233.23	211,075
36	15. Toilet Blocks	57	m2	7,000.00	399,000
37	16.Parking	353	m2	300.00	105,900
38	17. Future acess to lot 300		note		Excluded
39	**Subtotal**				**7,570,145**
40	Design Contingency	5	%		378,507
41	Construction Contingency	7.5	%		596,149
42	Client Contingency and Costs				Excluded
43	ESD (PV Cells, etc)				Excluded

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

RBB
Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Memorial Parkland (Cont'd)				
44	Staging Requirements				n/a
	Headworks				
45	- Western Power	1	Item		20,000
46	- Water Corp	1	Item		20,000
47	Building Act Compliance	0.25	%		19,872
48	Artwork				Excluded
49	Land costs	1			Excluded
50	Professional Fees and disbursements; allowance	8.5	%		731,397
51	Disbursements	1.5	%		131,938
52	**Gross Project Cost (At Current Prices)**				**9,468,008**
53	Escalation to Tender (6 Months)	6	%		566,992
54	**ESTIMATED TOTAL COMMITMENT (excl GST)**				**10,035,000**
	Subtotal - Memorial Parkland				**10,035,000**
	Family Parkland				
	Site Preparation				
55	*Demolition*	1,000	m2	50.00	50,000
56	Celarance	13,297	m2	15.00	199,455
57	*Cut to fill*	13,297	m2	50.00	664,850
58	Seawall	65	m		Excluded
59	Water Supply	1	Item	25,000.00	25,000
60	Power Supply	1	Item	30,000.00	30,000
61	Sewer Waste	1	Item	25,000.00	25,000
	Structures and Landscaping				
62	1.Turf	4,037	m2	124.75	503,616
63	2.Parallel Street Parking	254	m2	300.00	76,200
64	3.Overflow parking	1,007	m2	300.00	302,100
65	4.Palm Grove	806	m2	300.00	241,802
66	5. Gravel and tree	212	m2	233.23	49,445
67	6.Irrigated Garden Beds	1,573	m2	150.00	235,950
68	7.Amenities	264	m2	4,050.00	1,069,200
69	8.Drinking fountain and Dog Bowl	1	No	15,000.00	15,000
70	9.Concrete Pathways (Shells, and salt rock)	779	m2	225.00	175,275

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

RBB
Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Family Parkland (Cont'd)				
71	10.Seating Nodes	4	No	8,100.00	32,400
72	11.Coastal promenade	463	m2	225.00	104,175
73	12.Coastal Node lookout	67	m2	4,500.00	301,500
74	13.Remnant Trees and Vegetation	2,878	m2	80.00	230,240
75	14.Toilet Blocks	37	m2	7,000.00	259,000
76	Sundry seating and metalworks	1	Item	30,000.00	30,000
77	**Subtotal**				**4,620,208**
78	Design Contingency	5	%		231,010
79	Construction Contingency	7.5	%		363,841
80	Client Contingency and Costs				Excluded
81	ESD (PV Cells, etc)				Excluded
82	Staging Requirements				n/a
	Headworks				
83	- Western Power	1	Item		20,000
84	- Water Corp	1	Item		20,000
85	Building Act Compliance	0.25	%		12,128
86	Artwork				Excluded
87	Land costs	1			Excluded
88	Professional Fees and disbursements; allowance	8.5	%		447,711
89	Disbursements	1.5	%		79,103
90	**Gross Project Cost (At Current Prices)**				**5,794,002**
91	Escalation to Tender (6 Months)	6	%		345,998
92	**ESTIMATED TOTAL COMMITMENT (excl GST)**				**6,140,000**
	Subtotal - Family Parkland				**6,140,000**
	Tourist Backyard				
	Site Preparation				
93	Demolition	3,043	m2	20.00	60,860
94	Celarance	3,043	m2	15.00	45,645
95	Cut to fill	3,043	m2	15.00	45,645
96	Seawall	226	m		Excluded
97	Power Supply	1	Item	25,000.00	25,000
	Structures and Landscaping				

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

RBB
Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Tourist Backyard (Cont'd)				
98	1. Coastal Promenade	749	m2	225.00	168,525
99	2.Ramp to Promenade	34	m2	570.00	19,380
100	3. Stairs	24	m2	900.00	21,600
101	4. Coastal Lookout Node	200	m2	4,500.00	900,000
102	6. Panel wall and post	112	m	1,800.00	201,600
103	**Subtotal**				**1,488,255**
104	Design Contingency	5	%		74,413
105	Construction Contingency	7.5	%		117,200
106	Client Contingency and Costs				Excluded
107	ESD (PV Cells, etc)				Excluded
108	Staging Requirements				n/a
109	Building Act Compliance	0.25	%		3,907
110	Artwork				Excluded
111	Land costs	1			Excluded
112	Professional Fees and disbursements; allowance	8.5	%		143,121
113	Disbursements	1.5	%		28,685
114	**Gross Project Cost (At Current Prices)**				**1,855,580**
115	Escalation to Tender (6 Months)	6	%		114,420
116	**ESTIMATED TOTAL COMMITMENT (excl GST)**				**1,970,000**
	Subtotal - Tourist Backyard				**1,970,000**
	Coastal Promenade				
	Site Preparation				
117	Demolition	1	Item		35,000
118	Celarance	13,364	m2	10.00	133,640
119	Cut to fill	13,364	m2	5.00	66,820
120	Seawall	935	m		Excluded
121	Power Supply	1	Item	25,000.00	25,000
	Structures and Landscaping				
122	1.Coastal Promenade	3,015	m2	225.00	678,375
123	2. Community Shelters, BBQ, Table	218	m2	2,491.97	543,250
124	2. Existing Vegetation tidied up	4,010	m2	10.00	40,100
125	3.Coastal Lookout node	235	m2	4,500.00	1,057,500

