SHIRE OF GINGIN

HISTORY | BEAUTY | PROSPERITY

MINUTES

Ordinary Council Meeting

16 May 2023

CONFIRMATION OF MINUTES

These Minutes have been CONFIRMED by Council as the official record for the Shire of Gingin's Ordinary Council Meeting held on 16 May 2023.

_____
Councillor C W Fewster
SHIRE PRESIDENT

Date of Confirmation: _____

DISCLAIMER

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Applicants and other interested parties should refrain from taking any action until such time as written advice is received confirming Council's decision with respect to any particular issue.

ACKNOWLEDGEMENT OF COUNTRY

The Shire of Gingin would like to acknowledge the Yued people who are the traditional custodians of this land. The Shire would like to pay respect to the Elders past, present and emerging of the Yued Nation and extend this respect to all Aboriginal people. The Shire also recognises the living culture of the Yued people and the unique contribution they have made to the Gingin region.

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ORDER OF BUSINESS

1 DECLARATION OF OPENING

The Shire President declared the meeting open at 3:01pm and welcomed all in attendance.

He advised that, in accordance with Reg. 14C(2)(b) of the *Local Government (Administration) Regulations 1996*, he had authorised Councillor F Johnson to attend the meeting by electronic means.

He also advised that a trial recording of the meeting would be made as part of the Shire's preparations for forthcoming changes to legislation that will require audio recordings of all Council meetings to be made publicly available. It was not intended that this trial recording would be made available to the public.

2 RECORD OF ATTENDANCE, APOLOGIES AND LEAVE OF ABSENCE

2.1 ATTENDANCE

Councillors – C W Fewster (Shire President), A R Vis (Deputy Shire President), L Balcombe, F J Johnson (electronic attendance), R Kestel, F J Peczka and E Sorensen.

Staff – A Cook (Chief Executive Officer), L Crichton (Executive Manager Corporate and Community Services), R Kelly (Executive Manager Regulatory and Development Services), S Nolan (Acting Executive Manager Operations and Assets), J Bayliss (Coordinator Statutory Planning), M Taylor (Communications and Marketing Officer), M Agnew (Communications and Marketing Support Officer), N Jurmann (Statutory Planning Officer) and L Burt (Coordinator Governance/Minute Officer)

Gallery – There were 11 members of the public present in the Gallery.

2.2 APOLOGIES

Nil

2.3 LEAVE OF ABSENCE

Councillor J K Rule

3 DISCLOSURES OF INTEREST

Nil

4 PUBLIC QUESTION TIME

4.1 RESPONSES TO PUBLIC QUESTIONS PREVIOUSLY TAKEN ON NOTICE

Nil

4.2 PUBLIC QUESTIONS

4.2.1 John Sloan – Ledge Point
Ledge Point Beach Access

Mr Sloan's questions were submitted in writing prior to the meeting. The questions and responses were read aloud by the Shire President.

My question relates to maintaining beach access to both north and south entrances to Ledge Point beach as a commercial fisherman I would like to raise the issue of maintaining a beach access throughout the year the north access needs to have a bend with segment tanks to stop the sheer volume of sand that comes straight up from the south filling the car park with sand and all the driveways along the way the south beach access needs some attention the bitumen at the base of the access or where you come directly off the beach needs to be replaced with concrete and rio which would weather the winter storms.

Q1. Beach access Ledge Point southern access needs attention would recommend concrete to be installed at the base approximately 10 metres reinforced this would not wash away but in a severe winter it would need to be maintained by the Shire by replacing the sand that would wash away. Would Council consider this?

Response by Shire President

Work is currently underway on a Coastal Management Plan that is expected to be completed over the next few months. The current level of access will be retained until such time as the Plan is completed and Council considers the consultant's recommendations.

Q2. North beach access Ledge Point beach the access is constantly filling with sand due to it facing directly to the south west I recommend that a dogs leg so to speak of double segment wells or tyres be installed to stop the south west vortex. Can the Shire look into this?

Response by Shire President

See response to previous question.

Q3. I note no fire breaks have been maintained on the fences of the two houses that face north to Key Biscayne Park. Can the Shire take action to address this?

Response by Shire President

Firebreaks have not been constructed in this location in the past because of proximity to essential services such as power and water. The area is question is a small piece of land that is bounded on three sides by reticulated parkland, foreshore reserve and a bitumen road with prevailing winds blowing away from residences, and does not pose a high fire risk.

Q4. Drainage to the main beach front car park in Ledge Point large amounts of sand need to be removed from median strips that are covered with sand. Drainage is poor. Will the Shire take action to address this?

Response by Shire President

The matters raised will be investigated by the Shire's maintenance staff.

4.2.2 Katie Enright - Guilderton
Guilderton Parking Meters

Ms Enright's questions were submitted in writing prior to the meeting. The questions and responses were read aloud by the Shire President.

Q1. Were there financial figures requested recently for this new reassessment from the Gingin Shire to other businesses in Guilderton other than the Shire-owned caravan park to reflect other areas to add to the scale of declining numbers from other businesses? Specifically the financial figures from the previous Guilderton General Store and Café owners the Enright family from 2016 to 2021 which would show a significant loss of tourism revenue to that business from the time the parking meters went in and then from the other residing independent business being the Moore River Roadhouse.

Response by Shire President

Other businesses were not requested to provide financial figures as these are private and confidential. Additionally there are likely to be other contributing factors that affect the revenue of private businesses which makes this information an unreliable indicator.

Q2. Was there a survey conducted from the Shire to outer reach areas for potential visitors/re-occurring to the area to see if the parking meters are a deterrent to people to come to Guilderton? And if so why not?

Response by Shire President

No survey was conducted as Council did not believe it was necessary.

Q3. The perceived increased revenue that you speak of from the caravan park. Does this revenue also include the costs associated with upfront costs associated with booking and cancellation figures and charges?

Response by Shire President

No, this is the net revenue.

4.2.3 Lindsay Conway – Wanerie
CEO Performance Review

Mr Conway's questions were submitted in writing prior to the meeting, however he elected to ask them in person. The questions as submitted also contained a statement which the Shire President invited Mr Conway to also put to the meeting before asking his questions.

At its meeting on 18th April 2023, Council agreed to engage the services of Price Consulting Group Pty Ltd to undertake the 2023 CEO Performance Review at a cost of $5,314.84 (inc GST) which is lower than the 21/22 cost of approx. $5,800.00. I also note from the minutes of this meeting the following guidelines adopted for performance review of CEOs:

If a council lacks the resources and expertise to meet the expected standard of performance review, the council should engage an external facilitator to assist with the process of performance appraisal and the development of the performance agreement. The local government should ensure that the consultant has experience in performance review and, if possible, experience in local government or dealing with the performance review of senior executives. The consultant should not have any interest in, or relationship with, the council or the CEO.

It would appear to me from the above guidelines that you, our elected representatives, have acknowledged that you lack the resources, expertise, capacity and capability to conduct performance reviews of the CEO.

Response by Shire President

We believe we have the expertise to do it in-house, however there have been given recent changes made to the requirements for undertaking a local government CEO performance review. We believe the process needs to be conducted professionally and for that reason it was deemed worthwhile to engage a consultant to undertake the process. In addition, last Friday Council and some staff undertook a full day of training in relation to conducting and participating in a CEO performance review. It's also not unusual for local governments to engage a consultant to undertake the process rather than doing it in-house because of the complexity of the process and the potential for perceived conflict of interest.

Q1. I ask the following questions regarding the Council's decision of 18 April 2023:

a. Were other quotes obtained for this review?

Response by Shire President

No. It was considered that Price Consulting provided an excellent and impartial service in facilitating the last review, and as such it was deemed beneficial to maintain a consistent approach.

b. Did Council question the difference in the accepted quote and the cost of the previous review costing, noting that in this current economic climate it is very infrequent that costs decrease?

Response by Shire President

Having conducted the 2022 CEO Performance Review the consultant does not need to undertake as much preliminary work and this is reflected in the current quote.

c. As the consultant has conducted a previous performance review of the CEO, did Council not consider that the consultant may have an interest in, or relationship with, Council or the CEO that may have influenced the impartiality and transparency of the review?

Response by Shire President

Council does not believe, and nor is there any evidence to suggest, that this is the case. If we weren't using a consultant it is my responsibility to conduct the performance review, and this is certainly a process that could be questioned by the public with respect to how independent and transparent that process is as well given the working relationship between the President and the CEO. I believe that going out to a consultant is a better option.

Q2. In mid-2021 Council made the decision to outsource the annual performance review of the CEO to a human resources consultant. Is this correct? If so, what was the reason for this decision and benefit to the Council?

Response by Shire President

Yes. Council had not utilised the services of a consultant for a number of years and felt that this would improve clarity and the professionalism of the process. This year a decision was made to engage a consultant because of the recent changes to requirements for the process, and I would suggest that in the future it will probably be more often than not that the process is conducted externally rather than by Council.

Q3. Did Council place any standards/conditions on the review process as set out in Division 3 of Shire of Gingin Standards for CEO Recruitment, Performance and Termination Policy dated June 2021?

Response by Shire President

The consultant and Elected Members agreed on a process for conducting of the review that met the requirements of Division 3.

Q4. Was this change in review process initiated by Council or was it the initiative of senior executive of staff?

Response by Shire President

At the Council meeting on 19 October 2021 Council agreed that the CEO would seek quotes for the engagement of an independent consultant to undertake the 2021/22 CEO Performance Review, based on a recommendation from the Audit and Governance Committee.

Q5. In 2022 did Council conduct the annual review process in accordance with Division 3 clauses 17 and 19 of the Shire of Gingin Standards for CEO Recruitment, Performance and Termination?

Response by Shire President

Yes, the review was conducted as per the requirements.

Q6. It is noted in the policy document dated June 2021 that the selection process for the appointment of a CEO requires the appointment of a selection panel including an independent person (Division 2 para 8 clause (1)(3)). Did Council consider adopting this process when outsourcing the CEO's annual performance reviews? If not, why has Council ignored its own policy and engaged the services of Price Consulting (Human Resources Consultant) to conduct the annual performance assessment of the CEO for 2021/22?

Response by Shire President

The consultant and Council agreed on the process by which the review would be conducted. Cl.8 of the Standards for CEO Recruitment, Performance and Termination requires the establishment of a selection panel to conduct the recruitment and selection process for the employment of a person in the position of CEO. The process under discussion is a performance review, not a recruitment and selection process. Council therefore didn't believe it was a necessity to bring in an external person because their knowledge of what we expect and of the CEO's performance wouldn't be relevant.

Q7. Was this change in review process initiated by Council or was it the initiative of senior executive of staff?

Response by Shire President

At the Council meeting on 19 October 2021 Council agreed that the CEO would seek quotes for the engagement of an independent consultant to undertake the 2021/22 CEO Performance Review, based on a recommendation from the Audit and Governance Committee. I think we received two or three quotes from different consultants at the time, and we opted to go with Price Consulting.

Q8. In 2022 did Council conduct the annual review process in accordance with Division 3 clauses 17 and 19 of the Standards for CEO Recruitment, Performance and Termination?

Response by Shire President

Yes, the review was conducted as per the requirements.

Q9. Has Price Consulting been engaged to conduct consulting work for the Council prior to or since its contract to conduct the CEO annual assessment of 2021/22?

Response by Shire President

Price Consulting has not previously been engaged to undertake any consulting work for the Shire of Gingin other than the 2022 CEO Performance Review.

4.2.4 Kate Lane - Neergabby

Council Meeting 18 April 2023: Item 11.1 Petition Submitted to Council - 18 March 2023 and Item 12.4 Disposition of Assets - Guilderton Caravan Park Plant Items; Resident Perception Survey

Q1. Why has the recent petition been set aside, when the President's Comment states it "*does not specify what the perceived issues are*" but then concedes that "*the failure to undertake the renovations, and subsequently to close the cafe, were commercial decisions made by the lessee and not matters that could be influenced by the Shire of Gingin under the commercial lease agreement*"?

Response by Shire President

The lease did not allow us to become involved. It is a commercial lease, it was up to them to renovate.

Q2. Why did this lease fail to protect the interests of the Shire residents by not setting parameters for expected opening hours of the cafe, or for the quality and timing of the renovations - thus resulting in a demonstrable "lack and a loss in sustaining and building Tourism"?

Response by Shire President

It's very difficult to build that into a lease when we went through a period when Covid was at its peak and there was difficulty in getting materials and labour. We were of the belief that the rent they were paying was a sufficient incentive for them to get the work done and get it open as quickly as they could. I'm not sure why their business model has broken down, you'd have to ask them about that. We are doing all we can to progress the matter, but the fact is that they have a lease in place.

Q3. As the CEO is responsible for offering guidance to Council - is this lack a failing on his part?

Response by Shire President

Council made the decisions relating to leasing of the premises, not the CEO.

Q3a. But surely he offered guidance on it?

Response by Shire President

Of course he did, but Council doesn't always agree with the CEO.

Q3b. So you don't believe that the lease is lacking?

Response by Shire President

I don't believe it is. I don't believe that we're in a position where we can tell people when they should open their business - that's a matter for the individual business.

Q4. Why did the President's Comment include an item that was not part of the petition, namely an "allegation" of a conflict of interest on the part of the CEO - when this item should not form part of the conclusions? It wasn't part of the petition was it?

Response by Shire President

If you read the petition, I'm sure there was a section of the petition that talked about allegations towards the CEO and his links to Belgravia.

Q4a. Wasn't that Katie Enright's personal view?

Response by Shire President

If it was on the petition everyone has a right to read the petition and that was what they signed.

Q5. By what authority does the Shire President's "opinion" override the need to independently investigate the concerns raised?

Response by Shire President

It doesn't. Anyone can take civil action against the Council if they believe a matter been inappropriately managed. We believe the matter has been appropriately managed as a collective. Petitions get addressed to the President and it's up to me to deal with it once it's been addressed by Council.

Q6. Why did Belgravia Leisure not purchase these assets in October 2020 as set out in the contract?

Response by Shire President

There was an oversight with the agreement. We were dealing with other issues at the time and we accept that we were probably at fault and it should have been dealt with earlier.

Q7. Who has been using these assets and who has insured, serviced and maintained them and paid for the registration of the Ute and Trailer since October 2020?

Response by Shire President

Belgravia were using and maintaining them.

Q7a. Are you sure that's the case? Do you have documentary evidence?

Response by CEO

Correct. They were discussing that with us through the Shire's Executive Manager Regulatory and Development Services. The Shire was paying for the registration of the vehicle and trailer during the period.

Q8. Did Belgravia Leisure have a Leasing agreement for the 31 months they have been using the equipment and did the charges cover the costs?

Response by CEO

The valuation that was obtained was well over 12 months ago and that is the valuation that they are paying for the purchase. The fact is that when we got the valuation some 12 months ago that is the valuation they are paying for the purchase price, not the depreciated value that now applies some 12 months further on. So no, they have not paid Council back for those fees, but they are paying an elevated cost for the plant and equipment.

Q9. At the last meeting as the vote in favour for sale was passed, the President commented that this matter had been "overlooked for 18 months". Can the President explain this comment? Was not the “oversight” for a period of 31 months?

Response by Shire President

The oversight was for 31 months, but the valuation was done 12 months ago.

Q11. As the CEO is responsible for ensuring that the Management Contract with Belgravia Leisure is complied with, why has it taken over two and a half years to enforce Belgravia Leisure's purchase?

Response by Shire President

As I said, it was an oversight at the time.

Q12. As this apparent negligence seems to directly support the issues raised in the petition - why is the President insisting the points raised are "without basis"?

Response by Shire President

None of those issues were raised in the petition.

Q13. According to the Shire website there is a Resident Perception Survey underway, the home page states:

"For those Gingin Shire residents/ratepayers who indicated they wished to participate via email, Research Solutions has emailed you a link to the survey."

I have not received this link - despite an email on 10th February to announce the survey and another on 15th March delaying it. Can you explain why I have not received the link?

Response by Shire President

The perception survey was supposed to go out in March but there were some technical issues that we had to deal with, and so it's only gone out in the last fortnight. I'm not sure whether your request to get a link was prior to that and maybe it's been missed since.

Further Response by Communications and Marketing Officer

Everyone who has an email address recorded in our rates system should have received a link from Research Solutions. If you haven't received the email then we will need to find out why.

Q15. Why does the Shire consider it adequate to advertise the survey only on the Shire website and Facebook, neither of which are likely to be seen by the majority of residents. Why is this information not included with the Rates Notices, to ensure a proper survey of all residents?

Response by Shire President

It's a valid point and is certainly something we can look at. I will say though, that the rates go out with a massive envelope of information and we get criticised for sending too much information. The advice we get is that people get the envelope, take out their rates notice and throw the rest in the bin and I guess that would be the danger would be that the same thing would happen with a survey.

Further Response by Communications and Marketing Officer

We're actually expanding the ways in which people can respond to the survey this year. As well as the links to the full survey that are being emailed, every resident and ratepayer in the Shire will get a postcard in the mail detailing two options to participate in the survey. Postcards will be in the mail in a couple of weeks.

Q16. What purpose is there in the Shire holding a Survey of Perceptions when they ignore concerns raised in a perfectly legitimate petition signed by over 250 ratepayers?

Response by Shire President

We place a lot of value on the perceptions survey. We measure the results against previous surveys and it provides a valuable guide.

5 PETITIONS

Nil

6 APPLICATIONS FOR LEAVE OF ABSENCE

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Vis SECONDED: Councillor Balcombe

That Council grant Leave of Absence to Councillor J K Rule for the Ordinary Council Meeting on 16 May 2023.

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*
AGAINST: *Nil*

7 CONFIRMATION OF MINUTES

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Peczka SECONDED: Councillor Vis

That Council confirm the Minutes of the Ordinary Council Meeting held on 18 April 2023 as a true and accurate record.

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*
AGAINST: *Nil*

8 ANNOUNCEMENTS BY THE PRESIDING MEMBER

Nil

9 UNRESOLVED BUSINESS FROM PREVIOUS MEETINGS

Nil

10 QUESTIONS BY MEMBERS OF WHICH DUE NOTICE HAS BEEN GIVEN

Nil

11 REPORTS - OFFICE OF THE CEO

11.1 FORMAL POSITION OF COUNCIL - MINING OF LANCELIN SAND DUNES

File	ENV/17
Author	Aaron Cook – Chief Executive Officer
Reporting Officer	Aaron Cook - Chief Executive Officer
Refer	Nil
Appendices	1. Save Lancelin Sand Dunes Explanatory Email [**11.1.1** - 1 page] 2. Save Lancelin Sand Dunes Letter [**11.1.2** - 2 pages] 3. MOU - Dept of Mines & Petroleum EPA [**11.1.3** - 11 pages] 4. Dept of Mines & Petroleum Report - Migration of Limesand Dunes in WA & Their Impacts [**11.1.4** - 89 pages]

DISCLOSURES OF INTEREST

Nil

PURPOSE

To consider a request from the newly formed "Save the Lancelin Sand Dunes" Group (SLSD) for Council to formally support the actions of the Group.

BACKGROUND

Lime sand mining (mining) has been occurring within Lancelin for decades. This action is governed and facilitated by the Department of Mines, Industry Regulation and Safety (DMIRS). The area that is currently being mined has formal approval from DMIRS with the appropriate mining tenement and permits in place to undertake the mining activity.

The lime sand is mined/removed and trucked out for agricultural purposes within the rural sector as it is used to increase the pH in soil, improving farming yields and greatly adding to the economic output from the State of WA.

Next to the main lime sand mine in question is the Lancelin Off Road Vehicle Area (LORVA). Council has been very vocal with the State for years now about having to administer the LORVA on behalf of the State as required by legislation. The LORVA has significant risk associated with the users of the area due to the inherent risks associated with using a variety of off-road vehicles in the area designated. However, the greatest risk is the inability to control these users, inability to erect signage, limit anti-social behaviour and the ever-growing presence of sandboarders and general tourists taking photos and walking through the area.

The LORVA has been in place for some 30 years and has cost the Shire significantly in staff time and expenses with no ongoing support from the State Government other than several minor grants. There have been many deaths in the LORVA over the years and this has been highlighted to the State.

Recently the lime sand mine has come closer to the Lancelin townsite with more focus from residents. The SLSD Group was formed to actively fight against the removal of the lime sand to preserve the sand dunes for future generations.

Correspondence from the SLSD group has been received requesting that Council formally support its actions.

COMMENT

The Lancelin sand dunes is a complicated natural structure that has been a significant draw card for Lancelin for generations. The use of lime sand in the agricultural industry has also been utilised for generations and as the Lancelin lime sand is of a significant quality it was tested and approved for mining by the DMIRS.

Recently, Lancelin community residents have formed the SLSD Group and have been actively seeking to cease lime sand mining in Lancelin. This action has caused a level of angst between the mining company and its earth moving contractor and the general community, and the SLSD Group is asking Council to support its actions.

Information provided by the SLSD Group to Council, and other study documents provided to Elected Members for their general information, form **appendices** to this report.

It is difficult to advise Council as to how to proceed with a discussion point like this, as Council is being asked to actively advocate against the State and DMIRS with respect to decisions that were previously made and approved with the miner having had mining rights over the tenement for an extensive period. In conjunction with this, the main contractor has established themselves in Lancelin and has been a proactive supporter of Lancelin.

It is the right of the SLSD Group to advocate for the closure of lime sand mining in Lancelin, however is it appropriate for the Shire of Gingin to take an active role in this action?

In common with the community, the Shire of Gingin does not want to see the loss of the LORVA and the economic benefit that the sand dunes provide to the greater Lancelin community. It is emphasised that, whilst a mining tenement exists over the LORVA no mining permit has been issued.

Through discussions with DMIRS an offer was made to work with the Shire to identify other possible locations for the LORVA. However other locations would not provide the benefits offered by the current location, namely close proximity to emergency services.

Relocation of the LORVA would detrimentally impact on the economic benefits of the activity and tourism in Lancelin, increase the response time for emergency services to attend incidents and place more pressure on volunteers, reduce the ability of Council staff to service the area, reduce the attendance of Police to incidents of unrest in the LORVA and a whole range of additional issues.

On the other hand, potential positive outcomes would be to ensure that the LORVA area is not lost and remove the ability for any mining to occur in the LORVA area. As part of this outcome DMIRS would also need to prevent users of the LORVA from getting close to and entering the mine site and ensure that the LORVA sand dunes are not negatively affected by the neighbouring sand mining operation.

Should Council wish to take a firm stand on ceasing all lime sand mining in the area then it can do so and actively seek to advocate this point with State Ministers and Departments to seek an outcome and work closely with the SLSD Group.

Should Council not wish to take this advocacy position it could still align with the SLSD Group for the protection of the LORVA as has already been advocated. This, whilst providing some strength to the SLSD Group, would not align with the cessation of all sand mining activity in Lancelin.

There are pros and cons with any decision of Council, this one is difficult as the community are taking action and wishes to have Council's support. Council has received advocacy from the SLSD Group and the mining company and needs to look at the wholistic outcomes of any decision, the possibility of a positive outcome, be focused on the safety issue at hand and the long-term direction and viability of Lancelin.

As such, it is recommended that Council consider the following two options and form a position of Council on this matter.

Option 1

That Council:

1. *Formally support the Save the Lancelin Sand Dunes Group and advocate to the State Government and the Department of Mines, Industry Regulation and Safety for the cessation of lime sand mining in Lancelin and for the State Government to allocate alternative lime sand resources to be mined outside of the Lancelin area; and*

2. *That the State Government take immediate responsibility for control of the Lancelin Off Road Vehicle Area to facilitate and regulate users and activities within the Area and to ensure its continued operation into the future.*

Option 2

That Council advocate to the State Government:

1. *For removal of the Mining Tenement over the Lancelin Off Road Vehicle Area in order to protect the Area into the future; and*

2. *That the State Government take immediate responsibility for control of the Lancelin Off Road area to facilitate and regulate users and activities within the Area and to ensure its continued operation into the future.*

STATUTORY/LOCAL LAW IMPLICATIONS

Mining Act 1978

Control of Vehicles (Off-road Areas) Act 1978
s.5 – Local government's functions

The issue with the request that has been presented to Council is that mining tenements and permits are not controlled by local government, and the *Mining Act 1978* and its Regulations are some of the most powerful legislation in the State. The mining permit for the area in question has been in place for decades; as such the mining operation and its owners hold this area and resource as a legal asset. If the right to mine were to be removed then it is assumed that the State would need to compensate the mining company for any resulting losses and potentially for costs arising from relocating.

Whilst this does not create a liability or issue for the SLSD Group or for the Shire of Gingin, consideration must be given to the impact of any decision in terms of how any action would be progressed under the relevant legislation, the time required to implement the action and what the potential impacts could be.

POLICY IMPLICATIONS

Nil

BUDGET IMPLICATIONS

Nil

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	1. Attractions & Economy - Actively Pursue Tourism and Economic Development
Strategic Objective	1.1 Investment Attraction - Foster relationships with key stakeholders to attract tourism/economic development initiatives that will contribute to the Shire's economy

VOTING REQUIREMENTS - SIMPLE MAJORITY

OFFICER RECOMMENDATION

That Council:

1. Formally support the Save the Lancelin Sand Dunes Group and advocate to the State Government and the Department of Mines, Industry Regulation and Safety for the cessation of lime sand mining in Lancelin and for the State Government to allocate alternative lime sand resources to be mined outside of the Lancelin area; and

2. Request that the State Government take immediate responsibility for control of the Lancelin Off Road Vehicle Area to facilitate and regulate users and activities within the Area and to ensure its continued operation into the future.

PROCEDURAL MOTION

MOVED: Councillor Kestel SECONDED: Councillor Vis

That consideration of this matter be referred to the Council meeting on 20 June 2023 in order to provide further opportunity for investigation and discussion.

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*
AGAINST: *Nil*

Karen Okely

Subject: FW: ICP237387 - Fwd: Request for Council to support fight to save Lancelin dunes
Attachments: image003.em_; shire letter.docx; EPA-DMP-MOU.pdf; MP_87678.pdf

Begin forwarded message:

From: Tina Broughton <lanotina@live.com.au>
Date: 14 March 2023 at 8:46:10 am AWST
To: Cr Wayne Fewster <crfewster@gingin.wa.gov.au>, Cr Andrea Vis <CrVis@gingin.wa.gov.au>, Cr Kim Rule <CrRule@gingin.wa.gov.au>, Cr Erik Sorensen <CrSorensen@gingin.wa.gov.au>, Cr Frank Johnson <CrJohnson@gingin.wa.gov.au>, Cr Frank Peczka <crpeczka@gingin.wa.gov.au>, Cr Linda Balcombe <CrBalcombe@gingin.wa.gov.au>, Cr Rob Kestel <CrKestel@gingin.wa.gov.au>
Subject: Request for Council to support fight to save Lancelin dunes

Good morning Councillors.

Please find attached a letter on behalf of the Save Lancelin Sand Dunes Action Group requesting that Council resolve to unite with us to stop sand mining in the Lancelin sand dunes and work towards protecting the sand dunes as a natural landmark of at least state or hopefully national importance.

This does not require direct financial outlay from the Shire, but potentially some staff time in writing and responding to correspondence, and sourcing any records as needed.

It's a big fight. It's going to be a hard fight to win but we have overwhelming public support and a number of well-connected members who are getting in the ears of ministers. We are expecting growing media coverage as Landline release their story in coming months and some other leads with WA Newspapers.

There is almost not a single person you speak to that believes the dunes should not be protected. Even farmers who know the dunes are on our side – there are ample other sources of lime sand available – many already accessible and other large ones that could be brought online if needed.

It has also been discovered that Aglime have misled (whether knowingly or unknowingly) DMIRS in their latest mining proposal. Attached are the MOU which sets out the EPA referral triggers (see page 8) and the recent mining proposal (see page 4) where the applicant ticked the 'No' box for needing to refer to the EPA, along with a photo showing the straight line distance across the centre of town to the coast.

Additionally, the original mining agreement clearly stated that there was a need to protect the aesthetic value of the dunes. As you will see from the picture taken from Mullins Way, this is no longer possible.

Please get in touch if there are any concerns about information provided.

Kind regards

[PO Box 133, Lancelin WA 6044 info@savelancelindunes.com.au][A picture containing text Description automatically generated]

Click

1

Dear Wayne and Councillors,

Following a community meeting attended by over 100 people and watched by livestream by over 1000, the Save Lancelin Dunes action committee has been formed under the umbrella of the Lancelin Chamber of Commerce.

The ultimate position of the committee, including the overwhelming feedback from our residents and the wider community that we have engaged with, is to cease all sand mining activities **in the Lancelin sand dunes** urgently and protect them for eternity.

By Lancelin sand dunes we mean the entire connected system of sand that on the northern and eastern side of Lancelin Rd/Walker Ave. This includes what is widely regarded as the LORVA through to the area that is currently being mined to the south by Aglime Pty Ltd. It does not include any other mining pits south of Lancelin Rd or Ledge Point or anywhere else in the state.

We call on the Shire to support our community by resolving at Council to join our fight to stop all sand mining in the Lancelin sand dunes. It is the belief of our residents, ratepayers, local businesses and wider community, including people from all over the world – **that it is not possible for sand mining to co-exist with tourism** in the dunes any longer.

1. There is **no need** to mine sand from the Lancelin dunes as there are more than 30 other accessible sources of lime sand around the State, and multiple other untapped sources that do not impact such a major tourist attraction, the livelihoods of so many people in our community and the future of our iconic natural landmark.
2. **No environmental impact studies** have ever been conducted to determine the likely impact of loss of sand from the south on the main tourist dune area. We have photographic evidence to show a significant decline in dune height since mining operations began and there are also concerns about sand replenishment impacts on our foreshore. No studies have been conducted at any time to assess or monitor these issues either.
3. When mining licences were initially granted in the dunes there was concern to maintain 'the aesthetic nature of the area'. Extraction of sand has already resulted in dramatic impacts on the aesthetic value of the dune system, on this basis alone the mining really should be stopped.
4. There is evidence to suggest that Aglime provided inaccurate information to DMIRS and by doing so avoided EPA referral for their current extraction operations – under the MOU they should've referred their proposal to the EPA if it was less than 2km from the town, less than 2km from the ocean and over a water catchment. All three of these triggers occur in this operation.
5. Residents down wind of the mine site are experiencing significant increases in dust due to the mining operations that and no air quality monitoring or assessment has been carried out.

Resolving to support us in this issue does not mean you are against farmers or against sand mining - it shows that you recognise that Lancelin's magnificent sand dunes are worth far more to our community and the State than the lime sand they contain and understand your mandate to represent the views of your community, especially when they are being made so overwhelmingly clear.

We welcome you to meet with representatives to discuss possible options for achieving this outcome, but we reiterate that while we are prepared to engage with stakeholders we will not

waiver in our ultimate goal of stopping all mining operations in the Lancelin sand dunes as a matter of urgency.

As a significant body of ratepayers, we request that the council endorse our position in stopping mining activities at the Lancelin site and move to permanently protect the sand dunes for the sake of future generations as well as for tourism and the business communities of Lancelin and surrounding towns that rely on this iconic attraction to survive and thrive in the long term.

Yours sincerely

Save Lancelin Dunes Action Group

Memorandum of Understanding

between the

Department of Mines and Petroleum

and the

Environmental Protection Authority

in relation to the referral of

Mineral and Petroleum (Onshore and Offshore) and Geothermal Proposals

Endorsement

The purpose of this Memorandum of Understanding is to establish an efficient and transparent administrative process for the Department of Mines and Petroleum to refer environmentally significant mineral, petroleum and geothermal proposals to the Environmental Protection Authority, pursuant to Part IV of the Western Australian *Environmental Protection Act 1986*.

The Environmental Protection Authority does not abrogate its responsibilities in regard to environmental assessment. The Authority can, under the *Environmental Protection Act 1986*, call in for assessment any proposal that is likely to have a significant effect on the environment.

Richard Sellers
Director General
Department of Mines and Petroleum

Date: 26/6/09

Dr Paul Vogel
Chairman
Environmental Protection Authority

Date: 29.6.09

1 Purpose

This document outlines the administrative arrangements between the Environmental Protection Authority (the Authority) and the Department of Mines and Petroleum (the Department) in the referral of proposals under section 38 of the *Environmental Protection Act 1986*. It establishes an agreed process for the Department to refer to the Authority for assessment those mineral, petroleum and geothermal proposals likely to have a significant impact on the environment.

The Authority and the Department commit to working cooperatively to ensure that:

- the objectives of the *Environmental Protection Act 1986* are met
- applications are considered efficiently and effectively, and
- the process is clear, consistent and transparent

A proposal may also require approvals under other legislation and it is the proponent's responsibility to ensure that all necessary State and Commonwealth regulatory requirements are met.

2 Relevant Legislation and Scope

The MoU facilitates the administration of the following legislation:

- *Environmental Protection Act 1986* and Regulations - section 38 requires the Department and any other Decision Making Authority to refer to the Authority any proposal that is likely, if implemented, to have a significant effect on the environment. This includes any proposal that is environmentally significant for reasons other than the factors listed in this MoU
- *Mining Act 1978* and Regulations - that relates to mining on land undertaken in accordance with the *Mining Act 1978,* and on freehold land subdivided before 1899 where most minerals are not 'owned' by the State, and
- *Petroleum and Geothermal Energy Resources Act 1967*, *Petroleum Pipelines Act 1969, Petroleum (Submerged Lands) Act 1982* and the relevant Schedules and Regulations, that relate to petroleum exploration and production within Western Australian coastal waters and onshore, and covers seismic and other ground disturbing surveys, drilling, facility (construction, installation, operation, modification and decommissioning), pipeline (construction, installation, operation, modification and decommissioning), and geothermal energy activities onshore

This MoU does not apply to proposals on Commonwealth lands or in Commonwealth waters but recognises that the Department is a lead agency for administration of petroleum legislation for Commonwealth Offshore Areas.

The MoU does not prejudice the provisions of any other written law or the statutory responsibilities of other Government agencies or their respective Ministers. However, to the extent that an inconsistency may arise then the provisions of the *Environmental Protection Act 1986* or approved policy prevails, in accordance with section 5 of the Act.

Matters relating to pre-1899 Crown grant lands and consequently not subject to the *Mining Act 1978*, are managed under the *Environmental Protection Act 1986*.

3 Roles and responsibilities

The following roles apply:

- The Authority has lead responsibility for providing advice to the Minister for Environment regarding environmental protection in the State
- The Authority is responsible for conducting the environmental impact assessment process as required under the *Environmental Protection Act 198*
- The Department has lead responsibility for the regulation of mineral, petroleum and geothermal exploration and development in the State, and
- The Department is a Decision-Making Authority under the *Environmental Protection Act 1986*

4 Agreement

In respect to the purpose of this MoU, the Authority and the Department agree to:

- be effective, timely, transparent and accountable;
- share information, including spatial data, to assist with decision-making under this MoU
- ensure that when referrals occur, the exchange of information and documentation occurs in a timely manner
- consult and pursue collaboration on new and proposed changes to relevant policies, guidelines and standards
- consult and pursue collaboration on new and emerging issues not adequately addressed by the MoU
- communicate decisions through the Authority's Director EPA Service Unit and the Department's Director Environment Division,
- publicly advise on the assessment status of proposals on each website (www.epa.wa.gov.au and www.dmp.wa.gov.au respectively), and
- meet as agreed to discuss specific proposals likely to be referred to the Authority and the general effectiveness of this MoU

In respect to the purpose of this MoU, the Department will:

- require proponents to submit adequate information with their application

- refer to the Authority those proposals it considers likely to have a significant effect on the environment if implemented
- use the best available information to promote industry leading practice
- require proponents to identify and minimise environmental risks associated with their proposals
- seek advice from appropriate agencies, research institutions and independent specialists to minimise the environmental risk of a proposal and determine whether a proposal is likely to have a significant effect on the environment, and
- review each proposal against relevant legislation, policies, guidelines and standards

This agreement between the Authority and the Department recognises that it is the proponent's responsibility to undertake environmental investigations in accordance with relevant guidelines and standards and demonstrate that all practicable measures will be taken, and that any residual risks or impacts are acceptable.

5 Factors to consider in determining whether a proposal is likely to have a significant effect on the environment if implemented

The Department's determination of whether a proposal is likely to have a significant effect on the environment if implemented, and therefore require referral to the Authority, will occur through the consideration of;

- those matters set out in Schedules 1,2 and 3, and
- the capacity of the Department's regulatory processes to deliver an agreed outcome where there would be no residual effects that would be environmentally significant

The following are general factors for determining the environmental significance of a proposal:

- character of the receiving environment
- magnitude, extent and duration of anticipated change
- resilience of the environment and its ability to cope with change
- confidence of prediction of change
- existence of environmental values, policies, guidelines and standards against which a proposal can be assessed, and
- degree of public interest in environmental issues likely to be associated with the proposal

Environmental impact assessment principles will be applied in decision making, including consideration of:

- risk-based assessment of impacts, to include a systematic assessment to identify and characterise the significant potential impacts, so that decisions made are informed by the significance of the environmental risks posed by the environmental aspects of a proposal

- cumulative impacts, so that all decisions will consider the short and long term and cumulative impacts of a proposal or a number of proposals in an area on the environment

- outcome or performance based conditions that set a specific outcome to be met, and are clear and auditable, and

- the strategic context for a proposal is considered early and with stakeholder involvement, including the outcome of previous strategic assessments undertaken by the Authority.

6 Duration and Review

The MoU will commence from the date of signing and continue in its terms until reviewed or terminated by written notice by either party. It will be reviewed if there is a change of legislation or State Government policy affecting the subject of the MoU, or one of the parties determines that a review is required. The review will be undertaken jointly by the parties.

7 Audit

Administrative processes and decision-making under this MoU may be audited every 12 months and the results of the audit will be publicly available.

Memorandum of Understanding

between the

Department of Mines and Petroleum

and the

Environmental Protection Authority

in relation to the referral of

Mineral and Petroleum (Onshore and Offshore) and Geothermal Proposals

Schedules

Endorsement

The following schedules attached to the Memorandum of Understanding between the Department of Mines and Petroleum and the Environmental Protection Authority:

1. Criteria for referral of onshore mineral proposals
2. Criteria for referral of onshore petroleum activities
3. Criteria for referral of offshore petroleum activities

valid as of 19 May 2010 are endorsed.

Richard Sellers
Director General
Department of Mines and Petroleum

Date: 17/6/10

Dr Paul Vogel
Chairman
Environmental Protection Authority

Date: 21.5.10

Schedule 1

CRITERIA FOR REFERRAL OF ONSHORE MINERAL PROPOSALS

This schedule should be read in conjunction with parts 4 and 5 of this MoU

Significance Test: DMP will consult with the Office of the EPA on **any** proposal considered likely to have a significant impact using the following test of significance:

- Character of the receiving environment;
- Magnitude, extent and duration of anticipated change;
- Resilience of the environment and its ability to cope with change;
- Confidence of prediction of change;
- Existence of environmental values, policies, guidelines and standards against which a proposal can be assessed; and
- Degree of public interest in environmental issues likely to be associated with the proposal.

Irrespective of the outcomes of the **Significance Test**, DMP will take the actions as described in criteria 1-8 contained in the table below for Proposals that meet those circumstances.

		Action Taken	
		Exploration proposals that result in ground disturbance	**Development, productive mining, excess tonnage applications and construction proposals**
1	Wholly or partly within pre-1899 Crown Grant and consequently not subject to the *Mining Act 1978*	**DMP will liaise with the Office of the EPA on the Proposal**	**DMP will refer the Proposal to the EPA in accordance with S38(5) of the EP Act 1986**
2	Wholly or partly within areas identified or protected under statute; • National Park • Nature Reserve • Conservation Park • State Forest and Timber Reserves • Threatened Ecological Communities		
3	Wholly or partly within the following areas: • World Heritage Property; • Biosphere Reserve, • Soil reference site, • Ramsar wetlands; • ANCA wetlands, • Sites visited by species listed under JAMBA or CAMBA.		
4	Having a direct or indirect effect upon environmentally significant lakes and wetlands including: • EPP lakes and wetlands; and • Conservation category wetlands.	**DMP will liaise with the Office of the EPA on the Proposal**	**DMP will liaise with the Office of the EPA on the Proposal**
5	Wholly or partly within 2km of the coastline		
6	Likely to impact on a water resource area, including a water reserve, a declared or proposed water supply catchment area or groundwater protection area.		
7	Area currently subject to formal assessment by the EPA.		
8	Wholly or partly within 2km of a declared occupied townsite	**DMP will liaise with the Office of the EPA on the Proposal**	**DMP will refer the Proposal to the EPA in accordance with S38(5) of the EP Act 1986**

Notes

i. Proposals that are wholly or partly within existing *Conservation and Land Management Act 1984* reserves are forwarded by DMP to DEC under separate administrative arrangements.

ii. Proposals that require native vegetation clearing will be assessed in accordance with the *Environmental Protection Act 1986* and *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* which are covered by separate administrative arrangements between DMP and DEC.

iii. DMP will not refer a Proposal to the EPA if the Proposal is part of a Proposal that has already been assessed by the EPA, and is consistent with the conditions of the relevant Ministerial Statement.

Schedule 2

CRITERIA FOR REFERRAL OF ONSHORE PETROLEUM ACTIVITIES

This schedule should be read in conjunction with parts 4 and 5 of this MoU

Significance Test: DMP will consult with the Office of the EPA on **any** proposal considered likely to have a significant impact using the following test of significance:

- Character of the receiving environment;
- Magnitude, extent and duration of anticipated change;
- Resilience of the environment and its ability to cope with change;
- Confidence of prediction of change;
- Existence of environmental values, policies, guidelines and standards against which a proposal can be assessed; and
- Degree of public interest in environmental issues likely to be associated with the proposal.

Irrespective of the outcomes of the **Significance Test**, DMP will take the actions as described in criteria 1-7 contained in the table below for Proposals that meet those circumstances.

		Action Taken
1	Wholly or partly within 500m of areas identified or protected under statue; • National Park • Nature Reserve • Conservation Park • State Forest and Timber Reserves • Threatened Ecological Communities	**DMP will refer the Proposal to the EPA in accordance with S38(5) of the EP Act 1986**
2	Wholly or partly within 500m of the following areas: • World Heritage Property; • Biosphere Reserve, • Soil reference site, • Ramsar wetlands, • ANCA wetlands, • Sites visited by species listed under JAMBA or CAMBA.	
3	Likely to have a direct or indirect effect upon environmentally significant lakes and wetlands including: • EPP lakes and wetlands; and • Conservation category wetlands.	**DMP will liaise with the Office of the EPA on the Proposal**
4	Wholly or partly within 2km of the coastline	
5	Likely to impact to a water resource area, including a water reserve, a declared or proposed water supply catchment area or groundwater protection area	
6	Area currently subject to formal assessment by the EPA	
7	Wholly or partly within 2 kilometres of a declared occupied town site	**DMP will refer the Proposal to the EPA in accordance with S38(5) of the EP Act 1986**

Notes

i. Proposals that are wholly or partly within specified reserves are forwarded by DMP to DEC in accordance with S15A of the *PGERA 1967*.

ii. Proposals that require native vegetation clearing will be assessed in accordance with the *Environmental Protection Act 1986* and *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* which are covered by separate administrative arrangements between DMP and DEC.

iii. DMP will not refer a Proposal to the EPA if the Proposal is part of a Proposal that has already been assessed by the EPA, and is consistent with the conditions of the relevant Ministerial Statement.

Schedule 3

CRITERIA FOR REFERRAL OF OFFSHORE PETROLEUM ACTIVITIES

This schedule should be read in conjunction with parts 4 and 5 of this MoU

Significance Test: DMP will consult with the Office of the EPA on <u>any</u> proposal considered likely to have a significant impact using the following test of significance:

- Character of the receiving environment;
- Magnitude, extent and duration of anticipated change;
- Resilience of the environment and its ability to cope with change;
- Confidence of prediction of change;
- Existence of environmental values, policies, guidelines and standards against which a proposal can be assessed; and
- Degree of public interest in environmental issues likely to be associated with the proposal.

Irrespective of the outcomes of the **Significance Test**, DMP will take actions as described in criteria 1-8 contained in the table below for Proposals that meet those circumstances.

		Action Taken
1	Surveys, drilling, pipelines and production development wholly or partly within a State Marine Park.	**DMP will refer the Proposal to the EPA in accordance with S38(5) of the EP Act 1986**
2	Surveys, drilling, pipelines and production development wholly or partly within the following areas of State Marine Management Areas: • Special Protection Zones.	
3	Surveys, drilling, pipelines and production development wholly or partly within a Marine Nature Reserve.	
4	Surveys, drilling, pipelines and production development wholly of partly within a Marine Protection Area other than those managed under the CALM Act, including; • Areas protected under the Fish Resources Management Act 1994, • Areas protected under the Rottnest Island Authority Act 1987, • Historic wreck sites • World Heritage Areas.	
5	Seismic activity wholly or partly within intertidal zones or shallow waters (<15m) in turtle breeding areas during turtle breeding.	
6	Seismic activity wholly or partly located in whale mating/calving areas in the breeding season, or in locations that may affect migrating whales.	
7	Exploration or appraisal drilling wholly or partly within 3nm of coast, islands or intertidal reefs.	
8	Production development and/or pipeline development in State Waters	

Notes

i. Activities in State or Commonwealth waters may also require referral to DEWHA under the *Environment Protection and Biodiversity Conservation Act 1999*.

ii. DMP seeks advice from DEC as to whether the proposal is consistent with the Marine Park or Reserve Management Plan, or is otherwise environmentally significant (for example because of potential for impacts on breeding turtles from artificial lighting), when considering whether referral to the EPA is required.

iii. Proposals that require native vegetation clearing will be assessed in accordance with the *Environmental Protection Act 1986* and *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. The native vegetation clearing process is covered by a separate administrative arrangement between DMP and DEC.

iv DMP will seek advice from DEC for proposals in unzoned areas of State Marine Management Areas.

v DMP will not refer a Proposal to the EPA if the Proposal is part of a Proposal that has already been assessed by the EPA, and is consistent with the conditions of the relevant Ministerial Statement.

vi DMP will not refer a Proposal to the EPA for construction of a well for an existing approved activity.

Appendix A Acronyms, Short Titles and Interpretation

For the purpose of this document, the following acronyms and short titles will be used:

DEC	Department of Environment and Conservation
DEWHA	Department of Environment, Water, Heritage and the Arts
DMP	Department of Mines and Petroleum (the 'Department')
EPA	Environmental Protection Authority (the 'Authority')
MoU	Memorandum of Understanding

Definitions

The terminology used in this document is defined below:

ANCA wetlands	Wetlands of national significance as listed by the Australian Nature Conservation Agency.
Biosphere Reserve	An area of terrestrial and coastal/marine ecosystem that is internationally recognised under UNESCO's 'Man and the Biosphere' program.
Conservation category wetlands	Wetlands categorised in the Geomorphic Wetlands Swan Coastal Plain dataset as 'conservation'.
Decision-Making Authority	Has the meaning as defined under section 3 of the *Environmental Protection Act* 1986 ('the Act') and means a pubic authority, including a Minister, that is notified in writing by the EPA that they must await authorisation by the Minister administering the Act before making a decision.
Decommissioning	The process that begins near or at the cessation of resource development and ends with the removal of all infrastructure and final rehabilitation of the operation.
Geothermal [activities]	Has the meaning under the *Petroleum and Geothermal Energy Resources Act 1967*.
Land	Under the *Mining Act 1978* includes water, and also includes the foreshore and sea bed within the meaning of section 25.
Leading practice	Means the best way of doing things at a given site. Leading practice is flexible and innovative in developing solutions that match site-specific requirements and is as much about approach as it is about a fixed set of practices or a particular technology (DITR 2006)
Minerals	Means naturally occurring substances obtained or obtainable from any land by mining operations carried out on or under the surface of the land, but does not include (a) soil; or (b) a substance the recovery of which is governed by the *Petroleum and Geothermal Energy Resources Act 1967* or the *Petroleum (Submerged Lands) Act 1982*; or (ba) without limiting paragraph (b), geothermal energy resources as defined in the *Petroleum and Geothermal Energy Resource Act 1967* section 5(1); or (c) a meteorite as defined in the *Museum Act 1969*; or (d) any of the following substances if it occurs on private land (i) limestone, rock or gravel; or (ii) shale, other than oil shale; or (iii) sand, other than mineral sand, silica sand or garnet sand; or (iv) clay, other than kaolin, bentonite, attapulgite or montmorillonite.
Mining	Includes fossicking, prospecting and exploring for minerals, and mining operations (s8 of *Mining Act 1978*).
Mining operations	Means any mode or method of working whereby the earth or any rock structure stone fluid or mineral bearing substance may be disturbed removed washed sifted crushed leached roasted distilled evaporated smelted or refined or dealt with for the purpose of obtaining any mineral therefrom whether it has been previously disturbed or not and includes (a) the removal of overburden by mechanical or other means and the stacking, deposit, storage and treatment of any substance considered to contain any mineral; (b) operations by means of which salt or other evaporites may be harvested; (c) operations by means of which mineral is recovered from the sea or a natural water supply; and (d) the doing of all

Mining operations	Means any mode or method of working whereby the earth or any rock structure stone fluid or mineral bearing substance may be disturbed removed washed sifted crushed leached roasted distilled evaporated smelted or refined or dealt with for the purpose of obtaining any mineral therefrom whether it has been previously disturbed or not and includes (a) the removal of overburden by mechanical or other means and the stacking, deposit, storage and treatment of any substance considered to contain any mineral; (b) operations by means of which salt or other evaporites may be harvested; (c) operations by means of which mineral is recovered from the sea or a natural water supply; and (d) the doing of all lawful acts incident or conducive to any such operation or purposes.
National park	Has the meaning assigned to it under the *Conservation and Land Management Act 1984.*
Nature reserve	Has the meaning assigned to it under the *Conservation and Land Management Act 1984.*
Offshore/ Offshore Area	Means an offshore area of a State or Territory within the meaning of section 7 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006.*
Onshore	Any locality on the mainland or islands (including Barrow Island) under Western Australian jurisdiction that lies above the mean low water mark.
Petroleum	Petroleum includes: (a) any naturally occurring hydrocarbon, whether in a gaseous, liquid or solid state; (b) any naturally occurring mixture of hydrocarbons, whether in a gaseous, liquid or solid state; or (c) any naturally occurring mixture of one or more hydrocarbons, whether in a gaseous, liquid or solid state, and one or more of the following, hydrogen-sulphide, nitrogen, helium and carbon dioxide, and includes any petroleum as defined by (a), (b) or (c) that has been returned to a natural reservoir, but excludes oil shale.
Petroleum activities	Operations carried out under authority or consent of the *Petroleum and Geothermal Energy Resources Act 1967, Petroleum Pipelines Act 1969* and *Petroleum (Submerged Land) Act 1982* and includes the following: seismic and other ground disturbing surveys; drilling; facility (construction, installation, operation, modification and decommissioning); pipeline (construction, installation, operation, modification and decommissioning) and any other upstream petroleum operations; and geothermal energy activities onshore.
Practicable	Capable of being put into practice, done, or effected, especially with the available means or with reason or prudence.
Proposal	An application to the Department for a proposed exploration, mineral or petroleum activity. It includes measures to protect the environment and to rehabilitate disturbed ground. Under the *Environmental Protection Act 1986*, a proposal can be a project, plan, programme, policy, operation, undertaking or development of change in land use, or amendment of any of these (section 3).
Red Book areas	Proposed conservation reserves for WA recommended by the EPA including the Forest Management Plan and the Department of Environment and Conservation's Regional Management Plans where they formally supercede Red Book areas where such plans have been endorsed).
Refer/Referral	Referral means a proposal that is referred to the EPA for consideration under Part IV (section 38) of the *Environmental Protection Act 1986.*
Risk	Means the chance of something happening that will have an effect on objectives (i.e. a component of the environment) in accordance with AS / NZS 4360:2004.
State	The State of Western Australia.
Systematic assessment	Clear processes that describe the decisions and decision making criteria, as amended from time to time, are appropriately documented and available to the other party.
Water Resource Management Area	An area where legislation administered by the Department of Water applies.

Government of **Western Australia**
Department of **Mines and Petroleum**

Migration of limesand dunes in Western Australia and their impacts

Implications of a geohazard along the Mid West coast of Western Australia

By Josefine Bruch and Michael Freeman

Migration of limesand dunes in Western Australia and their impacts

Implications of a geohazard along the Mid West coast of Western Australia

By Josefine Bruch and Michael Freeman

February 2017

MINISTER FOR MINES AND PETROLEUM
Hon. Sean L'Estrange

ACTING DIRECTOR GENERAL, DEPARTMENT OF MINES AND PETROLEUM
Tim Griffin

EXECUTIVE DIRECTOR, MINERAL TITLES
Ivor Roberts

REFERENCE
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Subjects:	Subjects: Sand dunes – Western Australia. Sand dune management – Western Australia. Coastal zone management – Western Australia. Shore protection – Western Australia. Geomorphology – Western Australia.
Other Creators/ Contributors:	Freeman, Michael John, 1946-, author

About this publication

This report represents the results of research by the Department of Mines and Petroleum on the mobility of certain sand dunes along the Mid West coast of Western Australia, between Perth and Geraldton. The Department is releasing the report to ensure a wider distribution of the results, which includes the characterisation of sand dunes and documentation of their rates and directions of travel during the period 1960 to 2010 and interpretations.

Published 2017 by Department of Mines and Petroleum, Western Australia

Copies available from:
Information Centre
Department of Mines and Petroleum
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Migration of limesand dunes in Western Australia and their impacts

Implications of a geohazard along the Mid West coast of Western Australia

By Josefine Bruch and Michael Freeman

Preface

This report was compiled by Josefine Bruch, from Dresden University, Germany, as a geomorphological study on the movement of several sand dunes on the Mid West coastal belt of Western Australia. Ms Bruch was assisted with much guidance, support and definitions of concepts by Mr Bob Gozzard of the Geological Survey of Western Australia.

The task was completed as an internship during a three-month period in late 2011 when Ms Bruch was sponsored jointly by the Mineral Titles Division of the Department of Mines and Petroleum and the International Association for the Exchange of Students for Technical Experience (IAESTE). IAESTE is the largest student exchange organisation worldwide, providing high quality practical training for tertiary students in foreign countries. Founded in 1948, it describes itself as a non-political, independent, non-governmental organisation which maintains consultative and operational relationships with agencies of the UN such as the United Nations Educational, Scientific, Cultural Organisation (UNESCO) or the United National Industrial Development Organization (UNIDO).

This report was initially drafted in 2011 but was revised by the second author during 2014–15 to use more non-scientific language to be in keeping with the needs of the inferred audience likely to read the document and to use the information. In addition, amendments, changes and expansion of the interpretations were carried out to improve the readability and organisation of the report. Google Earth images of the latest (2015–16) scenes replaced earlier images to present the latest situation of the dunes.

Summary

This report is a documentation of the rates and directions of migration of limesand dunes in parts of Western Australia. With the application of ArcGIS, georeferenced maps and aerial images from 1960 to 2010 were used to measure and monitor the locations of a selection of mobile dunes along the Mid West coast between Lancelin and Geraldton. Over the period of the study those measured travelled at rates that averaged between 4.1 and 15.8 metres a year for the 50 years, generally moving in a northerly direction, covering between 20,000 and 14 hectares and the longest migration distance identified is 21 kilometres. The monitoring of migration rates can provide valuable information for resource management and geohazard risk reduction as the rates and directions measured can provide predictive tools to document future impacts on built infrastructure. Therefore this report analyses factors that can influence the migration rate and direction of dunes such as climate data, dune

morphology, sediment supply and human activity. The main factors which influence the presence of mobile sand dunes in Western Australia are the wind regime and sediment supply. The study also discusses solutions to stabilise dunes in coastal areas. However, because of the vagaries of natural processes, no prediction of impact dates or severity presented herein are to be taken as fixed or firm. Any users of the data or suggested times or severity of impacts must undertake their own specific studies if definite predictions are required.

Built infrastructure in general had initially been constructed remote from mobile dunes. However, in the decades since construction, the dunes continued migrating and in a number of cases will pose threats to infrastructure. Several of those dunes considered to pose such threats were studied, along with a few others to give better representation of their movements.

It was also concluded that the speeds determined for those dunes included in this study are probably reliable long-term indicators of the rates, but are not reliable on shorter time frames, such as over a decade interval.

The coast and the locus of coastal developments trend parallel to the main winds that mobilise dune sands. This has major implications for land use and development planning because it exposes the maximum number of sites to the geohazard of migrating dunes. Anything built north of and within a close distance of an existing mobile dune near to the coast is likely to eventually become threatened.

The sand mainly consists of sand-sized limestone grains. This limesand is useful for combating increasing acidity in farm soils and is therefore in demand for use through the Wheatbelt region of Western Australia. Physical actions to stop a dune blowing over infrastructure, such as removing the sand with machinery, could be very expensive. Local communities are unlikely to be able to fund such activities without straining local budgets. However, the limesand itself has an economic value when applied to farmland. Therefore, marketing of the limesand from threatening dunes is highly recommended in order to utilise the value of the resource to pay for reducing or removing their threats.

The conclusions for each of the dunes studied follow, commencing at the northern-most dune and progressing southward:

- The Southgate Dune has a total area of 139ha, is moving northwards in the direction of the community of Wandina and will soon blow sand into the housing areas as it is only 230m away. South of this sand dune is the Greenough River mouth which probably supplied sand for the development of the dune. Extraction of limesand from the head of the dune is proceeding and it is recommended that the rate of production be monitored in order to stop the head migrating towards the houses. From the data available it is considered that the order of 25,000m^3 (cubic metres) of limesand needs removing at the dune front each year to minimise the forward movement of the dune.

- The Cape Burney sand dune is situated 420m south of the Greenough River mouth. This limesand dune has a total area of 60ha, is moving in a north-northwesterly direction and will soon blow sand into the Greenough River. Blockage of the river may then ensue although if river flows are strong enough it may maintain its course rather than be blocked. It is recommended that the potential problems that might arise from either scenario be considered by the local authority.

- The third area of sand dunes studied southwards is located 8km south of Dongara where dunes are blowing out of the Beekeepers Nature Reserve onto other land tenures. This area contains several discrete dunes, although only two were studied that are moving north-northeasterly and one is currently blowing over Kailis Drive. The sand dunes are named Dongara West, with a total area of 20ha and Dongara East with a total area of 13ha. Dongara West intersected Kailis Drive in the early 2000s and ongoing Shire-facilitated remediation is reportedly in place, though with time the higher parts of the dune will arrive at the roadside and constitute greater difficulties requiring consideration and attention. A mining lease recently granted could facilitate extraction of limesand from the head of the dune to reduce the potential impacts of the migration as the sand blows out of the adjacent Beekeepers Nature Reserve.

- The next dune area studied southward comprises four mobile limesand dunes grouped under the name of the White Point dunes. These sand dunes are located within the Beekeepers Nature Reserve southwest of the Dongara-Eneabba-Railway. The sand dunes are moving north-northeasterly in the direction of the railway line and in a few years they will intersect it. The nose of the largest sand dune in this area is White Point, which is up to 18m high with a total area of 118ha, and is only 750m from the railway. Monitoring of the movement is recommended along with planning on future actions to minimise impacts.

- Illawong Dune, located immediately west of Indian Ocean Drive has a crest up to 4m high and a total area of 111ha. This dune is about 1000m from Indian Ocean Drive. Measured along the trend of its movement and at the 1960–2010 average speed of 9.4m/year it has been estimated to take over 75 years for the dune to intersect the road. However in the period 2001–10 it averaged 30.4m/year and at that rate it will cut the road in 33 years. Monitoring of the movement is recommended to allow for early planning to minimise impacts.

- Coolimba was previously one dune but has separated into two dunes. The western dune, the larger of the two, has an area of 71ha and is located north of the Coolimba-coastal settlement. It has migrated approximately 2.5km north-northeasterly since leaving the beach head and is now closer than 500m to the Indian Ocean Drive and the Beekeepers Nature Reserve. The smaller dune has an area of 9ha and appears that it is being well-colonised with vegetation and may stop moving in the next few years. Extraction of limesand is ongoing from behind the head of the larger dune that will probably reduce its velocity, if not stop the dune. It is concluded this dune poses no immediate threat to the highway but should be assessed about 2050 to ascertain if that is a possibility.

- The next sand dunes southward in the study area are situated near the town of Green Head. The fast moving sand dune, named Green Head North, has a crest height of 3m, is located 2km north of the town and has an area of 28ha. The larger second sand dune, Green Head South, is up to 4m high, is located 4km south of the town of Green Head and has a total area of 191ha. Both mobile sand dunes are moving northwards, and Green Head North dune is less than 150m from a well-used scenic access road to coastal bays and is frequented by tourists. Grant of a mining lease and mining approval to permit extraction of the limesand is recommended to avoid the dune crossing and blocking this road. Green Head South could have impacts upon Indian Ocean Drive as the nose of the limesand dune is only 350-500m away from the highway. Mining Lease 70/782 exists over Green Head South and extraction of the limesand may result in the dune stopping before it reaches the highway. However it is considered that the movement needs monitoring in case the dune still migrates to the highway.

- The sand dune area Sandy Cape used to be one large dune migrating from the south but split into two dunes between 1982 and 2002. The larger eastern sand dune is 80ha in area and has already blown across the access track to Sandy Point. Consequently that road was closed and a new road was built south of the sand dune to access the coast. The smaller western dune appears to be becoming stabilised with vegetation colonising it. No action is recommended.

- The large Grey sand dune (370ha) located in the Nambung National Park and less than 600m northeast of the former coastal settlement of Grey, was blowing sand north-northwesterly over the route of the Indian Ocean Drive before road construction started. Main Roads WA removed sand from a 100 metre-wide strip next to the road alignment before construction commenced and it was revegetated as part of the road construction. This section of the Indian Ocean Drive was opened to the public in 2010 but since then the main bulk of the dune has continued migrating northward. The nearest part of the dune is 400m from blowing over the highway and with the peak of the dune having a height of over 10m, it will pose a significant problem when it reaches the road. It is recommended that this needs consideration and planning to cope with the limesand problem.

- The sand dune area of Wedge Island comprises three mobile dunes which are moving in a northerly and north-northwesterly direction. The dune Wedge Island East is less than 1km away from Indian Ocean Drive and will potentially have a major impact on this road, although it will be decades before that occurs. Wedge Island East is the biggest sand dune of the study area with a total area of 1005ha. This dune is moving into the Wanagarren Nature Reserve from the Commonwealth defence leasehold land of Lancelin. Wedge Island South has an area of 113ha and is possibly going to blow sand over the coastal access road to the beach shacks of Wedge Island as it is currently only 200m southeast of the road, although the sand is blowing into a broad vegetated depression and may halt before intersecting the road. The sand dunes Wedge Island South and East used to be one dune that separated in the decade between 1972 and 1982. Wedge Island North, which has an area of 463ha and a height of 5m, is migrating north-westerly and back into the ocean and does not pose any risks. It is recommended that migration of East and South dunes be monitored in order to plan for future remediation should it become necessary.

- The Lancelin dune is the southern-most studied. This large sheet-dune was migrating at the fast rate of 38m/year during the first period studied (1960–82), but slowed to 10.7m/year in the second period (1982–2004) and then to 6.1m/year in the third period (2004–10). Simultaneously it decreased in area from 1070ha in 1960 to 674ha in 2010. Extraction of limesand from a mining lease at the southern end of the dune correlates in part with this decrease in velocity and area and it is considered likely that this mining resulted in a significant degree of stabilisation of the dune movement. The southern parts of this dune sheet previously had the potential to expose houses on the eastern margin of the townsite to a threat of being impacted. However, it now appears this threat no longer exists.

Introduction

Sand dunes can be found along coastlines worldwide. When located along the coast away from human activities, they don't have a negative impact on human welfare and aren't considered to be a geohazard. In fact sand dunes can even have positive impacts as they provide shelter to the immediate inland areas from storms and flooding sea-level rises and can ameliorate onshore storm winds. However it is critical to be aware of the consequences when sand dunes became mobile and migrate, blowing over infrastructure such as roads, settlements and other developments.

The aim of this report was to document the migration of several sand dunes along coastal parts of Western Australia using ArcGIS, georeferenced maps and aerial images. The monitoring of dune migration rates can provide valuable information for resource management and geohazard risk reduction. This report provides an analysis of various factors which can influence the migration rate of dunes. Climate data, such as temperature, rainfall and wind were analysed in conjunction with dune morphology and sediment supply to ascertain why the sand dunes migrate inland, in which direction they are most likely to travel and at what rate. With the assistance of Mr Bob Gozzard, Senior Geologist in the Geological Survey of Western Australia, the outline of the dunes at various times over 50 years in the study area was analysed and mapped using the computer program ArcGIS. Following this, a study of other available material such as the climate and vegetation data of Western Australia was completed. This data was then organised into tables and charts which allowed conclusions to be made in respect to climate, vegetation cover, sediment supply and human activity all influencing the migration of mobile sand dunes which can have dramatic impacts on the surrounding infrastructure and environment.

In 2011 Damara WA Pty Ltd, in collaboration with the Geological Survey of Western Australia, undertook research into the vulnerability of coastlines by studying wind patterns and sea conditions along WA's Mid West coast (Stul et al, 2012) for the Department of Transport. That study focuses on the offshore and coastal zone and its assessments and conclusions have relationships to this sand dune study.

The research undertaken in this study and reported in this present document leads to recommendations regarding measures that could be taken to monitor, conserve and preserve the dunes while simultaneously preventing further destruction and damage to infrastructure in Western Australia.

Study area, setting and overview

The study area for this report is approximately 265km long and 5km wide, stretching along the WA coastline from Geraldton to Lancelin between 360km and 110km north of Perth (Figure 1). The study focuses on 12 identified sand dunes or groups of dunes, several of which are impacting or may impact various infrastructure or conservation areas. However, there are many more dunes that were not studied and mobilisation of dunes that are currently stable or initiation of new blowouts from the coastal dunes may lead to new geohazards developing. From assessing the images, it is obvious that the mobile dunes have been blowing along the coastal zone possibly since the Pliocene times (about 5 million years ago). There is no reason to consider the process of initiating dunes migrating along the coastal zone has ceased.

A number of towns and other coastal settlements exist within the study area. There are two Nature Reserves, Beekeepers and Wanagarren, Nambung National Park, a number of reserves vested in Local Government authorities intended to allow for locally-managed coastal living and recreational pursuits and a small number of freehold titles. The aim of the conservation reserves is to conserve their natural biological asset and biodiversity and cultural heritage (TasGov, 2011). Nambung contains the Pinnacles Desert a popular tourist feature that is based on unusual limestone pinnacles (Lipar and Webb, 2014) that is on the State Geoheritage Register. Between the two southern-most dunes is an extensive area of leasehold and freehold land in the name of the Commonwealth Government that is utilised for defence training purposes and contains one of the largest sand dunes along the Mid West coast.

Geologically the dunes in the study area are modern coastal sand dunes located within the Perth Basin. The Perth Basin is a tectonic unit extending northwards for approximately 700km from the south coast of the State along the western coastline. It is bounded on the eastern side by the Darling Fault and consists of up to 15,000m of sediments ranging in age from Permian to Holocene (300 million years [Ma] to the present). The basement rocks under the Perth Basin, referred to as the Pinjarra Orogen, consist of igneous and metamorphic rocks with minor areas of sedimentary rocks and have a Proterozoic age ranging from 1300 to 900Ma.

This study focuses on the youngest sediments of the Perth Basin consisting of various sand and limestone units. The geological units are related to physiographic or geomorphological units. The nearshore Safety Bay Sands underlie the Quindalup Dunes. The Safety Bay Sand is Holocene in age (<12 000 years) and includes the modern mobile sand dunes immediately along the shoreline (Abeysinghe 1998; Sanderson and Elliott 1999 and Semeniuk 1988). Inland of these dunes is the Spearwood Dune system underlain by both limestone of the Tamala Limestone and sand derived from the Tamala Limestone. Further inland again is the Bassendean Sand that underlies the Bassendean Dunes. These dune or sand units grade easterly into a more silt or clay-rich unit, the Guildford Formation that underlies the Pinjarra Plain. This unit laps against the Darling Scarp and the Gingin Scarp as well as underlying the sand units.

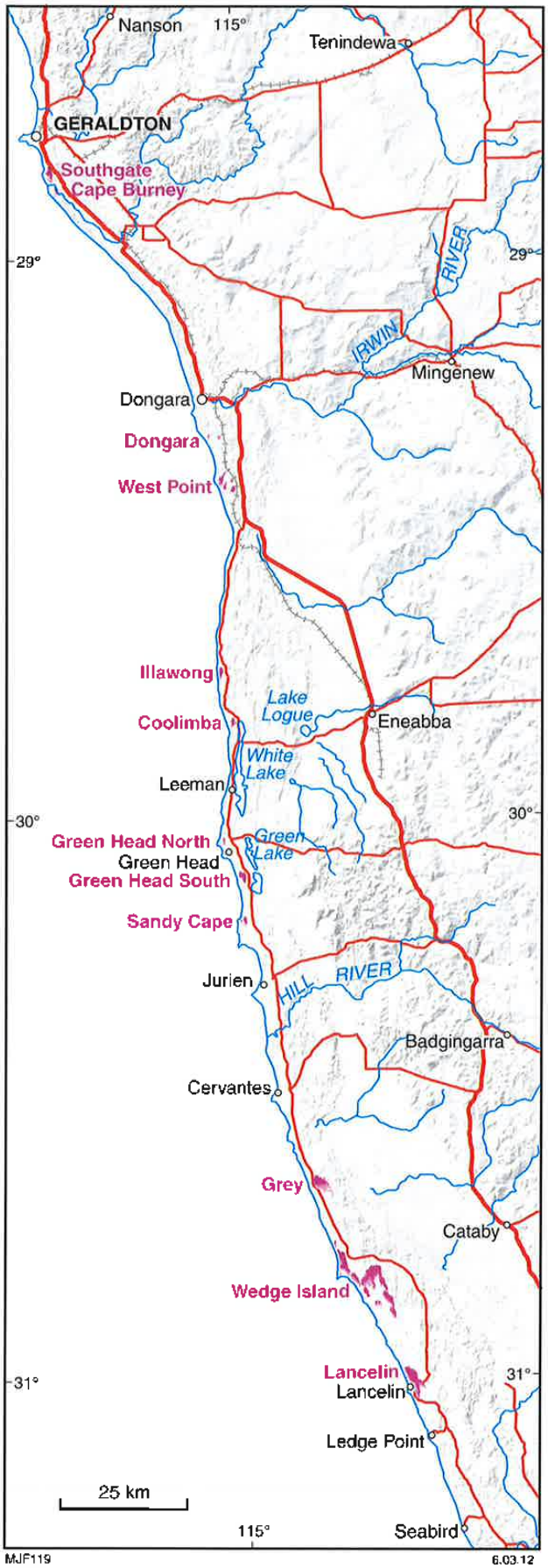
Both the Safety Bay Sand and the Tamala Limestone consist of medium to coarse-grained calcareous sand, quartz sand, limestone consisting of cemented calcareous grains, and calcareous sandstone. The age of the Tamala Limestone is late Pleistocene (ranging between 2.6Ma and 12,000a). The sand-sized sediment grains are almost all originally shell and other biogenic fragments with minor amounts of quartz sand. The shell fragments were formed by the breakdown of sea shells through wave action pulverising the biogenic remnants on or adjacent to beaches.

The modern mobile coastal dunes vary in volume and general physiography and are dependent on the nature of the coastal type and sediment supply. More dunes exist in the middle of the study area than in the south, inferred to be due to the higher aridity and stronger wind regime towards that portion. However, in the north the dunes between Dongara and Geraldton form a noticeably narrower zone. It is inferred that this may reflect the paucity or absence of offshore reefs and the relationship between the trend of the coast and the angle subtended between the coastline and the direction of the dominant winds.

The Holocene dunes overlap the Pleistocene units and therefore Semeniuk (1988) describes it as a "coast to hinterland" relationship. There exists a relationship between coastal facies, which comprise calcareous marine and eolian sediments, and continental facies which consist of eolian quartz sand with a transition between both (Semeniuk 1988) as shown diagrammatically in Figure 2.

Dune sand with a high content of lime (calcium carbonate) has a premium commercial market value through being supplied to farmers for application to farmland to reduce the build-up of acidity in agricultural soils (EPA 2006).

Figure 1. Study area and names applied to dunes as shown by the purple shapes.



Study methods

The main data used in this study was taken from historical and current aerial photographs (airphotos), historical documentary information, topographic maps, tourist-type maps (scale 1:400 000) and Google Earth images, all of which depict a record of dune morphology and migration. The scale of the aerial photographs supplied depends upon the year in which they were taken as well as the area and the survey. For example, in the Perth and Hill River area the scale is 1:50 000 whereas in Dongara it is 1:25 000. The photographs were taken across numerous years between 1960 and 2010. A map also exists for the Green Head to Wedge Island area dating back to 1910 and was drawn by Campbell (Figure 3; Campbell 1910).

The images were digitised and corrected by adjusting the projection, perspective and scale to ensure the data compiled was conducted on comparable images. The aerial photographs were not always taken from the same location and therefore required standardisation of the projection and perspective and to correct the distortion. After all the images were digitised by scanning they were further processed using ArcGIS/ArcMap software.

The airphoto flying was conducted as a series of surveys covering different parts of the study area at different dates. Consequently there are gaps in the data record through this lack of integrated flying of the total area. Some of the gaps were overcome by including nearby airphotos of a slightly different time and allowances were made on the interpretations. Through this interpretive process a much more complete assemblage of results was achieved. The scanned photographs were compiled into ArcGIS's subprogram system ArcMap to be georeferenced utilising current mapping by comparing the digital photograph with fixed locality features on the modern map, such as road intersections, buildings and other features that were identifiable on both images. The next step was mapping the movement of the sand dunes in ArcMap by analysing the aerial photographs for each available year. Each sand dune used for the research had to be mapped at least once in each decade. The outlines of the sand areas were drawn using the ArcGIS polygon feature tool. In a number of cases, vegetation exists within the sand dune areas and therefore the polygons became donut shaped. In these the vegetation areas had to be removed by using the clip tool of the Editor and then converted to lines and smoothed using the XtoolsPro program for a better result. Using the measuring tool of ArcGIS, the average rate of migration of the sand dunes as well as the total area of each dune in each year could be measured. To draw the correct outline of the sand dune the DEM of the area was analysed as well as the vegetation cover surrounding each dune. With both elements it was possible to define the sand dune outline for each year. The results are represented in maps in the Appendices. Figure 4 shows an example of the outcome of the processing for one dune.

The dunes specifically studied were named based on a nearby feature or town (Table 1 and Figure 1). The dunes occur in a number of Local Government Areas as listed in Table 1 along with the latitude and longitude of each dune or group of dunes studied.

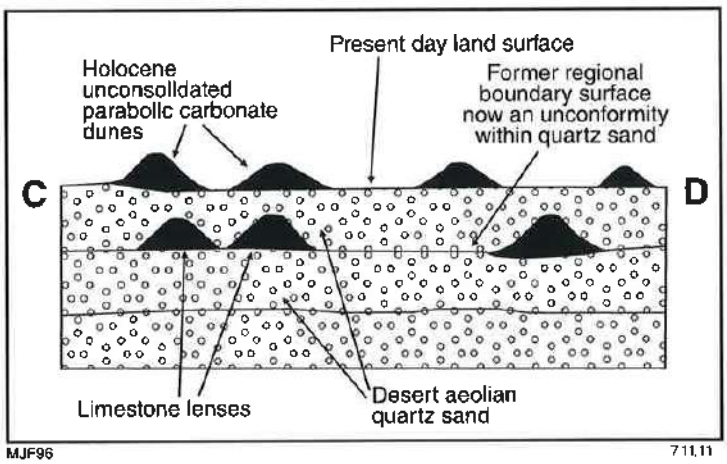


Figure 2. Hypothetical section showing typical Units in the study area (Semeniuk 1988)

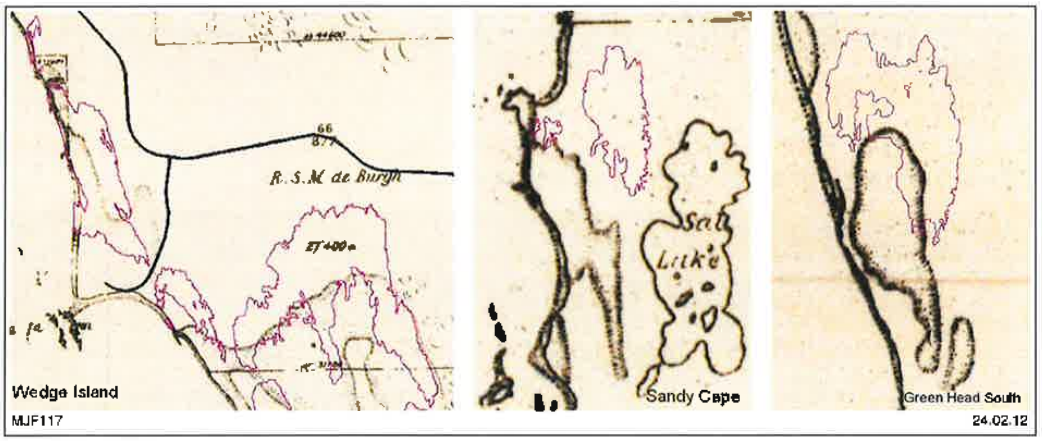


Figure 3. Comparison between sand dunes of 1910 (Campbell 1910, black lines) and 2008–10 (ArcGIS, violet lines)

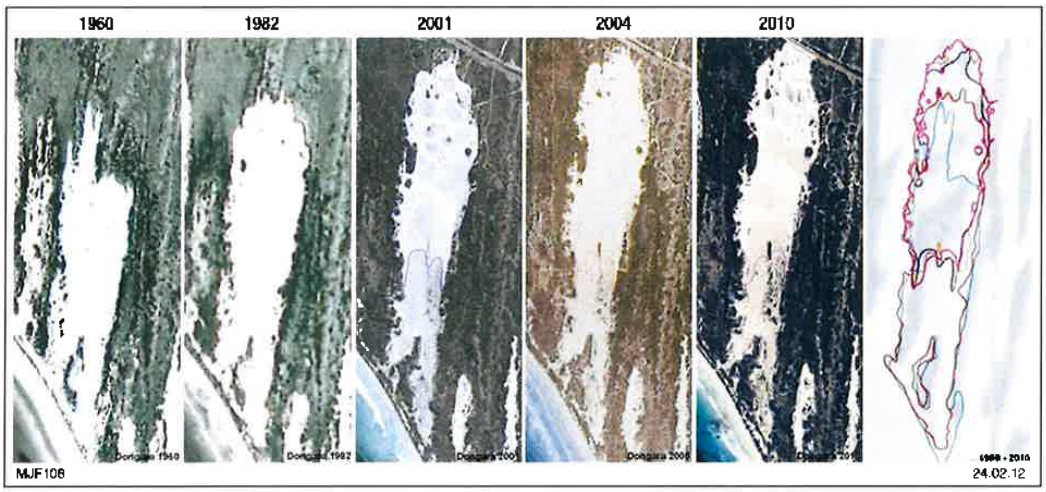


Figure 4. Example of one dune showing the nature of the shape and area change during migration of a sand dune between 1960 and 2010 with the illustration on the right-hand side showing how those changes were represented in ArcGIS

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Dune morphology

A sand dune is a ridge or hill of sand created by winds and can be differentiated depending on whether it is located near an ocean, lake or in a desert. To classify the dunes in the study area it is important to differentiate between coastal dunes and desert dunes. Coastal dunes will generally only have sediment supply from off the shore or beach and will be driven dominantly by onshore prevailing winds. Dunes in the desert are not limited by the availability of sediment from one source because the sand supply is available from any wind direction and therefore the wind pattern is the primary factor influencing desert dunes. Dunes adjacent to lakes or playas have specific shapes and sizes governed by the attributes of the specific site.

Table 1. Dune names, relevant local Government responsible for area and location

DUNE	LOCAL GOVERNMENT AREA	APPROXIMATE CENTROID	
		LATITUDE South	LONGITUDE East
Southgate	City of Greater Geraldton	28° 50' 12"	114° 37' 50"
Cape Burney	City of Greater Geraldton	28° 52' 16"	114° 38' 42"
Dongara West	Shire of Irwin	29° 18' 56"	114° 56' 40"
Dongara East	Shire of Irwin	29° 19' 12"	114° 57' 56"
White Point	Shire of Irwin	29° 24' 07"	114° 58' 58"
Illawong	Shire of Carnamah	29° 44' 23"	114° 57' 44"
Coolimba West	Shire of Carnamah	29° 49' 44"	114° 59' 06"
Coolimba East	Shire of Carnamah	29° 49' 58"	114° 59' 22"
Green Head North	Shire of Coorow	30° 2' 34"	114° 57' 43"
Green Head South	Shire of Coorow	30° 5' 55"	115° 00' 02"
Sandy Cape	Shire of Dandaragan	30° 10' 47"	115° 00' 15"
Grey	Shire of Dandaragan	30° 38' 57	115° 08' 48"
Wedge Island North	Shire of Dandaragan	30° 47' 33	115° 11' 49"
Wedge Island South	Shire of Dandaragan	30° 49' 16	115° 13" 14"
Wedge Island East	Shire of Dandaragan	30° 48' 40"	115° 15' 37"
Lancelin	Shire of Gingin	31° 00' 04"	115° 20' 39

As in many references to the dunes in this study report, the names are in geographical sequence from north to south.

