

Valid until 19/10/2035

STRUCTURE PLAN AMENDMENT No. 2

Treendale South
Structure Plan



PREPARED FOR FASTBET INVESTMENTS PTY LTD



DOCUMENT CONTROL

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A	31.01.2020	Lodgement with the Shire of Harvey	KS	BCO	BCO
B	06.04.2020	Lodgement with the Shire of Harvey following initial comments	KS	BCO	BCO
C	20.05.2020	Lodgement with the Shire of Harvey following further comments	KS		
D	13.01.2021	Final for Approval	KS		
E	05.05.2021	Final for Approval	KS		
F	04.08.2021	Final for Approval	KS		

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Contents

EXECUTIVE SUMMARY	3
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PART 1 - IMPLEMENTATION

1.1	Structure Plan Area and Application of Structure Plan	6
1.2	Operation	6
1.3	Staging	6
1.4	Subdivision and Development Requirements	6
	Planning Policy Statements	6
	Subdivision and Development Requirements	6

PART 2 - EXPLANATORY REPORT

1	Planning Background	10
1.1	Introduction and Purpose	10
1.2	Location	10
2	Planning Framework	11
2.1	Greater Bunbury Region Scheme and Shire of Harvey District Planning Scheme No.1	11
2.2	Treendale South Structure Plan	11
2.3	Subdivision Approvals	11
2.4	Liveable Neighbourhoods	11
3	Site Considerations and Landuse	14
3.1	Bushfire Management Plan	14
3.2	Public Open Space	14
3.3	Environmental Management	16
3.4	Residential	16
3.5	Commercial Demand	17
3.6	Noise Mitigation	17
3.7	Movement Network	20
3.8	Infrastructure Coordination, Servicing and Staging	20
4	Conclusion	21

Figures

Structure Plan Map	8
Figure 1 – Location Plan	10
Figure 2 – Scheme Maps	12
Figure 3 – Existing Structure Plan	13

Appendices

Appendix A	Indicative Staging Plan
Appendix B	Bushfire Management Plan
Appendix C	Retail Needs Assessment
Appendix D	Acoustic Report
Appendix E	Details of Acoustic Wall

This structure plan is prepared under the provisions of the Shire of
Harvey District Planning Scheme No. 1.

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

22 FEBRUARY 2010

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b)
of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Date of Expiry: 19 October 2035

Table of Amendments

Amendment No.	Summary of the Amendment	Amendment Type	Date approved by the WAPC
1	• Replace the former school site and Community Purposes site with 'Residential - R20'; • Relocate the Local Centre (Commercial) cell adjacent to the Collie River bridge (fronting The Boulevard) and increase the land area by 0.28 ha to 0.77 ha; • Reconfigure the central POS site (POS C) to protect threatened fauna habitat trees; • Relocate the Community Purposes site to the central POS site (POS C); • Replace portion of the POS site near the Forrest Highway Landscape Buffer (POS F) with 'Residential - R40'; • Reconfigure and increase the Collie River foreshore reserve/POS by 0.9432 ha to 7.6932 ha to provide a 'low-threat' vegetation area adjacent to residential lots for bushfire protection and to protect threatened fauna habitat trees; • Designate 'Residential-R40' cells around the relocated Local Centre and the Collie River foreshore and 'Residential-R30' cells adjacent to 'The Boulevard', the relocated POS C and R40 sites; • Restructure the road layout east of The Boulevard providing free-flowing north-south routes (extension of Jupiter Drive) and staggered east-west routes; and • Provide for appropriate access arrangements for lots fronting The Boulevard.	Major	09/04/2019
2	• Replace the Local Centre with 'Residential-R30 and R40' and adjust surrounding residential density; • Remove the landscape buffer to Forrest Highway; and reconfigure adjacent residential cells. • Remove the requirement for toilet facilities on the foreshore Public Open Space. • Remove the requirement for lots with wider frontages within the central cells of Stage 5.	Standard	06/10/2021

EXECUTIVE SUMMARY

Harley Dykstra together with Calibre Professional Services has been engaged by Fastbet Investments Pty Ltd to prepare an amendment to the endorsed Treendale South Structure Plan for the undeveloped portion of land, currently being lot 9501, east of The Boulevard.

The purpose of the Structure Plan amendment is to remove the local centre site, which is to be replaced with residential development and to remove the landscaped noise bund adjacent to Forrest Highway, which is to be replaced by an acoustic wall.

Other minor amendments are being proposed as the development proceeds to address concerns raised by Government Agencies during the development process and contemporary planning practices.

Removal of the bund has allowed adjustment to the residential cells near the Forrest Highway for a more efficient use of the land. An acoustic wall with a landscaped vegetation strip will replace the noise bund.

