Halsall & Associates

Town Planning Consultants

WESTERN AUSTRALIAN PLANNING COMMISSION

STRUCTURE PLAN

Lot 102 Bussell Highway/Moodjar Court, Karridale

Updated August 2023

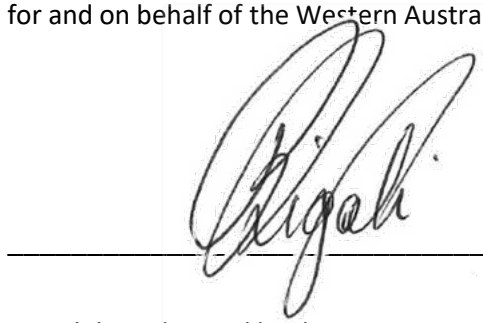
ENDORSEMENT PAGE

This Structure Plan is prepared under the provisions of the Shire of Augusta Margaret River Local Planning Scheme No. 1.

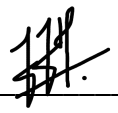
IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON

09 November 2023

Signed for and on behalf of the Western Australian Planning Commission:



an officer of the Commission duly authorised by the Commission pursuant to Section 24 of the *Planning and Development Act 2005* for that purpose, in the presence of:

Witness: 

Date: 15 November 2023 Date of

Expiry: 15 November 2033

TABLE OF AMENDMENTS

Amendment No.	Summary of Amendment	Amendment type	Date approved by the WAPC

EXECUTIVE SUMMARY

Purpose

This Structure Plan has been prepared for the Shire of Augusta Margaret River ('the Shire') and the Western Australian Planning Commission ('WAPC'). The Structure Plan relates to the area of Lot 102 Bussell Highway/Moodjar Court, Karridale and its inter-relationship with surrounding road reserves including Bussell Highway to the east, the unmade road reserve (essentially cleared) to the south and Moodjar Court to the west.

The Structure Plan is to facilitate accommodation of residential lots at the R5, R2.5 and R2 densities as required by the strategic planning framework along with appropriate public open space, internal road network connecting to Bussell Highway and the public road network to the south to Chapman Road and will facilitate rehabilitation of the drainage line system with further extended landscaping and rehabilitation along the eastern boundary adjacent to Bussell Highway. Landscaping is also to be installed along the northern and western boundaries. Emergency access arrangements to the road network southward is a feature and the Structure Plan has been informed by significant investigations by various experts in respective fields.

Strategic planning for development of residential lots at Karridale commenced with the inception of the Leeuwin Naturaliste Ridge Statement of Planning Policy in 1998 and this culminated in the adoption of the Karridale Settlement Strategy in 2011. Under this strategy the land was identified for development in the form of an enclave to support the town and particularly the community precinct. The land was further identified in the Shire's Local Planning Strategy and recently considered updated Local Planning Strategy with the site recognised for development in the shorter term with lot yield to be determined based on assessment recognising that Residential R5 and R2.5 was generally to be delivered.

The Shire of Augusta Margaret River supported rezoning of the land 'in principle' several years ago and detailed investigations have occurred since including importantly suitable arrangements for a connection to Bussell Highway with Main Roads which took several years to resolve.

Ground water monitoring occurred along with other investigations to inform the Structure Plan design including detailed engineering considerations by a qualified civil engineer.

The Structure Plan therefore aims to deliver a suitable outcome for the land via future subdivision consistent with the Strategic Planning Framework.

EXECUTIVE SUMMARY TABLE

Item	Data	Structure Plan Ref. (section no.)
Total area covered by the Structure Plan	Approximately 18.66ha	
Area of each land use proposed: Residential R2 Residential R2.5 Residential R 5	Lot yield: 4.43ha 3.6375ha 4.7147ha	
Estimated number of additional dwellings	35	
Number of high schools	0	
Number of primary schools	0	
Estimate commercial space	100m2 (after school care/day care) 100m2 guesthouse	
Estimate POS (local only)	18.32%	
Estimated percentage of natural area	20%	

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1.0 IMPLEMENTATION

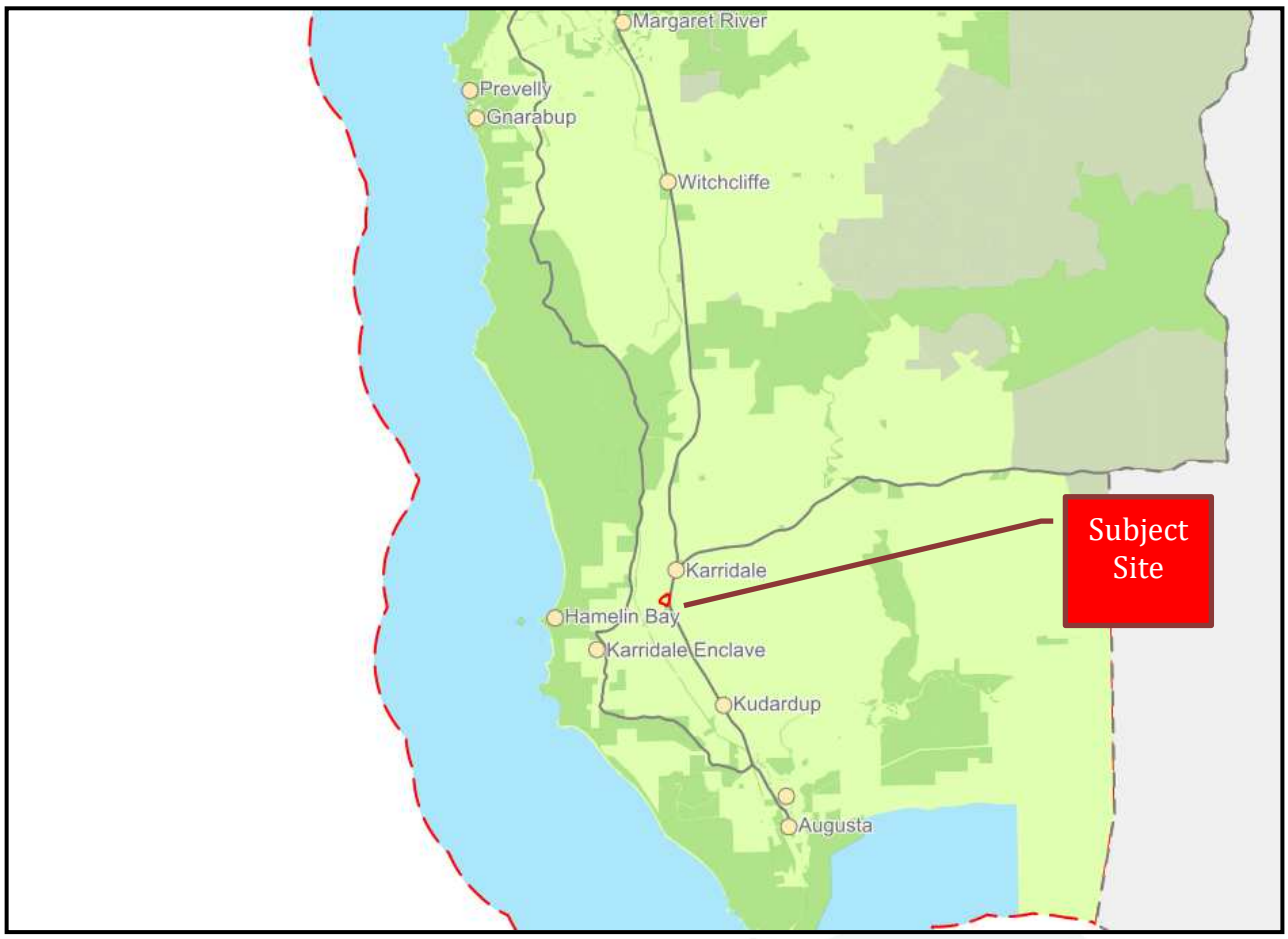
1.1 Structure Plan Area

The Structure Plan area encompasses the entirety of Lot 102 Bussell Highway/Moodjar Court, Karridale and the associated connections to adjacent public roads including Bussell Highway to the east an unmade road to the south and Moodjar Court to the west.

The site is located immediately adjacent to the Karridale Primary School and community precinct (hall/ bushfire brigade) immediately to the south and is surrounded principally by small rural holdings with larger farms further afield. The subject site is situated a short distance (1km) south from the intersection of Brockman Highway and Bussell Highway known as the "Karridale Crossroads". The location of the site within the locality is evident at Figure 1 below.

Figure 1 – Location of site within the locality

Source: Shire of Augusta Margaret River



The specific site is essentially cleared save for a stand of vegetation in the west of approximately 1 hectare, a few paddock trees and scattered trees/shrubs around the drainage system in the south. This is evident on the aerial photograph contained at Figure 2 below.

Figure 2 – Subject Site

Source: Shire of Augusta Margaret River

1.2 Operation

The date the Structure Plan comes into effect is the date the Structure Plan is approved by the Western Australian Planning Commission (WAPC).

1.3 Staging

Staging is not applicable to this proposal because the construction of a significant intersection to Bussell Highway and the need for a through connection to Chapman Road necessitates construction of the entire network and it would not be feasible to construct the subdivision in several stages. In addition, the subdivision scale is relatively small and would constitute a one stage of development in a typical urban subdivision area.

1.4 Subdivision and Development Requirements

As detailed within the preamble to this report, the proposal seeks to introduce a Structure Plan as relevant to a Structure Plan area as referenced at Schedule 11 of the Scheme and embodied within the Scheme through a Scheme Amendment process. This includes consideration of the following:

- Residential densities at R5 and R2.5 (with three lots at R2 with no subdivision potential)
- Provision of public open space.
- Rehabilitation of the creekline and provision of buffers and rehabilitation/landscaping along the eastern, southwestern and northern boundaries.
- Internal road network and connection to Bussell Highway in the northeast and Chapman Road via emergency access to the south.
- Provision of firefighting facilities such as water tanks and suitable access for fire vehicles.

In addition to the Structure Plan the provisions of the Scheme will be relevant both generally within the residential zone but also as specifically mentioned at Schedule 11.

1.4.1 Land Use Permissibility – Zoning

The zoning for the area will be 'Future Development' which will enable the Structure Plan to operate to guide future subdivision at the residential densities of R5/R2.5/R2 and allocation of public open space which will be permanently reserved.

The zoning provisions will also allow limited additional uses to assist employment including art and craft centre, consulting rooms (one practitioner), a favoured guesthouse site and after school care/small day care centre site.

The following provisions also guide subdivision and development.

Subdivision

The following matters are to be addressed as recommended conditions of subdivision:

1. Subdivision shall generally accord with the Structure Plan.
2. The preparation and implementation of a landscape and rehabilitation plan. The plan is to identify planting proposed to address regeneration/ rehabilitation of the drainage line, address buffering to Bussell Hwy and neighbouring properties to mitigate visual impact and the function of Bussell Hwy as a travel route corridor and to serve a nutrient stripping function.
3. A detailed drainage design is to be implemented to effectively manage drainage and protect water resources.
4. Design guidelines to address the built form and integrated sustainability measures appropriate to the rural and historic context of Karridale shall be prepared.
5. Notifications on title will be applied advising relevant prospective purchasers of "quiet house design requirements" for lots requiring noise attenuation measures as prescribed by the Structure Plan.
6. Notifications on title to be applied advising relevant prospective purchasers of the proximity of existing agricultural uses, which may impact on local amenity.
7. The subdivider implementing the requirements of the endorsed Bushfire Management Plan applicable to the Structure Plan area.
8. Notifications on title are to be applied advising prospective purchasers that the lot is subject to a Bushfire Management Plan which contains owner/occupier management responsibilities and that dwellings need to be constructed to AS3959 as applicable.
9. At subdivision, the road intersection to Bussell Highway shall be designed and constructed to Main Roads WA standards.
10. A pedestrian/cycle pathway system shall be designed and implemented at subdivision to provide an effective method of access directly to the primary school as indicated on the Structure Plan.
11. At subdivision the subdivider shall provide information to purchasers with respect to the effluent disposal setbacks and practices to be employed as outlined in the Structure Plan.

Development

1. Use and development will be assessed in accordance with the provisions applicable to the residential zone and Residential Design Codes on lots where an R Code applies.
2. Additional uses are permitted in accordance with Local Planning Scheme No.1 on nominated lots as indicated on the Structure Plan.
3. Development shall comply with the adopted Design Guidelines for the area.
4. Development shall comply with the endorsed Bushfire Management Plan for the area.
5. All dwellings are to make provision for the catchment of potable water in accordance with Clause 4.21.6(f) and 5.2.2 of the Scheme unless otherwise approved by the Local Government.
6. Effluent disposal system disposal areas are to be setback a minimum of 80 metres and 100metres from the drainage line/dams and located within designated Land Application Areas as indicated on the Structure Plan. The single effluent disposal areas located within 80 metres to 100 metres of the drainage line shall be an alternative treatment unit. Effluent disposal treatment areas setback further than 100 metres from the drainage line may be of typical septic tank and leach drain standard.
7. Development on Lot 11 as depicted on the Structure Plan shall be setback at least 40 metres from the Bussell Highway boundary.
8. Any development located within the packaged housing design for noise setback line shall comply with quiet house design requirements as applicable.

1.4.2 Interpretation and Scheme Relationship

The words and expressions used within the Structure Plan shall have the respective meanings given to them in the Shire of Augusta Margaret River's Local Planning Scheme No.1 (LPS1).

Subdivision within the Future Development zone will be guided by the Structure Plan as it will be referenced at Schedule 11.
Other general clauses of the Scheme will be applicable where not varied at Schedule 11.

1.4.3 Other Requirements

Servicing Considerations

The Karridale Settlement has been identified for development without the provision of reticulated water and sewer services. As such, onsite effluent disposal and water supply systems are to be provided and located in accordance with the Structure Plan and Local Planning Scheme No. 1. Other services such as power, telecommunications and drainage will be provided at subdivision.