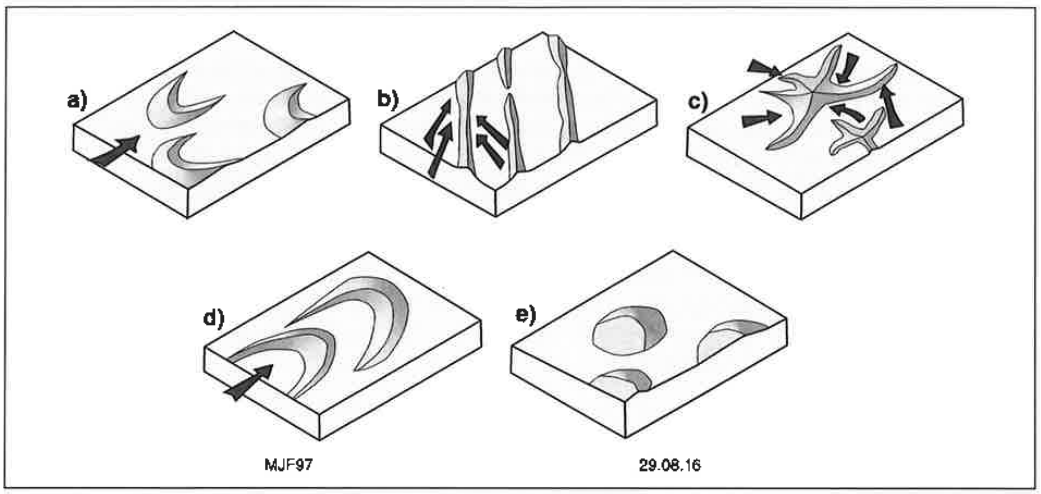

Figure 5. Dune forms (from Short & Nicholas, 2011)

The United States Geological Survey (USGS) classifies five transgressive dune types as below and as shown in Figure 5.

(a) crescentic (barchan)
(b) linear
(c) star
(d) parabolic
(e) dome.

In addition, extensive areas or sheets of sand may migrate across the countryside with a range of dunes types on top of the sand sheet. These transgressive sand sheets can cover very large areas in continental dunefields and migrate at slow to fast speeds depending on the nature of prevailing winds. Moderate-sized transgressive sand sheets occur at Lancelin and Wedge Island and a smaller sheet at Cape Burney-Southgate.

Across the various types of dunes the migration velocity ranges from fast to slow and the velocity can vary markedly within a single dune. A crescentic or **barchan dune** (Figure 5a) is wider than it is long with fast moving arms and migrates more rapidly than other dune types. **Linear dunes** (Figure 5b) are longer than they are wide with prominent snakelike ridges. Linear dunes do not migrate; they get longer over time, often up to several kilometres. **Star dunes** (Figure 5c) are the tallest dune type reaching over 100m. These have arms radiating out from the centre formed by the winds which blow from more than three directions and are therefore relatively immobile. **Parabolic dunes** (Figure 5d) look similar to barchan dunes but with arms that follow behind the crest point. Vegetation grows on the arms of the parabolic dune, holding them in place while the body of the dune migrates forward (Ronca 2011). The shape of a parabolic dune changes with the dune becoming longer over time. A **dome dune** (Figure 5e) is circular and these are very rare.

In addition to the USGS classification, there are numerous opinions on how to classify dunes. Girardi (2005) and McKee (1979) classify dunes according to their complexity although their focus seems to relate more to desert dunes than coastal dunes. Their first classification is simple dunes, which have an isolated body with no contact with other dunes in the area. This dune type is common in areas where there is only one dominant wind. Examples of simple dunes are barchan, parabolic and transverse dunes. Their second classification is compound dunes which are multiple dunes of the same type overlapping – eg. star or barchan dunes. The third classification is complex dunes where two different dune types are growing together – eg. blowouts on a transverse dune.

It is not as appropriate to classify coastal dunes in the same manner as desert dunes. The growth of coastal dunes is limited by the sediment availability and the fact that the sand only comes from one main direction, from the beaches. Coastal dunes are strongly influenced by wind, vegetation and moisture, and they always form in the direction the wind is dominantly blowing. At the beginning of the development of the dune the shape is constrained by that of the coast or beach. However, coastal dunes are very sensitive to any change in sediment supply, wind regime or rainfall, especially as those factors can later change the outline and morphology of the dune (McKee 1979).

Mobile sand dunes

The mineral composition of the sand dunes in the study area ranges from limesand to quartz sand. The chemical composition ranges from calcium carbonate-rich to silica-rich. Near-coastal sand is lime-dominant, but the concentration of lime, in general terms, becomes lower progressing inland and the Bassendean Dunes dominantly consist of quartz sand. However, this study has concentrated on the lime-rich mobile dunes within the Quindalup Dune System. Magnesium carbonate occurs in minor to trace amounts with the calcium carbonate. The sands consist of bleached white, yellow, beige, red and grey shell fragments of marine organism (Figure 6 and Figure 7) with grain sizes ranging between 0.4mm and 2.6mm (2.64 – 0.684 Φ[1]; Sanderson and Elliott (1999)). The shell fragments are of Pleistocene to Holocene age (less than 2.6 million years; Bird 1984). The coast of Western Australia has a long length of irregular coastal dune topography, and Bird (1984) suggests limesand dunes were probably formed when the sea level was lower and the sand was blown from what is now the sea floor potentially increasing the complexity of the coastal morphology. However, dunes appear to be forming at today's sea level (for example north of Jurien Bay), arguing against this interpretation.

Bird (1984) inferred that a small tidal range, for example as along the west coast of Australia, results in the sand being delivered to the beach primarily by wave action with tidal range being less important for accumulating the sand on beaches. This is in contrast to coastlines with larger tidal range that allow for greater drying of sand at low-tide times, potentially having a significant control on the rate at which dry sand is blown to form foredunes.

Figure 6. Sea shell fragments in the limesand dune at Lancelin have a particle size of sand typically less than 0.5mm. This is a later stage in comminuting the sediment particles, having undergone a greater degree of wind and water transportation that reduces the grain size as they are carried along.

1 The Phi (Φ) Scale (defined as the grain size to the -log$_2$ (diameter in mm)), was conceived by William Krumbein (1934) and is a system of measuring sediment grain sizes. It is useful in that the larger the number, the finer the grains and hence easier to transport. The system can be applied to dune sands as well as the more normal application to alluvial transported sediments. The basic concept is that the Φ size increases as the grain size decreases and is a useful alternative to simply quoting dimensions. 2.64 Φ to 0.684 Φ are equivalent to 0.37 to 1.46 mm which is defined as fine sand to coarse sand using the terminology of Wentworth (1922)

Figure 7. Sea shells that have been partially pulverised by beach and dune processes. The largest fragments are up to 2cm across. This is an earlier stage in comminuting the shells than in Figure 6 (pocket knife is 9cm long) as the fragments have been transported shorter distances and have not been ground down to the same degree.

Once a foredune is built up at the back of the beach by eolian movement, vegetation can become established on it and this traps further blowing sand. Trapping grains enhances the foredune, building it up in height and broadening it as the sand accumulates. The native vegetation dune pioneers on the West Australian coast are dominated by coast fescue (*Festuca littoralis*) and sand spinifex (*Spinifex hirsutus*).

Subsequently cliffed foredunes form when the seaward side of the foredune is eroded or trimmed back by waves in response to higher than usual sea levels, potentially in response to storm surge. The new sand supply from the erosion can lead to the growth of a new foredune at the foot of the eroded dune. Due to this effect the sand builds up a new beach ridge parallel to the foredune and a little further towards the ocean. Again, with the colonisation of vegetation on the new beach ridge the blown sand becomes trapped and a new foredune is established. The old foredune then becomes stable and a vegetation succession starts. With time the dune grass is replaced by scrub vegetation and the vegetation succession in the near-shore environment ends with woodland or heath. Where this process repeats itself several times, a series of parallel dunes will be created (Figure 8). The parallel dunes are separated by swales (Bird 1984).

Storm winds can remove the pioneer vegetation cover allowing erosion of the foredune and thereby exposing the more-inland climax vegetation[2] to higher wind stress which can cause further sand destabilisation and concomitant removal of the more mature vegetation. The Department of Environment (Beach Protection Authority, Queensland; not dated) quoted that human activity, grazing, rabbits or a phase of aridity, droughts and fire can also cause the removal of vegetation cover from the foredune. Once this occurs, the lowered vegetation density does not protect the dune, the sand starts moving in masses and, as the foredune ridge becomes unstable, strong onshore winds can erode at a gap in the foredune and develop blowouts, (DERM, 2011). Strong onshore winds can then blow the sand landwards (Figure 9).

[2] Climax vegetation is the association of plants that results when they evolve to colonise an area following some significant environmental change. In the sand dune case, it is the plant association that is the final occupier after a mobile dune is colonised and stabilised.

The shore-parallel dune ridges then locally develop into migrating patches of sand. Commonly, as these patches start to migrate, they become parabolic dunes. This occurs because onshore winds typically cause the nose of the parabolic dune to travel faster than the outer parts which are held back by vegetation and by slightly lower wind velocities. The dunes then develop trailing arms and therefore a parallel dune has the potential to become a parabolic dune migrating inland at an angle to the shore-parallel dunes. While this angle is commonly referred to as being high in many situations, along the Mid West coast, the angle may be as low as 10°. In other words, the blowout is migrating nearly parallel to the shore-line trend.

The movement of the sand dunes is influenced by the direction, frequency and strength of the onshore winds. The nose of the parabolic dune moves parallel to the direction of the onshore winds. The dunes migrate when the wind moves the sand by creep (also referred to as reptation), saltation or suspension movement up the windward slope and over the crest of the dune, and the sand then accumulates on the slip face. Wind strengths required to move dune sands are measured on the Beaufort Scale as Category 3 or higher[3]. The greater the wind speed, the greater the sand-carrying capacity. Particles with a size of less than 20 microns[4] are the first to be transported by suspension, whereas particles with a size more than 500 microns move by reptation or creep. Saltation accounts for 80 per cent of the migration of sand with sand particles ranging in size from 70-1000µm move by a hop or bouncing action across the ground, causing other sand grains to hop along in the wind when they are struck by a falling grain (Figure 10; Chevron 2012, Lancaster 2009). As a result of the physics of the sand-grain movement the windward slopes have an angle of 10-15° which is lower than the slip face which has an angle of 30-34° (Figure 11).

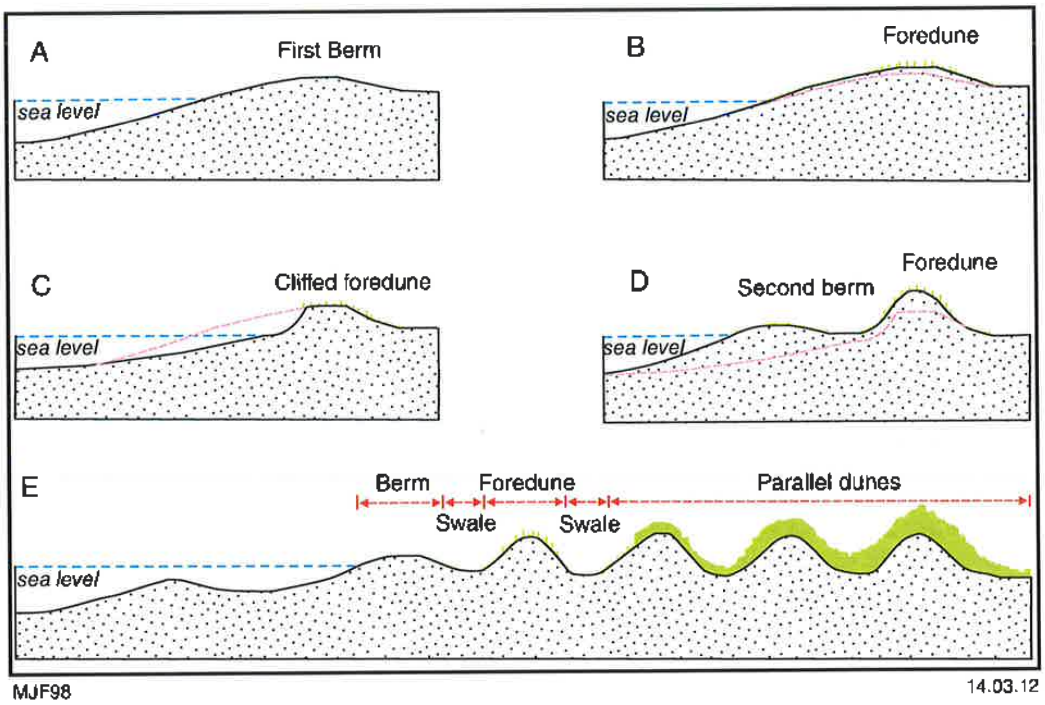

Figure 8. Development of parallel dune ridges (after Bird 1984)

[3] The Beaufort Wind Scale describes the wind velocity and the system was derived from a perspective of classifying oceanic or marine wind conditions. The Scale starts at 0 (0km/h) and ends at 12 (>118km/h). Wind with a Beaufort Scale 3 has a velocity of 12-19km/h (BOM, 2011).

[4] One micron (abbreviated µm) is 1/1000th of a millimetre. Therefore, 20µm is 1/50th of a millimetre and 500µm is half of a millimetre.

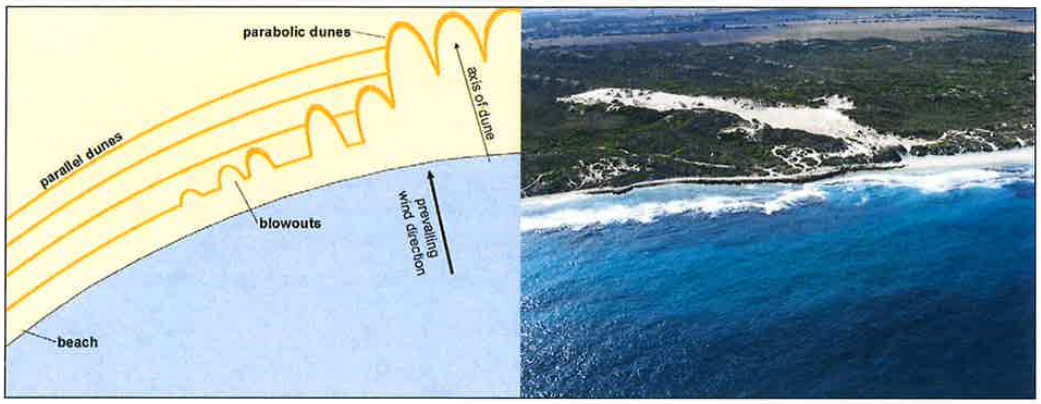

Figure 9. Blowouts in Western Australia (DERM, not dated) and an example of the development of a relatively new blowout south of Dongara.

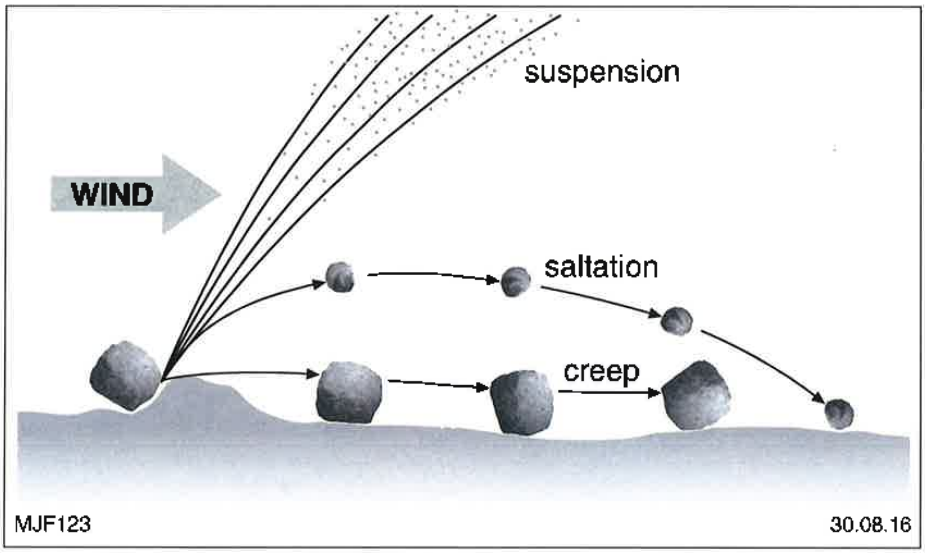

Figure 10. Forms of sand grain movement (NASA 2011)

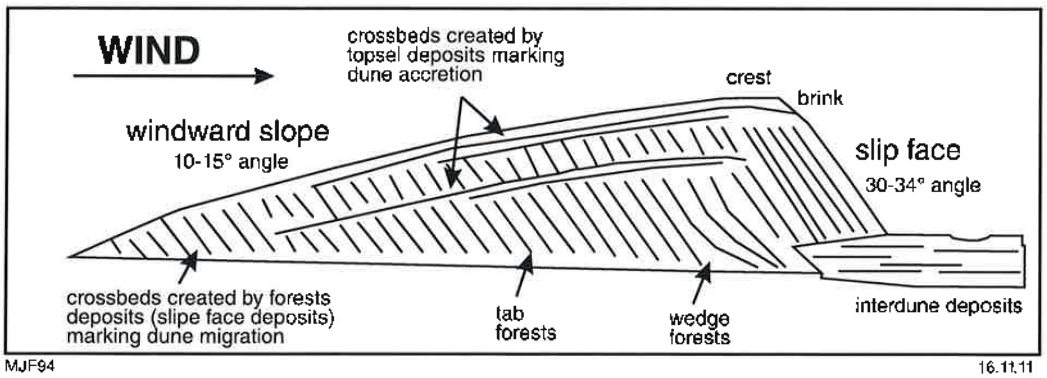

Figure 11. Morphology of a dune. Note orientation of internal bedding (Chevron 2011)

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Migration of dunes in Western Australia

Migration direction and velocity and areas of mobile sand dunes

To measure the migration rate of the dunes from 1960 to 2010, each dune nose was identified and used as the basis for measurement. Due to the complex dune morphology within the study area, blowouts on the nose or limb of the dunes can occur and migrate at a different rate than the rest of the dune or of an adjacent lobe of the dune. In order to provide a reasonable measurement of the migration rate, the location of the nose was determined at several points across the front of the dune and these determinations used to measure the migration rate.

The dune speeds were determined in three discrete periods and an overall analysis conducted for the whole 50-year period. The periods are:

- Period 1 1960 to 1982
- Period 2 1982 to 2001–04
- Period 3 2001–02 to 2010

However, because imagery was not consistently available for all the area for each time, there were gaps in the data and the Period 2-Period 3 break was not consistent between all dunes. Details of the measured movement direction and speed are contained in Table 2. The migration direction and velocity is influenced by a range of factors, including wind direction, size, shape and type of the dune, vegetation cover, rainfall, temperature and the morphology and nature of the nearby coastline and ocean currents. Figure 12 shows the generalised outline of the dunes as drawn from the first and last dates images are available.

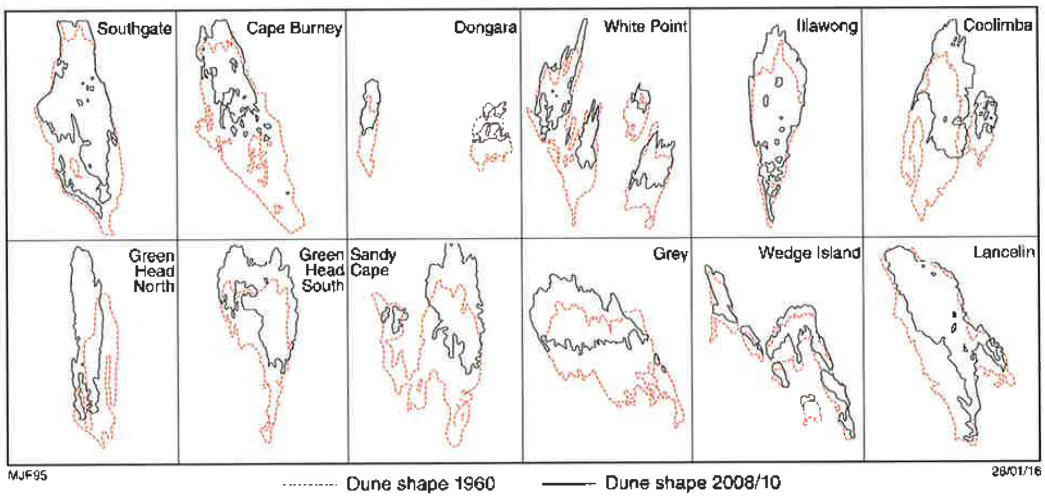

Figure 12. Limesand dunes showing overall movement and change of shape from 1960 to 2010

The mean direction of all the sand dunes is towards the north although there are detailed variations from this general trend (Figure 13).

Dune areas were measured at up to seven discrete times. Table 3 shows the actual areas and the changes in the areas with time and Figure 14 and Figure 15 show graphically the measured areas for each dune for each measurement with the two graphs showing different scales to illustrate the dune sizes for convenience. Note that a few data values are omitted through not having complete imagery or through changes in nomenclature because dunes split apart. In 1960 the biggest dune in the study area was Wedge Island with a total area of 1997ha. During Period 1 this dune split into Wedge Island South and Wedge Island East. Wedge Island East is still the biggest dune in the study area with a total area now of 1005ha. Lancelin, the second-largest in 1960 at 1068ha, has decreased during the study period to 674ha, a decrease of 37 per cent. The smallest dune in size is Dongara East with 13ha in the year 2010. The average areas for each of the three periods for all dunes measured are shown graphically in Appendix B.

During the past 50 years only two dunes have increased in size. Green Head South has increased slightly by 3 per cent and now has a total area of 174ha and Illawong increased by 11 per cent per cent to 111ha.

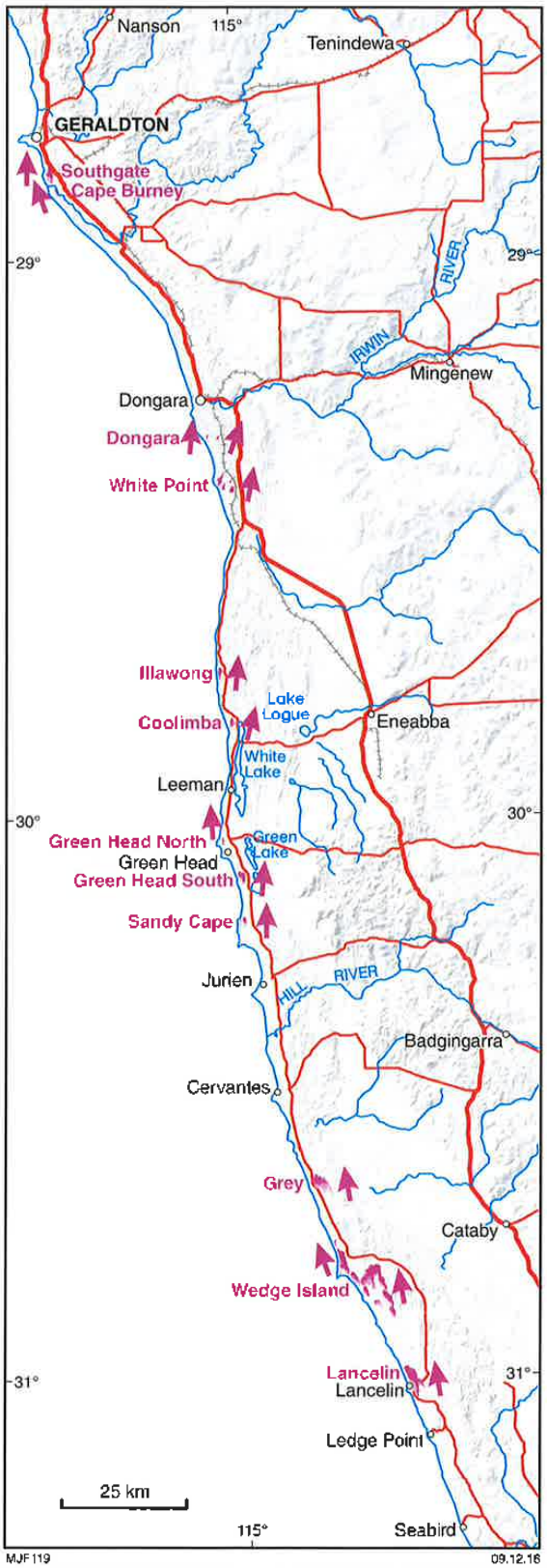

Figure 13. Mid West coastal dunes showing average direction of dune migration 1960–2010. Note subtle variations of trends

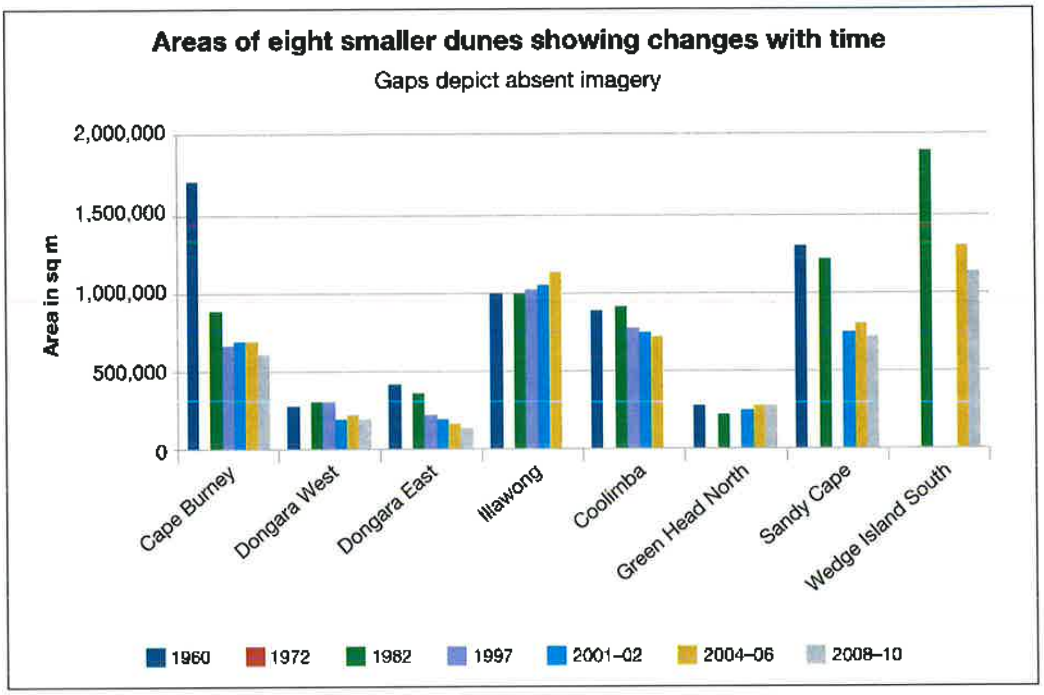

Figure 14. Areas of smaller dunes showing variations in time

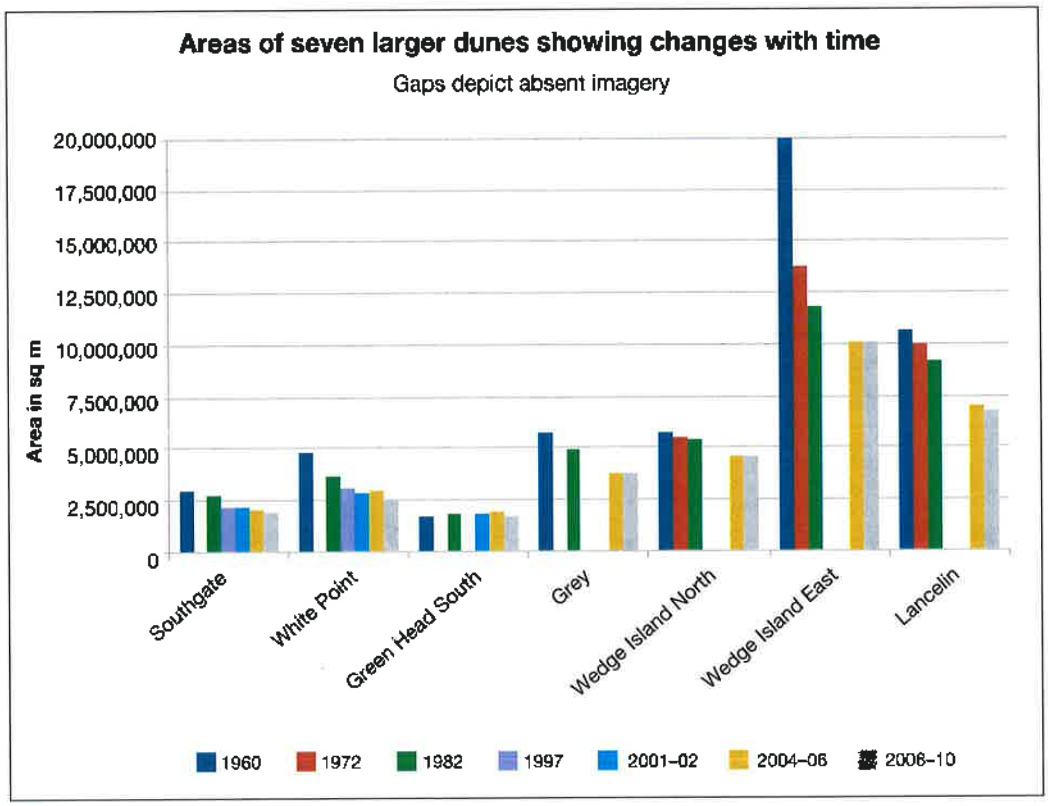

Figure 15. Areas of larger dunes showing changes with time

Table 2. Migration rate and migration direction of dunes.

DUNE	MIGRATION RATE (M YEAR^{-1})			MIGRATION OVERALL	
	Period 1	Period 2	Period 3	Distance	Direction[5]
	1960 – 1982	1982 – 2001/04	2001/04 – 2010	(1960 – 2010)	
Southgate					
Migration in m	155.6	70.2	114.4	340.2	0
Migration rate m/year	8.8	3.6	12.7	6.8	
Cape Burney					
Migration in m	64.0	118.7	91.0	273.7	340
Migration rate m/year	3.5	6.2	10.1	5.4	
Dongara West					
Migration in m	193.6	120.9	72.2	386.7	005
Migration rate m/year	8.8	6.3	8.0	7.7	
Dongara East					
Migration in m	99.25	89.5	20.2	209.0	020
Migration rate m/year	4.5	4.7	2.2	4.1	
White Point					
Migration in m	241	173.2	182.6	596.8	010
Migration rate m/year	10.9	9.1	20.2	11.9	
Illawong					
Migration in m	132.8	182.0	121.7	436.5	005
Migration rate m/year	6.0	9.1	30.4	9.4	
Coolimba					
Migration in m	164.6	166.9	25.7	357.2	015
Migration rate m/year	7.4	8.3	6.4	7.7	
Green Head North					
Migration in m	154.4	131.9	142.0	428.3	330
Migration rate m/year	7.0	6.5	17.7	8.5	
Green Head South					
Migration in m	351.8	151.9	124.3	628.0	005
Migration rate m/year	15.9	7.5	15.5	12.5	
Sandy Cape					
Migration in m	220.1	162.4	182.7	565.2	000
Migration rate m/year	10.0	8.1	22.8	11.3	
Grey					
Migration in m	235.6	448.6	71.9	756.1	350
Migration rate m/year	10.7	20.3	17.9	15.7	
Wedge Island North					
Migration in m	367.7	285.7	108.3	761.7	340
Migration rate m/year	16.7	12.9	27	15.8	
Wedge Island South					
Migration in m	222.0	215.3	75.8	513.3	340
Migration rate m/year	10.0	9.7	18.9	10.6	
Wedge Island East					
Migration in m	243.4	250.6	44.5	538.5	350
Migration rate m/year	11.0	11.3	11.1	11.2	
Lancelin					
Migration in m	835.1	237.3	24.7	1,097.1	
Migration rate m/year	37.9	10.7	6.1	22.8	
Mean migration rate m/year	9.23	8.95	15.13	10.76	

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[5] Directions are bearings measured from true north in a clockwise direction

Table 3. Area and change in area of each dune[6].

AREAS (M^2) MEASURED BETWEEN 1960 AND 2010							
DUNE	Areas (m^2)						
	1960	1972	1982	1997	2001–02	2004/06	2008/10
Southgate	2,962,296		2,693,939	2,113,919	2,153,982	2,018,804	1,937,807
Cape Burney	1,706,223		870,156	659,727	676,457	692,181	600,049
Dongara West	265,405		311,594	309,640	192,019	207,411	202,239
Dongara East	413,258		345,394	217,230	180,506	166,126	137,087
White Point	4,831,483		3,673,269	3,087,301	2,875,786	2,926,648	2,548,702
Illawong	999,645		986,137	1,026,197	1,058,206	1,119,343	
Coolimba	888,560		914,837	780,540	731,366	714,217	
Green Head North	288,006		211,301		239,268	284,975	286,532
Green Head South	1,688,424		1,840,433		1,822,274	1,913,820	1,743,305
Sandy Cape	1,289,965		1,212,357		746,635	805,077	714,878
Grey	5,770,899		4,898,975			3,791,556	3,783,873
Wedge Island North	5,786,110	5,548,187	5,352,312			4,596,679	4,632,569
Wedge Island South	19,976,020	13,745,544	1,903,494			1,283,903	1,132,415
Wedge Island East			11,841,847			10,155,176	10,058,170
Lancelin	10,680,570	9,994,183	9,140,837			6,962,595	6,744,495

CHANGE IN AREA (M^2) FROM 1960 TO 2010				
DUNE	Change in areas for periods (m^2)			OVERALL M^2
	1960 – 1982	1982 – 2004/06	2004/06 – 2008/10	
Southgate	-268,357	-675,135	-80,997	-1,024,489
Cape Burney	-836,067	-177,975	-92,132	-1,106,174
Dongara West	46,189	-104,183	-5,172	-63,166
Dongara East	-67,864	-179,268	-29,039	-276,171
White Point	-1,158,214	-746,621	-377,946	-2,282,781
Illawong	-13,508	133,206		119,698
Coolimba	26,277	-200,620		-174,343
Green Head North	-76,705	73,674	1,557	-1,474
Green Head South	152,009	-1,838,519	1,741,391	54,881
Sandy Cape	-57,608	-407,280	-90,199	-555,087
Grey	-871,924	-1,107,419	-7,683	-1,987,026
Wedge Island North	-433,798	-755,633	35,890	-1,153,541
Wedge Island South		-619,591	-151,488	-771,079
Wedge Island East	-8,134,173	-1,686,671	-97,006	-9,917,850
Lancelin	-1,539,733	-2,178,242	-218,100	-3,936,075

[6] Note that dunes Wedge Island East and Wedge Island South split apart between 1972 and 1982

In comparison, all other dunes in the study area have decreased in size in the past 50 years. Those of most significance were White Point dune field which decreased from 308ha in 1960 to 175ha in 1982. The other significant decrease occurred at the Lancelin dune from 1982 to 2004 – a decline of 200ha.

There is a correlation between the size of the dune and the migration rate. Fundamentally, the bigger the dune is, the faster it is migrating. For example Dongara East and West have the smallest areas and the lowest mean migration rate per year, whereas the bigger dunes of Wedge Island North and Grey had higher migration rates per year. Figure 16 graphically shows the relationship between size in 2010 and the average speed for the period 1960–2010. However, Wedge Island East is anomalous in that while it is the largest dune at 1006ha in 2010, for the 50-year period its average speed was a relatively low 11.2m/year. Examination of the situation of Wedge Island East dune shows that it is anomalous from a height perspective. Most of the dunes in the study did not climb upslope much, with Grey and Wedge Island East being the exceptions. Appendix D shows graphically the anomalous height situation of Wedge Island East dune. This also is the largest sand sheet on the coast and that fact may have had some influence on the speed. Three Wedge Island dunes were mapped for this exercise. However there are seven or eight individual dunes that extend over distances of 15km north-south and 5km east-west that could be grouped genetically because they appear on airphotos as having a common origin from the same beaches. This is a complex dune area and it is inferred that this complexity of forms may also be part of the reason why Wedge Island East dune has an anomalous speed/size relationship. As a consequence of this dune's speed being an outlier, it was removed from the graph (Figure 16) because of its very large effect on the relationship line for all the other dunes. If Wedge Island East was to conform to the relationship as shown by the correlation line, it would have had an average speed over the 50 years of three times its measured speed.

In Figure 16 the trend line implies that for the 50-year period the dunes had a rate equivalent to one metre a year for each 50ha of bare dune sand. However, this value as noted above, only applies to time frames of the order of 50 years and the relationship between area and speed should not be applied to shorter periods in attempts to project future movements of the dunes.

Figure 17 shows diagrammatically the dune speeds in each of the three individual periods plotted against the area showing the much larger scatter of data points and the inconsistency between area and speed within each of the three periods. It is particularly noted that there is greater scatter in Period 3 as most dunes increased in speed. This suggests that local variations in the factors controlling the dune speed can have a dominating influence on short-term behaviours of the dunes, but that for five decade averages these local controls are less important.

By comparing the 1910 Campbell map (op cit) of dunes (Figure 3) with the more recent images, it was noted that the dune migration rate between 1910 and 1960 was twice as rapid as the migration rate between 1960 and 2008–10. Possible causes of the faster historic migration could be a different climate, higher level of human activity or an inaccuracy of the 1910 Campbell map. While Campbell focused on the importance of the outline and the form of the dunes, the location of the dunes in the 1910 map is considered not to be accurate enough for the present higher precision analysis.

Examination of the regional dune pattern clearly shows the trailing arms of the parabolic dunes as they passed onwards (Figure 18). Once stabilised, the limesand rapidly (geologically speaking) becomes cemented to form limestone, preserving the traces of the migration. Based on these remnant traces of the trailing arms, some of the dunes have migrated considerable distances. Because of successive generations of dunes blowing over older dunes, in many cases the source beach of the most inland dunes is not readily apparent. However, for example, there are good indications that dune remnants appearing to emanate from the bay adjacent to Wedge Island had progressed some 21km before finally stopping. Likewise older dunes emanating from the bay south of Cervantes migrated 15km before totally stabilising. Near Dongara, the distance travelled appears to be in the order of up to 10km while north of Dongara it decreases to 2km. As noted above, it is inferred that this regional change relates to decreases in the supply of sediment onto beaches to the north.

In general directional terms, south of Jurien Bay (Grey to Lancelin) the dunes are moving north-northwesterly, parallel to the coastline. In comparison the limesand dunes north of Jurien Bay are moving northwards to north-northeasterly (Dongara to Sandy Cape). However, north of Dongara the trend reverts to west of north at Southgate and Cape Burney. The migration directions of each dune range from 330° to 020° (north-northwesterly to north-northeasterly). The dunes migrate dominantly in parabolic form and leave tails behind. The tails usually have depleted levels of vegetation, even a long time after stabilisation. These poorly vegetated dune ridges or tails show clearly as white traces on airphoto and satellite images and stand out on images showing enhanced relief (Figure 18).

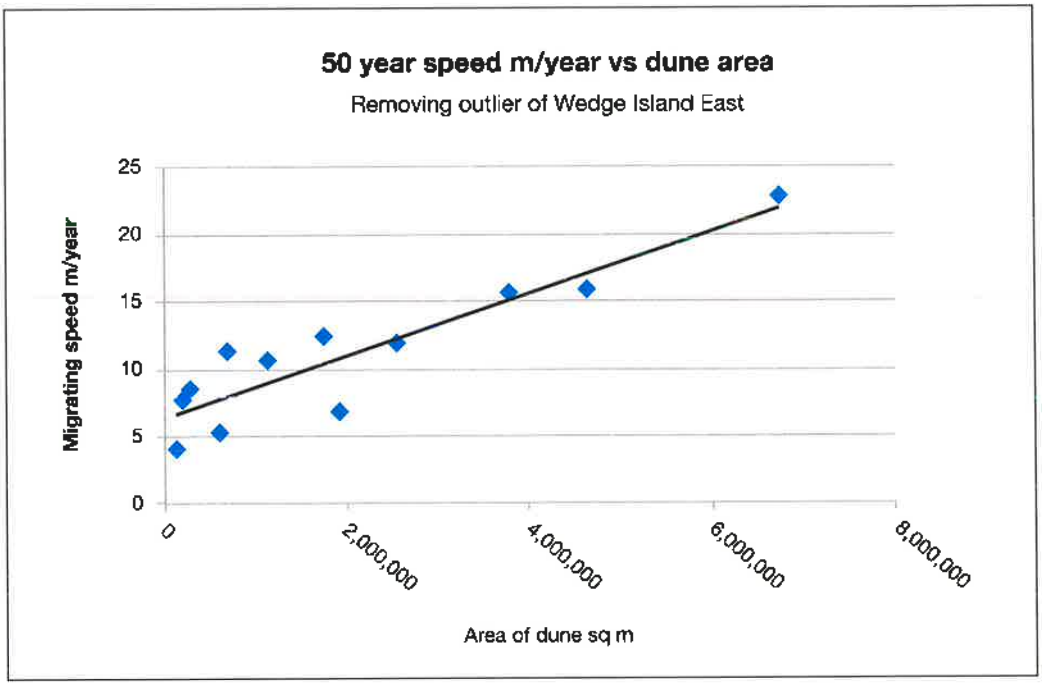

Figure 16. 50-year average speed of dunes showing correlation line between speed and size. Note that Wedge Island East dune is deleted from the graph as being an outlier to the data.

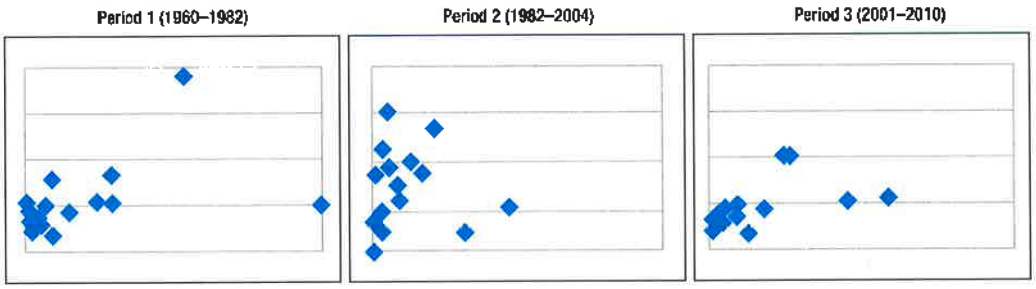

Figure 17. Speed of dunes plotted against dune area in Periods 1, 2 and 3 respectively
Note: The three graphs have the same abscissa and ordinate scales to permit direct comparison although the axis data is omitted for simplicity of presentation. While there is a general relationship between size and speed for each of the shorter periods, the correlation is far inferior to the correlation over a 50-year period as in Figure 16.

The dune migration rate was measured by calculating the distance from nose to nose and did not take into account the nature of the movement within the rest of the dune, with the exception of the Lancelin dune. Due to movement only occurring on the west side of the Lancelin dune the trailing arms were also measured to determine the migration rate.

As the Lancelin dune is not specifically moving in any particular direction, because it is actually decreasing in size, it was therefore excluded from the analysis of the overall migration velocity.

There is a large range in the speed of the various dunes with the slowest at 2.2m/year and the highest at 37.9m/year (Table 2). The Illawong dune had a large acceleration from 6.0m/year in Period 1 and 9.1m/year in Period 2 up to the unusually fast 30.4m/year in Period 3. At the opposite extreme, Dongara East increased slightly from 4.5m/year in Period 1 to 4.7m/year in Period 2 but then slowed to half at 2.2m/year in Period 3. White Point and Sandy Cape dunes markedly accelerated in Period 3. The biggest change was Lancelin that slowed from an extremely fast 37.9m/year to 10.7m/year from Period 1 to Period 2. The dunes Grey and Wedge Island North, both located in the south of the study area, have the highest mean migration rate within the period 1960–2010, with 15.7m/year for Grey and 15.8m/year for Wedge Island North. The lowest mean migration rate has taken place at the dune Dongara East with only 4.1m/year for the whole 50 years.

As an overall statement, the migration rate decreased slightly in the second period (1982–2001) but then increased again in the Period 3, when most of the dunes became highly active and with the migration rate reaching its highest. This is shown by the simple average speeds of all the dunes, at 11.3m/year in Period 1, decreasing to 9.5m/year in Period 2 and then rising to 15.1m/year in Period 3, meaning that the average speed in Period 3 was 34 per cent above that in Period 1. There were exceptions with the Dongara East and Coolimba dunes where the migration rate actually decreased in the past 50 years. Overall, there is considerable inconsistency in the variations of rate depending on the periods and the particular dunes and it is concluded that extrapolation of the present migration rates into the future should be considered only with a significant variation likely.

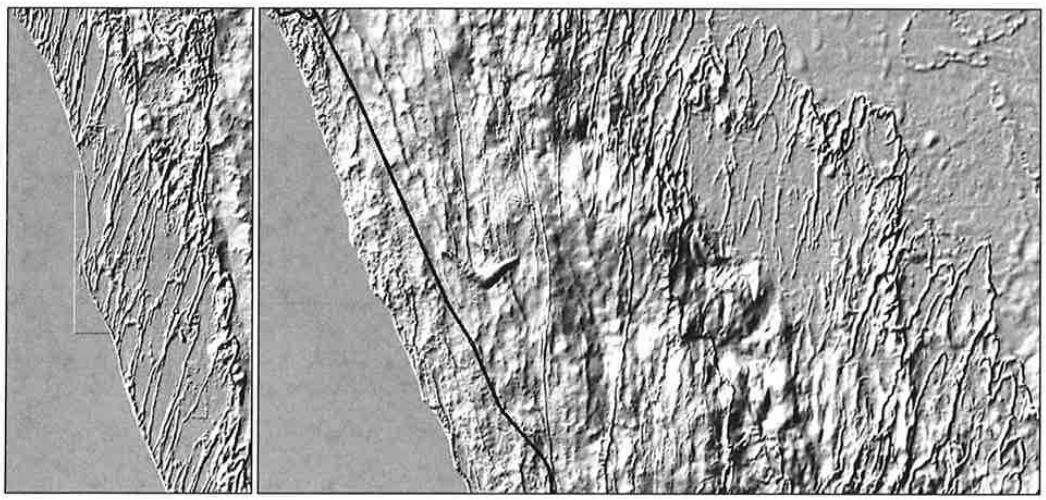

Figure 18. Relict dunes showing the stabilised lateral arms and the parabolic shape reflecting the stabilised head of the former dune. Left-hand image shows White Point and the right-hand is Wedge Island. Images compiled by ehancing the digital relief model and illuminating with strong, low-level source on west (left) horizon. The sharp lines are the stabilised lateral tails and the heads of the parabolic dunes. The left-hand image is 17km north to south (top to bottom) and the right-hand image is 13km north to south.

Migration influenced by climate

To ascertain whether the migration rate of the dunes is influenced by climate, various rainfall, temperature and wind, data were analysed for the towns of Geraldton, Jurien Bay and Lancelin.

- Geraldton (Latitude: 28.77°S · Longitude: 114.61°E) situated in the north of the study area with an elevation of 9m.
- Jurien Bay (Latitude: 30.31°S · Longitude: 115.03°E) is sheltered by a string of islands and reefs and has an elevation of 2m.
- Lancelin (Latitude: 31.02°S · Longitude: 115.33°E) has an elevation of 4m and is located in the south of the study area

Wind influence

Diurnal change causes the sun, during daytime, to create higher temperatures over land than over the sea, causing the inland air to rise and creating a lower pressure system over the land's surface. As the sea surface temperature increases slower than on the land, it results in a higher air pressure over the ocean. The different pressures create a sea breeze that blows inland from west to the east along this coast and speeds of 25-30km/h are not uncommon for these sea breezes. By contrast, a land breeze is created at night when the land cools more than the water because water, having a higher specific heat capacity, stores the heat energy longer than the land. The resultant air-pressure differential results in the higher-pressure land air pushing the lower-pressure sea air upwards and creating a land breeze. Typically, land breezes are of a lower velocity than the sea breezes due to a lower temperature contrast between the two surfaces from day to night (Figure 19).

The wind direction in the study area has a seasonal as well as a diurnal pattern. During the summer months of November to February strong winds are southerly. In comparison during the winter months there is a dominance of oscillating easterly and westerly winds (BoM 2011).

The west coast sea breeze in summer in Western Australia is controlled by two forces. Pattiaratchi et al (1997) noted that in summer a low pressure trough forms parallel to the coast due to the intense heating of the air across the continent and this leads to inflow of air from the

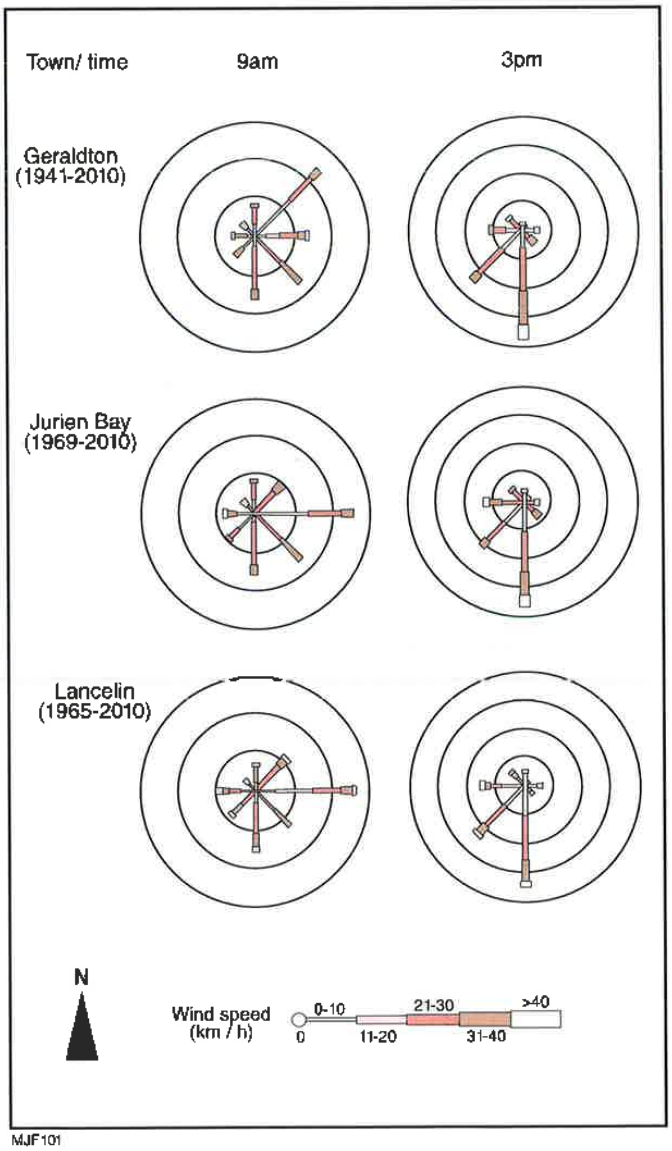

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Figure 19. Annual wind rosettes for Dongara, Jurien Bay and Lancelin (BOM 2011).

northeast. However, there is also a synoptic development caused by a very large-scale pressure gradient that generates a southwest air movement potential. The combination of the general synoptic weather pattern and the west coast trough with additional influences from diurnal variations and the Coriolis[7] force generate a dominant southerly air movement. This combination of the potential blowing directions results in one of the strongest southerly sea breeze systems in the world with mean wind velocities of 36km/h but with a direction nearly parallel to the coast.

In winter, there is dominance by an easterly-moving high-pressure anticyclone belt through the Mid West coastal region. Low pressure cells and frontal systems trail each anticyclone with strong winds initially from the northwest and then from the southwest as they recede to the east with the latter causing rainfall and storm events (Pattiaratchi et al. 1997). In summer, the west coast trough becomes established after anticyclones have passed and may remain in place or even migrate slowly to the west offshore for several days, strengthening with time. This draws in low-humidity, hot air from the interior of the continent leading to marked drying off of the region's soils as well as stressing vegetation and contributing to decreased foliage density on the sand dunes.

Figure 19 shows average wind rosettes for varying periods for three major settlements. Winter winds have strongly contrasting directions between mornings and afternoons. In the morning the winds blow from the east or northeast for between 10 per cent and 30 per cent of the time and, in the afternoon, from the south for between 15 per cent and 22 per cent. Lesser components are a northeasterly wind for between 10 per cent and 15 per cent of the time, particularly in the northern part of the area. Therefore the wind direction in winter is highly variable and consequently can be regarded as having a fairly balanced potential to move sand, especially in the afternoon.

During summer by 9am, between 25 per cent and 35 per cent of the wind is southerly whereas between 17 per cent and 23 per cent is from the east to southeast with main wind velocities ranging between 20 and 30km/h. By 3pm, very strong southerly winds develop with 55-62 per cent of all winds blowing from this direction reaching velocities of over 40km/h, with southwesterly winds accounting for between 25 per cent and 30 per cent of the wind direction and having wind velocities of between 20km/h and 30km/h (BoM 2011).

The shore-parallel sea breeze in Western Australia is an unusual phenomenon. During summer there are few westerly morning winds or easterly afternoon winds because the wind blows parallel to the shoreline. In addition, there are slight changes in the orientation of the dune direction and hence average wind direction during the periods of mobility. The consequence of this is strong south-southeast winds in the areas south of Jurien Bay, south or south-southwest winds in the areas from Jurien Bay to Dongara and returning progressively to south and then south-southeast winds to the north of Dongara. However, the strong summer shoreline-parallel sea breeze results in all sand dunes migrating subparallel to oblique to the shoreline.

Yao et al. (2007) identified three prime factors that can create the optimal conditions for high rates of sand migration:

- Dry weather and substrate
- Strong prevailing winds
- None to minimal vegetation coverage

In the study area the driest part of the year in summer occurs when the consistent afternoon sea breeze from the south is strongest. During these summer months the southerly wind velocities reach 40km/h for between 10 per cent and 15 per cent of the time. During this period the dryness of the substrate minimises vegetation density and foliage growth and in extreme periods causes deaths of plants which, coupled with the high wind velocities, ensures maximum sand migration potential occurs in this period. There may also be an influence from electrical storms starting bushfires that bare the sand and may lead to initiation of dune blowouts.

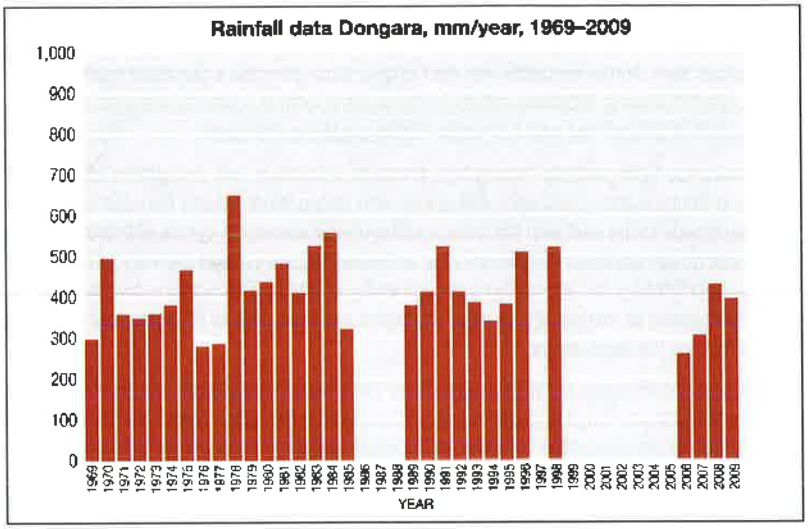
Rainfall and temperature influence

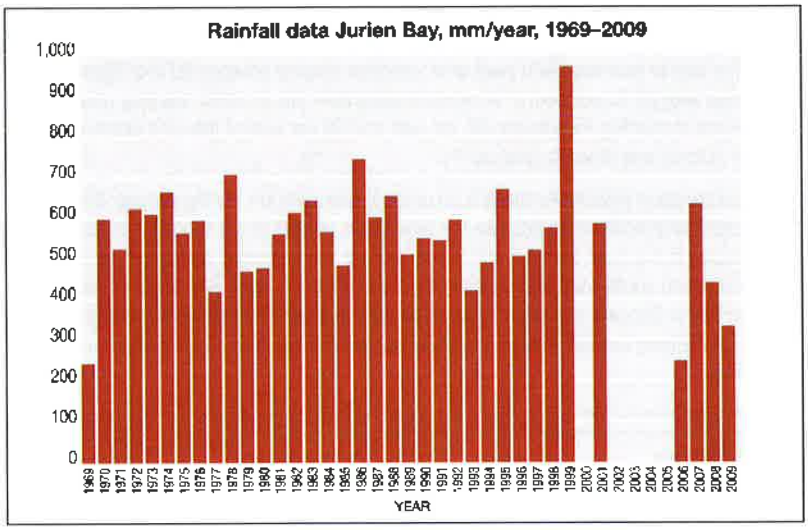
The annual rainfall increases from north to south through the study area. During the 40-year period 1969–2009 the mean rainfall figures for three major towns were:

- Dongara 386mm a year
- Jurien Bay 535mm a year
- Lancelin 623mm a year

Based on the three time periods of data from above (1960–82, 1982–2001 and 2001–10) the lowest rainfall data for Dongara and Jurien Bay occurred in the third period (Figure 20) which correlates with the highest dune migration rates.

[7] Coriolis force is the property derived from the rotation of the Earth that deflects the wind to the left in the southern hemisphere, thereby generating circular winds around pressure centres.





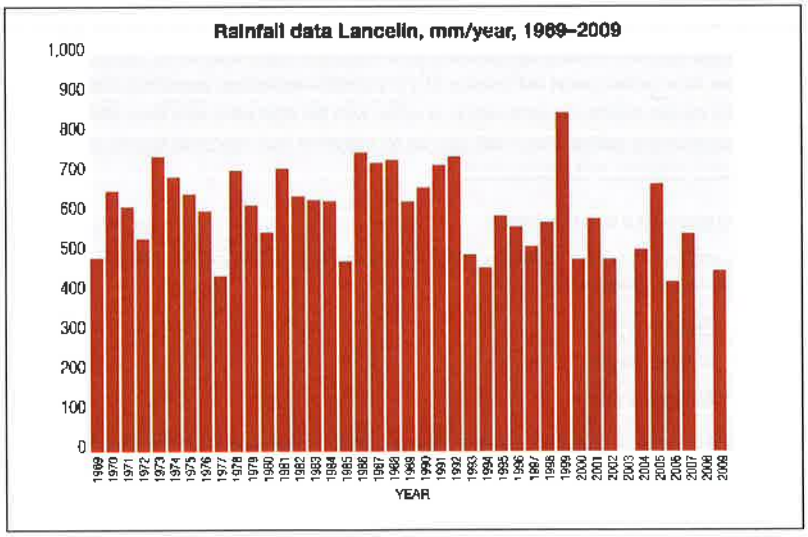


Figure 20. Rainfall data for Dongara, Jurien Bay and Lancelin between 1969 and 2009 (BOM 2011)

However, it is important to note that at Lancelin there was not a significant decrease in the annual rainfall during the third period and the migration rate was no greater than that of the second period.

The highest rainfall occurs in winter (June to July) and the lowest in summer (December to January). The significant anomaly in the year 1999 (Figure 20) was due to the La Niña effect. La Niña is a phenomenon caused by a cooler than normal sea surface temperature of the eastern Pacific Ocean which influences the weather in Australia, bringing rain and flooding, particularly in the eastern and northeastern parts of Australia (BoM 2005). This phenomenon impacted the study area from April to September 1999 (Figure 21) when the rainfall reached levels well above average.

An important consideration for this research is the impact of the El Niño effect on the west coast of Australia (Figure 22). El Niño is a phenomenon that occurs intermittently, in periods ranging from one to 26 years, and relates to a higher sea surface temperature in the central and eastern Pacific Ocean, which can influence climate worldwide. A strong El Niño causes drier than normal conditions over Australia (BoM 2005), particularly eastern and northern parts and although the effects can occur over Western Australia they tend to be weaker. Significant rainfall decreases were observed in the years 1977, 1994 and 2006 for Dongara, Jurien Bay and Lancelin (Figure 20). The year 2006 was especially dry with rainfalls of 428mm in Lancelin, 248mm in Jurien Bay and 260mm in Dongara. For all three towns it was one of the driest or the driest year in the 40-year period 1969 to 2009. That year also was unusually hot with Jurien Bay reporting a mean maximum temperature of 25.6°C and Dongara a mean maximum of 26.9°C respectively (compared with long-term averages of 24.9°C and 25.2°C). Lancelin's highest mean maximum temperature was 26°C in 1978 which coincides with the highest migration rate of the Lancelin dunes in the first period (1960–1982). For the majority of the other dunes, the highest migration rate occurred in the third period between the years 2001 and 2010. Within this third time period two El Niño events impacted the study area (BoM 2011). This helps to explain the higher dune migration rate, averaging 15.13m/year, occurring in Period 3.

Dune migration and the initiation of blowouts will be enhanced when the sand is driest and the vegetation cover is minimised. As noted above, this occurs in summer when the west coast trough has been drawing in dry, hot air from the interior of the continent and this wind has prevailed for several days. Anecdotal comments from residents living or working near mobile dunes supports this contention by having noted that a single due front may advance by one or several metres over a few days in summer, but then not migrate much for weeks or even for the rest of the year.

Migration influenced by dune type

Coastal dunes form under different conditions from inland or desert dunes. Firstly coastal weather is more humid than in the desert and therefore more vegetation can grow. As such, coastal dunes are often isolated from each other by vegetated areas (Ronca, 2011). The formation of a dune type depends on the presence or absence of vegetation, its degree of coverage and the wind speed and directions. The majority of the dunes analysed in the study area can be classified as parabolic dunes, eg. Dongara West and Wedge Island South. However, the migration of parabolic dunes is poorly understood or analysed.

Essentially a parabolic dune is a blowout that commences in a part of a coastal parallel dune. With a parabolic dune, the dune crest (central blowout) advances rapidly but the limbs are held back by lower wind velocity, possibly caused by vegetation, thus lengthening the dune in a windward direction. However, changes in vegetation can destabilise the parabolic dune morphology and the shape changes (DERM, 2011). With the limbs becoming stabilised, the quantity of sand in the head of the dune progressively decreases. Ultimately too little sand is left and the head becomes stabilised and the dune migration ceases as shown by the relict dune traces in Figure 18.

The majority of the dunes studied have forms related to parabolic types, though a number have been modified from a clearly parabolic shape. The Southgate-Cape Burney dunes in the north and the Wedge Island East and Lancelin dunes in the south of the study area deviate most from the parabolic shape and are better considered as transgressive dune sheets. A transgressive dune sheet occurs specifically in areas with abundant sand supply, powerful onshore winds and winds that may seasonally vary in direction. They are commonly formed from parabolic dunes when the vegetation cover over the trailing arms is removed (Hesp 1990) or does not form a complete coverage, coupled with a copious supply of sand.

Older relict fixed dunes in the study area consist of limesand grains (calcium carbonate) which became cemented to form limestone. This process is called lithification and has been occurring and stabilising the limesand dunes since Pleistocene time (Bird 1984). These are now evident as relict dunes that are still visible from the air (Figure 18), but they are now covered with climax vegetation. The stabilised limbs left behind commonly retain little vegetation and show as semi-continuous slightly wavy white lineaments on airphoto or satellite images.

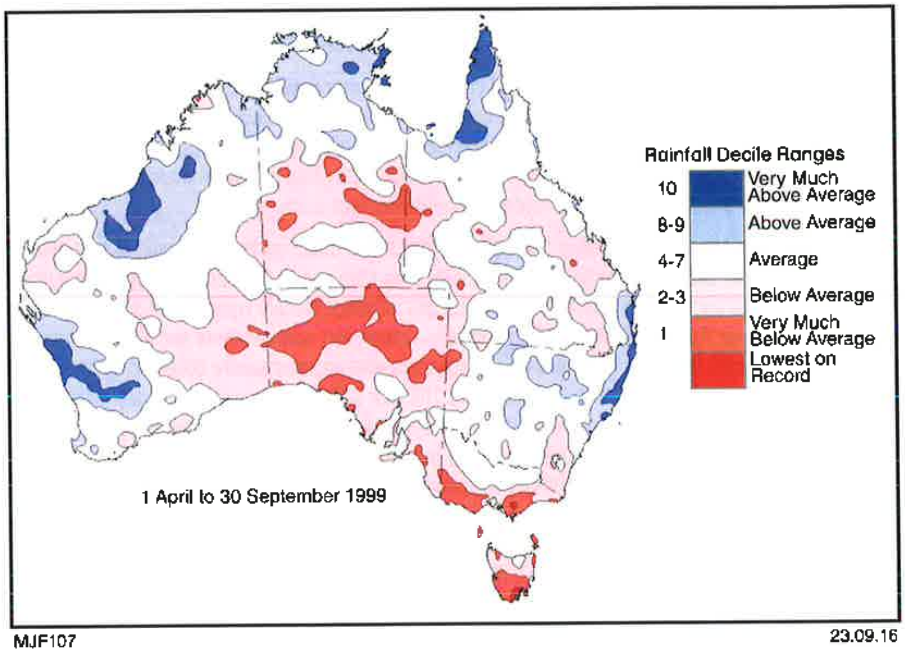


Figure 21. La Nina effect in 1999 (BoM 2011)

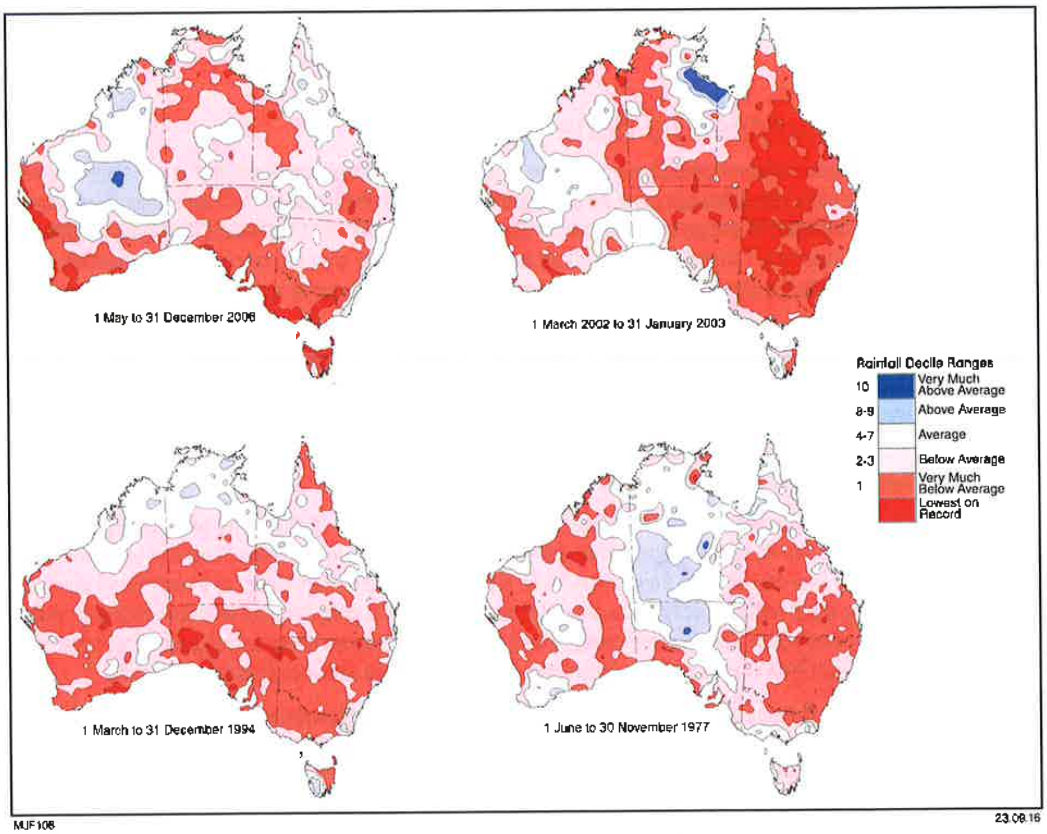


Figure 22. El Niño in the years 1977, 1994, 2002 and 2007 showing very low or lowest-on-record rainfall for the study area (BoM 2011).

Migration influenced by offshore effects

A long, continuous limestone reef system occurs along the Mid West coast of Western Australia. This is located up to 10km west of the coast of the study area parallel to the coastline and extends over some 300km from near Jurien Bay to Cape Bouvard, south of Mandurah, and with sporadic, short reefs between Jurien Bay and Geraldton. The offshore reef development occurred originally when the feature was an onshore limesand dune at times of lower sea level. Following formation of the dune, the limesand became cemented to form the limestone. The presence of this reef system exerts a significant controlling influence on the sand deposition along the beaches.

Sand deposition on beaches is strongly controlled by the coastal morphology and in particular by the concept of littoral cells where sand is cycled onto the beach and then eroded off the beach in storm periods, while moving laterally along the beach. Each littoral cell functions as an isolated cell with sand not moving laterally from one cell to the adjacent cell or moving in restricted quantities, except in times of exacerbated activity through strong longshore movement or through extreme storm event (Bray et al, 1995; Finkl, 2004; Masselink and Pattiaratchi, 2000).

Sanderson and Elliott (1999) described several littoral cells in the study area which are framed by cuspate forelands, rocky headlands and reefs. They note that a limestone reef located in the offshore zone also acts as a barrier to incoming swells and can influence the wave energy, water level and water circulation in the near-shore zone. Closed cell circulation of coastal sediment occurs if a reef extends from one rocky headland to another along the coast in such a way that the sediment is trapped within the lagoonal basin. Open cell circulation occurs if there is a gap in the reef system, also known as an energy window, which allows for sediment exchange between the adjacent near-shore compartments and offshore. Open cell circulation means there is always a loss of sediment to adjoining cells or to deep offshore environments.

The Western Australian Planning Commission (WAPC 2003) has noted that there are two potentially closed cell systems respectively north and south of Jurien Bay. In both of these sites, the coast is sheltered by the offshore reef system and that approaches the shore at northern and southern ends.

The offshore reef can prevent 60 per cent of the wave energy reaching the coast. Located between the reef and the coast is the inner shelf plain which is a smooth, gentle slope. A combination of the limestone reef, islands, ridges and shallow banks shelter the coast from wave energy so that cuspate forelands, tombolos, embayments and sheltered sandy beaches and lagoons can develop (Richardson et al 2005). The term tombolo is applied to a sand spit that links a reef or offshore island with the coast. A cuspate foreland is a landform that has been developed as an accumulation of coastal sediment protruding from the shore by the longshore transport of sediment through opposing drifts or by wave refraction around offshore islands (eg. Island Point). These features all interact with the supply of sand to the beaches and therefore influence dune formation and mobility.

Coastal landforms include river mouths. There are few rivers located within the study area. The mouths of the Greenough and Irwin Rivers are blocked by sediments for half of the year due to the southward longshore drift of sand along the beach (Sanderson and Elliott 1999). The Hill River mouth is blocked intermittently by northward longshore drift.

All of these features can enhance or reduce the supply of sand from offshore onto the beaches and influence sand dune formation (Figure 23).

Coastal environments are highly dynamic and complex because they are influenced by various high-energy weather elements such as air pressure, wind, temperature, precipitation, waves and swell, sea level conditions, tides and currents. The Leeuwin Current system is one such element influencing coastal environments located off the study area. This system consists of three major currents – the Leeuwin Current, the Leeuwin Undercurrent and the Cape Current. The Leeuwin Current is a poleward-migrating tropical current of the Indian Ocean that hugs the west coast of Australia. It's less than 100km wide and approximately 300m deep. The water in the Leeuwin Current has a lower salinity than the surrounding water and is migrating at 1m/s. It is stronger in winter than in summer as during the summer months the Leeuwin Current is pushed offshore. Strong southerly winds create the Cape Current, a northward flowing shelf current system which is up to 20km wide. This is a wind-driven current that exists from November until March, bringing in cold, nutrient-rich water which plays an important role for the local fishing industry. The third major current is the Leeuwin Undercurrent which is a northward flowing current that flows below the Leeuwin Current at 200-400m depths (Thompson, 1984; Chua 2002, Woo 2005).

The coast of the study area is influenced by a micro-tidal range of less than 0.5m, a strong southerly sea breeze and a low wave energy (WAPC, 2003). Under high energy wave conditions, such as storm events, the breaking waves carry sand offshore. However, under low energy wave conditions the waves and currents deposit the sand directly from the shore

face to the beach. Bird (1984) published several methods on how sand can be accumulated on a beach and Aagaard et al (2004) described how longshore drift can lead to a net build-up of beach sediment. Such methods include the sand supply coming directly from the eroded coast itself, fluvial sediments from river mouths or biogenic calcareous sediments from the ocean via shoreward transportation.

The beach sediments and sand dunes in the study area, as noted earlier, are composed dominantly of fragmented and broken-down biogenic material such as bryozoans, molluscs, foraminifers and calcareous algae. The calcareous sand demonstrates the shoreward transportation of the biogenic material living offshore as far as the continental shelf. However, the transport of sand shoreward, especially during successive marine transgressive cycles, depends on several factors such as sea floor topography, wave energy and the presence or absence of submarine vegetation (Bird 1984). The sediments on the beach and sand dunes consist of at least 70 per cent of marine-derived organic carbonate detritus from the reef which were transported shoreward. The reasons for the high percentage of carbonate in the study area are aridity of the land, the presence of only a few rivers that transport little detritus from the hinterland, a low wave-energy system that is insufficient to transport the fluvial sediments back to the shore, and a rich marine ecosystem.

The biogenic material lives on the deeper inner continental shelf at depths of up to 70m and in sea grass which grows in shallow waters close to the shore. Both of these sites provide a favourable habitat for molluscs, foraminifera and algae and the biogenic material can be eroded and transported shoreward to form low-energy beaches (Figure 23). Longshore currents in the near-shore zone transport sediments along the beach, known as a littoral drift, with the sediments accumulating against headlands and groynes (WAPC 2003). Littoral sand transport is predominantly caused by wind waves generated by the sea breezes. Richardson et al (2005) documented the sea breezes that blow onshore and generate these waves, and they have velocities in the range of 20-28km/h. The sheltered location of the study area provided by the limestone reef is the reason for the low-energy waves that are the main cause of sedimentation on the sandy beaches and the dunes.

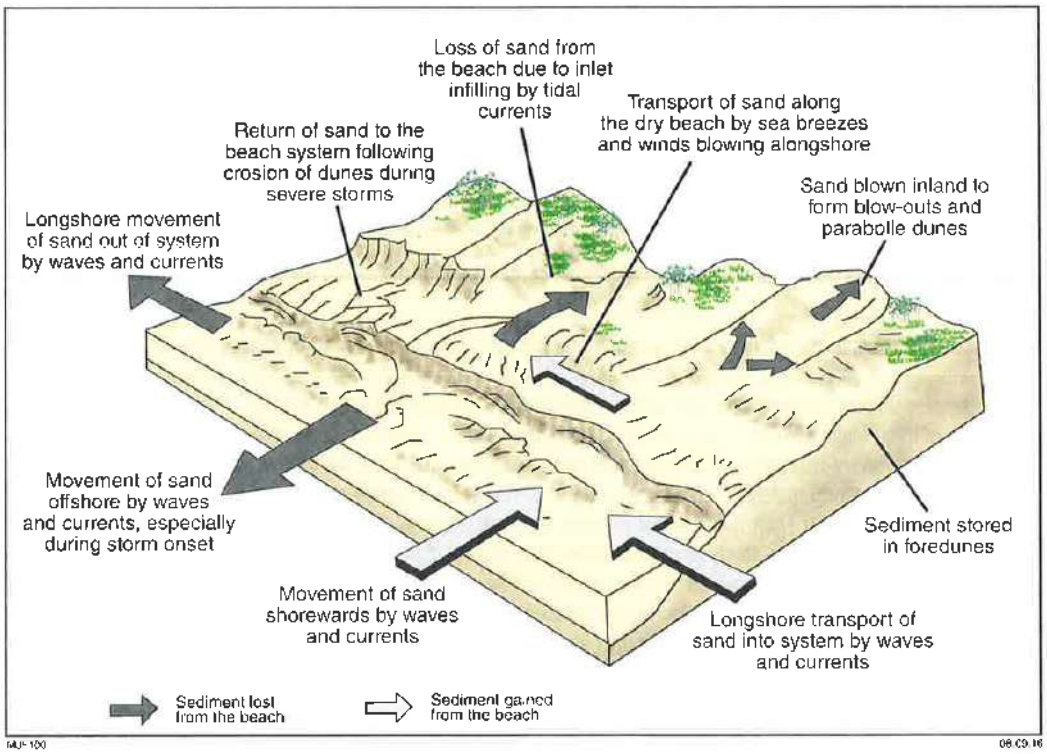


Figure 23. Components of coastal sediment budgets (Western Australian Planning Commission, 2003)

The dunes located in the south of the study area are larger than the dunes in the north which is inferred to relate primarily to the sediment supply. This interpretation was supported by Sanderson and Elliott (1999) who divided the study area into a northern and a southern zone at Green Head. Sanderson and Elliott described the area north of Green Head as one of rocky headlands and outcrops, pocket beaches and shallow lagoonal waters with an average depth under 5m. The reef has a higher elevation but is situated further offshore (5-10km) compared with the southern zone. These factors result in a smaller surf zone, lower wave energy and a narrower beach width (less than 20m). South of Green Head the reef is situated only 2-4km offshore but is more perforated and deeper than in the north with a depth of 5-10m. Therefore, in the south of the study area, sandy beaches are longer and there are fewer large cuspate forelands of Holocene age (Sanderson and Elliott 1999).

Dune impacts on infrastructure and consideration of some solutions

In the study area a number of dunes have or will have impacts on built structures and developments. Table 4 lists features within the study area that are vulnerable and provides estimates of times until the potential impacts. These times are determined from both the 50-year average speed and also from the speed determined for Period 3. As noted above, there has been significant variation in the dune speeds and these estimated times are therefore highly vulnerable to change. There is no certainty that the historic rates will persist; the dune speeds may accelerate or decelerate. This imprecision is emphasised in the table where there was significant difference between the overall average speed and the Period 3 speed by showing marked differences in the times of impact.

Bovin & Jonsson (2011) describe sand dunes as natural hazards which can cause major material and socio-economic damage. The dune sands blow over roads, highways and railways and can even bury settlements. In the late 1800s, the town of Eucla, located on the south coast of Western Australia near to the South Australian border, was buried by shifting sand dunes. The ruins at the site of the town now constitute a historical tourist attraction.

The migration of sand dunes is a slow and pervasive geomorphologic event that has consequences for human welfare as the removal of sand from affected infrastructure imposes significant costs on the community and the relevant government authorities. Kailis Drive is currently being impacted by the Dongara West mobile sand dune and the Indian Ocean Drive may be impacted in the next few years by the Grey Dune. However, several other roads will be impacted soon by the migration of dunes, eg. the Wedge Island Road, in the longer term. Once the sand has blown onto the roads it can become a safety hazard that at minimum causes delays and at worst can create road hazards and incur economic loss (Bovin & Jonsson 2011).

Bovin & Jonsson (2011) provide several methods to reduce or stop sand dune migration or provide solutions for infrastructure already damaged. Mobile sand dunes can be slowed or halted by increasing the critical roughness density of the dune surface which will decrease the sand transport capability (Gillies et al. 2011). As roughness increases the ground-level, wind speed decreases which in turn decreases saltation flux. Dong (2004), in considering stabilisation of dunes in the Taklimakan desert, identified the prime fixation technique as mechanical dune stabilisation by fences. Fences that are set up directly across the path of the prevailing wind halt or slow the rate of sand movement because they act as artificial barriers causing sand accumulation at the lee site. The wind in the study area is coming from various directions, so to apply this method here would require fences to be set up as squares creating a checkerboard effect. For example, in Mauritania "close clustered reed fences" with a porosity of less than 10 per cent proved the most effective (Dong 2004).

Another temporary roughness option is to use a straw checkerboard technique which has already been proven as an effective method in China (Figure 24). The straw checkerboard technique was developed by scientists from the Shapotou Desert Research Station in 1957. Rice, wheat or other plants were planted in a checkerboard pattern. By setting up the semi-covered straw checkerboards, the straw is placed vertically. With the heights of the straw between 10 and 20cm, half of the straws are buried in the sand and half are exposed and the grid size ranges from 1x1 to 2x2m. Smaller grid sizes are required in areas of stronger winds (DRI 2011). Straw checkerboards with a height of 10-20cm and a grid size of 1x1m have been proven to be the most effective. In areas with precipitation of more than 200mm, vegetation should be planted simultaneously (Qiu et al 2004).

Table 4. POTENTIAL Dune impacts on features in the study area

DUNE	Infrastructure at risk	Distance to infrastructure in 2011 (m)	Migration rate (m/year)		Estimated width of dune on first arrival (m)	Maximum width (m)	Maximum height (m)	Indicative timing of dune impact (year)	
			For period 2001–10	For period 1960–2010				At speed for period 2001–10	At speed for period 1960–2010
Southgate	Brand Highway	150	12.7	6.8	30	1,200	6	12	22
	Houses in Wandina	200	12.7	6.8	30	1,200	4	16	30
Dongara West	Kailis Drive	0	8.0	7.7	120	300	10	Now	Now
Dongara East	Kailis Drive	130	2.2	4.1	20	370	10	60	31
White Point	Dongara-Eneabba railway line	380	20.2	11.9	25	790	18	19	32
Illawong	Indian Ocean Drive	1,000	30.4	9.4	30	740	4	33	105
Coolimba	Indian Ocean Drive	500	6.4	7.7	50	560	7	78	65
Green Head North	Scenic tourist road	140	17.7	8.5	30	260	3	8	16
Green Head South	Indian Ocean Drive	480	15.5	12.5	30	1,400	4	30	38
Grey	Indian Ocean Drive	250	17.9	15.7	100	1,700	10	13	16
Wedge Island South	Road into Wedge Island	215	18.9	10.6	70	800	3	11	20
Wedge Island East	Indian Ocean Drive	900	11.1	11.2	30	2,100	11	80	80

Figure 24. Straw checkerboard technique (DRI 2011) and its application on the Tarim Highway, China (The Tarim Highway, undated).

The checkerboard technique described above was conceived on the basis of it commencing a progression of vegetation growth that can take up to five years to become properly established and thus lead to a healthy vegetation succession. The first vegetation growth of grasses is followed by shrubs and finally woodland or heath. This environmentally friendly method can halt the sand movement as long as the plants used for brushing meet certain requirements. These requirements include being resistant to strong, hot and dry winds and in the near-coast environment on sand the vegetation must tolerate salty conditions (halophytic plants) and nutrient-poor environments (Goudie 2010).