The site previously identified for a local centre has been redesigned for residential development. Specialist advice indicates that the local centre in this location would be economically unviable due to the proximity of the District Centre at Treendale and the Eaton Fair Centre to the south at Eaton.

In addition, the residential densities surrounding what was the local centre site have been reviewed and reallocated to a more appropriate density for this location.

Following an application for subdivision for the land east of The Boulevard, the Department of Water and Environment (DWER) in consultation with the Shire of Harvey made a request that the area on the foreshore, previously shown as sporting oval with ablution and associated facilities is now proposed to be a more informal grassed area due to concerns relating to maintenance, nutrient pollution from ablutions facilities, fertilizer issues from the oval, and development of substantial structures on the floodplain, or on the steep banks of the river floodplain. Hence, it is proposed the ablution facilities shown on the current approved Structure Plan be removed.

The changes to the residential cells within the area shown as stage 5 on the original approved Structure Plan and more recently approved Modification No. 1 has allowed for a more efficient design of lots and road layout. The residential cells as shown in this Structure Plan will allow for the majority of dwellings to have their front or rear façade facing north with living areas parallel to side boundaries facing either east or west depending on individual lot design.

Modification No. 1 to the Structure Plan was approved by the WAPC on the 5th April, 2019. This was a 'major' amendment to the endorsed Structure Plan of 2010, which removed the primary school site, relocated the POS and community purposes site and reconfigured the residential cell layout.

A subdivision approval over the undeveloped portion of the Structure Plan area was issued by the WAPC on the 22nd November 2019. It is proposed the lots unaffected by this Structure Plan modification may be developed while this is considered by the Shire of Harvey and the WAPC. It is the intention of the developer to make application for a new subdivision approval in accordance with this Structure Plan for the portion of lots subject to the modification.

The Structure Plan provides a basis for zoning and subdivision of land and will be given due regard when determining applications within the Structure Plan area, including consideration of the objectives and requirements of the Scheme zones proposed by the Structure Plan. The Structure Plan Map outlines the applicable land uses and sets out the Planning Policy Statements and other requirements.

This Structure Plan Amendment has been prepared in accordance with Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (the Deemed Provisions) and the Western Australian Planning Commission's Structure Plan Framework.

A summary of key elements of the Structure Plan can be found in *Table 1*.

Summary Table

Item	Data
Total area covered by the structure plan	58.7233ha
Area of Residential land use proposed	32.6856ha
Total estimated lot yield	882
Estimated number of dwellings	882
Estimated residential site density	R20 21.6413ha 480 dwellings R30 8.1826ha 272 dwellings R40 2.8616ha 130 dwellings
Estimated population	2200
Number of high schools	0
Number of primary schools	0
Community purpose site	0.2861ha
Estimated area and percentage of public open space given over to:	
• Restricted open space	POS Area A 1.8121ha POS Area E 2.1972ha POS Area G 0.7413ha TOTAL 4.7506ha
• Neighbourhood Parks	POS Area D 1.8454ha TOTAL 1.8454ha
• Local Parks	POS Area B 2.0081ha POS Area C 1.2067ha POS Area F 0.4259ha TOTAL 3.6407ha

PART 1 – Implementation

1.1 Structure Plan Area and Application of Structure Plan

The Structure Plan area is represented by the area identified on the Structure Plan map. This modification applies to land not yet developed within the Structure Plan area.

Residential and community purposes lots shall be developed in accordance with the requirements of the 'Residential Development' zone or as required under the relevant local planning scheme (as amended) with due regard being given to the provisions of the structure plan and local development plan.

1.2 Operation

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

The Structure Plan (as amended) will be required to be approved by the WAPC prior to the approval of any application for subdivision.

1.3 Staging

The staging of subdivision is to be generally consistent with the Staging Plan – see **Appendix A**. However, this may be determined by specific subdivision applications in response to market demand and engineering advice.

1.4 Subdivision and Development Requirements

The Structure Plan provides a basis for zoning and subdivision of land and will be given due regard when determining applications within the Structure Plan area, including consideration of the objectives and requirements of the Scheme zones proposed by the Structure Plan. The Structure Plan Map outlines the applicable land uses and sets out the Planning Policy Statements and other requirements.

Planning Policy Statements

This Local Structure Plan (LSP) provides a framework for future subdivision and development of the land. Actual subdivision may vary from the Structure Plan, and requires approval from the Western Australian Planning Commission.