Appendix A - Structure Plan

LEGEND

- APPLICATION BOUNDARY
- PROPOSED BOUNDARY
- R2.0 LOTS (NO FURTHER SUBDIVISION)
- R2.5 LOTS
- R5.0 LOTS
- PUBLIC OPEN SPACE (POS)
- MAXIMUM SURFACE WATER OF WINTER DRAINAGE LINE & DAM
- 100m SETBACK FOR EFFLUENT DISPOSAL FROM MAXIMUM SURFACE WATER (EXCEPT LOT 17 - 80m)
- 40m BUILDING SETBACK FROM BUSSELL HWY BOUNDARY
- LANDSCAPED EARTH BUND
- POTENTIAL ADDITIONAL USE
- PACKAGED HOUSING DESIGN FOR NOISE SETBACK LINE
- REHABILITATION & REVEGETATION / LANDSCAPE PLANTING
- PROPOSED FOOTPATH
- PROPOSED BITUMEN ROAD / DRIVEWAY
- EAW EASEMENT
- EMERGENCY ACCESSWAY (EASEMENT)
- EMERGENCY ACCESSWAY (FUNCTION OF PUBLIC ROAD)
- LAND APPLICATION AREA (LAA'S) SECONDARY TREATMENT DISPOSAL TO BE LOCATED IN THESE AREAS (TYPICALLY 300m² REQUIRED WITHIN THE BROAD AREA SHOWN ON RELEVANT LOTS)

EASEMENT FOR FUTURE EMERGENCY ACCESSWAY FOR LOT 101 THROUGH LOT 8

RURAL BUFFER PLANTING

50,000L FIRE FIGHTING TANK

INTERSECTION TO MAIN ROADS REQUIREMENTS

LANDSCAPING BUFFERS

EXISTING DAM

PICNIC AREA & NATURE PLAYGROUND

50,000L FIRE FIGHTING TANK

REDUCED EFFLUENT DISPOSAL SETBACK - 80m

EAW TO AVOID TREES

CONNECTION TO MOODJAR COURT TO SHIRE REQUIREMENTS

LOW KEY GUESTHOUSE - ADDITIONAL USE SITE

LOW KEY AFTER SCHOOL CARE/SMALL DAY CARE CENTRE - ADDITIONAL USE SITE

SCHOOL OVAL

KARRIDALE PRIMARY SCHOOL

KARRIDALE COMMUNITY HALL & FIRE BRIGADE

POS TABLE	
ORIGINAL LOT AREA	LOT 102 - 18.66ha
REQUIRED POS (10%)	1.86ha
PROVIDED POS	3.42ha (18.32%)

LOT YIELD - R2			LOT AREA		
Size	No. Lots	% Total Lots	Average Size	% of Total Area	Area
10001m² - 15000m²	2	66.67%	13550m²	61.31%	27100m²
15001m² - 20000m²	1	33.33%	17100m²	38.69%	17100m²
Total Number of Lots	3				

Minimum Lot Size 13000m² Average Lot Size 14733m²
Maximum Lot Size 17100m² Total Lot Area 44200m²

LOT YIELD - R2.5			LOT AREA		
Size	No. Lots	% Total Lots	Average Size	% of Total Area	Area
4001m² - 4500m²	9	100.00%	4041m²	100.00%	36375m²
Total Number of Lots	9				

Minimum Lot Size 4002m² Average Lot Size 4041m²
Maximum Lot Size 4171m² Total Lot Area 36375m²

LOT YIELD - R5			LOT AREA		
Size	No. Lots	% Total Lots	Average Size	% of Total Area	Area
2000m² - 2500m²	23	100.00%	2049m²	100.00%	47147m²
Total Number of Lots	23				

Minimum Lot Size 2005m² Average Lot Size 2049m²
Maximum Lot Size 2275m² Total Lot Area 47147m²

This concept has been prepared for the purpose of meeting client specifications. The drawing does not constitute an invitation, agreement or contract (or any part thereof) of any kind whatsoever.

Although care has been taken on the compilation of this document by Halsall & Associates, all parties associated with the proposed property development disclaim any responsibility for any errors or omissions. The right is reserved to change the plan at any time.

Liability is expressly disclaimed by Halsall & Associates for any loss or damage which may be sustained by any person acting on any visual impression gained from this drawing.

All areas and dimensions shown on this drawing are subject to final survey.

0 25 50 75 100 metres

LEIGHTON land development DRAFTING & visuals
bleighton@westnet.com.au
0408 820 001

Title: PROPOSED STRUCTURE PLAN
LOT 102 MOODJAR COURT, KARRIDALE

Date: AUGUST 2023

Scale: 1:2,500@A3

Revision No: B

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Rural & Urban Subdivisions
Development Applications
Structure Planning
Tourism Projects
Re-zonings
Drafting

2.0 EXPLANATORY REPORT

2.1 Planning Background

2.1.1 Introduction and Purpose

This Structure Plan has been prepared in accordance with the Department of Planning Structure Plan preparation guidelines. The Structure Plan seeks to provide a comprehensive planning framework to guide future subdivision and development of Lot 102 Bussell Highway, Karridale. The design is considered and incorporated Regional Strategies, relevant State Planning Policies, Shire Planning and Controls and the outcomes of technical and environmental assessments of the subject land undertaken to inform the Structure Plan.

2.2 Land Description

2.2.1 Location

Lot 102 Bussell Highway, Karridale ('the site') is situated adjacent to the Karridale Primary School at Bussell Highway, Karridale with frontage to Moodjar Court in the west and an unnamed road reserve to the southwest. The subject site is approximately 1km south from the Karridale Crossroads (intersection of Brockman and Bussell Highways), 11.5km north from the township of Augusta and approximately 29km south from the townsite of Margaret River.

The location of the site within the immediate locality is evident at Figure 3.

Figure 3 - Site Location and Context Plan

2.2.2 Area and Land Use

The site comprises approximately 18.66 hectares which was created as a super lot to facilitate development under the relevant planning framework the subject of the Structure Plan. Surplus land was severed off from the original holding including Lot 101 to the northwest and Lot 103 to the southwest. Access to Moodjar Court and the unnamed road reserve was deliberately left to be accessible from the site within the boundary configuration. The nature of the subject site is evident at Figure 4 below.

Figure 4 - Aerial Photograph of Subject Site

The site has been previously used for grazing purposes and is predominantly cleared however this is small section of trees in the west which totals approximately 1 hectare. There are also some pockets of native vegetation about the head of the drainage line in the southeast of the site with a number of Marri, Karri and Peppermint trees. There are also a few paddock trees evident on the aerial photograph.

The site has notable contour in the form of a small hill in the north of the site with slopes ranging downhill to the drainage line system in the east and south. This dries up in summer and flows to a very shallow depth from a point around the existing small dam in the east of the site in a wet winter.

To the south of the site is the existing Karridale Primary School, oval, community hall and fire brigade. To the southwest the small lot containing a large dam and dwelling and associated outbuildings was previously utilised as a nursery however now is simply used as a rural retreat. Land further to the south and west is used for broad acre farming purposes and to the north there are two small rural allotments containing dwellings and outbuildings.

To the east is Bussell Highway which provides extensive frontage to the site and opposite this to the east are further broad acre farming properties.

The location of the site is therefore immediate to the community precinct for Karridale and it is for this purpose it has been identified for development of dwellings.

2.2.3 Legal Description and Ownership

The site is legally described as Lot 102 Bussell Highway, Karridale. The Certificate of Title for the land is referenced Volume 2836, Folio 625, Lot 102 on Deposited Plan 76530, Property Street Address 38 Moodjar Court, Karridale. The site is owned by Balfield Nominees Pty Ltd.

2.3 Planning Framework

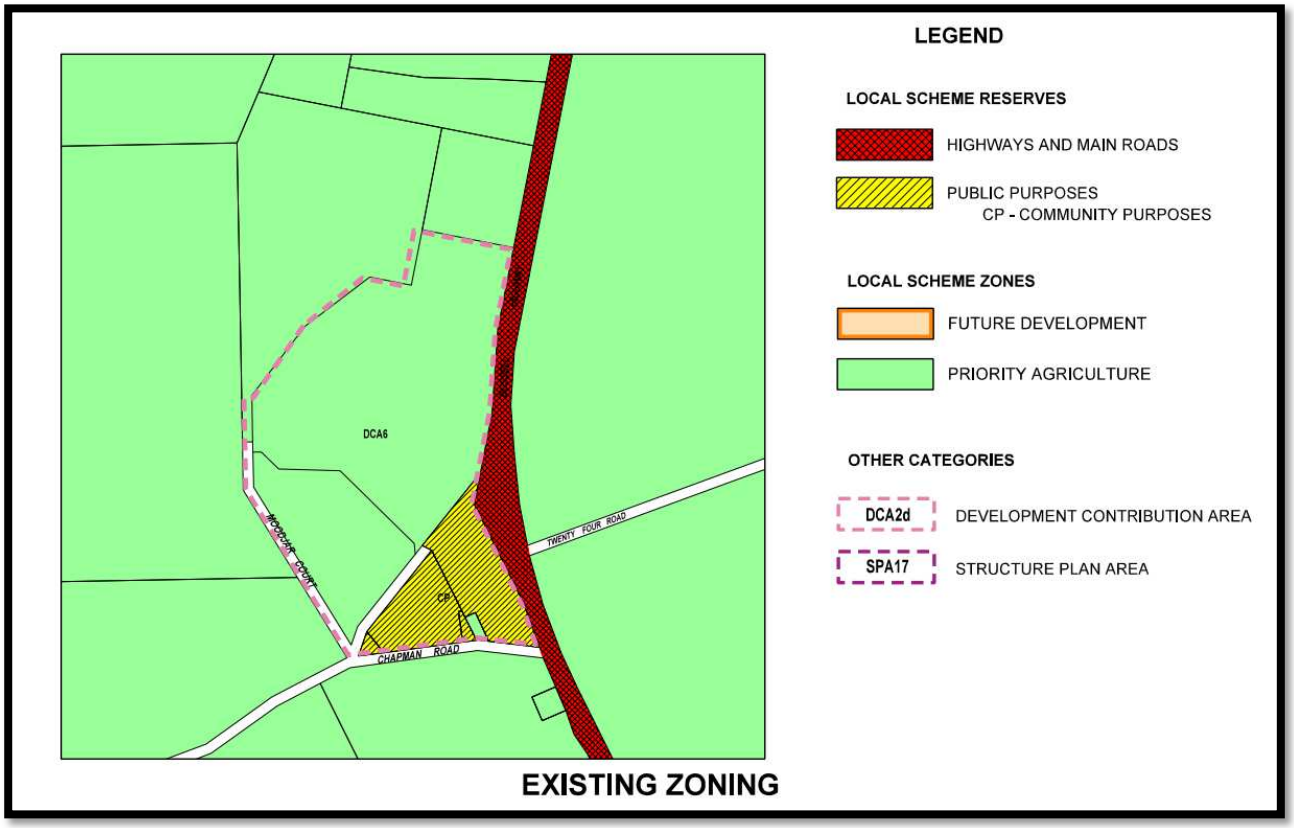
2.3.1 Zoning and Reservations

2.3.1.1 Shire of Augusta Margaret River – Local Planning Scheme No.1

Under the Shire of Augusta Margaret River Local Planning Scheme No.1 the site is zoned 'Priority Agriculture' and is within a developer contribution area no.6. The boundary of the developer contribution area does not exactly accord with the boundaries of the lot in the north and this is proposed to be rectified by the Scheme Amendment co-jointly lodged with this Structure Plan.

The existing zoning map is provided at Figure 5 below.

Figure 5 - Existing Zoning Map



Land surrounding the site is likewise zoned for Priority Agriculture however, the land containing the school, community hall and fire brigade is reserved for public purposes (community purposes).

In conjunction with the Structure Plan a proposal is to rezone the land to 'Future Development' zone in order to facilitate the proposed subdivision/development. The purpose of the future development zone is to *"provide for additional sustainable development within and around existing settlements within the Scheme area".* The Structure Plan presents a logical expansion of the existing Karridale Settlement and will utilise a number of sustainability initiatives in the design and development of the proposed residential areas, this being in accordance with the strategic planning framework.

2.3.2 Planning Strategies

2.3.2.1 Leeuwin Naturaliste Sub Regional Strategy (LNSRS) May 2019

The LNSRS was adopted in May 2019 and amended by the Commission in January 2020. The strategy plan recognises Karridale as a village alongside the town sites of Witchcliffe, Kudardup, Prevelly, Gnarabup, Yallingup, Gracetown and Eagle Bay.

It was confirmed with the Department of Planning, Lands & Heritage that the application of the Sub Regional Strategy to the subject site is that the document is: *"A conceptual representation of land use within the sub region. Further planning processes will need to be undertaken including amendments to statutory mechanisms and detailed planning…".* It was confirmed the document has "*no intention for the Sub Regional Strategy to rescind what is set out in Local Planning Schemes and Strategies or already has approval which would include the Karridale Hamlet Settlement Strategy".*

The Sub Regional Strategy therefore serves to not provide any further regional direction for Karridale other than what was already identified within the LNRSPP to be further extrapolated by Local Planning Strategies.