Goudie (2010) states that the mechanical removal of sand is also an effective method of mitigating the impacts of mobile sand dunes. While this may seem a pragmatic approach, the quantity of sand moving in larger dunes each year can be very large and invoke considerable community expense. However, in Western Australia the sand has a high component of lime and is a very marketable commodity for farm applications. Therefore, extracting and utilising the limesand is playing a crucial role in stopping a number of the dunes from migrating or at the very least minimising the damage by removing the limesand.

The optimum solution is to extract the limesand from the head of the dune at a rate near or above the rate at which the dune is migrating. Marketing of this product for farm application to control farm soil acidity actually utilises the economic value of the sand to overcome the economic cost of managing the migrating sand. Other techniques of management involve significant cost, to the financial detriment of either the State Government or Local Government authorities.

Dunes along the Mid West coast

Southgate Dune

The Southgate Dune, located 7km south of the centre of Geraldton, is migrating northwards on freehold and unallocated Crown land. On the freehold, limesand is not a mineral and extraction is subject to Local Government authority through grant of an Extractive Industry Licence. Southgate dune covers 194ha and is up to 6m high. It has advanced to the edge of a beach access track from which extraction of the limesand is proceeding and appears to be holding the dune head nearly stationary, although it is not clear if sufficient extraction is occurring to stop the dune sand (Figure 25).

Since 1960, Southgate Dune has decreased in area from nearly 300ha to nearly 200ha. This has been caused by the natural stabilisation of the tail parts of the dune, particularly with the flanks becoming stable. It has averaged 6.8m/year of advance at the head, the speed having decreased markedly from Period 1 (8.9m/year) to Period 2 (3.6m/year) but then accelerated markedly in Period 3 (12.7m/year). This acceleration is of concern because if it maintains this speed, the dune will present a geohazard to the Brand Highway and the houses in Wandina. Alternatively, it will require the removal of larger quantities of mobile sand to artificially stop the dune head from moving northwards. However, note the caution expressed earlier in this report that the longer-term speed appears to be a more robust predictor of future average speeds.

The northern 25 per cent of the mobile dune is on freehold land and the remaining southern part is on unallocated Crown land that was proposed in the late 1990s to be converted to freehold. It is recommended that the City of Greater Geraldton monitor the movement of the dune to ascertain if it does pose this threat. The first sign will be the dune crossing the beach access track and entering the freehold property to the north. Successive high waves of sand are approaching from the south and would pose significant costs to remove artificially. Alternatively, stabilisation of the dune south of the head could be caused by vegetating the sand or applying one of the techniques discussed above. However, a public authority considering action will need support from the owner of the land.

Figure 25. Southgate Dune showing proximity to Brand Highway and Wandina subdivision houses. The dune head currently runs along the edge of beach track. Map data: Google, © 2015 CNES/Astrium.

Cape Burney dunes

The Cape Burney sand dune (Figure 26) is situated 420m south of the Greenough River mouth and centred about 4km south of the Southgate Dune. This limesand dune in 2012 had an area of 60ha and a height of about 4m. In Period 3 it was migrating north-northwest at 10.1 m/year, having accelerated from 3.5m/year in Period 1, has progressively shrunk from 170ha in 1960, and will soon blow sand into the Greenough River. Blockage of the river may then ensue. However, if river flows are strong, it may maintain its course rather than be blocked. It is recommended that the potential problems be considered and taken into account by the City of Greater Geraldton when making nearby land-use planning and development decisions adjacent to the watercourse.

Figure 26. Cape Burney Dune showing proximity to the Greenough River and its mouth. Map data: Google, © 2015 CNES/Astrium.

Dongara dunes

At Dongara the study focused on two dunes, Dongara East and Dongara West, located 7km south of Dongara township.

The Dongara West dune has migrated onto and is depositing sand over Kailis Drive (Figure 27). This dune is up to 11m tall and from 1960 to 2001 it decreased in area from 26ha to 20ha, but did not change thereafter. This suggests that the sand will continue to blow at the measured rate of between 7m/year and 8m/year for the foreseeable future. Kailis Drive is a Shire of Irwin road and the sand removal falls under the maintenance responsibilities of that Shire. Figure 28 shows the very leading edge of the dune about to impinge on the road shoulder in October 2004. Figure 29 shows how the dune front had progressed by November 2009 and at that stage the Shire of Irwin had periodically been removing sand from the road. Mining Lease M70/1271, applied for in 2006 and granted in December 2015 over the dune head, should assist through removing and marketing the limesand to sell to farmers, removing the economic liability on the Shire. An example supporting this option is the granted mining leases on the Coolimba and Lancelin dunes where active mining of those dunes has significantly reduced the migration rate and area over the past 50 years. North of this dune, across Kailis Drive, is a limesand processing operation where high-grade limesand is converted to quicklime.

Dongara East Dune, located 2km east of Dongara West, is approximately 10m high and between 1960 and 2010 it split into four dunes, and in that time shrank and slowed. In Period 1 it was moving north-northeast at 4.5m/year, but slowed to 2.2m/y in Period 3 while decreasing from 41ha to 14ha. It is considered likely that the dune may cease to migrate before it reaches Kailis Drive, some 120m ahead of the front of the dune. Limesand is being extracted at a low rate from the northeastern corner of the dune where the sand has blown onto freehold land. This extraction is authorised by an Extractive Industry Licence granted by the Shire of Irwin.

Figure 27. Dongara dunes (West and East). West has intersected Kailis Drive and East has broken into a number of parts. Note general trend of former dunes that are now stabilised and covered with vegetation. Map data: Google, © 2016 CNES/Astrium.

Figure 28. Dongara West Dune approaching Kailis Drive October 2004. Photo taken looking southeast.

Figure 29. Dongara West Dune on edge of Kailis Drive, November 2009. Photo taken looking southwest.

White Point dunes

There are four separate dunes at White Point (Figure 30) that are moving independently towards the north-northeast. The western two clearly show the stabilisation and revegetation of lands behind the dunes. The eastern dune head is 4.9km from the beach and if it had maintained a rate of 20m/year, it would be over 400 years since initiation of this dune, showing the long-term nature of the mobility of these coastal dunes. The western dune has two separate lobes, and the eastern lobe has advanced 1.4km further than the western lobe. In Period 1 and Period 2 of the study, the average speed was approximately 10m/year. However in Period 3 the rate doubled to 20.2m/year. Simultaneously, the area of the dunes decreased from a total of 483ha in 1960 to 254ha in 2010 and therefore the increase in speed of this dune is in contrast to most other dunes where the migration rate decreased as the dunes shrank.

The eastern dune head is 380m from the Dongara-Eneabba railway line and, at an average speed of 11.9m/year, will be approaching the line in 30 years. This is a large dune that is up to 18m high and is expected to continue migrating for many years. It is recommended that monitoring of the dune be undertaken each five years to continue investigating the likely interruption of rail usage.

Mining Leases 70/642 and 70/711 exist over the majority of the dunes. Extraction previously occurred on M70/642 between 1997 and 2001 and on M70/711 between 1994 and 1996. Extraction from M70/642 ceased as the operator has an alternative feed source. However, if the closure of the railway poses an economic threat, it is recommended that the Public Transport Authority engage with the tenement holder to ascertain if any joint amelioration actions could be entertained.

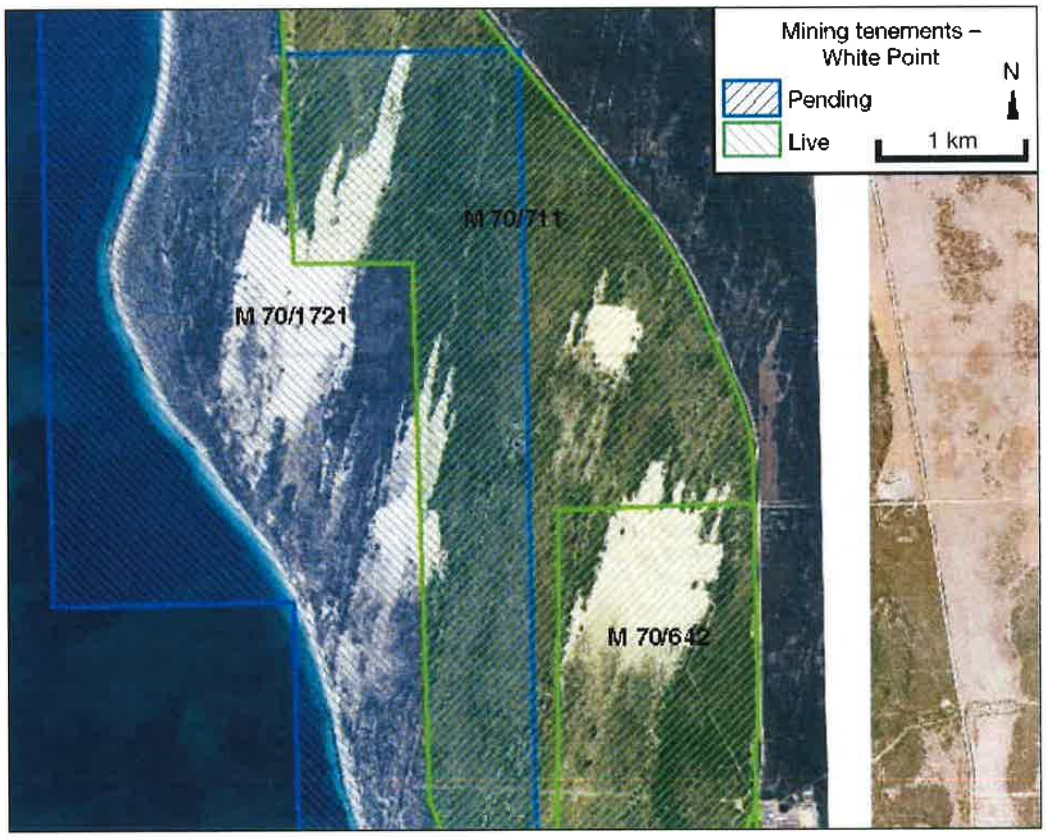


Figure 30. Four dunes at White Point. Map data: Google, © 2016 CNES/Astrium.

Illawong dunes

There are two relatively large dunes at Illawong, both having areas in the order of 100ha, although only the northern was studied in this project (Figure 31). The northern dune is approximately 5km south of the former coastal community of Illawong. This dune is still being fed with beach sand and this is confirmed by the dune area increasing from approximately 100ha to 110ha between 1960 and 2010 as additional sand was fed into the tail of the dune off the beach. In contrast, the southern dune has separated from the beach supply. Both dunes are migrating north-northeasterly. Illawong Dune accelerated markedly between Period 1 and Period 3 from 6.0m/year to 30.4m/year.

At the closest, the head of the northern dune is some 1000m from intersecting Indian Ocean Drive. Both dunes are on Reserve 42 477 for Parkland, Recreation and the Letting of Cottages managed by the Shire of Carnamah. North and east of this reserve and across Indian Ocean Drive, the land is part of the Beekeepers Nature Reserve. At the current rate of movement the dune will not reach Indian Ocean Drive for more than 30 years. Provided the dune maintains the average speed of 9.4m/year as recorded for the period 1960 to 2010 it will be a century before this impact occurs.

The northern dune is largely within the area of the application for Exploration Licence 70/2221, although the head is close to blowing out of the tenement application area. The southern dune is on application for Exploration Licence 70/4652. Exploration licence E70/2221 over the dune will not allow for the removal of sand. It would be beneficial to grant a mining lease over this dune as, if migration is not addressed, it could start to impact on Indian Ocean Drive over the next 30 years. It is recommended that the dune be monitored each five years in order to allow time to prepare and address the complications of any impact.

Coolimba Dune

The Coolimba dune (Figure 32) consists of a large western dune, with an area of over 70ha and a height of up to 7m and a smaller eastern dune with an area of less than 10ha; both had separated from a single large dune historically.

Coolimba Dune in 1960 covered 89ha which increased to 91ha in 1982, but then decreased to 71ha in 2006. This change in area correlates with the speed of the dune, rising from 7.4m/year in Period 1 to 8.36m/year in Period 2 and then slowing to 6.4m/year in Period 3.

The dunes are centred some 4km north-northwest of the intersection of Indian Ocean Drive and Coolimba-Eneabba Road and are migrating north-northeast towards Indian Ocean Drive. The eastern dune is becoming stabilised with vegetation and is likely to stop moving before it has gone much further. However the larger western dune is considered likely to continue migrating and if it maintains the speed in Period 3, it will cover the 500m to reach the Indian Ocean Drive in just over 75 years.

The majority of the dune is within M70/932 and limesand production is proceeding from an area some 500m back from the head of the dune. Continued extraction of the limesand will assist in removing sand that is migrating and will probably slow the movement. Access to the dune is along Miscellaneous Licence 70/75. It is recommended that the migration of the dune be monitored to provide early warning to Main Roads WA if it seems likely to impact on Indian Ocean Drive.

Green Head dunes

Two dunes were studied at Green Head, one north of the townsite and a second south. Green Head North (Figure 33), with an area of 28ha, is up to 3m high and centred 3km north of Green Head, is of particular concern as its migration rate has accelerated from about 7m/year in Period 1 and Period 2 to 17.7m/year in Period 3. At the same time, its area has remained at between 24ha and 28ha. It is inferred that it will continue migrating for some years. The sand dune is currently only 140m from a local beach access road and, if not addressed, within a couple of years this dune will meet and potentially cut the scenic tourist route. This dune is on a reserve for Parkland, Recreation and the Letting of Cottages managed by the Shire of Coorow and therefore maintaining the tourist road will be a Shire responsibility.

A prospecting licence (P70/1468) has been applied for over the dune. However, it is reported that there is community opposition to the grant of the tenement and potential extraction of limesand. Grant of this tenement

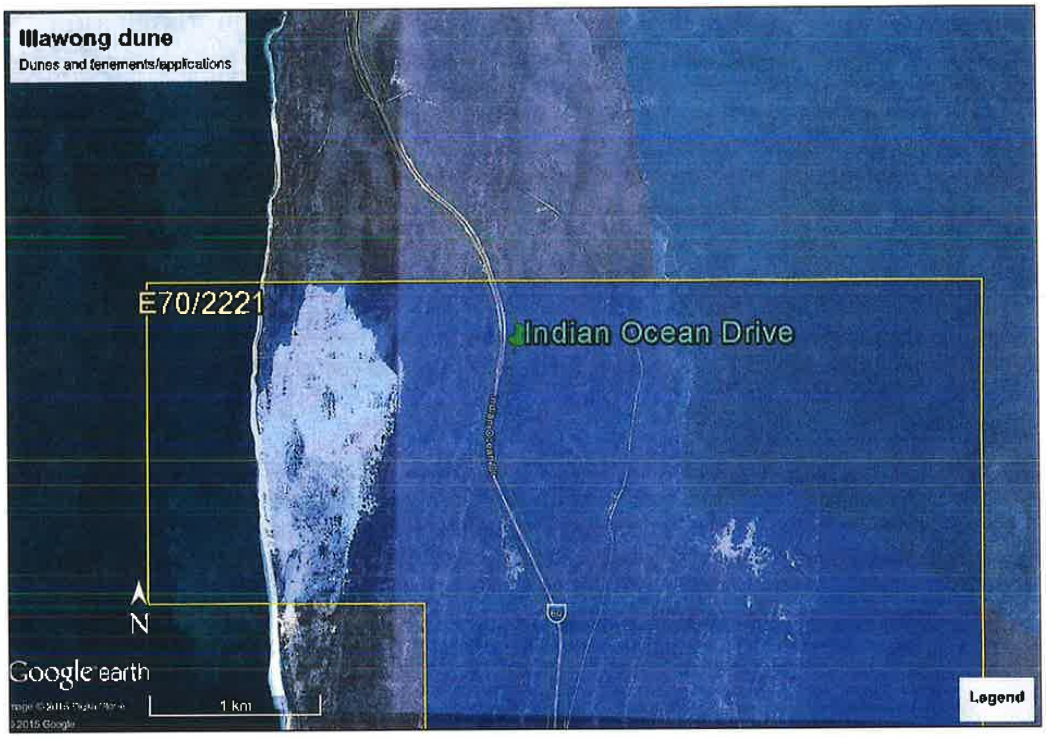


Figure 31. Illawong northern dune showing extent of exploration licence 70/2221. Indian Ocean Drive is the light-coloured line east of the dune. Map data: Google, © 2016 CNES/Astrium.

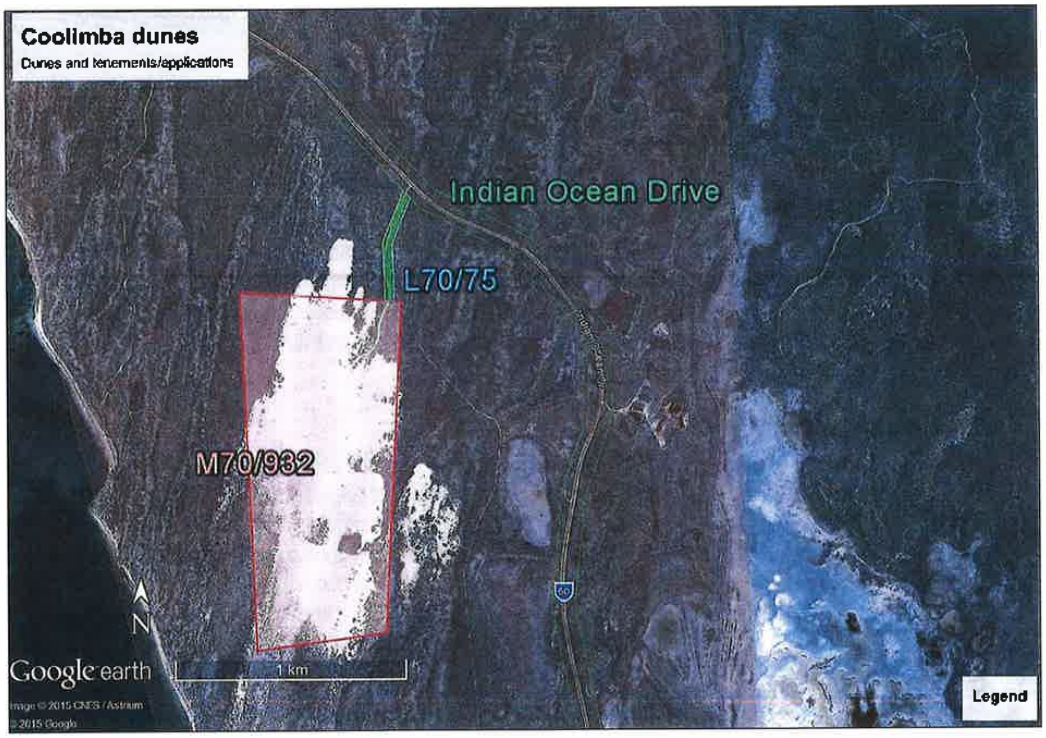


Figure 32. Mining tenements on Coolimba Dune. Indian Ocean Drive is the light-coloured line to the east and north of the dune. Map data: Google, © 2016 CNES/Astrium.

will not permit productive extraction and a mining lease will be required for that activity to be authorised. If productive extraction under authority of the Mining Act is not undertaken, the Shire of Coorow will have to undertake removal of sand blowing over the road at its expense. Remediation of this geohazard is likely to be required in the near future.

Green Head South Dune (Figure 34), located 5km southeast of Green Head, is a moderately large dune (174ha) and up to 4m high that is progressing on a broad front with several leading nodes. It is migrating slightly east of northwards, and has changed speed markedly from 16m/year in the first study period, slowing to half that in the second period and then returning to the original speed in the third period. At the closest, it is nearly 500m from Indian Ocean Drive and could intersect that in 30 years. However, extraction of limesand from behind the dune head is likely to lead to that part of the dune slowing and possibly not reaching the highway. Other nodes of the dune may continue migrating towards the road and future monitoring of that progress is recommended in five-year intervals. Tenements exist over other parts of the dune and extraction on those would assist in reducing any future potential geohazard potential from those parts. The dune is on Parkland and Recreation Reserve 40 544 managed by the Shire of Coorow.

Sandy Cape Dune

The Sandy Cape Dune (Figure 35) is a moderately large north-migrating dune located 14km north of Jurien Bay. It covers 71ha and is up to 7m high and is now is well separated from the coast at its source. Since leaving the beach, it has migrated approximately 5km. The dune is advancing over previous generations of coastal dunes that are now fixed and vegetated and does not pose any threat to infrastructure except for four-wheel-drive tracks used to access isolated beaches. Sandy Cape Dune is within Reserve 19 206 for Parkland and Recreation managed by the Shire of Dandaragan.

Sandy Cape Dune has contracted markedly from 129ha in 1960 to 71ha in 2010. As with many other dunes, it slowed from 10m/year in Period 1 to 8.1m/year in Period 2 and then accelerated to 22.8m/year in Period 3.

Figure 33. Green Head North Dune, within 140 metres of intersecting the tourist road that accesses bays and beaches near the township. Map data: Google, © 2016 CNES/Astrium.

Figure 34. Green Head South Dune showing tenements. Green tenements are granted and the blue is an application. Map data: Google, © 2015 CNES/Astrium.

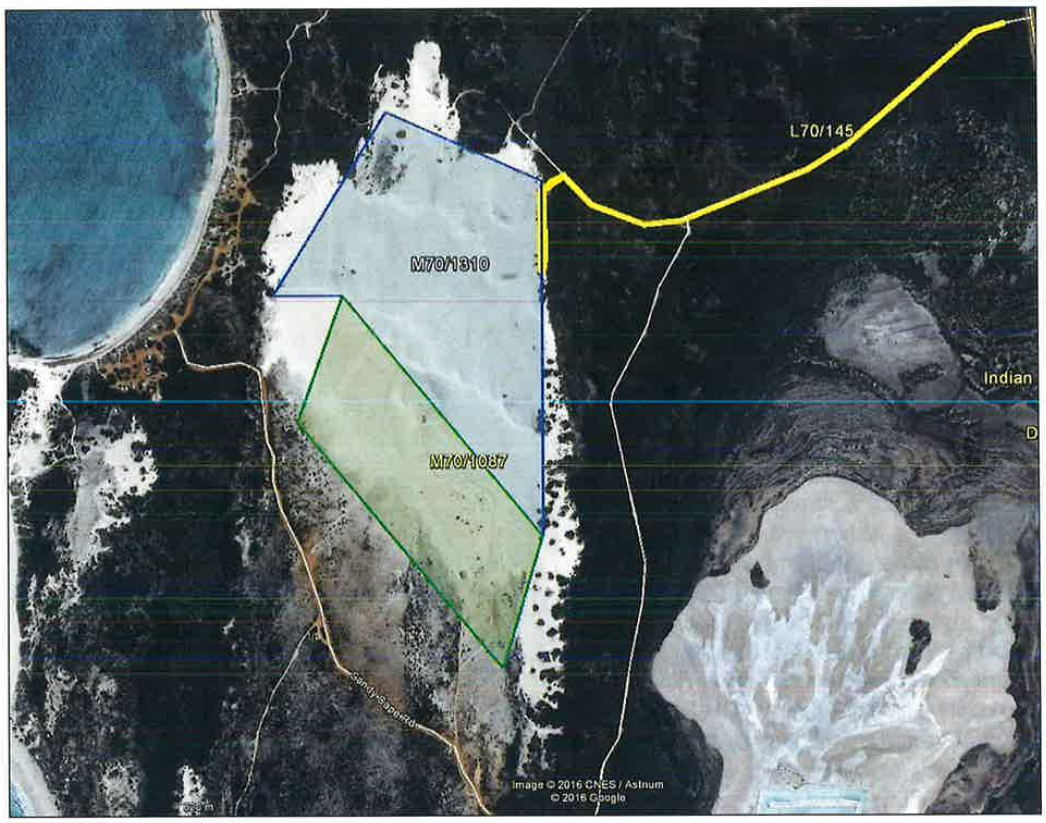


Figure 35. Sandy Cape Dune and tenements. Green lease is granted, blue is application and yellow is miscellaneous licence for access from Indian Ocean Drive. Map data: Google, © 2015 CNES/Astrium.

The tail of the dune has vegetation re-establishing on and stabilising the loose sand. At the head of the dune there is a 250m-wide central lobe that is about 250m ahead of a large wave of sand that extends across the 600m width of the whole mobile sand dune. It is inferred that this dune is the product of an earlier, narrower, central dune that is being overtaken and overcome by the much wider later dune.

Sandy Cape Dune had previously cut across bush tracks that allowed access to coastal recreational sites, more recently replaced by a beach access track across the tail of the dune. Otherwise it does not pose any threats to built infrastructure.

Grey Dune

This dune (Figure 36) is located immediately northeast of the former coastal settlement of Grey and is within Nambung National Park. Grey Dune currently has an area of nearly 380ha and is over 10m high. It appears to have been migrating from a beach source located at least 14km to the south of the present tail and it is therefore inferred it will continue migrating for several more kilometres over future years and decades. During the study period it has been moving in a north-northwest direction, but its speed is unusual when contrasted with other dunes studied. In Period 1 it was migrating at 10.7m/year and then accelerated in Period 2 to 20.3m/year, finally slowing a little in Period 3 to 17.9m/year. Between 1960 and 2010 it shrank from 577ha to 378ha.

The new scenic tourist route along Indian Ocean Drive was opened on 19 September 2010. However it is located on the migration route of the Grey sand dune. Main Roads Western Australia (MRWA) removed bare dune sand over about a 100m width on the western side of the dune adjacent to the road at the time of road construction in 2009–10. Subsequently, to reduce the visual impact of the bare limestone pavement adjacent to the road as well as trying to minimise the movement of the dune sand, the surface of the area, that had consisted of remnant sub-dune limestone pavement, was covered with topsoil and mulch material that consisted of local vegetation including seeds (Figure 37) . Two years later the vegetation had grown significantly, covering the bare surface (Figure 38).

Following a report from 360 Environment Pty Ltd, tube stock was planted on the dune in winter 2012. To ensure the seeds were representative of the regional flora and would successfully grow on dune limesand, collection was confined to 25km east of the coast and 50km north or south of the Grey Dune. The seeds germinated and seedlings adapted and have since regenerated vegetation that has stabilised the area and reduced the visual impact. Species suitable for the Grey Dune were presented (Table 5) in the report Dune Stabilisation Concept by 360 Environmental (2010).

The dune is adjacent to Indian Ocean Drive, is moving close to the edge of the highway and will encroach on the highway in time. Remediation to remove the sand will become a significant cost because this dune is high (more than 10m) and wide (more than 1700m). Some 350m of width of this dune will intersect the Indian Ocean Drive, presuming it maintains its current path. From calculations, it is estimated the dune has the potential to deposit over 100,000 tonnes of limesand on the road per year. Remnant stabilised dune limbs are apparent adjacent to Grey Dune and continue for up to 5km north of the head of the dune, indicating the potential for the large Grey Dune to continue migrating and impact the highway. It is recommended that Main Roads WA investigate potential options for alleviating this impact in collaboration with the Department of Parks and Wildlife as the dune is within Nambung National Park.

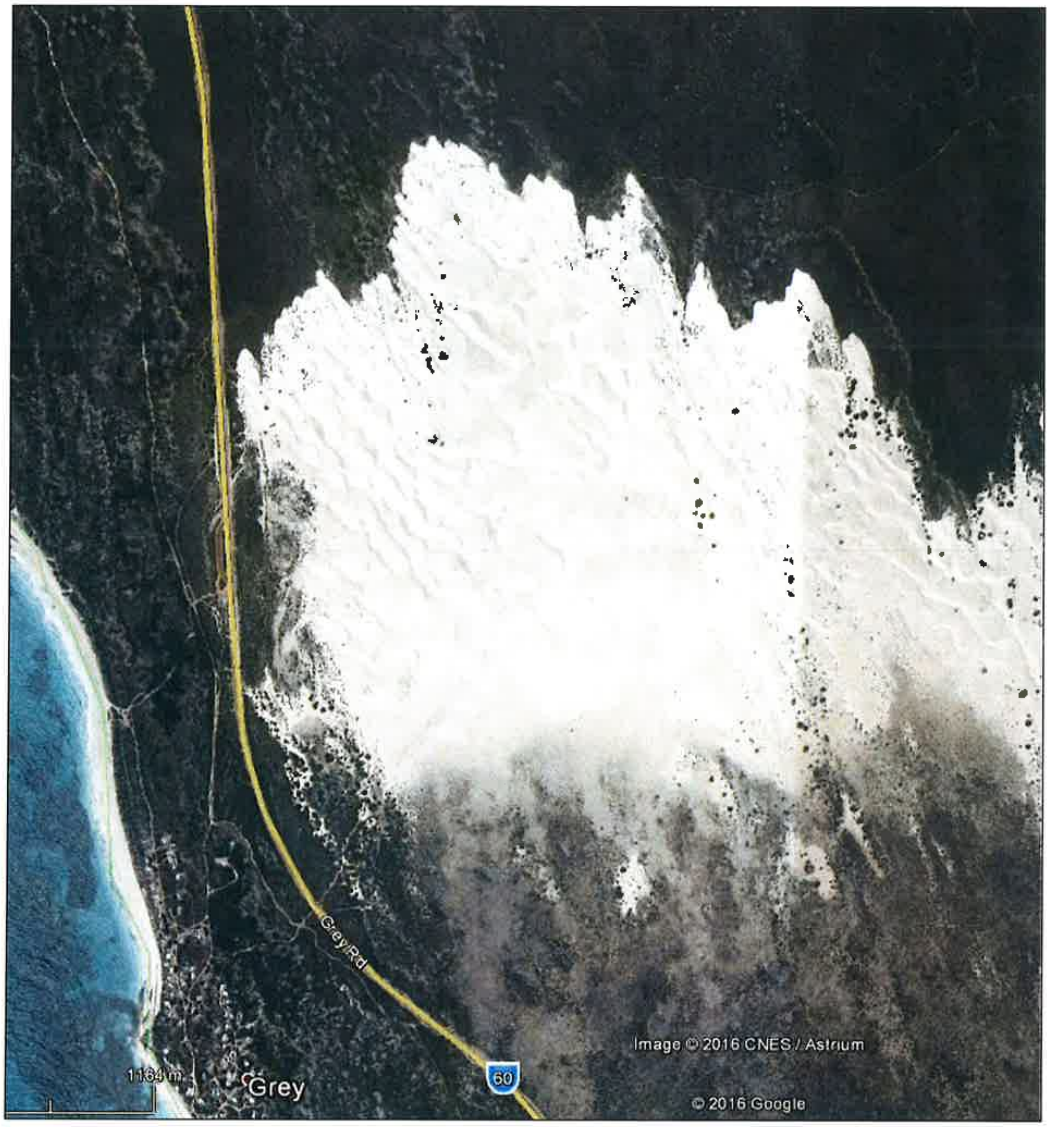


Figure 36. Grey Dune showing proximity to Indian Ocean Drive and general direction of migration towards the north-northwest. Note that western 350m width of the dune is heading towards intersecting the highway. Map data: Google, © 2015 CNES/Astrium.

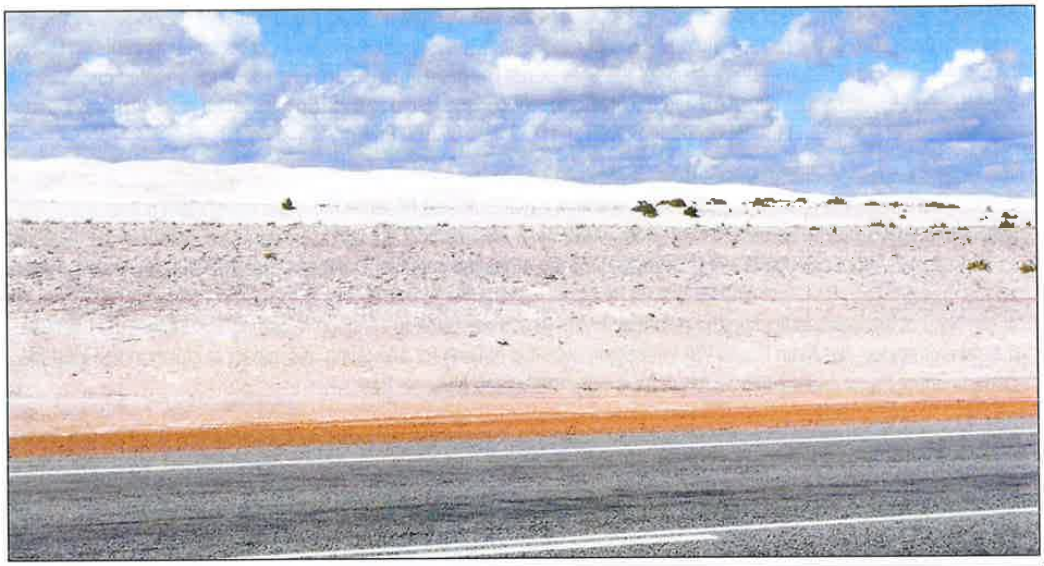


Figure 37. Hundred-metre-wide area from where Grey Dune sand was removed along its western margin prior to building of Indian Ocean Drive, August 2011.

Figure 38. Regrowth of vegetation adjacent to Grey Dune following reseeding and planting of tube stock. Similar to site shown in Figure above, but two years afterwards (August 2013).

Table 5. Suitable native plant species for seeding on the Grey Limesand Dune (360 Environmental, 2010).

Genus	Species
Acacia	cochlearis
Acacia	cyclops
Acacia	rostellifera
Allocasuarina	lehmanniana
Atriplex	cinerea
Atriplex	isatidea
Carpobrotus	virescens
Ficinia	nodosa

Genus	Species
Melaleuca	huegelii
Melaleuca	systena
Myoporum	insulare
Olearia	axillaris
Rhagodia	baccata
Scaevola	crassifolia
Spinifex	longifolius
Spyridium	globulosum

Wedge Island dunes

Three dunes are recognised, North, South and East (Figure 39). The western two are close to the coastal community of Wedge Island. All three dunes are migrating to the north-northwest and the eastern two have potential implications for roads.

Wedge Island North is migrating away from the nearby community at a velocity of 27m/year during the last study period (2001–10) and does not pose any threat. It is actually migrating towards the beach and will be contributing sand back onto the beach in the very near future.

Wedge Island South is the smallest of the three dunes with an area of 111ha in 2010 and a height of less than three metres. This is migrating towards the newly constructed Wedge Island access road and could intersect that in about 10 years at the latest velocity of 19m/year. However, it is now migrating into a well-vegetated swale that appears to have the potential to contain all the dune sand at a low level and it is considered that this may slow or stop the dune's migration.

Wedge Island East Dune is the largest dune included in the present study with an area of just over 1000ha, is 2100m wide and up to 11m high. Though it is migrating towards the Indian Ocean Drive, the dune will not intersect it for something like 80 years at the present rate of about 11m/year. It is of note that this dune is one of only three that maintained a consistent rate for each of the three periods studied. However, this is moving at an exceptionally slow speed for its area and this is inferred to be caused by the fact that the dune has been migrating up an incline from about 20m above sea level (ASL) to 110m ASL in its present location (Appendix D). However, from the present position to the Indian Ocean Drive the ground falls to about 45m ASL and consequently there is a possibility that its migration speed may accelerate and the impact on the highway may occur earlier rather than later.

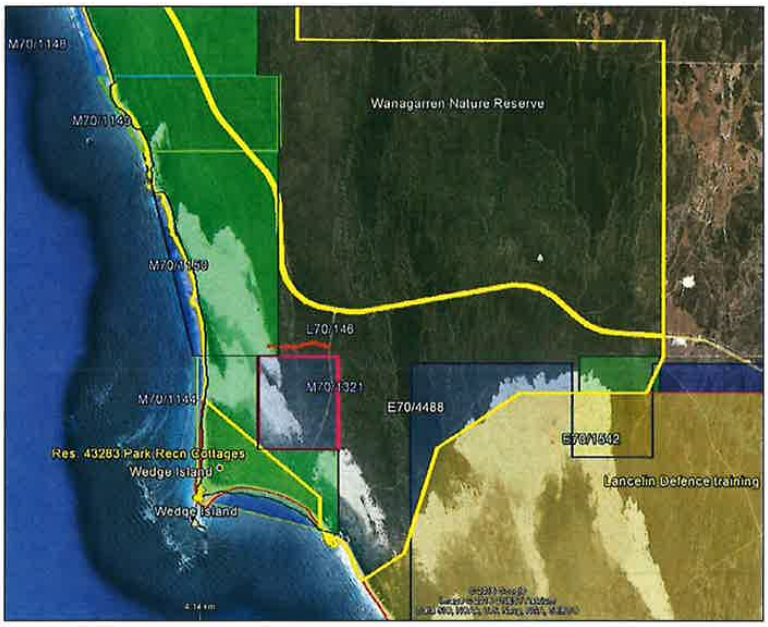


Figure 39. Wedge Island dunes showing North Dune (upper left), South Dune (in the middle) and East Dune (right-hand) dunes with Mining Act tenements.
Map data: Google, © 2014 CNES/Astrium.

These three dunes are in the Wanagarren Nature Reserve and the Minister for Environment must support any extraction of limesand from the mobile dunes. The East Dune is migrating out of land leased to the Commonwealth Government as part of the Lancelin Defence Training area.

Tenements have been applied for over all of the dunes for the purpose of extracting the limesand. The economically optimum solution to minimising future impacts of the geohazards would be to progress to granting of tenements and consent to extract limesand, particularly from Wedge Island East Dune.

It is recommended that the migration of East Dune be monitored because it would have a major impact on Indian Ocean Drive. The extraction and marketing of the limesand should be supported as a means of reducing future economic impacts on the road, which is a major tourist route.

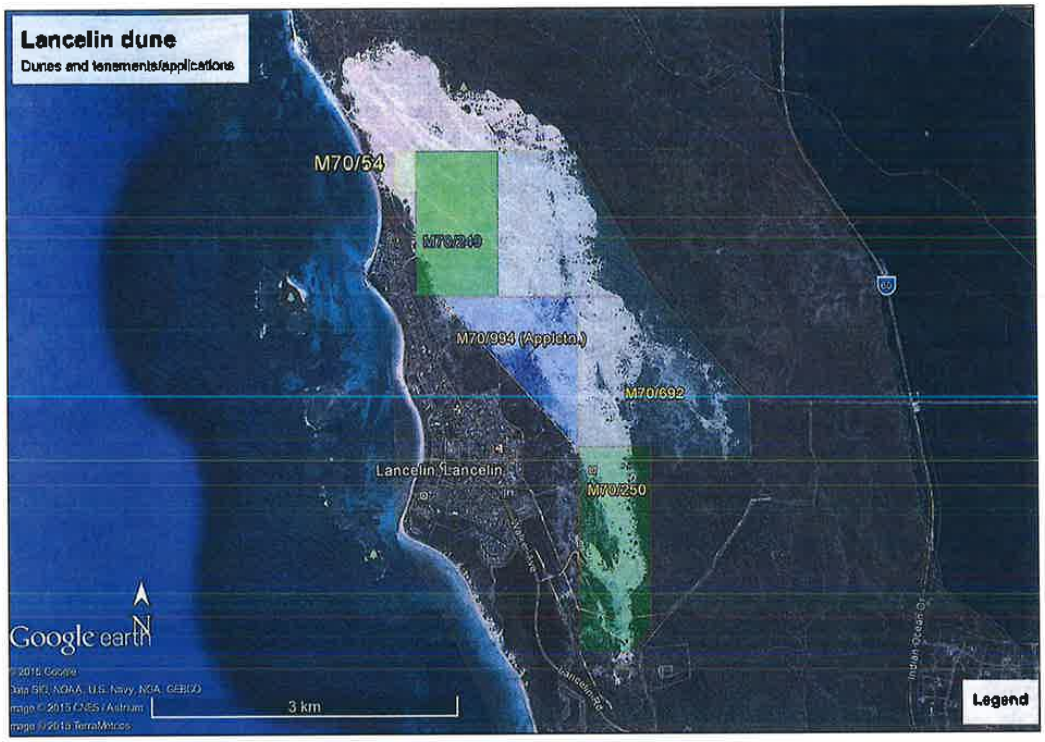


Figure 40. Mining tenements on Lancelin Dune. Note proximity of housing on south western margin of mobile dune. Current limesand extraction is mostly proceeding in the southern-most portion. Map data: Google, © 2015 CNES/Astrium.

Lancelin Dune

The Lancelin Dune (Figure 40), the southern-most dune in the study area, covers a very large area (nearly 700ha), is immediately east of the Lancelin townsite and is well-used for recreational purposes for driving four-wheel-drive motor vehicles, quad-bikes and motorcycles over the bare dunes. As such the community has expressed strong reservations about the ongoing mining of the limesand.

Lancelin Dune has complex morphology and strictly speaking the Lancelin Dune should be referred to as a dune sheet. However, for simplicity in this report it is termed a dune. It is migrating in a north-northwesterly direction. At the northern end it is encroaching onto the beach and the sand is being recycled back into the shoreline environment.

During the study periods, this dune has experienced a significant decrease in its migration rate and area, decreasing in speed from 37.9m/year to 6.1m/year between the first and last periods in the study with a corresponding area decrease of 393ha, representing a 36 per cent change from 1960 to 2010. This decrease has occurred especially on the southwest side mostly near to the extraction areas of limesand. This part of the dune is no longer considered a "mobile dune". The present extraction activities are located on both the body and limbs of the dune and due to this extraction, the dune limb is now located one kilometre further east than in 1960.

The sand is migrating parallel to the eastern edge of the townsite and within 160m of the nearest houses. Through the reduction in area, this dune no longer impacts on the settlement except when the easterly winds are blowing dust from the bare sand. At times of extreme dryness, such as in summer, dust from the dune could be a nuisance to some residents. Previously, the southern portion of the dune was migrating towards the eastern edge of the townsite, but mining in the southern portion appears to have removed this threat.

Possible solutions to resolve or reduce dune impacts

Increasing the roughness index of the surface can reduce the wind velocity, reduce its transport capability and in the best cases, stabilise the dune. Once colonising plants are able to grow on the sand dunes, a vegetation succession can start (Refer to Figures 37, 38 and 41). Natural dune vegetation occurring in the study area that can start the colonising process includes herbaceous plants such as *Cakile maritima*, Grey Saltbush *(Atriplex cinerea)*, Coast Saltbush *(Atriplex isatidea)* and the tussocky grass, Beach Spinifex *(Spinifex longifolius)*. Once the initial vegetation becomes established, particularly in the offshore slopes of the foredune, perennial woody vegetation grows, eg. Coastal Daisybush *(Olearia axillaris)*, Blueberry Tree *(Myoporum insulare)*, Summer-scented wattle *(Acacia rostellifera)*, and *Tetragonia decumbens* (Eliot, not dated; Western Australian Planning Commission 2010).

Sand extraction has had a positive effect on both the migration rate and area reduction of dunes in the study area. Lancelin has five active mining leases, some of which commenced operation in the 1980s. The migration of this dune used to be fast, but has now slowed and it is inferred part of this reduction has been caused by extraction of the limesand from the leases.

The Southgate Dune will also soon have major impacts on the town of Wandina as there are only 230m between the dune and the nearest houses. To prevent further migration of the dune, extraction must be continued, allowing industry to remove the sand. The Southgate Dune has an approximate volume of 33 million m^3 and between 2001 and 2010 was migrating at a rate of 12.7m/year. For the purpose of volume calculations, the dune was assessed as a rectangle (Figure 42) with an average height of 4m and width of 520m at the nose of the dune. Based on these calculations, to halt the nose of the dune progressing towards the town, approximately 26,000m^3 of sand needs to be removed annually.

Figure 41. Solutions to halt sand dune migration – mulch material (left-hand photo) as laid, and a vegetation succession commencing (right-hand photo) two years later.

While the dunes at White Point and Sandy Cape have decreased in area, they have increased in migration rate, particularly during the past 10 years. Fortunately, there are several mining tenements located on both dunes which appear to have reduced the area. However, the acceleration shows that the migration rate of these dunes is influenced by other factors such as wind and sediment supply as well as surface area.

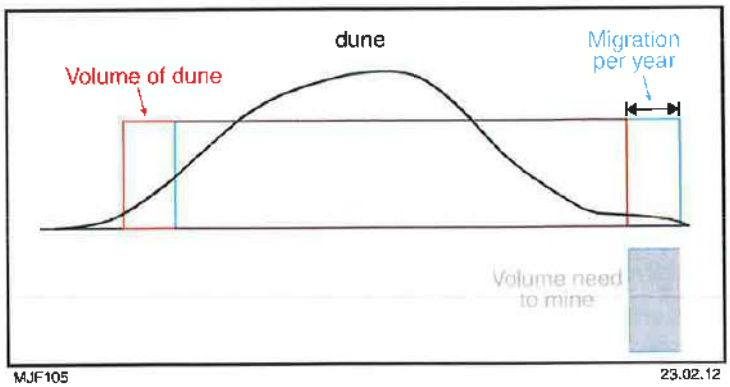


Figure 42. Simplified calculation for the volume which needs to be extracted each year to stop Southgate Dune migration

The limesand extraction has beneficial outcomes to reduce the dune areas and reduce migration speeds. It can also stop the dunes from impacting infrastructure, create local jobs, increase the availability of limesand for agricultural uses, ameliorate environmental impacts on farmland and it can also be used for road and other construction purposes.

The farmland soil in most parts of Western Australia is becoming increasingly acidic. To maintain farm productivity, this acidity must be neutralised by an alkaline material. Calcium carbonate in the form of crushed limestone or limesand is the preferred material. The dunes in the study area are dominantly limesand and are underlain by limestone which also constitutes the widespread relict vegetated dunes.

During the period 1995 to 2005 several attempts were made to compile a State Lime Supply Strategy by State Government authorities to provide guidance and leadership in relation to the availability of limesand and limestone in Western Australia in the face of conflicting issues of protection of native vegetation, especially in conservation lands. However, it is reported that through the complexities of the diverse geological occurrences, of the land tenure issues and of the lime usage regime, it became clear that the initial goal of a Statewide approach was not feasible.

A major component of the drive for the Lime Strategy was the inferred huge impact on the native vegetation on the coastal environments of the agriculture sector. Unfortunately, most of the limesand sites are situated in near-coastal conservation areas to which extraction could pose a threat to the natural vegetation. In addition, there is significant reluctance for freehold land owners to allow extraction, meaning that the industry is pushed onto Crown land (reserves and unallocated Crown land) to seek extraction sites.

This time also corresponded with production of the campaign "Time to Lime" by the Department of Agriculture and Food, designed to encourage farmers to add alkaline limesand to their acidifying soils. The campaign was an overall success and lime usage in agriculture has increased over the past 10 years.

The near-shore limesand contains minor but significant levels of common salt, (sodium chloride), derived from sea spray that can infiltrate the soil and ground water systems, elevating salinity. The quantity of limesand required for agricultural purposes is determined by the percentage of calcium carbonate. As limesand has different neutralising values, the higher the percentage of calcium carbonate in the limesand, the less volume is required for the same pH change in the soil (Environmental Protection Authority 2007). The salt content is not normally considered but needs to be identified as a potential issue if the lime addition rates rise.

Conclusions

The mobile sand dunes in the study area consist of fragmented biogenic material such as bryozoa, mollusc, foraminifer and calcareous algae that originated offshore. The organic lime material is pulverised to sand-sized particles by wave action, transported to the shore, built up on the beach and into foredunes, from where it can be blown as dunes inland. Former terrestrial sand dunes that became cemented into limestone have been submerged through subsequent transgressions and have formed a series of offshore reefs located 2-10km west of the present shoreline. These have become additional sources of limesand through submarine erosion.

The sheltered location created by the reef produced a micro-tidal range and low wave-energy environment that has helped in the development of the sandy beaches. The beach sand is blown to form frontal dunes which, over time, become colonised with vegetation and the dunes then become stabilised. However, natural processes, including fires and drought, and more recently human activity and animal grazing, have all contributed to the subsequent removal of any foredune vegetation cover. Bare sand surfaces allow for the potential destabilisation of the foredune and any adjacent shore-parallel dune ridges that may have developed. Strong onshore winds are then able to erode gaps in the dune ridges and cause blowouts which then migrate as mobile parabolic dunes.

The morphology of a coastal sand dune is influenced by the wind, vegetation and the shape, outline and overall morphology and nature of the coast itself.

Parabolic dunes initiated by blowouts occur when the crest of the dune advances rapidly while the limbs are held back by vegetation, resulting in the trailing arms becoming longer during the migration of the dune. In situations where the vegetation cover over trailing arms is removed, extensive transgressive sand sheets such as Cape Burney-Southgate, Wedge Island East and Lancelin develop.

The wind along the west coast of Australia – the dominant factor governing dune migration – is controlled by competing, large scale, seasonal weather systems. Within the study area, all dunes are migrating northerly rather than inland to the east due to the strong shore-parallel southerly winds. Variation in the trend of the coastline and the wind regime results in the migration directions (Figure 13) of the dunes varying in such a way that the southern-most dunes are migrating north-northwesterly, dunes in the central part of the study area migrate mainly northerly to north-northeasterly, and the most northerly dunes are moving northerly to north-northwesterly.

The strong southerly sea breeze has wind velocities of 20-40km/h and occurs mostly in summer between 2pm and 8pm. Precipitation is lower in summer than winter and temperatures are higher. Therefore, the prime mobilisation period of dunes is mainly in summer. The analysis conducted in this study indicates that the highest migration period was during Period 3 (2001–10) which had lower precipitation levels than Period 2 (1982–2001) and Period 1 (1960–82). It is noticeable that there were two years of abnormally high temperatures in 2003 and 2006 which are correlated with two strong El Nino events in Period 3 when migration rates in general were high.

The correlation between the migration rate and the size of the dune demonstrates that the larger the dune, the faster they migrate. During the past 50 years, the dunes decreased in size with some shrinking over 60 per cent, eg. Cape Burney and Dongara East. Within the study area only the Illawong and Green Head South dunes increased in size. Illawong increased by 11 per cent which was due to the availability of a strong sediment supply. In comparison, Green Head South only increased by 3 per cent. However, this dune, which is now severed from its beach sand supply, no longer has a connection with a beach sediment supply to account for this increase.

Stabilisation of the mobile dunes is extremely important to prevent the dunes becoming geohazards. The dune migration in this study area is a slow and pervasive geomorphologic event which will cause major material and socio-economic damage. As such, mitigating the migration impacts by introducing vegetation cover or extraction and marketing of limesand should be a high priority for all the dunes that are or have potential to become a geohazard over the next few years.

Prime threats to infrastructure occur at the following sites:

- Kailis Drive, which is currently in the migration path of the Dongara West Dune
- The recently opened Indian Ocean Drive which the Grey Dune is approaching
- The very popular scenic tourist route north of the Green Head town, only 42m from the closest dune which has been calculated as migrating at a rate of 17.1m per year

It is recommended that the migration of the mobile sand dunes in the study area be addressed, including assessment of options to prevent the development of future geohazards caused by additional mobile sand dunes commencing from the parallel dune ridges.

To slow the migration of mobile sand dunes, the roughness density needs to be increased. This will decrease the wind speed and therefore the saltation flux. Methods to increase the roughness density include the construction of fences across the path of the prevailing wind, planting local vegetation in a checkerboard pattern and covering the surface of the dune with wood chips, pruning material and straw which need to be crimped to the surface. Government has already taken steps to stop part of Grey Dune from impacting the Indian Ocean Drive by removing limesand adjacent to the highway and covering the surface with stockpiled topsoil and mulch material to allow plants to grow on the remaining sand and ultimately create a vegetation succession (although future impacts in a new part of the highway are predicted). It is hoped that the vegetation cover will stabilise the dune, resulting in the prevention of accidents, delays and economic loss caused by the mobile sand dune adjacent to the treated area.

Mining leases in the study area can play an important role in halting mobile sand dunes where extraction is undertaken. The mechanical excavation of the limesand can reduce the size of the dune, remove sand ahead of the dune and can cut dunes off from sediment supply. The extracted limesand can then be used for road construction and for neutralising acidic soil in the agricultural farmlands of the wheatbelt. However, it is important that only limesand with a high percentage of calcium carbonate can be used in agriculture soil neutralisation because of increased costs from transporting larger quantities of lower grade limesand. Additionally, any increase in the salt levels of modern limesand from the nearshore environment can negatively impact the groundwater underlying farmlands.

While various methods can be implemented to halt and slow down the migration of mobile sand dunes, it is more important to prevent the development of geohazardous mobile dunes in the first place by educating people about the potential geohazards. This increased awareness should have a decisive impact on how mobile sand dunes and potentially mobile dunes are handled and treated in the future. It is also important that parallel beach ridges be protected by the use of signage, artificial walkways and the prohibition of driving vehicles within the threatened dunes. These safety measures will decrease the destruction of the vegetation cover which will in turn prevent blowouts. Without blowouts the sediments will stay on the beach and cannot easily form a mobile sand dune.

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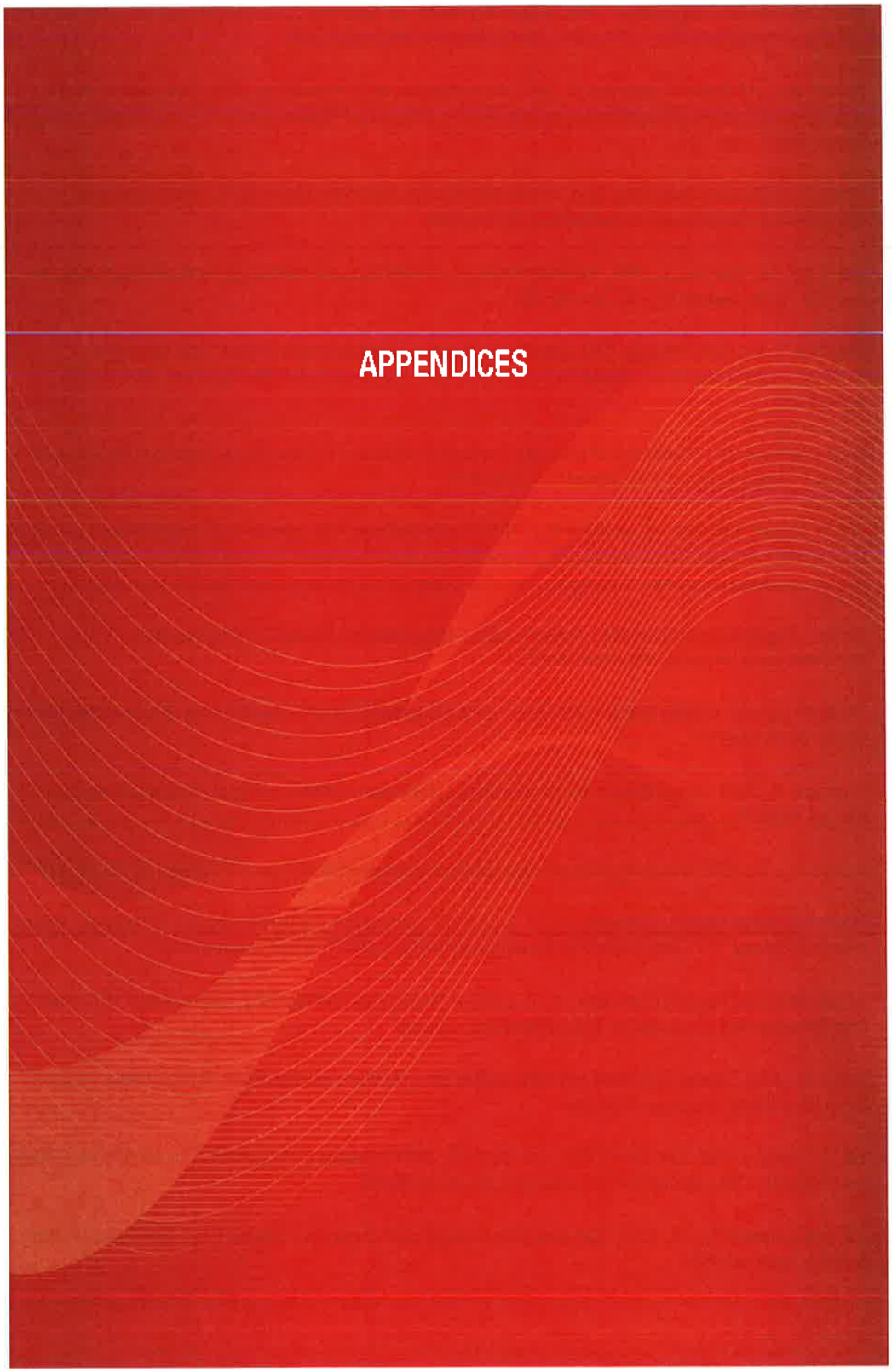
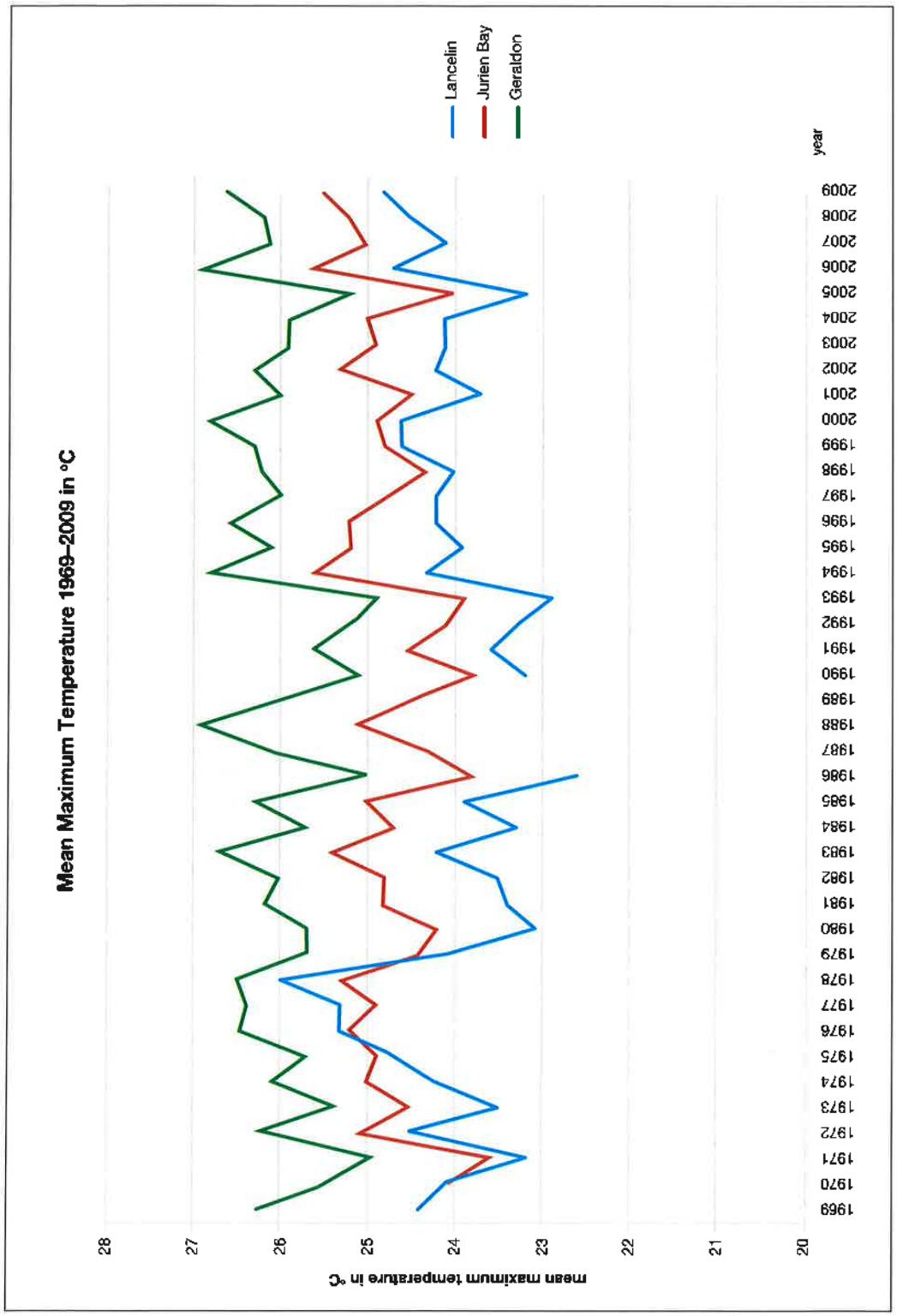

APPENDICES

APPENDIX A. Temperature data from 1969–2009



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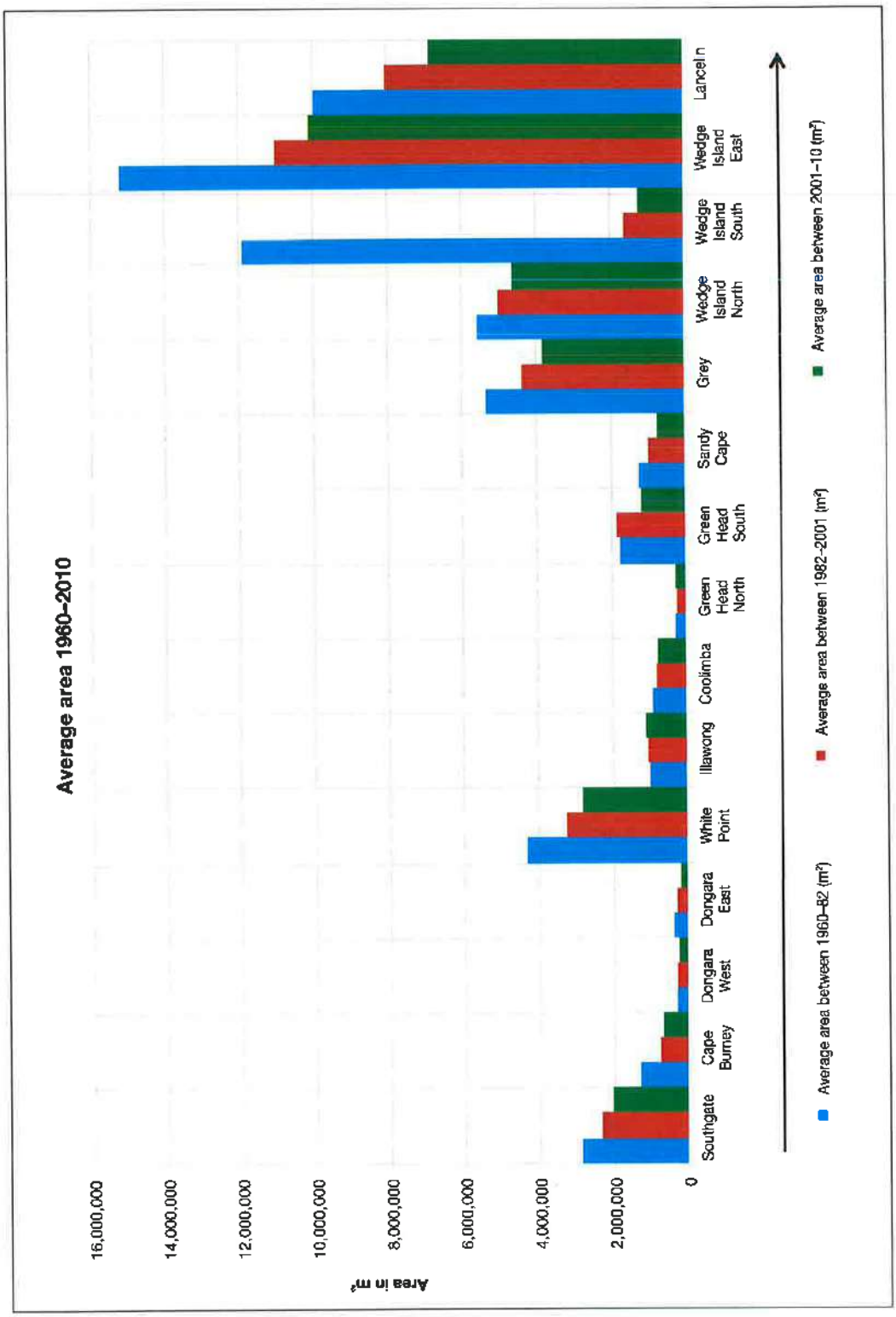
APPENDIX B. Average areas of dunes in three measured periods



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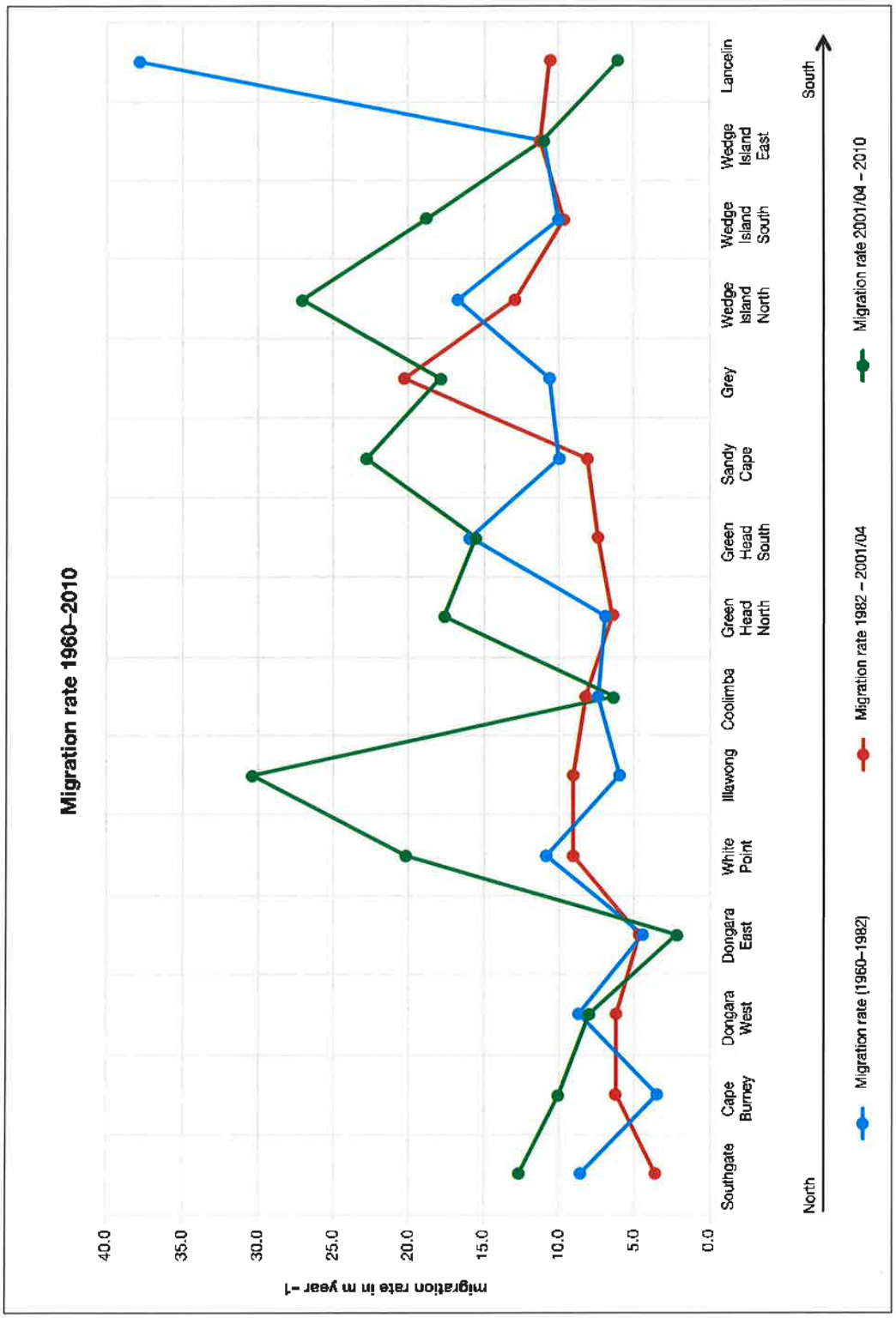
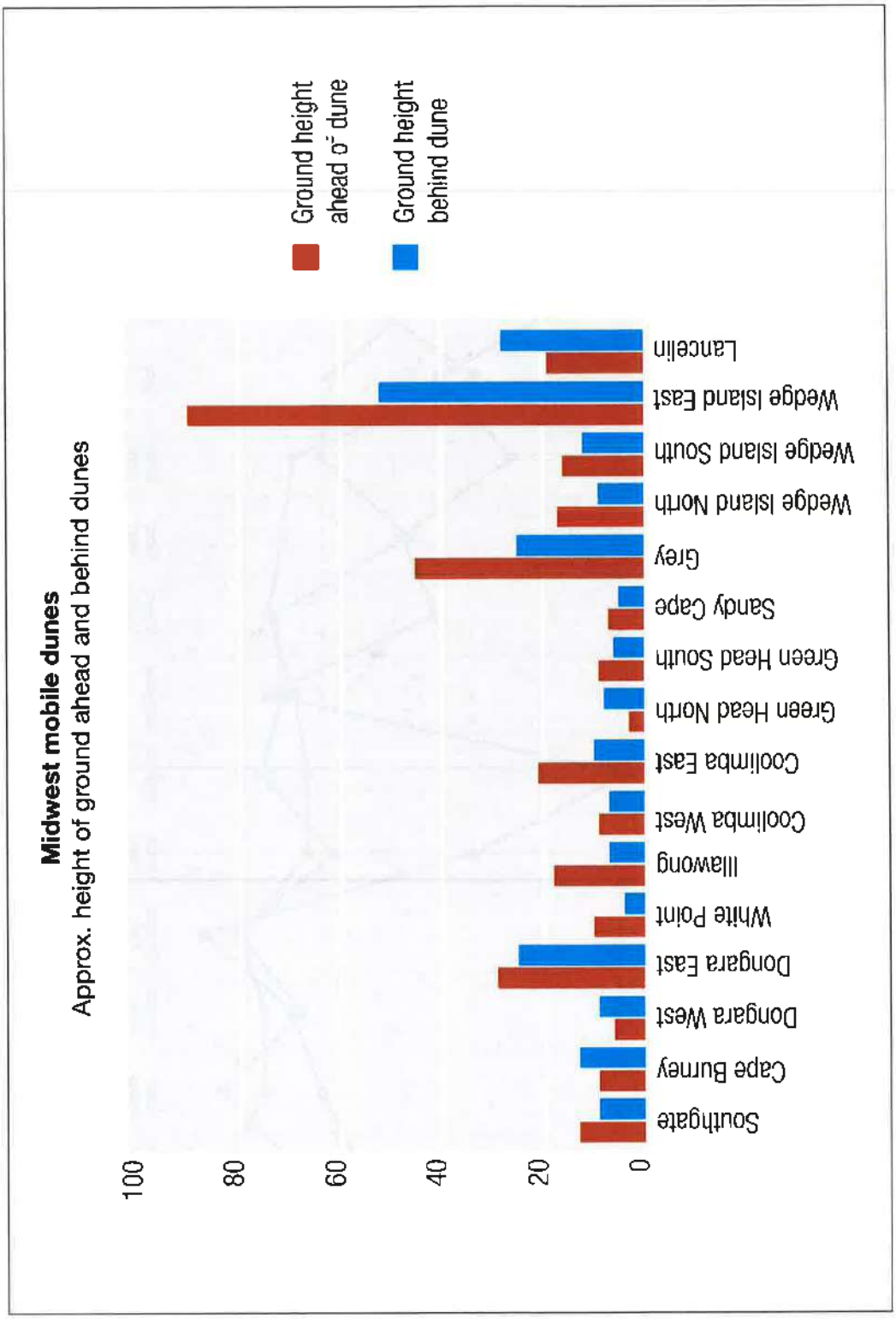
APPENDIX C. Migration rate 1960–2010



APPENDIX D. Graph showing relative heights of dunes ahead and behind each.
Note the Wedge Island East is anomalous



APPENDIX E. Sand areas and volume estimates on tenements related to dunes. Tenement data as at 6/10/2016

Dunes	Area (m^2)	Volume (m^3)	Migration rate (m year-1)	Tenements*[8]	Status of tenement (#)	Holder/Applicant
Southgate	1 937 807	35 410 078	6.8	See footnote [9]	–	–
Cape Burney	600 049	17 953 634	5.4	–	–	–
Dongara West	202 239	1 496 578	7.7	M70/311	Live (25/7/1988)	Cockburn Cement Ltd
				M70/1271	Live (10/12/2015)	Westdeen Holdings Pty Ltd
				E70/355	Live (24/7/1987)	Cockburn Cement Ltd
				E70/4634	Pending (7/10/2014)	Bulkwest Pty Ltd
Dongara East	137 087	4 218 115	4.1	See footnote [9]	–	–
				M70/1343	Pending (20/7/2015)	Ian West
White Point	2 548 702	15 923 192	11.9	M70/642	Live (10/6/1996)	Cockburn Cement Ltd
				M70/711	Live (26/5/1992)	Cockburn Cement Ltd
				E70/1721	Pending (5/8/1996)	Cockburn Cement Ltd
Illawong	1 119 343	8 566 898	9.4	E70/2221	Pending (8/7/1999)	Goldgate Holdings Pty Ltd
Coolimba	714 217	4 472 435	7.7	M70/1357	Pending (9/9/2016)	Minawaha Farms Pty Ltd
				M70/932	Live (26/11/1997)	Minawaha Farms Pty Ltd
Green Head North	286 532	1 353 573	8.5	P70/1468	Live (9/2/2007)	Minawaha Farms Pty Ltd
Green Head South	1 743 305	13 061 003	12.5	M70/782	Live (4/2/1997)	Minawaha Farms Pty Ltd
				M70/1066	Live (9/8/2013)	Westdeen Holdings Pty Ltd
				M70/1667	Pending (7/11/2014)	Westdeen Holdings Pty Ltd
Sandy Cape	714 878	3 396 742	11.3	–	–	–
Grey	3 783 873	147 723 565	15.7	–	–	–
Wedge Island North	4 632 569	34 250 703	15.8	M70/1321	Pending (2/1/2014)	Mineral Sand Mining and Development Pty Ltd
				M70/1150	Pending (3/6/2003)	Mineral Sand Mining and Development Pty Ltd
				M70/1144	Pending (5/5/2003)	Mineral Sand Mining and Development Pty. Ltd
Wedge Island South	1 132 415	16 016 247	10.6	M70/1144	Pending (5/5/2003)	Mineral Sand Mining and Development Pty. Ltd
Wedge Island East	10 058 170	832 504 959	11.2	E70/1542	Live (23/12/2010)	Enmic Pty Ltd
				E70/4488	Pending (12/4/2013)	Mineral Sand Mining and Development Pty. Ltd
Lancelin	6 744 495	100 392 703	22.8	M70/54	Live (28/11/1983)	Lavar Pty Ltd
				M70/249	Live (7/10/1986)	Westdeen Holdings Pty Ltd
				M70/250	Live (20/10/1986)	Westdeen Holdings Pty Ltd
				M 70/692	Live (29/10/1991)	Westdeen Holdings Pty Ltd
				M 70/994	Pending (15/10/1997)	Enmic Pty Ltd

[8] *M = Mining Lease *E = Exploration License *P = Prospecting License # Date of application for pending tenement or of grant for live tenement

[9] Note. Part is on freehold land and therefore extraction is proceeding by authority of Local Government Authority

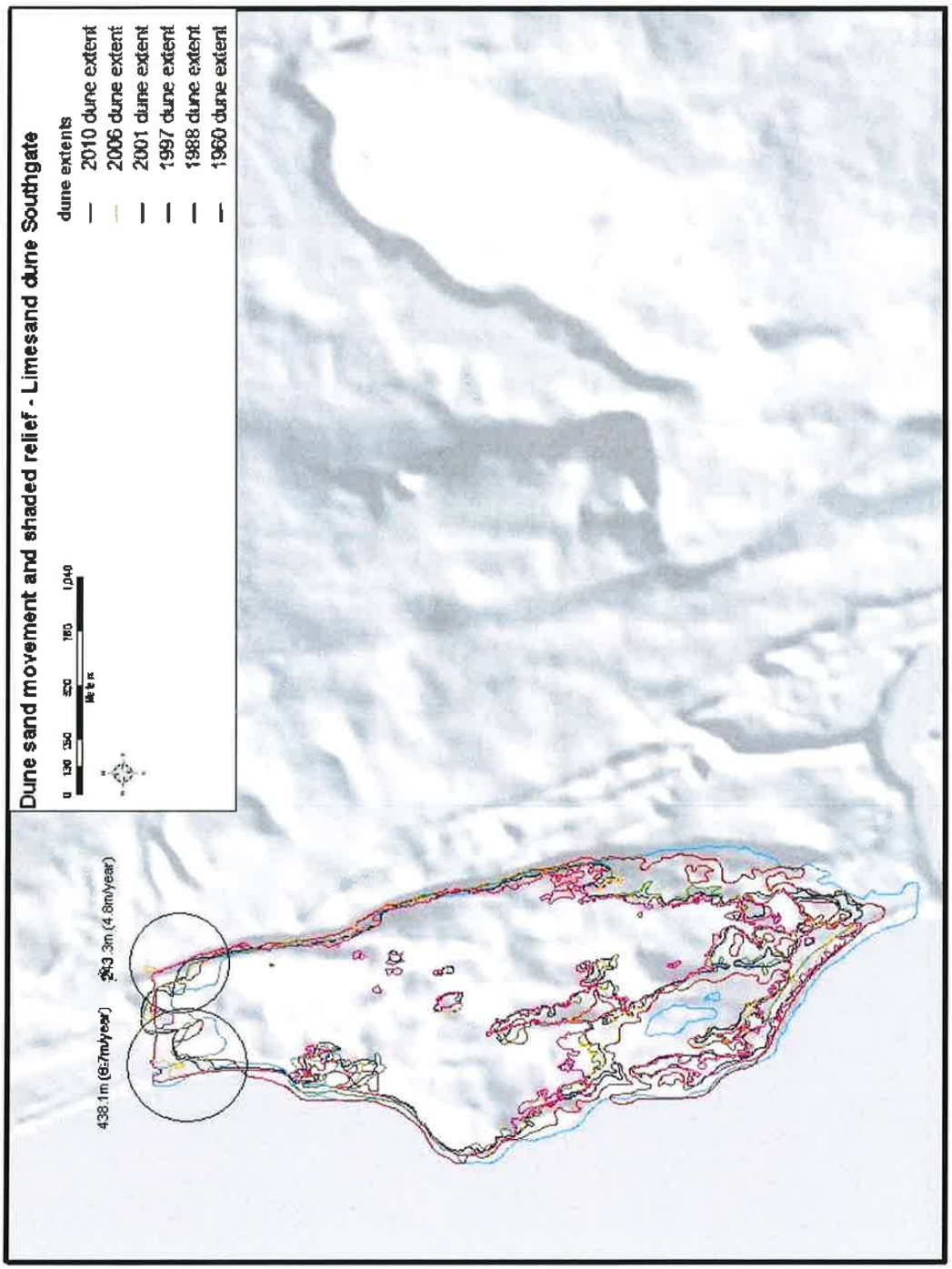
APPENDIX F.

Dune areas analysed in study showing boundaries of areas used for calculation and geomorphology of each dune and surroundings

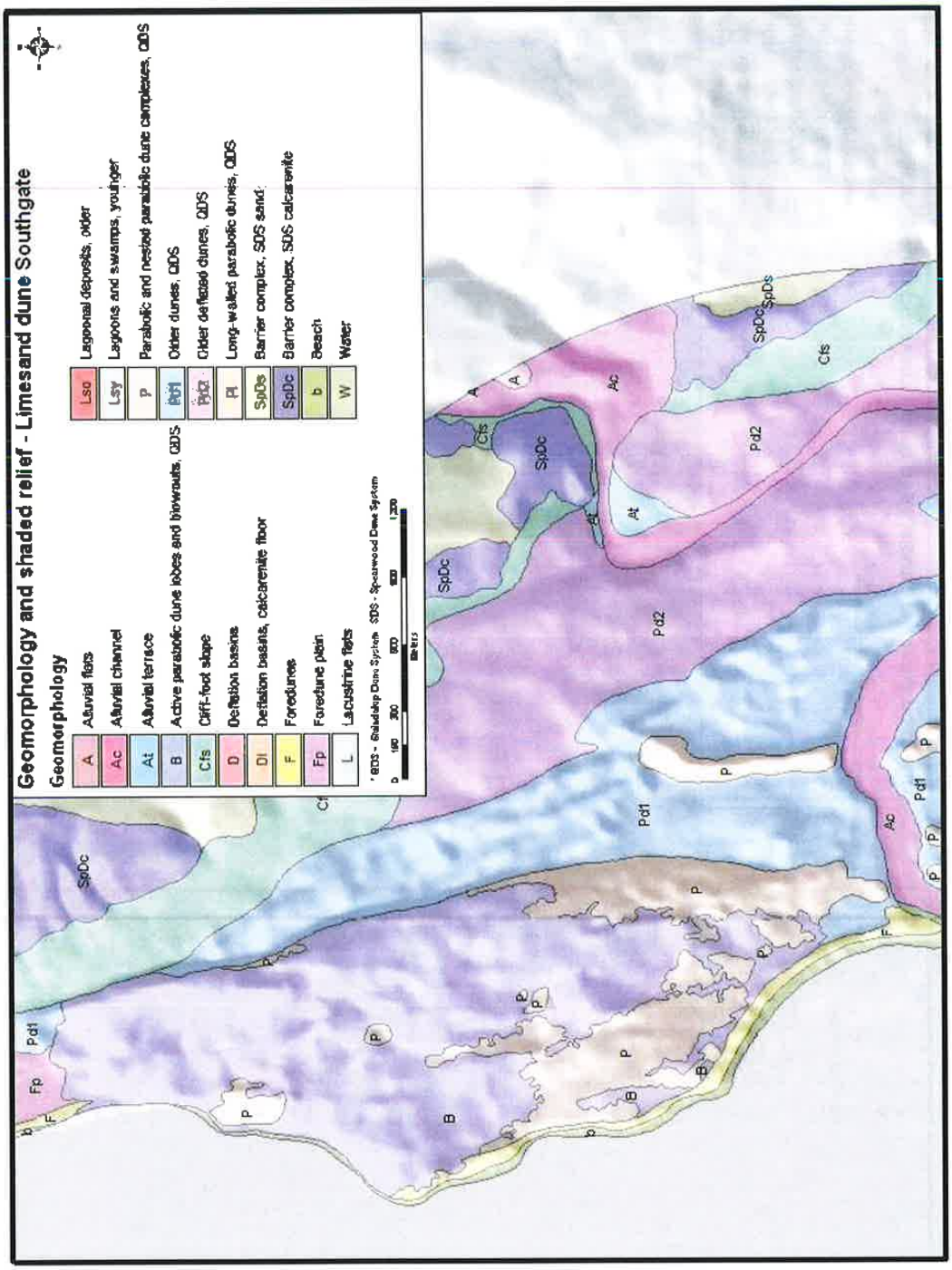
NOTES

1. The circles on the mobile sand dunes show sites of measurements.
2. The movement of the dune heads within each circle defines the direction of movement; and
3. They are listed in sequence from north to south in the study area.