Subdivision and Development Requirements

1. The ceding of Public Open Space shall be carried out in accordance with the Staging Plan at *Appendix B*. Subdivision will not be approved by the WAPC until such time as a management authority has been identified and has agreed to manage the open space which is to be ceded for the corresponding stage of subdivision for which approval is sought.
2. An acoustic wall is to be constructed adjacent to Forrest Highway at such a time as identified by the approved Staging Plan, so as to ensure that no lots are created which would be subject to unacceptable noise impacts. The construction of the noise mitigation measures are to be in accordance with State Planning Policy No. 5.4 to the satisfaction of Main Roads WA.
3. Subdivision clearance, to any subdivision approval which may be issued, will not be granted by the Shire and the WAPC, until such time as the proposed roads can be connected to the wider road network, via the connections shown on the Structure Plan.
4. A landscaping plan is to be prepared and implemented for each stage of the subdivision.
5. An up to date BAL contour plan is to be lodged with any subdivision application.
6. A Foreshore Management Plan for Regional Open Space (ROS) and Public Open Space Foreshore areas is to be prepared and implemented to the satisfaction of the Shire of Harvey, the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions. The foreshore management plan is to include staging of ROS ceding.

7. Prior to the commencement of subdivision a Local Development Plan shall be prepared for R40 lots abutting the Foreshore POS, which satisfies the following requirements:
 - a) Development to address the adjoining foreshore areas;
 - b) Boundary fencing to be designed to enable passive surveillance of the adjoining foreshore reserve and public access ways, where applicable, and constructed to restrict vehicle access to the foreshore reserve; and
 - c) Maximum building heights of three storey's as defined by the Residential Design Codes.
 - d) Cut and fill not to exceed 1 metre.
8. Pedestrian pathways are to be constructed by the subdivider in the locations shown on the Structure Plan and to the specifications of the Shire of Harvey. Pathways within the Collie River foreshore area are to be located and constructed so as to minimise disruption to fringing vegetation.
9. Car parking is to be constructed by the subdivider in conjunction with the development of Public Open Space area 'D' to the satisfaction of the Shire of Harvey, the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions.
10. An Urban Water Management Plan, consistent with an approved Local Water Management Strategy is to be prepared and implemented for each stage of the subdivision.
11. Developer contributions are to be made by the subdivider as required by the Shire of Harvey and Shire of Dardanup Joint Town Planning Scheme No. 1.
12. All lots are to be connected to water and sewer, underground power and telecommunications.
13. Location of significant trees in relation to development to be confirmed at time of subdivision.
14. No direct vehicular access to Forrest Highway. Direct access is also prohibited to 'The Boulevard' carriageway except via service roads or as determined by a Transport Impact Statement.
15. Traffic noise attenuation is to be investigated at the subdivision stage for the lots abutting The Boulevard.
16. The ceding of Regional Open Space shall be carried out in accordance with the Staging Plan at Appendix A. Subdivision will not be approved by the WAPC until such time as a management authority has been identified and has agreed to manage the Regional Open Space which is to be ceded for the corresponding stage of subdivision for which approval is sought.
17. Before commencement of Stage 8, the timing of ceding of the Regional Open Space in relation to other stages of development, should be determined through joint discussion involving the proponent, the Shire of Harvey, the Department of Planning, Lands and Heritage and the Department of Biodiversity, Conservation and Attractions.



LEGEND

- EXISTING CADASTRAL BOUNDARIES
- EXISTING STRUCTURE PLAN BOUNDARY (TOTAL AREA = 59.00ha)
- PROPOSED CADASTRAL BOUNDARIES
- PROPOSED AMENDMENT BOUNDARY
- CONSERVATION CATEGORY WETLAND
- WETLAND 50 METRE BUFFER
- PROPOSED LOCATION OF SEWER PUMP STATION

LAND USE

- RESIDENTIAL - R20
- RESIDENTIAL - R30
- RESIDENTIAL - R40
- PUBLIC PURPOSE - COMMUNITY FACILITY
- PUBLIC OPEN SPACE
- PUBLIC OPEN SPACE (Foreshore Reserve - restricted use)
- ACOUSTIC WALL
- LANDSCAPING AND ACOUSTIC WALL RESERVE
- LOCAL ROAD
- LANEWAY
- SERVICE LANES
- INDICATIVE SITE FOR CAR PARKING
- PATHWAY - SHARED PATH
- TREES TO BE RETAINED (DEVELOPER COMMITMENT)
 - Eucalyptus Rudi (Flooded Gum)
 - Corymbia calophylla (Marri)
- OTHER TREES TO BE RETAINED IN POS
 - Corymbia calophylla (Marri)

250m
0m

PART 2 – EXPLANATORY REPORT

1 Planning Background

1.1 Introduction and Purpose

The purpose of the Structure Plan modification is to remove the local centre and replace with residential lots while adjusting the surrounding residential density to address this change in use.

In addition, the noise bund is proposed to be replaced with an acoustic wall to allow for a more efficient use of residential land. Adjacent residential cells have been modified to accommodate the reduced footprint of the acoustic mitigation measures.

Following the subdivision application of which some of the lots are currently being developed, comments from agencies and the Shire of Dardanup has required the removal of the formal oval and facilities from the foreshore area.