2.3.2.2 Local Planning Strategy 2011 – Shire of Augusta Margaret River

Under the Local Planning Strategy endorsed by the Shire in 2011 the subject site is identified for development and noted as an Enclave Investigation Area (EIA). The Local Planning Strategy makes reference to the Karridale Settlement Strategy which was a specific town site urban development investigation and report that followed significant public consultation and involvement of Government agencies with ultimate support by the Shire and the Planning Commission. The Local Planning Strategy identified the site as suitable for a development associated with the Karridale Primary School and community centre that includes a community hall, bushfire brigade and emergency water supply for firefighting. It was noted the town site of Karridale already had a significant amount of infrastructure including 2 service stations, a general store, post office and tavern at the Karridale Crossroads along with a number of other associated uses and a primary school, community hall and fire brigade at the Chapman Road/ Bussell Highway intersection. There was very limited population in residential dwellings with there only being a handful of lots. The Karridale Settlement Strategy identified the need for residential lots to provide for a population of up to approximately 500 including development of land both northwest and northeast of the "Crossroads" to harbour the majority of the

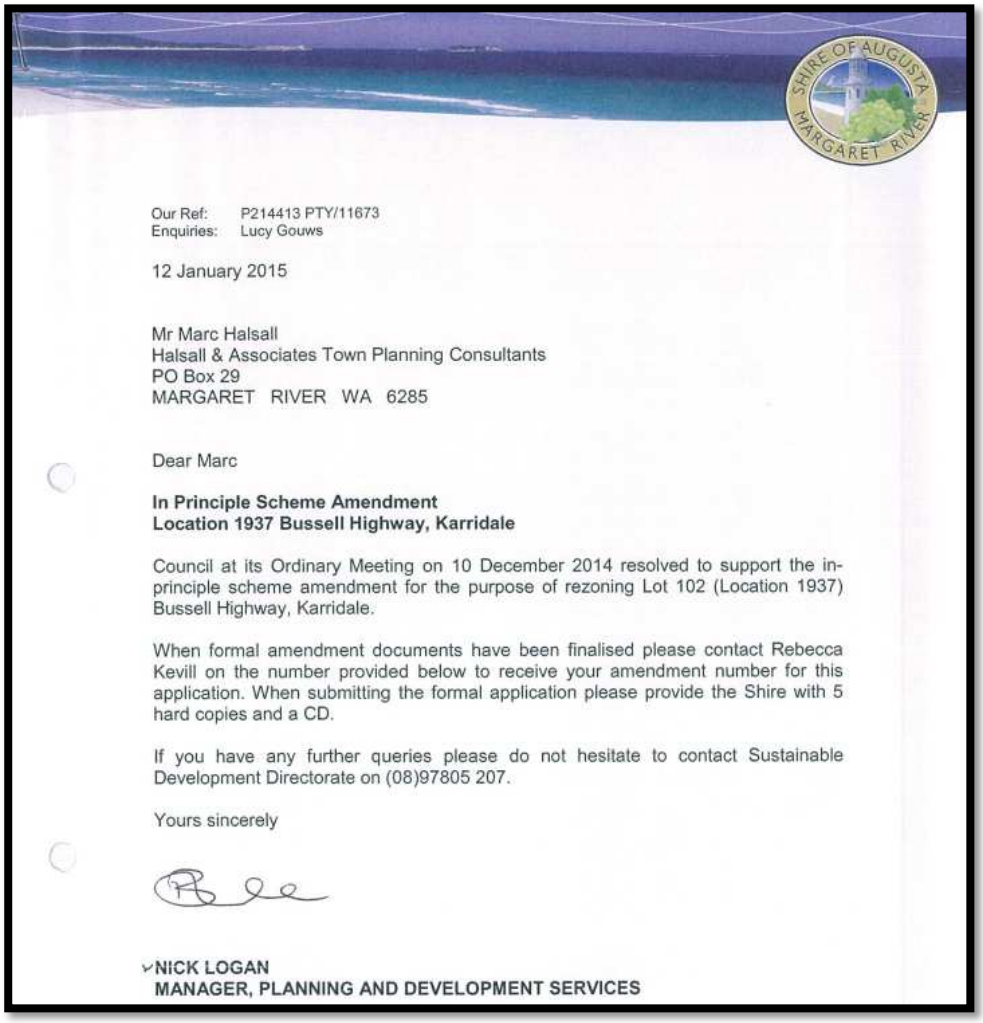
population and a smaller offering of residential lots associated with the school. The strategy indicated that development at the "Crossroads" should commence first and the development of the subject site should follow. (This objective has since been removed under the new Local Planning Strategy particularly given the development of the town has progressed.)

Pursuant to the strategy the two development areas to the northwest and northeast of the Karridale Crossroads commenced and substantial subdivisions were approved. The northwest subdivision has commenced with creation of a number of lots which have been released and a Structure Plan and approval for a large number of lots has also be issued and it is noted that almost all lots within the entire subdivision have been sold and the balance of the estate is under construction.

Subdivision of the northeastern site at the Crossroads has been moving along at a reasonable pace with a number of stages sold and development of housing ongoing. All originally planned stages have been sold. This is now providing for a strong development of resident population in Karridale.

Given development had commenced at the "Crossroads" a request was made to commence development under the Karridale Settlement Strategy for the subject site at Lot 102 Bussell Highway, Karridale associated with the community centre. The Council considered that the Crossroads areas had commenced and supported an in principle Scheme Amendment. Correspondence confirming this January 2015 is provided below.

Figure 6 - Correspondence confirming support of Scheme Amendment



Our Ref: P214413 PTY/11673
Enquiries: Lucy Gouws

12 January 2015

Mr Marc Halsall
Halsall & Associates Town Planning Consultants
PO Box 29
MARGARET RIVER WA 6285

Dear Marc

In Principle Scheme Amendment
Location 1937 Bussell Highway, Karridale

Council at its Ordinary Meeting on 10 December 2014 resolved to support the in-principle scheme amendment for the purpose of rezoning Lot 102 (Location 1937) Bussell Highway, Karridale.

When formal amendment documents have been finalised please contact Rebecca Kevill on the number provided below to receive your amendment number for this application. When submitting the formal application please provide the Shire with 5 hard copies and a CD.

If you have any further queries please do not hesitate to contact Sustainable Development Directorate on (08)97805 207.

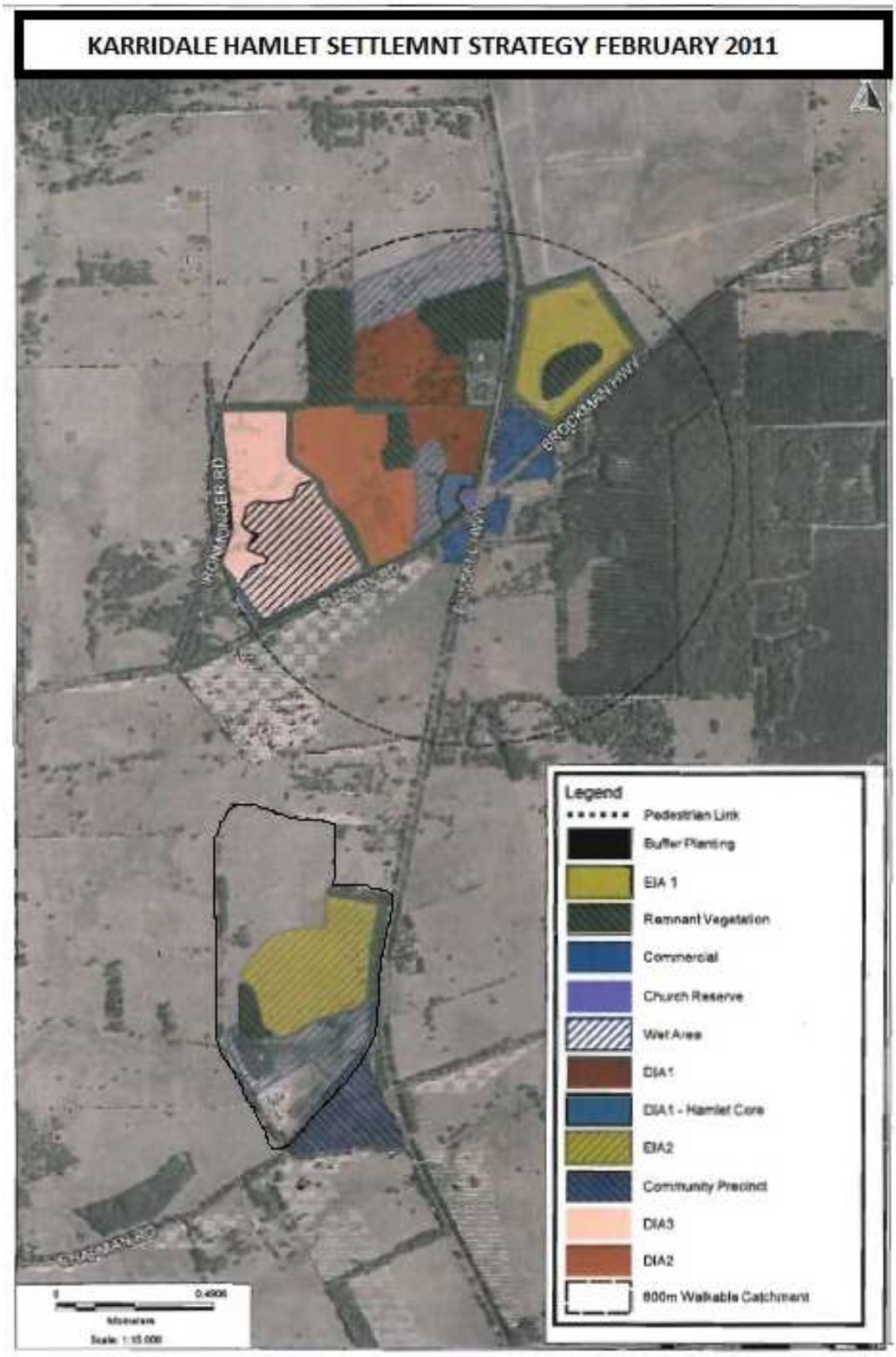
Yours sincerely

NICK LOGAN
MANAGER, PLANNING AND DEVELOPMENT SERVICES

Pursuant to the Council's resolution to support an amendment detailed investigations occurred including liaison with Main Roads WA and several years of negotiation with Main Roads WA resulted in support for an access to Bussell Highway which initially proved difficult and stalled production of documents. Access to Bussell Highway was considered essential particularly given two methods of access and egress from the site is essential for bushfire purposes.

The 2011 Local Planning Strategy incorporated reference to the Karridale Settlement Strategy and an excerpt from the Karridale Settlement Strategy plan is included at Figure 7 below.

Figure 7 – Excerpt from the Karridale Settlement Strategy Plan



2.3.2.3 Local Planning Strategy 2020 – Shire of Augusta Margaret River

The Shire of Augusta Margaret River prepared a review of the 2011 Local Planning Strategy and this was advertised in late 2020. The objectives for the site were ratified and it was indicated that a total of 46 lots was suitable within the development investigation area and no objections were received to this during the advertising period. Final consideration by the Shire and Commission included a timeframe for development that could be acted upon immediately and reference was made to the lot yield to be determined at development stage based on an assessment of the capability of the land and taking into account the previous Karridale Settlement Strategy. The recommendations of the Local Planning Strategy 2020 include provision of low density residential lots at the R5 to R2.5 density. This Scheme Amendment therefore follows on from the Shire's resolution to support a Scheme Amendment that timing is appropriate and based on a consideration of the planning framework that has moved forward from initial consideration under the 2011 Local Planning Strategy, Karridale Settlement Strategy and advertised Local Planning Strategy 2020. The Structure Plan therefore takes into account all of these documents and presents opportunities for the land based on suitability of the site whilst protecting the environmental characteristics and providing a significant area of public open space, rehabilitation program and strong inter-relationship with the school and the community precinct.

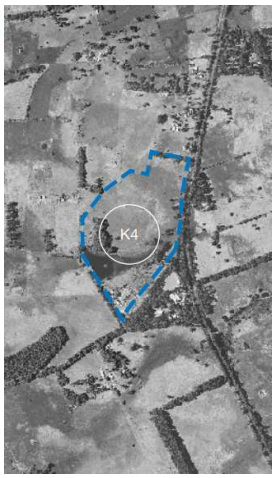
The Commission considered the Strategy at its meeting October 2021 and likewise resolved to support the strategy with guidance that development can proceed immediately given the significant growth and release of land that has occurred since the Covid-19 outbreak and the number of lots was to be determined as part of the structure plan process having regard for the Karridale Settlement Strategy.

The guidance specifically to the planning precinct applicable to the subject land (identified as K4) is provided below and this indicates that the opportunities for the land are identified as Residential with a general density of R2.5 to R5. Development timeframe is medium to long term which has been confirmed with the Department of Planning, Lands and Heritage as being suitable for immediate release. A structure plan is required and the estimated lot yield is to be determined by detailed structure planning and guided by the Karridale Hamlet Settlement Strategy.

Planning matters to be addressed include adequate buffers to Bussell Highway, sufficient buffers to agricultural land and consistency with the direction of Karridale as outlined for the site.

Figure 8 - Excerpt Local Planning Strategy 2020

Future Urban Growth Area		
Planning Precinct	Precinct Planning Requirements	
K4	**Proposed Land Use:** Residential **Current Zoning:** Rural **Proposed Use:** Residential R2.5 – R5.	**Development Timeframe:** Medium/Long Term **Structure Planning Status/Required:** Structure Plan Required **Estimated Lot Yield:** to be determined by detailed structure planning guided by the Karridale Hamlet Settlement Strategy.
	Planning matters to be addressed: • Adequate buffers to Bussell Highway provided to ensure the amenity of residents and minimise visual impacts of development, • Sufficient buffers to surrounding agricultural properties such that their operations are not prejudiced. • Consistency with the direction of the Karridale Hamlet Settlement Strategy as outlined for this site.	



The proposal has been tailored to address the Local Planning Strategy 2020 taking into account the advertised Lot yield of 46 for the precinct however, having regarding for the available areas within the site, consideration has been given to appropriate allocation of public open space and protects and allows enhancement of the drainage line which is well above requirements and balance land being provided with the density of R2.5 to R5 with three larger lots at R2 addressing the buffer requirements to Bussell Highway. This identifies a yield of 35 lots thus considered to be suitable for the land via detailed structure planning. In addition, the structure plan incorporates adequate buffers to both Bussell Highway and surrounding agricultural lots and is consistent with the direction for Karridale.

2.4 Planning Policies

2.4.1 WAPC Statement of Planning Policy 6.1 – Leeuwin Naturaliste Ridge

SPP6.1 Leeuwin Naturaliste Ridge was adopted in 1998 and identified a number of objectives for urban settlement within the Cape to Cape Region including Karridale. The provisions of SPP6.1 was taken into account within the Karridale Hamlet Settlement Strategy as well as within the Structure Plan.

The Policy designates Karridale as a Hamlet with enclaves and states the function should be for a rural service centre with a focus on rural living and tourist facilities. The Policy identifies the Hamlet as a settlement with a population of less than 500 people and specific infrastructure includes innovative alternatives to conventional reticulated water, sewerage and power. Enclaves are identified for a population of 50 again

with innovative onsite water supplies, effluent disposal and power. Enclaves may take the form of clustered rural living or specialised developments and may include low impact tourist development.

As specified at SPP6.1 Karridale will serve as a rural service centre with a focus on rural living. The intent for the design of settlements also identifies the need for matters to be addressed through structure planning including:

- Provision of a range of innovative settlement options to accommodate population growth and ensure a choice of accommodation types.
- Integration of development within its local environment.
- Water sensitive urban design.
- Supporting the use of non-conventional servicing solutions.
- Presumption against clearing of remnant vegetation.