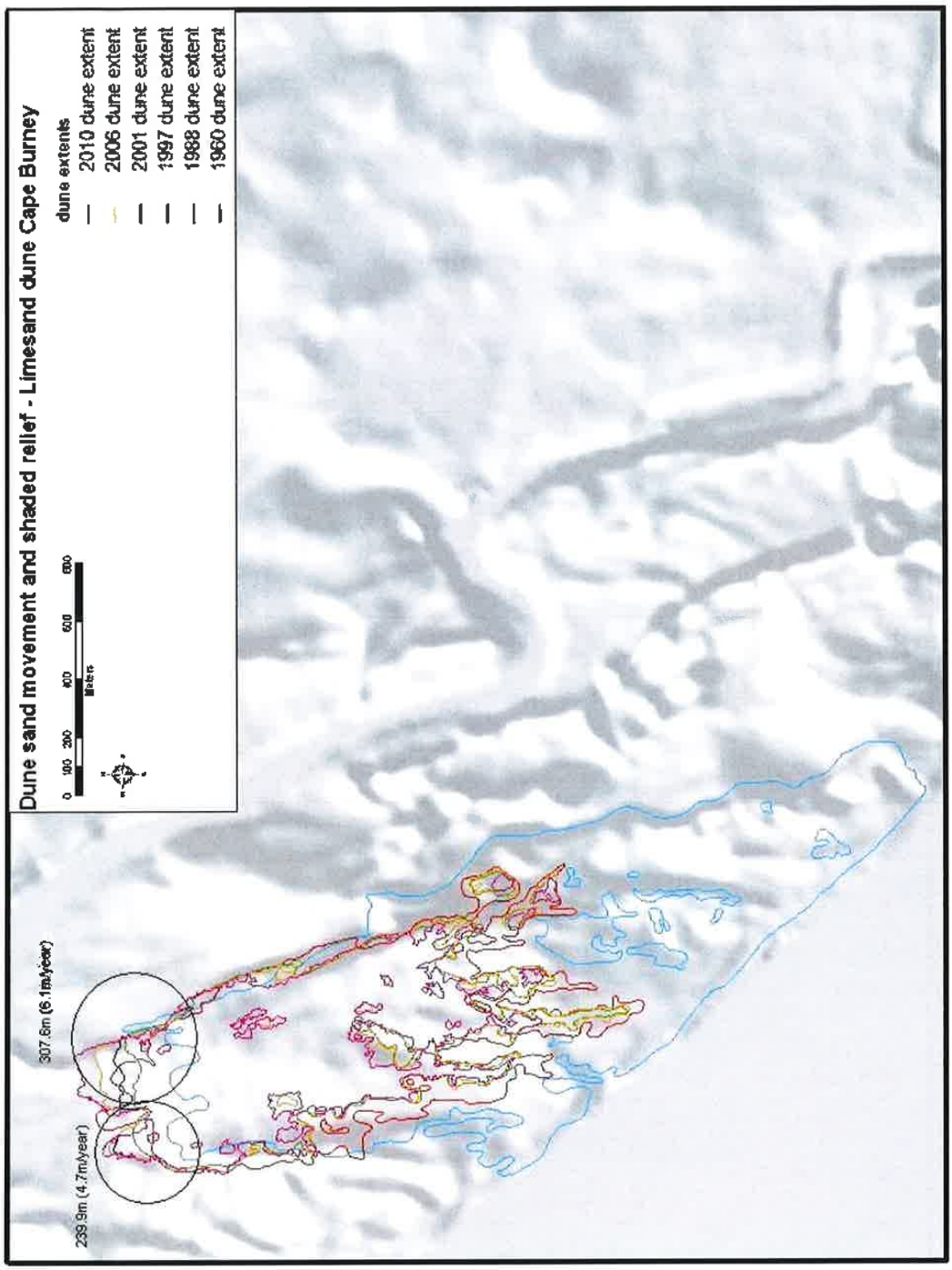
Limesand dune Southgate – Migration



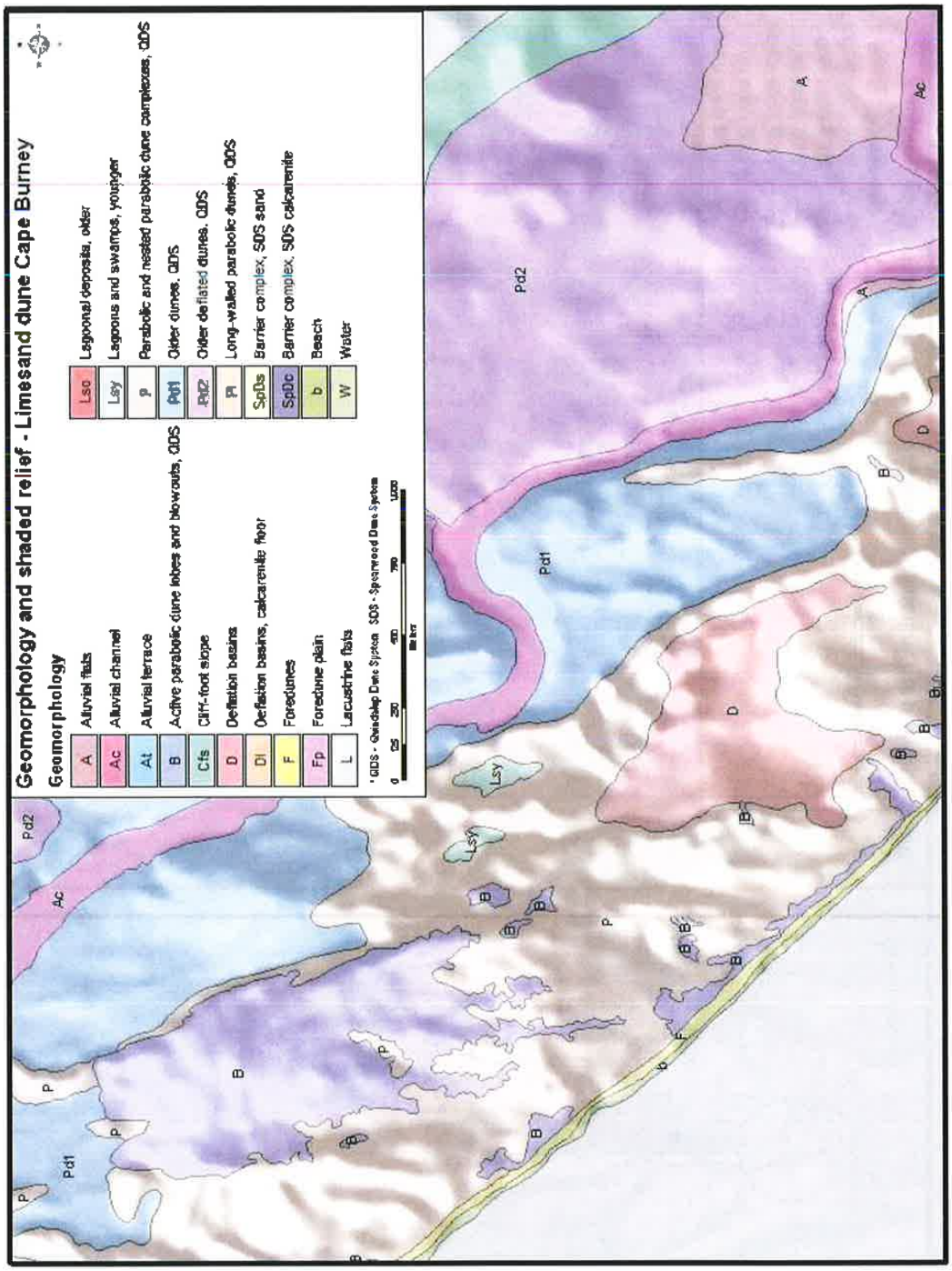
Limesand dune Southgate – Geomorphology



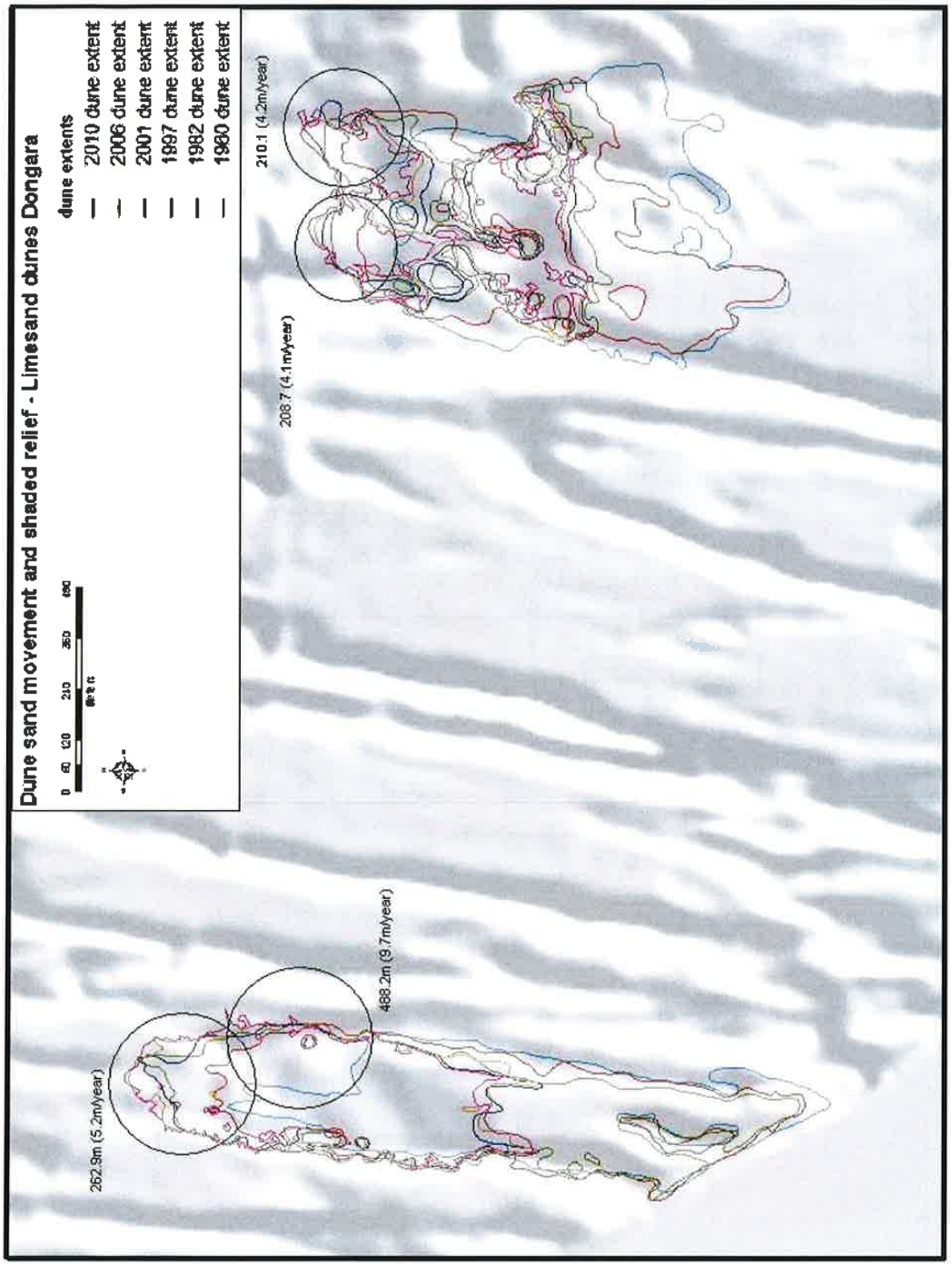
Limesand dune Cape Burney – Migration



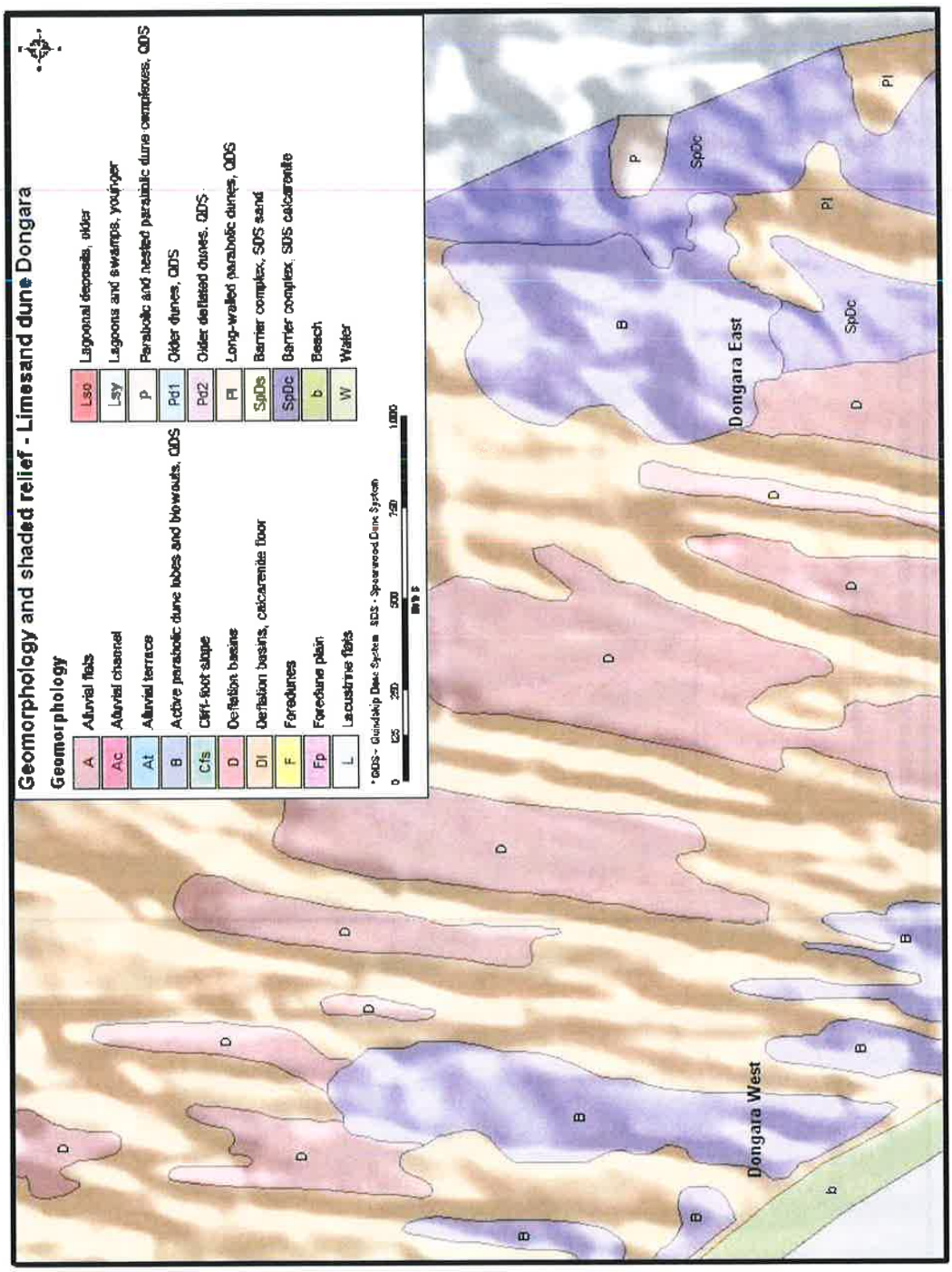
Limesand dunes Cape Burney – Geomorphology



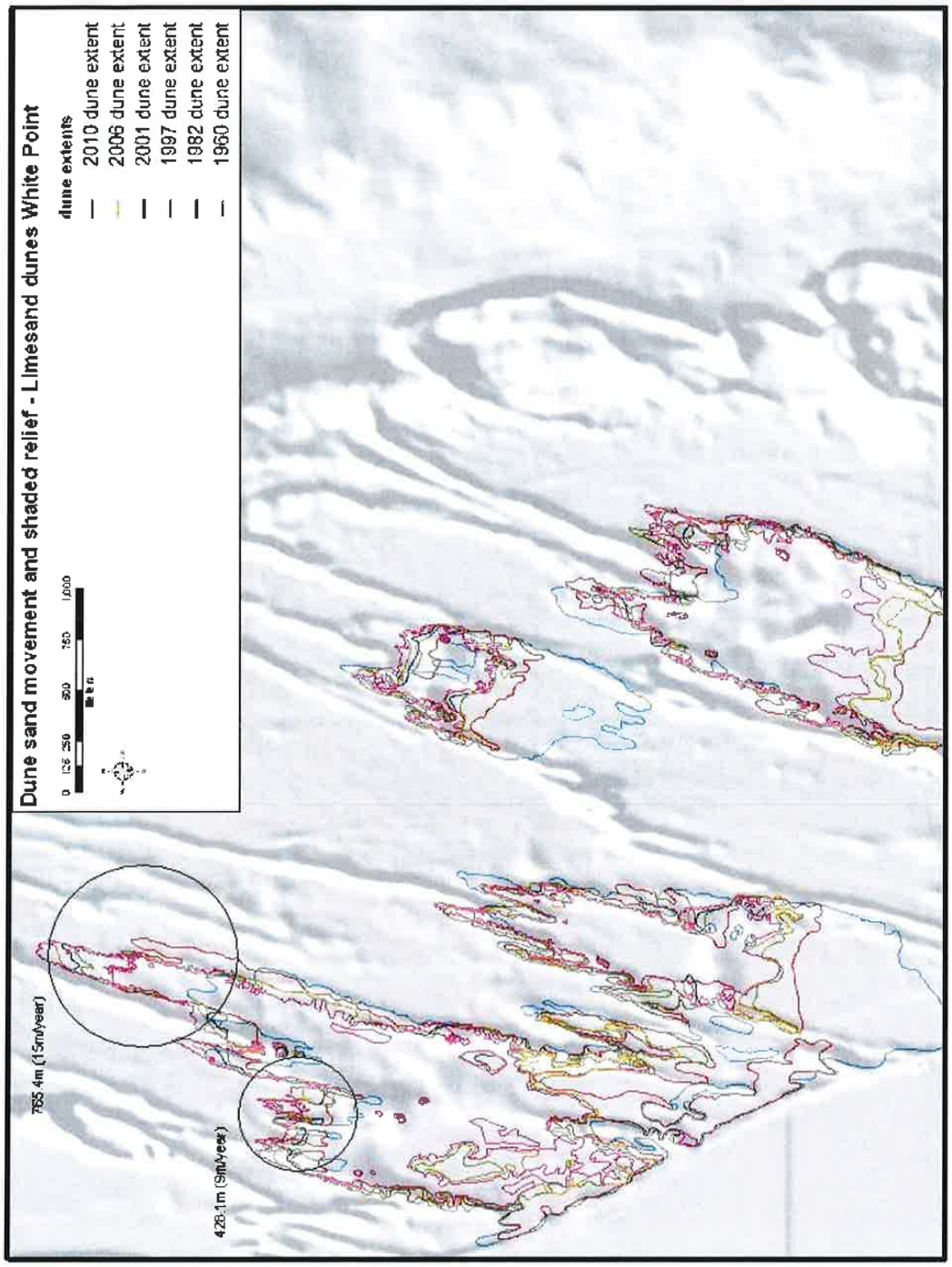
Limesand dunes Dongara – Migration



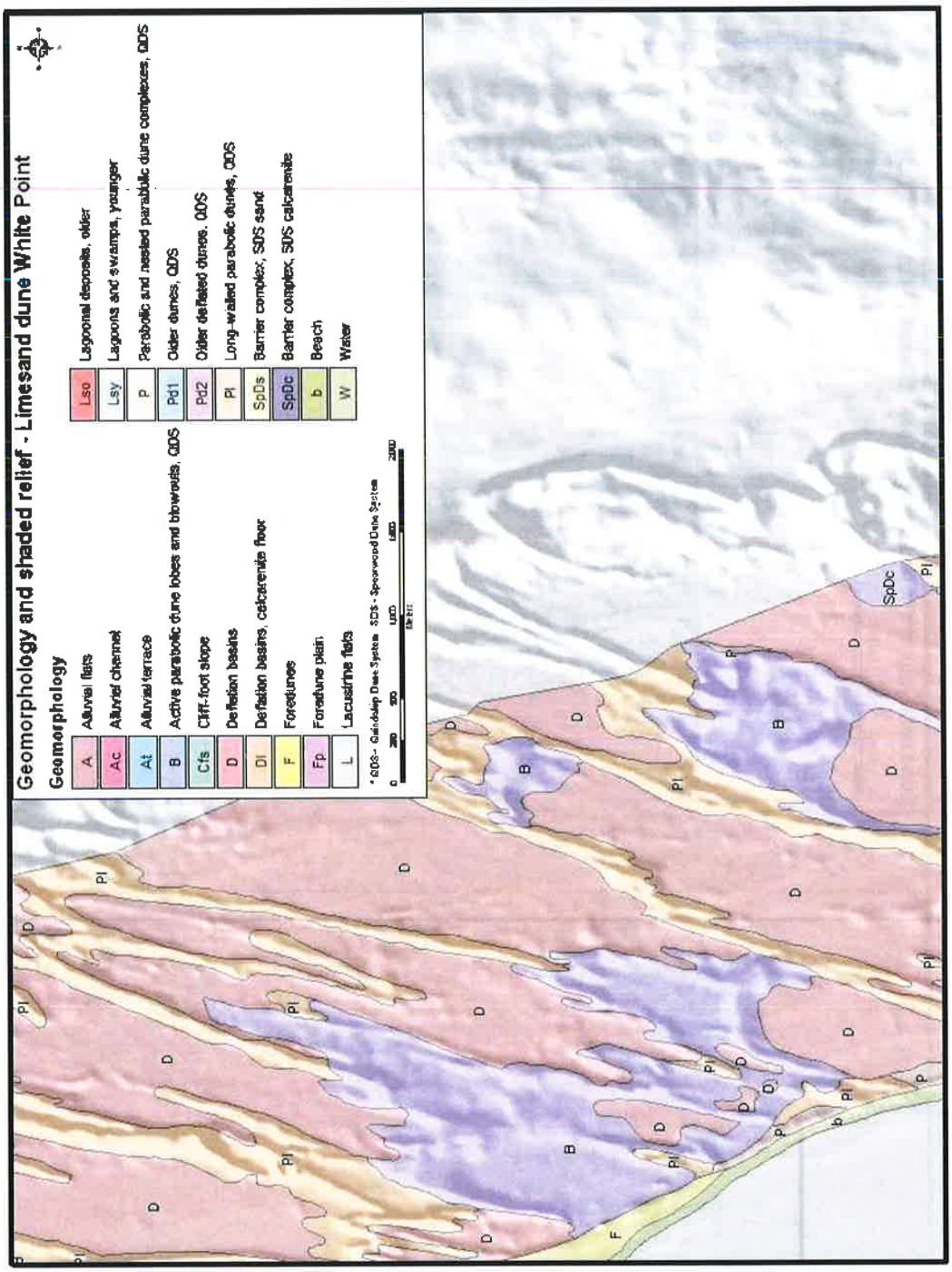
Limesand dunes Dongara – Geomorphology



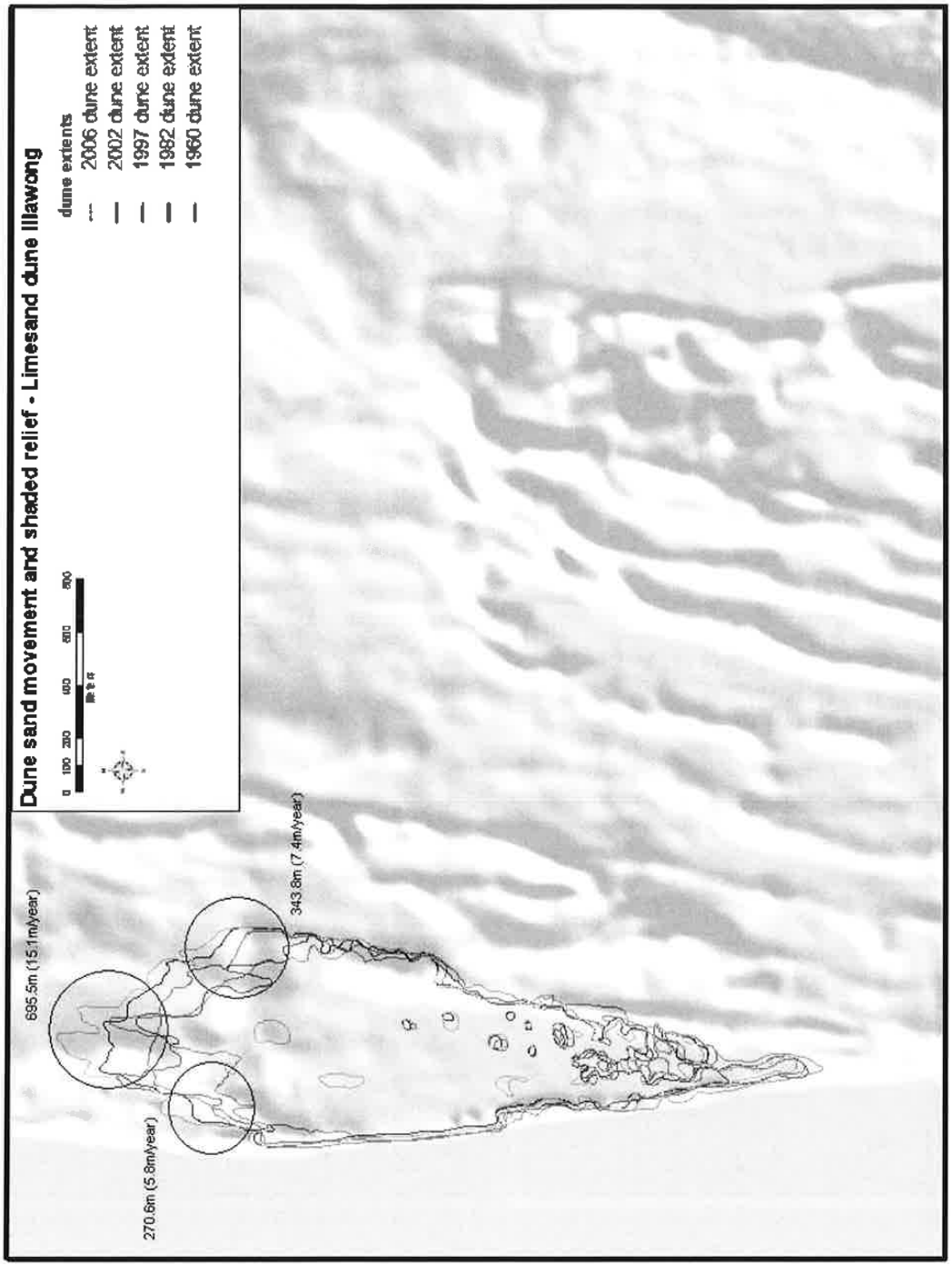
Limesand dunes White Point – Migration



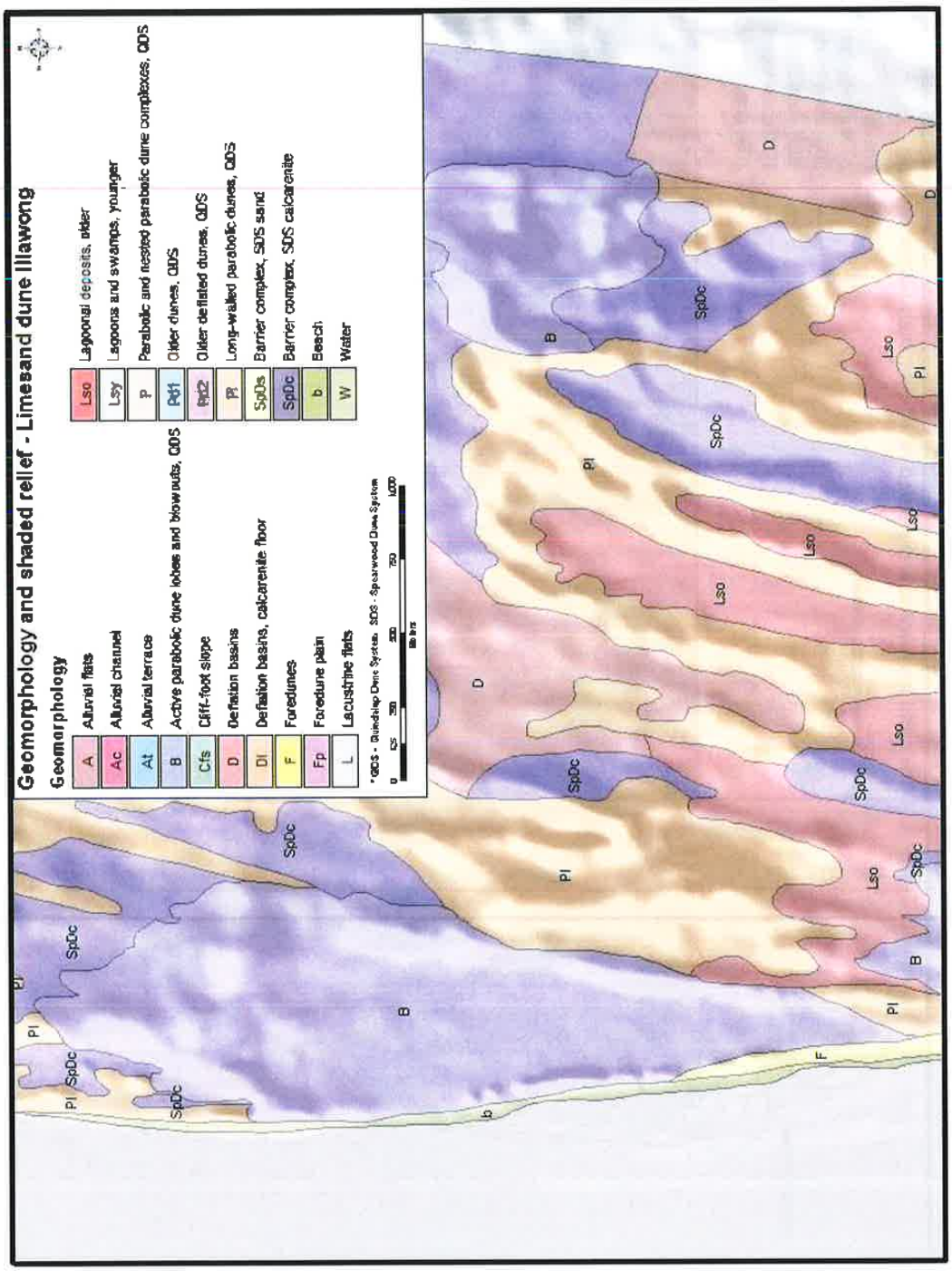
Limesand dunes White Point – Geomorphology



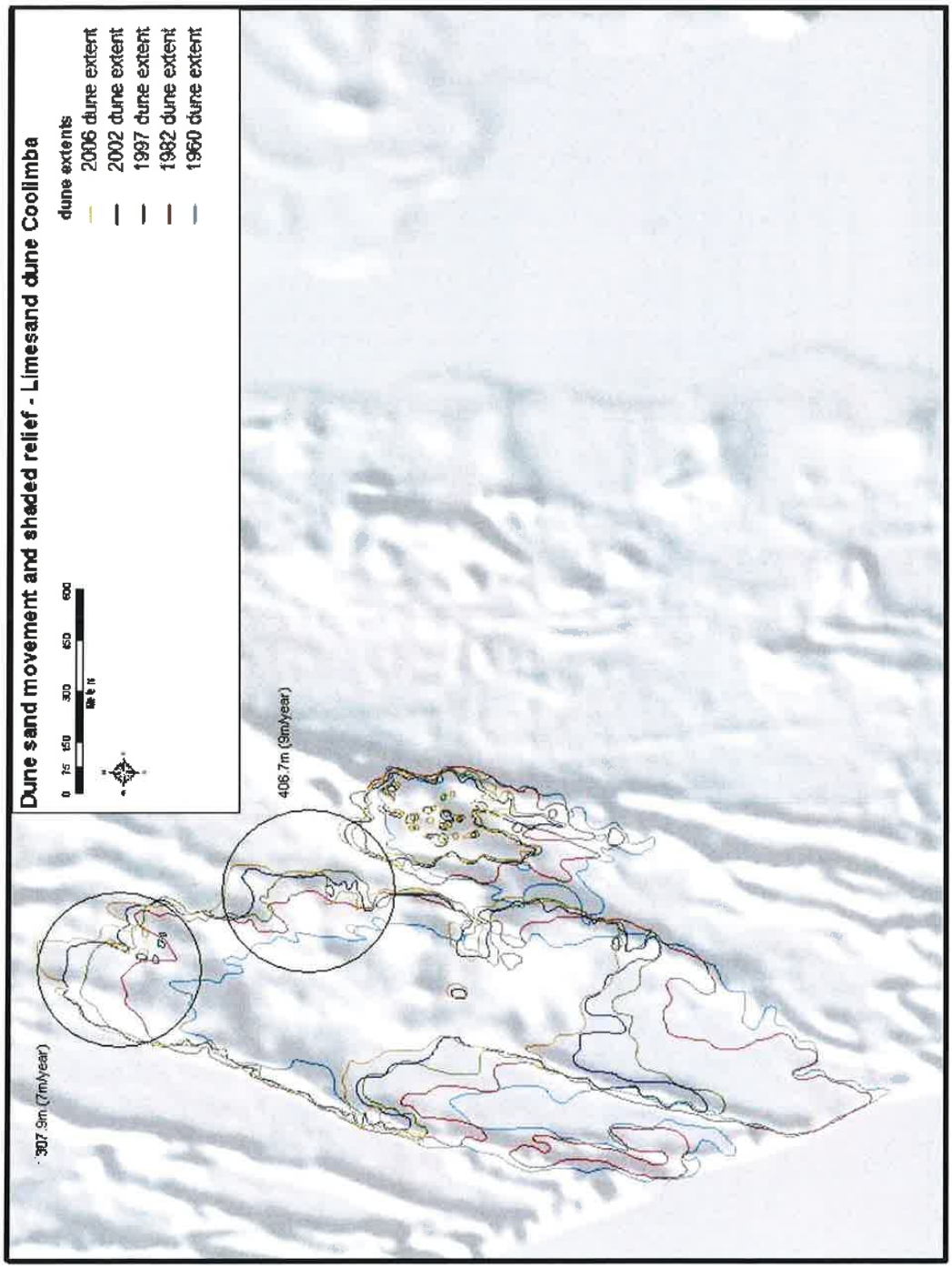
Limesand dune Illawong – Migration



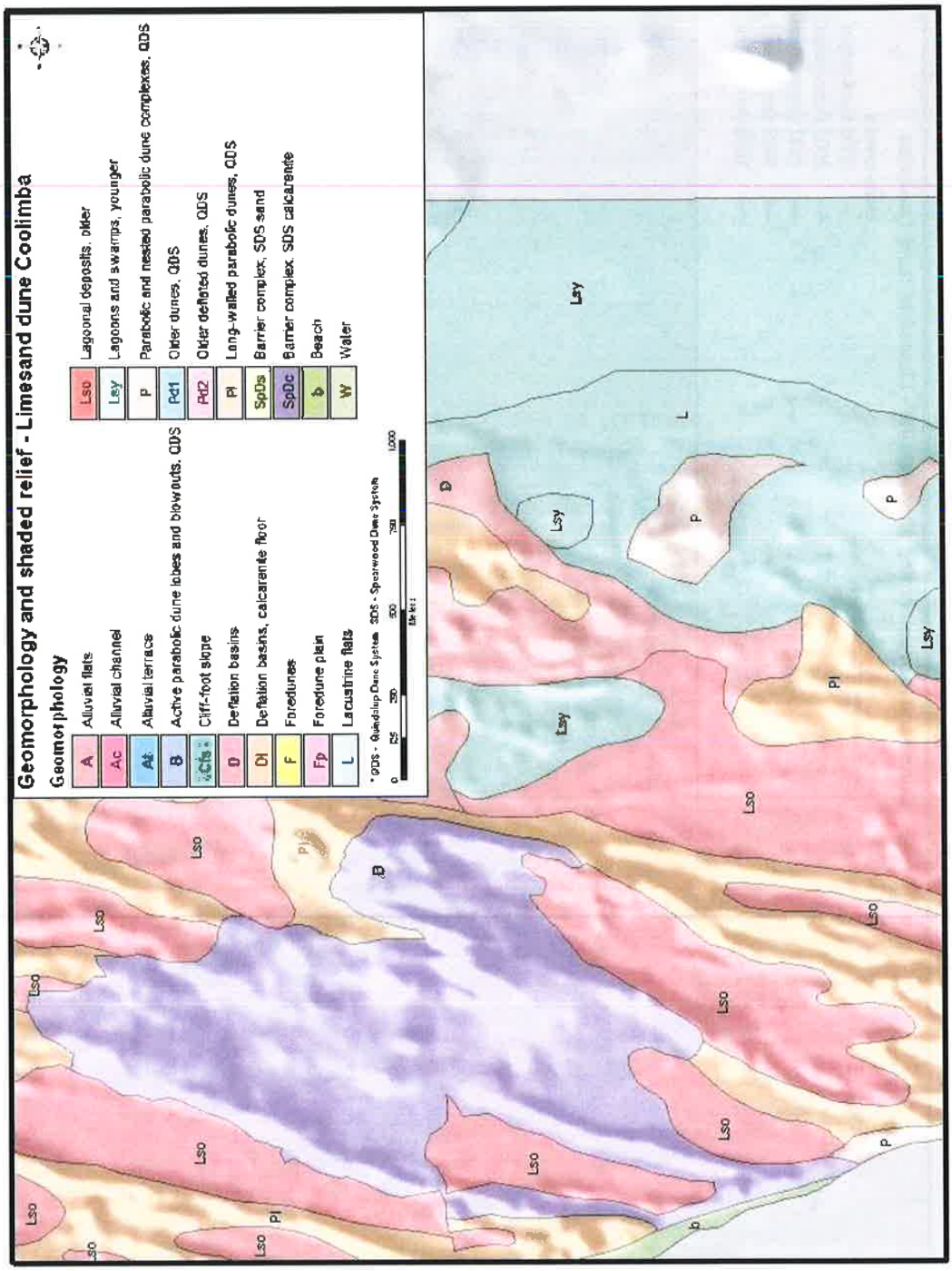
Limesand dune Illawong – Geomorphology



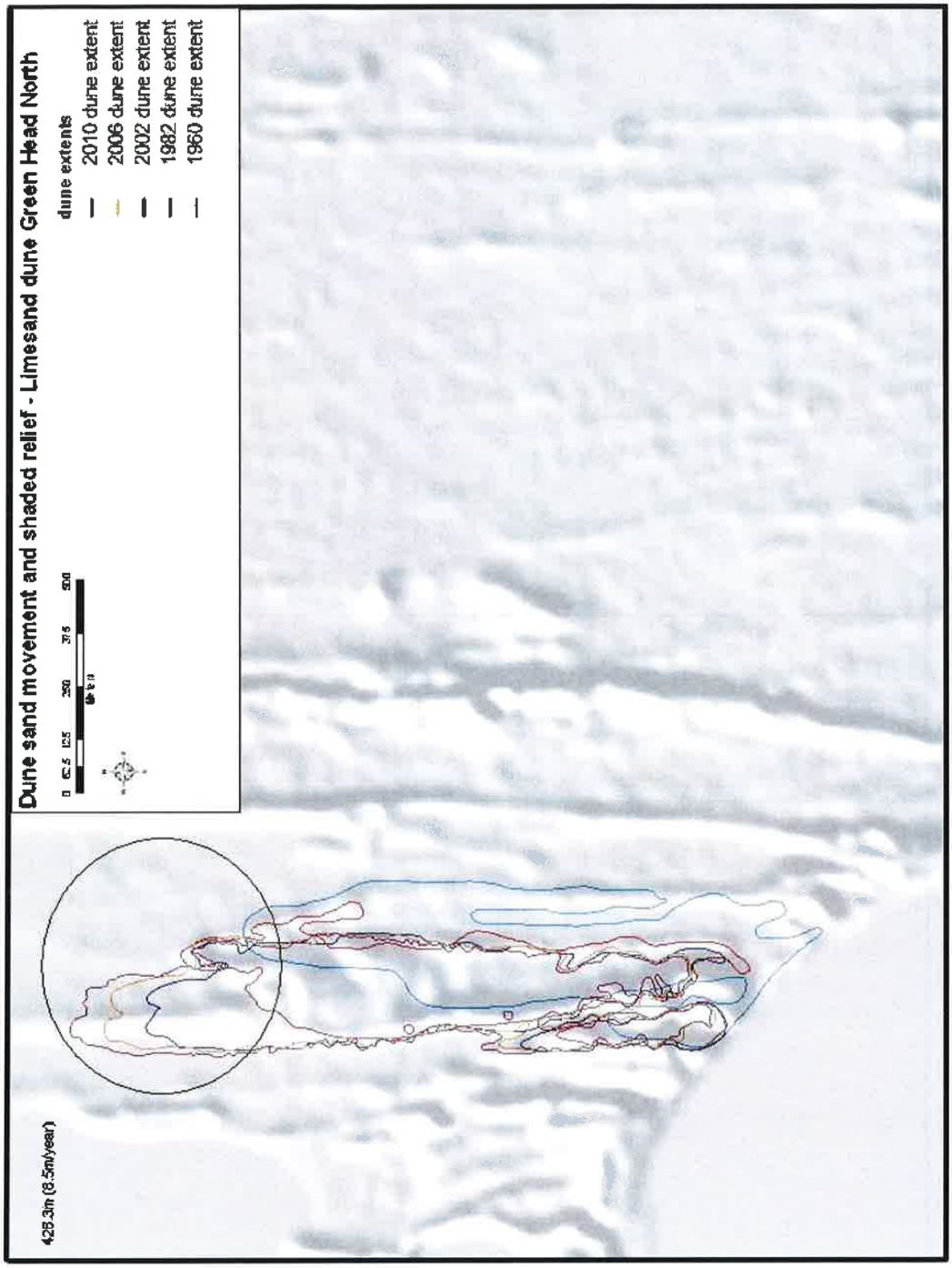
Limesand dune Coolimba – Migration



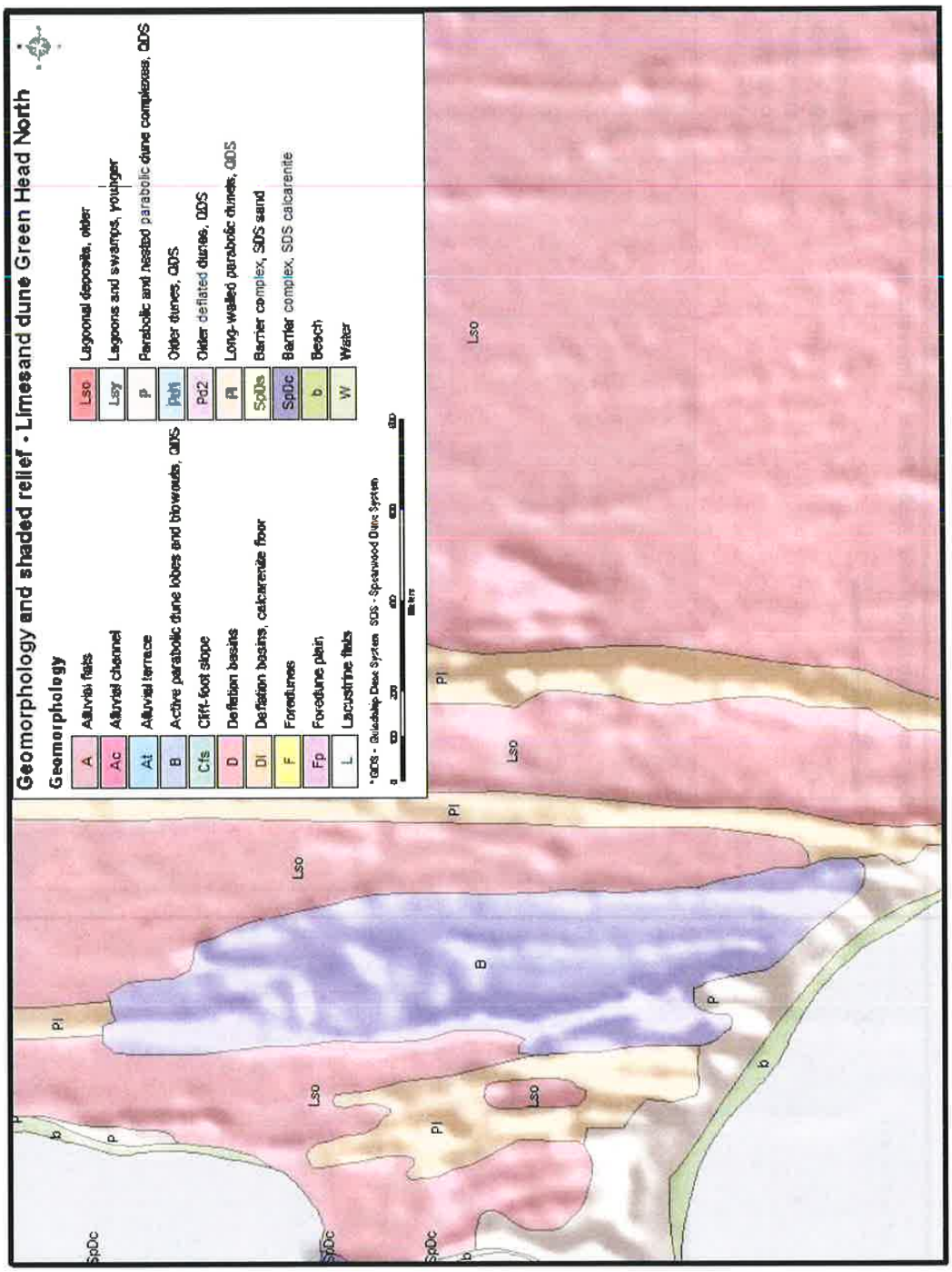
Limesand dune Coolimba – Geomorphology



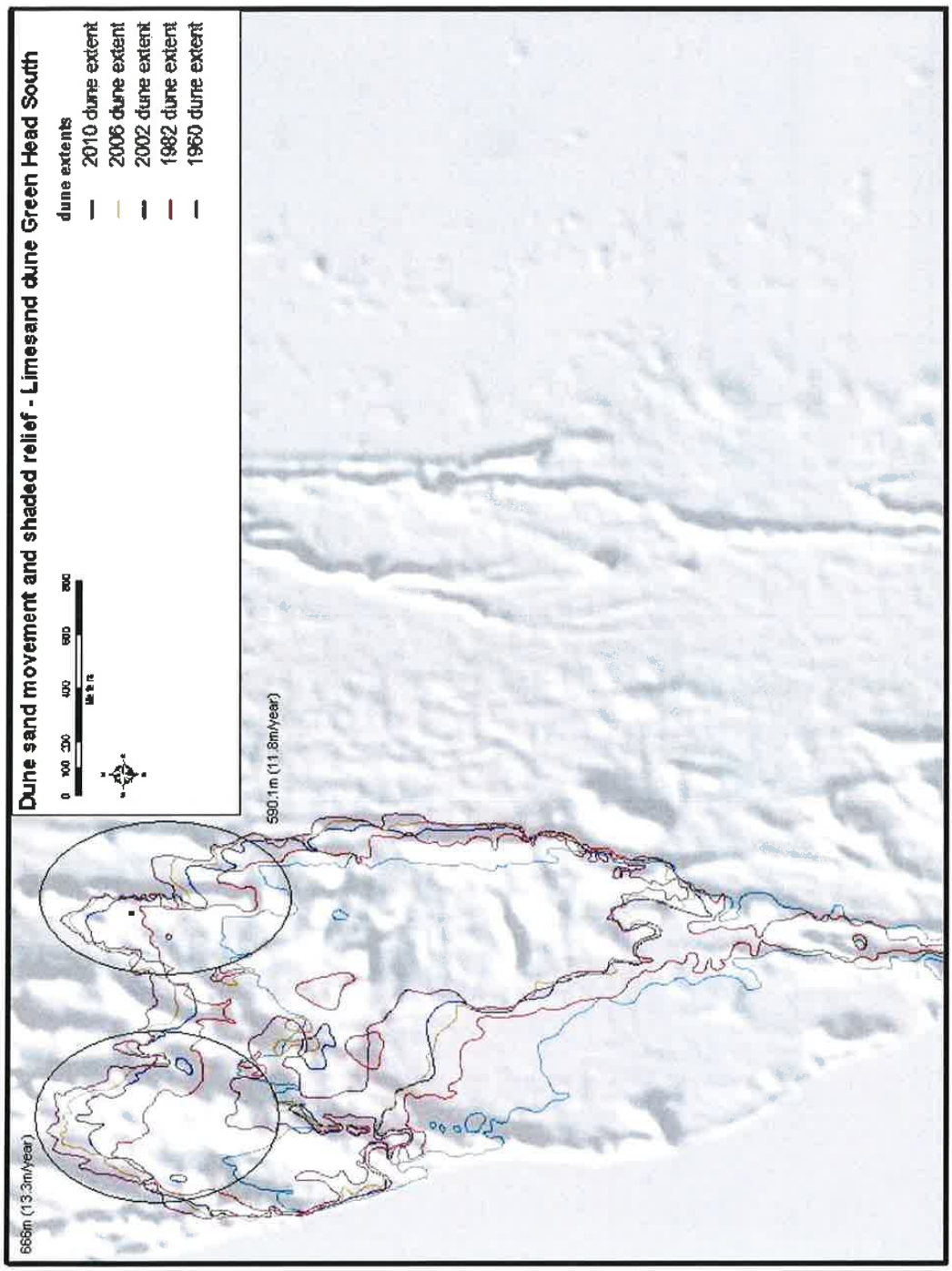
Limesand dune Green Head North – Migration



Limesand dune Green Head North – Geomorphology



Limesand dune Green Head South – Migration



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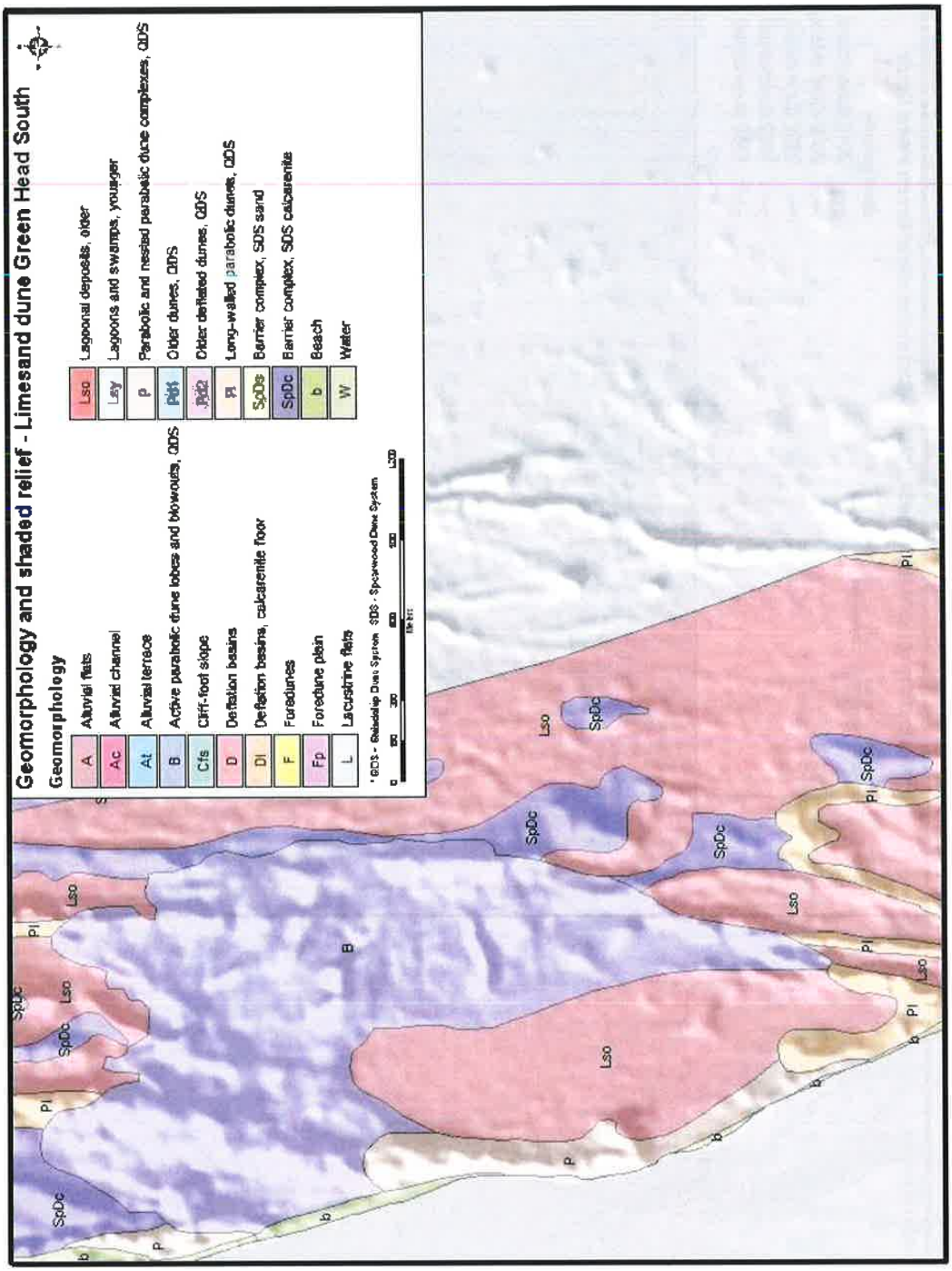
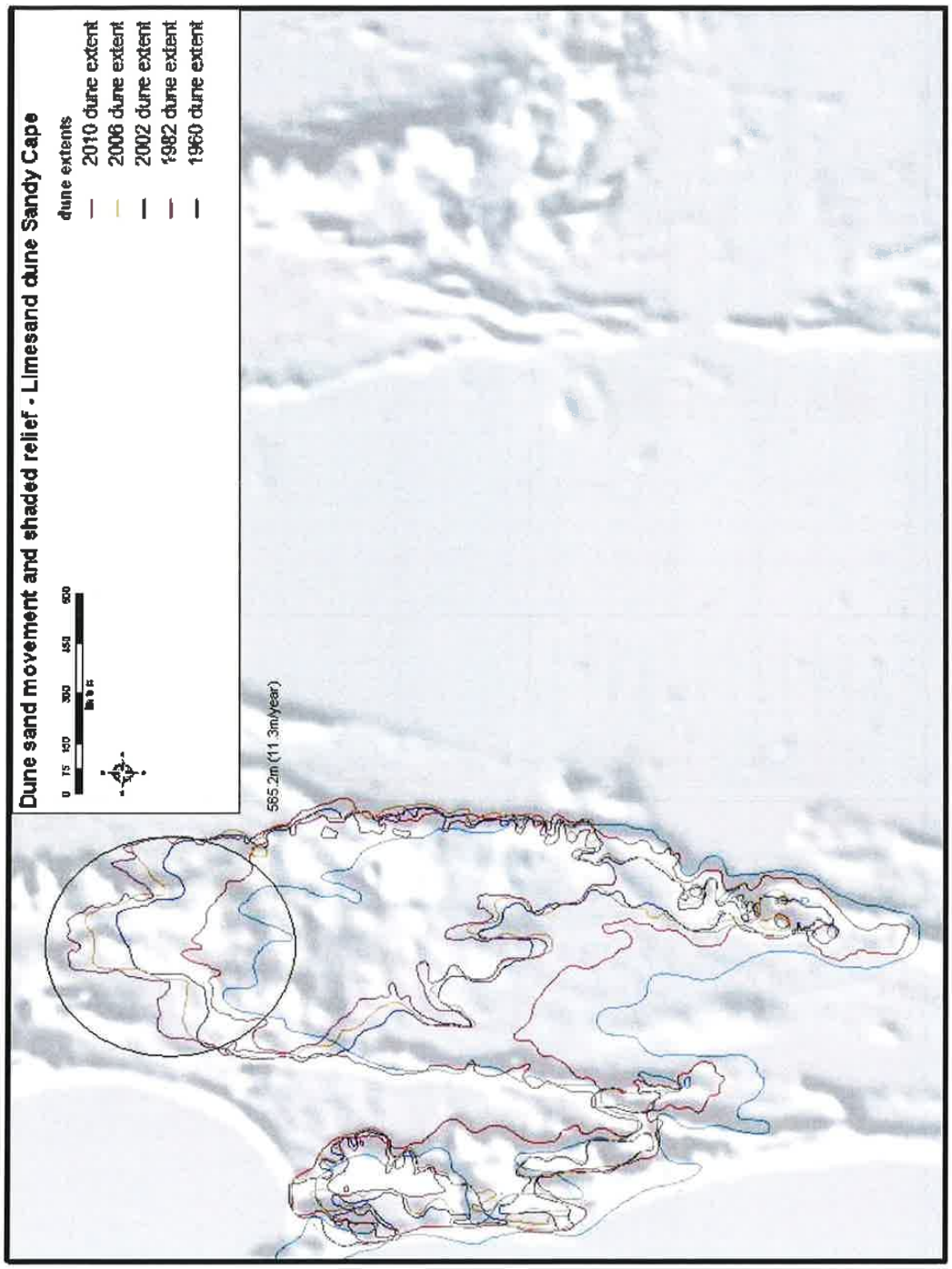
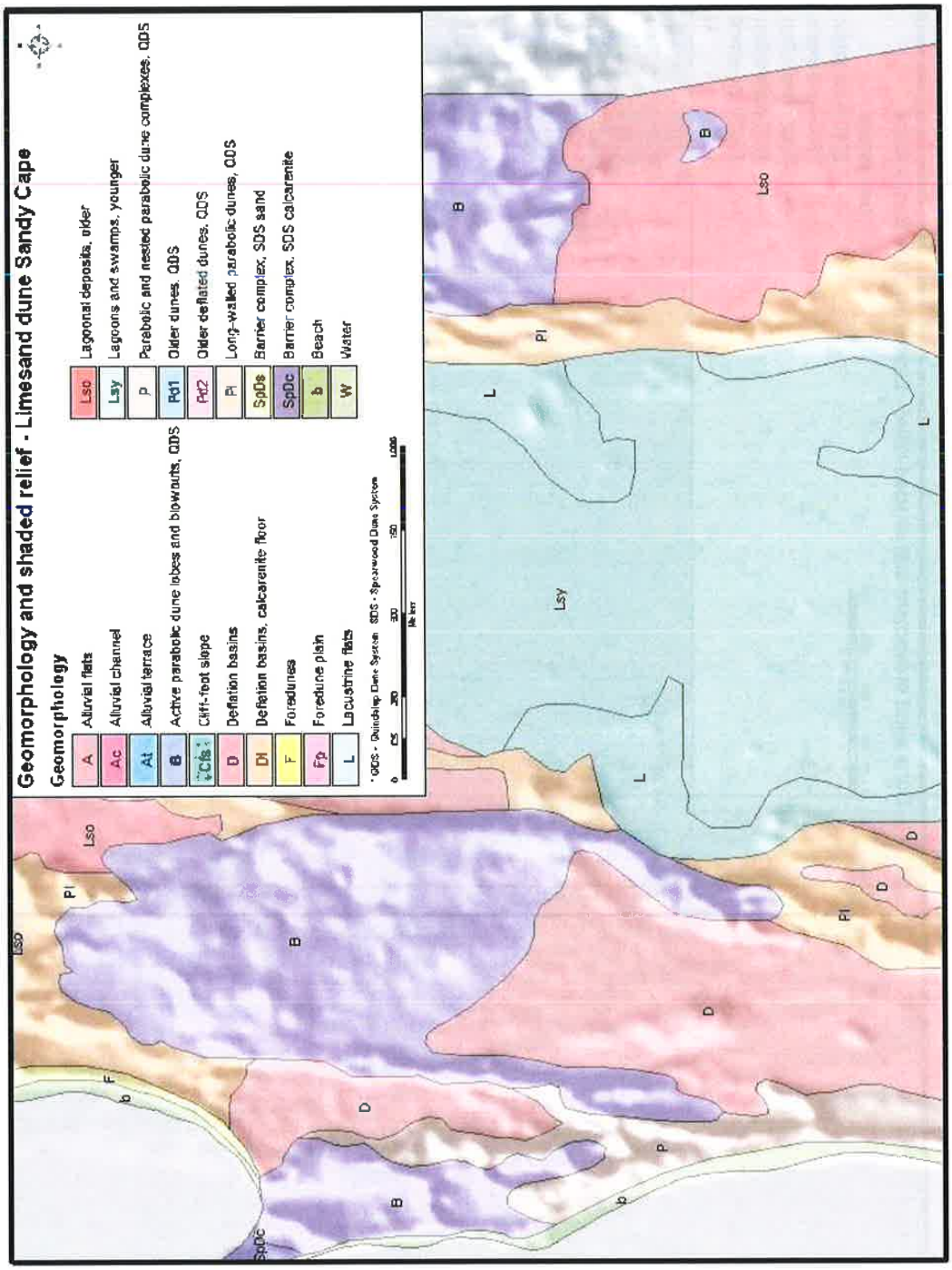


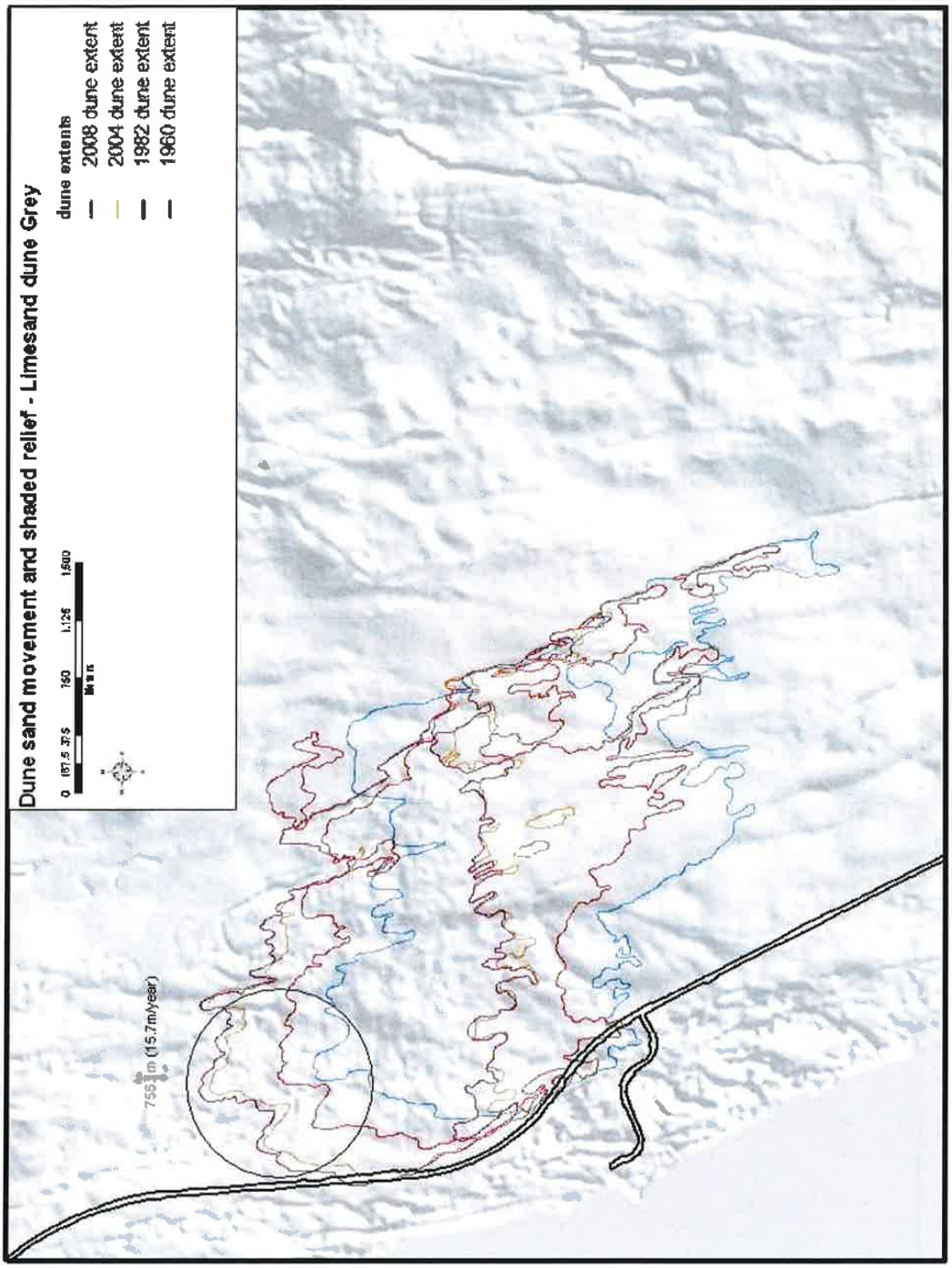
Limesand dune Sandy Cape – Migration



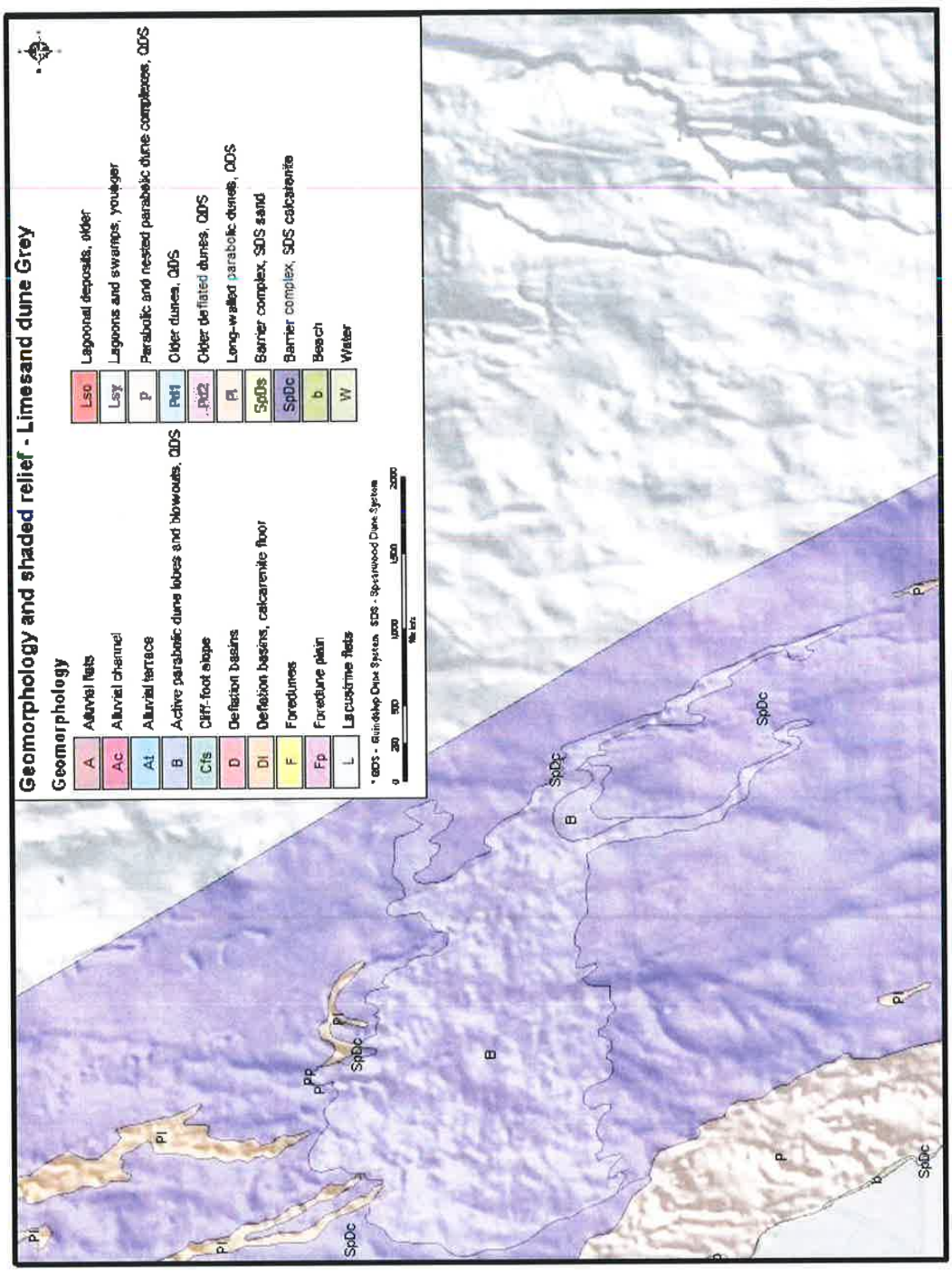
Limesand dune Sandy Cape – Geomorphology



Limesand dune Grey – Migration



Limesand dune Grey – Geomorphology



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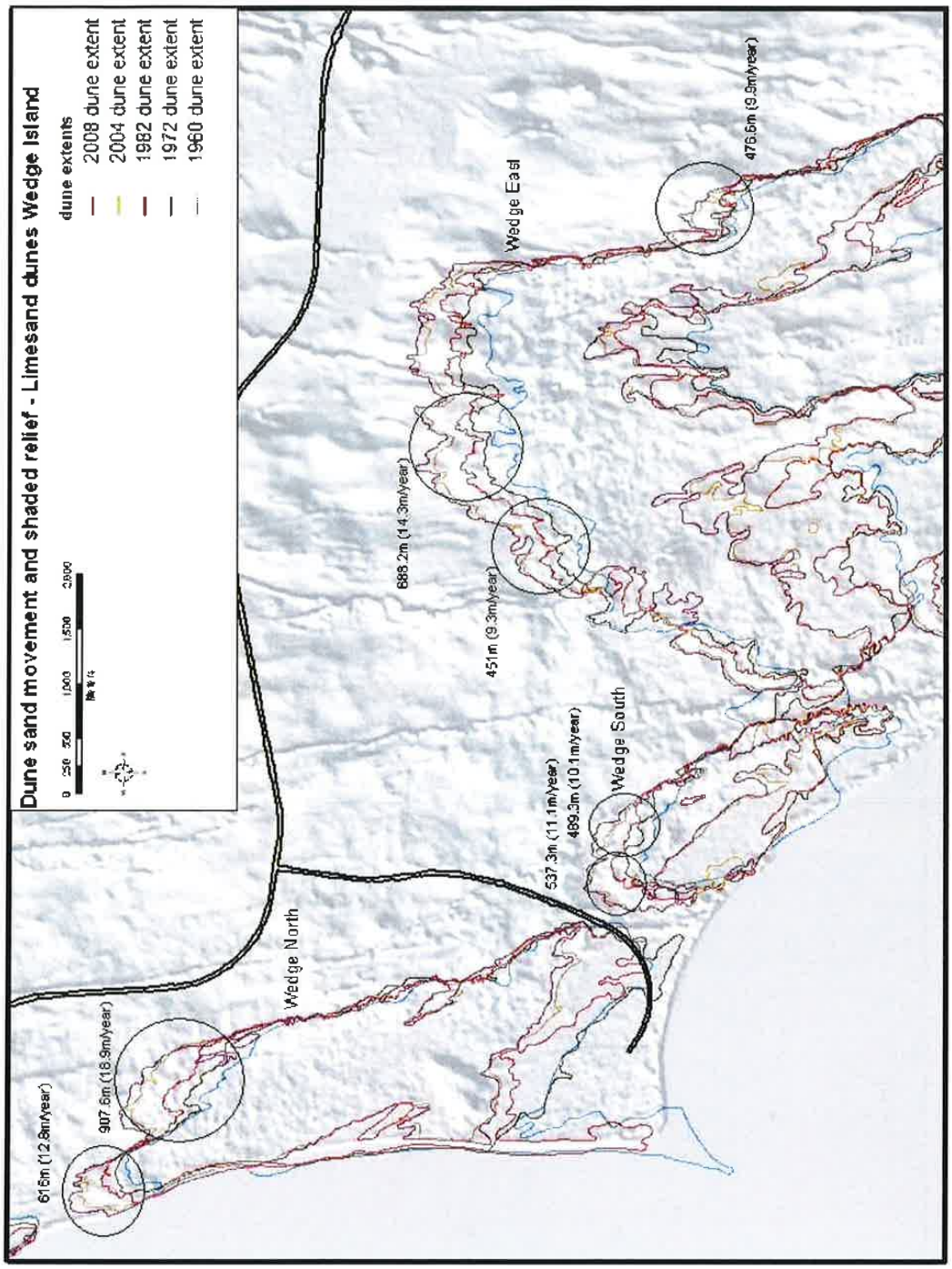
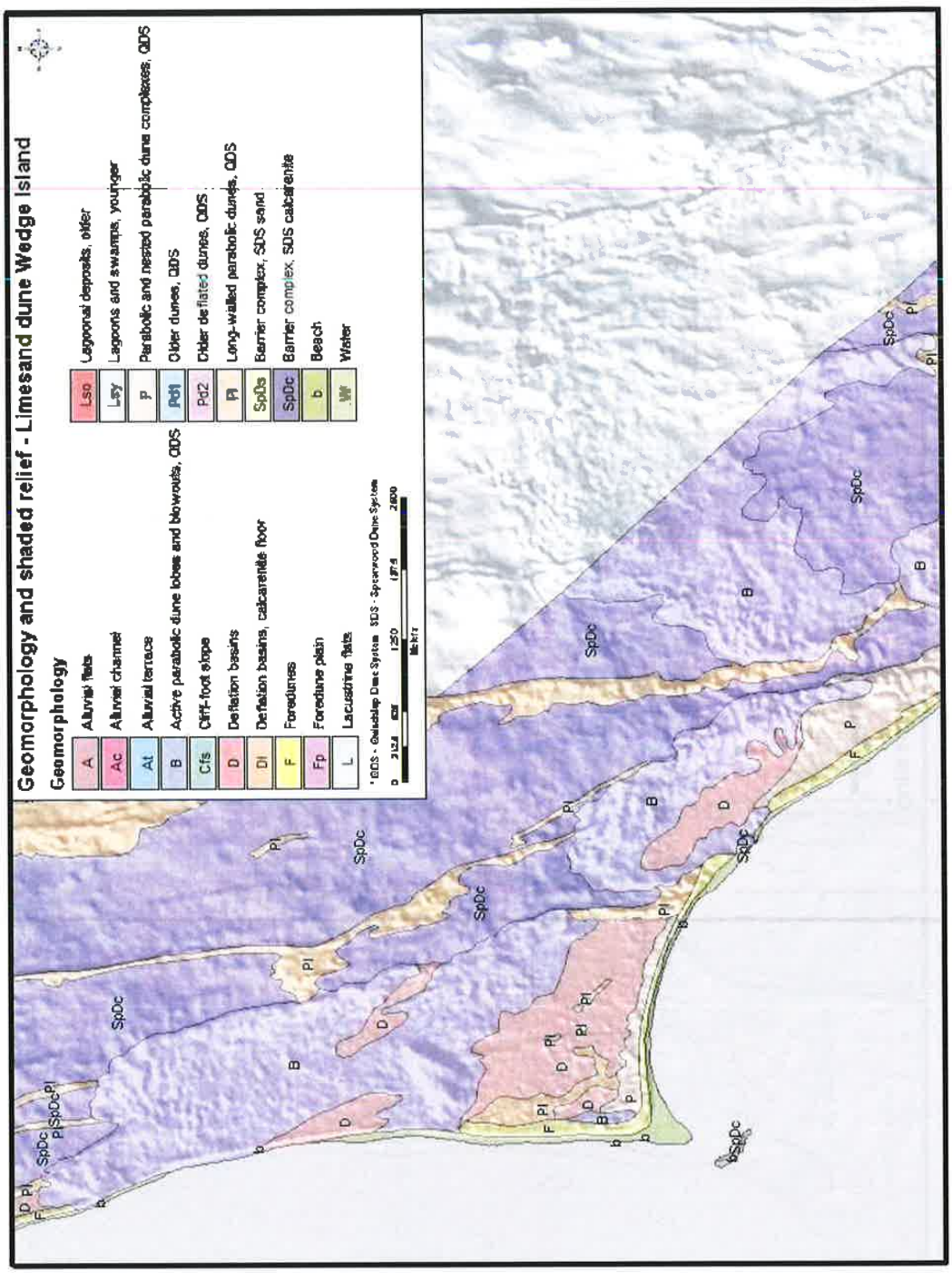
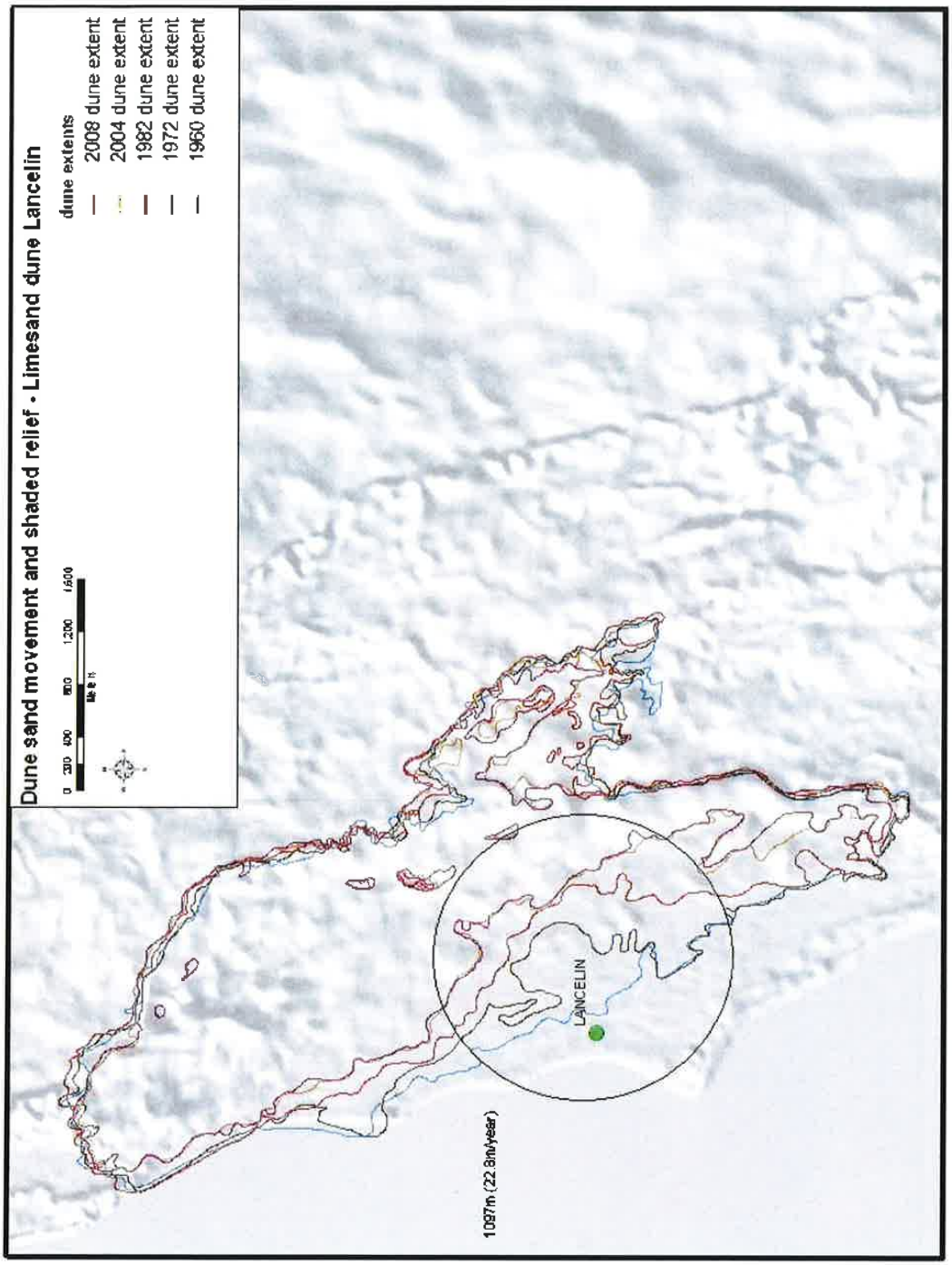


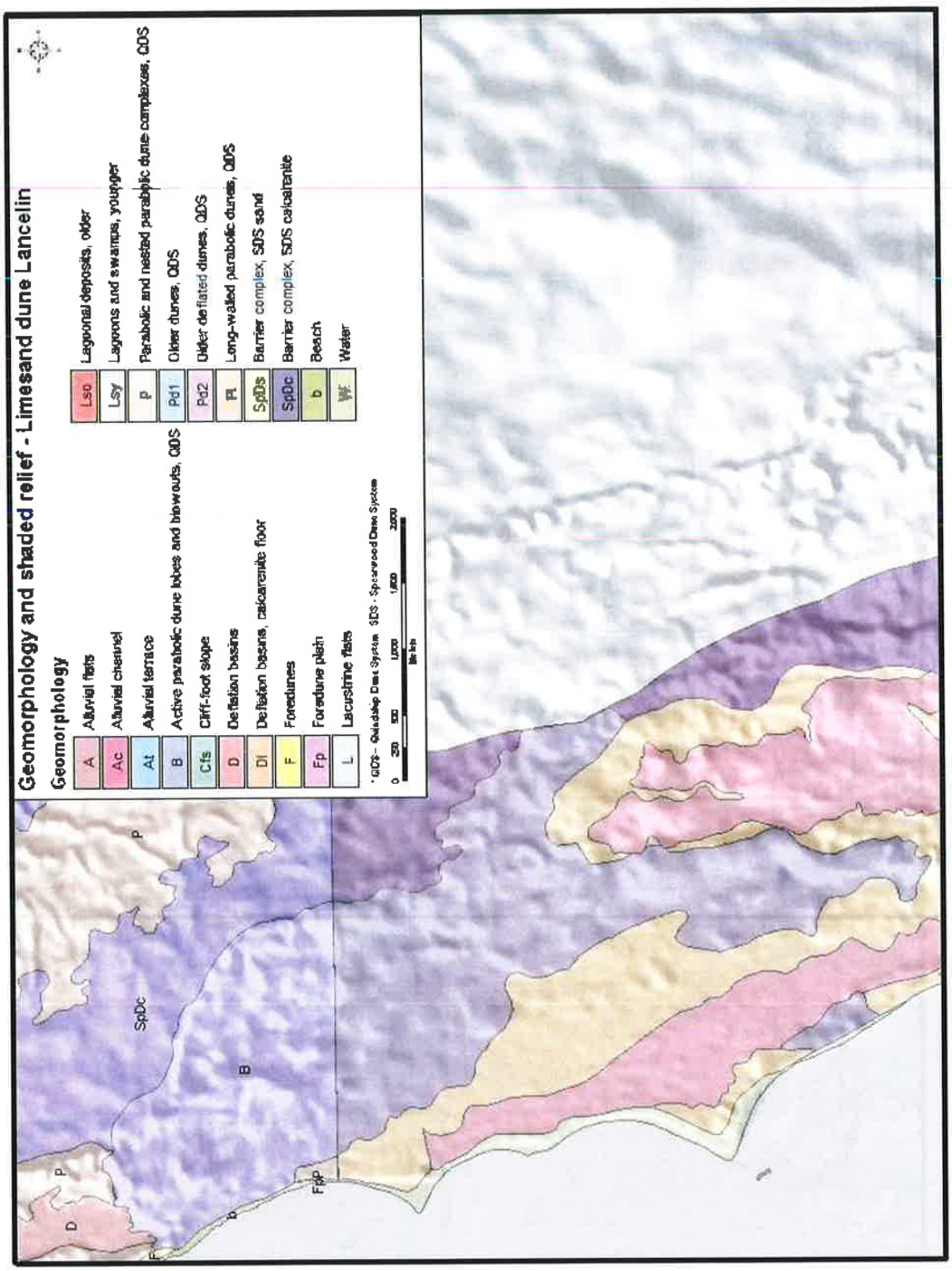
Limesand dunes Wedge Island – Geomorphology



Limesand dune Lancelin – Migration



Limesand dune Lancelin – Geomorphology



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11.2 GUILDERTON PARKING METERS

File	CPT/5-3
Author	Aaron Cook - Chief Executive Officer
Reporting Officer	Aaron Cook - Chief Executive Officer
Refer	Nil
Appendices	Nil

DISCLOSURES OF INTEREST

Nil

PURPOSE

For Council to consider amending or removing the parking meters at the Guilderton Foreshore.