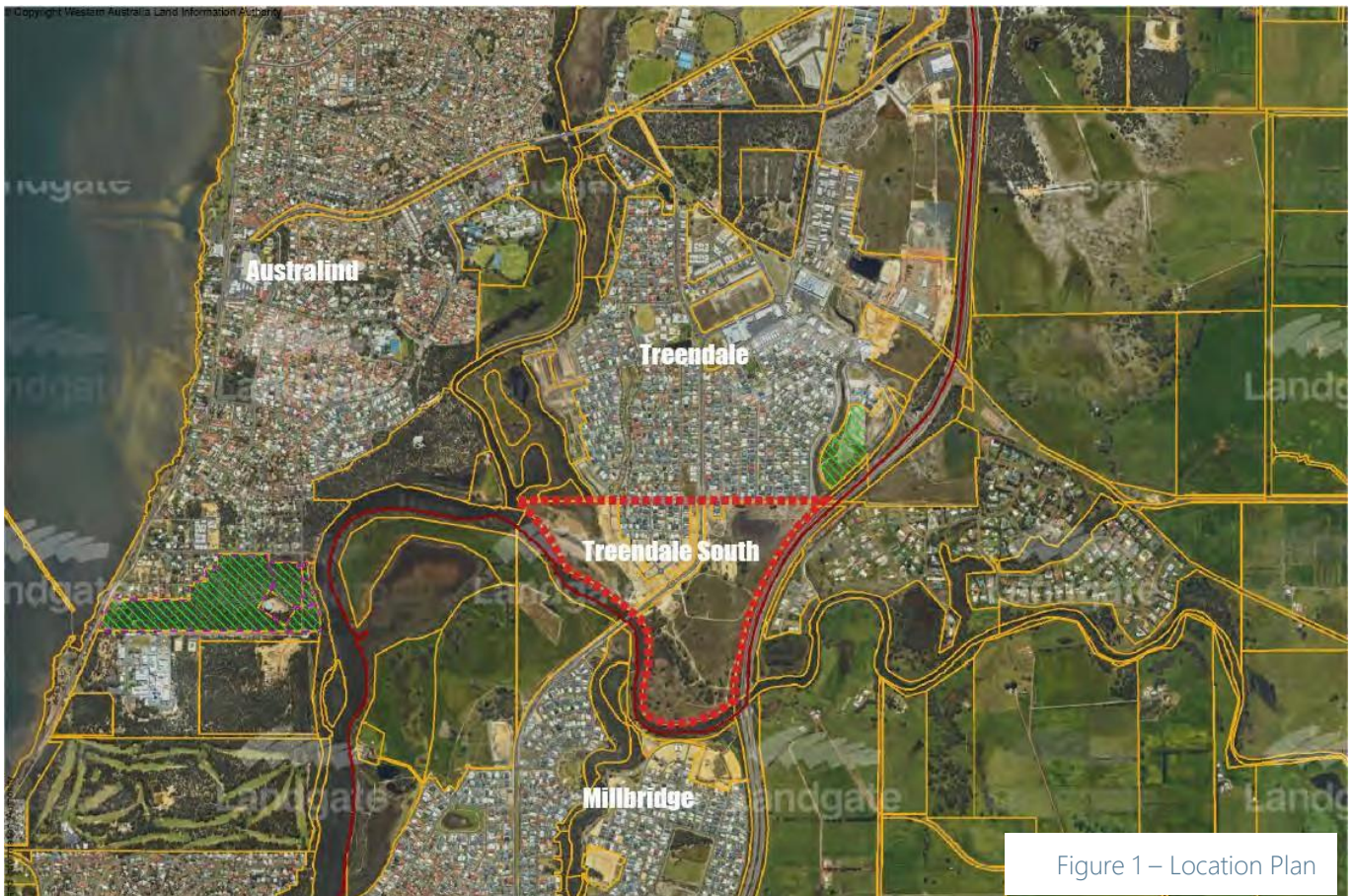
Other changes include the consolidation of the subdivision and development requirements.

The following report addresses the proposed modification to the Structure Plan, and describes the statutory planning context of the Structure Plan modification.

1.2 Location

The subject site is located on the northern side of the Collie River, approximately 2.5 kilometres east of the Australind town centre and between the developments of Treendale to the north and Millbridge on the southern side of the Collie River. (see *Figure 1 – Location Plan*). The total area of the Structure Plan is almost 59ha.

The property has been used primarily for agricultural purposes, predominately livestock grazing.



2 Planning Framework

2.1 Greater Bunbury Region Scheme and Shire of Harvey District Planning Scheme No.1

The subject site is zoned Urban under the Greater Bunbury Region Scheme (GBRS) and Residential Development under the Shire of Harvey District Planning Scheme No.1 (DPS 1). *Figure 2* shows the relevant Scheme maps.