Another aspect of SPP6.1 identifies the site as bordering a travel route corridor for the majority of the frontage to Bussell Highway with a short section in the south containing a travel route corridor with rural landscape significance classification. A travel route corridor is an area which allows people opportunities to access and experience adjoining areas along the primary transport network and these corridors may include rural or natural significant areas. The Structure Plan responds to the rural significance of the locality by enhancing the creekline system, providing rehabilitation and buffers to the highway which would be consistent with what could be typically experienced as part of the rural landscape and would respect the transport corridor policy statements within the SPP.

The Structure Plan has addressed the relevant requirements of SPP6.1 as applicable and as documented in this report.

2.4.2 Government Sewerage Policy

The Government Sewerage Policy was endorsed in September 2019 and provides the government's position on the provision of sewerage services in the state through planning and land development. It requires reticulated sewerage to be provided however instances where reticulated sewerage cannot be provided it adopts best practice to the provision of onsite sewerage treatment and disposal in accordance with the Australian Standard.

It should be noted that the townsite of Karridale has been identified for provision of alternative solutions to sewerage and this is reflected in the rezoning and structure planning for land at the "Karridale Crossroads" where lots in excess of 2000m^2 have been approved with onsite effluent disposal systems. It should be noted that development to the northwest of the Karridale Crossroads has recently been approved at the State Administrative Tribunal with onsite effluent disposal systems with setbacks less than 50m from a water course. This is obviously on the basis that alternative treatment units (ATU's) are utilised.

Of importance to the subject site is the fact that the policy applies to the development of structure plans and scheme amendments which is obviously therefore relevant to this documentation and under Part 5.1.1 of the Policy there has been no requirement for the site to be connected to reticulated sewerage and as such 5.2 is relevant where onsite sewerage disposal can be considered. The policy states that onsite sewerage disposal may be considered where the responsible authority is satisfied that:

- Each lot is capable of accommodating onsite sewerage disposal without endangering public health or the environment.
- The minimum site requirements for onsite sewerage disposal outlined in Section 5.2 in Schedule 2 can be met.

It is noted that 5.2.1 for urban/industrial subdivision outside public drinking water source areas and sewerage sensitive areas that minimum lot size of 2000m^2 is required and for heavy soils secondary treatment systems will be required to achieve this lot size. The subject site fits this classification and detailed assessments have occurred including ground water assessments on three occasions and a specific effluent disposal reports prepared by GALT and Ross Mars. This will be dealt with in a later section however addresses in significant detail the requirements of the Government Sewerage Policy.

It should be noted that separation from water resources is necessary and a 100m setback should be achieved from the high water mark of a reservoir or any bore used for public drinking water supply. A setback of 30m must also be achieved from a private bore used for household or drinking water purposes and 100m of a waterway or significant wetland and not within a waterway foreshore area or wetland buffer. The separation distance should be measured from the outer edge of the riparian vegetation area. A 100m separation area should also be achieved from a drainage system that discharges directly into a significant wetland. Smaller setbacks may be considered where the proponent demonstrates to the satisfaction of the responsible

authority in consultation with the relevant advisory agencies (Department of Water and Environmental Regulation and or Department of Biodiversity Conservation Attractions, Department of Health and or Local Government) that the reduced setbacks will not have a significant impact on the environment or public health. In seeking a reduced setback it is likely that secondary treatment systems will be required. Smaller setbacks from reservoirs or bores used for public drinking water will not be supported.

Subject lots within the Structure Plan are located adjacent to an ephemeral drainage line which deposits into a private dam not utilised for public drinking water. The drainage line system is not a significant wetland and the site is not adjacent to within a sewerage sensitive area. As has been assessed for other land at Karridale, a lesser setback of 100m can therefore be achieved specifically where conditions suit and this has been demonstrated in reports by a number of experts (refer to later relevant section).

Clause 5.2.3 of the Policy refers to separation from ground water and given the site is not within a public drinking water catchment area or sewerage sensitive area a separation of 0.6 to 1.5m should be achieved.

There has been detailed winter ground water monitoring on three occasions and this has indicated generally that a separation distance of 0.6m can be achieved in the areas of lots proposed. Again detailed reporting on this aspect is outlined in a later section. Separation to the ground water table was determined in mid-August 2021 which was considered one of the wettest years for winter rain in many years. This therefore provides a strong indication that lots are suitable without the need for imposition of fill to support effluent disposal.

Each lot needs to be of sufficient size to accommodation development and have an unencumbered area for sewerage disposal under Section 5.2.4 of the Policy. As evident on the Structure Plan, a setback of 100m is easily achieved and only 1 lot has a setback of 80metres.

Clause 5.2.5 of the Policy refers to the type of onsite treatment system required and secondary treatment systems with nutrient removal will generally be required in public drinking water and sewerage sensitive areas. As stated this is not the case in this instance as the site is not in a sewerage sensitive area. In all other instances secondary treatment systems should only be required to address site specific physical or environmental constraints. In this circumstance, given a setback of 100m or for one lot 80m to an intermittent drainage line is proposed, lots within this context are recommended to be utilised using

secondary treatment systems whereas lots with an adequate setback and deep ground water could utilise conventional systems. A land Application Area for relevant lots close to the drainage line is indicated on the Structure Plan where a typical maximum 300sqm disposal field can easily be accommodated. Within the Shire of Augusta - Margaret River there are a number of alternative treatment unit system installers operating including Fuji Clean, Biomax, Taylex and others and therefore there a number of service operators in the area that can assist with installation and maintenance of ATU systems.

The Policy outlines information to support planning proposals including method of sewerage disposal and information to be supplied including site and soil evaluations outlined at Schedule 1. GALT have prepared such detailed information and Oversby Consulting have also prepared the Local Water Management Plan which also provides guidance with respect to treatment of sewerage attending to the requirements of the government sewerage policy with regard to analysis of conditions. A later section of this report documents this in further detail however, it is considered the proposal is adequately informed with relevant information with significant ground water monitoring being a feature. A key part of this investigation was to ensure that ground water conditions were monitored at the wettest possible time in addition to other readings at the end of a long wet winter (2020) so as to gain a clear understanding of the conditions generally at what could be considered worst case scenario. It is important for a structure plan under the Policy at Schedule 1 to identify how sewerage will be treated and disposed of and as outlined in a later section, this proposal is to ensure that all effluent disposal systems have a setback of at least 80m and 100m from the intermittent drainage line and private dam and ATU's are to be used where any lot is to be located within 100m of this feature. The location of the drainage line and dam was mapped in mid Augusta 2021 which was a very wet year which should provide a typical outer edge of what is considered to be the riparian area. The measurements for setbacks of effluent is therefore based on this information and therefore informs the Structure Plan appropriately.

Schedule 2 of the Policy has been addressed by GALT referred to in a later section of the report however, it should be noted that lots are in excess of 2000m^2. Soils are generally gravels, sandy loams and clay loams and with secondary treatment in soils that are generally gravels, sands and loams over clay indicates disposal fields that can be achieved within lots with a 80-100m setback. Where lots are in excess of 100m primary treatment systems can be used given lots are greater than 2000m^2. A disposal field up to 300m^2 can easily be achieved.

The information demonstrated within the attached reports and referred to in a later section clearly indicate the following key features:

- The site is not located within a sewerage sensitive area.
- The site is not located within a public drinking water catchment.
- The drainage line through the site is not a significant wetland or watercourse.
- The riparian area carries water generally in winter is narrow and shallow. The proposal is to protect this narrow riparian area with buffer planting.
- Ground water where lots are proposed is generally at 0.6m or deeper at the wettest time of the year.
- A minimum setback of 80m for one lot and 100metres for all others is set from the drainage line and private dam because soils and conditions suit, the drainage line is not a significant feature and the site is not in a sewerage sensitive or public drinking water situation. This is also recognising other decisions at Karridale recently where lesser setbacks have been supported. This is however on the basis of application of an alternative treatment unit.
- Assessment of ground water conditions has occurred on three separate occasions including 2020 and 2021 during periods of very wet periods and this provides a strong indication of worst case scenario conditions.
- A detailed assessment has occurred by GALT, experts in the field and this has also been supported by two years of winter water monitoring. This was supported by a secondary report by Ross Mars.
- The Structure Plan has been designed to respond to the characteristics of the site and rehabilitation of the drainage line which would provide a buffer both visually and environmentally. A feature of the proposal is also to ensure that public roads exist between the lots and the drainage line system in the northern part of the site.

The proposal therefore responds diligently to the government sewerage policy and given the specific approach for Karridale has been to provide for a small town site with onsite effluent disposal and water supply systems the need to take such an approach and inform where types of effluent disposal systems should be utilised is a key feature of structure planning for the land.

2.4.3 State Planning Policy 2.9 – Water Resources

The objectives of this policy are to:

- Protect, conserve and enhance water resources that are identified as having significant economic, social, cultural and/or environmental values.
- Assist in ensuring the availability of suitable water resources to maintain essential requirements for human and all other biological life with the attention to maintaining or improving the quality and quantity of water resources.
- Promote and assist in the management and sustainable use of water resources.

To address this policy, a Local Water Management Strategy and drainage strategy has been developed and detailed analysis has informed the design of the Structure Plan. Adequate setbacks for effluent disposal systems from the drainage line is proposal as well as rehabilitation and use of nutrient stripping basins will be employed. Lots within 100 metres from the drainage line will also be fitted with alternative treatment units.

2.4.4 SPP3.0 – Urban Growth and Settlement

The objectives of this policy are to:

- Promote a sustainable and well planned pattern settlement across the state with sufficient suitable land to provide for a wide variety of housing, employment, recreation facilities and open space.
- Build on existing communities with established local and regional economies concentrating investment in the improvement of services and infrastructure and enhance the quality of life in those communities.
- Manage the growth and development of urban areas in response to social and economic needs of the community and in recognition of relevant climatic environmental, heritage and community values and constraints.
- Promote the development of a sustainable and livable neighbourhood form which reduces energy, water and travel demand while ensuring safe and convenient access to employment and services by all modes.
- Provides choice and affordability of housing and creates an identifiable sense of place for each community.
- Coordinate new development with the efficient, economic and timely provision of infrastructure and services.

The proposal responds to SPP3.0 in that it is consistent with strategic planning framework that has been developed to take into account the above objectives. The various policies applicable have clearly identified Karridale as a small town that would accommodate up to 500 persons and a clear objective has been to provide for an offering of residential land adjacent to the school and community precinct to support this facility and logically provide for family leaving.

Karridale in itself will also be an affordable option for accommodation of population within the Shire with sustainable principles employed and proximity to major settlements including Augusta and Margaret River.

2.4.5 SPP5.4 – Road and Rail Noise

SPP5.4 applies to all stages of planning in Western Australia, where noise sensitive land use is proposed within the policies trigger distance of specified transport routes or when new or major upgrades of road and rail are proposed. The transport routes identified are considered of key economic importance due to their high vehicle movements and/or freight handling functions.

The objectives of the policy is to:

- Protect the community from unreasonable levels of transport noise.
- Protect strategic and other significant freight transport corridors from incompatible urban encroachment.
- Ensure transport infrastructure and land use can mutually exist within urban corridors.
- Ensure that noise impacts are addressed as early as possible in the planning process.
- Encourage best practice noise mitigation design and construction standards.

To address this policy, acoustic experts were employed and testing/modelling undertaken and this has informed the Structure Plan identifying a line which indicates the extent of noise requiring attention that would emanate from Bussell Highway such that dwellings can be located further than this or if not, quiet house designs are implemented. Technical appendices within this document details this investigation and advice on the Structure Plan.

2.4.6 SPP3.6 - Infrastructure Contributions

This policy sets out the principles and considerations that apply to development contributions for the provision of infrastructure in new and established urban areas, and the form, content and process to be followed.

The Shire of Augusta Margaret River have already developed a developer contribution scheme for Karridale and the subject site is already identified within a developer contribution area.

2.4.7 SPP3.7 – Planning in Bushfire Prone Areas

SPP3.7 directs how land use should address bushfire management risk in Western Australia. It applies to all land which has been designed as bushfire prone by the Fire and Emergency Services (FES) Commissioner as highlighted on the map of Bushfire Prone Areas.

To address SPP3.7 a bushfire consultant has been engaged to undertake a detailed assessment of the relevant matters as required under the policy and associated guidelines and this assessment and advice from the consultant has informed the Structure Plan and the Bushfire Management Plan appended to it. This is further explained in the technical appendices section and other sections of this document.

2.5 Other Approvals and Decisions

As explained elsewhere in this report, the subject site was considered for rezoning previously by the Shire of Augusta Margaret River and it was resolved to support a Scheme Amendment at the ordinary council meeting in late 2014. Pursuant to this detailed investigations occurred including initially difficulties in confirming an access point to the site from Bussell Highway. After several years it was negotiated that an access point to Bussell Highway could be taken in the northeast of the site and correspondence has been provided to the consulting engineer on the project confirming this. Effectively, Main Roads have therefore given their tacit approval to the entry to the site and the Shire have supported in principle the objective of rezoning the land. This includes the need to prepare this Structure Plan.

It should also be noted the Local Planning Strategy 2020 has already been endorsed by the Commission and this decision of the Commission allows movement immediately to consideration of the development of the land the subject of this Structure Plan.

2.6 Pre Lodgement Consultation

Prior to lodgement of this amendment a number of meetings were held with Shire planners. This particularly centred on the design and consideration of a number of lots, issues to address, information to submit etc. It was confirmed through detailed liaison with the Shire planners that the number of lots to be identified within the site was to be determined through an assessment of a Structure Plan. The site has been set aside for the development and is a significant size. Public open space has naturally been identified and is significant in area (almost 20%). In prior consultation, it became apparent that the Shire had advertised the Local Planning Strategy indicating a total of 46 lots would be suitable for the development area. The yield of the site was debated by Council specifically and it was ultimately decided that rather than try to identify a yield of number of lots for the site that this would be determined at Structure Plan stage. Notwithstanding this, this pre-consultation with the Shire, briefing session discussion and advertised yield of 46 lots provides some guidance and the Structure Plan has therefore been prepared having regard for this recent consultation and the characteristics of the site have resulted in the 35 lot Structure Plan prepared.

Pre consultation also occurred with the Karridale Primary School which included some discussion with adjoining owners to the northwest and southwest. The fire brigade captain was also present as well as quite a number of community members. In pre consultation it was identified that connection to the school was important with pedestrian connection needed central to the oval for safety reasons. Further, it was noted that the second road access north of the school through to Chapman Road was not considered desirable. As an alternative the school and immediate neighbour were open to an emergency access way connection which is what has resulted in the objectives of the Structure Plan. Pre consultation with the school also resulted in it being considered desirable to provide low key after school care/small day care use.