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

RBB
Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Coastal Promenade (Cont'd)				
126	4. Fitness Node	209	m2	1,000.00	209,001
127	5.Tropical Planting	964	m2	182.78	176,200
128	6.Turf Zones	3,160	m2	124.75	394,210
129	Capark	268	m2	300.00	80,400
130	**Subtotal**				**3,439,496**
131	Design Contingency	5	%		171,975
132	Construction Contingency	7.5	%		270,860
133	Client Contingency and Costs				Excluded
134	ESD (PV Cells, etc)				Excluded
135	Staging Requirements				n/a
	Headworks				
136	- Water Corp	1	Item		20,000
137	Building Act Compliance	0.25	%		9,029
138	Artwork				Excluded
139	Land costs	1			Excluded
140	Professional Fees and disbursements; allowance	8.5	%		332,466
141	Disbursements	1.5	%		62,327
142	**Gross Project Cost (At Current Prices)**				**4,306,152**
143	Escalation to Tender (6 Months)	6	%		258,848
144	**ESTIMATED TOTAL COMMITMENT (excl GST)**				**4,565,000**
	Subtotal - Coastal Promenade				**4,565,000**
	Dune Boardwalk				
	Site Preparation				
145	Clearance	7,062	m2	10.00	70,620
146	Cut to fill	6,837	m2	10.00	68,370
	Structures and Landscaping				
147	6.Boardwalk	5,014	m2	1,138.63	5,709,066
148	Dune Shelter, signage, artwork and seating	58	m2	4,200.00	243,600
149	Gravel Pathway	196	m2	87.00	17,052
150	**Subtotal**				**6,108,708**
151	Design Contingency	5	%		305,435
152	Construction Contingency	7.5	%		481,061

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

RBB
Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Dune Boardwalk (Cont'd)				
153	Client Contingency and Costs				Excluded
154	ESD (PV Cells, etc)				Excluded
155	Staging Requirements				n/a
156	Building Act Compliance	0.25	%		16,035
157	Artwork				Excluded
158	Land costs	1			Excluded
159	Professional Fees and disbursements; allowance	7.5	%		518,343
160	Disbursements	1.5	%		106,485
161	**Gross Project Cost (At Current Prices)**				**7,536,067**
162	Escalation to Tender (6 Months)	6	%		448,933
163	**ESTIMATED TOTAL COMMITMENT (excl GST)**				**7,985,000**
	Subtotal - Dune Boardwalk				**7,985,000**
	Beadon Creek Node				
	Site Preparation				
164	Clearance	579	m2	25.00	14,475
165	Cut to fill	579	m2	50.00	28,950
	Structures and Lanscaping				
166	1.Gravel Pathway	520	m2	87.00	45,240
167	2.Shelter with, Signage, artwork, seating	59	m2	4,500.00	265,500
168	**Subtotal**				**354,165**
169	Design Contingency	5	%		17,708
170	Construction Contingency	7.5	%		27,890
171	Client Contingency and Costs				Excluded
172	ESD (PV Cells, etc)				Excluded
173	Staging Requirements				n/a
174	Building Act Compliance	0.25	%		930
175	Artwork				Excluded
176	Land costs	1			Excluded
177	Professional Fees and disbursements; allowance	8.5	%		37,520
178	Disbursements	1.5	%		8,809
179	**Gross Project Cost (At Current Prices)**				**447,023**
180	Escalation to Tender (6 Months)	6	%		27,977

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Onslow Areas
Onslow Foreshore - Copy
MAIN ESTIMATE

Quantity Surveyors & Cost Consultants

REF	DESCRIPTION	QTY	UNIT	RATE $	TOTAL $
	Beadon Creek Node (Cont'd)				
181	**ESTIMATED TOTAL COMMITMENT (excl GST)**				**475,000**
	Subtotal - Beadon Creek Node				**475,000**

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Cost Plan Summary

Project: Ashburton
Building: Onslow Conference Centre
Details: Concept Cost Estimate Feb 2022