2.2 Treendale South Structure Plan

Modification No. 1 to the Treendale Structure Plan was approved by the WAPC in April 2019. The Structure Plan covers land generally bound by the Australind Bypass to the east, the Collie River to the South and West and the existing Treendale Estate to the North. The site subject to this Structure Plan Modification is the land located to the east of The Boulevard.

The main drivers behind the redesign of this portion of the Treendale South Structure Plan have been due to, firstly, to specialist advice in relation to the economical unviability of local centre site, and secondly, the change in the Forrest Highway noise mitigation measures from noise bund to acoustic wall. This resulted in additional residential land and changes to the residential density to accommodate the change of use surrounding what was the local centre site.

Due to these modifications, it was timely to adjust the residential layout to accommodate the above impediments and to update the design to conform with the current market demand for residential lots with a mixture of mainly R20 and R30 and cells of R40 fronting the foreshore POS.

Figure 3 shows the existing Structure Plan.

2.3 Subdivision Approvals

A number of subdivision applications have been approved over the Estate with the land to the west of The Boulevard being either developed or being constructed for residential purposes.

The entire Structure Plan area has gained subdivision approval, though the area subject to this modification are yet to be developed.

2.4 Liveable Neighbourhoods

Liveable Neighbourhoods is the Western Australian Planning Commission's operational policy prepared to implement the objectives of the State Planning Strategy, which aims to guide the sustainable development of Western Australia in to the future Liveable Neighbourhoods is used for the design and assessment of structure plans and subdivision for new areas in the metropolitan area and country centres. It incorporates many of the development control policies relating to structure planning and subdivision. Liveable Neighbourhoods is to be followed in the design and approval of urban development. While the Treendale South Structure Plan has evolved over the course of implementation of Liveable Neighbourhoods, it nevertheless reflects many elements contained within the policy and in particular, promotes diversity of housing density and product. The redesign of the subject site is consistent with the overarching aims and goals of Liveable Neighbourhoods.

3 Site Considerations and Landuse

The proposed Structure Plan Amendment will facilitate the subdivision of the subject site into green title lots approximately 300-500m² in area, adhering to the proposed R20 and R30 Residential coding. Proposed lots will conform to the provisions of the Residential Design Codes, with R40 lots subject to detailed area plans.

The design provides for a variety of housing product reflective of the current market and is a response to the modifications made with the removal of the local centre and landscape buffer containing the noise bund.

3.1 Bushfire Management Plan

A Bushfire Management Plan (BMP) was undertaken in support of Modification No. 1 of the Structure Plan by Lushfire (reference 17-064 Version C May 2018) and subsequently approved by DFES.

The change of landuse and residential cells as proposed by this Structure Plan modification has little impact on the development footprint from the previous approved Structure Plan. However, the removal of the landscaped bund adjacent to Forrest Highway may reduce the hazard in terms of bushfire in this vicinity. The acoustic wall will be setback from the front boundary of lots facing the wall by 18m, an encroachment of 3m from the front boundary will achieve the 21m separation for a BAL-29 rating. Landscaping along the wall will be low threat vegetation.

The subdivision design provides for external boundary road reserves separating the development from the hazard areas in most parts, with except on the R40 site adjacent to the foreshore. The Regional Open Space vegetation on the foreshore and embankment will also be separated from the development by an additional linear Local Open Space which will be maintain as low threat vegetation. The precedent for this design approach has already been established in the previous stages of the development and the adjacent Treendale Estate.

All of the proposed lots will have a Bushfire Attack Level of BAL-29 rating or less. The majority of lots in the Estate will have a BAL-12.5 or BAL-Low rating.

The proposed subdivision complies with the objectives of State Planning Policy 3.7 as:

1. It avoids any increase in the threat of bushfire to people, property and infrastructure;
2. It reduces vulnerability to bushfire through the identification and consideration of bushfire risks in the design of the development and the decision-making process;
3. The design of the subdivision and the development takes into account bushfire protection requirements and includes specific bushfire protection measures; and
4. Achieves an appropriate balance between bushfire risk management measures and biodiversity, conservation values, and environmental protection.

An update of the BMP to address the modifications detailed in this amendment can be found at **Appendix B**.

3.2 Public Open Space

The Treendale South Structure Plan area features good quality and quantity public open space, with at over 10 per cent of the subdivisible area set aside as public open space in accordance with Liveable Neighbourhoods requirements.

In addition to the foreshore area, the balance of POS is located in a large central area to ensure its useability and north-east corner, neighbouring the R40 site.

A calculation of the POS contribution is shown in *Table 3*.