As stated previously, Main Roads WA were consulted and this was a key reason why the rezoning and Structure Plan has not yet been submitted until this time. Main Roads WA were initially unsure about connection to the Highway but following detailed analysis they have confirmed that an appropriate connection point in the northeast of the site is supported. This is reported in great detail in the engineering

technical report appended to this Structure Plan and this confirms the pre consultation and the identification of the entry point and the standard that this should be construction to.

Pre consultation also occurred specifically the adjoining owners to the northwest (Lot 101) who identified that they were very keen to develop a tourism enterprise however given they were in a cul-de-sac situation (end of Moodjar Court) have issues given there was no other way out which is generally a requirement of bushfire planning. As a result of this, an emergency access way easement has been identified within proposed Lot 9 within the Structure Plan area and this could assist the adjoining owners with their objectives for low key tourism use off their small rural allotment. This shows collaboration and cooperation between landowners.

3.0 SITE CONDITIONS AND CONSTRAINTS

3.1 Biodiversity and Natural Areas

To assess the biodiversity and natural characteristics of the land, detailed investigations have occurred on a number of occasions including flora investigations by botanist Kay Lehman of Ecologic in 2016 and 2021 (spring investigations) and a fauna investigation has been undertaken by zoologist Greg Harewood who is also a qualified fauna spotter with Section 40 clearance through the Department of Biodiversity, Conservation and Attractions.

As evidenced on the aerial photograph for the site, native vegetation is limited to a stand of trees with limited understory in the west and isolated vegetation about the drainage line in the south with a number of standalone paddock trees elsewhere on the site. Further areas of relevance include the unmade road reserve to the south of the site which is predominantly cleared with a few peppermint trees in the southern end that can be avoided through winding of an emergency access way. The location of the entry point to Bussell Highway in the northeast has been specifically located approximately 30 to 40 metres to the south to avoid street trees at this location which are non-native.

The floristic and fauna characteristics of the site are included in detailed reports within the technical appendices and these are summarised as follows.

3.1.1 Flora Investigations

Ecologic Environmental Services (Kay Lehman, botanist) undertook detailed investigations of the subject site including flora and vegetation assessment also targeting important species in spring time both in 2016 and 2021. The further assessment in 2021 was undertaken given 5 years had passed since the original investigation. A copy of the report documenting the findings is included in the technical appendices.

In summary, the springtime assessment both in 2016 and 2021 was a targeted flora and vegetation assessment and this included the subject site, the entry point to Bussell Highway and the unmade road reserve to the south. The findings of the vegetation on site included 67 discreet vegetation types with the majority of native vegetation recorded as in a degraded or completely degraded condition. The southern

area of native vegetation associated with the drainage line was recorded to be good to very good condition as was some roadside vegetation in pockets.

Sixty one (61) flora species from 31 families were recorded from the study area inclusive of 36 native species and 25 introduced species. No threatened (declared rare species) were identified and the majority of flora conservation significance would have been identifiable within the surveys giving the timing was optimal.

It was noted the investigation in 2021 noted 4 additional species and a general spread of some weeds. The studies resulted in a recommendation that the results of the study considered against the proposed development footprint confirms there will be no impact on conservation significant flora or vegetation within the study area.

A figure included within the report illustrates the nature of the vegetation including open forest, woodland, scattered trees, isolated trees and herbland. The vegetation quality is principally degraded or completely degraded with some good quality vegetation associated with the drainage lane and a small section of the unmade road reserve to the south.

The investigation provides advice with respect to the status of the floristic characteristics of the site and key findings include no flora significance, no limitations for proposed development but obviously it will be advantageous to improve the vegetation within the drainage line area and manage weeds on site. The proposal can serve to facilitate this objective.

3.1.2 Fauna Investigations

Greg Harewood (Zoologist) was engaged to undertake a fauna investigation of the site taking into account the development proposal for residential development having regard for the proposed Structure Plan. Greg Harewood is a highly respected Zoologist operating in the southwest and has Section 40 universal clearance for fauna spotting. This report included a detailed investigation of the site conducted in October 2021 considered to be an optimal time for such work.

The fauna investigation is documented in a report included in the Technical Appendices however the summary of this investigation and the findings are explained below.

The fauna investigation was undertaken specifically with field work on 8th October 2021 consisting of a series of on foot transects across the survey area.

Key findings included consideration that most of the site had been cleared for pasture and the remnant vegetation present is comprised of three larger groves of woodland forest and scattered paddock trees. The report estimates there is approximately 1.3 hectares of vegetation on the site.

Most of the vegetation is noted as being woodland forest generally of the Karri, Marri and to a lesser extent Peppermint and Jarrah trees over open shrubland and grassland/herbland of introduced pasture grasses.

It is also noted there is a short degraded seasonal drainage line in the southern section of the survey area and a manmade dam in the eastern boundary location. The report indicates that given the degree of disturbance and the limited extent of native vegetation the original fauna assemblage within the survey area is likely to be depauperate in many aspects in particular with respect to ground dwelling species which rely on dense native understorey which is almost absent or very sparse.

No evidence of any fauna species of conservation significance identified in the literature review was observed on site.

The investigation identified a total of 71 potential Black Cockatoo breeding habitat trees and most of these trees (57) appeared not to contain hollows of any size. The lack of hollow bearing trees can be attributed to the relatively young age of the trees that were present. Ten trees contained apparent or obvious hollows all of which were assessed as being unlikely suitable for Black Cockatoos to currently use for nesting purposes due to the hollows apparent small size, unsuitable orientation and/or low height above ground level.

Four of the trees appeared to contain hollows considered potentially suitable for Black Cockatoos to use for nesting purposes but this was not confirmed and no actual signs of use were noted.

Based on the current Structure Plan, about 3 or 4 habitat trees may need to be removed to allow for the proposed development to proceed. None of these trees contain possible larger hollows suitable for Black Cockatoos.

No evidence of Black Cockatoos foraging on vegetation within the survey area were observed. The quality foraging habitat within the area was mainly defined as containing marri which is scattered in relatively low densities throughout the forest and therefore has a limited extent. No evidence of Black Cockatoos roosting within the survey area was also noted.

With respect to Western Ringtail Possums, it was noted the limited area of woodland/forest does contain some potential habitat however the lack of observations of Western Ringtail Possums including scats, dreys and individuals does suggest the overall habitat is possibly marginal in quality.

Other species were recognised as being potentially likely to occur on occasion however the proposed development will see the retention of almost all remnant vegetation within the survey area and therefore negative impacts on fauna including those of the conservation significance is anticipated to be negligible. The report states that no overall change in the conservation status of any fauna species currently utilising the survey area is therefore anticipated.

Further details with respect to the fauna investigation is provided in the technical appendices section.

3.2 Landform and Soils

3.2.1 Soil Types

The Department of Agriculture – Western Australia undertook a comprehensive land capability study of the Busselton Margaret River Area in 1990 and mapped soils of the area. It is noted that the soils specific to the site are of the Cowaramup Uplands system. The Cowaramup Uplands system is a gently undulating to undulating plain formed on the lateritised granitic basement of the Leeuwin block. The land system was primarily used for grazing sheep as well as beef and dairy cattle and pasture growth is generally good. The land system is generally not suitable for horticulture because of the lack of ground water which is almost non-existent and dams and soaks are able to supply sufficient quantities of water are not common.

The majority of the site is covered by the soils of “C” classification which are Cowaramup Flats and Gentle Slopes. These are soils of the gravelly duplex pale grey mottled mungite variety and where slopes exist further gravelly duplex soils also exist. The soils following the drainage line system are of the Cw soil type which are Cowaramup Wet Flats, poorly drained flats with slight depressions with pale grey and mungite

soils. Further evidence of the detailed soil types is provided in the reports accompanying the Geotechnical and Effluent Disposal Capability Assessment prepared by Galt, Halsall and Associates Auger Report and Local Water Management Strategy by Oversby Consulting appended to this report.

3.2.2 Acid Sulphate Soils

Acid sulphate soil mapping identifies the soil type as having moderate to low risk generally within the C Cowaramup soils classification and moderate risk in the Cw soil classification area. The presence of moderate risk in the Cw soil classification is within the parameter drainage line areas and the majority of lots are within the soils that present a low risk. The likelihood of excavation is minor therefore potential for acid sulphate soils is considered relatively low. Further information regarding acid sulphate soils is provided with the report prepared by Oversby Consulting and at subdivision stage acid sulphate assessments can be progressed in further detail if considered necessary. It should be noted however that high risk of acid sulphate soil impacts does not exist within the site.

3.3 Ground Water and Surface Water

3.3.1 Ground Water

Detailed assessments have occurred on three separate occasions specifically to analyse groundwater characteristics of the land. This included installation of groundwater monitoring bores across the site by TME in 2011 and 2012. The results of the groundwater monitoring over these two years as is typically required is reported in the Local Water Management Strategy by Oversby Consulting referred to in the technical appendices. Four bore holes are located within the subject site spread across the area and the highest groundwater level evidenced within these bore holes within the site was 700mm below surface.

Further investigations of groundwater were undertaken by GALT in October 2020 following three months of heavy rain. This is evidenced in the figure below. This indicated at the Witchcliffe Bureau of Meteorology monitoring site that the mean rainfall in July, August and September is 192.6mm, 157.9mm and 109.2mm respectively. Rainfall in 2020 for these three months included readings of 248.8mm, 169.6mm and 137.8mm. This indicates that above average rainfall had been received for three months prior to the assessment by GALT. Again, the technical appendices include the GALT report and this includes a summary of the findings with respect to groundwater and recommendations with respect to effluent disposal capability.

The report documents the digging of 21 test pits across the site with depth to groundwater analysed and reported. Table A1 from the report is included at Figure 9 below and this indicates that groundwater was not evidenced in 9 of the test pits and most test pits had a groundwater reading in excess of 1 metre with only 5 test pits having less than 1 metre depth to groundwater with the shallowest being 0.6 metres in test pits 8 and 9. The location of test pits across the site excerpted from the GALT report is also provided below at Figure 10.

Figure 9 – Table A1 taken from GALT report

Source: GALT

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Table A1: Summary of Soil Categories

Test Pit Number	Main Soil Type/s 0.0 – 1.0 m	Indicative Soil Category	Indicative/Recorded Hydraulic Conductivity[2] (m/day)	Depth to Groundwater[3] (m)
BH01	SAND (SP) over Silty SAND/SAND (SM-SP)	2	1.4-3.0	1.0
BH02	Sandy GRAVEL (GP) over CLAY (CL)	6	<0.03	GNE
BH03	SAND/Silty SAND (SP-SM) over Silty SAND/SAND (SM-SP) over Clayey SAND (SC)	2	1.4-3.0	1.7
BH04	SAND (SP) over Silty SAND/SAND (SM-SP)	2	1.4-3.0	0.7
BH05	SAND (SP) over Silty SAND/SAND (SM-SP)	2	1.65	0.9
BH06	Sandy GRAVEL (GP-GM) over CLAY (CH)	1	7.5	GNE
BH07	Clayey SAND (SC) over Sandy CLAY (CI-CH)	6	0.03	1.8
BH08	SAND (SP) over Silty SAND/SAND (SM-SP)	2	1.4-3.0	0.6
BH09	Silty SAND/SAND (SM-SP) over GRAVEL (GP-GM)	1	3.23	0.6
BH10	Sandy GRAVEL (GP-GM)	1	>3.0	GNE
BH11	Sandy GRAVEL (GP-GM) over Sandy CLAY (CI)	1	>3.0	GNE
BH12	SAND (SP) over Sandy GRAVEL (GP-GM)	1	>3.0	GNE
BH13	SAND (SP) over Silty Sandy GRAVEL (GM)	1	4.57	0.8
BH14	Sandy GRAVEL (GP) over Sandy CLAY (CH)	1	>3.0	GNE
BH15	Silty Gravelly SAND (SM-SP) over Sandy CLAY (CH)	1	>3.0	GNE
BH16	Sandy GRAVEL (GP) over Sandy CLAY (CH)	6	0.03	GNE
BH17	SAND (SP-SM) over Silty Sandy GRAVEL (GM-GP)	1	>3.0	1.8
BH18	Sandy GRAVEL (GP-GM)	1	3.13	GNE
BH19	SAND (SP)	1	>3.0	1.2
BH20	Silty SAND (SM) over Sandy CLAY (CI-CH)	4	0.16	1.6
BH21	Silty SAND (SM-SP)	2	1.4-3.0	1.1