BACKGROUND

Parking meters were installed at the Guilderton Foreshore Carpark in early 2018 after planning the action from as early as 2016. The main impetus for the installation of parking meters was the additional costs that the Shire bears due to the increased visitation rates by day visitors and tourists who go to the foreshore, park up and stay all day using the facilities but contributing little to the local economy. Council has incurred a large amount of cost over the years through damage to the park and infrastructure, increased rubbish and vandalism and this increased cost affects all Shire of Gingin ratepayers.

As part of the roll out of the parking meters, all ratepayers of the Shire of Gingin are issued with two parking permits each year to enable them to park at the foreshore without being required to purchase a parking ticket. As such only visitors and tourists are required to purchase a parking ticket.

There have been many requests received since the parking meters were installed to either remove the meters or to limit their use in one way or another.

The proponents for this change have based their argument on the perceived negative impact of paid parking on tourism.

The last review of the parking meters was conducted in April 2021. At that time Council chose to leave the meters in situ and fully operational all year, with a further review to be undertaken this year. This impending review was raised at the Annual Meeting of Electors held on 7 March 2023.

COMMENT

Since 2018 there has been a level of community unrest in Guilderton over the installation of the parking meters. Council has reviewed its stance on the meters on several occasions over the years and has resolved on each occasion to leave the meters in place and to continue with the requirement for people to pay for parking all year round.

The issues that are being raised are the requirement for people to purchase a parking ticket in the off-season quiet period from approximately May to the end of August, the impact of having to pay for parking on the tourism of Guilderton and the negative perception of Guilderton created by the requirement to pay for parking and the issue of parking fines, especially during the off-season.

The suggestion that the meters impact on tourism is a debate that has parameters with values that are not clear and easily raised. The caravan park, despite the fact that Council has had some issues with the contract Manager, has increased in revenue each year since the current Manager took over. Previously the caravan park income was consistently declining, which would relate back to visitation rates and numbers of caravans staying in the park. Other people that visit Guilderton who are not staying in alternative accommodation are day visitors. Whilst these numbers are not recorded, congestion and pressure on facilities in the town during these times would indicate that the overall number has not reduced.

The following table compares the total actual income from the Guilderton Caravan Park over the last eight financial years to the anticipated income reflected in the adopted Budget for each year.

Year	Total Budget	Total Actual	
2022/2023	$1,370,000	$1,322,084	As at 10 May 2023
2021/2022	$1,320,000	$1,290,182	
2020/2021	$1,098,000	$1,288,163	Contractor started Oct 2020
2019/2020	$1,050,000	$916,141	Covid started Feb 2020
2018/2019	$1,425,000	$1,242,315	
2017/2018	$1,485,000	$1,281,544	Meters installed Jan 2018
2016/2017	$1,480,000	$1,308,014	
2015/2016	$1,360,000	$1,336,934	

Based on the above data, if tourism (in terms of people staying and spending money in the shops and community) is declining, then this started back in 2015/16 prior to the parking meters being installed. Since the new contractor has been in place revenue has slowly increased back above prior years and this year is expected to be around the income level of 2015/16. Therefore it can be argued that tourist visitation rates are actually on the increase. It should also be noted that this increase in income has occurred without large increases to booking fees and charges.

At a recent presentation to Council the Guilderton Community Association requested either the complete removal of the parking meters and return of the area to previous management practices, or the hooding of the parking meters during the off-season. Both requests have implications for the Shire that need to be seriously considered, as follows:

1. Complete removal of the parking meters and return of the area to timed parking would result in Rangers having to attend site more often to chalk tyres, and then to return again to infringe people overstaying their limit. This is very time consuming for Ranger staff, and it is expected that it would result in a greater negative perception than the requirement to purchase a ticket. In addition, the Shire would be required to alter all of the signage on the foreshore, remove the meters and try to sell the units and repair the infrastructure and electrical connections etc.

2. Hooding of the meters would require the purchase of hoods, which would be a minimal cost. There would be a cost associated with staff time required for installation and removal as required, but this would be offset by the reduction in time spent by Rangers at the parking area.

The parking fee has not been raised as an issue as $2 an hour (up to $10 for all day parking) is well under metropolitan rates. In addition, when requested free parking was made available outside the Café and Store so that customers stopping quickly did not need to purchase a ticket.

The income that has been earned from the parking meters is now within a reserve fund to be used for the purpose of developing the Guilderton foreshore. Council is currently commencing preparation of a redevelopment plan for this area and the reserve funds will be utilised as seed money for this project. The reserve currently has $121,075 in it, but as Council is aware the reserve is owed additional moneys which will bring the total reserve balance to $236,244 since early 2018.

The income from the parking meters also seems to be a contentious issue within the community. Funds to be transferred to the reserve equate to the income received from the parking meters net of the costs of running the meters and the required boat trailer reserve contribution of 7.2%. As such, materials purchased, subscription costs for electronic payments and the cost of maintaining the machines is deducted from the gross income earnt. Council never agreed that the full gross income would be placed into the reserve, and nor was it ever agreed that penalties from parking infringements would be transferred to the reserve.

Total gross income received from the parking meters on a month by month basis for the years of 2021 and 2022 is as follows:

Jan 2021	$21,579
Feb 2021	$5,969
Mar 2021	$6,580
April 2021	$10,582
May 2021	$2,474
June 2021	$2,118
July 2021	$1,654
Aug 2021	$1,796
Sept 2021	$4,905
Oct 2021	$5,915
Nov 2021	$6,621
Dec 2021	$12,910
Jan 2022	$22,953
Feb 2022	$8,212
Mar 2022	$7,362
April 2022	$11,409
May 2022	$2,171
June 2022	$2,163
July 2022	$2,085
Aug 2022	$1,340
Sept 2022	$6,112
Oct 2022	$5,671
Nov 2022	$5,032
Dec 2022	$14,940

As shown above, the income that is generated by the parking meters drops considerably during the months of May, June, July and August. The total income for these four months for 2021 and 2023 was $8,042 and $7,759 respectively, totalling for these two years alone $15,801 gross income.

It can be argued that, whilst for consistency it is best to not alter the operation of the meters over the year, hooding during this period would ease some of the angst within the community. However, the number of people purchasing tickets is very minimal regardless and still provides Council with an income. The main benefit of this action would be that the Rangers would not need to review vehicles for ticket purchases, but would still attend the area to make sure that vehicles are not undertaking other illegal actions.

It should also be borne in mind that people who receive an infringement for any reason, whether for parking or any other matter such as non-installation of firebreaks, have the ability to appeal the infringement. If officers are provided with evidence that the infringement was issued in error or there are acceptable mitigating circumstances, then a recommendation is provided to the CEO to withdraw the infringement. There are many such requests received over any given year and a number of withdrawals are issued. However, infringements must be dealt with in a logical and consistent manner and there must be acceptable evidence provided. Excuses such as "I forgot", "I didn't see the signage", "I was not aware" and "The ticket blew out of the window" are not accepted reasons for withdrawing an infringement, but if the meters are not operational (which can be proven by the machine data) or there are other reasons beyond the person's control that can be substantiated, then the infringement will be withdrawn.

The parking meters have been, and potentially will continue to be, a perceived thorn in the side of the Guilderton community, but continuously requiring the review of the metered parking system only serves to destabilise the decision made by Council. As has been stated, the meters have now been operational, all year round, for over 5 years (since early 2018).

Council now has the opportunity to make a determination that will settle the issue once and for all without the requirement to review the situation again in 12 months.

The following options are open to Council:

1. Remove the parking meters completely and return to timed parking;

2. Hood the parking meters during the months of May, June, July and August; or

3. Leave the parking meters operating as they are for the full extent of each year.

In preparing the above information it has become apparent that the recommended action for Council will be to continue with the parking meters all year as they are currently operating. Whilst hooding the meters from May through to the end of August would have a minor benefit in terms of staff time, the loss of potential income amounting to $8,000 per annum is significant and limits Council funding options for the Guilderton foreshore upgrade in the near future. In addition, maintaining the status quo limits staff resources required to change the parking conditions and keeps the area consistent.

It is also recommended that the parking meters not be reviewed again until April/May 2029 (and then only if a review is requested by Council) to ensure that the decision made by Council can be properly administered without question for a period of time.

STATUTORY/LOCAL LAW IMPLICATIONS

Nil

POLICY IMPLICATIONS

Nil

BUDGET IMPLICATIONS

Options 1 and 2 above both have budget implications that need to be addressed.

1. This option has the greatest implication as Council will not only lose the income from the meters being $89,461 gross last year, but will be required to expend an estimated $50,000 in removing the meters and remaking and installing signage. There may be some income created through the sale of the machines, but as they are 5 years old it's not expected that they would return a large sum. In addition, Ranger Services would need to allocate a significant amount of Ranger time to attend the site to monitor and regulate foreshore parking. This internal cost would be far greater than is current and would reduce the time available for Rangers to attend to other matters.

2. It is estimated that $3,000 would be required to purchase the necessary hoods. The Shire would also lose the income generated by the meters during the period May to August, which is estimated at $8,000 gross per annum.

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	4. Excellence & Accountability - Deliver Quality Leadership and Business Expertise
Strategic Objective	4.1 Management of Assets - Maintain civic buildings, sporting facilities, public places, plant and road and cycleway/pathways based on asset management plans and identified priorities

VOTING REQUIREMENTS - SIMPLE MAJORITY

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Vis SECONDED: Councillor Kestel

That Council agree:

1. To leave the current operating conditions of the Guilderton parking meters unchanged; and

2. That, if requested by Council at the time, the meters will be reviewed in April or May 2029 unless an issue presents that needs urgent resolution.

LOST
3 / 4

FOR: *Councillor Fewster, Councillor Kestel and Councillor Sorensen*
AGAINST: *Councillor Balcombe, Councillor Johnson, Councillor Peczka and Councillor Vis*

Note: Given that no effective decision was reached with respect to this item, the matter will be re-presented to the next Ordinary Council Meeting on 20 June 2023.

12 REPORTS - CORPORATE AND COMMUNITY SERVICES

12.1 LIST OF PAID ACCOUNTS APRIL 2023

File	FIN/25
Author	Tania Ladner – Accounts Payable / Administration Support Officer
Reporting Officer	Les Crichton - Executive Manager Corporate and Community Services
Refer	Nil
Appendices	Nil

DISCLOSURES OF INTEREST

Nil

PURPOSE

For Council to note the payments made in April 2023.

BACKGROUND

Council has delegated authority to the Chief Executive Officer (CEO) to exercise the power to make payments from the Municipal Fund (Delegation 1.1.13 Payments from the Municipal or Trust Funds). The CEO is required to present a list to Council of those payments made since the last list was submitted.

COMMENT

Accounts totalling $1,959,177.06 were paid during the month of April 2023.

A detailed payment schedule has been provided to Councillors and can be made available to the public for viewing at the Shire's Gingin Administration Centre and Lancelin Office upon request. The schedule covers:

• Municipal Fund electronic funds transfers (EFT)	$1,423,146.18
• Municipal Fund cheques	$22.50
• Municipal Fund direct debits	$536,008.38
Total Municipal Expenditure	**$1,959,177.06**
TOTAL EXPENDITURE	**$0.00**

All invoices have been verified, and all payments have been duly authorised in accordance with Council's procedures.

STATUTORY/LOCAL LAW IMPLICATIONS

Local Government Act 1995
s.6.4 – Financial Report

Local Government (Financial Management) Regulations 1996
Reg. 13 – Payments from municipal fund or trust by CEO

Shire of Gingin Delegation Register – Delegation 1.1.13 Payments from the Municipal or Trust Funds

POLICY IMPLICATIONS

Nil

BUDGET IMPLICATIONS

Resource requirements are in accordance with existing budgetary allocations.

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	4. Excellence & Accountability - Deliver Quality Leadership and Business Expertise
Strategic Objective	4.4 Strategic & Sustainable Financial Planning - Undertake long-term resource planning and allocation in accordance with the Integrated Planning and Reporting Framework

VOTING REQUIREMENTS - SIMPLE MAJORITY

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Balcombe SECONDED: Councillor Sorensen

That Council note all payments made by the Chief Executive Officer under Delegation 1.1.13 for April 2023 totaling $1,959,177.06 as detailed in the schedule provided to Councillors comprising:

• Municipal Fund electronic funds transfers (EFT)	$1,423,146.18
• Municipal Fund cheques	$22.50
• Municipal Fund direct debits	$536,008.38

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*

AGAINST: *Nil*

12.2 SALE OF PROPERTIES FOR NON PAYMENT OF RATES

File	A3529; A1499: A4529; A5721
Author	Natasha Harry, Senior Rates Officer
Reporting Officer	Les Crichton - Executive Manager Corporate and Community Services
Refer	Nil
Appendices	1. A 1499 - Overview Document [**12.2.1** - 1 page] 2. A 3529 Overview Document [**12.2.2** - 1 page] 3. A 4529 - Overview Document [**12.2.3** - 1 page] 4. A 5721 Overview Document [**12.2.4** - 1 page]

DISCLOSURES OF INTEREST

Nil

PURPOSE

To consider taking further action against the owners of the following properties:

1. Lot 920 (3) Bateman Way Lancelin due to unpaid rates in excess of five years.

2. Lot 1 (25A) Horton Way Lancelin, due to unpaid rates in excess of three years.

3. Lot 5 (44) Sovereign Hill Drive, Gabbadah due to unpaid rates in excess of five years.

4. Lot 201 Ocean Farm Drive Nilgen due to unpaid rates in excess of three years.

BACKGROUND

1. Lot 920 (3) Bateman Way Lancelin

This property has accumulated debt since before the 2017/18 financial year. There have been random payments of $60.00 during this financial year which is not considered a substantial enough payment arrangement to recover the debt. The property owner does not reside in the property and correspondence has been sent to the owner and their representative advising that if outstanding rates and service charges remain unpaid, debt recovery action, which includes sale of the property, will be initiated. Within this correspondence a request for payment in full within 21 days was made. This correspondence has received no reply.

A breakdown of the current outstanding balance is detailed below.

Assessment	A3529
Type/ Zoning	GRV-Townsites
Period Outstanding	Prior to 2017/18 to 2021/22
Amount Outstanding	$7,364.72
2022/23 Rates and charges	$1,930.18
Total	$9,294.90

2. Lot 1 (25A) Horton Way Lancelin

This property has accumulated debt since before the 2017/18 financial year. The property owner has been deceased since 2017 and there was a delay in provision of the details of the Executor of the Will. Despite advice being received that the rates would be paid, there has not been a substantial enough payment arrangement to cover the current arrears and ongoing rates charges.

Correspondence has been sent to the estate advising that if outstanding rates and service charges remain unpaid, debt recovery action, which includes sale of the property, will be initiated. Within this correspondence a request for payment in full within 21 days was made. This correspondence has received no reply.

A breakdown of the current outstanding balance is detailed below.

Assessment	A1499
Type/ Zoning	GRV-Townsites
Period Outstanding	2017/18 to 2021/22
Amount Outstanding	$6,434.60
2022/23 Rates and charges	$1,677.00
Total	$8,111.60

3. Lot 5 (44) Sovereign Hill Drive, Gabbadah

The property has accumulated rates debt since before the 2017/18 financial year.

The ratepayers had agreed to a repayment arrangement of $100 per week, however this has not been maintained. The process of debt collection has been followed. Given the length of time this debt has been outstanding, correspondence has been sent to the property owner advising that if outstanding rates and service charges remain unpaid, debt recovery action, which includes sale of the property, will be initiated. Within this correspondence a request for payment in full within 21 days was made. This correspondence has received no reply.

A breakdown of the current outstanding balance is detailed below.

Assessment	A4529
Type/ Zoning	GRV-Rural Residential
Period Outstanding	Prior to 2017/18 to 2021/22
Amount Outstanding	$6,254.49
2022/23 Rates and charges	$1,880.56
Total	$8,135.05

4. Lot 201 Ocean Farm Drive Nilgen

Investigation has been undertaken into this vacant property's rate history which indicates that the owner has not paid any rates since purchasing the land in 2018. All correspondence and attempts at contact have been ignored.

The Bailiff has deemed that there are no goods of value to be placed under seizure.

A breakdown of the current outstanding balance is detailed below.

Assessment	A5721
Type/ Zoning	GRV-Rural Residential
Period Outstanding	Since purchase 2018
Amount Outstanding	$8,945.03
2022/23 Rates and charges	$1,373.00
Total	$10,318.03

COMMENT

If any rates or service charges due to a local government have been unpaid for at least three years, the local government may take possession of the land and proceed to sell it. The Shire's Debt Collection Agent has attempted to recover the debts to no avail. It is, therefore, prudent that Council escalates the process to recover the outstanding debts and proceed to the sale of the land.

The sale of any property to recover unpaid rates and service charges is not the preferred course of action, however all other legal options have been exhausted and this remains the Shire's only option to recover rates.

Accordingly, a Council resolution is required to take possession of the land in accordance with s.6.64 of the *Local Government Act 1995,* and to issue instructions to the Bailiff's Office to proceed with the sale of the land.

The Bailiff's Office will proceed to auction, and all fees and charges will be recovered from the sale of the land. The Bailiff's Office will prepare and serve the appropriate documentation and undertake the necessary checks of all outstanding debts. It will obtain a valuation on the property and once a determination is made that there is sufficient equity to proceed, the Bailiff's Office will advertise the "Bailiff's Auction" at least two weeks prior to the auction date.

STATUTORY/LOCAL LAW IMPLICATIONS

Local Government Act 1995
Part 6 Financial management
Division 6 Rates and service charges
Section 6.56 Rates or service charges recoverable in court
Section 6.64 Actions to be taken
Section 6.68 Exercise of power to sell land

Section 6.68(1) of the Act prevents the local government from exercising the power of sale unless the local government has at least once attempted to recover money due to it under Section *6.56* of the Act, through instituting proceedings in a court of competent jurisdiction.

Section 6.68(2) states that:

A local government is not required to attempt under section 6.56 to recover money due to it before exercising the power of sale where the local government –

(a) has a reasonable belief the cost of the proceedings under that section will equal or exceed the value of the land; or

(b) having made reasonable efforts to locate the owner of the property is unable to do so.

Given the amount of time and effort that has been afforded to tracing the owners to enable the ratepayers to either clear or reduce the debt, it is prudent for Council to proceed with the requirements of Section 6.64(1)(b) of the Act empowering the sale of the land in relation to unpaid rates and charges.

POLICY IMPLICATIONS

Nil

BUDGET IMPLICATIONS

There are no negative financial implications for the Shire.

Outstanding rates and service charges will be able to be recovered from the proceeds of sale together with any additional costs associated with further legal action plus the costs of the sale of the property, including the Bailiff's Office fee.

The Bailiff's Office fee for the preparation and sale of the land will be between $1,200 and $1,500 per property and is to be paid in advance by the Shire.

The current total outstanding debt for the above four properties is $35,859.58 with interest and other charges, accruing daily.

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	4. Excellence & Accountability - Deliver Quality Leadership and Business Expertise
Strategic Objective	4.4 Strategic & Sustainable Financial Planning - Undertake long-term resource planning and allocation in accordance with the Integrated Planning and Reporting Framework

VOTING REQUIREMENTS - SIMPLE MAJORITY

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Vis SECONDED: Councillor Balcombe

That Council agree, in accordance with s.6.64(1)(b) of the *Local Government Act 1995*, to take possession of the following properties and sell the land for the purpose of recovering unpaid rates:

- **Lot 920 (3) Bateman Way, Lancelin;**
- **Lot 1 (25A) Horton Way Lancelin;**
- **Lot 5 (44) Sovereign Hill Drive, Gabbadah, and;**
- **Lot 201 Ocean Farm Drive Nilgen;**

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*
AGAINST: *Nil*

Assessment Number **A1499**

Property Address: 25A Horton Way Lancelin

Resides: 5 Fig Close Spearwood

Commentary
Estate of R Diver; Executor is the partner. No solid payments, letter of demand sent, no response.

Recommendation
Letter of demand – if full payment not received, agenda item to be drafted for May Council.

TOTAL ARREARS as at 21/03/2023	$8,111.60

Levies	Receipts	Balance	Description
1244.00	0.00	1244.00	Rates
3236.50	750.00	2,486.50	Rates
1135.08	0.00	1165.64	Interest
1833.90	0.00	1833.90	Legal Charges
15.00	0.00	15.00	Ad hoc Rates Instalments
15.00	0.00	15.00	Ad hoc Rates Instalments
12.37	0.00	13.79	ESL PENALTY
52.77	0.00	52.77	ESL PENALTY
226.00	0.00	226.00	Rubbish Charge
452.00	0.00	452.00	Rubbish Charge
93.00	0.00	93.00	EMERGENCY SERVICES LEVY
172.00	0.00	172.00	EMERGENCY SERVICES LEVY
114.00	0.00	114.00	Waste Management Rate – GRV
228.00	0.00	228.00	Waste Management Rate - GRV
8829.62	**650.00**	**8111.60**	***** TOTALS *****

1919/365

25A Horton Way, LANCELIN 6044

Title Details | Plan Details

General Details | Associated Documents | Ownership History

Certificate of Title	1919/365
Title Type	Certificate of title for a Strata Lot
Parcel Identifier	Lot 1 On Strata Plan 20946
Address Details	25A Horton Way, LANCELIN 6044
Dealing Status	Complete
Purchasers Caveat	N/A
Other Interests	N/A
Document Type	Transfer
Document Number	J362423
Date of Execution	11/04/2005
Consideration	$220,000
Proprietor(s)	DIVER, RYAN PETER

Assessment Number **A3529**

Property Address: 3 Bateman Way Lancelin 6044

Resides: Ratepayer does not reside at property

Correspondence: C/- Epping VIC 3076

TOTAL ARREARS as at 20/04/2022	$9,294.90

Levies	Receipts	Balance	Current/ Arrears	Description
1492.80	0.00	1492.80	C	Rates
3602.93	0.00	3602.93	A	Rates
1009.22	68.42	940.80	C	Interest
4555.38	1424.97	3130.41	C	Legal Charges
15.00	0.00	15.00	C	Ad hoc Rates Instalments
15.00	0.00	15.00	A	Ad hoc Rates Instalments
13.27	0.00	13.27	C	ESL PENALTY
42.75	3.35	39.40	A	ESL PENALTY
226.00	0.00	226.00	C	Rubbish Charge
452.00	113.26	338.74	A	Rubbish Charge
97.38	0.00	97.38	C	EMERGENCY SERVICES LEVY
243.00	0.00	243.00	A	EMERGENCY SERVICES LEVY

Commentary

This property has been in arrears for over 10 years. The spouse has since passed, and the daughter/granddaughter are assisting with the payments.

A portion of the outstanding is listed as deferred – she is no longer eligible for the pensioner concession.

Deferred: $1,201.83
Net Due: $9294.90

Historically the family appear to be interested in paying off the debt, however unable to receive a response when discussing the payment arrangement. Letter of Demand send to daughters contact address advising require urgent payment of the arrears. Again, no response.

Recommendation

Prepare Agenda item for sale of property.

Assessment Number **A4529**

Property Address: 44 Sovereign Hill Drive Gabbadah

TOTAL ARREARS as at 21/03/2023	$8,157.92

Commentary
No solid payments, letter of demand sent, no response.

Recommendation
Agenda item for May Council Request sale of property.

Levies	Receipts	Balance	Description
1447.56	0.00	1447.56	Rates
3049.50	297.53	2751.97	Rates
1712.68	230.63	1482.05	Interest
1523.30	463.10	1060.20	Legal Charges
15.00	0.00	15.00	Ad hoc Rates Instalments
45.00	0.00	45.00	Ad hoc Rates Instalments
14.73	0.00	14.73	ESL PENALTY
65.15	8.74	56.41	ESL PENALTY
226.00	0.00	226.00	Rubbish Charge
452.00	0.00	452.00	Rubbish Charge
93.00	0.00	93.00	EMERGENCY SERVICES LEVY
172.00	0.00	172.00	EMERGENCY SERVICES LEVY
114.00	0.00	114.00	Waste Management Rate - GRV
228.00	0.00	228.00	Waste Management Rate - GRV
9157.92	**1000.00**	**8157.92**	***** TOTALS *****

2068/104

44 Sovereign Hill Drive, GABBADAH 6041

Title Details | Plan Details

General Details | Associated Documents | Ownership History

Certificate of Title	2068/104
Title Type	Certificate of title for regular Freehold Land
Parcel Identifier	Lot 5 On Plan 21215
Address Details	44 Sovereign Hill Drive, GABBADAH 6041
Dealing Status	Complete
Purchasers Caveat	N/A
Other Interests	N/A
Document Type	Transfer
Document Number	M154296
Date of Execution	28/08/2012
Consideration	$465,000

Assessment Number **A5721**

Property Address: Lot 201 Ocean Farm Drive Nilgen

Postal Address: 135 Ross Street Jandabup 6077

TOTAL ARREARS as at 20/04/2023	**$10,353.83**

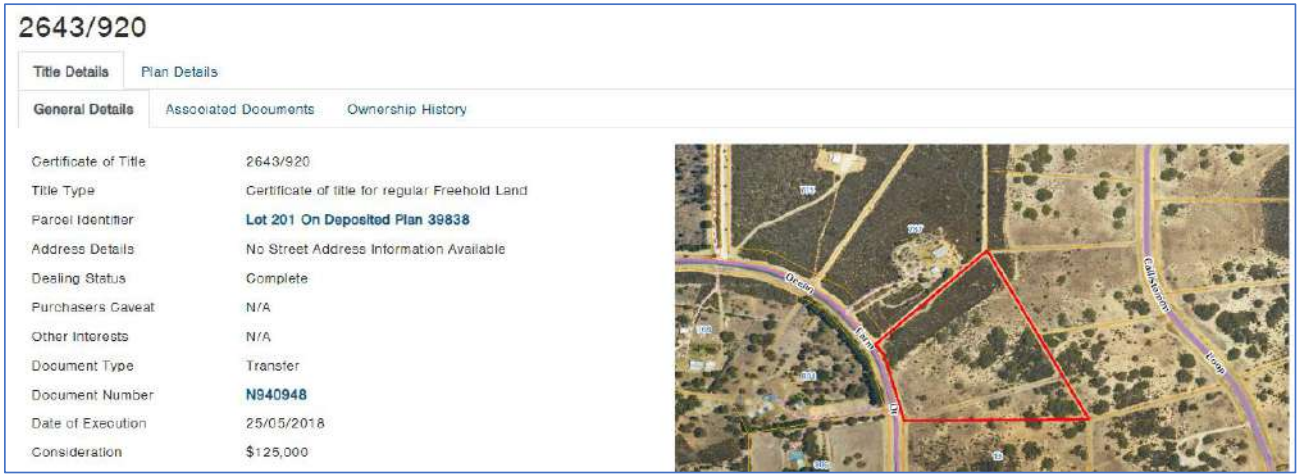
The Ratepayer does not live at the property – Vacant Land

No payment since 2018. No contact made.

Recommendation

Compliance required to recommence payment arrangement by 3rd November or referral to Council for Sale of Land.

Levies	Receipts	Balance	Description
1166.00	0.00	1166.00	Rates
3934.80	0.00	3934.80	Rates
1069.58	0.00	1069.58	Interest
3262.90	0.00	3262.90	Legal Charges
9.77	0.00	22.04	ESL PENALTY
61.37	0.00	61.37	ESL PENALTY
93.00	0.00	93.00	EMERGENCY SERVICES LEVY
288.14	0.00	288.14	EMERGENCY SERVICES LEVY
114.00	0.00	114.00	Waste Management Rate - GRV
342.00	0.00	342.00	Waste Management Rate - GRV
			==========
10353.83	**0.00**	**10353.83**	***** TOTALS *****



12.3 REQUEST FOR USE OF RESERVE FUNDS - GUILDERTON COUNTRY CLUB

File	CPT/3
Author	Les Crichton - Executive Manager Corporate & Community Services
Reporting Officer	Les Crichton - Executive Manager Corporate and Community Services
Refer	Nil
Appendices	1. Guilderton Country Club - Request For Use of Reserve Funds [**12.3.1** - 1 page]

DISCLOSURES OF INTEREST

Nil

PURPOSE

To seek Council approval to release funds from the Guilderton Country Club Reserve for the purpose of upgrading the beer dispensing system.

BACKGROUND

The Guilderton Country Club has advised that the beer dispensing system operating within its bar facility has reached its end of life and requires replacing. The glycol chiller motor is failing, and in arranging its replacement the Club will use the opportunity to update the remainder of the system with new gas and beer lines.

To meet the cost of this replacement the Club has requested use of $15,000 from the Guilderton Country Club Reserve account held by the Shire.

COMMENT

The Guilderton Country Club Reserve was created during the 2016/17 year and has as its purpose:

To be used to fund the development of the Guilderton Country Club and are to be spent upon request from the Club, and approval from Council.

No other criteria are required within the purpose.

Optus has a telecommunications tower located on the Reserve leased by the Guilderton Country Club.

Council has a lease in place with Optus and receives lease revenue accordingly.

The revenue from the current lease between the Shire of Gingin and Optus for the placement of its telecommunications tower on the land has been placed in the Guilderton Country Club Reserve Account.

Funds from this account are available specifically for the purpose of developing the Guilderton Country Club and are to be spent upon request from the Club, and approval from Council.

In this regard use of the funds for the purpose proposed is appropriate.

STATUTORY/LOCAL LAW IMPLICATIONS

Local Government Act, 1995 Section 6.8
Part 6 – Financial management
Section 6.8 – Expenditure from municipal fund not included in annual budget.
Section 6.11 – Reserve accounts

POLICY IMPLICATIONS

Nil

BUDGET IMPLICATIONS

Council's 2022/23 Budget does not contain provisions for this unbudgeted expenditure and therefore Council's approval to access the funds from the Guilderton Country Club Reserve is required. The current balance in the reserve account is $27,456.

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	4. Excellence & Accountability - Deliver Quality Leadership and Business Expertise
Strategic Objective	4.1 Management of Assets - Maintain civic buildings, sporting facilities, public places, plant and road and cycleway/pathways based on asset management plans and identified priorities

VOTING REQUIREMENTS - ABSOLUTE MAJORITY

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Kestel SECONDED: Councillor Johnson

That Council agree to amend its 2022/23 Budget in accordance with the following table:

Account	Description	Current Budget	Revised Budget	Surplus / Deficit
151103810	Recreation – Transfers from Reserve	(583,501)	(598,501)	(15,000)
CG11302	Contribution – Guilderton Country Club	0	15,000	15,000
Change to surplus				0

CARRIED BY ABSOLUTE MAJORITY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*

AGAINST: *Nil*

Guilderton Country Club (Inc)

Postal Address: PO Box 1005, Guilderton, WA 6041
Location: Wedge Street, Guilderton
Tel: 08 9577 1013 Email: guildertoncc@bigpond.com
Website: www.guildertoncc.wix.com/guildertoncc

Friday, April 28, 2023

Attention Les Crighton, Executive Manager Corporate & Community Services
Shire of Gingin
7 Brockman Street
Gingin
WA 6503

Dear Les,

At the Guilderton Country Club, Management Committee meeting last night, it was agreed to upgrade our Beer Dispensing System. We have been advised that our existing glycol chiller motor is failing, and we are keen to replace this unit as soon as possible. We are planning to use this as an opportunity to update the remainder of the system with new gas and beer lines. This is a job that is long overdue.

To meet the cost of this improvement, we would like to draw down $15,000 from the Shire 'Guilderton Country Club' Reserve account.

[redacted]

This will be a significant improvement for the Club.

Please contact me if there are any issues with our request.

Kind Regards

Philip Eaton, GCC President

13 REPORTS - REGULATORY AND DEVELOPMENT SERVICES

13.1 APPLICATION FOR DEVELOPMENT APPROVAL - EXPANSION OF THE EXISTING EXTRACTIVE INDUSTRY ON LOT 222 (283) CARABAN ROAD, CARABAN

File	BLD/3005
Applicant	Harley Dykstra
Location	Lot 222 (280) Caraban Road, Caraban
Owner	Angela Clifton and Shane Clifton
Zoning	General Rural
WAPC No	NA
Author	James Bayliss – Coordinator Statutory Planning
Reporting Officer	Bob Kelly - Executive Manager Regulatory and Development Services
Refer	Nil
Appendices	1. Previously Approved Plan (extract) [**13.1.1** - 1 page] 2. Location Plan [**13.1.2** - 1 page] 3. Aerial Plan [**13.1.3** - 1 page] 4. Applicant's Proposal [**13.1.4** - 44 pages] 5. Dust Management Plan [**13.1.5** - 2 pages] 6. Weed Management Plan [**13.1.6** - 3 pages] 7. Schedule of Submissions and Recommended Responses [**13.1.7** - 12 pages] 8. Applicant's Response to the Schedule of Submissions [**13.1.8** - 11 pages] 9. Photos of crossover and Caraban Road intersection [**13.1.9** - 4 pages] 10. SoG- ST D 05 Rev B crossover standard [**13.1.10** - 1 page]

DISCLOSURES OF INTEREST

Nil

PURPOSE

To consider an Application for Development Approval for an expansion of the existing Extractive Industry (sand and limestone) on Lot 222 (280) Caraban Road, Caraban.

BACKGROUND

The Shire received an Application for Development Approval on 12 April 2022 to expand the existing extractive industry operating on the subject land. The application was scheduled to be presented to Council in September 2022, however at the applicant's request the proposal was held in abeyance to allow for further consideration in view of the decision relating to a nearby extractive industry proposal.

Council granted Development Approval on 27 March 1998 for an extractive industry on the site, subject to 20 conditions. This decision was appealed to the relevant appeals board at the time with many conditions being modified. One of the modified conditions limited the term of the approval to 10 years.

A further development approval was subsequently considered on 1 September 2009 at the expiry of the original approval, which was approved by Council. This decision was appealed to the State Administrative Tribunal (SAT) in relation to road contributions imposed by the Shire. The matter was reconsidered by Council behind closed doors in January 2010 and it seems that, during that same reconsideration meeting, an Extractive Industry License (EIL) was approved which contained many conditions that would typically be imposed on a development approval.

The conditions imposed on the EIL were then appealed under the *Local Government Act 1995* to the SAT. On 16 March 2010 the EIL was reconsidered by Council and a notation placed on the approved plans delineated 'future stages'. The officer's report to Council confirmed that the 'future stages' notation did not form part of the assessment and was not therefore included as part of the approval. A copy of the previously approved plan is provided **(see appendices).**

This application seeks to expand the existing extractive industry into the area delineated as 'future stages' on the earlier plans. It is unclear why the 'future stages' component was omitted from the earlier approval.

It should be noted that this application does not seek to expand the intensity of the development currently being operated from the property (i.e. no additional material is proposed to be removed that is not already permitted under the works licence), but rather to expand the footprint of the development into a previously identified resource.

The subject property is 102 hectares (ha) in area and is used to extract basic raw material (i.e. sand and limestone). The topographic contours over the site range in elevation from approximately 30m Australian Height Datum (AHD) to 50m AHD. Contours along the front boundary of the lot commence at 30m AHD and rise to 50m AHD in the middle of the current extraction site. Elevations then reach 30m AHD towards the eastern portion of the lot.

It is anticipated that the pit will initially produce about 75,000 tonnes per annum, increasing to up to a maximum extraction capacity of 100,000 tonnes that is reflective of the current works licence granted in 2019 by the Department of Water and Environmental Regulation (DWER). This results in a total extraction area of approximately 25 ha, on the understanding that the operator is still utilising portions of existing stages 5 and 6.

It should be noted that the entire area will not be utilised at once. The officer also notes that proposed Stage 7 extends towards the neighbouring property to the south (market garden) and toward the Woodridge Rural Living Estate. The remainder of the expansion extends east and north.

The table below outlines development within the immediate area.

Land Use	Proximity to Development Area
Residential	~ 500m south-east;
Agriculture Intensive	~ 100m north

The development involves crushing and screening operations which requires the proponent to hold a Works Licence from the DWER under section 54 of the *Environmental Protection Act 1984* (EP Act). Given this is an existing operation, the development is currently regulated via a works licence until 2029.

A location plan and aerial photograph are provided **(see appendices).**

The applicant has provided a report in support of the application. The submission bundle includes a Dust Management Plan and Weed Management Plan received by the Shire on 9 March 2023 **(see appendices).**

COMMENT

Stakeholder Consultation

The application was advertised in accordance with clause 64 of the Deemed Provisions for Local Planning Schemes within the *Planning and Development (Local Planning Scheme) Regulations 2015* (Deemed Provisions). This included advertising to surrounding landowners within a one-kilometre radius of the development area, a development sign placed on the verge of the property, a notification on the Shire's website and a notification on the Woodridge Community Notice Board, all for a period of 28 days.

The Shire received 10 submissions as part of the consultation process, six of which oppose the development, one which supports the development and three general comments.

The following table provides an overview of concerns raised during the consultation process and the officer's comments in response.

Issue Raised	Officer's comments
Vehicle Impacts - Traffic Volumes - Safety Concerns - Cumulative Impact	Noted. 1. The officer is of the view that the road network within Woodridge Estate is not adequate to cater for vehicles associated with the development. All traffic associated with

	the development should and currently does utilise Caraban Road via Indian Ocean Drive to avoid any increase in vehicles using the internal roads of Woodridge. This has been the transport route to date for the operator and no complaints have been received in relation to haulage vehicles using the estate as a thoroughfare. 2. The development does not seek to increase vehicle movements above what is currently permitted under the existing approvals.
Amenity Impacts on Woodridge Estate - Noise Issues - Dust Issues - Silicosis	Noted 3. The development must comply with the *Environmental Protection (Noise) Regulations 1997* which stipulates permitted noise levels in the context of neighbouring receptors. The officer notes that DWER has authorised usage of the screening plant 800 metres from the nearest sensitive land use, and this is not intended to change. 4. Dust from extraction, screening and vehicle movements creates the potential for adverse impacts on the amenity of residents abutting the site. The primary mechanism proposed for dust suppression is watering. The topography of the land does provide a natural bund to receptors. Furthermore prevailing winds would not distribute dust in the direction of sensitive receptors should it become airborne. The operator holds a water licence that has been sufficient for the operations to date and is anticipated to be sufficient into the future. 5. The Department of Health (DoH) submission makes no comment on health risks associated with airborne silica. The typical position adopted by local governments regarding silica dust is that exposure to the respirable fraction of silica generally needs to be continuous and for extended periods of time (e.g. employees working in an enclosed area where the airborne particles are unable to dissipate as readily) for it to present health risks. In the context of this proposal, no health risks are anticipated.
Visual Amenity	Noted. 6. The provision of vegetative screening adjacent to the south-eastern corner of the lot screens the development from view

	to a large extent, thus mitigating this concern. Portions of the existing vegetative screening could be replanted to provide a greater barrier adjacent to Caraban Road and a portion of the southern boundary.
Devalue Properties	Noted. 7. Property values are not a material planning consideration and there is no evidence to support these claims.

Table 1 – Officer Response to Submissions

The application was also advertised to the following State agencies for a period of 42 days in accordance with clause 66 of the *Planning and Development (Local Planning Scheme) Regulations 2015*:

- Department of Water and Environmental Regulation (DWER);
- Department of Mines, Industry Regulation and Safety (DMIRS);
- Department of Planning, Lands and Heritage (DPLH);
- DPLH – Aboriginal Heritage Council;
- Department of Health (DoH);
- Department of Biodiversity, Conservation and Attractions (DBCA); and
- Department of Primary Industries and Regional Development (DPIRD).

The comments received from State agencies reinforce the need to impose conditions relating to rehabilitation, dust management, noise management etc. which are typically applied to extractive industries. The officer notes that no objections have been raised.

A copy of the Schedule of Submissions and Recommended Responses, including correspondence from State agencies, is provided **(see appendices).**

The applicant has provided a response to the Schedule of Submissions **(see appendices).**

PLANNING FRAMEWORK

Local Planning Scheme No. 9 (LPS 9) Planning Assessment

The subject lot is zoned "General Rural (GR)" under LPS 9. The objectives of the GR zone are outlined below with officer comments, given various submissions assert that the development does not in fact satisfy these objectives:

a) manage land use changes so that the specific local rural character of the zone is maintained or enhanced;

Officer comment:

The locality generally consists of rural land that has been predominantly cleared of vegetation to facilitate the grazing of livestock. Smaller lots are located closer to the Moore River which is situated to the west of Caraban Road.

Land immediately to the south is used for Agriculture Intensive (annual horticulture) purposes with a proposed extractive industry (Sheepco Pty Ltd) further south along Caraban Road that has been refused by Council on two occasions, with a SAT proceeding currently in progress. Woodridge Estate, which is zoned 'rural living', is located to the south-east and is used for low density residential purposes with properties typically being in the order of 2ha.

The character of the area therefore comprises an array of land uses (commercial and residential) of varying scales, within an area that has tourism-related opportunities given close proximity to the Moore River and the impending construction of a restaurant and micro-brewery.

The officer is of the view that the subject property currently contributes to and forms part of the diverse character of the locality and, if appropriately managed, will maintain the existing status quo.

b) encourage and protect broad acre agricultural activities such as grazing and more intensive agricultural activities such as horticulture as primary uses, with other rural pursuits and rural industries as secondary uses in circumstances where they demonstrate compatibility with the primary use;

Officer comment:

This objective is mainly relevant to the existing Agriculture Intensive (annual horticulture) development to the south. The separation distance, land topography and proposed vegetative buffer reduces the conflict that may otherwise potentially exist.

c) maintain and enhance the environmental qualities of the landscape, vegetation, soils and water bodies, to protect sensitive areas especially the natural valley and watercourse systems from damage;

Officer comment:

The State's primary environmental regulator, DWER, has not raised any potential environmental concerns and the officer has not identified any adverse environmental consequences.

d) provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses in the General Rural zone.

Officer comment:

This objective seeks to limit land uses (residential) within the GR zone that may prevent the zone from operating as intended (i.e. for primary and secondary agricultural pursuits). The proposed development does not seek to introduce a sensitive land use into the area and therefore is consistent with this objective.

An Extractive Industry is an "A" use within the General Rural zone, which means that the use is not permitted unless the local government has exercised its discretion by granting development approval after giving special notice in accordance with clause 64 of the Deemed Provisions.

It should also be noted that an extractive industry is regulated under an Extractive Industry Licence (EIL) that is issued in accordance with the Shire of Gingin's *Extractive Industries Local Law 2004*, which sets out further operational requirements.

Setbacks

In accordance with 'Table 2 – Site Requirements' of LPS 9, all development shall be set back a minimum 20 metres from all lot boundaries. The proposed extraction area is set back from all lot boundaries adequately.

4.8.10 Extractive Industries

4.8.10.1 Local government may consider applications for extractive industries in the General Rural zone where the sites have not been identified within an SCA under clause 5.4.

4.8.10.2 In considering applications for extractive industries, local government will have regard for the zone objectives.

4.8.10.3 Local government will also consider the potential impact of the extractive industry in regard to surrounding land uses (both existing and future) and may apply conditions to manage the potential impacts, such as noise, dust, odour and amenity.

Comment:

The above provision outlines that resources not identified under the Strategy are still able to be utilised, subject to a planning assessment. The relevant considerations outlined under clause 4.8.10.3 above are duplicated under the Deemed Provisions.

Planning and Development (Local Planning Scheme) Regulations 2015 (Deemed Provisions)

In accordance with Schedule 2, Part 9, Clause 67 of the Deemed Provisions, the local government is to have due regard to a range of matters to the extent that, in the opinion of the local government, those matters are relevant to the development the subject of the application. In this instance, the following matters are considered to be relevant with the officer comments outlined below:

(c) Any approved state planning policy;

(f) Any policy of the state;

Comment

Various state planning policies and guidance statements are applicable to the development assessment as referenced below:

- State Planning Policy 2.4 - Basic Raw Materials (SPP 2.4) (draft);
- State Planning Policy 2.5 - Rural Planning (SPP 2.5);
- Guilderton to Kalbarri Sub-Regional Strategy (GKSRS); and
- Guidance for the Assessment of Environmental Factors - Separation Distances between Industrial and Sensitive Land Uses No 3 (EPA Guidance Statement).

The officer notes that the suite of planning framework duplicates relevant considerations between documents. This section focuses on the buffer distances in the EPA Guidance Statement in the context of the proposed expansion.

Appendix 1 of the EPA Guidance Statement provides the separation distances for 'Extractive Industries - Sand and Limestone' and outlines a buffer distance of between 300-500 metres depending on size and scale of the operation. This buffer excludes crushing/screening activities which are included as part of the development proposal and therefore the buffer distance is expanded to 1000 metres.

Sensitive land uses are defined as follows:

> *"... land uses applied to places where people live or regularly spend time and which are therefore sensitive to emissions from industry. They include residences, hospitals and nursing homes, short stay accommodation, schools, child care facilities, shopping centres, playgrounds, and some public buildings. Some commercial and institutional land uses which require high levels of amenity or are sensitive to particular emissions may also be considered sensitive land uses.*

The current DWER licence accepts that crushing and screening will occur within at least 800m of the nearest dwellings. This is already occurring, with the crusher placed approximately 800m from the nearest dwelling. This is occurring without complaint from nearby residents. There is a high pit wall between the nearest dwellings and the proposed activities, which effectively operates as an acoustic barrier. This may explain why there have been no issues relating to noise emission discharges to date. The batter/pit wall is said to be 30m high, however the officer suspects this figure has been overestimated. Irrespective of the precise height, the bunding will be maintained with the proposed expansion to afford the same level of protection.

While the screening operations may not encroach closer to Woodridge, the use of plant equipment as part of Stage 7 will encroach within the 1 km buffer suggested by the EPA.

Noting that the majority of the expansion extends away from the nearest dwellings (with the exception of stage 7), the officer does not anticipate the expansion will have any further impact than the operation currently does.

(m) the compatibility of the development with its setting including the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development;

Comment

The officer is of the view that the proposed land use is compatible within the rural environment, and the existing development contributes to the locality's current character.

The relationship between the development and the surrounding land uses, particularly Woodridge Estate (given the separate zoning), is a point of contention. The officer is of the view, when considering the context of the development area in relation to the topography of the land, setbacks to sensitive receptors, duration of existing operations and management measures capable of mitigating potential impacts, that the development expansion is capable of co-existing within the locality.

Further effort can be made by the applicant to reduce the visual impact of the development encroaching towards the Caraban road frontage to the north-west by additional vegetation being planted in areas where plant uptake has not occurred.

(n) The amenity of the locality including the following:
(i) Environmental impacts of the development;
(ii) The character of the locality;

Comment

Amenity is defined under the Deemed Provisions as:

All those factors which combine to form the character of an area and include the present and likely future amenity.

Potential impacts on the amenity of the locality and more specifically on sensitive receptors in Woodridge are viewed as a key consideration. Amenity can be impacted by matters such as dust, noise and visual appearance, all of which are addressed separately below. The existing character and amenity of the locality has been outlined above in addressing the objectives of the zone.

Environmental Impacts

The development area is generally clear of remnant vegetation. The area is not identified as containing threatened and priority flora or fauna or threatened and priority ecological communities. The environmental impacts therefore appear to be minimal.

Noise

The regulatory regime relating to noise control and management in Western Australia is established by the *Environmental Protection Act 1986* (EP Act) and, in particular, the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations). The Noise Regulations set out the maximum permissible noise levels for land uses based on levels, frequency and matters such as impulsiveness and tonality. The development is obliged to adhere to these regulations.

The officer has suggested that a condition be imposed requiring a Noise Management Plan (NMP) to be submitted to the Shire, and subsequently adhered to, that will incorporate a complaints register. Appropriate signage is to be located at the perimeter gates identifying the site manager's contact details for submission of any concerns or complaints that may arise, with such complaints and concerns to be assessed and resolved by the operator prior to referral to the Shire.

Dust

Dust suppression is currently managed by a water truck with spray cannons to saturate and dampen fresh stockpiles when weather conditions require this course of action. The applicant advises that once stockpiles become established, they are stabilised and will not omit dust given that a hard crust forms over the stockpile.

The applicant notes that dust may be generated by excavation, screening, truck loading and wind action on exposed surfaces. The main potential for dust generation will occur during the stripping of topsoil, which contains fine sand and particulate organic matter.

The potential for dust generation during excavation, screening and loading of material, which has much more evenly sized particles, will be much lower.

The development has previously operated and currently operates via water application for dust suppression. The applicant has successfully operated without a formalised Dust Management Plan (DMP) since 1998, however as part of this proposal and to keep the quarry operating at industry standard, a DMP has been prepared and lodged.

The proposal seeks to stockpile material up to 6 metres in height and 90m^2 in area as a sufficient reserve to fulfil orders. The officer notes that similar proposals of this nature have had stockpile heights limited to 4.5 metres by way of development conditions to mitigate the likelihood of dust generation, knowing that the consequence of a height reduction results in a greater area dedicated to stockpiling. This can be captured as a condition of approval and revised development plans.

Visual Appearance

The topography of the subject land results in the pit being relatively discreet when viewed from Woodridge. The pit bunding is, however, viewable from Caraban Road. To address potential visual impacts, the applicant proposes vegetative screening along a portion of the south-eastern corner of the property shielding viewing of the pit from Woodridge. The officer is of the view that existing vegetation along the Caraban Road frontage should be reviewed and any areas where plant uptake is limited should be reinstated. This can be captured via a revised Landscaping Plan.

(p) Whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;

Comment

As referenced above, the applicant intends to install vegetation along the south-eastern boundary of their property. The lodgement of a Landscaping Plan will ensure that sufficient vegetation buffers are installed and maintained to the Shire's satisfaction.

(r) The suitability of the land for the development taking into account the possible risk to human health or safety;

Comment

Community submissions raised human health concerns in relation to exposure to silica dust. The relevant State agency to provide comment on matters of public health, being the Department of Health, has not raised any concern with respect to silica-related disease.

The officer has reviewed similar extractive industry assessments and notes that other local governments have acknowledged that no evidence exists to verify that silica-related diseases result from non-occupational exposure to respirable silica from extractive industries such as that proposed. Furthermore, this development does not seek to extract silica sand.

Exposure to the respirable fraction of silica generally needs to be continuous and for extended periods of time (e.g. employees working in an enclosed area where the airborne particles are unable to dissipate as readily) for it to present health risks.

Given the above, the officer is of the view that the proposed development is not considered to be a risk to human health or safety.

(s) The adequacy of -
(i) The proposed means of access to and egress from the site; and
(ii) Arrangements for the loading, unloading, manoeuvring and parking of vehicles;

(t) The amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;

Comment

The intensity of the excavation will fluctuate depending on the demand for the material being extracted. Development assessments must consider the worst case, or maximum, development scenario. It is important to note that this proposal will not generate any additional traffic than that permitted under previous approvals (i.e. 100,000 tpa).

Material will be transported from the site by pocket road trains in loads of up to 60 tonnes, however it is anticipated most trucks that come into the pit will carry an average of 12-24 tonnes. This will result in an average of 13-26 trucks per working day to export the extracted materials. This equates to 78-156 two-way truck movements per week.

The officer notes that the existing intersection between Caraban Road and the crossover is not to the standard reflected in the Shire's current design and specifications for developments of this nature. It is noted that the operator has previously been required to upgrade this intersection to the applicable standard at the time, which they did. However it appears that the works undertaken are at the end of their lifespan.

The landowner entered into a Deed with the Shire on 3 November 2010 **(see confidential appendices)**. The terms of the Deed related to the landowner's contributions towards any extraordinary expenses incurred by the Shire in repairing damage to the road caused by heavy vehicles associated with the development. This included payment of a bond by the landowners. It appears that no expenses have been incurred by the Shire to date, or at least no costs have been claimed by the Shire.

Site photographs taken on 22 March 2023 reveal damage to Caraban Road, with loose road material being dragged onto the road from the crossover and potholing/rutting at the entrance to the property. The officer is of the view that the Shire could administer the provisions of the Deed to have the road, including the intersection, reinstated to a contemporary standard.

Notwithstanding the above, the current approach is to impose conditions requiring landowners/operators to install an intersection and crossover in accordance with the Shire's Crossover Specification Drawing Number SoG/STD-05 dated January 2021. **(see appendices)**. This is a consistent approach that has been implemented on similar developments, which includes asphalt works and widened swept paths to avoid the very damage observed at the entrance to this site.

In view of the above, the officer has suggested a condition of approval that requires an upgrade to the intersection between Caraban Road and the entrance to the subject property. These works are secured via a Deed of Agreement (DoA) which may be in the form of an amendment to the existing DoA. It is likely that the existing provision will be difficult to administer (pending the outcome of the SAT appeal relating to a nearby property) and given that heavy vehicles frequent the adjoining market garden to the south. Attributing damage to this operator, as opposed to other operators, will be a point of contention in administering the provision of the existing Deed. On that basis the Shire may consider extinguishing the terms of the existing Deed in lieu of an intersection upgrade.

(y) Any submissions received on the application;

(za) The comments or submissions received from any authority consulted under clause 66;

The officer has addressed the main concerns raised under the stakeholder consultation section above. The officer is of the view that the issues raised can be adequately addressed through conditions of approval.

Summary

The officer is of the view that the subject land can accommodate the proposed extractive industry, provided that appropriate planning conditions and management plans are in place to ensure off site impacts can be controlled in a manner that won't adversely affect the amenity of the locality and will uphold the objectives of the General Rural zone.

STATUTORY/LOCAL LAW IMPLICATIONS

Planning and Development (Local Planning Scheme) Regulations 2015
Schedule 2 – Deemed provisions for Local Planning Schemes

Local Planning Scheme No. 9

Shire of Gingin Extractive Industries Local Law 2004 (as amended)

The Local Law guides the formal licensing of extractive industries throughout the Shire to monitor ongoing operational aspects of the use. The officer is of the view that, once revised management plans have been submitted as per suggested conditions of approval, an EIL can be issued.

Management plans would generally address dust, staging, noise, rehabilitation and traffic management. These components can be conveniently captured in a single Site Management Plan (SMP) for ease of reference.

POLICY IMPLICATIONS

State Planning Policy 2.4 - Basic Raw Materials

State Planning Policy 2.5 - Rural Planning

Guilderton to Kalbarri Sub - Regional Strategy

Environmental Protection Authority's (EPA) Guidance Statement No. 3 – Separation Distances between Industrial and Sensitive Land Uses (Guidance Statement)

BUDGET IMPLICATIONS

Nil

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	3. Planning & Sustainability - Plan for Future Generations
Strategic Objective	3.3 Planning & Land Use - Plan the use of the land to meet future requirements incorporating economic development objectives and community amenity

VOTING REQUIREMENTS - SIMPLE MAJORITY

The CEO left the meeting at 4:08pm and returned at 4:09pm.

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Balcombe SECONDED: Councillor Vis

That Council grant Development Approval for an expansion to the existing Extractive Industry (sand and limestone) on Lot 222 (280) Caraban Road, Caraban subject to the following conditions:

1. The development plans, including accompanying documentation (Application for Development Approval report prepared by Harley Dykstra dated 14 June 2022) together with any requirements, management plans and annotations detailed thereon, are the plans approved as part of this application and shall form part of the development approval issued unless amended by way of condition;

2. All works required to satisfy a condition of this approval are required to be installed/constructed and maintained in accordance with the approved plans and conditions of approval for the life of the development;

3. This development approval is granted for a limited period and shall expire on 18 April 2039;

4. The approved extraction area is limited to 22 hectares in area as outlined on the approved plans and shall be undertaken in accordance with the staging sequence delineated;

5. The extraction depth is limited to a finished level of 20 metres Australian Height Datum (AHD). The extractive industry shall not at any time intercept the groundwater table;

6. Prior to the commencement of site works, the landowner/operator shall enter into a Deed of Agreement for the upgrade of the intersection between Caraban Road and the internal access crossover to the satisfaction of the Shire of Gingin. The applicant/operator shall be responsible for all costs associated with the preparation of the Deed (including all drafts);

7. Prior to the commencement of the approved use, the works specified in the Deed of Agreement for the upgrade of the intersection between Caraban Road and the internal access crossover shall be undertaken at the expense of the landowner/operator to the satisfaction of the Shire of Gingin;

8. The landowner/operator shall maintain the crossover in a good condition thereafter to the satisfaction of the Shire of Gingin;

9. Prior to commencement of the approved use, a Site Management Plan (SMP) shall be submitted to and approved by the Shire of Gingin that, at a minimum, includes the following:

    a. Rehabilitation Plan – Proposed contouring and rehabilitation works during and at the conclusion of the extraction stages are to be specified. This is to also include decommissioning works should the extraction pit/approved development be suspended for a period of 12 months or longer and/or decommissioned. This is to include a contingency should seed germination within the spread topsoil not be successful.

    b. Revised Dust Management Plan that shall incorporate the following:

        i. Confirmation that the operator will keep an up-to-date complaints register, that is to be made available to the Shire of Gingin within 14 days upon written request;

        ii. Confirmation that the onsite manager's details will be located at the entrance gate, viewable to the public.

    c. Weed and Disease Management Plan - Detail the management of grasses, weeds and disease nuisances within the development area.

    d. Stormwater Management Plan – This is to demonstrate that the development is able to manage stormwater onsite and that the extraction pit is able to drain adequately.

    e. Traffic Management Strategy – This is to detail the route traffic will utilise to avoid the local road network within Woodridge Estate.

    f. Noise Management Plan – This is to formalise that the development will comply with the *Environmental Protection (Noise) Regulations 1997*.

10. In relation to Condition 9 e, all traffic associated with the approved use is to access the site from the north via Caraban Road. Vehicles associated with the approved use are prohibited from using the internal access roads of Woodridge Estate, unless the vehicle is supplying material to a property within Woodridge Estate;

11. The approved Site Management Plan (SMP) is to be implemented and adhered to thereafter to the satisfaction of the Shire of Gingin;

12. Prior to commencement of site works, a Landscaping Plan (LP) is to be submitted to and approved by the Shire of Gingin. The LP is to outline the type of vegetation to be established, including additional vegetation along portions of the Caraban Road frontage where plant uptake has been suppressed;

13. Prior to commencement of the approved use, the LP is to be actioned and thereafter maintained to the satisfaction of the Shire of Gingin;

14. Prior to commencement of the approved use, a Rehabilitation Bond in the amount of $10,714 is to be paid to the Shire of Gingin;

15. Stockpiles shall be limited to a maximum height of 6 metres from the pit floor ground level and located within the development area;

16. The approved development may only operate during the following times:

    Monday – Friday: 6:00am – 6:00pm.
    Saturday: 7:00am to 5:00pm.
    No extraction activities shall occur prior to 7:00am, on Sunday or on public holidays.

17. Truck loading activities shall cease at 12:00pm on Saturday, with only loader operations permitted between 12:00pm and 5:00pm.

Advice Notes:

Note 1: If you are aggrieved by the conditions of this approval, you have the right to request that the State Administrative Tribunal (SAT) review the decision, under Part 14 of the *Planning and Development Act 2005*.

Note 2: Where an approval has lapsed, no development may be carried out without further approval of the local government having first been sought and obtained.

Note 3: The development requires an Extractive Industry Licence to be issued by the Shire of Gingin prior to extraction occurring, which will be subject to periodical renewal in accordance with the Shire's Extractive Industries Local Law 2004 (as amended).

Note 4: Please be advised that the Shire of Gingin will not issue an Extractive Industry Licence should the annual (or as required) survey plan be inconsistent with the approved plans or accompanying documentation forming part of this approval, or if rehabilitation works are incomplete.

Note 5: Once rehabilitation works have been finalised, the landowner/operator may apply to the Shire of Gingin for the rehabilitation bond to be returned.

Note 6: Backfilling of the excavation pits with landfill is prohibited.

Note 7: In relation to the Deed of Agreement, the Shire is of the view that the intersection between Caraban Road and the access crossover is to be to an asphalt standard.

Note 8: In relation to the installation of a crossover, please be advised that the Crossover Specification Type B outlined within the Shire's Crossover Specification Drawing Number SoG/STD-04 dated January 2021 is applicable.

Note 9: In relation to the upgrade of a new crossover, please note that a crossover application form is to be submitted to the Shire's Operations and Assets Department. The application form can be found on the Shire's website at the following link: https://www.gingin.wa.gov.au/roads-driveways-and-crossovers

Note 10: Please be advised that clearing of native vegetation is prohibited in Western Australia, unless the clearing is authorised by a clearing permit obtained from the Department of Water and Environmental Regulation or is of a kind that is exempt in accordance with Schedule 6 of the *Environmental Protection Act 1986* or the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004.*

Note 11: Please be advised that the property may be re-rated to reflect the change in intensification and use approved as part of this application.

Note 12: If any interception of groundwater occurs, work shall cease and an advice notice be provided to the Department of Water and Environmental Regulation within 48 hours, followed by agreed remedial action.

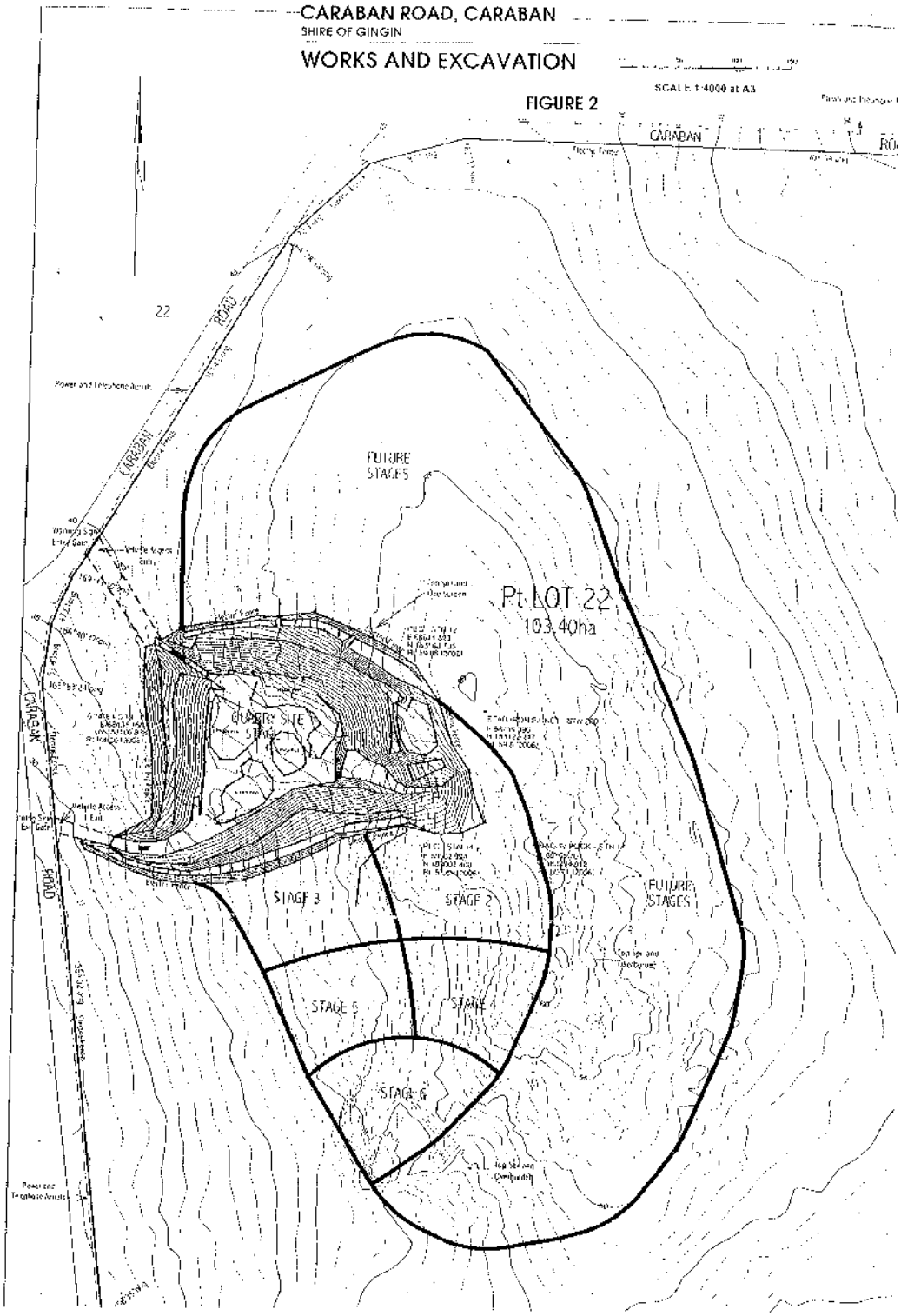
Note 13: The proponent is reminded of obligations under the *Aboriginal Heritage Act 1972* in relation to the discovery of unknown heritage places during excavations.

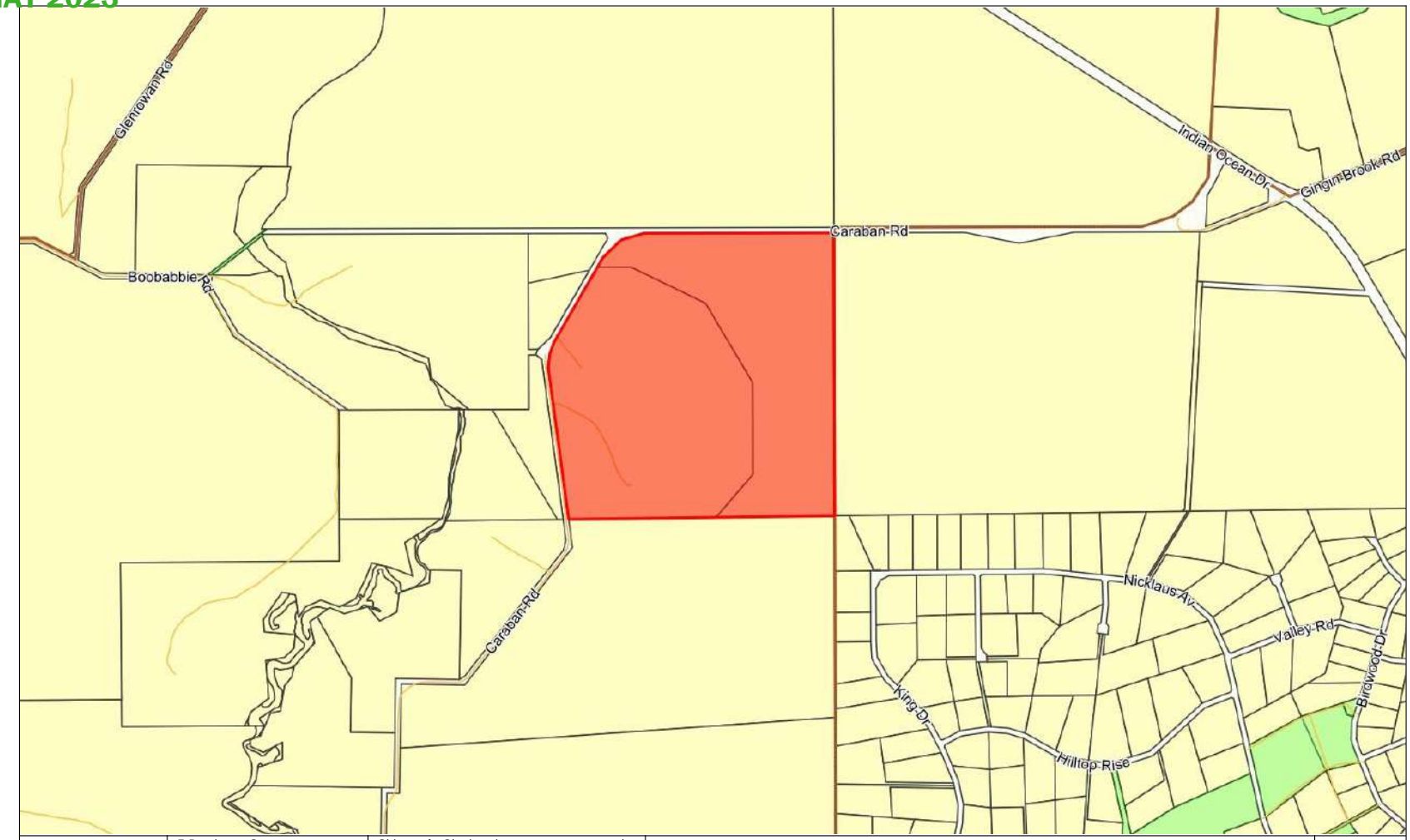
Note 14: Please be advised that you will be required to obtain an approval from the Shire's Environmental Health Section regarding the effluent disposal system for the toilet. https://www.gingin.wa.gov.au/effluent-disposal

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*

AGAINST: *Nil*


CARABAN ROAD, CARABAN
SHIRE OF GINGIN
WORKS AND EXCAVATION
FIGURE 2
SCALE 1:4000 at A3
CARABAN
ROAD
22
FUTURE STAGES
Pt LOT 22
103.40ha
QUARRY SITE
STAGE 1
STAGE 3
STAGE 2
FUTURE STAGES
STAGE 5
STAGE 4
STAGE 6



SHIRE OF GINGIN
HISTORY | BEAUTY | PROSPERITY

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Date: 3/04/2023

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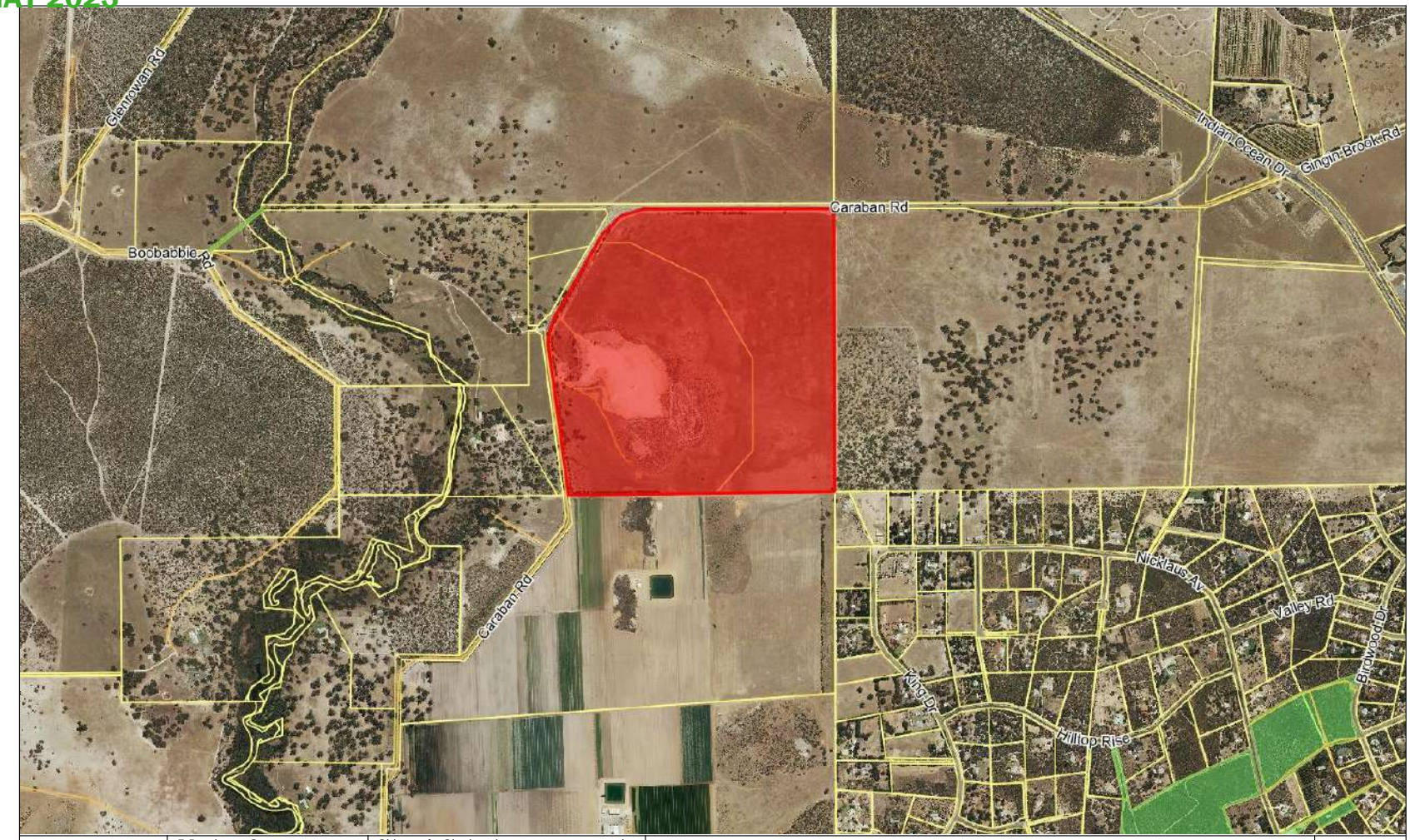

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N

Application for Development Approval for Extractive Industry

Lot 222 (No. 283) Caraban Road, Caraban

Harley Dykstra
PLANNING & SURVEY SOLUTIONS

DOCUMENT CONTROL

Control Version	Date	Status	Distribution	Comment
A	14/12/2021	Draft	Internal	For QA
B	15/12/2021	Draft	Client	For Comment
C	22/03/2022	Final	Shire	For Assessment

Prepared for:	Caraban Limestone and Sand	Date:	14 June 2022
Prepared by:	JS	Job No:	22978
Reviewed by:	CP	Ref:	B

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1. INTRODUCTION

This application for development approval of an expansion to an existing Extractive Industry on Lot 222 (No. 283) Caraban Road, Caraban (the subject site), has been prepared by Harley Dykstra on behalf of Caraban Limestone and Sand. Caraban Limestone and Sand represent and act under the authority of the registered proprietors of Lot 222 Caraban Road.

Caraban Limestone and Sand wish to renew approval to extract limestone and sand from the site to be used for various purposes including road building material within the Shire of Gingin, and elsewhere, plus agricultural purposes and other uses.

The subject site comprises a 102.8158ha square shaped lot which has approximately 1821.3m frontage to Caraban Road. The site is zoned General Rural under Local Planning Scheme No. 9 (LPS 9). 11.59 ha of the site is currently being used for extraction purposes. The application for Extractive Industry development relates to an additional 22ha portion of the site ('the Application Area'). Plans illustrating the nature and extent of development are included at **Appendix B.**

The owners currently operate a small limestone crushing and screening operation for local markets. Caraban Limestone and Sand wish to renew their approval to guide future stages of extraction whilst reflecting the approved DWER Licence that was granted in 2019.

The purpose of this report is to provide planning justification for the proposal supported by accurate topographical data in order to assist the Shire of Gingin to favourably consider this application and grant approval, subject to appropriate conditions.

2 SUBJECT SITE

2.1 Property Description, Ownership and Locality

The subject site is described as Lot 222 (No.283) Caraban Road, Caraban, which is approximately 15km north-east of the Guilderton town site. The site derives access from Caraban Road, via a sealed driveway. Caraban Road connects with Indian Ocean Drive to the northeast and provides access to the Caraban townsite to the south.

A summary of the land particulars is provided in **Table 1** and copy of the Certificate of Title is included in **Appendix A**.

LOT NO.	PROPERTY ADDRESS	LANDOWNER	AREA	VOL.	FOLIO	PLAN NO.
222	283 Caraban Road, Caraban	Shane John Clifton & Angela Michelle Clifton	102.815 8 ha	2782	192	DP 60931

TABLE 1 – SUMMARY OF LAND

An Aerial Locality Plan has been included at **Figure 1** which illustrates the location of the site relative to the Guilderton townsite, Moore River, Woodridge Estate and Indian Ocean Drive.

FIGURE 1 – AERIAL LOCALITY PLAN – SUBJECT LAND OUTLINED IN BLUE

The subject site has historically and is currently being used for limestone and sand extraction and is currently being operated by Caraban Limestone and Sand. **Figure 2** represents an Aerial Photograph of the site itself. The subject site is surrounded by General Rural land, with the Moore River to the west.

Plates 1 -3 depict the site and existing limestone extraction operation on Lot 222.

FIGURE 2 – AERIAL PHOTOGRAPH- SUBJECT SITE OUTLINED IN RED

PLATE 1 – SITE ACCESS (VIA CARABAN ROAD)

PLATE 2 –VIEW OF CARABAN LIMESTONE AND LIMESAND PIT

PLATE 3 – VIEW FROM CARABAN ROAD

2.2 Topography and Landform

The site is located in the Spearwood Dunes system of the Swan Coastal Plain with the landform consisting of irregular or parabolic calcareous sand dunes. The site plan located at **Appendix B** indicates the subject land has a gentle undulation across the Application Area.

The topographic contours over the site range in elevation from approximately 30mAHD to 50mAHD. Contours along the front boundary of the lot commence at 30mAHD and fall to 50mAHD in the middle of the current extraction site. Elevation then reaches 30mAHD towards the eastern portion of the lot.

2.3 Geology and Soils

The subject site is part of the Spearwood System which comprises of sand dunes and plains.

The Spearwood System is typically characterised by yellow brown sands of varying thickness over Tamala limestone. Soils within this system have often been removed by wind action to expose the underlying limestone.

2.4 Hydrology

The subject site is located on the Gnangara Jandakot Water Table. The depth to groundwater at the lowest point of the current pit is approximately 29m below natural ground level. Depth to groundwater on the proposed extraction site ranges from 36 to 58m below natural ground level.

The applicant holds a Licence to Take Water, which is valid from the 27th of June 2019 to 26th of June 2029. This licence includes the taking of water for domestic use, irrigation of up to .3ha of lawns and gardens, road construction purposes and dust suppression. This equates to an annual water entitlement of 6,150KL.

2.5 Vegetation

The site has been grazed since settlement, with some remnant vegetation is evident towards the northern and western edges, along the lot boundaries. The site has historically been used for cattle grazing and hence the land is degraded.

2.6 Fauna

There are no threatened/priority fauna habitats on the subject site, with the nearest potential habitat located 1km southwest of the boundary, along the Moore River foreshore.

Further, there are no significant feeding, roosting or breeding habitat for Carnaby's Black Cockatoo on the subject site given it is broadly cleared, leaving limited significant trees that these cockatoos could inhabit.

2.7 Bushfire Prone Areas

According to the map of Bushfire Prone Areas, a portion of the subject land is identified as bushfire prone due to the presence of low lying vegetation around the extraction pit (refer to **Figure 4**).

Version 1.4 of the Guidelines for Planning in Bushfire Prone Areas was released in December 2021. Accordingly, this document outlines examples of when exemptions to a Bushfire Management Plan may be considered. In relation to extractive industries, it states the following:

"A development application for an extractive industry where the extraction is undertaken in an open cleared area (for example, quarries and open cut mining) and no habitable buildings are proposed."

Due to the nature of this proposal, a Bushfire Management Plan is not required to support this application.

FIGURE 3 – BUSHFIRE PRONE AREAS MAP

3 PROPOSED DEVELOPMENT

3.1 Development Overview

Original planning consent was granted by the Shire of Gingin to the Applicant for the establishment of an extractive industry for the subject site on 27th of March 1998. This proposed works and excavation in 6 stages, with the potential for future stages. In accordance with that approval, the Applicant currently operates a small crushing and screening operation under Registration (R1015/1999/1).

This Application for Development Approval proposes an increase in the area of extraction of limestone and sand from Lot 222 Caraban Road, Caraban. This application seeks to increase extraction, in line with DWER Licence approval granted in 2019. This will generate a total extraction area estimated to be around 25ha, considering the Applicant will still be utilising stages 5 and 6. However, not all of this area will be utilised at once, as indicated by the site plan in **Appendix B**.