Public open space schedule		
Calculation of Required POS Provision		
Total site area (ha)		58.7233
<i>Deductions</i>		
Environmental	0.0000	
Conservation Category	0.0000	
Bush Forever	0.0000	
Regional Open Space	0.0000	
Restricted Access Conservation	0.0000	
Surface area of natural water	0.0000	
Infrastructure		
Rail Reservation	0.0000	
Regional Road Reservations, widenings -	0.0000	
Public utilities (include pump station sites, transmission	0.0000	
Drainage (steep sided drains and basins)	0.0000	
Non Residential Land Uses		
Primary School	0.0000	
High School	0.0000	
Activity centres, commercial, retail (excluding residential	0.0000	
Public Purpose	0.2861	
Other		
Surplus Restricted Public Open Space Not Credited	3.6542	
<i>Total Deductions</i>		
Total Deduction		3.9403
Gross Subdivisible Area (total site area minus deductions)		54.7830
Required Public Open Space (10%)		5.4783
Breakdown of POS Provided		
Restricted Public Open Space		
Conservation Category Wetland Buffer (up to 50m)	4.0093	
Resource Enhancement, multiple use wetland or similar and associated buffers	0.0000	
Reserved land encumbered by easements ie powerlines, sewer gas	0.7413	
<i>Total Restricted</i>	4.7506	
<i>Maximum 20%</i>	1.0964	
Total Restricted POS Credited to a maximum of 20%		1.0964
Surplus Restricted POS Not Credited i.e. over the maximum	3.6542	
Unrestricted Public Open Space: by function (refer Note 4)		
Sport	1.8454	
Recreation	3.6407	
Nature		
<i>Total Unrestricted</i>	5.4861	
Total Unrestricted POS		5.4861
Total		6.5825
POS Provision as Percentage of Gross Subdivisible Area		12.02%

Table 3 – POS Calculation

The original Treendale South Structure Plan identified an area of the Foreshore to be developed as a sporting oval with ablution facilities and carparking. Whilst the original intent was for a formal oval, this was changed during the recent amendment of the Structure Plan to an 'area' of POS due to the impracticalities of developing, maintaining and accessing a formal oval in this location.

However, the current Structure Plan still shows an "Indicative Site for Toilet Facilities" on the foreshore area. As any ablution facilities would need to be connected to reticulated sewer, due to the steep banks of the river foreshore this location would be difficult to service. This location would also likely become the target for vandalism or anti-social behaviour and as such has been removed from this proposed modification to the Structure Plan.

Carparking would be provided at the top of the river foreshore as shown on the existing Structure Plan for those utilising the foreshore area.

3.3 Environmental Management

As a condition of subdivision approval gained previously for the overall development site, an Environmental Management Plan (EMP) was undertaken. The objectives of the EMP are to:

- Provide guidance to ensure the protection and management of Black Cockatoo and Western Ringtail Possum (WRP) populations and their habitat during pre-construction, construction and post-construction in the Project;
- Minimise the overall impact of the Project upon the Western Ringtail Possum population and Black Cockatoos; and
- Wherever possible, take action to enhance long term fauna habitat in the Project Area.

During the WRP habitat assessment no signs of the WRP were observed in the Project Area.

Although no Black Cockatoo species were directly observed, the EMP identified a number of possible breeding trees that were recommended be retained.

This modification to the structure plan proposes no change to the POS areas identified in the approved Structure Plan with the retention of significant trees as identified in the EMP and in consultation with the Department of Biodiversity, Conservation and Attractions. The exact location of the trees to be retained in relation to development, as shown on the Structure Plan Map, are to be confirmed at time of subdivision.

3.4 Residential

Additional residential development to replace the site previously identified as the local centre site is proposed. A R40 cell consistent with those on the northern side of The Boulevard, neighbouring the POS foreshore with a reworking of surrounding local roads and densities will accommodate the changes.

An adjustment of density to R30 for cells alongside the foreshore is consistent with the objectives of liveable neighbourhoods.

Minor expansion to the residential cells adjacent to the acoustic wall allow for additional lots without significantly modifying the overall design.

The changes to the residential cells within the area shown as stage 5 on the original approved Structure Plan and more recently approved Modification No. 1 has allowed for a more efficient design of lots and road layout. The residential cells as shown in this Structure Plan will allow for the majority of dwellings to have their front or rear façade facing north with living areas parallel to side boundaries facing either east or west depending on individual lot design.

3.5 Commercial Demand

A Retail Needs and Demand Assessment (RNA) was undertaken by Taktics4, a specialist consultancy providing advice on consumer behaviour and market drivers and how they specifically influence the sustainability of development and policy.

The RNA considered the market potential and sustainability of potential retail opportunities for the site identified on the existing Structure Plan.