Code	Description	Quantity	Unit	Rate	Total
	GROUND FLOOR LEVEL				
1	Main Conference & Function Space	218	m2	5,100.00	1,111,800
2	Chair store	23	m2	3,060.00	70,380
3	Green room	8	m2	3,910.00	31,280
4	Office	6	m2	3,825.00	22,950
5	Cafe	81	m2	4,760.00	385,560
6	Kitchen	31	m2	5,780.00	179,180
7	Kitchen equipment		Item		300,000
8	Coolroom		Item		30,000
9	Lobby	50	m2	5,100.00	255,000
10	Public toilets & Cleaner	38	m2	5,610.00	213,180
11	Bin Store	10	m2	3,145.00	31,450
12	Covered alfresco/verandah areas	419	m2	3,230.00	1,353,370
13	Proportion of Preliminaries		Item		400,000
	Ground Floor Total				**4,384,150**
	EXTERNAL WORKS				
14	Site Preparation - clearing & topsoil removal	10,200	m2	8.00	81,600
15	Bulk earthwork cut to fill to achieve building, road & landscape design levels	8,130	m2	38.00	308,940
16	Imported fill - placement & compaction only (fill supplied to site for free from dredging)	2,100	m3	40.00	84,000
17	Retaining walls including drainage	375	m	600.00	225,000
18	Retaining walls to parking areas, access road & loop road	230	m	500.00	115,000
19	Carparking & access - asphalt on roadbase - within site boundaries	980	m2	160.00	156,800
20	Carparking & access - asphalt on roadbase - outside site boundaries	1,740	m2	160.00	278,400
21	Carpark wheel stops	48	No	250.00	12,000
22	Pedestrian paving	400	m2	220.00	88,000
23	Pedestrian ramp (retaining walls included elsewhere)	40	m2	300.00	12,000
24	Steps & landings (retaining walls included elsewhere)	50	m2	450.00	22,500
25	Allowance for embankment and scour protection		Item		75,000
26	Landscaping - grassed areas including irrigation	2,720	m2	70.00	190,400
27	Landscaped areas - native planting & mulch - no irrigation	1,100	m2	30.00	33,000
28	Advanced tree	10	No	7,500.00	75,000
29	Signage		Item		30,000
30	Proportion of Preliminaries		Item		155,000
	External Works Total				**1,942,640**

Cost Plan Summary

Project: Ashburton
Building: Onslow Conference Centre
Details: Concept Cost Estimate Feb 2022

Code	Description	Quantity	Unit	Rate	Total
	SERVICES				
31	Allowance for the following:				
32	• Site Main Switchboards & submains		Item		72,160
33	• Electrical headworks		Item		211,200
34	• Incoming comms connection		Item		35,200
35	• Light poles & cabling		Item		52,800
36	• Roof PV system		Item		100,000
37	• Testing & commissioning		Item		13,200
38	• Sewer extension & connection		Item		60,720
39	• Stormwater drainage including soakwells		Item		70,400
40	• Water service extension to site		Item		35,200
41	• Water service		Item		19,200
42	• Sewer drainage		Item		35,200
43	• Carpark stormwater		Item		107,360
44	• Testing & commissioning		Item		21,120
45	Proportion of Preliminaries		Incl.		
	Services Total				**833,760**
	ESTIMATED CONSTRUCTION COST				**7,161,000**
	OTHER COSTS				
46	Design Contingency	10.0	%		717,000
47	Construction Contingncy	5.0	%		359,000
48	Loose Furniture & Equipment		Item		180,000
49	Design, Management & Supervision fees including travel & related disbursements	8	%		573,000
50	Cost escalation to anticipated tender November 2022		Item		540,000
	TOTAL EXCLUDING GST				**9,530,000**

Cost Plan Summary

Project: Ashburton
Building: Onslow Conference Centre
Details: Concept Cost Estimate Feb 2022

Code	Description	Quantity	Unit	Rate	Total
	EXCLUSIONS				
51	• Rock excavation				
52	• Dewatering				
53	• Treatment and/or disposal costs of contaminated ground				
54	• Boundary fencing				
55	• Rainwater tanks & pumps				
56	• Grey water treatment system				
57	• Gas service				
58	• Artwork				
59	• Loose Furniture & Equipment				
60	• Land Costs				
61	• Construction Finance / Holding Costs				
62	• Legal & Marketing Costs				
63	• Goods & Services Tax				
	NOTES				
64	No Structural or Services design was available at the time of preparing this estimate				
65	This cost indication is based on conceptual design information provided by the Project Manager. The information provided is preliminary and incomplete. Accordingly, this cost indiaction reflects the current conceptual design information and may vary significantly once investigation work and designs are finalised.				
66	By their nature, these estimates and assumptions are subject to significant uncertainties and the actual costs may materially differ from these estimates and assumptions. Accordingly, no assurance can be given that the cost estimates and the underlying assumptions will be realised in practice				
67	Pricing assumes the project will be competitively tendered				
	REFERENCE DOCUMENTS				
68	Drawings prepared by Whitehaus Architects				
69	- Site Plan SK02 Rev A				
70	- Ground Floor Plan SK10 Rev B				
71	- Sections SK30				
72	- Site Plan SK01 Site Levels				
73	- Concept Scheme - SK00 Rev A Cover Sheet				
74	- Concept Scheme - SK01 Rev A 3D Views				