In respect of the potential lifespan of the pit, it is noted that this depends on a variety of factors, such as demand and the quantity and nature of resources. Notwithstanding that, however, the applicant estimates that there is sufficient resource for a lifespan of 30 plus years.

The Development Plan set (**Appendix B**) includes:

- a Pre-Extraction Site plan – identifying existing contours and the proposed Application Area (including indicative staging);
- a rehabilitation plan; and
- a Post Extraction Section Diagram.

3.2 Scale of Operations

Demand for limestone and sand is highly seasonal, with peak demand typically occurring between January and April. Operations at the extraction pit will vary according to market demand and to satisfy specific contracts, with output ranging from near-zero in winter to between 8,000 – 10,000 tonnes per week in summer.

The company saw an increase in demand last year as they supplied a larger amount of road building material to the Shire of Gingin for the Orange Springs Road project and other projects.

It is anticipated the pit will initially produce about 75,000 tonnes per annum, increasing to a maximum extraction capacity that is reflective of the current DWER licence.

The proposed extraction area is approximately 22ha and will be set back a minimum of 94m from Caraban Road, 35m from all other lot boundaries and 500m from the nearest residence in Woodridge Estate.

3.3 Stages of Excavation

The Applicant will continue to extract from stages 5 and 6, as well as the proposed expansion area. Extraction will commence from the southern end of the site and work back towards the north, as this is the most feasible option to ensure that rehabilitation can take place. Within each stage, extraction will proceed progressively, with rehabilitation taking place behind the extraction front. The active working area at any one time will be no more than 6-7 ha.

A site plan is attached at **Appendix B** which stipulates the proposed stages of extraction.

3.4 Depth of Excavation

The ultimate depth of limestone extraction would be to a depth of approximately 20m AHD to match the prevailing natural level of the land surrounding the pit. Groundwater is between 2m AHD to 3m AHD.

The depth to groundwater at the lowest point of the current pit is approximately 29m below natural ground level which is 2-3m AHD. Depth to groundwater on the proposed extraction site ranges from 36m to 58m below natural ground level. By extracting to a depth of 20m AHD, no impact on ground water will occur.

3.5 Method of Excavation

A wheeled loader (CAT 966H or similar) will be used to excavate and load the material. A bulldozer will be used to strip the topsoil/overburden to a depth of 300mm (approximately 21,000m^3 of topsoil in total). The loader will be used to excavate the materials and load it directly into trucks. Caraban Limestone and Sand currently use two loaders (CAT 972 G and Cat 980 H), with a third as a backup machine. Limestone is broken by a dozer track that crushes the excavated material to a specific size

Crushed material is then fed through the mobile screen plant to achieve specific size for customers. The screening plant will have a capacity of approximately 1,000 to 2,000 tonnes per day. Once the material has been screened, it will then be loaded to trucks for transfer to customers.

On-site refuelling of the loaders and screening plant will be carried out via fuel stored within bunded or self-bunded tanks. Vehicles will be serviced off-site, and no notable volumes of hydrocarbons are stored onsite.

3.6 Material Stockpiles

Excavated material will be stockpiled on site, with it being removed once it has been screened. There will be different stockpiles for each product grade, with the size of these dependent on the demand for each product. Further, stockpiles will be placed as close to each other as possible and close to the working face, with exact locations varying dependant on the stage of operation. The largest volume/tonnage of stockpiled material would not exceed 10,000 tonnes, which can be achieved by a 20m^2 and 6m high pile. Whilst stockpile sizes and heights may vary slightly, as demand dictates, given the depth of the pit from natural ground level it is confirmed that these stockpiles will continue to be entirely screened from the view of surrounding development, in the same fashion as they are, currently.

3.7 Hours of Operation

The quarry will continue to operate between the hours of 6am - 6pm Monday to Friday, with no extraction activities occurring before 7am. Extraction and truck movements on Saturdays will only be occasional and on an as-need basis. In the instance that large orders are placed, causing the need for the quarry to operate on Saturday, large trucks (semi-trailer) loading activities will typically cease at 12pm, with quarrying activities occurring until 6pm. Whilst it will generally be a rare occurrence, Saturday truck loading after 12pm will generally only take place in the form of small, 6-wheeler trucks / single trailer vehicles. No extraction or truck movements will occur on Sundays or on public holidays.

3.8 Site Access and Traffic Generation

The proposed Extractive Industry will utilise the existing access from Caraban Road. A blue metal road surface is currently being utilised as a driveway from Caraban Road through to the proposed Application Area. This portion of Caraban Road has historically been utilised for trucks and is safe for road trains to exit and enter the site.

The excavation site is already fenced, with a locked gateway when the site is not actually in use. Warning signs are located at the entrance of the site. They contain the wording "DANGER DEEP EXCAVATIONS." These requirements are set out as the Obligations of the Licensee which must be met under the Extractive Industries Local Law 2004.

Due to the nature of the industry, the intensity of the excavation will fluctuate depending on the demand for the material being extracted. Material will be transported from the site by pocket road trains in loads of up to 60 tonnes, however it is anticipated most trucks that come into the pit will carry an average of 12-24 tonnes. This will result in an average of 13-26 trucks per working day to export the extracted materials. This equates to 78-156 two-way truck movements per week. It is important to note that this proposal will not generate any additional traffic in accordance with previous approvals granted at the site.

The subject site has convenient access to Aglime Route 1 which extends from Lancelin through to Northam, via the townships of Gingin, Bindoon and Toodyay (see **Figure 6**). This route has been classed as suitable for RAV 4 vehicles. Aglime Route 1 has been allocated for upgrades as a priority. Work on this route was initially flagged by the state government in 2017 and has more recently received additional funding

FIGURE 6 – AGLIME ROUTES (ROADS 2030)

3.9 Dust Management

Dust may be generated by excavation, screening, truck loading and wind action on exposed surfaces. The main potential for dust generation will occur during the stripping of topsoil, which contains fine sand and particulate organic matter. The potential for dust generation during excavation, screening and loading of material, which has much more evenly sized particles, will be much lower.

In this instance, however, it is noted that observation of the last 12 months of Bureau of Meteorology data suggests that the prevailing wind patterns in the area are north, west and southwest. This emphasises a wind pattern that typically ensures dust will be blown away from Woodridge Estate. As extraction is already taking place on the site, the new extraction stages will not impact on Woodridge Estate as the dust will continue to blow in a direction which is away from the residential Estate, ensuring that a detailed Dust Management Plan is not required.

Further, the application has operated on this site for a number of years with no recorded complaints to DWER made about the operational activities.

Irrespective of the above, however, the operator already utilises dust suppression techniques. Specifically, dust suppression is managed by a water truck with spray cannons to saturate and dampen fresh stockpiles, when weather conditions require this course of action. In any event, once stockpiles become established they will be stabilised and will not omit dust given a hard crust that forms over the stockpile.

Finally in respect of truck movements, given there will be no changes to the number of trucks on site, dust suppression will continue to occur effectively, as it has been for the life of the existing operations.

It is also noted that progressive rehabilitation of quarried areas will mean that no more than 6-7 ha of the pit is exposed at any one time, thus reducing the potential for dust generation.

3.10 Noise Management

The current DWER license accepts that crushing and screening will occur within at least 800m from the nearest dwelling. The crusher is already placed approximately 800m from the nearest dwelling and is operating without complaint. It is apparent that a key contributing factor to the appropriate management of noise is the fact that the pit operations are significantly screened from view, as evidenced by the high pit wall (approximately 30m high) between the nearest dwellings and the proposed activities, which effectively operates as a strong acoustic barrier. Photographic evidence of this screen is included at **Plate 4** below.

PLATE 4 – VIEW FROM INSIDE THE PIT

Under future stages (particularly proposed Stage 7) the crusher may be required to move a little closer to than 800m (approximately 650m), but the significant pit wall barrier will remain in

place. Furthermore, the operator has confirmed that crushing activities do not take place before 7am, and that most products which are crushed are finer grain products, limiting the noise the crusher produces. Therefore, the generic buffer distances in the EPA Guidance Statement aren't particularly applicable to this site, in this instance.

Furthermore, the nearest neighbouring residence is approximately 500m to the southeast and is completely screened from the site by vegetation. This is demonstrated in **Plate 5** below. Therefore, given the existing barrier and the physical separation from existing residential locations, noise impact to sensitive land uses is not expected to be an issue.

PLATE 5 – VIEW FROM WOODRIDGE ESTATE

Mechanical equipment used at the quarry will include a bulldozer, impact crusher, a mobile screen plant and trucks carrying the material. These are fitted with standard noise attenuation equipment. It is anticipated the operations will be able to comply with the *Environmental Protection (Noise) Regulations, 1997* at all times.

Limestone excavation has been operating on the site for a number of years with no complaints lodged due to operational activities.

3.11 Drainage Management

The highly porous sands of the site will generate little or no runoff under any but the most extreme rainfall conditions. Any runoff that does occur will be captured in the pit, where it will infiltrate to the groundwater within a few hours. Runoff from the access road will be allowed to drain to the roadside, where it will infiltrate.

3.12 Protection of Retained Vegetation

Minimal clearing of remanent vegetation will need to take place to accommodate the increase in the area of extraction. This vegetation has been heavily impacted by cattle grazing activities, and consequently is very sparse.

3.13 Management of Visual Impacts

As referenced in section 3 of this report, the excavation activity will not be highly visible from Caraban Road due to the existing landform and the retained shrubs and small trees. The site will become less evident as the extraction progresses (and the site levels are lowered). Although the pit is fully concealed from the residents in the Woodridge Estate (as evidenced in **Plate 5**, above), a vegetation buffer in the south eastern corner of the lot is proposed to be implemented.

This form of land use currently exists on the site and is considered to form part of the specific rural character of the area. Therefore, an expansion of the extraction area can be expected to occur in the locality.

3.14 Employees and Site Management

Up to two employees will be on site at any time, with the potential for subcontractors carrying out various tasks. An on-site office and ablution block will be located in the northern portion of the site. The ablution block will be connected by a leach drain.

The excavation site is securely fenced, with gateways locked when the site is not in use. Warning signs are located along each boundary of the excavated area, not more than 200m apart and not less than 1.8m high or less than 1m wide. The warning signs contain the wording “DANGER DEEP EXCAVATIONS”. These requirements are set out as the Obligations of the Licensee which must be met under the Extractive Industries Local Law 2004.

4 PLANNING FRAMEWORK

4.1 Shire of Gingin Local Planning Scheme No. 9

The subject site is zoned 'General Rural' Under the Shire of Gingin LPS 9, as is the land directly to the north, south and west. Land to the southeast is zoned 'Rural Living 2,' which consists of Woodridge Estate. An extract from the Shire's zoning map is included at **Figure 5** *(below).*

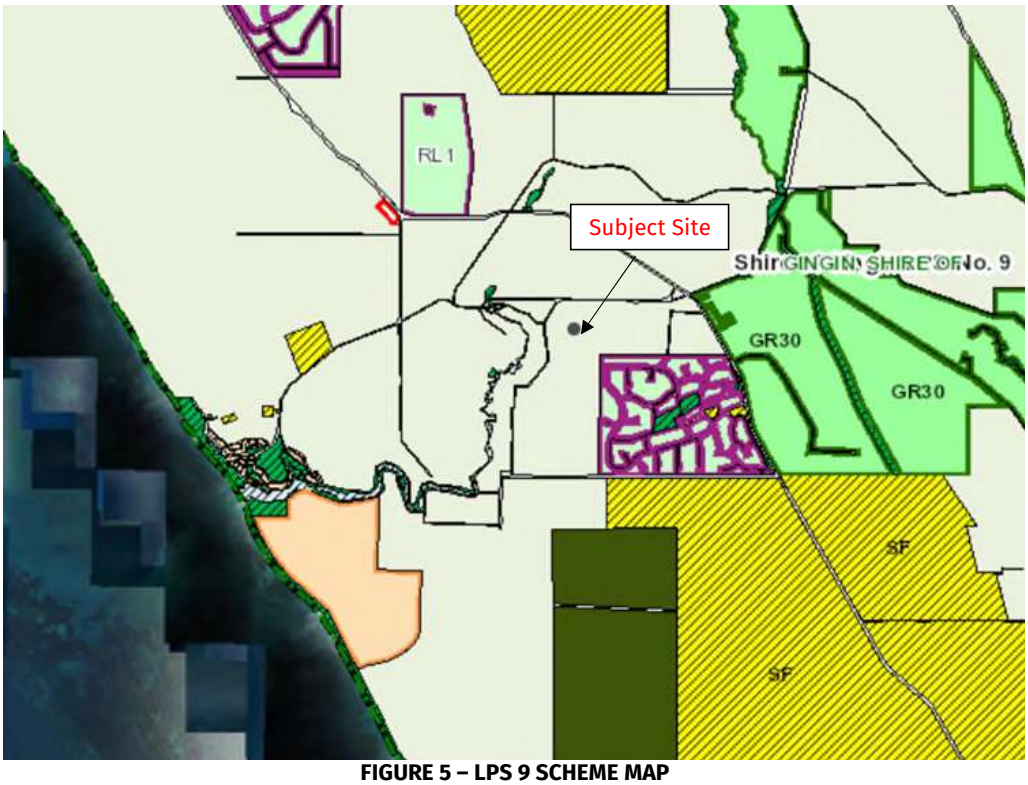


FIGURE 5 – LPS 9 SCHEME MAP

An Extractive Industry is identified as an 'A' use within the General Rural Zone which permits the use to be granted planning approval at the discretion of the local government following advertising.

Clause 3.2.7 of the Scheme sets out the following objectives for the 'General Rural' zone:

a) *Manage land use changes so that the specific local rural character of the zone is maintained or enhanced;*

b) *Encourage and protect broad acre agricultural activities such as grazing and more intensive agricultural activities such as horticulture as primary uses, with other rural pursuits and rural industries as secondary uses in circumstances where they demonstrate compatibility with the primary use;*

c) *Maintain and enhance the environmental qualities of the landscape, vegetation, soils and water bodies, to protect sensitive areas especially the natural valley and watercourse systems from damage; and*

d) *Provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses in the General Rural zone.*

With regard to cl 3.2.7 a) relating to local rural character, extraction activity is currently being undertaken on the site. Generally, the excavation activity will not be visible from Caraban Road due to landform. Activity will also be screened by a proposed a 20m wide vegetation buffer to Woodridge Estate in the south east. The site will become less evident to Caraban Road as the extraction progresses (and the site levels are lowered). The proposed increase in the volume of material extracted will not require any additional equipment or methods. Subsequently, this proposal will not alter the local rural character of the area.

The existing Caraban Limestone and Sand operations retain a visually pleasing buffer from Caraban Road so that extraction operations are screened. This consists of a buffer created by shrubs and small trees as evidenced in Plate 3. As such, this form of land use can be anticipated within the locality and is considered to form part of the specific rural character of the area albeit in a manner that is cognisant of surrounding development.

The proposal does not conflict with cl 3.2.7 b) on the basis that the existing landform and vegetation does not lend the site to broad acre or intensive agricultural activities.

In addition to comments above in relation to landscape impacts detailed environmental investigation and analysis will demonstrate that the proposal is not in conflict with cl 3.2.7 c).

Further, given the proposal does not involve the introduction of a sensitive use, cl 3.2.7 d) is satisfied.

The local planning scheme outlines general development standards that require all development within land zoned 'General Rural' to be setback a minimum of 20m from all boundaries. The proposed development will meet this requirement.

LPS 9 also addresses extractive industries specifically as follows:

4.8.10.1 *Local government may consider applications for extractive industries in the General Rural zone where the sites have not been identified within an SCA under clause 5.4.*

4.8.10.2 *In considering applications for extractive industries, local government will have regard for the zone objectives.*

4.8.10.3 *Local government will also consider the potential impact of the extractive industry in regard to surrounding land uses (both existing and future) and may apply conditions to manage the potential impacts, such as noise, dust, odour and amenity.*

It is considered that the Application is consistent with the relevant provisions of LPS 9, given it is not within/or in conflict with an SCA, is capable of satisfying the zone objectives and will not impact on surrounding uses via the application of appropriate conditions.

4.2 Shire of Gingin Local Planning Strategy

The Shire of Gingin's Local Planning Strategy ('the Strategy') was endorsed in February 2012 and provides the strategic guidance for land use planning within the municipality for the forthcoming 10-11 years.

The Shire of Gingin Local Planning Strategy identifies that there is *"...increasing pressure for extractive industry development as the resource lessens in the metropolitan area"*. The Strategy identifies that there is a need to protect the Basic Raw Materials (BRM) in the region until such time as they can be extracted. The Strategy also specifically recognises the utility of limesand for agricultural purposes to assist in arresting soil acidification on affected rural lands.

It is acknowledged a key environmental issue within the Strategy is the potential impact extractive activities have on the landscape in rural areas. The visual amenity impact of the proposed development is considered to be minimal and manageable in the context of the existing rural character of the area, when having regard to the nature of current extraction taking place on the site.

A key economic objective of the Strategy is to *"...facilitate more intensive and diversified use of rural land for higher value products"* which includes the extraction of basic raw material. The proposal is considered to be consistent with the above objective.

4.3 Guilderton to Kalbarri Sub-Regional Strategy

The Guilderton to Kalbarri Sub-Regional Strategy, identifies limesand extraction is one of the sub-region's key economic drivers:

Limesand deposits within the dune systems along parts of the sub-region are a valuable resource for the broader region's agricultural industry.

The Guilderton to Kalbarri Sub-Regional Strategy further recognises that a ready supply of limesand is essential for the sustainability of agricultural production.

The Sub-Regional Strategy also recommends that major freight associated with the transport of limesand be directed towards the Aglime Routes. The subject site has convenient access to Aglime Route 1 via Indian Ocean Drive to Gingin Brook Road.

4.4 Wheatbelt Regional Planning and Infrastructure Framework

The Wheatbelt Regional Planning and Infrastructure Framework recognises Basic Raw Materials (BRM), including limesand, are in demand both within the Wheatbelt region and to service the Perth metropolitan area. It is estimated more than 14.25 million hectares of Wheatbelt soils are acidic or at risk of becoming acidic and restricting agricultural production. The primary means of addressing soil acidification is by application of agricultural lime (limesand) reinforcing the value of this product in supporting agricultural land use.

4.5 State Planning Policy 2.4 – Basic Raw Materials

The current WAPC State Planning Policy 2.4 – Basic Raw Materials, was gazetted in July 2000. Since this time an updated Draft State Planning Policy 2.4 has been advertised. Submissions for comment on this planning policy closed on the 25/01/2019 however the updated version of the SPP2.4 has not yet been finalised.

The objectives of the current State Planning Policy 2.4 are as follows:

- *identify the location and extent of known basic raw material (BRM) resources;*
- *protect Priority Resource Locations, Key Extraction Areas and Extraction Areas from being developed for incompatible land uses which could limit future exploitation;*
- *ensure that the use and development of land for the extraction of basic raw materials does not adversely affect the environment or amenity in the locality of the operation during or after extraction;*
- *provide a consistent planning approval process for extractive industry proposals including the early consideration of sequential land uses.*

The draft policy seeks to enable the responsible extraction of Basic Raw Materials (BRM) while ensuring the protection of people and the environment. The application of this policy provides the foundation for land use planning to address the sustainable management of BRM in Western Australia. Applicable to this proposal, the following objectives of the policy are as follows:

> *a) Provide guidance to facilitate the planning of BRM extraction from sites, where such extraction is considered appropriate on planning and environmental grounds;*
>
> *(c) ensure considerations relating to the extraction of BRM and the regional importance of the materials are taken into account in the early stages of the planning process including scheme amendments, planning strategies and structure plans;*

(e) prioritise the extraction and availability of BRM through the identification of sequential use sites and planned extraction and remediation as appropriate for the final intended land use;

(f) ensure that the use and development of land for extraction of BRM, during or after extraction, avoids, minimises and mitigates detrimental impacts on the community and environment, including water resources and biodiversity values, while allowing for future use, consistent with long term planning.

With regard to the above current state policy objectives, the Application meets the objectives as outlined as follows:

- The proposed extractive industry is within a region known for the availability of BRM resources;
- Given limestone extraction is currently occurring on the site in an appropriately managed fashion, the expansion will have no adverse impact on the environment or amenity of the area.
- The proposal seeks to minimise and mitigate environmental impacts by progressively rehabilitating the site using native species, whilst still providing for future use of the site by limiting the depth of excavation to a finished level which is generally consistent with surrounding land.

4.6 State Planning Policy 2.5 – Rural Planning

The intent of the rural planning policy is to *'protect and preserve Western Australia's rural land assets due to the importance of their economic, nature resource, food production, environmental and landscape values.'*

The policy objectives are as follows:

(a) support existing, expanded and future primary production through the protection of rural land, particularly priority agricultural land and land required for animal premises and/or the production of food;

(b) provide investment security for existing, expanded and future primary production and promote economic growth and regional development on rural land for rural land uses;

(c) outside of the Perth and Peel planning regions, secure significant basic raw material resources and provide for their extraction;

(d) provide a planning framework that comprehensively considers rural land and land uses, and facilitates consistent and timely decision-making;

(e) avoid and minimise land use conflicts;

(f) promote sustainable settlement in, and adjacent to, existing urban areas; and

(g) protect and sustainably manage environmental, landscape and water resource assets.

The policy specifically addresses the extraction of basic raw materials outside the Perth and Peel planning regions and encourages the protection and extraction of basic raw materials whilst promoting sequential land use planning and appropriate rehabilitation. The proposal satisfies this specific policy objective whilst also having regard to the other relevant objectives of SPP 2.5.

4.7 Environmental Protection Authority Guidance Statement No. 3

The Environmental Protection Authority Guidance Statement No. 3, outlines that Extractive Industry uses, specifically sand and limestone extraction which does not require grinding or milling works (as is the case with this proposal), has a required buffer distance of 300m – 500m (depending on the size of the development) from sensitive land uses. Whilst the total proposed Application Area extends over 22ha the intensity of the development is considered to be relatively low, in terms of staging, depth of excavation, frequency of use (with peak demand between the months of January and April), hours of operation, transport movements and annual extraction tonnage/volumes.

The nearest sensitive land use is considered to be Woodridge Estate, which contains residential dwellings. The nearest residence is 500m from the proposed Application Area.

4.8 Indian Ocean Drive Planning Guideline

The Indian Ocean Drive Planning Guideline sets out broad guidelines for the location, siting and design of various land uses and development in the locality of Indian Ocean Drive (IOD), including Basic Raw Materials extraction. The Guideline applies specifically to a 500 m corridor on either side of the IOD road reserve from the Woodridge rural settlement, south of Guilderton, to the intersection of IOD with the Brand Highway. It also applies more generally to land that is outside of that corridor but may be prominently viewed from IOD. The subject site is located approximately 3km from IOD and is further obscured from view due to intervening landform. As such the development of the site will not have any impact on rural or natural landscapes when viewed from IOD.

4.9 Shire of Gingin Extractive Industries Local Law

The Shire of Gingin, under the Local Government Act, has prepared an Extractive Industry Local Law to outline the process for determining Extractive Industry Licence applications made to the Shire. As extraction is currently taking place on the site, this application is able to satisfy all of the regulations stipulated within the local law to allow for an increase in operations that will occur in a manner that will have no adverse impact on the surrounding locality.

5 REHABILITATION PROGRAM

5.1 Objectives

The primary objective of the rehabilitation and decommissioning program is to ensure that following the completion of the extractive industry, notwithstanding that the landform will have been modified, the site is otherwise restored and rehabilitated to a condition similar to what it was prior to the commencement of the development. Accordingly, the extractive industry site will return to pasture post extraction.

5.2 Rehabilitation Activity

Initially, whilst extraction takes place on stage 7, rehabilitation will be carried out on the existing pit areas, surrounding the pit floor (which currently accommodates plant equipment and material stockpiles). This will ensure the existing pit can be adequately rehabilitated in a timely manner. Subsequently, rehabilitation will occur in a progressive manner, as excavation moves through the different stages, so that no more than 6 to 7 ha of the pit will be open at any one time. Rehabilitation stages are depicted in the plans attached at **Appendix B**.

Rehabilitation will consist of terrain reshaping and the re-establishment of pasture. Rehabilitation will be progressive and will take place immediately behind the front of each extraction block (sub-stage). The topsoil from each extraction block will be saved and re-spread over the surfaces of restored landforms to allow for the regrowth of land for pasture.

The post extraction landform will comprise a flat or gently sloping pit floor with a sandy soil texture. The pit floor will be left smooth and even to prevent ponding of surface water and erosion.

The rear and sides of the pit will be battered where necessary to a maximum slope of 1:3. The Section at **Appendix B** shows a conceptual profile of the completed land surface.

Rehabilitation will comprise battering (if necessary) to a maximum slope of 1:3, followed by spreading of topsoil and vegetation debris. Topsoil will be applied to the completed pit surface using a wheeled loader and spread using a grader or other means.

Stockpiled vegetation debris will be spread over the soil surface to provide a seed source. Some debris may be burned in situ to break seed dormancy and create ash beds for germination.

5.3 Ongoing Monitoring

Maintenance and monitoring will occur following the completion of extraction activities and on final decommissioning of the site:

- Weeds are to be controlled bi-annually or as the need requires by the licence holder; and
- Repair erosion damage as required.

5.4 Final clean-up

Upon completion of all works and extraction, the final site clean-up will be completed as part of decommissioning. The access track will remain for the purpose of providing site access for fire break maintenance. The transportable site office/site amenities will be removed.

6 CONCLUSION

Development approval for an Extractive Industry at Lot 222 Caraban Road, Caraban is sought on behalf of Caraban Limestone and Sand as detailed in this report.

The proposed Extractive Industry development application is justified as follows:

- This proposal seeks to expand an already existing limestone and sand extraction site, required to service an increasing demand for this resource within the agricultural and infrastructure sector;
- The property is well located with good access to transport links of suitable capacity and construction that are specifically identified for the transport of agricultural limesand;
- The proposed expansion of the extraction area will not result in an increase in staff or equipment required;
- Extraction works shall continue to be appropriately managed and sequentially implemented to minimise any impact on surrounding landholders and the public;
- Rehabilitation work will be completed to a standard which will ensure the amenity and character of the broader area is appropriately maintained.

On the basis of the description and rationale provided within this report, it is respectfully requested that the Shire of Gingin review this application and approve the proposed expansion to this extractive industry development.

Should additional information be required to facilitate approval, please do not hesitate to contact the author of this report.

APPENDIX A | CERTIFICATE OF TITLE

Application for Development Approval
Lot 222 (No.283) Caraban Road, Caraban

WESTERN AUSTRALIA

REGISTER NUMBER	
222/DP60931	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	30/11/2011

RECORD OF CERTIFICATE OF TITLE

VOLUME 2782 FOLIO 192

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 222 ON DEPOSITED PLAN 60931

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

SHANE JOHN CLIFTON
ANGELA MICHELLE CLIFTON
BOTH OF POST OFFICE BOX 287, JOONDALUP
AS JOINT TENANTS

(AF L787640) REGISTERED 18/11/2011

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

1. EXCEPT AND RESERVING METALS, MINERALS, GEMS AND MINERAL OIL SPECIFIED IN TRANSFER 738/1942.
2. L787642 RESTRICTIVE COVENANT TO SHIRE OF GINGIN SEE DEPOSITED PLAN 60951 REGISTERED 18/11/2011.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

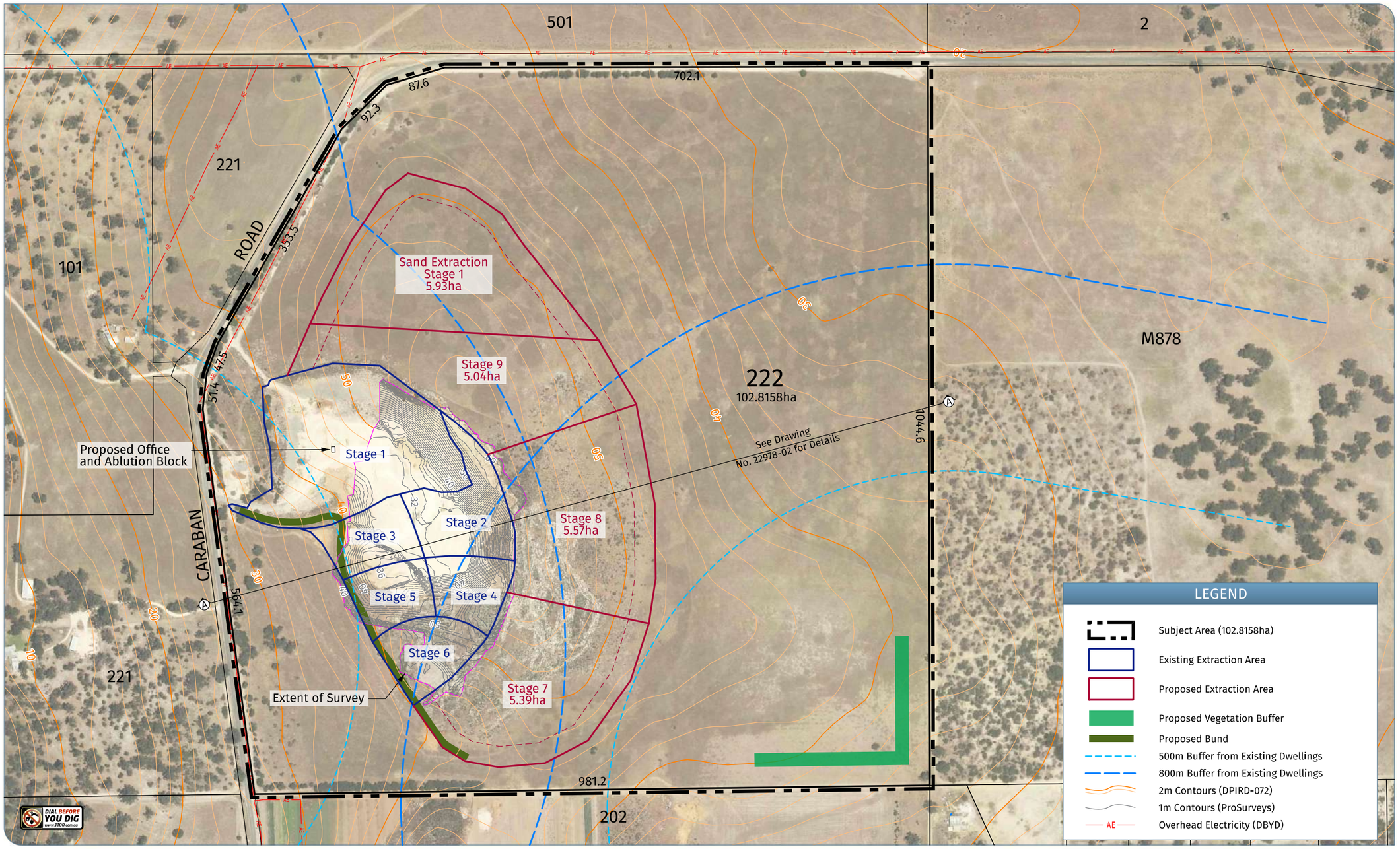
STATEMENTS:

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

SKETCH OF LAND:	DP60931
PREVIOUS TITLE:	2218-634
PROPERTY STREET ADDRESS:	283 CARABAN RD, CARABAN.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF GINGIN

APPENDIX B | DEVELOPMENT PLANS

Application for Development Approval
Lot 222 (No.283) Caraban Road, Caraban



DEVELOPMENT SITE PLAN

Lot 222 (No. 283) Caraban Road, CARABAN

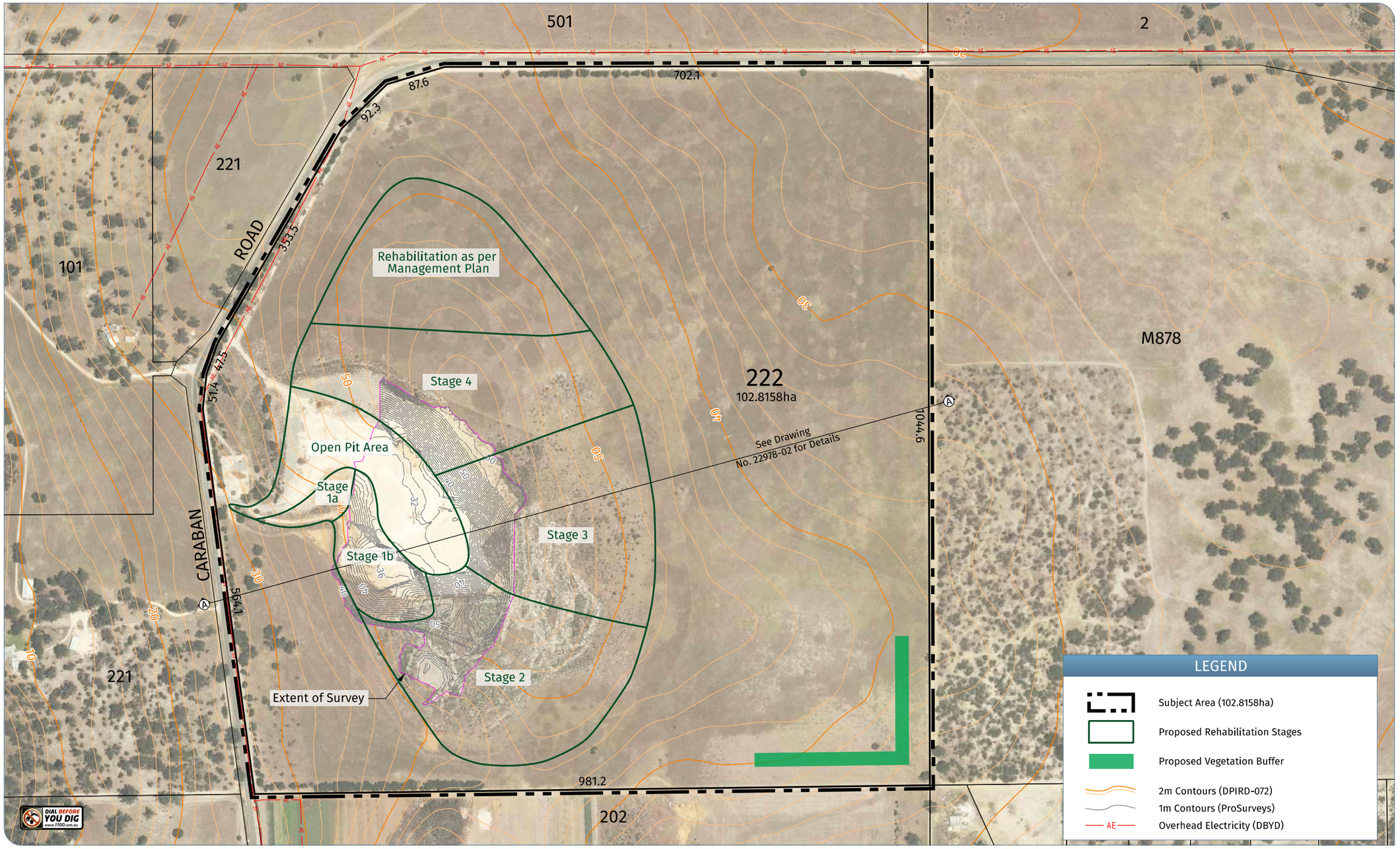
Plan No.	22978-03
Date	10/05/22
Drawn	NP
Checked	JS
Revision	A
Scale	1:5000@A3

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
PERTH WA 6000
15/2 Hensbrook Loop,
FORRESTDALE WA 6112
T: 08 9495 1947
E: metro@harleydykstra.com.au
ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

0 50m 100m 150m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

Harley Dykstra
PLANNING & SURVEY SOLUTIONS



REHABILITATION PLAN

Lot 222 (No. 283) Caraban Road, CARABAN

Plan No.	22978-04
Date	18/03/22
Drawn	NP
Checked	CP
Revision	B
Scale	1:5000@A3

PERTH & FORRESTDALE:
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0 50m 100m 150m

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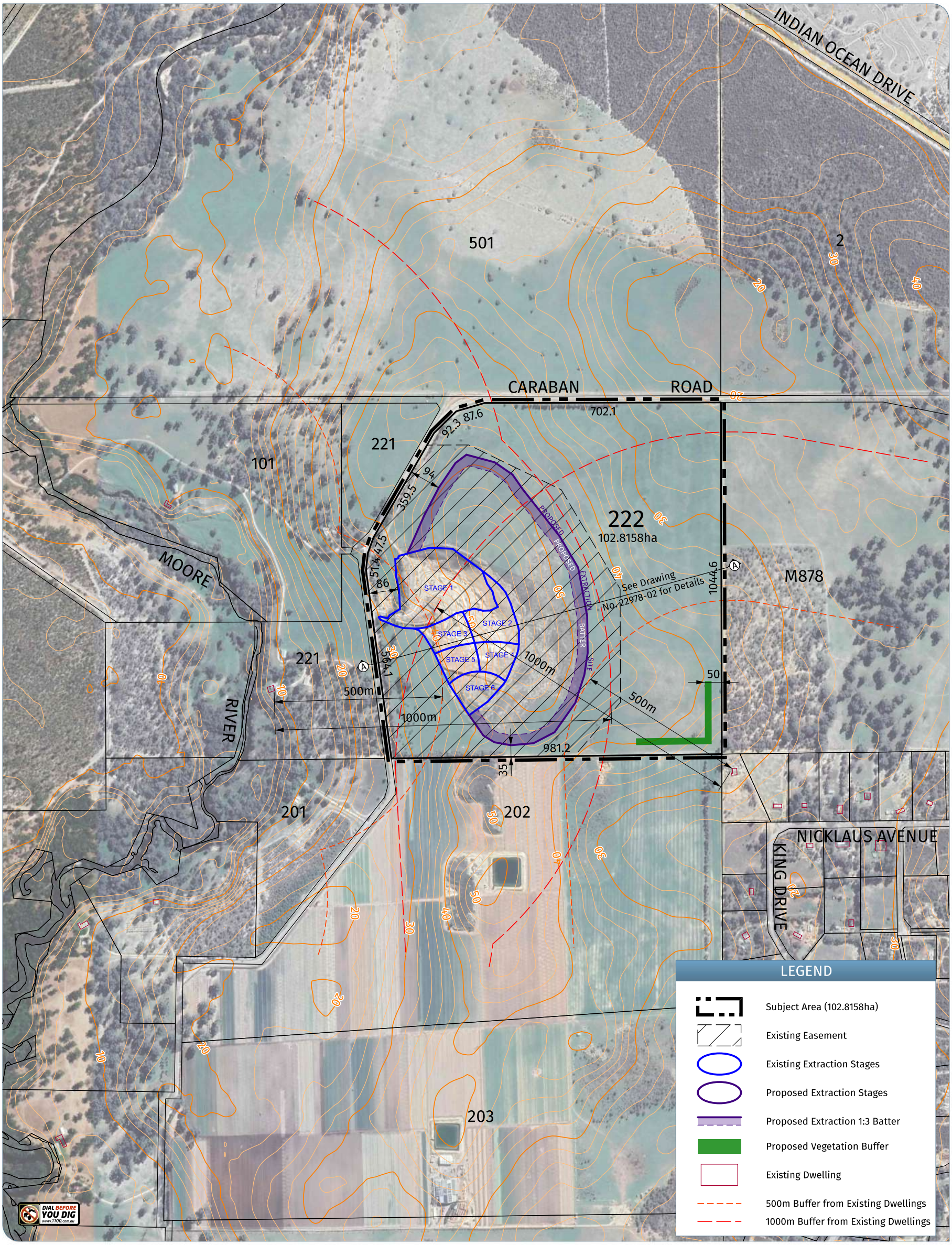

LANDUSE CONTEXT & BUFFER PLAN

Lot 222 (No. 283) Caraban Road, CARABAN

Plan No. | 22978-01
Date | 07/12/21
Drawn | NP
Checked | DM
Revision | B

Scale | 1:10000@A3

0 100m 200m 300m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
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ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

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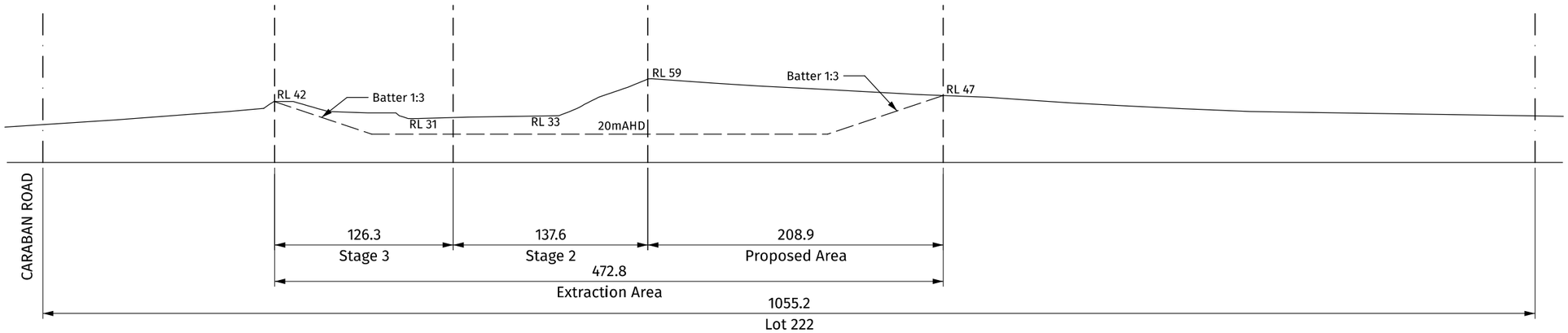

Cross Section A

Note: Cross Section created from Site Survey by ProSurveys (09/06/2021) Drawing No. 13086PDET-7 and from 2m contours (DPIRD-072)

LEGEND

- Natural Ground Level
- Post Extracation Ground Level
- Lot Boundary
- Extraction Stage Boundary

CROSS SECTION

Lot 222 (No. 283) Caraban Road, CARABAN

Plan No. | 22978-02
Date | 13/12/21
Drawn | NP
Checked | DM
Revision | A

Scale | 1:3000@A3

0 40m 80m

NOTE: This plan has been prepared for planning purposes. Areas, Contours and Dimensions shown are subject to survey

PERTH & FORRESTDALE:
Lvl 1, 252 Fitzgerald St
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ALBANY | BUNBURY | BUSSELTON | FORRESTDALE | PERTH

Harley Dykstra
PLANNING & SURVEY SOLUTIONS

APPENDIX C | DWER WORKS LICENSE

Government of Western Australia
Department of Water and Environmental Regulation

Licence

Licence Number	L9205/2019/1
Licence Holder	Split Rock Enterprises Pty Ltd
ACN	619 839 066
Registered business address	Lot 22 Caraban Road Caraban 6041
File Number	DER2019/000286
Duration	16/08/2019 to 14/08/2029
Date of issue	15/08/2019
Prescribed Premises	Category 12: Screening etc. of material
Premises	Split Rock Quarry Lot 22 Caraban Road Caraban 6041 Legal description - LOT 222 ON DEPOSITED PLAN 60931

This Licence is granted to the Licence Holder, subject to the following conditions, on 15 August 2019, by:

Tim Gentle
Manager, Resource Industries

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Explanatory notes

These explanatory notes do not form part of this Licence.

Defined terms

Definition of terms used in this Licence can be found at the start of this Licence. Terms which are defined have the first letter of each word capitalised throughout this Licence.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) is established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the *Environmental Protection Act 1986* (WA) (EP Act). The Department also monitors and audits compliance with licences, takes enforcement action and develops and implements licensing and industry regulation policy.

Licence

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased, or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered, or permitted to be altered, from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987* (WA) (EP Regulations).

This Licence does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DWER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007;*
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Licence Holder to ensure that any action or activity referred to in this Licence is permitted by, and is carried out in compliance with, other statutory requirements.

The Licence Holder must comply with the Licence. Contravening a Licence Condition is an offence under s.58 of the EP Act.

Responsibilities of a Licence Holder

Separate to the requirements of this Licence, general obligations of Licence Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Licence Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under section 61; and
- restrictions on making certain changes to Prescribed Premises unless the changes are in accordance with a works approval, Licence, closure notice or environmental protection notice (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Licence Holder has a duty to report to DWER all discharges of waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences, including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA).*
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA).*

Section 53 of the EP Act provides that a Licence Holder commits an offence if Emissions are caused, or altered from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a Closure Notice or an Environmental Protection Notice.

Defences to certain offences may be available to a Licence Holder and these are set out in the EP Act. Section 74A(b)(iv) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Licence Holder can prove that an Emission or Discharge occurred in accordance with a Licence.

This Licence specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of Specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The Specified and General Emissions and Discharges from Primary Activities conducted on the Prescribed Premises are authorised to be conducted in accordance with the Conditions of this Licence.

Emissions and Discharges caused from other activities not related to the Primary Activities at the Premises have not been Conditioned in this Licence. Emissions and Discharges from other activities at the Premises are subject to the general provisions of the EP Act.

Amendment of licence

The Licence Holder can apply to amend the Conditions of this Licence under s.59 of the EP Act. An application form for this purpose is available from DWER.

The CEO may also amend the Conditions of this Licence at any time on the initiative of the CEO without an application being made.

Amendment Notices constitute written notice of the amendment in accordance with s.59B(9) of the EP Act.

Duration of Licence

The Licence will remain in force for the duration set out on the first page of this Licence or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

Suspension or revocation

The CEO may suspend or revoke this Licence in accordance with s.59A of the EP Act.

Fees

The Licence Holder must pay an annual licence fee. Late payment of annual licence fees may result in the licence ceasing to have effect. A licence that has ceased to have effect due to non-payment of annual licence fees continues to exist; however, it ceases to provide a defence to an offence under s.74A of the EP Act.

Late fees are a component of annual licence fees and should a Licence Holder fail to pay late fees within the time specified the licence will similarly cease to have effect.

Definitions and interpretation

Definitions

In this Licence, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Annual Period	means a 12 month period commencing from 1 July until 30 June.
Condition	means a condition to which this Licence is subject under s.62 of the EP Act.
Books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 10 JOONDALUP DC WA 6919 info@dwer.wa.gov.au
Compliance Report	means a report in a format approved by the CEO as presented by the Licence Holder or as specified by the CEO (guidelines and templates may be available on the Department's website).
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Licence Holder in writing and sent to the Licence Holder's address for notifications, as described at the front of this Licence, in relation to: (a) compliance with the EP Act or this Licence; (b) the Books or other sources of information maintained in accordance with this Licence; or (c) the Books or other sources of information relating to Emissions from the Premises.
Discharge	has the same meaning given to that term under the EP Act.
DWER	Department of Water and Environmental Regulation.

Emission	has the same meaning given to that term under the EP Act.
EP Act	means the *Environmental Protection Act 1986* (WA).
EP Regulations	means the *Environmental Protection Regulations 1987* (WA).
Implementation Agreement or Decision	has the same meaning given to that term under the EP Act.
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
Licence	refers to this document, which evidences the grant of a Licence by the CEO under s.57 of the EP Act, subject to the Conditions.
Licence Holder	refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence.
Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Waste	has the same meaning given to that term under the EP Act.

Interpretation

In this Licence:

(a) the words 'including', 'includes' and 'include' will be read as if followed by the words 'without limitation';

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a Condition, each row in a table constitutes a separate Condition;

(d) any reference to an Australian or other standard, guideline or code of practice in this Licence means the version of the standard, guideline or code of practice in force at the time of granting of this Licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Licence; and

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act.

Conditions

Emissions

1. The Licence Holder must not cause any Emissions from the Primary Activities on the Premises except for specified Emissions and general Emissions described in Column 1 of Table 2 subject to the exclusions, limitations or requirements specified in Column 2 of Table 2.

Table 2: Authorised Emissions table

Column 1	**Column 2**
Emission type	**Exclusions/Limitations/Requirements**
General Emissions	
Emissions which: • arise from the Primary Activities set out in Schedule 2.	Emissions excluded from General Emissions are: • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy; or • Emissions or Discharges which do not comply with a prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or • Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the Environmental *Protection (Unauthorised Discharges) Regulations 2004*.

Infrastructure and equipment

2. The Licence Holder must ensure that the infrastructure and equipment specified in Column 1 of Table 3 is maintained in good working order and operated in accordance with the requirements specified in Column 2 of Table 3.

Table 3: Infrastructure and equipment controls table

Column 1	**Column 2**
Site infrastructure and equipment	**Operational requirements**
Crushing and screening circuit	Ensure all infrastructure and equipment is operational as per manufacturer's instructions, including any dust and noise suppression equipment.

Record-keeping

3. The Licence Holder must maintain accurate and auditable Books including the following records, information, reports and data required by this Licence:

(a) the calculation of fees payable in respect of this Licence; and

(b) complaints received under Condition 3 of this Licence.

In addition, the Books must:

(c) be legible;

(d) if amended, be amended in such a way that the original and subsequent amendments remain legible and are capable of retrieval;

(e) be retained for at least 3 years from the date the Books were made; and

(f) be available to be produced to an Inspector or the CEO.

4. The Licence Holder must record the number and details of any complaints received by the Licence Holder relating to its obligations under this Licence and its compliance with Part V of the EP Act at the Premises, and any action taken by the Licence Holder in response to the complaint. Details of complaints must include:

(a) an accurate record of the concerns or issues raised, for example a copy of any written complaint or a written note of any verbal complaints made;

(b) the name and contact details of the complainant, if provided by the complainant;

(c) the date of the complaint; and

(d) the details and dates of the actions taken by the Licence Holder in response to the complaints.

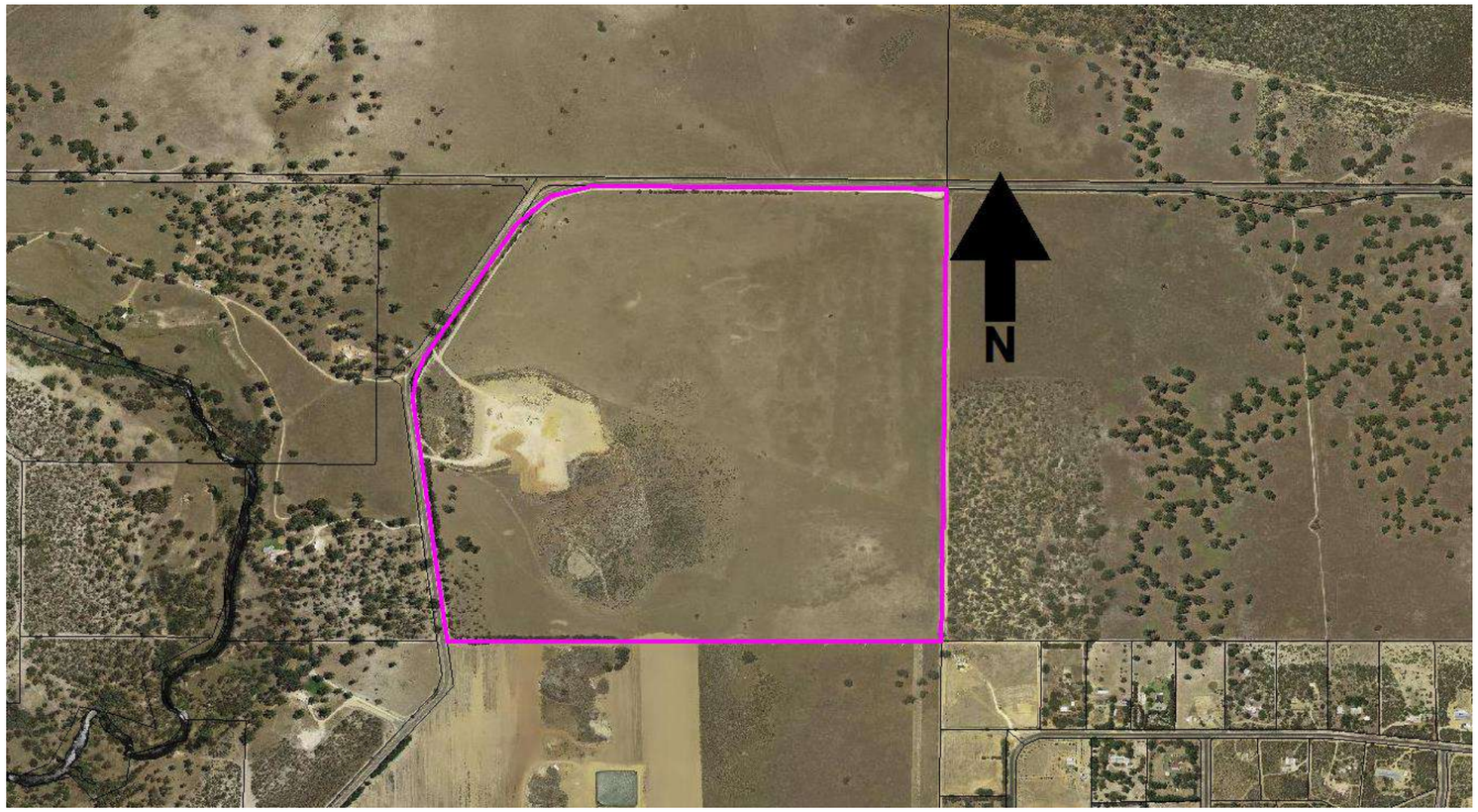
5. The Licence Holder must submit to the CEO, no later than 30 July, a Compliance Report indicating the extent to which the Licence Holder has complied with the Conditions in this Licence for the preceding Annual Period.

6. The Licence Holder must comply with a Department Request, within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The Premises boundary is shown in pink.



Schedule 2: Primary Activities

At the time of assessment, Emissions and Discharges from the following Primary Activities were considered in the determination of the risk and related Conditions for the Premises.

The Primary Activities are listed in Table 5:

Table 4: Primary Activities

Primary Activity	Premises production or design capacity
Category 12: Screening etc. of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.	100,000 tonnes per annual period

Infrastructure and equipment

The Primary Activity infrastructure and equipment situated on the Premises is listed in Table 6.

Table 5: Infrastructure and equipment

Infrastructure and equipment	Plan reference
Dozer	Mobile – various locations
Crushing and screening circuit	
Water truck	

Site layout

The Primary Activity infrastructure and equipment is set out on the Premises in accordance with the site layout specified on the Premises map in Schedule 1.

APPENDIX D | WATER LICENSE

File No: SN13873

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Instrument No. GWL202996(1)

LICENCE TO TAKE WATER

Granted by the Minister under section 5C of the Rights in Water and Irrigation Act 1914

Licensee(s)	Clifton, Angela Michelle Shane John Clifton		
Description of Water Resource	Gingin Perth - Superficial Swan	**Annual Water Entitlement**	1,500kL
Location of Water Source	LOT 221 ON PLAN 60931 - Volume/Folio 2782/191 - Lot 221 CARABAN RD CARABAN		

Authorised Activities	**Taking of water for**	**Location of Activity**
	Dust suppression for earthworks and construction purposes	LOT 222 ON PLAN 60931 - Volume/Folio 2782/192 - Lot 222 CARABAN RD CARABAN
Duration of Licence	From 27 June 2019 to 26 June 2029	

This Licence is subject to the following terms, conditions and restrictions:

1. The annual water year for water taken under this licence is defined as 1 June to 31 May.

End of terms, conditions and restrictions

This Licence is granted subject to the Rights in Water and Irrigation Regulations 2000.

File No: SN13873

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Instrument No. GWL152667(3)

LICENCE TO TAKE WATER

Granted by the Minister under section 5C of the Rights in Water and Irrigation Act 1914

Licensee(s)	Clifton, Angela Michelle Shane John Clifton		
Description of Water Resource	Gingin Perth - Superficial Swan	**Annual Water Entitlement**	6,150kL
Location of Water Source	LOT 221 ON PLAN 60931 - Volume/Folio 2782/191 - Lot 221 CARABAN RD CARABAN		

Authorised Activities	**Taking of water for**	**Location of Activity**
	Domestic use	LOT 221 ON PLAN 60931 - Volume/Folio 2782/191 - Lot 221 CARABAN RD CARABAN
	Irrigation of up to .3 ha of lawns and gardens	LOT 221 ON PLAN 60931 - Volume/Folio 2782/191 - Lot 221 CARABAN RD CARABAN
	Road construction purposes	LOT 221 ON PLAN 60931 - Volume/Folio 2782/191 - Lot 221 CARABAN RD CARABAN
Duration of Licence	From 27 June 2019 to 26 June 2029	

This Licence is subject to the following terms, conditions and restrictions:

1. The annual water year for water taken under this licence is defined as 1 June to 31 May.

2. The licensee shall not use water for non commercial purposes between 9 am and 6 pm except for the establishment of newly planted areas. For newly planted areas water may be used within these hours for a period of up to 28 consecutive days, commencing from the date of planting.

End of terms, conditions and restrictions

This Licence is granted subject to the Rights in Water and Irrigation Regulations 2000.

CARABAN
LIMESTONE & SAND

Caraban Limestone Dust Management Plan.

Occurrence of Dusts

Dusts can occur at almost any time when the ground is disturbed by natural events (wind, animals, etc) or by man made events such as drilling, blasting, digging or horticulture pursuits.

Dust will always be worse if the conditions are dry, and the ground material is in a fine form.

The construction and operation activities that are to be undertaken on the premisis may cause dust to be generated if measures are not put in place to control dust and dust making activities.

When dust is present personnel will arrange for areas where dust is being generated to be watered. Other methods successfully employed in the quarry is the placing of dry screened rubble as a dust suppressor.

Crushers and screening plant are fitted with spray points to reduce any dust lift off if the feed material is of a dry nature and produces dust.

7.4 Dust Suppression methods

- Ensure that all water sprays at transfer points are in place and operational as required.
- Ensure dust suppression systems are maintained and in a working condition.
- Ensure all surface roadways to be watered in regular intervals or dry rubble applied to prevent dust lift off maintain dust levels.

Prevailing winds.

Winds are predominantly from the East turning Southwest in the drier months, with very few North-to-North Westerly winds which usually occur in conjunction with a rain event thus alleviating any dust lift-off.

Historical Data.

The quarry has been operating for more than 20 years and has had no complaints in relation to dust or noise.

Material processing is conducted within the pit floor area which is protected from most of the volatile evening South Westerly winds.

Given the prevailing winds would carry any potential dust liftoff to the West and North there would be no likely impact on any other land uses.

In addition, the majority of airborne contaminants in the area can be attributed to neighbouring land uses which deposits tonnes of dust and sand in the direction of the quarry and into the local atmosphere.

It would be very difficult to attribute the quarry operations as a major contributor to any dust in the vicinity.

In summary every effort is taken to eliminate dust liftoff.
The quarry operations are subject and comply with all relevant conditions imposed by DWER and as stated no complaints have ever been recieved.

This application does not in any way alter our commitment to compliance and our continued diligence in compliance.

CARABAN ROAD QUARRY
WEED MANAGEMENT PLAN

CARABAN ROAD QUARRY
WEED MANAGEMENT PLAN

Background:

The Caraban Rd Quarry is located on lot 22 Caraban Rd Caraban in the Shire of Gingin.

The Quarry has been in operation for some 20 years and is currently providing High Grade Road building material and Agricultural Lime throughout the Shire and the wheat belt region.

It is especially important to ensure that our products are weed free, to prevent the spread of weeds in either the material produced or on vehicles entering and exiting the site. It is equally as important to prevent the spread of weeds into the quarry with good hygiene practices.

This will continue to enable the quarry to supply a non-contaminated product.

The Quarry is located on a Rural block which has been part of the family's grazing operation for the last 100 years, as such weed control has always been of the highest importance in both the farming operation and the quarry works.

Personal observation has revealed that many declared weed species are apparent in the area.

Most are found on road verges and on smaller rural properties who fail to adequately maintain a diligent approach to invasive weeds.

As Land holders we have for many years been combating the spread of Geraldton Carnation weed, Patterson Curse Paddy melons, calthrop, and African love grass to mention a few.

Paddocks are regularly inspected, and invasive weeds are eradicated or controlled by either manually grubbing, ploughing and or spraying with herbicides.

This being the case it is of heightened importance that a weed management plan is maintained.

Regular inspections for Weed species in and around the quarry are undertaken as part of both the quarry and farming operations.

Areas inspected include the road verge and the quarry roads, stockpiles and surrounding paddocks.

Seasonality of plants must be considered, and routine checks and inspections need to take place at various times of the year to cover all seasons.

CARABAN ROAD QUARRY
WEED MANAGEMENT PLAN

Hygiene:

The process of quarrying lends to a weed free environment, as the topsoil is ripped and stockpiled in windrows which make up part of the acoustic bund.

These stockpiles are generally inhabited by the local pasture grasses, wild couch, WA Blue lupins and other grasses common to the area.

Care is taken to only introduce a Clean Friable rock to the quarry floor for processing.

This means that there is no seed base introduced to the working faces or floor and as such the quarry could be classed as 'weed-free'.

Consideration must then be given to the implementation of weed hygiene practices to ensure machinery, equipment or people are not introducing any weed species into the quarry.

Weed management is often considered as containing or eradicating weeds, however stopping the introduction of weed species into a weed-free zone is as equally important.

The hygiene practices for weed control can be achieved by implementation of the following Actions and Recommendations

- Regular weed inspections of the Quarry : This is to take place in varying months to take seasonality into consideration.

- A Dedicated clean down area for all trucks for sweeping down and clearing grain.

- All machinery that might be brought on site be cleaned with removal of any material that may be contaminated with weeds (i.e. mud, dirt, vegetation) be carried out in the dedicated was down or sweep out area. This would be accomplished using a broom, stiff brush or air blower. Also, the use of a water wash down.

- Treat isolated occurrences of all weeds that may occur in the quarry and or surrounding paddocks as well as the road verges.

These practices have served us well in the years past, and although it is difficult to combat the invasion of many weeds it is possible and imperative that only clean product is offered for sale.

The best way to ensure this and monitor the successfulness of the weed management plan is to regularly inspect and test the products offered for sale.

To ensure the integrity of the product random test samples should be sent away for analyst and inspection to ensure that it is weed and seed free, this will be carried out by an independent and certified lab capable of performing the task.

Conclusion:

In conclusion by continuing to implement the actions as highlighted in this document weed control can be adequately managed.

SCHEDULE OF SUBMISSIONS AND RECOMMENDED RESPONSES

DEVELOPMENT APPLICATION: EXPANSION TO EXISTING EXTRACTIVE INDUSTRY ON LOT 222 (283) CARABAN ROAD, CARABAN

No.	Submitter	Submission details	Recommended response
1	DWER	The submitter provides the following general comment: "*The Department has identified that the proposed development has the potential to impact on environment and water values and management. Key issues and recommendations that should be addressed are provided below:* *Native Vegetation Clearing* *Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless:* • *it is undertaken under the authority of a clearing permit* • *it is done after the person has received notice under Section 51DA(5) that a clearing permit is not required* • *the clearing is subject to an exemption* *Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).* *Based on the information provided, it is not clear whether the proposal requires the clearing of native vegetation. If any clearing is proposed, a clearing permit is required, noting that exemptions do not apply.* *The Department has not received a clearing permit application for this proposal. Application forms are available from https://www.wa.gov.au/service/environment/environment-information-services/clearing-permit-forms*	Noted.

Information regarding clearing permit fees can be found here:
https://www.wa.gov.au/service/environment/environment-information-services/clearing-fees-frequently-asked-questions

If further clarification is required regarding clearing, please contact the Department's Native Vegetation Regulation section at admin.nvp@dwer.wa.gov.au or on 6364 7098.

Industry Regulation
The Department regulates emissions and discharges from the construction and operation of prescribed premises through a works approval and licensing process, under Part V, Division 3 of the EP Act.

The categories of prescribed premises are outlined in Schedule 1 of the Environmental Protection Regulations 1987.

The EP Act requires a works approval to be obtained before constructing a prescribed premises and makes it an offence to cause an emission or discharge from an existing prescribed premises unless they are the holder of a works approval or licence (or registration) and the emission is in accordance with any conditions to which the licence or works approval is subject.

The provided development approval application for extractive industry was reviewed in relation to works approval and licence requirements under Part V Division 3 of the EP Act.

The proposed operation is categorised as a Prescribed Premises under Schedule 1 of the Environmental Protection Regulations 1987 for the following categories:

Category	*Description*	*Production/ design capacity*

12	*Screening, etc. of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated*	*100,000 tonnes per annual period*

Any future changes to the licence will require an amendment application to be submitted by the Licence Holder. The application forms and future information is available at http://www.der.wa.gov.au/our-work/licences-and-works-approvals and / or if there are queries relating to this Licence, to contact the Department at info@dwer.wa.gov.au or 6364 7000.

The purpose of a licence is to allow the Department to assess the environmental acceptability of a proposal's potential to cause emissions and discharges during operation. Note that any licence issued under Part V of the EP Act will only regulate emissions associated with the screening operation (such as dust, noise and contaminated stormwater). It does not extend to the environmental impacts of extracting the material from the ground or transport of material off-site.

The operations will need to demonstrate compliance with the include all relevant regulations including Environmental Protection (Noise) Regulations 1997.

Please note that this advice is provided based on information provided. Should this information change, a works approval or licensing requirements may also change. Applicants are encouraged to contact the Department at the above contact details to clarify requirements, should there be changes to the development proposal.

<u>Water Resources</u>
The site is located within the Gingin Groundwater Area, proclaimed under the Rights in Water and Irrigation Act

		1914, where there may be a requirement to obtain a licence to abstract groundwater. *The Department advises that there is an existing licence to take water on the property and considers that there is sufficient water supply for the proposal.* *For further guidance on best management practices for extractive industries, refer to the Department's Water quality protection note no. 15: Basic raw materials extraction (July, 2019).* *In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed."*	
2	DPIRD	The submitter provides the following general comment: *"Some of the largest and highest quality lime sand deposits in the entire south west of Western Australia are located in the Gingin shire. Lime products are very important to allow sustainable agricultural activities to continue in the Shire and across the entire agricultural area of the state. DPIRD does not object to the proposal and offers the following comments:* • *The application outlined that the site access would be between 78-156 two-way truck movements per week. It is expected that during the life of the pit, vehicle and machinery movements into, around and away from the site will be significant. This facility does pose a risk of introducing a weed species into the shire, thus it is important that the proponents monitor and control declared species as required under the Biosecurity and Agriculture Management Act 2007. DPIRD requests that the proponent prepares a "Weed Management" plan. The plan should include measures such as careful movement and storage of soil, weed assessments and machinery hygiene should be emphasised. Regular monitoring is important and weed management standards need to be upheld during the life of the pit*	Noted.

		and its rehabilitation. This will ensure a minimal biosecurity risk for the site as well as for adjoining land and along transport routes. • *DPIRD supports plans create a vegetative buffer in the south eastern corner of the lot to create a physical barrier between the pit and the residents in the Woodridge Estate.* • *While DPIRD supports plans to stockpiled vegetation debris to spread as a source of a seed during the rehabilitation process, DPIRD suggests that the proponent liaise with the Department of Biodiversity, Conservation and Attractions to determine the time period the seed can be sorted before viability is lost and if a clearing permit is required.* • *Given the extreme risk of wind erosion in the area, rehabilitation will need to be monitored to ensure the vegetation provides adequate protection to the soil for the site, DPIRD recommends regular monitoring of the re-establishment of surface cover to ensure that adequate protection of the soil (a minimum 50% ground cover) is in place, particularly through the drier months.*	
3	DBCA	The submitter provides the following general comment: *"The Department of Biodiversity Conservation and Attractions - Swan Region Office (DBCA) has no comments on the application. It is DBCA's expectation that the Shire of Gingin will address any environmental issues associated with the proposal."*	Noted.
4	DMIRS	The submitter provides the following general comment: *"The Department of Mines, Industry Regulation and Safety (DMIRS) has determined that this proposal raises no significant issues with respect to mineral and petroleum resources, geothermal energy, and basic raw materials."*	Noted.
5	DOH	The submitter provides the following general comment: *"The DOH has no objections to the above proposal."*	Noted.
6	DPLH (Aboriginal Heritage)	The submitter provides the following general comment: *"A review of the Aboriginal Heritage Register of Places and Objects, as well as the DPLH Aboriginal Heritage Database,*	Noted.

		concludes that the subject lot intersects with the boundaries of the following Registered Aboriginal site and Aboriginal heritage Place: • *Public dithered boundary of registered Site ID 20008 (Gingin Brook Waggyl Site); and* • *Lodged Aboriginal Place ID 4100 (Moore River).* *As the proposed works only intersect with the public dithered boundary of Site ID 2008 (Gingin Brook Waggyl Site), approval under the Aboriginal Heritage Act 1972 (AHA) is only required for works proposed within the boundary of Aboriginal heritage Place ID 4100 (Moore River). Lodged Aboriginal site ID 4100 (Moore River) is a restricted Aboriginal Heritage Place. DPLH recommends the proponent should undertake consultation with the Traditional Owners, the Yued Indigenous Land Use Agreement Group, represented by the South West Aboriginal Land and Sea Council (SWALSC).* *The proponent can submit a Section 18 Notice at the following link: Land use under the Aboriginal Heritage Act 1972 | Western Australian Government (www.wa.gov.au) The next round of Section 18 submissions close on 20 July 2022 at 5pm for the scheduled Aboriginal Cultural Material Committee (ACMC) Meeting on 13 September 2022. A full list of the ACMC meeting dates and submission closing dates can be found at the following link: https://www.wa.gov.au/organisation/department-of-planning-lands-andheritage/aboriginal-cultural-material-committee#meeting-dates. Please be aware that an Aboriginal Heritage Survey (Archaeological and Ethnographic) is usually required by the ACMC to accompany a Section 18 Application.* *The ACMC and the Minister for Aboriginal Affairs requires written and signed statements from relevant traditional owners noting they understand what is being proposed, including any impacts to the site, and that they are supportive of the proposed works. When submitting the Notice, please attach signed written support of the works from all Traditional Owner and Knowledge Holder*	

		representatives present on the heritage survey along with any design plans including details of the scope of works."	
7	DPLH	The submitter provides the following general comment: *"The Land Use Planning division of Department of Planning, Lands and Heritage advises that it has no concerns to raise in relation to the proposal and that it is consistent with the State Planning Framework including State Policy 2.4 – Basic Raw Materials and State Policy 2.5. – Rural Planning."*	Noted.
8	MRWA	The submitter provides the following general comment: *"Main Roads are progressing with planning projects along Indian Ocean Drive. The associated future increase in traffic from development proposals along Caraban and Gingin Brook Road, and through traffic on the Indian Ocean Drive, shall assist determine the ultimate intersection arrangement of Caraban and Gingin Brook Road.* *Traffic Impact Statements for individual developments should also consider traffic from proposed developments within the vicinity in accordance with the Planning Commission Traffic Assessment Guidelines.* *Main Roads requests a copy of the City's final determination on this proposal to be sent to planninginfo@mainroads.wa.gov.au quoting the file reference above."*	
9	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"What happened to all the conditions that were given to this company when it first started? Woodridge was a housing estate before this quarry! We do not need more dust etc. blowing across our homes. We can hear machines and we do not need them any closer. Bigger quarry means more trucks turning into Indian Ocean Drive. We moved here for a healthy lifestyle away from the city smells. Why are you as a Council thinking it will be ok when there is so much land away from homes? It is unhealthy for people here if this goes ahead do we need to add more?"*	Noted. The officer is unsure if the submitter is implying the operator has been breaching conditions of approval, however notes that no complaints have been identified alleging such breaches. The intensity of the development is not proposed to alter, only the development footprint.

10	Ratepayer	The submitter **supports** the proposal and provides the following general comment: *"We have lived on Caraban road for over 26 years and have known both Angie and Shane for longer than that time. They are good responsible members of the Caraban road community as well as being great neighbours. The present Quarry is well run and virtually inconspicuous, and despite living in proximity, it doesn't affect us! Shane's management of their quarry is meticulous, professional and community minded. We think this is vital in the Shire's consideration, a genuine neighbour and not someone who locks the gate at the end of the day and drives away! We have no problem in supporting this application for "Expansion to Existing Extractive Industry (Limestone and Sand)"*	Noted.
11	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"It is proven medically silica dust causes lung disease and already in Woodridge there appears to be a large number of residents with some form of cancer. Where our property is located the developer would have to put in an unachievable buffer zone to reduce silica dust falling on us and no amount of water will prevent the dust escaping. If the Shire agrees to this development you can't say no to Sheepco or any other developer!"*	Noted. Exposure to the respirable fraction of silica generally needs to be continuous and for extended periods of time. The officer would anticipate that the Department of Health would raise a public health issue regarding silica dust if there was risk associated with the development.
12	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"I am a Woodridge home owner and have lived in Woodridge on and off for over 10 years. My wife grew up in the area and we now live here with our children. I was able to view the proposed plans at the last Woodridge community meeting I know the owner of this land and I still object to him expanding the mining area south.* *My issue is in relation to the South lying expansion closest to Woodridge (King Dr) I do not believe this is needed and no mine should be within 1500metres of Residential living dwellings. Even this is still too close but I understand that the mine was there before most residents. We need to look at*	Noted.

		further tourist attractions in the area e.g the proposed Brewery and so on."	
13	Ratepayer	The submitter provides the following general comment: *"As long as all environmental concerns incl. dust and noise are strictly upheld and that the development does not visually impact on Woodridge (Plan 5 shows the view) that should not alter."*	Noted.
14	Ratepayer	The submitter provides the following general comment: *"As we did not know of the current development at Caraban we have we have no objection to the further extension of this site. The proposed green belt should be a definite project to reduce noise and dust."*	Noted.
15	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"I believe allowing a mine site to operate within 500m of existing residential properties concerning and disregarding to those properties. The impacts of noise, health, dust, property devaluation and long term effects on the land to be all viable reasons for opposal. All the residents at 238 Nicklaus Ave, Woodridge have ongoing health issues and have moved to the country for a quiet life with health benefits, plus future land value.* *By allowing expansion so close we are subject to direct impact. There is no notice of how extraction is carried out.* *There currently is no buffer zone between TC Doe and Woodridge which I have previously written to the Gingin Shire abut with no response. They cleared a large section of land last year almost to the boundary fence of Woodridge properties with only a few single line trees remaining. This included being subject to noise from machinery prior to 6am plus the continual movement of earth and rocks felt so close it was through the ground. The dust and particles from this property is horrendous.* *By allowing further expansion of the Extractive Limestone and Sand Site this will continue to have the same impact. It*	Noted. The proposal demonstrated how extraction will be carried out. The Market garden approval is not relevant to this proposal nor can this operator be held responsible for actions of an adjoining landowner.

		states a buffer zone but does not state how high, deep or wide this is to be. Sunday and Public Holiday operations. Repair of the land. The title on Woodridge Land Holders state 1. Except and reserving metals, minerals, gems and mineral oil specified in transfer. How is it therefore acceptable to be subject to a mine site 500m from a residence? *I believe the Gingin Shire have a responsibility to Woodridge residents that impact the Estate directly. By allowing large market gardens with no management of buffers both East and West of Woodridge plus the possible addition of expansion of an existing site to the Northwest and a possible mine site to the Southwest the entire estate will be directly impacted in many ways including health, mental health, devaluation of properties and including but not limited to the reduction of flora and fauna."*	
16	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"I object to the planning application as the proposed expansion puts the extraction pit in such close proximity to the Woodridge community and homes. I ask you to consider this before approving an operation of this nature and I also make reference to some details of the application that I ask you to consider in full.* • *The expansion of the pit will mean the extraction operation is less than 500m from the nearest residence in Woodridge Estate and less than 200-450m from residential premises on the west on the Moore River side of Caraban road. .* • *Page 10 of the proposal states, "Due to the nature of this proposal, a Bushfire Management Plan is not required to support this application." This is inaccurate, the nature of the proposal means the decision makers, Shire of Gin Gin, may, at their discretion apply an exemption from the requirements of SPP 3.7. The proposed extraction pit, would be directly within the bush fire prone area and is surrounded in all directions by a large expanses of bush fire prone area, as detailed on*	Noted.

		FIGURE 3 – BUSHFIRE PRONE AREAS MAP, so would be argued, does require such a plan. • *The proposal suggests that a Dust Management Plan is not required due the direction of prevailing winds, and boldly claims dust would not be an issue for nearby residents in Woodridge estate. Winds, prevailing or otherwise, can disperse inert silica dust over residents in the immediate vicinity. A detailed Dust Management Plan should be a minimum for any works engaged within such close proximity to residential dwellings.* • *The proposal refers to progressive rehabilitation reducing the potential for dust generation. This detail provided is incredibly thin, simply suggesting that battering (if necessary) to a maximum slope of 1:3, will occur followed by spreading of topsoil and vegetation debris. Over the last 24 years tens of thousands of tonnes of limestone have been extracted from the area and all that is required from a rehabilitation perspective is a smattering of vegetation debris? The rehabilitation plan requires significantly more detail and taking a steep and deep pit and reducing the pitch of the pit wall does not constitute rehabilitation.* *Just because the mine exists, doesn't mean that it should continue to be approved, forever more particularly as it proposes encroaching on residential homes."*	
17	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"Regarding industry (limestone and sand) address lot 222 (no.283) Caraban Rd. Not supporting that what in the future if I decides to sell that won't benefit me or land owners on Caraban Rd what about the landscape seeing pit of limestone and sand on winding days dust won't be are good driving on Caraban roads."*	Noted.
18	Woodridge Community Association	The submitter provides the following general comment: *"Concerns have been raised that if approval is granted to extend this quarry, then it will provide evidence to support an*	Noted.

		application currently being denies by the Shire. Further concerns have been raised about extra traffic and noise along with the possibility of dust increase."	

SCHEDULE OF SUBMISSIONS AND RECOMMENDED RESPONSES

DEVELOPMENT APPLICATION: EXPANSION TO EXISTING EXTRACTIVE INDUSTRY ON LOT 222 (283) CARABAN ROAD, CARABAN

No.	Submitter	Submission details	Recommended response
1	DWER	The submitter provides the following general comment: *"The Department has identified that the proposed development has the potential to impact on environment and water values and management. Key issues and recommendations that should be addressed are provided below:* *<u>Native Vegetation Clearing</u>* *Under section 51C of the Environmental Protection Act 1986 (EP Act), clearing of native vegetation is an offence unless:* • *it is undertaken under the authority of a clearing permit* • *it is done after the person has received notice under Section 51DA(5) that a clearing permit is not required* • *the clearing is subject to an exemption* *Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).* *Based on the information provided, it is not clear whether the proposal requires the clearing of native vegetation. If any clearing is proposed, a clearing permit is required, noting that exemptions do not apply.* *The Department has not received a clearing permit application for this proposal. Application forms are available from*	The proponent notes the comments provided by DWER. In response, they can confirm that the necessary clearing and works approvals will be sought should this development be approved. The proponent has undertaken the necessary investigations to ensure these approvals are capable of being granted.

		https://www.wa.gov.au/service/environment/environment-information-services/clearing-permit-forms *Information regarding clearing permit fees can be found here:* *https://www.wa.gov.au/service/environment/environment-information-services/clearing-fees-frequently-asked-questions* *If further clarification is required regarding clearing, please contact the Department's Native Vegetation Regulation section at admin.nvp@dwer.wa.gov.au or on 6364 7098.* *Industry Regulation* *The Department regulates emissions and discharges from the construction and operation of prescribed premises through a works approval and licensing process, under Part V, Division 3 of the EP Act.* *The categories of prescribed premises are outlined in Schedule 1 of the Environmental Protection Regulations 1987.* *The EP Act requires a works approval to be obtained before constructing a prescribed premises and makes it an offence to cause an emission or discharge from an existing prescribed premises unless they are the holder of a works approval or licence (or registration) and the emission is in accordance with any conditions to which the licence or works approval is subject.* *The provided development approval application for extractive industry was reviewed in relation to works approval and licence requirements under Part V Division 3 of the EP Act.* *The proposed operation is categorised as a Prescribed Premises under Schedule 1 of the Environmental Protection Regulations 1987 for the following categories:*	

Category	*Description*	*Production/ design capacity*
12	*Screening, etc. of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated*	*100,000 tonnes per annual period*

Any future changes to the licence will require an amendment application to be submitted by the Licence Holder. The application forms and future information is available at http://www.der.wa.gov.au/our-work/licences-and-works-approvals and / or if there are queries relating to this Licence, to contact the Department at info@dwer.wa.gov.au or 6364 7000.

The purpose of a licence is to allow the Department to assess the environmental acceptability of a proposal's potential to cause emissions and discharges during operation. Note that any licence issued under Part V of the EP Act will only regulate emissions associated with the screening operation (such as dust, noise and contaminated stormwater). It does not extend to the environmental impacts of extracting the material from the ground or transport of material off-site.

The operations will need to demonstrate compliance with the include all relevant regulations including Environmental Protection (Noise) Regulations 1997.

Please note that this advice is provided based on information provided. Should this information change, a works approval or licensing requirements may also change. Applicants are encouraged to contact the Department at the above contact details to clarify requirements, should there be changes to the development proposal.