Analysis of the commercial, market and policy factors influencing the delivery and sustainability of a local retail centre at Treendale South suggest that there is insufficient market demand to warrant the continued planning for a local centre. The findings of the RNDA considers:

- There is enough retail activity available to the local resident market to provide for all their convenience-based food and grocery needs.
- There is insufficient spending capacity within the local catchment to sustain a local centre.
- There is insufficient non-resident spending potential such as employment areas, visitor accommodation, traffic volumes to improve the spending capacity in the catchment to a level which would sustain a local centre at Treendale South.
- In addition to the significant retail network providing for the convenience-based retail needs of the current and future local Treendale South residents, there are an additional three local activity centre zones planned in proximity to the potential Treendale South local centre. These centres will be competing directly for the same markets in an already established and significant commercial environment, furthering limiting the sustainable delivery of a centre at Treendale South.
- There will be no direct impact on local Treendale South residents as a result of the removal of the local centre.
- Given that the local centre cannot be sustained and therefore would be unlikely to be developed / trade for a significant period means that the residents would not have access to the local centre even it was continued to be planned for.
- Residents have access to all their convenience-based food and grocery needs within 1.5 km of Treendale Centre.
- There remains the potential for a local centre to be developed in the area at one of the three remaining planned local centre zones located between Treendale South and Eaton District centre.

Further detailed analysis can be found in the RDA at **Appendix C**.

3.6 Noise Mitigation

An Acoustic Assessment was undertaken by Herring Storer Acoustics in December 2019 to:

- Measure current noise levels within the proposed development;
- Determine by noise modelling the noise levels that would be received at residences within the development from vehicles travelling on the future Forrest Highway;
- Assess the predicted noise levels received at residence for compliance with the requirements of the WAPC State Planning Policy 5.4 "Road and Rail Transportation Noise and Freight Consideration in Land Use Planning" - 2019 (SPP 5.4); and
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

Noise monitoring was conducted at the site on the edge of Forrest Highway to determine the existing vehicle noise levels. Future road traffic volumes, based on data supplied by MRWA, were used in the noise modelling.

Recommendations based on the results of the modelling and in accordance with SPP 5.4 for the site are:

- An acoustic barrier of 3m in height be constructed along the edge of the highway;

- Lots located adjacent to Forrest Highway would exceed the “Noise Targets” and would require the adoption of “Quiet House” design in the form of Package A and notification on titles; and
- Other lots within the subdivision, the noise levels would be less than the target level, therefore there are no acoustics requirements for these lots.

The Acoustic Assessment which details the modelling, analysis, recommendations and quiet house design criteria can be found at **Appendix D**.

Acoustic Wall

Investigations into the acoustic properties of the proposed wall indicate no significant difference from an earth bund. Specifications, photographs and a cross-section of the acoustic wall proposed for noise mitigation along Forrest Highway can be found at **Appendix E**.

The wall proposed is an attractive alternative to an earth bund. The product is a moulded patterned stone finish on both sides providing a masonry look with durable solid panels.

The wall is proposed to be located within a POS reserve, running parallel to Forrest Highway as shown on the “Proposed Bund Wall Configuration Plan” within **Appendix E**. The plan indicates a limestone track on the highway side of the wall for maintenance, with a vegetated swale, landscaping, local road carriageway, services and path on the structure plan site of the wall. The POS reserve will be 7m wide to accommodate the maintenance track and landscape screening.

The construction and materials used are consistent with those used at the residential development known as Evolve at Eaton. This is located approximately 2.7km south of the Structure Plan site along Forrest Highway. Similar products are now commonplace and uses extensively along sections of the Kwinana Freeway, Mitchell Freeway, Forrest Highway and major Perth highways.

Recent designs of the Bunbury Outer Ring Road (BORR) by Main Roads Western Australia (MRWA) have also utilised acoustic walls rather than earth bunds where practical. It is expected noise attenuation in the form of an acoustic wall will be constructed adjacent to Kingston Estate to the north of Treendale South.

The **Bunbury Outer Ring Road Northern and Central Sections Traffic Noise Assessment**, 10 May 2019, a study by the BORR team to support the Environmental Referral, by conducting a traffic noise assessment based upon the Ultimate Design concept of the BORR to identify sensitive receptors which will require some form of mitigation treatment to satisfy the noise criteria prescribed within SPP 5.4 states:

“Noise mitigation will be required to reduce received noise levels at properties as identified in the previous section. Noise mitigation treatments typically consist of the following for road projects:

- *Earth bunds, located on the road or property boundary. In some areas constrained by the required surface area to obtain sufficient height. Most effective for groups of properties rather than single rural properties.*
- *Noise walls, located on the road or property boundary. Require less area for installation than earth bunds. Like earth bunds, most effective for groups of properties rather than single rural properties.*
- *Architectural treatment package consisting of, for example, upgraded glazing (such as double glazing) and mechanical ventilation (to allow windows to be kept closed). Specific architectural treatment packages are determined for each individual sensitive receptor following completion of an architectural treatment inspection.”*

Further, MRWA standards and Technical Specifications for the Design of Fencing/Walls is intended to reflect the preferred practice of MRWA states:

“The need to incorporate traffic noise barriers in a road project will have been identified in a noise study, usually as part of a wider environmental impact assessment. A typical noise study report will indicate noise level objectives and any noise barriers required to achieve them, in terms of their location, extent and height. The design process and community consultation usually involve consideration of options and review to ensure a suitable final design.