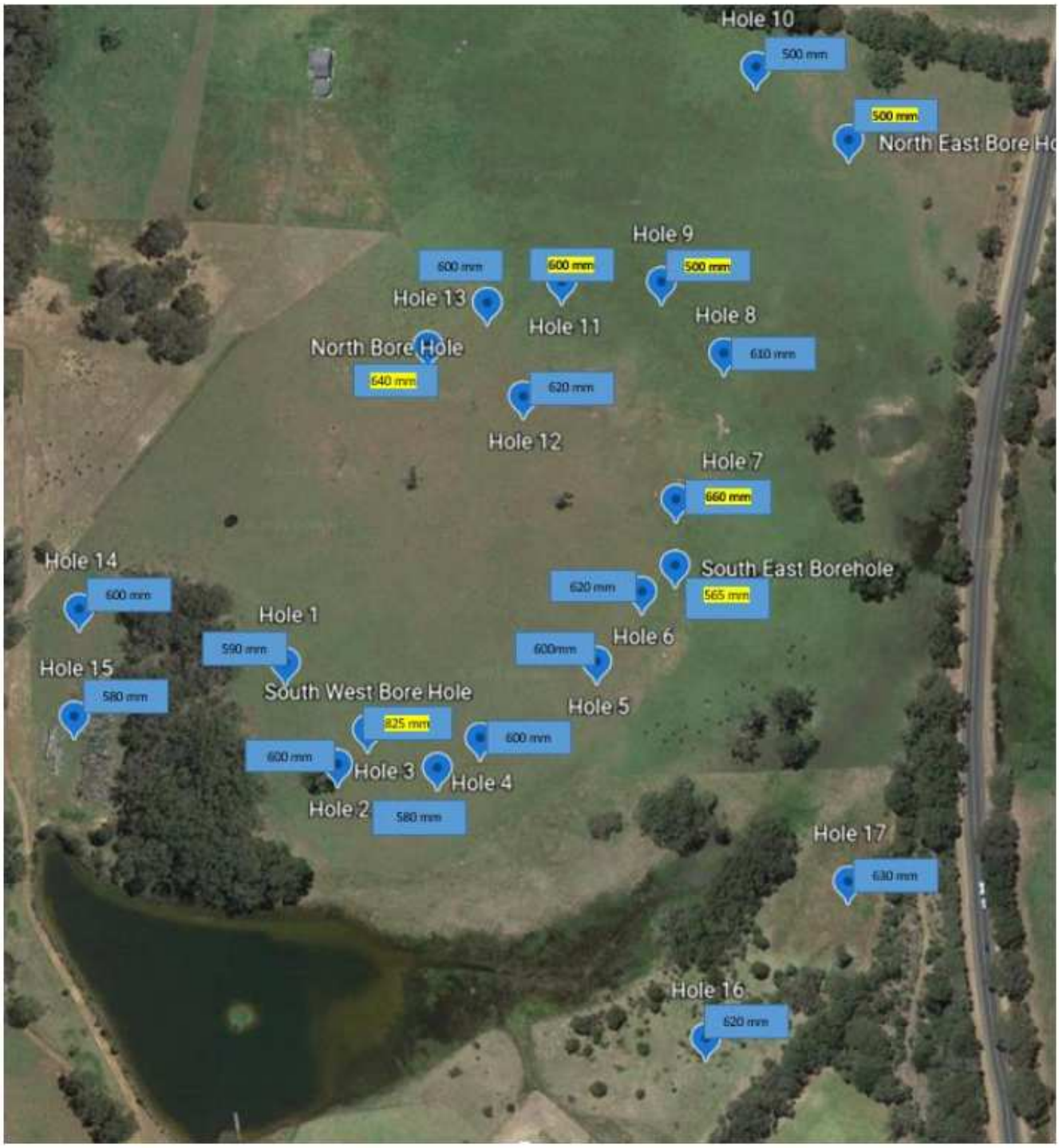
Note: 1. Permeabilities highlighted in yellow are the results of the constant head permeameter tests conducted

Figure 10 – Location of test pits taken from GALT report Source: GALT

Following the reporting in October 2020, formulation of the Structure Plan was occurring and this coincided with a very wet winter in 2021. Similar to 2020, mean rainfall was received in May, well above average in June and July and as a result very wet conditions were experienced in August. To inform consideration of groundwater conditions and finalised design of the Structure Plan, further groundwater testing occurred by Halsall and Associates in August 2021. The report documenting the findings of this investigation including the digging of a large number of auger holes is also included in the technical appendices.

The August 2021 assessment included the consideration of groundwater levels within the existing bore holes from the original TME investigation and the digging of 17 test holes by auger (250mm x 600mm generally) to determine groundwater near the surface. This was to try and find the extent of groundwater near the surface within the site at the wettest time of year. A diagram indicating the results of the test pits and depths to where groundwater was evidenced is provided at Figure 11 below.

Figure 11 – Diagram indicating the results of the test pits – August 2021 Source: H&A



In summary, test pits were dug generally to a depth of around 500 to 600mm and groundwater was evidenced in 3 test pits and 4 bore holes. Groundwater was evidenced at between 500mm and 825mm in the 7 samples that demonstrated groundwater. The report demonstrates a consideration of groundwater

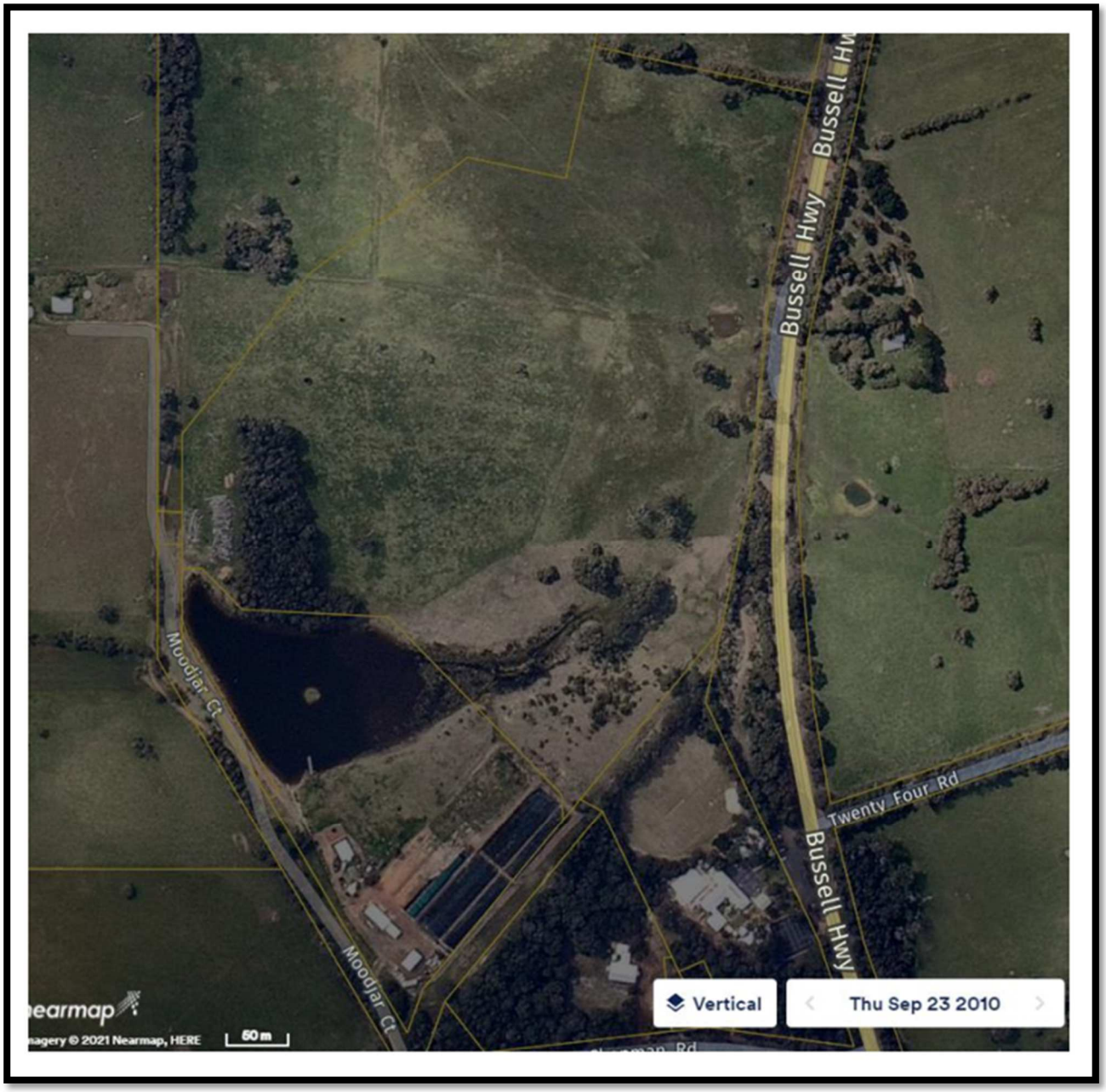
across the site and assists the interpretation of information provided by Oversby Consulting through the Local Water Management Strategy.

The investigations indicate that higher ground water tables are generally evidenced around the drainage line and the edge of depth to groundwater at around 600mm can be interpreted from the information derived.

3.3.2 Surface Water

As evidenced on the Structure Plan, a location of general surface water across the site is illustrated based on a traverse of the site in August 2021. The drainage line is very shallow and intermittent and can be generally traversed by foot except for the area of the obvious dam within the adjoining Lot 101 and the immediate tail of this within the subject site. Surface water does not appear in summer within the site save for the tail of the dam in the south of the site and the small previously established stock watering dam in the central east. This is evidenced even within a photograph on 23rd September 2010 (see Figure 12 below).

Figure 12 – Photograph illustrating surface water – 23rd September 2010 Source: Nearmap



In winter time some puddles were evidenced on the property after heavy rain however these are not representative of the groundwater table which was generally at 600mm in depth in the vicinity of such puddles. This surface puddling is probably representative of scouring by cattle and padded clay or sand.

The surface water considerations of the site have been demonstrated on the Structure Plan so that these surface water conditions experienced in winter time are taken into account for setbacks for effluent disposal

and such areas have been placed within future public open space areas with adequate separation where active/passive recreation opportunities could be experienced.

Photographs depicting the surface water as evidenced on the site in August 2021 are included in the groundwater report in the technical appendices.

A Local Water Management Strategy has been prepared for the subject site and this is attached as an Appendix this has been prepared by Oversby Consulting and this has been prepared in consultation with GALT, Halsall and Associates and Ascent Engineering and has informed with the design of the Structure Plan and therefore proposed subdivision.

3.3.3 Local Water Management Strategy

Oversby Consulting were engaged early on in the process to assist in providing advice with respect to Local Water Management and the design of the Structure Plan. This was prepared with the benefit of previous groundwater monitoring 2011/2012 by TME and the assessment by GALT October 2020 with respect to groundwater and effluent disposal capability. Given the winter of 2021 was a very strong event with heavy rainfall further groundwater testing occurred in August 2021 to further inform both the GALT report and the Local Water Management Strategy. A copy of the Local Water Management Strategy is included in the technical appendices.

In summary, the Local Water Management Strategy addressing all the relevant issues that need to be covered for the subject site and this has provided firm advice with respect to the design of the Structure Plan and justification for lot layouts, road alignments, drainage elements and effluent disposal methods and domestic/ firefighting water supplies.

Key elements for the plan include water conservation and servicing with onsite water and effluent disposal systems which is recommended for the Karridale town site and has been implemented already through approvals for two previous urban areas at Karridale crossroads area. This includes houses supplying their own water through rainwater capture (120,000 kilolitre tanks), each lot treated effluent with minimised risk for population to groundwater and downstream systems, public open spaces via retention units and street

landscaping to have a strong focus on water wise local native species and firefighting tanks designed for water storage as is required.

Stormwater management will have to pitch basins that limit outflow from the development to comparable pre-development level events up to 20% AEP.

Bio retention basins will be installed to attenuate trees and infiltrate the 1EY storm events. A portion of the road network that adjoins the public open space areas will sheet flow across grass and all lots will detain part of peak flow within a 1 kilolitre air gap within rainwater tanks and linked to the roadside drainage system.

Flood protection will be dealt with by all the building pads being designed to have a minimum separation of 300mm between habitable floor levels and the 1% AEP levels, relevant lots will have a finished floor level of 500mm above 1% AEP flood level and the drainage network flow at the capacity and excess water will be directed down the road reserves and drainage reserves to protect houses and infrastructure.

With respect to groundwater management, inflows to the groundwater from the road network will predominantly be treated through bio retention basins.

Building pads and infrastructure sites will be undertaken where necessary so there is adequate clearance from the maximum groundwater/drainage level or controlled level and finished surface level.

Subsoil drainage pipe networks will only be used where higher groundwater is encountered within the road reserves. Groundwater discharge regimes are to be maintained so there is no negative impacts on the subject land or downstream.

All onsite effluent management systems on lots within 100 metres of the onsite waterways (minimum 80 metres) are to incorporate secondary treatment to assist in minimising nutrient and other contaminants entering the groundwater near this landform.

A water dependent ecosystem management will be developed through water sensitive urban design, bio retention basins, soak wells and protection of nutrients from water runoff from impervious services. Public

open spaces will be composed of predominantly native species and minimal lawn areas. Onsite waterways are to be rehabilitated with native vegetation and weed control.

A new ephemeral waterway habitat will be created through appropriate planting of native vegetation and with water sensitive urban design features. This will be complemented by the protection of existing onsite vegetation, planting of new vegetation and enhancement of linkages to fauna habitat households will also be informed regarding nutrient water wise garden practices to reduce nutrient loading on private lots.

The Local Water Management Strategy serves to support the Structure Plan, addressing the key elements as is required under the relevant framework.

3.4 Bushfire Hazard

The subject site falls within a bushfire prone area under state mapping and therefore is subject to bushfire assessment. A level 3 bushfire consultant (Anthony Rowe of Envision) was engaged to assist in designing the structure plan and providing advice with respect to bushfire and ultimately a bushfire management plan to support the proposal. The Bushfire Management Plan prepared to support the objectives is included within the technical appendices.