		<u>Water Resources</u> *The site is located within the Gingin Groundwater Area, proclaimed under the Rights in Water and Irrigation Act 1914, where there may be a requirement to obtain a licence to abstract groundwater.* *The Department advises that there is an existing licence to take water on the property and considers that there is sufficient water supply for the proposal.* *For further guidance on best management practices for extractive industries, refer to the Department's Water quality protection note no. 15: Basic raw materials extraction (July, 2019).* *In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed."*	Noted.
2	DPIRD	The submitter provides the following general comment: *"Some of the largest and highest quality lime sand deposits in the entire south west of Western Australia are located in the Gingin shire. Lime products are very important to allow sustainable agricultural activities to continue in the Shire and across the entire agricultural area of the state. DPIRD does not object to the proposal and offers the following comments:* • *The application outlined that the site access would be between 78-156 two-way truck movements per week. It is expected that during the life of the pit, vehicle and machinery movements into, around and away from the site will be significant. This facility does pose a risk of introducing a weed species into the shire, thus it is important that the proponents monitor and control declared species as required under the Biosecurity and Agriculture Management Act 2007. DPIRD requests that the proponent prepares a "Weed Management" plan. The plan should include measures such as careful movement and storage of soil, weed assessments and*	Noted.

		machinery hygiene should be emphasised. Regular monitoring is important and weed management standards need to be upheld during the life of the pit and its rehabilitation. This will ensure a minimal biosecurity risk for the site as well as for adjoining land and along transport routes. • *DPIRD supports plans create a vegetative buffer in the south eastern corner of the lot to create a physical barrier between the pit and the residents in the Woodridge Estate.* • *While DPIRD supports plans to stockpiled vegetation debris to spread as a source of a seed during the rehabilitation process, DPIRD suggests that the proponent liaise with the Department of Biodiversity, Conservation and Attractions to determine the time period the seed can be sorted before viability is lost and if a clearing permit is required.* • *Given the extreme risk of wind erosion in the area, rehabilitation will need to be monitored to ensure the vegetation provides adequate protection to the soil for the site, DPIRD recommends regular monitoring of the re-establishment of surface cover to ensure that adequate protection of the soil (a minimum 50% ground cover) is in place, particularly through the drier months.*	This consultation has already occurred given the comment provided by DBCA on this proposal, below (confirming their support).
3	DBCA	The submitter provides the following general comment: *"The Department of Biodiversity Conservation and Attractions - Swan Region Office (DBCA) has no comments on the application. It is DBCA's expectation that the Shire of Gingin will address any environmental issues associated with the proposal."*	Noted.
4	DMIRS	The submitter provides the following general comment: *"The Department of Mines, Industry Regulation and Safety (DMIRS) has determined that this proposal raises no significant issues with respect to mineral and petroleum resources, geothermal energy, and basic raw materials."*	Noted.
5	DOH	The submitter provides the following general comment: *"The DOH has no objections to the above proposal."*	Noted.

6	DPLH (Aboriginal Heritage)	The submitter provides the following general comment: *"A review of the Aboriginal Heritage Register of Places and Objects, as well as the DPLH Aboriginal Heritage Database, concludes that the subject lot intersects with the boundaries of the following Registered Aboriginal site and Aboriginal heritage Place:* • *Public dithered boundary of registered Site ID 20008 (Gingin Brook Waggyl Site); and* • *Lodged Aboriginal Place ID 4100 (Moore River).* *As the proposed works only intersect with the public dithered boundary of Site ID 2008 (Gingin Brook Waggyl Site), approval under the Aboriginal Heritage Act 1972 (AHA) is only required for works proposed within the boundary of Aboriginal heritage Place ID 4100 (Moore River). Lodged Aboriginal site ID 4100 (Moore River) is a restricted Aboriginal Heritage Place. DPLH recommends the proponent should undertake consultation with the Traditional Owners, the Yued Indigenous Land Use Agreement Group, represented by the South West Aboriginal Land and Sea Council (SWALSC).* *The proponent can submit a Section 18 Notice at the following link: Land use under the Aboriginal Heritage Act 1972 | Western Australian Government (www.wa.gov.au) The next round of Section 18 submissions close on 20 July 2022 at 5pm for the scheduled Aboriginal Cultural Material Committee (ACMC) Meeting on 13 September 2022. A full list of the ACMC meeting dates and submission closing dates can be found at the following link: https://www.wa.gov.au/organisation/department-of-planning-lands-andheritage/aboriginal-cultural-material-committee#meeting-dates. Please be aware that an Aboriginal Heritage Survey (Archaeological and Ethnographic) is usually required by the ACMC to accompany a Section 18 Application.* *The ACMC and the Minister for Aboriginal Affairs requires written and signed statements from relevant traditional owners noting they understand what is being proposed,*	Noted that Place ID 2008 is not a restricted site and therefore approval is not required. The subject site is not located within Lodged Aboriginal Place ID 4100, as the Moore River is located west of the site. Please see the screen shot below. Further, the extractive industry has operated on the site for a number of years without any need for signed statements from relevant traditional owners. 

		including any impacts to the site, and that they are supportive of the proposed works. When submitting the Notice, please attach signed written support of the works from all Traditional Owner and Knowledge Holder representatives present on the heritage survey along with any design plans including details of the scope of works."	
7	DPLH	The submitter provides the following general comment: *"The Land Use Planning division of Department of Planning, Lands and Heritage advises that it has no concerns to raise in relation to the proposal and that it is consistent with the State Planning Framework including State Policy 2.4 – Basic Raw Materials and State Policy 2.5. – Rural Planning."*	Noted.
8	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"What happened to all the conditions that were given to this company when it first started? Woodridge was a housing estate before this quarry! We do not need more dust etc. blowing across our homes. We can hear machines and we do not need them any closer. Bigger quarry means more trucks turning into Indian Ocean Drive. We moved here for a healthy lifestyle away from the city smells. Why are you as a Council thinking it will be ok when there is so much land away from homes? It is unhealthy for people here if this goes ahead do we need to add more?"*	The prevailing winds in the area demonstrate that any dust generated will be blown away from the Woodridge Estate. The proponent also wishes to emphasise their great dust management record. No complaints have ever been received during the life of the pit and the operator expects this record to be maintained, using the dust management technologies set out in the report. Further, this proposal will not generate additional traffic in accordance with previous approvals granted at the site, given this proposal only seeks new stages as opposed to a pit expansion.
9	Ratepayer	The submitter **supports** the proposal and provides the following general comment: *"We have lived on Caraban road for over 26 years and have known both Angie and Shane for longer than that time. They are good responsible members of the Caraban road community as well as being great neighbours. The present Quarry is well run and virtually inconspicuous, and despite living in proximity, it doesn't affect us! Shane's management of their quarry is meticulous, professional and community minded. We think this is vital in the Shire's consideration, a genuine neighbour and not someone who locks the gate at the end of the day and drives away! We*	Noted, with thanks.

		have no problem in supporting this application for "Expansion to Existing Extractive Industry (Limestone and Sand)"	
10	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: "It is proven medically silica dust causes lung disease and already in Woodridge there appears to be a large number of residents with some form of cancer. Where our property is located the developer would have to put in an unachievable buffer zone to reduce silica dust falling on us and no amount of water will prevent the dust escaping. If the Shire agrees to this development you can't say no to Sheepco or any other developer!"	Caraban Limestone and Sand is an existing operator that has an exemplary track record of supressing dust. The business has operated on the site for decades without any complaints. Dust will be managed by the use of an on-site water truck to prevent dust lift-off. In addition, the prevailing winds in the area demonstrate that any dust generated will be blown away from the Woodridge Estate. There have been no health concerns raised by the Shire's health officers.
11	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"I am a Woodridge home owner and have lived in Woodridge on and off for over 10 years. My wife grew up in the area and we now live here with our children. I was able to view the proposed plans at the last Woodridge community meeting I know the owner of this land and I still object to him expanding the mining area south.* *My issue is in relation to the South lying expansion closest to Woodridge (King Dr) I do not believe this is needed and no mine should be within 1500metres of Residential living dwellings. Even this is still too close but I understand that the mine was there before most residents. We need to look at further tourist attractions in the area e.g the proposed Brewery and so on."*	EPA Guidance Statement 3 requires buffer distances of 300-500m from sensitive land uses. As demonstrated in the landuse context and buffer plan attached at Appendix A in the Development Application, the nearest residence in Woodridge Estate is 500m away from the edge of the extraction pit. Additionally, this buffer distance is conservative and adopts a worth case approach whereupon it is expected that pits have no high walls. However, the pit in question has a high (30m) wall which acts as a significant acoustic barrier. Further, the proponent has exemplary management of the pit and vegetated buffer.
12	Ratepayer	The submitter provides the following general comment: *"As long as all environmental concerns incl. dust and noise are strictly upheld and that the development does not*	Noted.

		visually impact on Woodridge (Plan 5 shows the view) that should not alter."	
13	Ratepayer	The submitter provides the following general comment: *"As we did not know of the current development at Caraban we have we have no objection to the further extension of this site. The proposed green belt should be a definite project to reduce noise and dust."*	Noted, with thanks. This comment confirms the existing pit has little to no visual impact.
14	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"I believe allowing a mine site to operate within 500m of existing residential properties concerning and disregarding to those properties. The impacts of noise, health, dust, property devaluation and long term effects on the land to be all viable reasons for opposal. All the residents at 238 Nicklaus Ave, Woodridge have ongoing health issues and have moved to the country for a quiet life with health benefits, plus future land value.* *By allowing expansion so close we are subject to direct impact. There is no notice of how extraction is carried out.* *There currently is no buffer zone between TC Doe and Woodridge which I have previously written to the Gingin Shire abut with no response. They cleared a large section of land last year almost to the boundary fence of Woodridge properties with only a few single line trees remaining. This included being subject to noise from machinery prior to 6am plus the continual movement of earth and rocks felt so close it was through the ground. The dust and particles from this property is horrendous.* *By allowing further expansion of the Extractive Limestone and Sand Site this will continue to have the same impact. It states a buffer zone but does not state how high, deep or wide this is to be. Sunday and Public Holiday operations. Repair of the land.* *The title on Woodridge Land Holders state 1. Except and reserving metals, minerals, gems and mineral oil specified*	There have been no health concerns raised by the Shire's health officers. The operations at TC Doe are not relevant to this application. The existing vegetation provides a buffer to the residents in Woodridge Estate, with a bund proposed as part of the rehabilitation plan. Further, as stated in the Development Application, no extraction or truck movements will occur on Sundays or Public Holidays.

		in transfer. How is it therefore acceptable to be subject to a mine site 500m from a residence? *I believe the Gingin Shire have a responsibility to Woodridge residents that impact the Estate directly. By allowing large market gardens with no management of buffers both East and West of Woodridge plus the possible addition of expansion of an existing site to the Northwest and a possible mine site to the Southwest the entire estate will be directly impacted in many ways including health, mental health, devaluation of properties and including but not limited to the reduction of flora and fauna."*	Devaluation of land is not a relevant planning matter.
15	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"I object to the planning application as the proposed expansion puts the extraction pit in such close proximity to the Woodridge community and homes. I ask you to consider this before approving an operation of this nature and I also make reference to some details of the application that I ask you to consider in full.* • *The expansion of the pit will mean the extraction operation is less than 500m from the nearest residence in Woodridge Estate and less than 200-450m from residential premises on the west on the Moore River side of Caraban road. .* • *Page 10 of the proposal states, "Due to the nature of this proposal, a Bushfire Management Plan is not required to support this application." This is inaccurate, the nature of the proposal means the decision makers, Shire of Gin Gin, may, at their discretion apply an exemption from the requirements of SPP 3.7. The proposed extraction pit, would be directly within the bush fire prone area and is surrounded in all directions by a large expanses of bush fire prone area, as detailed on FIGURE 3 – BUSHFIRE PRONE AREAS MAP, so would be argued, does require such a plan.* • *The proposal suggests that a Dust Management Plan is not required due the direction of prevailing winds, and boldly claims dust would not be an issue*	• As demonstrated in the landuse context and buffer plan attached at Appendix A in the Development Application, the nearest residence in Woodridge Estate and the Moore River is 500m away from the edge of the extraction pit. • An exemption from SPP 3.7 should be sought as there are no habitable dwellings proposed on the site and the extraction pit is surrounded by cleared / sparse vegetation due to a history of cattle grazing on the site. Therefore, bushfire potential is not a significant risk on this site. • The Client has prepared a Dust Management Plan to outline dust suppression methods. However, it is important to note that extraction is already

		for nearby residents in Woodridge estate. Winds, prevailing or otherwise, can disperse inert silica dust over residents in the immediate vicinity. A detailed Dust Management Plan should be a minimum for any works engaged within such close proximity to residential dwellings. • *The proposal refers to progressive rehabilitation reducing the potential for dust generation. This detail provided is incredibly thin, simply suggesting that battering (if necessary) to a maximum slope of 1:3, will occur followed by spreading of topsoil and vegetation debris. Over the last 24 years tens of thousands of tonnes of limestone have been extracted from the area and all that is required from a rehabilitation perspective is a smattering of vegetation debris? The rehabilitation plan requires significantly more detail and taking a steep and deep pit and reducing the pitch of the pit wall does not constitute rehabilitation.* *Just because the mine exists, doesn't mean that it should continue to be approved, forever more particularly as it proposes encroaching on residential homes."*	taking place on this site, with no known complaints. The proposal will result in no additional truck movements, nor an increase in the amount of open pit exposed. Further, the operator will continue to use dust suppression techniques such as dampening stockpiles with water trucks. • The suggested battering is indicative and will be reassessed at the required time. The overall aim of rehabilitation on the site is to allow the land to return to pasture with this being achieved by the scattering of stockpiled vegetation debris. It should be noted that the rest of the subject land remains vegetated in this fashion. Ongoing maintenance and monitoring will occur once operations cease, ensuring that the site is visually pleasing and is commensurate with the rural character of the area.
16	Ratepayer	The submitter **does not support** the proposal and provides the following general comment: *"Regarding industry (limestone and sand) address lot 222 (no.283) Caraban Rd. Not supporting that what in the future if I decides to sell that won't benefit me or land owners on Caraban Rd what about the landscape seeing pit of limestone and sand on winding days dust won't be are good driving on Caraban roads."*	Rehabilitation of the pit will be progressive, taking place immediately behind the front of each extraction block. This will result in a flat or gently sloping pit floor, with stockpiled vegetation debris spread over the surfaces to provide a seed source. Ongoing maintenance and monitoring will occur once operations cease, ensuring that the site is visually pleasing and is commensurate with the rural character of the area.
17	Woodridge Community Association	The submitter provides the following general comment: *"Concerns have been raised that if approval is granted to extend this quarry, then it will provide evidence to support an application currently being denies by the Shire. Further concerns have been raised about extra traffic and noise along with the possibility of dust increase."*	Each application shall be assessed on its own merits. As outlined in the detailed planning report, the extension of the extractive industry will not result in an increase in traffic generation and dust suppression will be managed by on-site water tanks.


NE E SE S SW
60 90 120 150 180 210
132°SE (T) 31°19'28"S, 115°33'33"E ±26ft 104ft
22 Mar 2023, 12:28:49
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157°SE (T) 31°19'28"S, 115°33'33"E ±16ft 105ft
22 Mar 2023, 12:28:56


SE S SW W
120 150 180 210 240 270 300
212°SW (T) 31°19'28"S, 115°33'33"E ±16ft 105ft
22 Mar 2023, 12:29:03
N NE E SE
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22 Mar 2023, 12:29:11


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90 120 150 180 210 240
173°S (T) 31°19'28"S, 115°33'33"E ±242ft 116ft
22 Mar 2023, 12:28:18
NE E SE S SW
60 90 120 150 180 210
139°SE (T) 31°19'27"S, 115°33'33"E ±39ft 105ft
22 Mar 2023, 12:28:21


E
SE
S
SW
90
120
150
180
210
240
154°SE (T) 31°19'28"S, 115°33'33"E ±36ft ▲106ft
22 Mar 2023, 12:28:29
SE
S
SW
W
120
150
180
210
240
270
188°S (T) 31°19'28"S, 115°33'33"E ±39ft ▲105ft
22 Mar 2023, 12:28:38

NOTES:

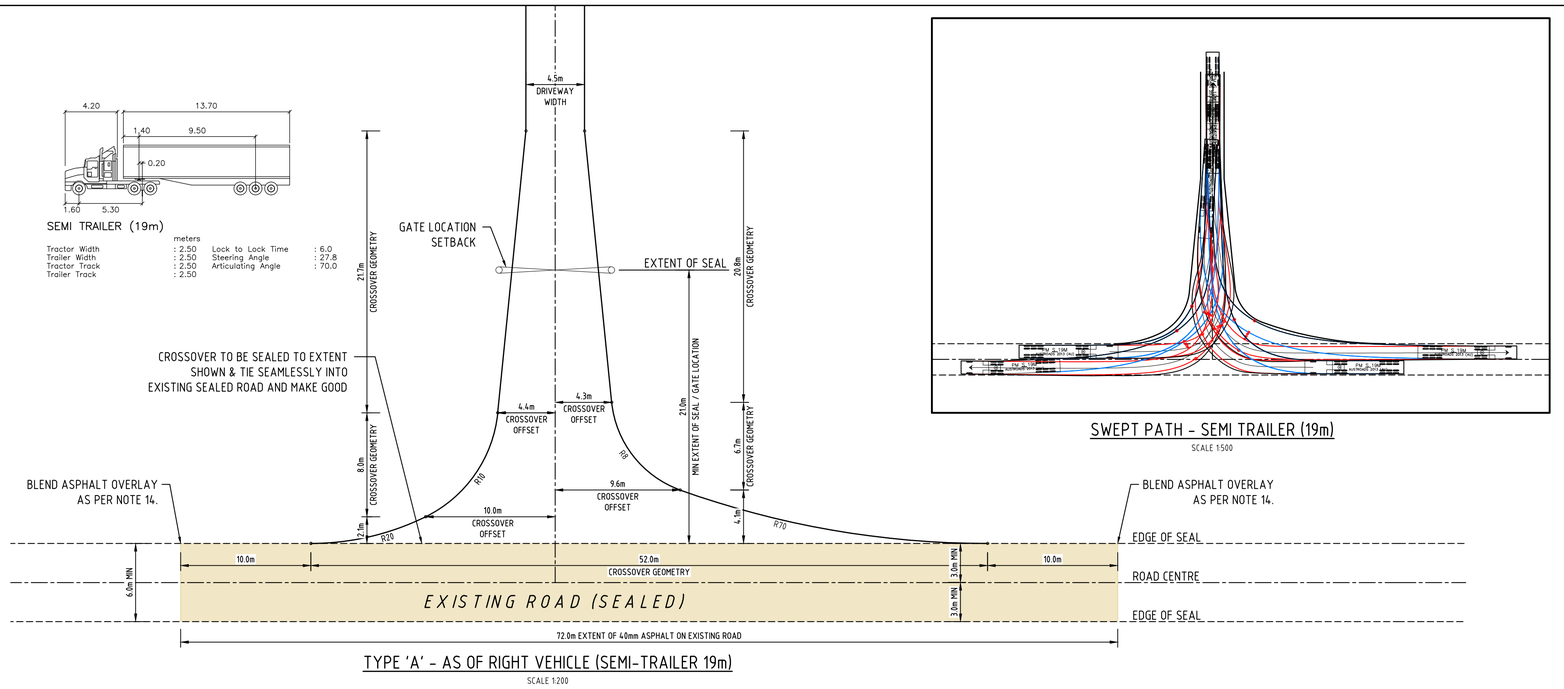
1. MAINTENANCE OF THE CROSSOVER IS THE LANDHOLDERS RESPONSIBILITY.
2. VEHICLE VOLUMES ARE ONE IN MOVEMENT.
3. B-DOUBLE OPTION APPLIES TO RAV 2,3 & 4 COMBINATIONS (i.e. B-DOUBLES & POCKET TRAINS) ANY LARGER COMBINATIONS (i.e. GREATER THAN RAV 4 NETWORK) WILL BE AS APPROVED BY THE SHIRE.
4. GATE SHALL BE LOCATED NOT LESS THAN THE LENGTH OF THE LONGEST VEHICLE USING THE CROSSOVER PLUS 2m FROM THE EDGE OF THE ROAD (I.E. UNSEALED SHOULDER) I.E. AS-OF-RIGHT VEHICLE WILL REQUIRE A LENGTH OF NOT LESS THAN 21m FROM THE EDGE OF THE ROAD.
5. ASPHALT SHALL BE PLACED ON TOP OF A SEALED (BITUMEN) SURFACE USING AN AGGREGATE NOT LESS THAN 5mm (NOT A PRIMED/TACK ONLY SURFACE)
6. SEAL ON CROSSOVER SHALL EXTEND TO ACCESS GATE.
7. SEALED CROSSOVERS SHALL OVERLAP EXISTING SEALED ROAD BY NOT LESS THAN 100mm.
8. ASPHALT OVERLAY ON CROSSOVER SHALL EXTEND TO THE TANGENT POINT
9. ASPHALT OVERLAY AND RESEAL ON ADJOINING SEALED ROAD SHALL EXTEND NOT LESS THAN 10m PAST THE TANGENT POINT ON THE SEALED ROAD.
10. ALL NEW SEAL SHALL BE A TWO COAT SEAL WITH AGGREGATE SIZES OF 10mm AND 5mm TO MRWA SPECIFICATIONS.
11. ALL MATERIALS, SEALING WORKS AND EARTHWORKS TO MEET ALL RELEVANT STANDARDS (MRWA SPECIFICATIONS AND TEST METHODS AND ANY OTHER RELEVANT STANDARDS).
12. LOCATION AND PROTECTION OF ROADSIDE SERVICES AND ASSETS (POWER, WATER, TELSTRA, NBN, ETC) ARE ENTIRELY THE RESPONSIBILITY OF THE APPLICANT (DBYD WWW.1100.COM.AU)
13. CULVERTS SHALL BE INSTALLED AS REQUIRED AND AS STIPULATED BY THE SHIRE. ALL CULVERTS SHALL USE PRECAST HEADWALLS. ALL CULVERTS SHALL UTILISE REINFORCED CONCRETE PIPES (RCP) OR REINFORCED BOX CULVERTS (RBC) AS STIPULATED BY THE SHIRE AND ALL RCP AND RCB SHALL BE NOT LESS THAN CLASS 2. REFER TO MRWA DRAWING 9831-6281
14. ALL TERMINAL JOINTS SHALL BE GRADED TO EXISTING AT 1:100 (ie.30mm COMPACTED ASPHALT REQUIRES A 3m TAPER). ALL TAPERS TO BE PROFILED. AS PER MRWA SPECIFICATION 504.

LEGEND

AREA OF SEALED CROSSOVER

AREA OF RE-SEAL ON EXISTING ROAD

NOTE: DEPENDANT ON TRAFFIC VOLUMES; TURNING MOVEMENT TREATMENTS MAY BE REQUIRED (EG. TURNING POCKETS, ACCELERATION LANE/S, LINE MARKNG, ETC) TO THE SATISFACTION OF THE SHIRE.

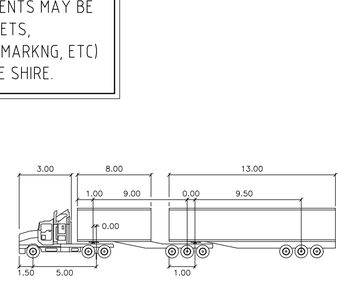


TYPE 'A' - AS OF RIGHT VEHICLE (SEMI-TRAILER 19m)

SCALE 1:200

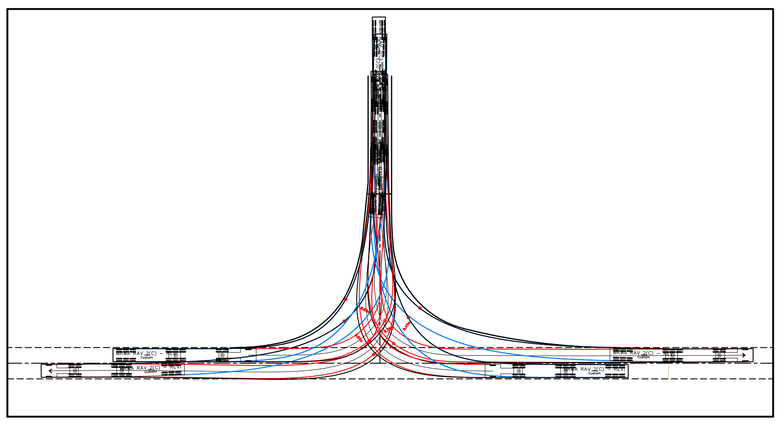
SWEPT PATH - SEMI TRAILER (19m)

SCALE 1:500



TYPE 'B' - RAV 2, 3 & 4 NETWORK VEHICLE (B-DOUBLE 27.5m)

SCALE 1:200



SWEPT PATH - B-DOUBLE (27.5m)

SCALE 1:500

DIAL BEFORE YOU DIG www.1100.com.au

0m 4 8 12m
1:200

PROJECT:

SHIRE OF GINGIN
CROSSOVER SPECIFICATIONS

No.	DATE	REVISION	BY
B	25-1-2021	NOTE 14 ADDED TERMINAL JOINTS TO BE GRADED AT 1:100. NOTE UPGRADED RE TURNING POCKETS	MJV
A	13-01-21	ISSUED FOR APPROVAL	MJV

Porter Consulting Engineers
TUOMO Pty Ltd ACN 070 097 168 as Trustee for the Consulting Engineering Unit Trust trading as Porter Consulting Engineers ABN 78 636 396 385
Level 2 Kishorn Court
58 Kishorn Road
Mt Pleasant 6153 WA
PO Box 1036
Canning Bridge 6153 WA
Tel (08) 9315 9955
Email. office@portereng.com.au
www.portereng.com.au

SHIRE OF GINGIN
HISTORY | BEAUTY | PROSPERITY

DRAWING:
RURAL & INDUSTRIAL CROSSOVER FRONTING SEALED ROAD HEAVY VEHICLES PER WEEK: >50

STATUS: **FOR INFORMATION**

SCALE	1:200
DATE	JAN 2021
DESIGN	ELW
DRAWN	MJV
CHECK	
APP'D	

DRAWING No: **SoG/STD-05**
REV No: **B**
ORIGINAL DRAWING SIZE: **A1**
FILE NAME: S:\ACTIVE PROJECTS\20-12-199\ACAD\2012199_SoG-STD-05.dwg

13.2 APPLICATION FOR DEVELOPMENT APPROVAL - PROPOSED CHALETS ON LOT 413 (596) CARABAN ROAD, CARABAN

File	BLD/7600
Applicant	Developed Property Pty Ltd
Location	Lot 413 (598) Caraban Road, Caraban
Owner	Sandra Murray and Noel Murray
Zoning	General Rural
WAPC No	NA
Author	James Bayliss – Coordinator Statutory Planning
Reporting Officer	Bob Kelly - Executive Manager Regulatory and Development Services
Refer	Nil
Appendices	1. Aerial Photograph [**13.2.1** - 1 page] 2. Location Plan [**13.2.2** - 1 page] 3. Applicant's Proposal [**13.2.3** - 37 pages]

DISCLOSURES OF INTEREST

Nil

PURPOSE

To consider an Application for Development Approval for two (2) Chalets on Lot 413 (598) Caraban Road, Caraban.

BACKGROUND

The subject land is located on the corner of Barragoon Road and Caraban Road. The property enjoys direct frontage to the Moore River and has a total area of 15.2 hectares.

The proposed development comprises two chalets consisting of two bedrooms, kitchen, bathroom, ensuite and laundry (i.e. self-contained). One of the chalets has been designed to be universally accessible.

The chalets will be located a minimum of 100m away from the bank of the Moore River, located on the western lot boundary.

A Property Management Plan (PMP) has been supplied that outlines the guest booking process, 'house rules' for guests, property management, and complaint handling procedures. and the 'house rules' will be provided to all patrons at the time of booking and will be displayed prominently in each chalet.

Aerial imagery and a location plan are provided (**see appendices**).

The applicant's proposal is provided (**see appendices**).

COMMENT

Stakeholder Consultation

The application was advertised to the surrounding landowners for a period of 21 days in accordance with clause 64 of the *Planning and Development (Local Planning Schemes) Regulations 2015*. No comments were received.

PLANNING FRAMEWORK

Local Planning Scheme No. 9 (LPS 9) Planning Assessment

The subject lot is zoned General Rural (GR). The objectives of the zone are to:

a) *manage land use changes so that the specific local rural character of the zone is maintained or enhanced;*

b) *encourage and protect broad acre agricultural activities such as grazing and more intensive agricultural activities such as horticulture as primary uses, with other rural pursuits and rural industries as secondary uses in circumstances where they demonstrate compatibility with the primary use;*

c) *maintain and enhance the environmental qualities of the landscape, vegetation, soils and water bodies, to protect sensitive areas especially the natural valley and watercourse systems from damage; and*

d) *provide for the operation and development of existing, future and potential rural land uses by limiting the introduction of sensitive land uses in the General Rural zone.*

The use class 'Chalet' is defined under LPS 9 as follows:

...means an individual self-contained unit usually comprising of cooking facilities, ensuite, living area and one or more bedrooms designed to accommodate short-stay guests, and where occupation by any person is limited to a maximum of three months in any 12-month period.

The use class 'Chalets' is an 'A' land use within the GR zone, which means the use is not permitted unless the local government has exercised its discretion by granting development approval after giving special notice in accordance with clause 64 of the Deemed Provisions for Local Planning Schemes within the *Planning and Development (Local Planning Schemes) Regulations 2015* (Deemed Provisions). As outlined above, appropriate stakeholder consultation has been undertaken.

Objective a) is of particular relevance and will be addressed in the report below.

Setbacks

In accordance with Table 2 – Site Requirements of LPS 9, development in the GR zone is required to be set back 20 metres from the lot boundary. The proposed setbacks are as follows:

- 320m (front setback – Caraban Road);
- 110m (rear setback – Moore River); and
- 95m (side – southern boundary).

Local Planning Policy 3.1 – Tourist Development in Rural Areas (LPP 3.1)

LPP 3.1 applies to the General Rural zone. The objective of the policy is to 'provide guidelines for the development of tourist facilities in General Rural areas to strengthen the economic base while enhancing the rural character of the area.'

Relevant provisions of the Policy are listed below with officer comments.

3.1 Tourist developments in rural areas will be considered in either one of two categories:

(a) high impact proposals involving significant capital investment or having the potential to conflict with surrounding land uses; and

(b) low impact proposals not involving significant capital investment and unlikely to conflict with adjoining land uses.

3.3 Low impact proposals, which may include proposals such as chalets or boarding houses with accommodation for less than 10 persons or small service establishments may be permitted in the GR zone at Councils discretion.

Officer comment

The officer is of the view that the development is appropriately classified as 'low impact'. Each chalet is designed to accommodate no more than 5 persons and on that basis is consistent with a low impact tourist development.

Local Planning Policy 1.4 – Foreshore Reserves along Water Courses (LPP 1.4)

LPP 1.4 provides guidance on the management and protection of foreshores and water courses within the Shire. Clause 3.1 is relevant in this instance and stipulates that all development is to be set back a minimum of 50m from the top of the bank of the water course, which the development achieves (110m setback provided).

Parking and Access

Clause 4.7.2.3 of LPS 9 states:

Except with the approval of local government, a person shall not use or develop land for a purpose specified in Column 1 of Table 3 unless provision is made on the site for a number of car parking spaces not less than the number calculated in accordance with Column 2 of that Table shown opposite that purpose.

In this instance the proposed use (chalet) is not identified within Table 3, as such clause 4.7.2.5 applies which states:

Where there is a use of land referred to in the Zoning Table (Table 1) for which no provision is made in respect of car parking spaces in Table 3, the car parking spaces required for that use of land shall be as determined by local government.

The officer has considered the parking provisions for a 'bed and breakfast' as a relevant reference for the chalet component of the development which requires 1 per bedroom and 1 per staff member. The development does not generate staff (the farm occupants will manage the development) and on that basis a total of 2 bays are required per chalet. The applicant confirms the parking bays are able to satisfy a width of 2.6m and length of 5.5 metres, with an accessible bay provided at the relevant chalet.

Access to the property is derived from an existing crossover and driveway from Caraban road.

Planning and Development (Local Planning Schemes) Regulations 2015

In accordance with Schedule 2, Part 9, Clause 67 of the Deemed Provisions, the local government is to have due regard to a range of matters to the extent that, in the opinion of the local government, those matters are relevant to the development the subject of the application. In this instance, the following matters are considered to be relevant to the proposal.

(a) the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;

(m) the compatibility of the development with its setting, including -
(i) the compatibility of the development with the desired future character of its setting;

(n) the amenity of the locality including the following -
(ii) the character of the locality;
(iii) social impacts of the development;

The officer is of the view that it is also pertinent to outline objective a) of the GR zone as it is complementary to the above provisions:

(a) manage land uses so that the specific local rural character of the zone is maintained or enhanced.

Officer comment

The relevant objective requires the 'specific local rural character' to be maintained or enhanced.

The locality generally consists of rural land that has been predominantly cleared of vegetation to facilitate the grazing of livestock. Smaller lots are located closer to the Moore River which is situated to the west of Caraban Road, with larger landholdings present to the east. An approved restaurant and micro-brewery is located to the north and a canoe hire business to the south.

The character of the area therefore comprises an array of land uses (commercial and residential) of varying scales, within an area that has tourism-related opportunities given close proximity to the Moore River.

The officer is of the view that the development will maintain the specific local rural character.

Noise

The regulatory regime relating to noise control and management in Western Australia is established by the *Environmental Protection Act 1986* (EP Act) and, in particular, the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations).

The proximity of the development to surrounding dwellings, in the context of approved adjoining uses, is viewed as being acceptable. The PMP outlines noise mitigation and complaints handling, which the officer views as being adequate.

(q) the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk;

(r) the suitability of the land for the development taking into account the possible risk to human health or safety;

Officer comment

This consideration goes hand in hand with State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7) and the Department of Planning, Lands and Heritage's Position Statement: Tourism Land Uses in Bushfire Prone Area.

Large tracts of the property are identified as being within a bushfire prone vegetation area. Notwithstanding this, the proposed chalets are located outside the bushfire prone area, and therefore the provisions of SPP 3.7 do not apply.

(s) the adequacy of —
(i) the proposed means of access to and egress from the site; and
(ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;

Government Sewage Policy 2019 (GSP)

The GSP establishes the Western Australian Government's position on the provision of sewage services in the State and required reticulated sewage to be provided during the subdivision and development of land. In instances where reticulated sewerage cannot be provided, which applies to a large portion of the Shire, it adopts a best practice approach to the provision of onsite sewage treatment and disposal.

In this instance, via clause 4 of the GSP, a Site and Soil Evaluation (SSE) with detail commensurate with the nature of the development should support such proposals. Typically an SSE report identifies the most suitable location for the effluent disposal area on the lot based on site and soil characteristics such as depth to groundwater and type and depth of soils (amongst other things).

The subject land is within a Sewage Sensitive Area (SSA) given its proximity to the Moore River, and on that basis the landowner will be required to install, at a minimum, a secondary treatment system and potentially a system with nutrient removal capabilities. The wastewater disposal system may require a separate approval by the Department of Health (DoH) and/or the Department of Water and Environmental Regulation (DWER) in addition to lodgment with the Shire's Environmental Health Section. The officer is of the view that the level of detail required within the SSE, if required at all, is appropriately determined by those departments. The officer notes that the development scale is largely uncontroversial in the GR zone in a planning sense.

Summary

In view of the above assessment, the officer supports the proposal subject to conditions.

STATUTORY/LOCAL LAW IMPLICATIONS

Planning and Development (Local Planning Scheme) Regulations 2015
Schedule 2 – Deemed Provisions for Local Planning Schemes

Local Planning Scheme No. 9

POLICY IMPLICATIONS

Local Planning Policy No. 1.4 Foreshore Reserves along Water Courses

Local Planning Policy 3.1 - Tourist Development in Rural Areas

Government Sewage Policy 2019

BUDGET IMPLICATIONS

Nil

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	3. Planning & Sustainability - Plan for Future Generations
Strategic Objective	3.3 Planning & Land Use - Plan the use of the land to meet future requirements incorporating economic development objectives and community amenity

VOTING REQUIREMENTS - SIMPLE MAJORITY

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Johnson SECONDED: Councillor Sorensen

That Council grant Development Approval for two (2) Chalets on on Lot 413 (598) Caraban Road, Caraban subject to the following conditions:

1. **The approved development plans and accompanying documentation, together with any requirements and annotations detailed thereon, are the plans approved as part of this application and shall form part of the development approval issued;**

2. **All works required to satisfy a condition of this approval are required to be installed/constructed and maintained in accordance with the approved plans and conditions of approval for the life of the development;**

3. **Prior to the commencement of site works, the landowner/applicant shall demonstrate to the Shire of Gingin that an effluent disposal system has been approved by the relevant authorities;**

4. **The Property Management Plan (PMP) dated 21 March 2023 (accompanying documentation) is to be implemented and adhered to, to the satisfaction of the Shire of Gingin;**

5. Prior to the commencement of the approved use, a new crossover from Caraban Road is to be constructed to the satisfaction of the Shire of Gingin at the landowners' cost;

6. Prior to commencement of site works a Landscaping Plan shall be submitted to and approved by the Shire of Gingin. The Landscaping Plan is to provide screening surrounding the approved chalets;

7. Prior to the commencement of the approved use, the landscaping as detailed in the Landscaping Plan shall be installed and thereafter maintained to the satisfaction of the Shire of Gingin;

8. The approved development is to comply with the definition of 'Short Stay Accommodation' as defined by Local Planning Scheme No. 9 (LPS9) which defines short stay as:

   means tourist accommodation facilities (including motels, caravan and camping facilities, chalets, guest houses, holiday houses or any other form of tourist accommodation) set aside either continuously or from time to time for temporary living purposes but which are not occupied by the same person or group of persons for a period in excess of 3 months in any one 12 month period.

9. The chalet accommodation shall only accommodate up to 10 persons at any one time; and

10. The operator is required to keep up to date records of occupants residing in the chalet accommodation and shall provide the Shire of Gingin with a copy of such records within 14 days upon written request.

Advice Notes

Note 1: If you are aggrieved by the conditions of this approval, you have the right to request that the State Administrative Tribunal (SAT) review the decision under Part 14 of the *Planning and Development Act 2005*.

Note 2: If the development subject to this approval is not substantially commenced within a period of two years, the approval shall lapse and have no further effect.

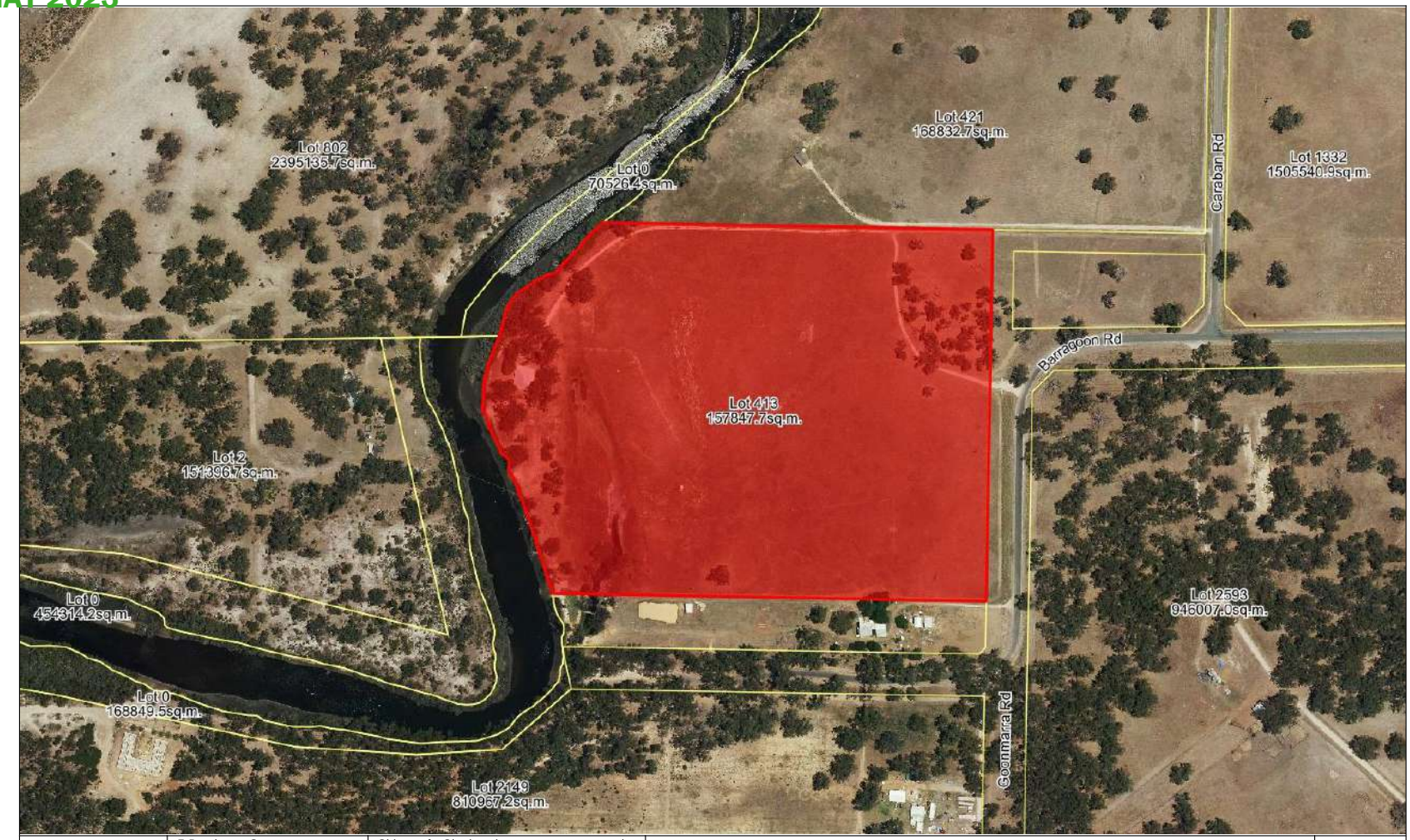
Note 3: Where an approval has so lapsed, no development may be carried out without further approval of the local government having first been sought and obtained.

Note 4:	Please note that you may be required to provide a Soil Evaluation Report, prepared in accordance with *AS/NZS 1547 Onsite domestic wastewater management,* prior to obtaining an effluent disposal system approval. For further information please refer to the fact sheet 'Guidance on Site and Soil Evaluation for Onsite Sewer Management' at the following link: https://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/water/Wastewater/Site-Soil-Evaluation.pdf.
Note 5:	The wastewater disposal system may require a separate approval by the Department of Health (DoH) and/or the Department of Water and Environmental Regulation (DWER).
Note 6:	All noise associated with the development is required to comply with the *Environmental Protection (Noise) Regulations 1997.*
Note7:	The development is to have access to a sufficient supply of potable water that is of the quality specified under the *Australian Drinking Water Quality Guidelines 2004*.
Note 8:	In relation to the new crossover from Caraban Road, please note that a Vehicle Crossover Application is required to be submitted to and approved by the Shire of Gingin prior to the installation of the crossover.
Note 9:	It is the landowner's responsibility to implement and maintain bushfire protection and mitigation measures on their property.
Note 10:	Please be advised that the proximity of the subject land to the Moore River may result in the land being subject to flooding. The proponent is encouraged to undertake further due diligence to ensure that the building design is appropriate in the event inundation occurs.

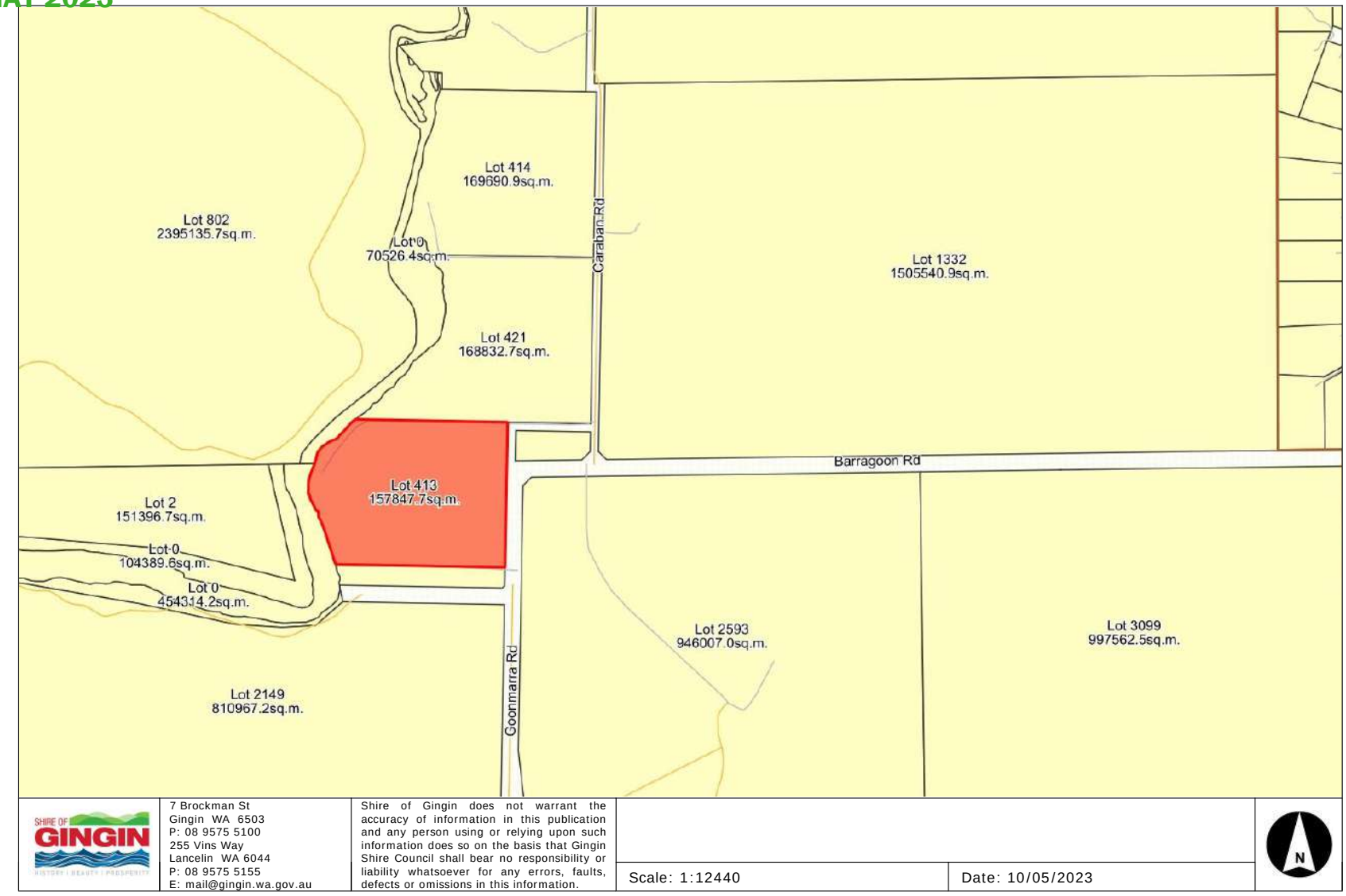
CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*

AGAINST: *Nil*



SHIRE OF GINGIN HISTORY | BEAUTY | PROSPERITY	7 Brockman St Gingin WA 6503 P: 08 9575 5100 255 Vins Way Lancelin WA 6044 P: 08 9575 5155 E: mail@gingin.wa.gov.au	Shire of Gingin does not warrant the accuracy of information in this publication and any person using or relying upon such information does so on the basis that Gingin Shire Council shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in this information.	Scale: 1:5095	Date: 10/05/2023



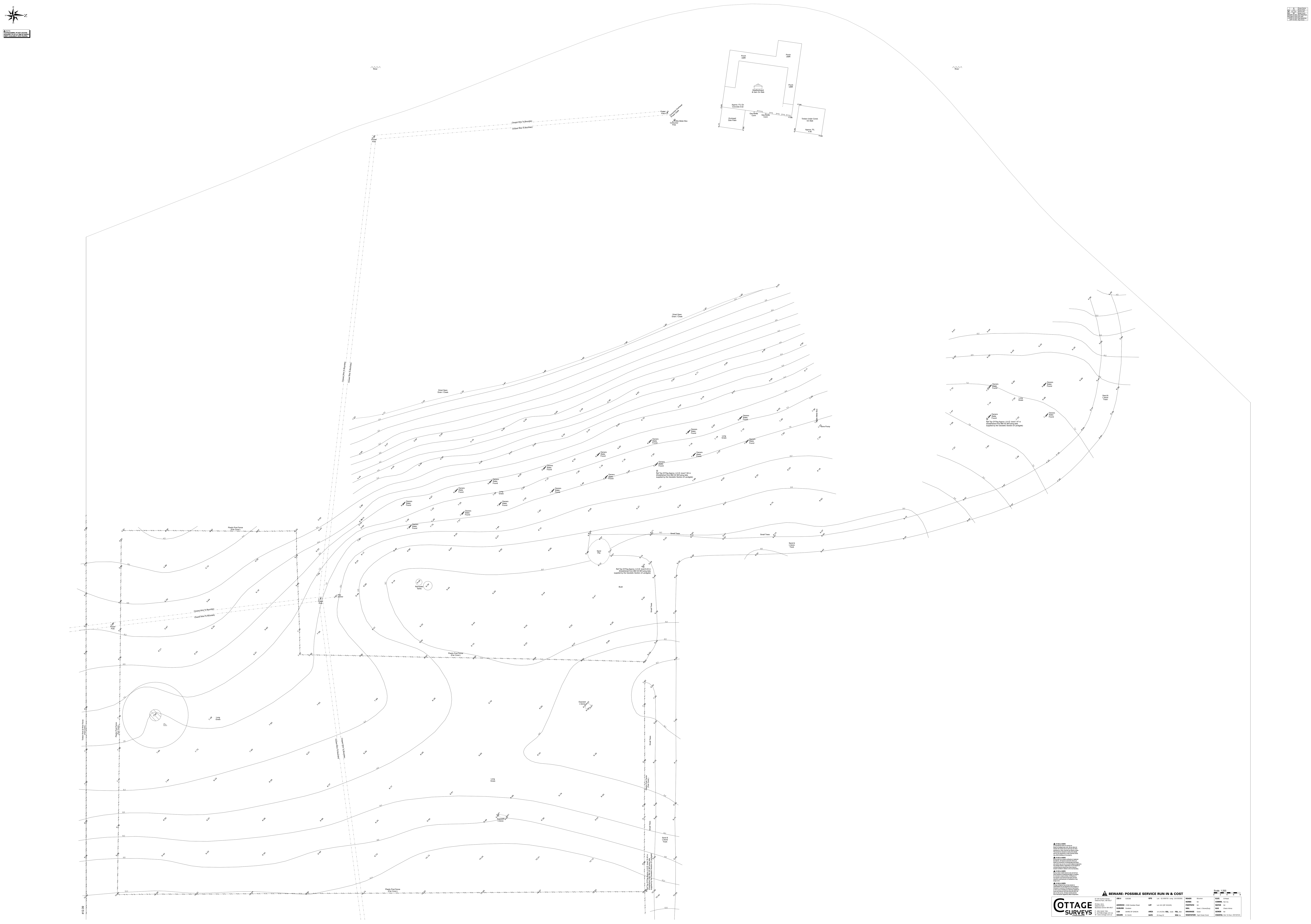
SHIRE OF GINGIN
HISTORY | BEAUTY | PROSPERITY

7 Brockman St
Gingin WA 6503
P: 08 9575 5100
255 Vins Way
Lancelin WA 6044
P: 08 9575 5155
E: mail@gingin.wa.gov.au

Scale: 1:12440

Date: 10/05/2023

N


NOTE
TELSTRA/COMMS. PIT NOT LOCATED ADJACENT TO LOT AT TIME OF SURVEY. VERIFY AVAILABILITY WITH TELSTRA.
River
Closest Wire To Boundary
Power Pole
Consumer Overhead Power Cable
Site Meter Box
Consumer Pole
Porch UMR
Weatherboard & Galv On Slab
Approx. F/L On Concrete 5.02
Enclosed Galv Patio
Gas Bottle Conn
Timber Under Const. On Slab
Approx. F/L 4.95
Dried Open Drain / Creek
Owners Stake Found
Long Grass
Bore Pump
Ref Top Of Peg Approx. A.H.D. level 7.62 m (Established from BM HZ 897using data supplied by the Geodetic Section of Landgate)
Ref Top Of Peg Approx. A.H.D. level 7.47 m (Established from BM HZ 897using data supplied by the Geodetic Section of Landgate)
Ref Top Of Peg Approx. A.H.D. level 9.23 m (Established from BM HZ 897using data supplied by the Geodetic Section of Landgate)
Ref Top Of Peg Approx. A.H.D. level 10.43 m (Established from BM HZ 897using data supplied by the Geodetic Section of Landgate)
Sand & L'stone Track
Small Trees
Sand Pile
Bush
Rainwater Tanks
Plastic Post Fence (Fair Cond.)
Timber Post & Wire Fence (Fair Cond.)
Exposed L'stone
412.39
LEGEND
Power Dome
Power Pole
Phone Pits
Water Conn.
Top Pillar/Post
Top Wall
Top Retaining
Top Fence
DISCLAIMER:
Lot boundaries drawn on survey are based on landgate plan only. Survey does not include title search and as such may not show easements or other interests not shown on plan. Title should be checked to verify all lot details and for any easements or other interests which may affect building on the property.
DISCLAIMER:
Survey does not include verification of cadastral boundaries. All features and levels shown are based on orientation to existing pegs and fences only which may not be on correct cadastral alignment. Any designs based or dependent on the location of existing features should have these features' location verified in relation to the true boundary.
DISCLAIMER:
Survey shows visible features only and will not show locations of underground pipes or conduits for internal or mains services. Verification of the location of all internal and mains services should be confirmed prior to finalisation of any design work.
DISCLAIMER:
Cottage & Engineering surveys accept no responsibility for any physical on site changes to the parcel or portion of the parcel of land shown on this survey including any adjoining neighbours levels and features that have occurred after the date on this survey. All Sewer details plotted from information supplied by Water Corporation.
BEWARE: POSSIBLE SERVICE RUN IN & COST
Scale 1:200
COTTAGE SURVEYS
LICENSED SURVEYORS
87-89 Guthrie Street Osborne Park, WA 6017
PO Box 1611 Osborne Park Business Centre WA 6917
P: (08) 9446 7361
E: perth@cottage.com.au
W: www.cottage.com.au
JOB # 530288
GPS Lat: -32.008703 Long: 116.032591
ADDRESS #598 Caraban Road
LOT Lot 413 (DP 231045)
SUBURB Caraban
LGA SHIRE OF GINGIN
AREA 14.1412ha VOL. 1526 FOL. 984
DRAWN B. Smith
DATE 29 Aug 22
SSA No
ROADS Bitumen
KERBS Nil
FOOTPATH Nil
SOIL Sand, L'Stone(Exp)
DRAINAGE Good
VEGETATION High Grass Cover
ELEC. O/Head
COMMS. Not loc.
WATER Nil
GAS Check Alinta
SEWER Nil
COASTAL 50m To River

13 BOOM STREET
GNANGARA
WESTERN AUSTRALIA
6077
t: 08 6377 8335
w: www.foxmodular.com.au
e: info@foxmodular.com.au

PROJECT DETAILS

JOB NO: FT-745
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 1 OF 11
DRAWING: SITE PLAN 1:1500
SCALE: 1:1500
DRAWN: BSI
CHECKED: N.P.
DATE: 16.03.23

REVISION

E	16.03.23	SITE SURVEY AMENDMENTS
D	14.03.23	PRESTART V.O.1 REV.2
C	13.01.23	PRESTART V.O.2
B	16.08.22	DESIGN AMENDMENTS
A	12.08.22	ISSUED FOR APPROVAL

NOTES

WRITTEN DIMENSIONS TAKE PREFERENCE OVER SCALE. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS, ENGINEERS DESIGNS, COMPUTATIONS, AND GEOTECHNICAL REPORT. WRITTEN SPECIFICATIONS TAKE PRECEDENCE OVER THESE DRAWINGS UNLESS NOMINATED IN CONTRACT OR SPECIFICATION.

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APPROVALS

OWNER 1: _

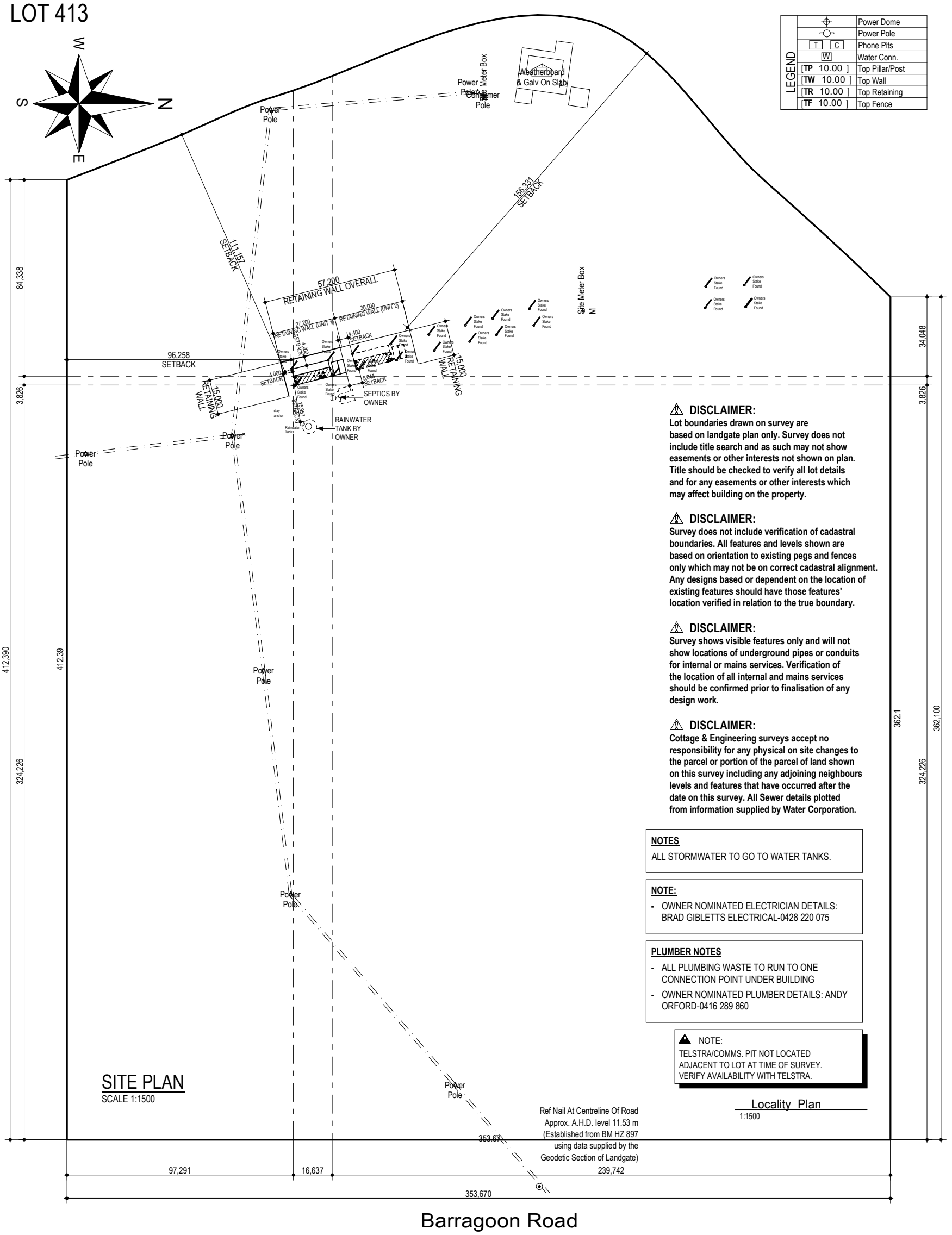
DATE: _

OWNER 2: _

DATE: _

CONTRACT DRAWINGS

LOT 413



LEGEND	
⊕	Power Dome
⊸○	Power Pole
T C	Phone Pits
W	Water Conn.
[TP 10.00]	Top Pillar/Post
[TW 10.00]	Top Wall
[TR 10.00]	Top Retaining
[TF 10.00]	Top Fence

⚠ DISCLAIMER:
Lot boundaries drawn on survey are based on landgate plan only. Survey does not include title search and as such may not show easements or other interests not shown on plan. Title should be checked to verify all lot details and for any easements or other interests which may affect building on the property.

⚠ DISCLAIMER:
Survey does not include verification of cadastral boundaries. All features and levels shown are based on orientation to existing pegs and fences only which may not be on correct cadastral alignment. Any designs based or dependent on the location of existing features should have those features' location verified in relation to the true boundary.

⚠ DISCLAIMER:
Survey shows visible features only and will not show locations of underground pipes or conduits for internal or mains services. Verification of the location of all internal and mains services should be confirmed prior to finalisation of any design work.

⚠ DISCLAIMER:
Cottage & Engineering surveys accept no responsibility for any physical on site changes to the parcel or portion of the parcel of land shown on this survey including any adjoining neighbours levels and features that have occurred after the date on this survey. All Sewer details plotted from information supplied by Water Corporation.

NOTES
ALL STORMWATER TO GO TO WATER TANKS.

NOTE:
- OWNER NOMINATED ELECTRICIAN DETAILS: BRAD GIBLETTS ELECTRICAL-0428 220 075

PLUMBER NOTES
- ALL PLUMBING WASTE TO RUN TO ONE CONNECTION POINT UNDER BUILDING
- OWNER NOMINATED PLUMBER DETAILS: ANDY ORFORD-0416 289 860

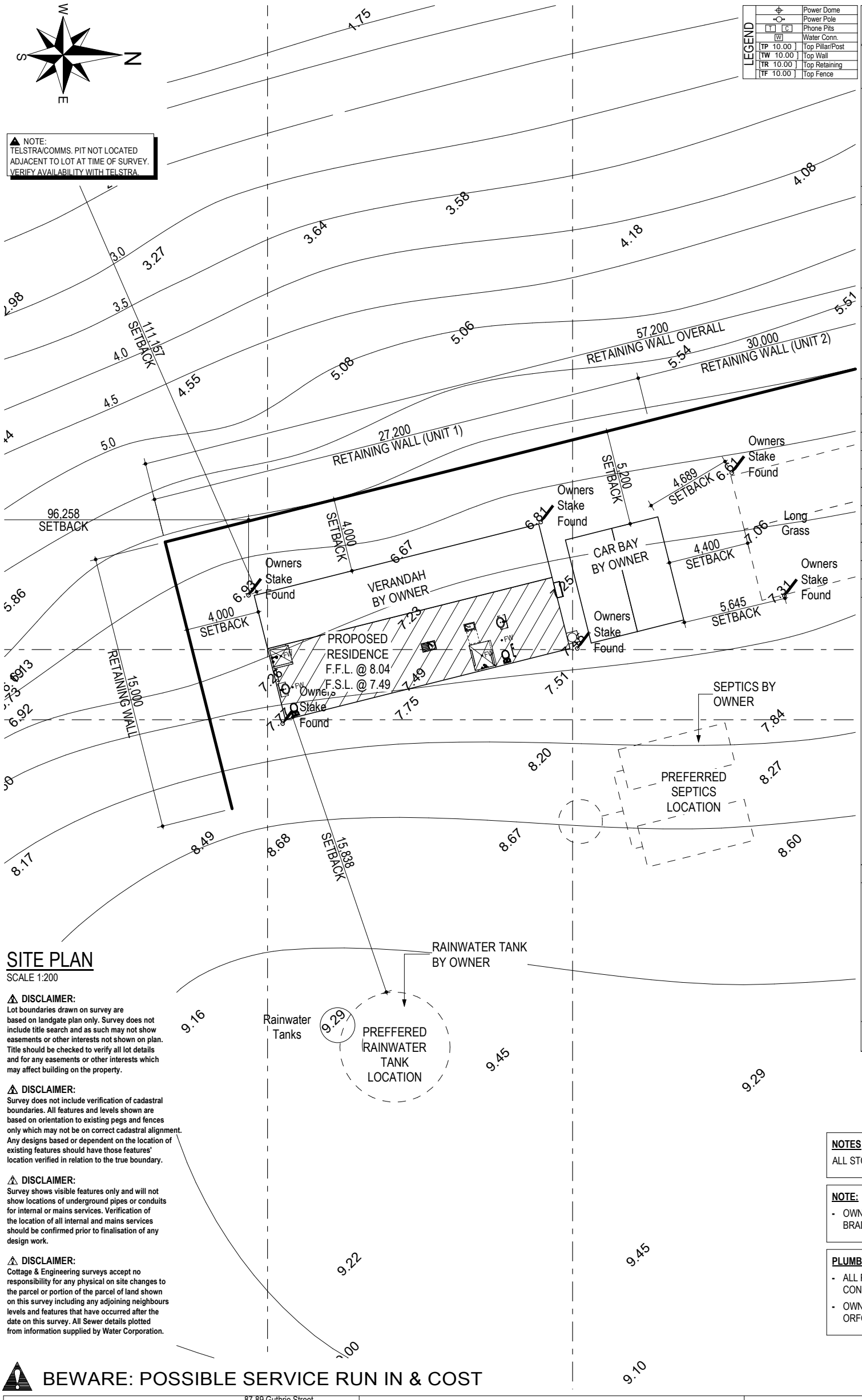
⚠ NOTE:
TELSTRA/COMMS. PIT NOT LOCATED ADJACENT TO LOT AT TIME OF SURVEY. VERIFY AVAILABILITY WITH TELSTRA.

SITE PLAN
SCALE 1:1500

Locality Plan
1:1500

Ref Nail At Centreline Of Road
Approx. A.H.D. level 11.53 m
(Established from BM HZ 897
using data supplied by the
Geodetic Section of Landgate)

Barragoon Road



SITE PLAN

SCALE 1:200

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13 BOOM STREET
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PROJECT DETAILS

JOB NO: FT-745
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 2 OF 11
DRAWING: SITE PLAN 1:200
SCALE: 1:200
DRAWN: BSI
CHECKED: N.P.
DATE: 16.03.23

REVISION

E	16.03.23	SITE SURVEY AMENDMENTS
D	14.03.23	PRESTART V.O.1 REV.2
C	13.01.23	PRESTART V.O.2
B	16.08.22	DESIGN AMENDMENTS
A	12.08.22	ISSUED FOR APPROVAL

NOTES

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-THIS DRAWING IS COPYRIGHT - ANY INFRINGEMENT WILL RESULT IN LEGAL PROCEEDING.

APPROVALS

OWNER 1:

DATE:

OWNER 2:

DATE:

CONTRACT DRAWINGS

NOTES
ALL STORMWATER TO GO TO WATER TANKS.

NOTE:
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PLUMBER NOTES
- ALL PLUMBING WASTE TO RUN TO ONE CONNECTION POINT UNDER BUILDING
- OWNER NOMINATED PLUMBER DETAILS: ANDY ORFORD-0416 289 860

Scale 1:200
0 2 4 6 8

⚠ BEWARE: POSSIBLE SERVICE RUN IN & COST

COTTAGE SURVEYS
LICENSED SURVEYORS
87-89 Guthrie Street
Osborne Park, WA 6017
PO Box 1611
Osborne Park
Business Centre WA 6917
P: (08) 9446 7361
E: perth@cottage.com.au
W: www.cottage.com.au

JOB #	530288	GPS	Lat: -32.008703 Long: 116.032581			ROADS	Bitumen
						KERBS	Nil
ADDRESS	#598 Caraban Road	LOT	Lot 413 (DP 231045)			FOOTPATH	Nil
SUBURB	Caraban					SOIL	Sand, L'Stone(Exp)
LGA	SHIRE OF GINGIN	AREA	14.1412ha	VOL. 1526	FOL. 964	DRAINAGE	Good
DRAWN	B. Smith	DATE	29 Aug 22		SSA No	VEGETATION	High Grass Cover

ELEC.	O/Head	
COMMS.	Not loc.	
WATER	Nil	
GAS	Check Alinta	
SEWER	Nil	
COASTAL	50m To River	(Approximate Only Confirm With Shire)

AREAS:		
	PERIM. (m)	AREA (m2)
HOUSE	40.00	64.00
VERANDAH	38.00	48.00
		112.00 m²

ROOF QUANTITIES	
Material Type	Roof | Metal copy
Surface Area (m2 on the rake)	124.46
Area [m2 on the flat]	124.36

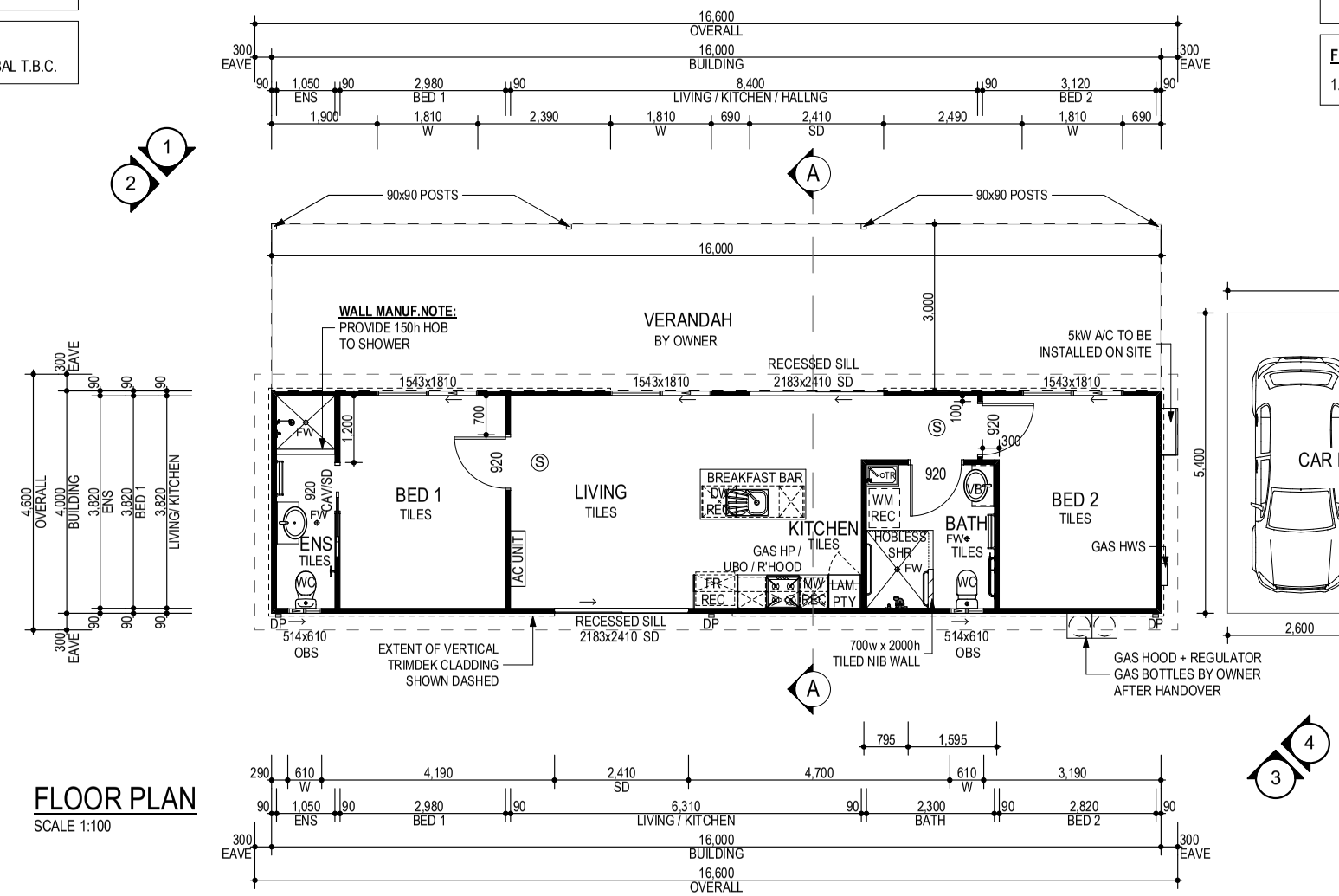
FINAL DESIGN SUBJECT TO SITE SURVEY, ENERGY EFFICIENCY ASSESSMENT, ENGINEER'S REQUIREMENTS AND COUNCIL APPROVAL

GLAZING NOTES
GLAZING TO BCA 3.6 AND AS2047/AS1288

WET AREA NOTES
WET AREAS TO BCA 3.8.1 & AS3740

SUB FLOOR VENTILATION NOTES
SUB FLOOR VENTILATION TO COMPLY WITH BCA 3.4.1

BAL NOTE
BUILDING TO BE CONSTRUCTED TO BAL T.B.C.