A noise barrier may take the form of a bund (earth mound), a wall or solid fencing, or a combination of these ...

Acoustic Requirements:

- a. *Minimum superficial mass of 15 kg/sq. m*
- b. *Free of cracks and gaps, at time of construction and after weathering.*
- c. *Position, height, and length adequate to achieve noise level objectives as determined in the noise study.*

Other Requirements:

- a. *Acceptable to the local community and local government authority, in terms of appearance, location and maximum height, and security matters.*
- b. *Meets all safety considerations.*
- c. *Graffiti resistance and removal (refer to Specifications 908 - Graffiti).*
- d. *Durability.*
- e. *Minimal maintenance.*
- f. *Acceptable materials include brick, concrete and stone, and can include fibre cement products and plastics where considered appropriate for a specific site. Timber is not generally suitable because of durability issues (eg. warping/cracking may particularly affect acoustic performance) and fire risk but may be used if suitably treated.*
- g. *Colour must be consistent.*
- h. *The footings of any noise wall located on the boundary must be located completely outside the abutting property. Such footings must be designed and located such that the face of the wall is as close as practicable and parallel to the boundary.*
- i. *Barriers should have a logical termination point satisfying noise objectives as well as fitting with the road design.*
- j. *Barriers must be structurally sound and accessible for maintenance.*

The acoustic wall proposed for Treendale South is a patterned pre-cast panel/pier/pad footing system, 127mm thick, resulting in a density of 300kg/m². The height of the wall will be consistent with that of the previous proposed bund required, being 3m vertical. The requirements of the MRWA technical specifications in terms of safety, design and aesthetics are met by the proposed wall while creating an effective visual and noise screen between the residential lots and the highway.

Considerable advantages of an acoustic wall, in comparison to an earth bund can be achieved by:

- the reduced footprint – the base of the bund to achieve a height of 3m, with side slopes of 1:3 and 1m wide flat top is in the order of 20m and is considered an inefficient use of the land;
- the reduction of fill – each linear metre of a bund requires 30m³ of sand fill;
- a wall is a vertical separation between the residential area and the Forrest Highway, creating a clear security barrier that is difficult for children and pets to cross into the highway reserve;
- the sound reflection of a vertical wall is greater than that of the sloped sides of a bund (see comparison in the “Typical Cross Section Plan” in **Appendix E**);
- the risk of landscaping the bund becoming a bushfire hazard while the wall provides additional protection from bushfire from the east; and
- the increased cost and difficulty of on-going maintenance of landscaping and reticulation of a bund.

Existing vegetation between the Forrest Highway and Treendale South will effectively screen most of the wall from view from the Highway, thereby minimising the visual impact.

The existing roadside vegetation is within the Forrest Highway road reserve. As the acoustic wall and maintenance track are to be constructed within the subject land, clearing of the roadside vegetation to construct this infrastructure will be minimal, if any.

Access for maintenance of the wall will be located near the northern section of the subject land near Vela Way and Reserve 52257. This will be subject to detailed design prior to construction and designed as such to ensure no increase in noise impacts with public access being restricted. Acoustic Wall Northern Detail Plan shows the location of the wall in relation to the existing drain, culvert and bund.



Existing views from Forrest Highway travelling north showing roadside vegetation

3.7 Movement Network

The road layout within the amendment area has been modified to accommodate the removal of the local centre and the landscaped bund. The main access points onto The Boulevard, together with the perimeter road and connection to the surrounding road network remains the same as the original Structure Plan.

3.8 Infrastructure Coordination, Servicing and Staging

All relevant infrastructure and services are in place and available to facilitate the development of the subject site. The portion of the Structure Plan to the west of The Boulevard is already partially developed with more stages either under construction or planned. The precise staging of the remainder of the development is unknown, but it is likely the site will develop generally in a North to South direction. An indication of likely staging is shown at **Appendix A**.

4 Conclusion

The modification to the Treendale South Structure Plan is deemed consistent with the goals and aspirations of the State and relevant Shire of Harvey Policies, as well as proper and orderly planning. The proposed Structure Plan modification seeks to modify the Treendale South Local Structure Plan by removing the Local Centre Site and increasing the residential land.

In addition, the landscaped noise bund is proposed to be replaced with an acoustic wall which will allow the more efficient use of the land for residential purposes.

On the basis of the information presented, it is requested that the Shire amend the Treendale South Structure Plan to reflect this change.