The key issue initially for the site was to consider access as a primary objective for the land which was confirmed with Main Roads WA as being via a new intersection to Bussell Highway in the northeast part of the site. Given the subject site is located within a predominantly cleared pasture area with the only vegetated area being about the Primary School and Bushfire Brigade/Community Centre immediately to the south, access/egress from the site in most instances would likely be straight to Bussell Highway where access is available northwards to other town sites and southwards to Augusta. This provides that the site is in a good immediate location for alternate access out of the area. With respect to its secondary access, a public road exists immediately to the south of the site which is predominantly already cleared and this presents as an ideal opportunity for a second access in the event of an emergency. Prior to consideration of the proposal, consultation occurred with local fire brigade captain and school given the proximity of the public road to these facilities and it was requested that a public road not be established through this section and rather than an emergency access way be presented as a solution. This was presented to the bushfire consultant and included as an objective given the primacy of Bussell Highway and this context in any case. The

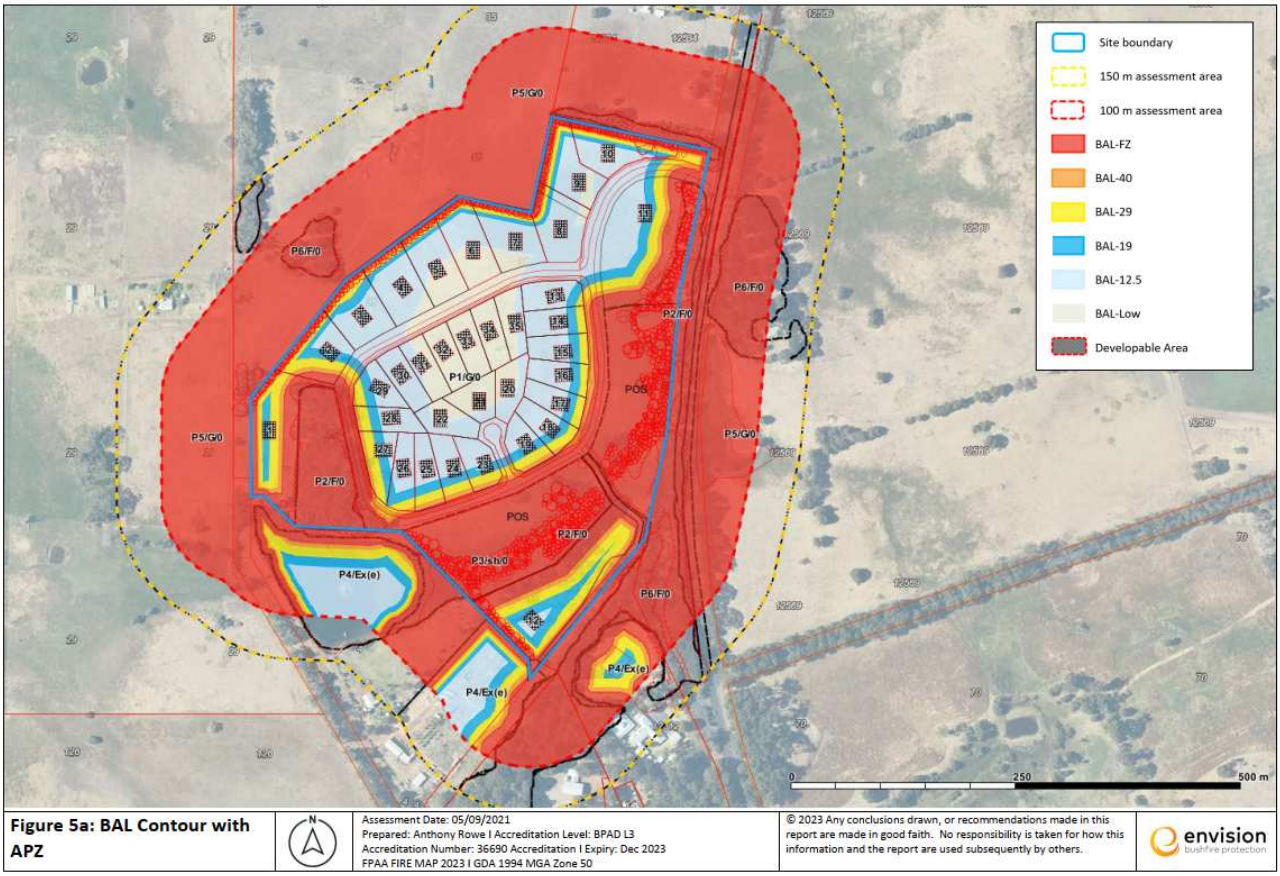
emergency access way arrangement has been therefore indicated on the Structure Plan and Bushfire Management Plan to support the proposal and provide an alternate means of access/egress from the subdivision area. This is also convenient because it will provide a method of access to the site from the bushfire brigade centre on Chapman Road if access via Bussell Highway is not preferred.

The internal road network is essentially a loop road system with one (1) small cul-de-sac essentially to provide access to 3 lots.

Access from the immediate road network are two (2) firefighting tanks one (1) in the north upon entry to the subdivision and the other in the south and both are readily accessible from the public road network. This provides two (2) anchor points at each end of the structure plan for water supplies for firefighting within the area. This satisfies water supply requirements.

An assessment of the bushfire attack levels applicable to the area was also undertaken to inform the subdivision and Structure Plan design. The Bushfire Attack Level mapping included in the Bushfire Management Plan is provided at Figure 13 below.

Figure 13 – Bushfire Attack Level Assessment Mapping Source: Envision



As evident above, the BAL ratings applicable to lots are generally in the low levels and none of the lots are provided with areas where dwellings must be constructed within a BAL 40 or worse situation. All lots are provided with a location for construction of a house BAL29 or better and notifications on titles can inform of the application of the bushfire management plan also the ability to construct only within suitable areas. A peripheral road network has generally been applied to separate areas of bushfire risk (public open space) from development of dwellings on lots and this provides a sound approach to bushfire management within the site.

Peripheral firebreaks where public roads and emergency access ways are not provided also are indicated and this is due to the fact that the site generally is bounded by grazing land and provision of hard public road infrastructure would be unfeasible.

Another feature is that the battleaxe lot is connected to alternate method of access to Moodjar Court/Chapman Road via emergency access way arrangements thus ensuring any lot in a battleaxe configuration is provided with secondary alternate access.

The Bushfire Management Plan appended to this report addresses the policy framework and all applicable elements and demonstrates the suitability of the configuration proposed. A key feature is the fact that the site is located within a very broad cleared grazing area, is immediate to the bushfire brigade facility and Bussell Highway where ready access to other areas of the Shire can easily be achieved.

3.5 Heritage

3.5.1 Indigenous Heritage

A search of the aboriginal enquiry system available through the Department of Planning Lands and Heritage advises that there are no known indigenous heritage sites within the area. Further, it is noted that a survey along Bussell Highway has been conducted previously which would have potentially considered portions of the land and identified any particular features. There are also no particular features within the site that present as potentially interesting sites that warrant investigation. Mapping from the heritage enquiry is provided at Figure 14 below.

Figure 14 – Aboriginal Heritage Enquiry System Mapping Excerpt

It is noted the proposal was referred to relevant government agencies for comment and obviously the Heritage Act requirements will be followed should development proceed. The dept of Aboriginal Affairs advised in response to the proposal:

"A review of the Register of Places and Objects, as well as the Aboriginal Heritage Database, concludes the above land does not intersect with any known Aboriginal sites or heritage places as administered by DPLH. Therefore, approval under the Aboriginal Heritage Act 1972 (AHA) is not required."

3.5.2 European Heritage

A review of the Shire of Augusta Margaret Rivers Municipal Inventory and Heritage Council WA State Register results that there are no identified European Heritage sites within the subject land area. The Dept Planning Lands and Heritage confirmed this during the advertising phase of the proposal.

3.6 Coast and Foreshores

The subject site is not located near the coast and with respect to foreshores, again there are no rivers but an ephemeral drainage which generally rises in the eastern part of the property in winter time, flows at a shallow depth at the peak of winter into a dam immediately to the west within Lot 103. The extremities of water moving at the surface was generally mapped on foot during August 2021 to inform the preparation of the Structure Plan. This is indicated on the Structure Plan. The intent of the proposal is to rehabilitate this drainage line and a wider surrounding area with appropriate species and this will serve also as a buffer to Bussell Highway. This feature will be placed within public open space and areas outside the rehabilitation of the drainage line could be available for residents in the area for active/passive recreation.

A requirement of the Structure Plan will be to prepare a rehabilitation plan for the creek to bolster the function of the drainage line and its immediate foreshore during winter. This will also be a visual screen.

3.7 Context and other Land Use Constraints and Opportunities

The context of the site is as explained previously immediate to Bussell Highway but also the community precinct for Karridale. Immediately to the south is the Karridale Primary School, community hall and fire brigade. The Karridale Primary School is an important historic school and photographs depicting the existing facilities including the hall, fire brigade and school are provided below.

School

School Oval

Standpipe at Fire Brigade Shed

Karridale Community Hall

School Playground

Karridale fire brigade shed

Immediately to the southwest of the site is a small rural holding that was subdivided off from the original farm considered to be surplus to the identified development site. Immediately to the west is Moodjar Court and broad acre farming properties. To the northwest is another small lot (Lot 101) which is a small rural holding and the owners of this land wish to establish a small tourism use hence the provision of an emergency access way for the benefit of this lot through Lot 9 as indicated on the Structure Plan. Another small landholding exists at the north which again is used as a retreat with low key farming activity. On the opposite side of Bussell Highway to the east again is a broad acre farm used for grazing purposes.

This context provides a number of opportunities and constraints including the following:

3.7.1 Opportunities

Connection to the community centre

The community centre to the south of the site incorporating the Karridale Primary School, community hall and fire brigade has provided the impetus for identification of a small community within the subject site. It is therefore logical and necessary to connect the development to this facility. An opportunity has therefore been identified to provide public open space to the boundary of the school where a pedestrian access can be provided such that children living within the subdivision can easily walk to school but also residents can walk to the community hall. This inter relationship and connection with the community precinct is seen as very beneficial. The Karridale Primary School currently only has 35 students and the clear objective of the Structure Plan is to provide for an excellent family living experience to support the school and the community precinct.

Access and bushfire connectivity

The fact the site is located immediate to Bussell Highway is very beneficial because this provides immediate access from public road network. Main Roads have been consulted and confirmed access to the site should be taken from the northeast corner as there are good sight distances in this location. It is however important to ensure that emergency access is available to a subdivision such as this and prior consultation with the school confirmed that it was not desirable to have a full road connection through across the northern side of the school oval. As such, it was considered highly desirable by the community that this be only an emergency access way which could be only used in the event of an emergency. This connection therefore responds to the need for fire access but also the desires of the community. In addition to this, the emergency access way provides a close and secondary link to the fire brigade for easy access with water supply.

Supporting land use for the school - employment

In prior consultation with the school it was noted it would be advantageous to have an after school care or day care facility in proximity. This would help support the school but also the community living within the subdivision to enable residents to have a more convenient arrangement for the management of children coming and going to and from the school. This includes younger age students. As such, proposed Lot 12 within the subdivision area has been identified with an 'Additional Use Right' for a low key after school care/small day care centre site.

Given the recommendations of the strategic planning framework, it is common for low key tourism opportunities to be identified in association with residential development such as this. There is a section of land upon the entry to the site which is relatively large and has an attractive outlook southward down the drainage line system and existing dam. This presents as an ideal opportunity for a low key guesthouse which would provide some accommodation for tourists and employment within the site. This location would not draw traffic into the residential area as it would common immediately from Bussell Highway and presents as an opportunity for an attractive land use that could work within this context.

Other opportunities for employment are promoted by the planning framework and consistent with other Structure Plans in the area other objectives are provided including:

- Art and craft centre.
- Consulting rooms for one practitioner to allow a doctor or physiotherapist to work from home for example.

Protection and enhancement of the drainage line

The Structure Plan identifies there is a drainage line which is probably not currently vegetated and an opportunity exists to rehabilitate this which will improve the function of this system and the water quality. This will also serve as a buffer providing a visual separation from Bussell Highway. Rehabilitation of the drainage line system could be facilitated on conjunction with the primary school which has been identified as desirable by the school. In addition, the stand of remnant vegetation to the west of the site can be protected and public open space can be provided as a nature walkway area providing a passive recreation opportunity. This will also be a visual buffer and will be designed as such.

Inter relationship with surrounding land uses

Given there are small rural properties adjacent to the north and southwest, consideration of inter relationship with these uses has been given on the Structure Plan. This has included identification of buffer planting around the periphery of larger lots (1.7ha and 4000m^2/1 acre plus) and this will provide a visual and agricultural separation. It should be noted the small rural allotments about the site have limited capacity for significant agricultural activities and it is typical in rural areas for development to be setback with 10 metres of landscaping provided. The Structure Plan incorporates this landscaping to assist in protection of the amenity of adjoining owners.

Development setback from the Highway

Typically a setback from Bussell Highway is a requirement and an assessment of this has been undertaken as part of the proposal. It was noted that a 40 metre setback has been applied to development at the Karridale Crossroads and this is because development is situated in what could be considered to be a town site situation. The same setback has been applied to the subject site however principally only to proposed Lot 11. This is also bolstered by the fact there is a landscaped bund proposed along the eastern boundary of Lot 11 and this will provide visual protection for any development within Lot 11. The setback has not been applied to Lot 12 because there is a very wide section of road reserve (old alignment of Bussell Highway) at this location which is densely vegetated and there will be no visual impact from any development within Lot 12 from the Highway. It has therefore been seen to be pointless to apply a setback in this location. The setback line is shown on the Structure Plan as applicable to Lot 11.

Effluent disposal setback

Again on a Structure Plan and as demonstrated in the number of reports attached to this Structure Plan, an effluent disposal setback line has been identified on the Structure Plan and this is to inform where effluent disposal systems, disposal fields, should be located (obviously further setback than this line).

Acoustic noise setback

An acoustic investigation particularly to consider noise emanating from Bussell Highway has been undertaken and this has resulted in the identification of a noise setback line on the Structure Plan. Any development that may be located within this setback line (east of it) may need to be constructed to standards of house construction to protect from such noise. This generally would only be applicable to development within Lot 12 because a noise attenuation bund is to be established within Lot 11 which would provide a likely opportunity to avoid the need for high level of construction in this lot.

4.0 TECHNICAL APPENDICES INDEX

Appendix No.	Document Title	Date of Document	Referral/approval agency	Summary of documentation modifications
A	Acoustic Assessment Rev3	22/12/2020		
B	Civil (Roads & Drainage) Concept Design RevB	1/11/2021		
C	Flora & Vegetation Assessment – Addendum V2	17/10/2021		
D	Fauna Assessment V1	November 2021		
E	Local Water Management Strategy V3	August 2023		
F	Bushfire Management Plan V4	25/07/2023		
G G2	Preliminary Geotechnical & Effluent Disposal Study Rev2 and ; Ross Mars report	2/11/2021 10/08/2022		
H	Updated Winter Wet Test Pit Report	16/8/2021		

4.1 Acoustic Assessment

Given the subject site is located within the proximity of Bussell Highway, an assessment of acoustic factors was undertaken and Herring Storer Acoustics were engaged for this purpose.

As part of the study, detailed assessment occurred including:

- Measuring the existing noise levels received at the proposed development associated with the current vehicle flows on Bussell Highway.
- Determining noise modelling of noise levels that would be received at residences within the development.
- Assessing the predicted noise levels received at residences and compliance with requirements of WAPC Statement of Planning Policy 5.4 “road and rail noise” (SPP5.4).
- If exceedences are predicted, the report indicates noise amelioration options for compliance.

The report documents general requirements for noise levels and takes into account criteria of the State Planning Policy. Noise monitoring occurred in November 2020 over a 13 day period, a copy of the report prepared by Herring Storer is included at Appendix A and this documents the findings and methodology used for the noise assessment.

The report documents modelling of future road traffic volumes and recommendations note that noise targets that should be achieved under the Policy include:

- external day maximum 55bb (a)laeq
- night maximum 50db (A)Laeq
- The Policy also states acceptable internal noise levels of:
- Living and work areas Laeq (day) of 40db(A) and bedrooms (L) aeq(night) of 35db (A)

Due to the size of the lots this can occur below relevant levels and a bunt is proposed adjacent to the intersection which will also have the secondary objective of screening development and allowing a landscaped feature addressing the view corridor objectives of SPP6.1. This results in all lots being generally situated in a situation where acoustic treatment of buildings is not necessary. Only one (1) lot will be provided with the need to achieve use of building materials to address acoustic requirements. This has meant

therefore the proposal addresses the relevant policy framework and has been carefully considered from an acoustic perspective from noise emanating currently and in future from Bussell Highway.

4.2 Civil (Roads and Drainage) Investigation – Traffic Impact Assessment

Ascent Engineering were engaged early in the process to assess with the design of the Structure Plan taking into account the characteristics of the site, the objectives for road access to be connected providing emergency access to the south, consideration of primary access from the Highway and drainage and servicing elements.

The technical report is included at Appendix B.

With respect to access to the Highway, the report acknowledges earlier investigations by TME Consultants and this resulted in ultimate feedback from Main Roads WA providing in principle support for a new intersection in the northeast of the site. The Structure Plan shows the location 30 metres south of the north boundary to avoid clearing of trees at this location although these do appear to be non-native.

The proposed Highway treatment has also been investigated and comments made in respect to the ultimate design.

Internal Roads

Internal roads have been designed to provide good quality access incorporating two very short cul-de-sacs. Principle roads are to be 6.2 metre wide, 2 coat bitumen seal except for the initial 220 metre length from Bussell Highway which would be 7.2 metre, 2 coat seal.

The design are that roads would have a 3% crowned and horizontal curves and rural design for standard unkerbed edges and 1 metre wide unsealed shoulders. The width of roads generally meet requirements of liveable neighbourhoods and the unkerbed roadage also provides for better stormwater sensitive urban design outcomes.

Road reserve widths are generally 22 metres except for the cul-de-sacs at 16 metres thus providing for management of drainage and adequate servicing.

Battleaxes are provided for Lots 1 and 2 combining with an emergency access way and another for Lot 39 again combining with an emergency access way arrangement.

It is noted that an emergency access way is proposed through Lot 9 for the benefit of Lot 101 to the west that have indicated in pursuing tourism development and this emergency access way would assist those prospects.

Elements required under the Bushfire Management Plan are also incorporated within the Structure Plan design including emergency access way, accessibility to two firefighting tanks, width of roads and emergency access ways/battleaxe legs all compliant and suitable for the purpose recognising the opinions of neighbours including the school.

Drainage Design Concept

Detailed drainage management strategy adopts a minor and major stormwater system design approach which includes:

- Minor drainage system is designed to accommodate rainfall events up to 20% AEP in street drains and property drains including piped drains and open drains without surcharging. The minor drainage system also includes water quality treatment for flows up to 63% AEP design storm.
- The major drainage design is designed to accommodate rainfall events greater than 20% AEP up to 1% AEP occurring as overland flow along road reserve and through public open space.

Stormwater Modelling

The stormwater model divides the site and other upstream hydrologically connected areas into eight catchments. These are explained in Figures 1 and 2 within the document.

It is noted that catchments (a) and (b) relate to the linear public open space and it is also noted that catchment (c) refers to water emanating from the eastern side of Bussell Highway which is deposited under the Highway into catchment (b). Catchment (d) principally incorporates the northern parts of the subdivision area and catchment (e) the majority of the balance of the central core. Catchment (h) refers to the public open space in the west. Stormwater runoff in each catchment is assessed with free development flows calculated. It is also recognised that each lot will provide its own potable water supply that will be stored

within a 120,000 kilolitre tank and as a result, no additional allowance is provided in the stormwater runoff calculations for impervious area from house and shed roofs.

The report documents how stormwater drainage will be managed through road corridors, public open space, drainage basins etc.

Initial designs and calculations with respect to water flow, culverts, cut off drains etc are also explained.

The report at Appendix B also explains traffic movements that are anticipated taking into account existing traffic movements northwards and southwards along Bussell Highway and this has resulted in an estimation of vehicle movements per day and therefore design elements within the road network.

The civil (roads and drainage) investigation - traffic impact assessment, therefore considers carefully the drainage access and water management as per a civil perspective and informs on suitable design which is a significant amount of detail that has led to the formulation of the Structure Plan and its layout. The report therefore serves to demonstrate that the Structure Plan is appropriate from a civil roads and drainage perspective.

4.3 Environmental Assessment

As documented within this report environmental assessments of the site have occurred including consideration of the flora and fauna characteristics both within the site but also road reserves that are to be utilised for access. The flora and fauna investigations have included springtime assessments in 2021 but a flora investigation was also originally undertaken in 2016 springtime. The flora and fauna reports are included at Appendix C and D.

In summary, the flora investigation identified there were no rare endangered priority species or environmentally sensitive areas and most of the vegetation was in a degraded state. Some vegetation was considered good however, impacts from previous land uses have obviously influenced the quality of vegetation. The proposed Structure Plan aims to avoid vegetation and bolster the environmental characteristics of the land by preparation of a rehabilitation plan specific to the drainage line particularly but also to provide a level of landscape buffering to Bussell Highway.

The fauna investigation also confirmed there were no rare or endangered species including Ringtail Possums which are a typical species to be investigated. Further, it was noted the proposal aims to avoid all relevant vegetation and where trees with hollows exist they can be protected in public open space or road reserve. The fauna investigation therefore indicates there are limited complications for implementation to the plan and the proposed Structure Plan serves to bolster fauna habitat through rehabilitation of the drainage line. Further, buffer planting around the periphery of the site to provide a visual buffer between neighbours will also provide further habitat.

4.4 Local Water Management Strategy

Oversby Consulting were engaged early on in the process to assist in providing advice with respect to Local Water Management and the design of the Structure Plan. This was prepared with the benefit of previous groundwater monitoring 2011/2012 by TME and the assessment by GALT October 2020 with respect to groundwater and effluent disposal capability. Given the winter of 2021 was a very strong event with heavy rainfall further groundwater testing occurred in August 2021 to further inform both the BAL report and the Local Water Management Strategy.

In summary, the Local Water Management Strategy (included at Appendix E) addressing all the relevant issues that need to be covered for the subject site and this has provided firm advice with respect to the design of the Structure Plan and justification for lot layouts, road alignments, drainage elements and effluent disposal methods and domestic/ firefighting water supplies.

Key elements for the plan include water conservation and servicing with onsite water and effluent disposal systems which is recommended for the Karridale town site and has been implemented already through approvals for two previous urban areas at Karridale crossroads area. This includes houses supplying their own water through rainwater capture (120,000 kilolitre tanks), each lot treated effluent with minimised risk for population to groundwater and downstream systems, public open spaces via retention units and street landscaping to have a strong focus on water wise local native species and firefighting tanks designed for water storage as is required.

Stormwater management will have to pitch basins that limit outflow from the development to comparable pre-development level events up to 20% AEP.

Bio retention basins will be installed to attenuate trees and infiltrate the 1EY storm events. A portion of the road network that adjoins the public open space areas will sheet flow across grass and all lots will detain part of peak flow within a 1 kilolitre air gap within rainwater tanks and linked to the roadside drainage system.

Flood protection will be dealt with by all the building pads being designed to have a minimum separation of 300mm between habitable floor levels and the 1% AEP levels, relevant lots will have a finished floor level of 500mm above 1% AEP flood level and the drainage network flow at the capacity and excess water will be directed down the road reserves and drainage reserves to protect houses and infrastructure.

With respect to groundwater management, inflows to the groundwater from the road network will predominantly be treated through bio retention basins.

Following building pads and infrastructure sites will be undertaken where necessary so there is adequate clearance from the maximum groundwater level or controlled level and finished surface level.

Subsoil drainage pipe networks will only be used where higher groundwater is encountered within the road reserves. Groundwater discharge regimes are to be maintained so there is no negative impacts on the subject land or downstream.

All onsite effluent management systems on lots within 100 metres of the onsite waterways (minimum 80 metres) are to incorporate secondary treatment to assist in minimising nutrient and other contaminants entering the groundwater near this landform.

A water dependent ecosystem management will be developed through water sensitive urban design, bio retention basins, soak wells and protection of nutrients from water runoff from impervious services. Public open spaces will be composed of predominantly native species and minimal lawn areas. Onsite waterways are to be rehabilitated with native vegetation and weed control.

A new ephemeral waterway habitat will be created through appropriate planting of native vegetation and with water sensitive urban design features. This will be complemented by the protection of existing onsite vegetation, planting of new vegetation and enhancement of linkages to fauna habitat households will also be informed regarding nutrient water wise garden practices to reduce nutrient loading on private lots.
The Local Water Management Strategy serves to support the Structure Plan, addressing the key elements as is required under the relevant framework.

4.5 Bushfire Management Plan

As is required and explained previously in this Structure Plan report, bushfire management planning is required to inform a Structure Plan of this nature. Consideration needs to be given to access, water supply, BAL ratings and for this purpose Envision (Level 3) bushfire consultants were utilised. The findings and advice of the bushfire consultants have also informed the Structure Plan. The Bushfire Management Plan is included at Appendix F.

In summary, the road network being direct from Bussell Highway is likely to be the primary method of access and egress from the subdivision and road networks are wide and open and cul-de-sacs are short being compliant with requirements. Where battleaxes are proposed, emergency access ways are also co-jointly indicated so that battleaxe lots are not situated in a throttled situation with access in two directions provided.

The emergency access way to the south is a fundamental feature which is to be incorporated within a battleaxe leg and unmade road reserve and this was supported by the school and local fire brigade captain as a better solution than providing a through road connection.

With respect to water supply, two firefighting tanks have been identified as is necessary to support lots with no fire hydrant and reticulated water system. Typically a 50,000 litre tank per 25 lots is required and as such two are indicated, one at the north upon the entry to the subdivision area and one to the south directly accessible from the cul-de-sac head and emergency access way in this area.

The Bushfire Management Plan also assesses carefully the Bushfire Attack Level ratings and demonstrates that each lot has a suitable area for a construction meeting BAL29 and to aid this peripheral road networks

have been used adjacent to public open space or strategic firebreaks considered in other locations adjacent to surrounding areas.

The Bushfire Management Plan serves to demonstrate the suitability of the proposed relevant framework.

4.6 Geotechnical and Effluent Disposal Study

To advise with respect to geotechnical aspects and also effluent disposal capability, experts in the field (GALT Geotechnics) were engaged and this involved an assessment of groundwater conditions specifically by investigations in October 2020 after a period of 3 months of heavy rain and again considering winter conditions 2021. A copy of the report documenting the findings and recommendations is included at Appendix G. Further supporting justification was provided by Ross Mars see Appendix G2.

In summary, the report included a description of the site, consideration of previous groundwater monitoring by TME (2011 and 2012 winters), measuring of bores that were still in situ by the previous TME monitoring regime, digging of 21 auger holes to a depth of around 2.5 metres by GALT on 14th and 15th October 2020 and assessment of capability geotechnically for construction but also for effluent disposal capability.

It was noted that groundwater conditions were generally favourable for effluent disposal and soils varied but included sandy clay, sandy gravel, gravely sand and clay soils across the site with good phosphorous retention index levels generally experienced. Groundwater was generally below 0.6 metres depth from the surface and capability for effluent disposal is generally considered favourable. It was noted that a setback of 50 metres could easily be achieved and lots in this context would be best suited to utilising alternate treatment units. Recommendation was that lots wholly in excess of a 100 metre setback from the winter wet drainage line conditions could utilise septic tanks and leach drain systems.

Geotechnically, again the subject site was considered suitable for construction and it was noted that the majority of the site was identified as class M soils with only a small portion identified as class H1 requiring minor attention and the southern portion as class M.

The investigation by GALT Geotechnics taking into account previous groundwater monitoring by TME and boreholes and further groundwater investigation in winter 2021 has provided guidance to the design of the

Structure Plan such that the establishment of dwellings in this context can be managed having regard a Government sewerage policy and effluent disposal and geotechnical considerations.

4.7 Winter Wet August 2021 Ground Water Testing Study

During the assessment of the proposal by GALT and Oversby Consulting experts in effluent disposal, geotechnical and water management, it became apparent that the winter 2021 was particularly wet. It was decided it would be beneficial to try to gauge an understanding of the water table across the site particularly at around 600mm in depth at what could be considered to be very wet year. As a result, Halsall and Associates embarked upon a study of the site to dig auger holes to a depth of 600mm plus where possible across the site in areas close to the drainage line so as to find the edge of the groundwater table and to inform the design of the Structure Plan further.

The report included at Appendix H has also been referenced by GALT, Ross Mars and Oversby Consulting.

This report provides site based evidence of groundwater findings across the site as documented and also a review of the existing bore holes that are still situated on the site from previous groundwater monitoring field work.

It was noted through the investigations in August 2021 that rainfall had been particularly heavy for the 3 ½ months preceding the investigation and no groundwater was evidenced within 500mm of the surface and all but one pit had at least 600mm of separation to the groundwater table on the 15th August 2021. This technical report has been used to further inform investigations by GALT and Oversby Consulting as well as the civil engineer.

5.0 CONCLUSION

The subject site has been identified for development for 12 years pursuant to strategic planning that identified expansion at Karridale endorsed in 1998. The Local Planning Framework has provided low density urban development opportunities for the site to support the community hub of Karridale including the Primary School and community centre which also harbours the bushfire brigade and also the overall town site of Karridale. The subject site was created specifically with excision of two smaller parts which were considered surplus and the resultant lot was intended to be developed once the Karridale Crossroads developments had commenced. The Karridale Crossroads subdivisions are well advanced and the Shire supported an amendment for the site with written advice in early 2015. Pursuant to this resolution significant investigations have occurred and this has been with the benefit of further review of the planning objectives for the site under the Sub Regional Strategy conducted by the Commission and also the Local Planning Strategy 2020 by the Shire.

The planning framework is clearly continued to identify suitability of the site to accommodate low density residential generally around the R5 to R2.5/R2 incorporating the need to protect the drainage line system but also recognising the need for access to Bussell Highway and emergency access to Chapman Road. The zoning of the land presented in this report is similar in format to those zoning objectives applied for other urban development sites at Karridale and the amendment is supported by a Structure Plan again designed to take into account the opportunities and constraints of the site, the relevant planning framework and provide appropriate lots and rehabilitation of the drainage line system.

The rezoning and structure planning for the land is consistent with all previous decision making of the Government and is supported by appropriate documentation.