FLOOR PLAN
SCALE 1:100

INSULATION REQUIREMENTS
REFER ENERGY REPORT FOR DETAILS

ROOF : 55mm ANTICON TO ROOF
CEILING : R4.0 CEILING BATTS
EXTERNAL WALLS : R2.5 BATTS + REFLECTIVE WALL WRAP

GUTTERS & DOWNPIPES
METAL GUTTERS & DOWNPIPES TO COMPLY WITH AS2179

VAPOUR BARRIER
VAPOUR BARRIER TO BE FITTED IN ACCORDANCE WITH BCA 3.2.2.6

METAL WALL CLADDING NOTES
METAL CLADDING TO AS1562.1

PLUMBER NOTES
- ALL PLUMBING WASTE TO RUN TO ONE CONNECTION POINT UNDER BUILDING
- OWNER NOMINATED PLUMBER DETAILS: ANDY ORFORD- 0416 289 860

FIXINGS NOTE
1. ENSURE CATEGORY 4 SCREWS AND FIXINGS ARE USED FOR ROOF SHEETS

FIXINGS NOTE
1. COASTAL UPGRADES TO ULTRASTEEL

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ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS
PAGE: 3 OF 11
DRAWING: FLOOR PLAN
SCALE: 1:100
DRAWN: BSI
CHECKED: N.P.
DATE: 16.03.23

REVISION

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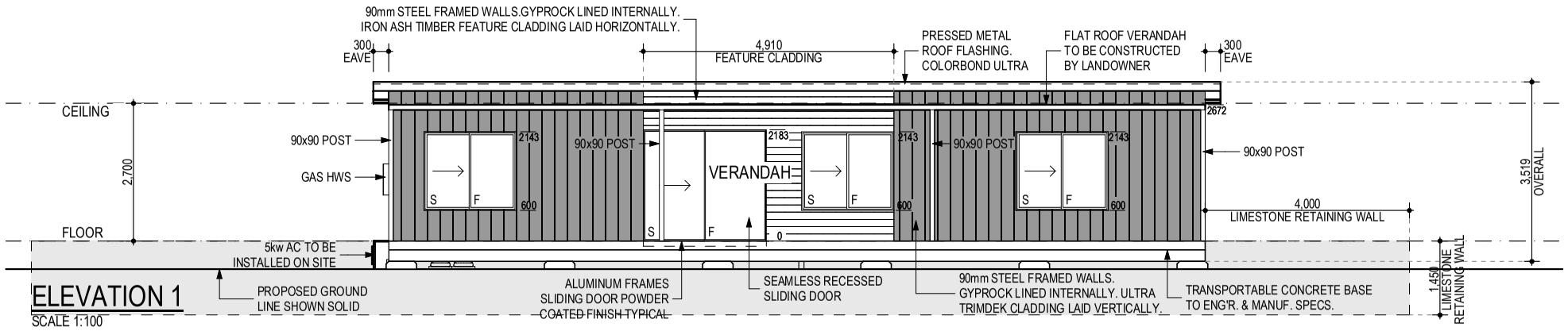
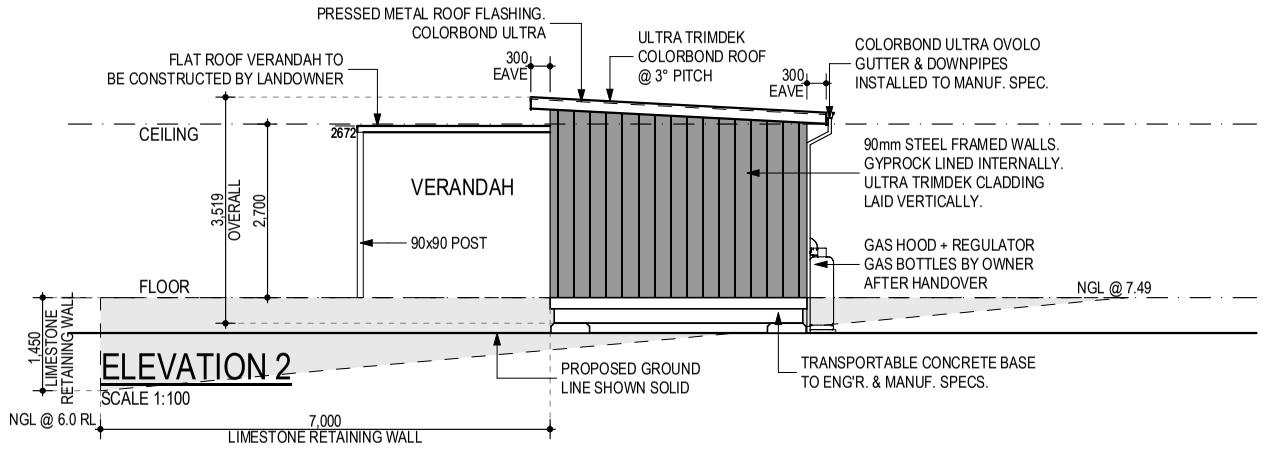
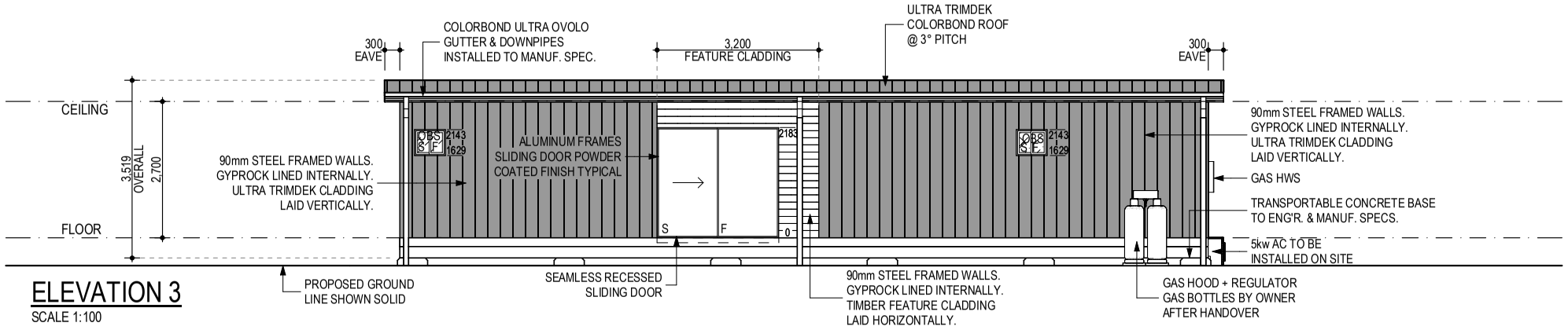
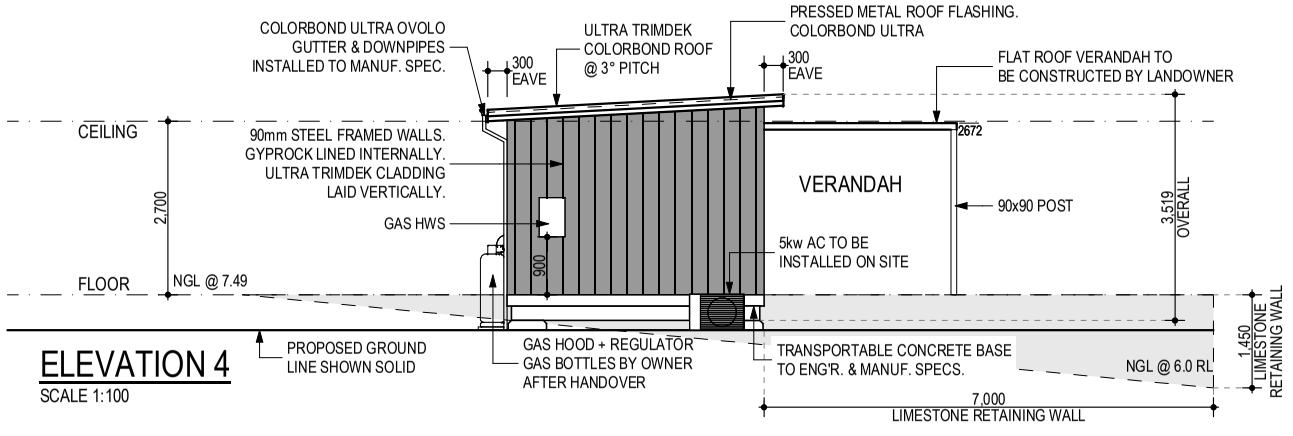
OWNER 2:
DATE:

CONTRACT DRAWINGS









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DRAWING DETAILS

PAGE: 4 OF 11
DRAWING: ELEVATIONS
SCALE: 1:100
DRAWN: BSI
CHECKED: N.P.
DATE: 16.03.23

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APPROVALS

OWNER 1:
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OWNER 2:
DATE:

CONTRACT DRAWINGS

ELECTRICAL LEGEND

	DOWN LIGHT - LED
	BUNKER LIGHT @ 2200
	EXHAUST FAN - WALL MOUNTED
	CEILING SWEEP FAN / LIGHT
	GPO SINGLE AT HEIGHT NOMINATED A.F.L.
	GPO DOUBLE AT HEIGHT NOMINATED A.F.L.
	GPO DOUBLE - WITH DOUBLE USB CHARGER - AT HEIGHT NOMINATED A.F.L.
	ISOLATION SWITCH WEATHERPROOF AT HEIGHT NOMINATED A.F.L.
	TV POINT
S	SMOKE DETECTOR

ELECTRICAL NOTES:

- GPO & LIGHT LOCATIONS ARE APPROXIMATE ONLY
- LIGHT SWITCHES TO BE MOUNTED @1200 AFL
- SMOKE ALARMS ARE TO BE POSITIONED 300mm FROM WALLS
- INTER CONNECTING SMOKE DETECTORS (HARD WIRED) THROUGHOUT

NOTE:

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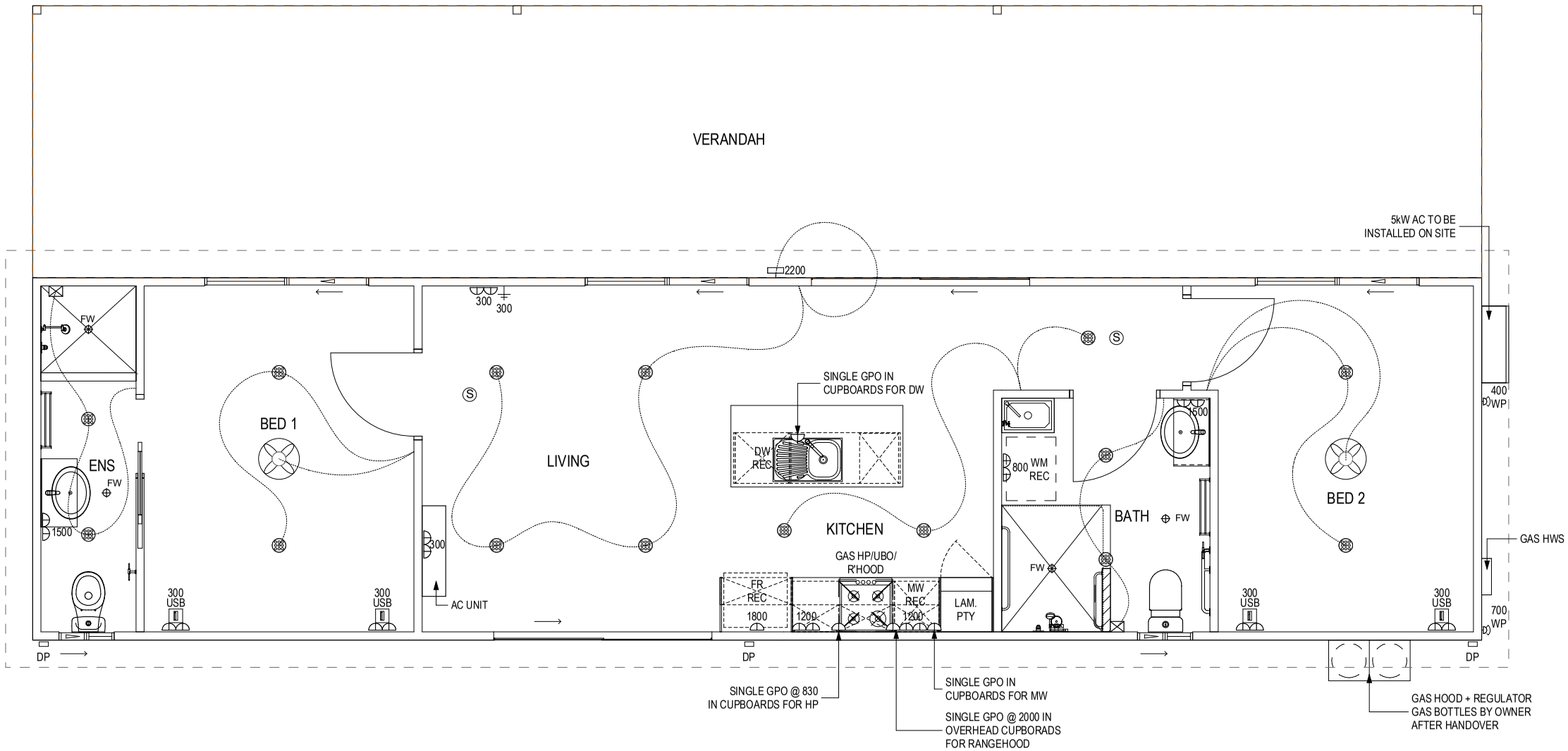

ELECTRICAL PLAN

SCALE 1:50

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DRAWING DETAILS

PAGE: 5 OF 11
DRAWING: ELECTRICAL
SCALE: 1:50
DRAWN: BSI
CHECKED: N.P.
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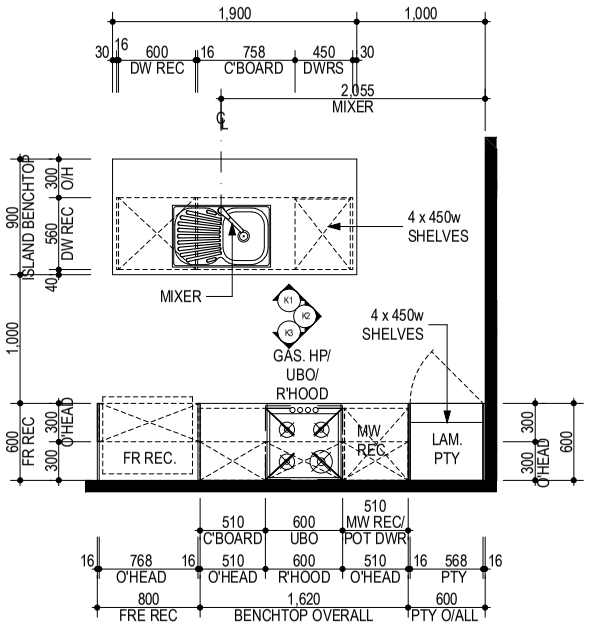
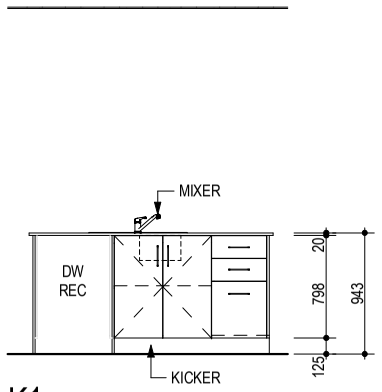
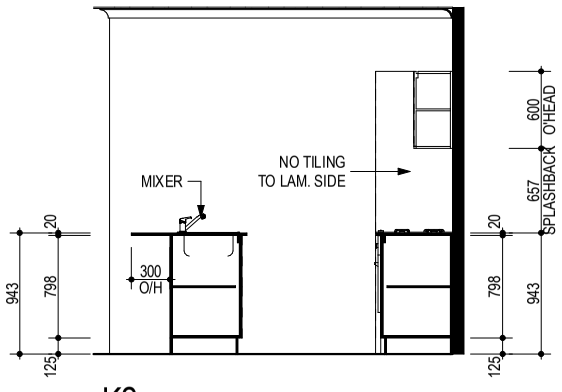


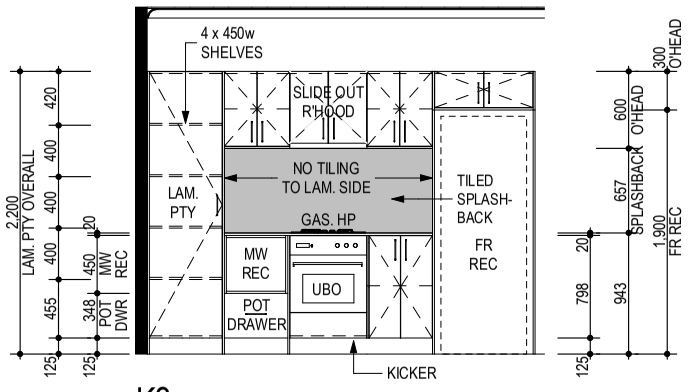
KITCHEN LAYOUT
SCALE 1:50



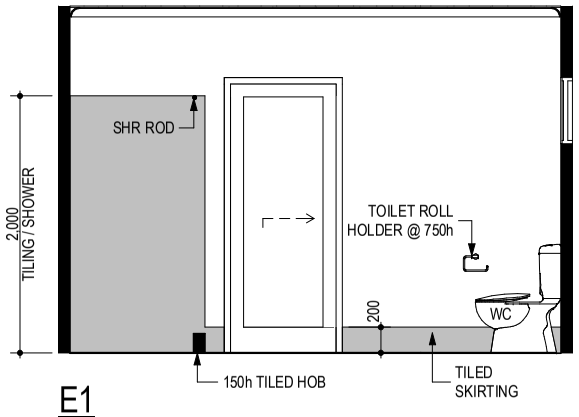
K1
SCALE 1:50



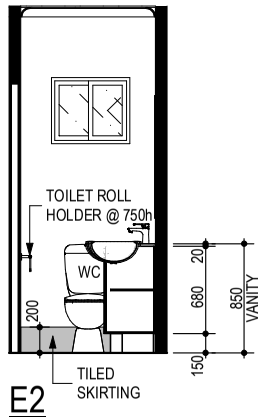
K2
SCALE 1:50



K3
SCALE 1:50

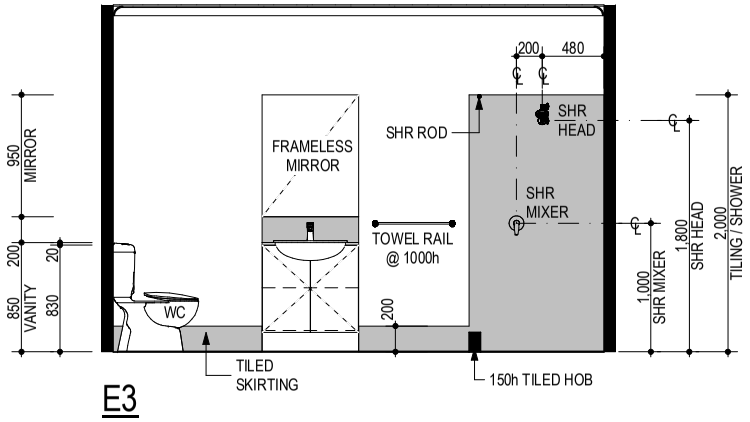


E1
SCALE 1:50

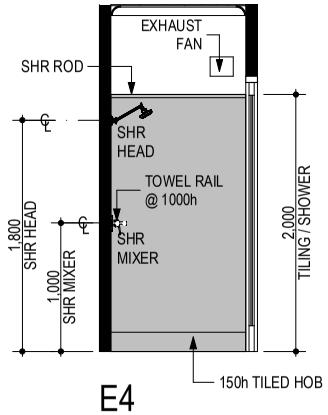


E2
SCALE 1:50

ENSUITE LAYOUT
SCALE 1:50



E3
SCALE 1:50



E4
SCALE 1:50

FINAL DESIGN SUBJECT TO SITE SURVEY, ENERGY EFFICIENCY ASSESSMENT, ENGINEER'S REQUIREMENTS AND COUNCIL APPROVAL

BENCHTOP NOTES
- 20mm Q-STONE GLACIER BENCH TOPS TO KITCHEN

FINISHES LEGEND
TILING EXTENTS SHOWN AS SHADED.
REFER COLOUR SCHEDULE FOR DETAILS

CABINETMAKER NOTE:
- TILING EXTENTS SHOWN AS GREY
- TILE LAYOUTS NOTATIONAL ONLY. CUT TILES TO TILER'S DISCRETION
- JOINTS TO BENCHTOPS AT CABINET MAKER'S DISCRETION
- 150h KICKBOARD TO BATHROOM, ENSUITE & LAUNDRY WITH 200mm SETBACK UNO
- 125h KICKBOARD TO KITCHEN & LAUNDRY ONLY UNO
- MITRED TILING TO WET AREAS
- ALL DIMENSIONS, DOOR SWINGS & PANEL SIZES ARE NOMINAL & MAY VARY ON SITE AT CABINET MAKER'S DISCRETION UNLESS ADVISED AS CRITICAL
- ANY CRITICAL MINIMUM CLEARANCE TO BE ADVISED BY CLIENT TOP BUILDER
- ALL SCRIBES ARE NOMINAL AT CABINET MAKER'S DISCRETION
- 40mm OVERHANG TO FRONT OF KITCHEN BENCHTOPS
- REFER TO PLANS FOR DEPTH OF BREAKFAST BAR (IF APPLICABLE)
- CABINET MAKER TO OBTAIN CUT-OUT SIZES FROM MANUFACTURER TO SUIT APPLIANCES SELECTED

ENSURE COMPLIANCE WITH MANUFACTURERS VENTILATION REQUIREMENTS

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ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 6 OF 11
DRAWING: ROOM LAYOUTS 1
SCALE: 1:50
DRAWN: BSI
CHECKED: N.P.
DATE: 16.03.23

REVISION

E	16.03.23	SITE SURVEY AMENDMENTS
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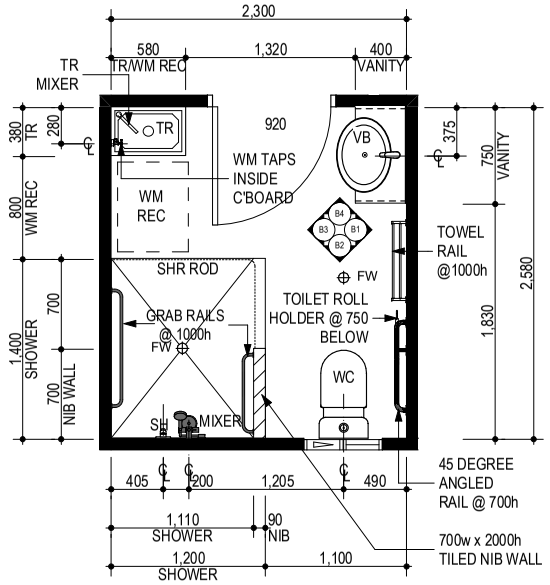
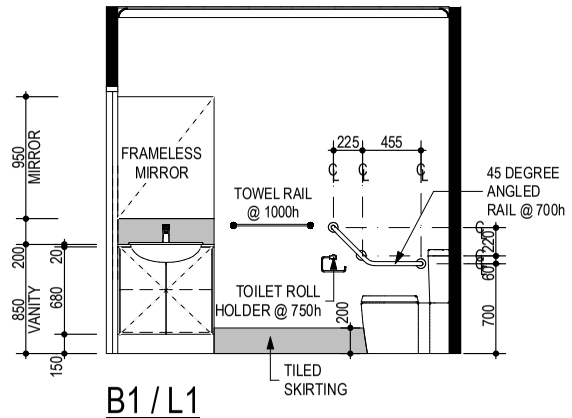
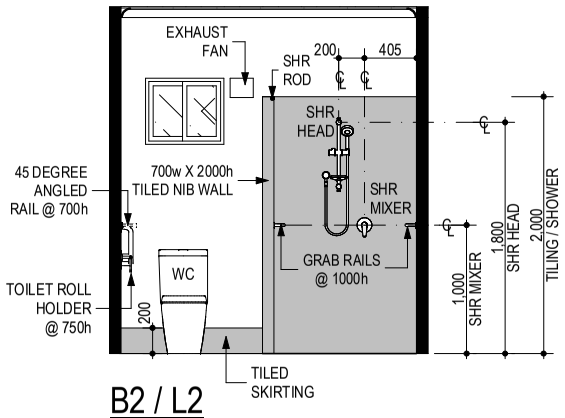


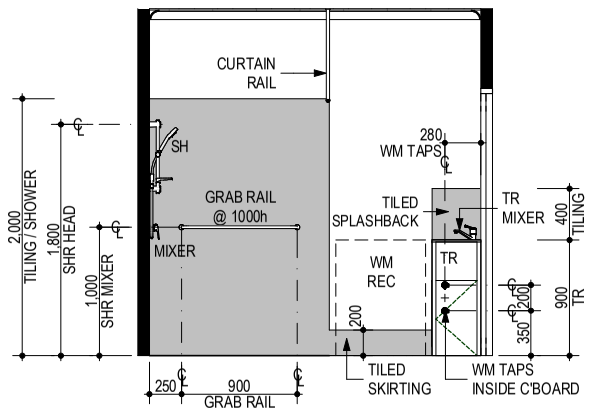
BATH / L'DRY LAYOUT
SCALE 1:50



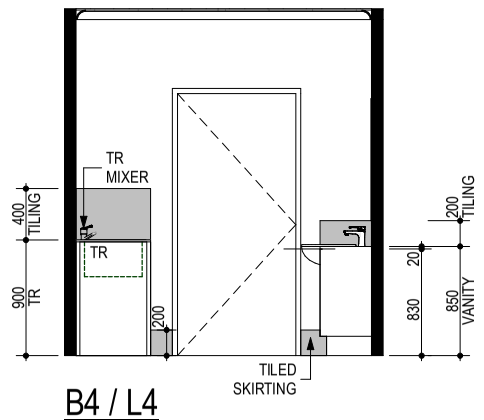
B1 / L1
SCALE 1:50



B2 / L2
SCALE 1:50



B3 / L3
SCALE 1:50



B4 / L4
SCALE 1:50

CABINETMAKER NOTE:

- TILING EXTENTS SHOWN AS GREY
- TILE LAYOUTS NOTATIONAL ONLY. CUT TILES TO TILER'S DISCRETION
- JOINTS TO BENCHTOPS AT CABINET MAKER'S DISCRETION
- 150h KICKBOARD TO BATHROOM, ENSUITE & LAUNDRY WITH 200mm SETBACK UNO
- 125h KICKBOARD TO KITCHEN & LAUNDRY ONLY UNO
- MITRED TILING TO WET AREAS
- ALL DIMENSIONS, DOOR SWINGS & PANEL SIZES ARE NOMINAL & MAY VARY ON SITE AT CABINET MAKER'S DISCRETION UNLESS ADVISED AS CRITICAL
- ANY CRITICAL MINIMUM CLEARANCE TO BE ADVISED BY CLIENT TOP BUILDER
- ALL SCRIBES ARE NOMINAL AT CABINET MAKER'S DISCRETION
- 40mm OVERHANG TO FRONT OF KITCHEN BENCHTOPS
- REFER TO PLANS FOR DEPTH OF BREAKFAST BAR (IF APPLICABLE)
- CABINET MAKER TO OBTAIN CUT-OUT SIZES FROM MANUFACTURER TO SUIT APPLIANCES SELECTED

ENSURE COMPLIANCE WITH MANUFACTURERS VENTILATION REQUIREMENTS

FINAL DESIGN SUBJECT TO SITE SURVEY, ENERGY EFFICIENCY ASSESSMENT, ENGINEER'S REQUIREMENTS AND COUNCIL APPROVAL

FINISHES LEGEND

TILING EXTENTS SHOWN AS SHADED.
REFER COLOUR SCHEDULE FOR DETAILS

13 BOOM STREET
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6077
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w: www.foxmodular.com.au
e: info@foxmodular.com.au

PROJECT DETAILS

JOB NO: FT-745
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 7 OF 11
DRAWING: ROOM LAYOUTS 2
SCALE: 1:50
DRAWN: BSI
CHECKED: N.P.
DATE: 16.03.23

REVISION

E	16.03.23	SITE SURVEY AMENDMENTS
D	14.03.23	PRESTART V.O.1 REV.2
C	13.01.23	PRESTART V.O.2
B	16.08.22	DESIGN AMENDMENTS
A	12.08.22	ISSUED FOR APPROVAL

NOTES

WRITTEN DIMENSIONS TAKE PREFERENCE OVER SCALE. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS. ENGINEERS DESIGNS, COMPUTATIONS, AND GEOTECHNICAL REPORT. WRITTEN SPECIFICATIONS TAKE PRECEDENCE OVER THESE DRAWINGS UNLESS NOMINATED IN CONTRACT OR SPECIFICATION.

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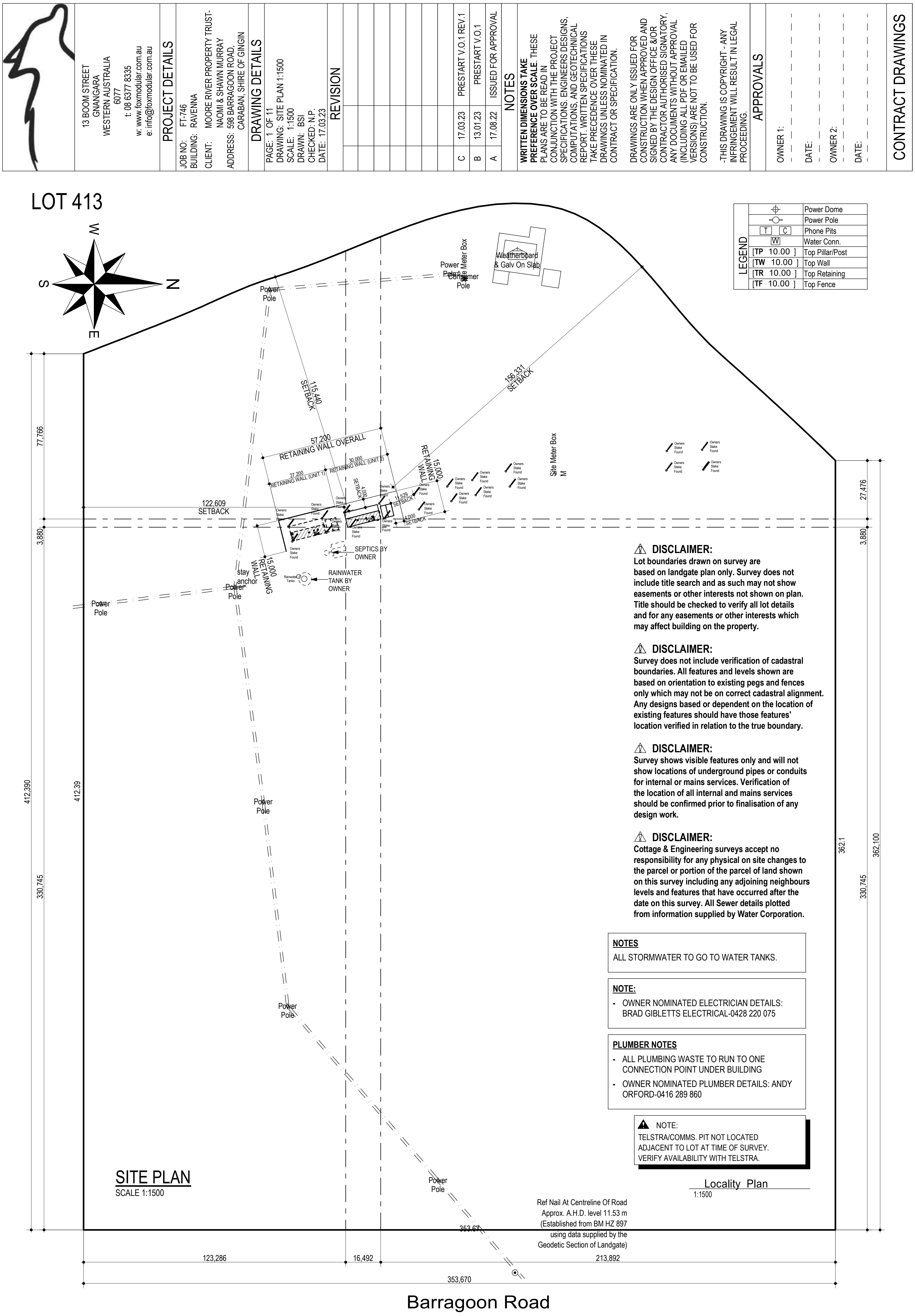
APPROVALS

OWNER 1:
- - - - - - - - - - - - - -
DATE:
- - - - - - - - - - - - - -
OWNER 2:
- - - - - - - - - - - - - -
DATE:
- - - - - - - - - - - - - -

CONTRACT DRAWINGS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PROJECT DETAILS
JOB NO: FT-746
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST-NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN
DRAWING DETAILS
PAGE: 1 OF 11
DRAWING: SITE PLAN 1:1500
SCALE: 1:1500
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23
REVISION
C 17.03.23 PRESTART V.O.1 REV.1
B 13.01.23 PRESTART V.O.1
A 17.08.22 ISSUED FOR APPROVAL
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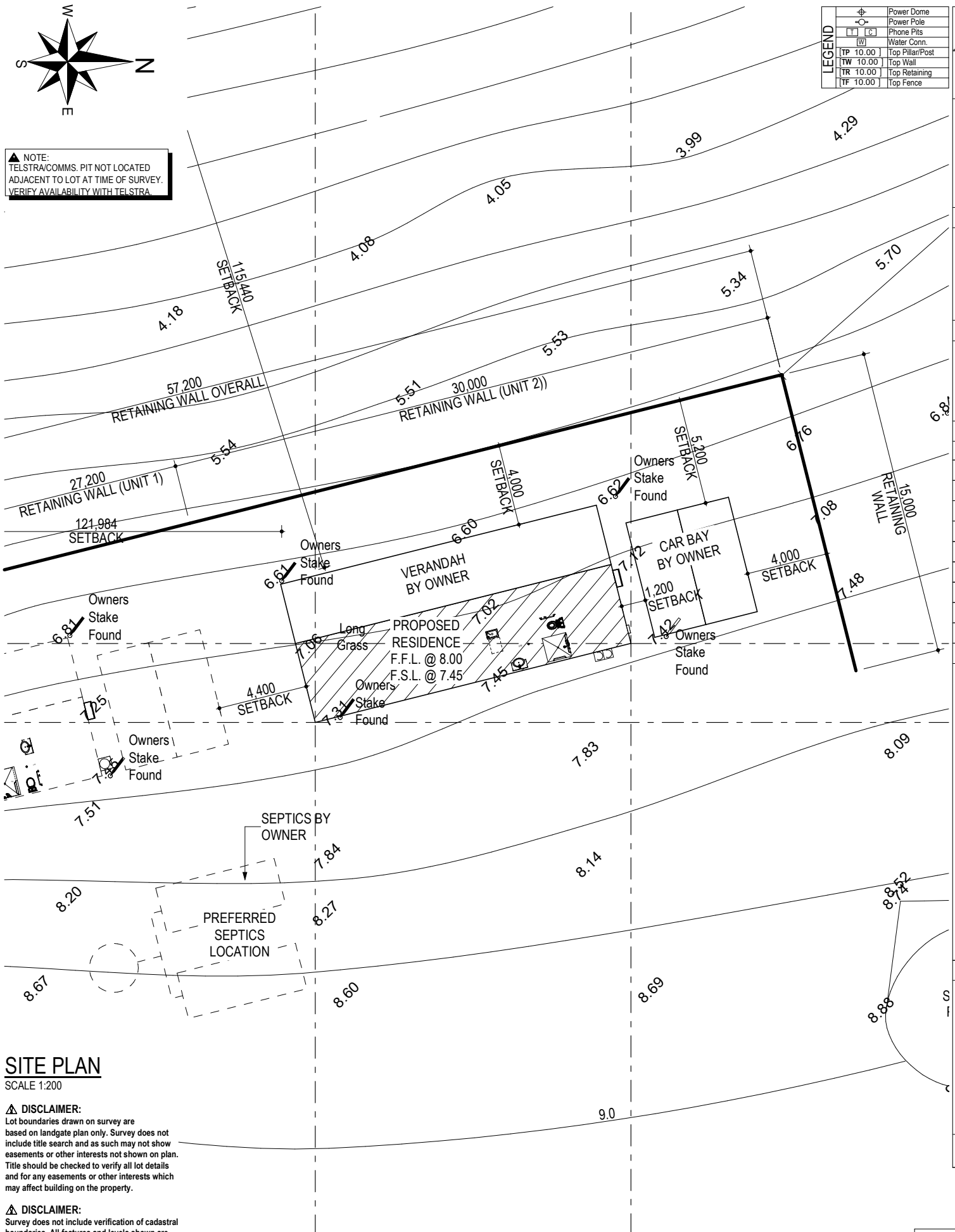
APPROVALS
OWNER 1:
DATE:
OWNER 2:
DATE:
CONTRACT DRAWINGS
LOT 413
W
S
N
E
LEGEND
Power Dome
Power Pole
T C Phone Pits
W Water Conn.
[TP 10.00] Top Pillar/Post
[TW 10.00] Top Wall
[TR 10.00] Top Retaining
[TF 10.00] Top Fence
Power Pole
Site Meter Box
Consumer Pole
Weatherboard & Galv On Slab
115,440 SETBACK
156,331 SETBACK
57,200 RETAINING WALL OVERALL
27,200 RETAINING WALL (UNIT 1)
30,000 RETAINING WALL (UNIT 2)
15,000 RETAINING WALL
4,000 SETBACK
11,529 SETBACK
122,609 SETBACK
Owners Stake Found
SEPTICS BY OWNER
RAINWATER TANK BY OWNER
Rainwater Tanks
stay anchor
Site Meter Box
M
77,766
3,880
412,390
412.39
330,745
27,476
3,880
362.1
362,100
330,745
DISCLAIMER:
Lot boundaries drawn on survey are based on landgate plan only. Survey does not include title search and as such may not show easements or other interests not shown on plan. Title should be checked to verify all lot details and for any easements or other interests which may affect building on the property.
DISCLAIMER:
Survey does not include verification of cadastral boundaries. All features and levels shown are based on orientation to existing pegs and fences only which may not be on correct cadastral alignment. Any designs based or dependent on the location of existing features should have those features' location verified in relation to the true boundary.
DISCLAIMER:
Survey shows visible features only and will not show locations of underground pipes or conduits for internal or mains services. Verification of the location of all internal and mains services should be confirmed prior to finalisation of any design work.
DISCLAIMER:
Cottage & Engineering surveys accept no responsibility for any physical on site changes to the parcel or portion of the parcel of land shown on this survey including any adjoining neighbours levels and features that have occurred after the date on this survey. All Sewer details plotted from information supplied by Water Corporation.
NOTES
ALL STORMWATER TO GO TO WATER TANKS.
NOTE:
- OWNER NOMINATED ELECTRICIAN DETAILS: BRAD GIBLETTS ELECTRICAL-0428 220 075
PLUMBER NOTES
- ALL PLUMBING WASTE TO RUN TO ONE CONNECTION POINT UNDER BUILDING
- OWNER NOMINATED PLUMBER DETAILS: ANDY ORFORD-0416 289 860
NOTE:
TELSTRA/COMMS. PIT NOT LOCATED ADJACENT TO LOT AT TIME OF SURVEY. VERIFY AVAILABILITY WITH TELSTRA.
Locality Plan
1:1500
SITE PLAN
SCALE 1:1500
Ref Nail At Centreline Of Road Approx. A.H.D. level 11.53 m (Established from BM HZ 897 using data supplied by the Geodetic Section of Landgate)
353,67
123,286
16,492
213,892
353,670
Barragoon Road



SITE PLAN

SCALE 1:200

⚠ DISCLAIMER:
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PROJECT DETAILS

JOB NO: FT-746
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 2 OF 11
DRAWING: SITE PLAN 1:200
SCALE: 1:200
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23

REVISION

C	17.03.23	PRESTART V.O.1 REV.1
B	13.01.23	PRESTART V.O.1
A	17.08.22	ISSUED FOR APPROVAL

NOTES

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APPROVALS

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DATE:
OWNER 2:
DATE:

CONTRACT DRAWINGS

NOTES
ALL STORMWATER TO GO TO WATER TANKS.

NOTE:
- OWNER NOMINATED ELECTRICIAN DETAILS: BRAD GIBLETTS ELECTRICAL-0428 220 075

PLUMBER NOTES
- ALL PLUMBING WASTE TO RUN TO ONE CONNECTION POINT UNDER BUILDING
- OWNER NOMINATED PLUMBER DETAILS: ANDY ORFORD-0416 289 860

Scale 1:200
0 2 4 6 8

BEWARE: POSSIBLE SERVICE RUN IN & COST

COTTAGE SURVEYS
LICENSED SURVEYORS
87-89 Guthrie Street
Osborne Park, WA 6017
PO Box 1611
Osborne Park
Business Centre WA 6917
P: (08) 9446 7361
E: perth@cottage.com.au
W: www.cottage.com.au

JOB #	530288	GPS	Lat: -32.008703 Long: 116.032581			ROADS	Bitumen
						KERBS	Nil
ADDRESS	#598 Caraban Road	LOT	Lot 413 (DP 231045)			FOOTPATH	Nil
SUBURB	Caraban					SOIL	Sand, L'Stone(Exp)
LGA	SHIRE OF GINGIN	AREA	14.1412ha	VOL. 1526	FOL. 964	DRAINAGE	Good
DRAWN	B. Smith	DATE	29 Aug 22		SSA No	VEGETATION	High Grass Cover

ELEC.	O/Head	
COMMS.	Not loc.	
WATER	Nil	
GAS	Check Alinta	
SEWER	Nil	
COASTAL	50m To River	(Approximate Only Confirm With Shire)

AREAS:		
	PERIM. (m)	AREA (m2)
HOUSE	40.00	64.00
VERANDAH	38.00	48.00
		112.00 m²
ROOF QUANTITIES		
Material Type		Roof | Metal copy
Surface Area (m2 on the rake)		124.46
Area [m2 on the flat]		124.36

FINAL DESIGN SUBJECT TO SITE SURVEY, ENERGY EFFICIENCY ASSESSMENT, ENGINEER'S REQUIREMENTS AND COUNCIL APPROVAL

GLAZING NOTES

GLAZING TO BCA 3.6 AND AS2047/AS1288

WET AREA NOTES

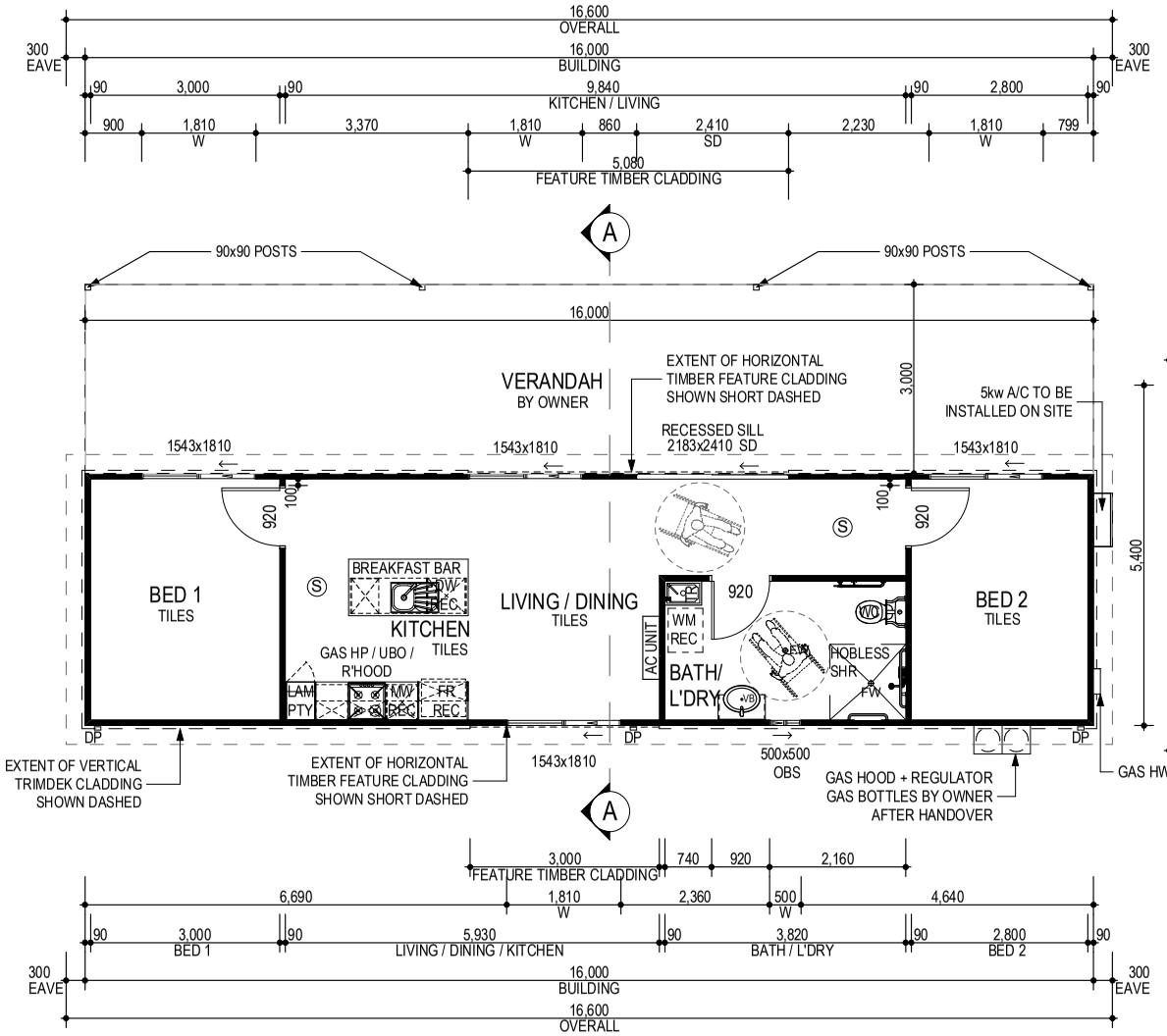
WET AREAS TO BCA 3.8.1 & AS3740

SUB FLOOR VENTILATION NOTES

SUB FLOOR VENTILATION TO COMPLY WITH BCA 3.4.1

BAL NOTE

BUILDING TO BE CONSTRUCTED TO T.B.C.



FLOOR PLAN
SCALE 1:100

INSULATION REQUIREMENTS

REFER ENERGY REPORT FOR DETAILS

ROOF : 55mm ANTICON TO ROOF
CEILING : R4.0 CEILING BATTS
EXTERNAL WALLS : R2.5 BATTS + REFLECTIVE WALL WRAP

GUTTERS & DOWNPIPES

METAL GUTTERS & DOWNPIPES TO COMPLY WITH AS2179

VAPOUR BARRIER

VAPOUR BARRIER TO BE FITTED IN ACCORDANCE WITH BCA 3.2.2.6

METAL WALL CLADDING NOTES

METAL CLADDING TO AS1562.1

PLUMBER NOTES

- ALL PLUMBING WASTE TO RUN TO ONE CONNECTION POINT UNDER BUILDING
- OWNER NOMINATED PLUMBER DETAILS: ANDY ORFORD- 0416 289 860

FIXINGS NOTE

1. ENSURE CATEGORY 4 SCREWS AND FIXINGS ARE USED FOR ROOF SHEETS

FIXINGS NOTE

1. COASTAL UPGRADES TO ULTRASTEEL

NOTE:

ALL BUILDINGS AND SITES ARE REQUIRED TO COMPLY WITH THE DISABILITY DISCRIMINATION ACT (DDA).

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PROJECT DETAILS

JOB NO: FT-746
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 3 OF 11
DRAWING: FLOOR PLAN
SCALE: 1:100
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23

REVISION

C	17.03.23	PRESTART V.O.1 REV.1
B	13.01.23	PRESTART V.O.1
A	17.08.22	ISSUED FOR APPROVAL

NOTES

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APPROVALS

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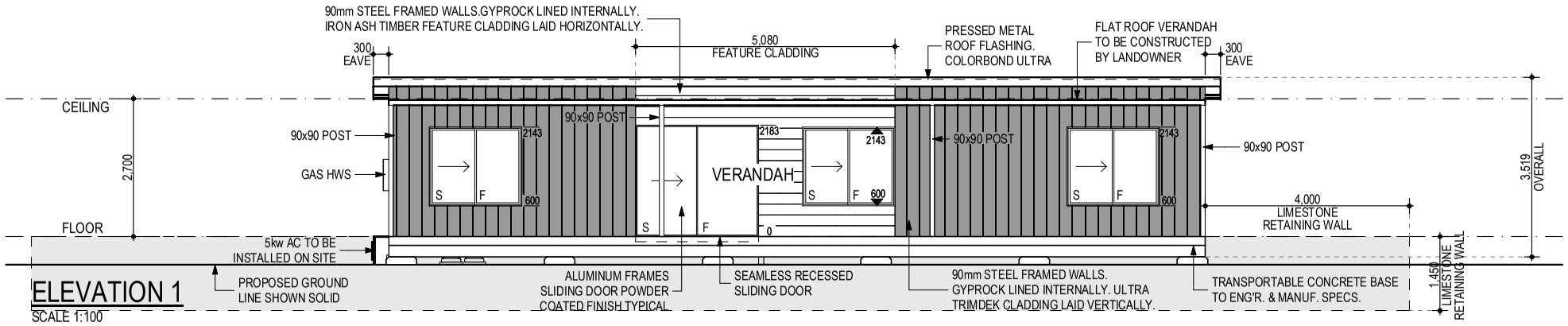
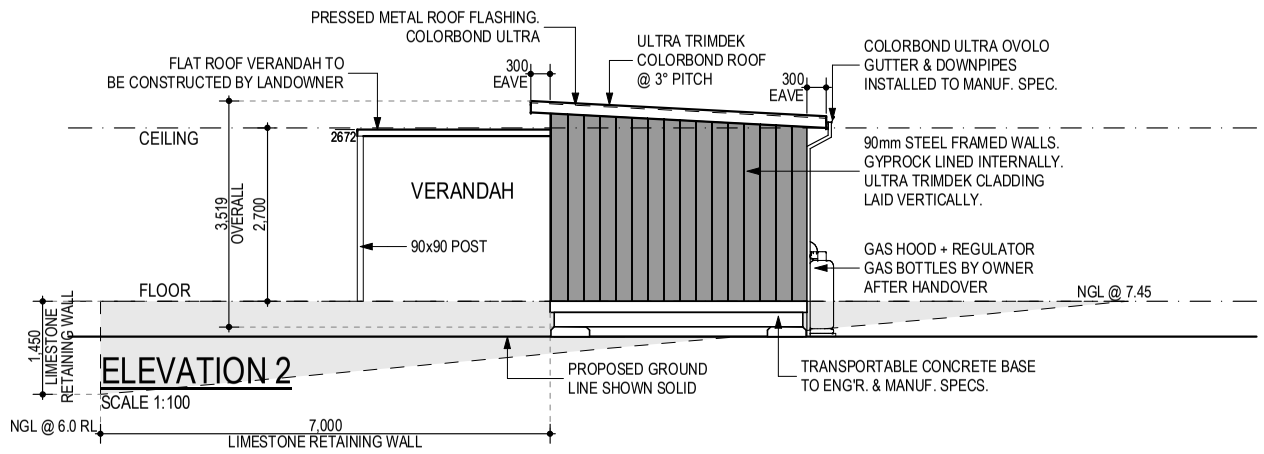
DATE:
OWNER 2:
DATE:

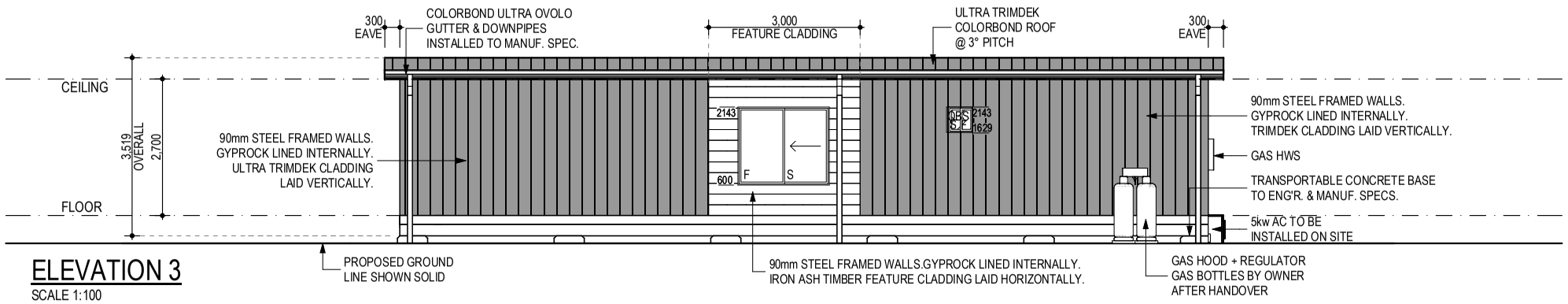
CONTRACT DRAWINGS



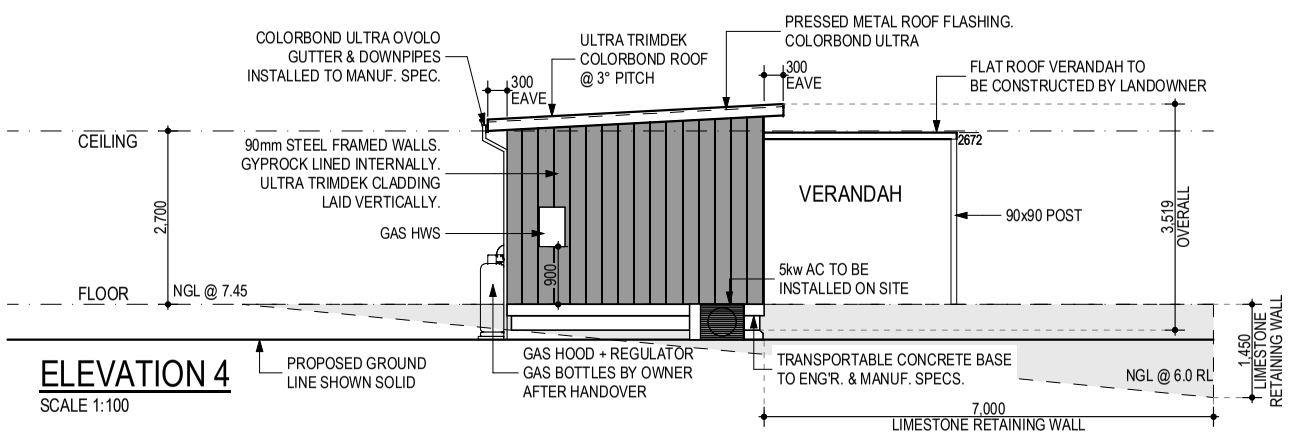
ELEVATION 1
SCALE 1:100



ELEVATION 2
SCALE 1:100



ELEVATION 3
SCALE 1:100



ELEVATION 4
SCALE 1:100

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PROJECT DETAILS

JOB NO: FT-746
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 4 OF 11
DRAWING: ELEVATIONS
SCALE: 1:100
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23

REVISION

C	17.03.23	PRESTART V.O.1 REV.1
B	13.01.23	PRESTART V.O.1
A	17.08.22	ISSUED FOR APPROVAL

NOTES

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APPROVALS

OWNER 1:
DATE:
OWNER 2:
DATE:

CONTRACT DRAWINGS

ELECTRICAL LEGEND

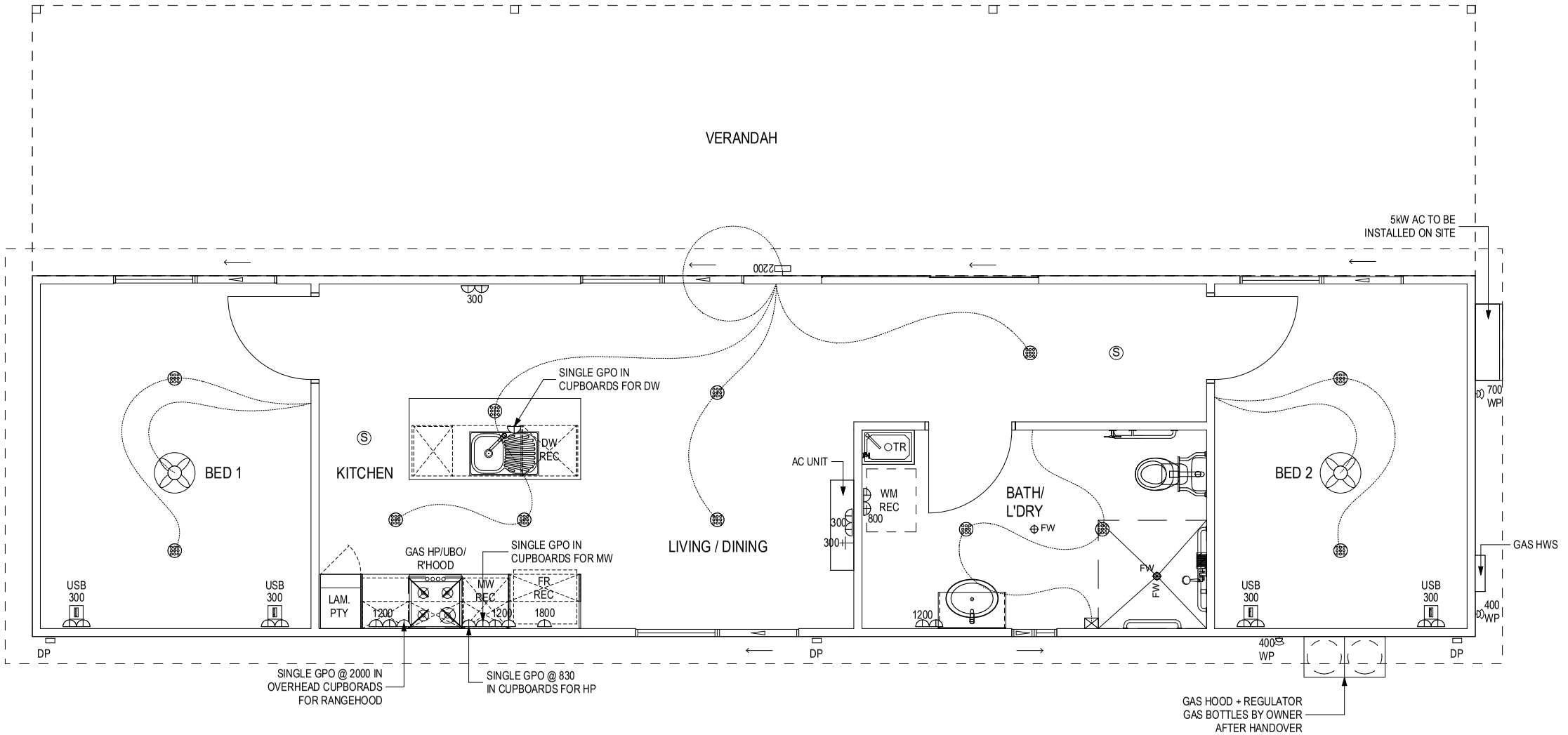
	DOWN LIGHT - LED
	BUNKER LIGHT @ 2200
	EXHAUST FAN - WALL MOUNTED
	CEILING SWEEP FAN / LIGHT
	GPO SINGLE AT HEIGHT NOMINATED A.F.L.
	GPO DOUBLE AT HEIGHT NOMINATED A.F.L.
	ISOLATION SWITCH WEATHERPROOF AT HEIGHT NOMINATED A.F.L.
	TV POINT
S	SMOKE DETECTOR

ELECTRICAL NOTES:

- GPO & LIGHT LOCATIONS ARE APPROXIMATE ONLY
- LIGHT SWITCHES TO BE MOUNTED @1200 AFL
- SMOKE ALARMS ARE TO BE POSITIONED 300mm FROM WALLS
- INTER CONNECTING SMOKE DETECTORS (HARD WIRED) THROUGHOUT

NOTE:

- OWNER NOMINATED ELECTRICIAN DETAILS: BRAD GIBLETTS ELECTRICAL-0428 220 075



ELECTRICAL PLAN

SCALE 1:50

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PROJECT DETAILS

JOB NO: FT-746
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 5 OF 11
DRAWING: ELECTRICAL
SCALE: 1:50
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23

REVISION

C	17.03.23	PRESTART V.O.1 REV.1
B	13.01.23	PRESTART V.O.1
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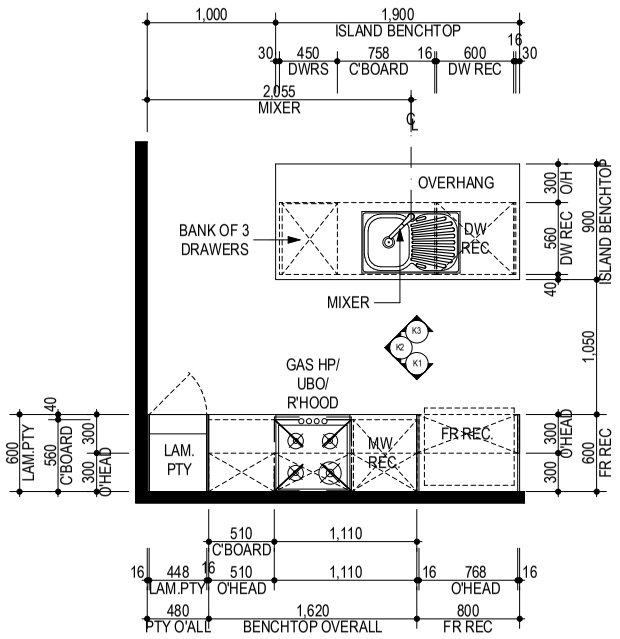
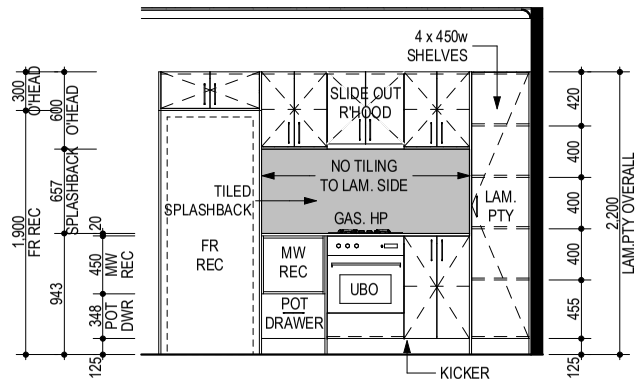
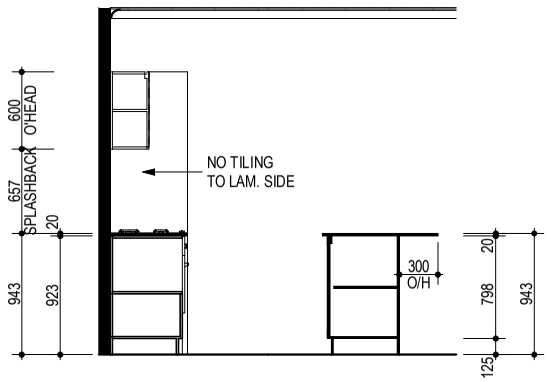


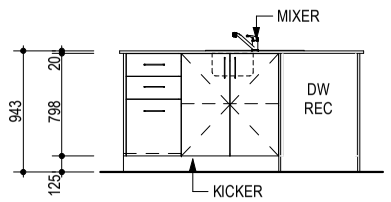
KITCHEN LAYOUT
SCALE 1:50



K1
SCALE 1:50



K2
SCALE 1:50



K3
SCALE 1:50

FINAL DESIGN SUBJECT TO SITE SURVEY, ENERGY EFFICIENCY ASSESSMENT, ENGINEER'S REQUIREMENTS AND COUNCIL APPROVAL

BENCHTOP NOTES
- 20mm Q-STONE GLACIER BENCH TOPS TO KITCHEN

FINISHES LEGEND
TILING EXTENTS SHOWN AS SHADED.
REFER COLOUR SCHEDULE FOR DETAILS

CABINETMAKER NOTE:
- TILING EXTENTS SHOWN AS GREY
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ENSURE COMPLIANCE WITH MANUFACTURERS VENTILATION REQUIREMENTS

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BUILDING: RAVENNA
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ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS
PAGE: 6 OF 11
DRAWING: ROOM LAYOUTS 1
SCALE: 1:50
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23

REVISION

C	17.03.23	PRESTART V.O.1 REV.1
B	13.01.23	PRESTART V.O.1
A	17.08.22	ISSUED FOR APPROVAL

NOTES
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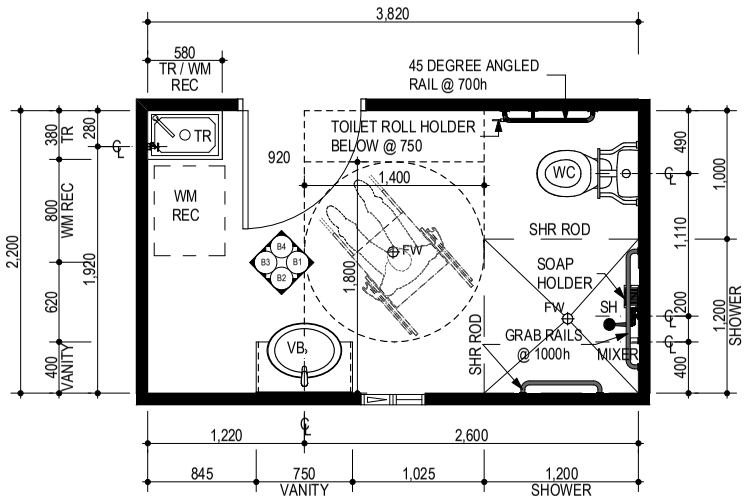
APPROVALS
OWNER 1:
DATE:
OWNER 2:
DATE:

CONTRACT DRAWINGS



BATH / L'DRY LAYOUT
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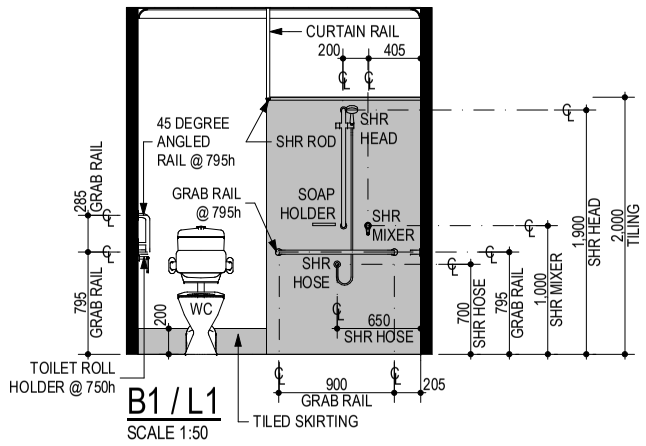

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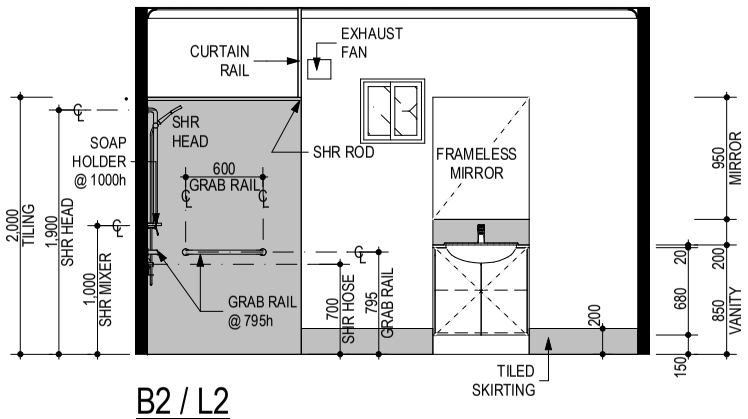

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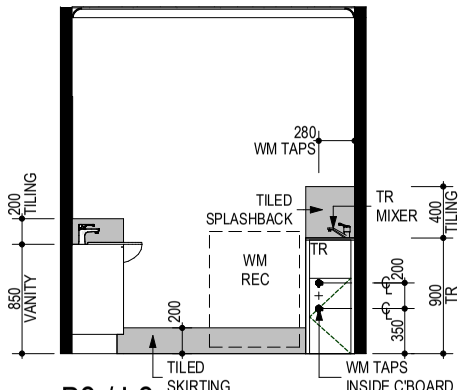

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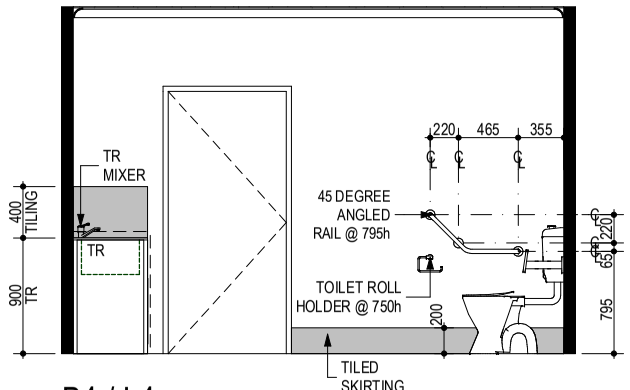

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CABINETMAKER NOTE:

- TILING EXTENTS SHOWN AS GREY
- TILE LAYOUTS NOTATIONAL ONLY. CUT TILES TO TILER'S DISCRETION
- JOINTS TO BENCHTOPS AT CABINET MAKER'S DISCRETION
- 150h KICKBOARD TO BATHROOM, ENSUITE & LAUNDRY WITH 200mm SETBACK UNO
- 125h KICKBOARD TO KITCHEN & LAUNDRY ONLY UNO
- MITRED TILING TO WET AREAS
- ALL DIMENSIONS, DOOR SWINGS & PANEL SIZES ARE NOMINAL & MAY VARY ON SITE AT CABINET MAKER'S DISCRETION UNLESS ADVISED AS CRITICAL
- ANY CRITICAL MINIMUM CLEARANCE TO BE ADVISED BY CLIENT TOP BUILDER
- ALL SCRIBES ARE NOMINAL AT CABINET MAKER'S DISCRETION
- 40mm OVERHANG TO FRONT OF KITCHEN BENCHTOPS
- REFER TO PLANS FOR DEPTH OF BREAKFAST BAR (IF APPLICABLE)
- CABINET MAKER TO OBTAIN CUT-OUT SIZES FROM MANUFACTURER TO SUIT APPLIANCES SELECTED

ENSURE COMPLIANCE WITH MANUFACTURERS VENTILATION REQUIREMENTS

FINAL DESIGN SUBJECT TO SITE SURVEY, ENERGY EFFICIENCY ASSESSMENT, ENGINEER'S REQUIREMENTS AND COUNCIL APPROVAL

FINISHES LEGEND

TILING EXTENTS SHOWN AS SHADED.
REFER COLOUR SCHEDULE FOR DETAILS

13 BOOM STREET
GNANGARA
WESTERN AUSTRALIA
6077
t: 08 6377 8335
w: www.foxmodular.com.au
e: info@foxmodular.com.au

PROJECT DETAILS

JOB NO: FT-746
BUILDING: RAVENNA
CLIENT: MOORE RIVER PROPERTY TRUST- NAOMI & SHAWN MURRAY
ADDRESS: 598 BARRAGOON ROAD, CARABAN, SHIRE OF GINGIN

DRAWING DETAILS

PAGE: 7 OF 11
DRAWING: ROOM LAYOUTS 2
SCALE: 1:50
DRAWN: BSI
CHECKED: N.P.
DATE: 17.03.23

REVISION

C	17.03.23	PRESTART V.O.1 REV.1
B	13.01.23	PRESTART V.O.1
A	17.08.22	ISSUED FOR APPROVAL

NOTES

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OWNER 2:
DATE:

CONTRACT DRAWINGS

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Development Application

Proposed Two x 2 bedroom Chalet

Lot 413 (No. 598) Caraban Road, Caraban

Planning Report

March 2023

DEVELOPED
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Developed Property Pty Ltd
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planning@developedproperty.com.au
www.developedproperty.com.au

Issue	Date	Statues	Prepared By	Approved By	Circulated
V1	21/03/2023	Draft	R. D		Internally
Final		Final		R. D	Externally

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1.0 Introduction

We, Developed Property Pty Ltd, on behalf of the Moore River Trust (landowners) are seeking approval from the Shire of Gingin for 2 proposed Chalets at 598 Caraban Road, Caraban. The development application is proposing the following:

- Each chalet consists of 2 bedrooms, kitchen, bathrooms, ensuite and laundries (i.e., self-contained). One of the chalets has been designed to be universally accessible.
- The chalets will be located a minimum of 100m away from the riverbanks of Moore River.
- Intended to accommodate families with children and small groups of up to 4 adults.
- No parties permitted at the accommodation, no loud music, no stays of less than two nights, and all visitors to be approved prior to the bookings being confirmed.
- A Property Management Plan has been prepared to establish the guest booking process, house rules, property management, and complaint handling procedure.
- A set of House Rules for all guests has been prepared and will be provided to all people when booking and displayed prominently at the accommodation.
- No physical works to the property or external signage are proposed as part of the application proposal.

The landowners' daughter (Naomi Murray) and son-in-law (Shawn Squire) reside on the property, and will be responsible for the general management, cleaning and care of the chalets. The chalets will not be available for short stay accommodation purposes without Naomi or Shawn present.

Refer to **Attachment 2 - Property Management Plan** and **Attachment 3 – House Rules** for further information.

1.1 Site details

Property Address	
Title Details	1526 / 964 P231045 SWAN Location 413
Lot Size	15.78ha
Current Use	Rural Residential - Single House
Relevant Encumbrances	N/A
Owner	Noel David and Sandra Leanne Murray
Residents / Property Managers	Shawn Squire and Naomi Murray
Local Government	Shire of Gingin

1.2 Utilities and Services

1.2.1 Electricity

The proposed chalets will be connected to the state's power grid.

1.2.2 Water

A water license (GWL208457(1)) for 20,000kLA to service the property was issued by the Department of Water and Environmental Regulation on the 8 March 2023. A bore will be installed as per Water Corporation's specification.

1.2.3 Effluent Disposal

The site is not serviced by reticulated sewer. As shown on the site plan, the two chalets will be connected to a single onsite effluent disposal system, however we can amend the plans to provide two systems if required by the Shire's Health Department and in accordance with the Government Sewerage Policy. An application to Install or Construct an Apparatus for the Treatment of Sewage will be submitted following the Development Approval and as part of the Building Permit. The details of the system will be provided as part of that application.

2.0 Local Planning Framework

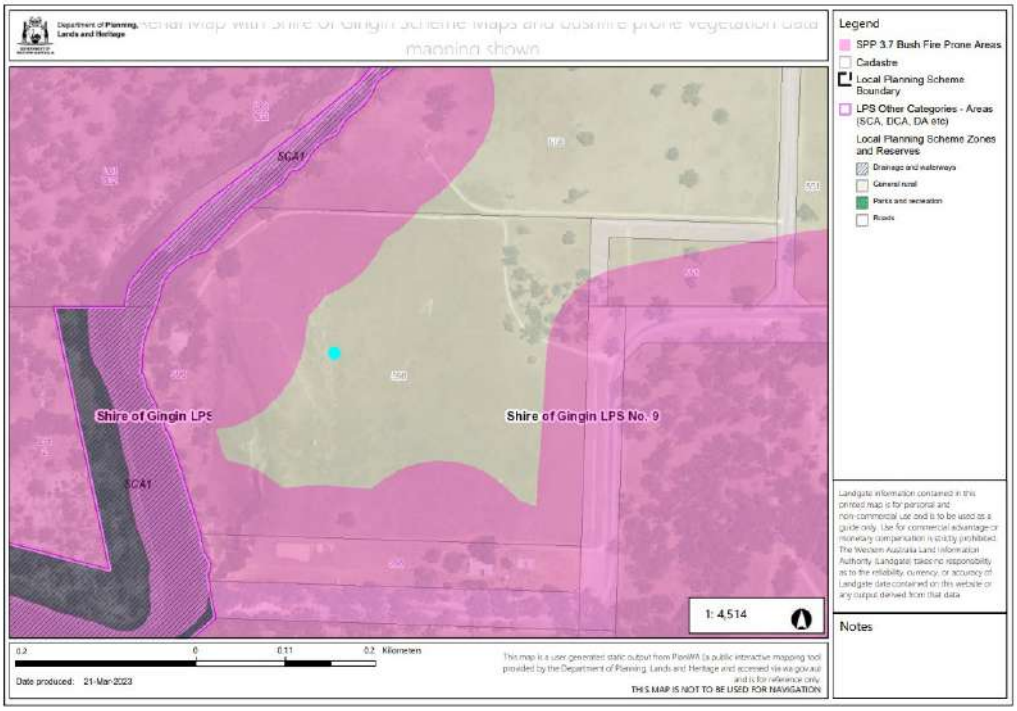

Figure 1: Zoning Map with Bushfire Prone Vegetation overlay
Source: https://espatial.dplh.wa.gov.au/planwa/

Property Address	
Local Planning Scheme	Shire of Gingin Local Planning Scheme No. 9
Local Planning Scheme - Zone	General Rural
Proposed land use	Chalet (A)
Bushfire Prone Area	Yes – however the chalets will be located outside the bushfire prone mapping data area.
Heritage	N/A
Other	N/A
State Planning Policies	• State Planning Policy 2.5 – Rural Planning • State Planning Policy 3.7 – Planning in Bushfire Prone Areas • Government Sewerage Policy
Local Planning Policies	• Local Planning Policy Statement No – 1.4 Foreshore Reserves Along Water Course • Local Planning Policy Statement No – 3.1 Tourist Development in Rural Areas

3.0 Planning Assessment

An assessment has been undertaken against the relevant local planning policies and any relevant state planning instruments.

3.1 Shire of Gingin Town Planning Scheme No.9

The development proposal is best defined as a 'Chalet' by the Shire of Gingin's Town Planning Scheme No.9 (Scheme). This use is defined as:

> *"means an individual self-contained unit usually comprising of cooking facilities, ensuite, living area and one or more bedrooms designed to accommodate short-stay guests, and where occupation by any person is limited to a maximum of three months in any 12-month period;"*

This use is listed as an 'A' use by the Shire's Local Planning Scheme, which means that the use is not permitted unless the local government has exercised its discretion by granting development approval after giving special notice in accordance with clause 64 of the deemed provisions.

3.1.1 Zone objectives

Clause 3.2.7 of the Shire's local planning scheme sets out the overall zone objectives for a 'General Rural' zone with the below Table providing an assessment against these provisions.

General Rural Zone Objective Assessment:	
a) Manage land use changes so that the specific rural character of the zone is maintained and enhanced;	The 2 two-bedroom chalets have been designed to accommodate individuals, couples, small families or individuals wanting a rural getaway retreat. Each chalet will have a 3m wide verandah overlooking Moore River and setback back far from the street. The total number of persons that would be able to stay on the property would be 8 persons, which is consistent with the low impact in nature of the Development. A development application for a proposed restaurant, micro-brewery and chalets were approved at Lot 421 Caravan Road (north of this site).

b) *Encourage and protect broad acre agricultural actives such as grazing and more intensive agricultural activities such as horticulture as primary uses, with other rural pursuits and rural industries as secondary uses in circumstances where they demonstrate compatibility with the primary use.*	The subject site is not presently operating for agricultural purposes with the proposed use being incidental to the existing Single House. Agricultural uses would likely not be supported from an environmental point of view due to the impacts this may have to Moore River that is located immediately west of the subject site.
c) *Maintain and enhance the environmental qualities of the landscape, vegetation, soils and water bodies, to protect sensitive areas especially the natural valley and watercourse systems from damage.*	The proposed chalets are sufficiently setback from Moore River.
d) *Provide for the operation and development of exiting, future and potential rural land uses by limiting the introduction of sensitive land uses in the General Rural Zone.*	The proposed change of use will not set a precedence for sensitive land uses within the General Rural Zone due to the temporary nature of the use and the infrequency of the use.

3.1.2 Site Requirements for the General Rural zone

In accordance with the Table 2 of the Scheme, setback of 20m to all boundaries is required. A summary of the setbacks proposed for the chalets has been assessed in the table below:

	Requirement	Proposed
Front (closest to Caraban Road)	20m	320m
Rear (closest to Moore River)	20m	110m
Side (closest to southern neighbour)	20m	95m

3.1.3 Number of car parking bays and requirements

Clause 4.7.2.8 of the Shire's Local Planning Scheme sets out minimum requirements for car parking based on the land use proposed. This clause does not refer to a 'Chalet' use with there being no guiding Local Planning Policy for the provision of car parking. Notwithstanding this, at its previous Ordinary Meeting (dated 18 February 2020), there was an application approved for a proposed Restaurant, Micro-brewery and Chalets at Lot 421 Caraban Road, Caraban. At

the time, the Shire's officers recommended a minimum of 1 bay be provided for each bedroom plus 1 per staff.

Each chalet consists of two bedrooms and will be managed and cleaned by the residents / property managers who reside on the property. On this basis, a minimum of 4 car parking bays is required. The chalets has been provided with two car parking bays each. Each bay will have a width of 2.6m and depth of 5.5m, thereby complying with minimum dimensions as specified in Table 4 of the Scheme.

3.1.3 Siting and Design

Clause 4.8.6.7 of the Shire's Local Planning Scheme requires that:

> *The siting and design of any buildings on any lot should not significantly impact on the natural vegetation or visual landscape amenity of the site.*

The chalets comply with the Scheme setback requirements, with a front setback in excess of 300m from the Caraban Road. Between the road reserve and the chalets, the land undulates providing a rolling hill affect that reduces their presence to the street. In addition, there will be 3m wide verandahs attached to the buildings that overlook Moore River. No vegetation is proposed to be removed as part of the development application. The buildings will

3.1.4 Matters for Due Regard

The development application has been considered against the following relevant Clause 67 of the Matters of Due Regard. The matters not relevant to this proposal have been removed from the table:

Matters of Due Regard	Planning Assessment
(a) the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	The application is consistent with the aims and provisions of the Local Planning Scheme and objectives of the "General Rural" zone as previously articulated in the report (see section 3.1.1).
(b) the requirements of orderly and proper planning;	The application for approval, public consultation, and local government planning assessment of the application are all consistent with orderly and proper planning processes.
(m) the amenity of the locality including the following — *(i) environmental impacts of the development;* *(ii) the character of the locality;* *(iii) social impacts of the development;*	As noted previously, chalet is discretionary land use that can be made to be compatible with the General Rural zone, when appropriately controlled and managed, as will be done via the measures set out in the Property Management Plan and Code of Conduct.

(s) the adequacy of — *(i) the proposed means of access to and egress from the site; and* *(ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;*	There is no change proposed to the existing access and egress arrangements as part of this application. Each chalet will have two car parking bays provided.
(t) the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	There will not be significant additional traffic generated from the development application. All the roads leading to the are constructed and sealed.
(x) the impact of the development on the community as a whole notwithstanding the impact of the development on particular individuals;	The chalets will be used in a manner that will appropriately manage the land use to have a minimal impact to the neighbours. Furthermore, the landowners' daughter and son-in-law who reside on the property will be present whenever the chalet is booked. The Property Management Plan and House Rules which are included in the application would form part of the approved plans and documents that must be implemented on an ongoing basis. The controls and limits within these documents ensure that the chalets have a minimal impact on surrounding residents.
(y) any submissions received on the application.	Any submissions received during the public advertising will need to be considered on its planning merits. We welcome feedback from the community and request an opportunity to respond appropriately.

3.2 Local Planning Policies

3.2.1 Local Planning *Policy 1.4 - Foreshore Reserves Along Water Course*

The site abuts the Moore River to the West, which has a 'Special Control Area' over it. The Shire of Gingin's Local Planning Policy 1.4 (LPP1.4) provides guidance on the management and protection of foreshores and water courses within the Shires jurisdiction. Clause 3.1 of LPP1.4 sets out the requirement that development located on a lot abutting a water course shall be setback 50m from the top of the bank of the water course. This application is seeking proposing a setback of 100m+ from the banks of Moore River, therefore it complies with this policy provision.

3.2.2 Local Planning Policy 3.1 - Tourist Development in Rural Areas

This Local Planning Policy is applicable to all 'General Rural' zoned land. The overall objective of this policy is to provide guidelines for the development of tourist facilities in this zone that will strengthen the economic base while enhancing the rural character of the area.

The policy identifies tourism developments as either high impact proposals or low impact with these being defined as:

High Impact Proposals – Proposal involving significant capital investment or having the potential to conflict with surrounding land uses.

Low Impact Proposals – Proposals not involving significant capital investment and unlikely to conflict with adjoining land uses.

> According to the Policy, low impact proposal "*such as chalets or boarding houses with accommodation for less than 10 persons or small service establishments may be permitted in the General Rural zone at Council's discretion*."

Each two-bedroom chalet is proposed accommodate a couples or small groups of not more than 4 person each. The proposal therefore consistent with a low impact proposal and complies with the Shire's Local Planning Policy requirements.

3.3 State Planning Policies (SPP)

3.3.1 State Planning Policy 2.5 – Rural Planning

As the subject site is currently zoned 'General Rural', any application to develop or use the site would be subject to the policy objectives and measures set out in State Planning Policy 2.5 – Rural Planning (SPP 2.5). This policy has been prepared to protect and preserve WA's rural land assets due to the importance of their economic, natural resource, food production, environmental and landscape values.

The policy sets out provisions to ensure that agricultural land is protected and used for the purposes of agriculture instead of allowing ad hoc development and subdivision to diminish the supply or rural land.

The Shires Local Planning Strategy designates the subject site as a Rural small holding with these sites having greater flexibility in subdivision control and use permissibility due to the relatively smaller lot area. This ensures other rural sites are preserved for the intended rural land uses. Based on this the proposed change of use would be consistent with SPP 2.5 and the Shires overall strategic plan.

3.3.2 State Planning Policy 3.7 – Planning in Bushfire Prone Areas

As identified on the site plan and Figure 1, a significant portion of the property is identified as being within a bushfire prone vegetation area. Notwithstanding this however, the proposed chalets will be located outside the bushfire prone area, and therefore the provisions of State Planning Policy 3.7 – Planning for Bushfire Prone Areas do not apply to this application.

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4.0 Conclusion

Based on the above assessment, the proposal is consistent with the Shire's local planning framework and is capable of approval. The proposed application is consistent with the zone objectives of a General Rural Zone and will not detract from the existing rural context and character.

This report in association with the operations strategy demonstrates that all the servicing and amenity considerations relevant to this application can be addressed and any impacts associated with the proposed use will not have any adverse impacts on the site or its surroundings.

If you require further clarification or justification regarding the above matters, please contact us via telephone (08) 6119 9175 or email planning@developedproperty.com.au

Ryan Soerja Djanegara
Planning Consultant
(08) 6119 9175

Attachments

1. **Development Plans**
2. **Property Management Plan**
3. **House Rules**

Property Management Plan for the Two (2) Chalets

Lot 413 (No. 598) Caraban Road, Caraban

21 March 2023

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3. Check-In & Check-Out Procedure 3

4. Guest Handbook & House Rules 4

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6. Noise Mitigation & Complaints Procedure 5

7. Property Managers details for emergencies and complaints 6

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1. Property Overview

This Property Management Plan has been prepared on behalf of the residents and property managers, Shawn and Naomi and applies to the two chalets at 598 Caraban Road, Caraban. The Plan includes details of the property accommodation and parking; house rules and noise management; as well as booking procedures, complaint handling and other matters managed by the landowner.

Each chalet is intended for individual, couples, small groups and families of up to 4 people, who are seeking a relaxed, rural residential retreat. It is not intended for large groups, parties and late-night activities, which are more suited to hotels and tourism precincts.

Guests will be aware of the available car parking spaces within the property prior to booking.

Property Address	598 Caraban Road, Caraban
Number of Bedrooms	Two (2) bedrooms
Max Number of Guests per chalet	Four (4) guests
Car Parking Location	Two (2) car parking bays provided for each chalet
Total Car Parking Bays	Two (2) per chalet
Visitors	Visitors require management consent. No overnight visitors
Pets	Pets are permitted at the property but must confirm the nature and breed prior to booking
Parties & Gatherings	No parties or large gatherings permitted
Music & Noise	No loud music, movies, noise etc to be heard outside the property between 10am to 7am
Smoking	No smoking permitted at the property

2. Guest Screening & Booking Process

When a guest requests or books a stay at this property, we can view or determine whether the guest's profile includes their required verification steps, including:

- Contact details including full name(s), phone numbers & e-mail address
- Acceptance of our stipulated house rules
- Confirmed payment
- Profile photo (if set)
- Government issued ID (such as driver's licence or passport)
- Written reviews/recommendations from other hosts
- Their overall star rating which can be categorised for items such as observance of house rules, cleanliness & communication
- Total number of guests & location based
- Their reason for visiting Perth & booking the property

We have set a "pre-booking questionnaire" requesting applicable responses in relation to the above. Once we have carried out a thorough check of the prospective guest, we then have a right to refuse, accept or cancel the reservation. Prior or after acceptance of the booking, we also send our "party screening" message which essentially reiterates our stance on no parties to be hosted at the premises and encourages guests to cancel their booking if that is their intent.

Our set of house rules are displayed both on the online listing and in our comprehensive guest handbook which is located inside the property in the kitchen. We can add additional house rules to suit the property, location, neighbourhood, or landlord's desires.

Once a guest is confirmed, our direct phone numbers are automatically exchanged for any further required communication. We privately message our guests before, during and after their stays and all the correspondence is saved for our own records.

We anticipate approximately three bookings per week and with a minimum stay length of two (2) nights to deter any unwanted use of the Chalets for parties or gatherings. We also have a booking cut-off time after 7:00pm so that we can't allow last minute and late-night bookings to occur from opportunistic and likely undesirable guests.

3. Check-In & Check-Out Procedure

The Guest(s) are advised that the check-in and check-out times will be limited as follows:

Check-in	Check-out
2pm to 10pm	**7am to 10am**

Check-in and check-out times from the unit will not be permitted between the hours of 10pm and 7am. Once the Guest(s) is confirmed, the tenants phone numbers are automatically exchanged for any further required communication. We privately message with the Guest(s) before, during and after their stays and all the correspondence is saved for our own records.

Bookings will only be accepted when the tenants are presents during their stay.

4. Guest Handbook & House Rules

When a guest checks in, they are encouraged to read our 'Guest Handbook' which provides them with all the important information they need to know to have an enjoyable, safe & respectful stay.

The Handbook includes the property managers contact details, emergency contact details, emergency plan, house rules, parking rules, bin collection days, nearby amenities, sights, and attractions in the area and more.

Guests will also always have access to the Airbnb platform during their stay and are required to communicate with their property managers on this platform so all details pertaining to their booking are documented. The Airbnb platform also provides guests with the hosts contact details.

The guest handbook which we have created is very comprehensive which significantly mitigates any risk and issues regarding the stays. Included in the Guest handbook is the House Rules – which summarises the rules for all guests and any approved visitors. It also provides property management and emergency contact details.

The Code of Conduct is printed on a one-page, laminated document and affixed in a prominent place/s at each of the dwellings.

The following House Rules are displayed at the property:

1. Parties & Gatherings – This property has a strict no party policy. Prior permission must be obtained from management for any visitors.
2. Music & Noise – All guests must not create excessive noise, that may disturb any surrounding properties. Amplified music, loud movies, or other such entertainment must not be audible from outside the property between 10pm to 9am every day.
3. Outdoor Use – All guests shall ensure that the use of the Verandahs and other outdoor areas are kept to a minimum after 10:00pm. Guests will be notified, should there be any issues that arise.
4. Car Parking – Car parking is to be on-site in the allocated car bays only.

5. Smoking - This property has a strict no smoking policy. If there is a clear odour of any smoking odour upon checkout or cigarette butts have been found, guests will be charged a deodorising fee.
6. Pets – Pets are permitted at the property but must confirm the nature and breed prior to booking.
7. Rubbish - Rubbish and recycling items are to be disposed of and placed in the bins provided on the property.
8. Security - All doors and windows should be locked when property is not occupied and the security alarm used (where applicable).

5. Safety

The property includes compliant RCDs and Smoke Alarms. A licenced electrician may be required to provide an electrical safety certificate from time to time to make sure the property is compliant and safe. We also offer first aid kits.

If required, we can consider fire extinguishers, fire blankets and implementing an emergency safety plan in case of a fire. In our detailed guest handbook, guests are provided with the contact details for the local police station, hospitals & fire station and that our emergency contact number is '000'.

6. Noise Mitigation & Complaints Procedure

Guests and visitors must not create noise which is offensive and excessive to occupiers of neighbouring properties especially between 10pm and 7am at any day of the week, during arrival, and during departure, and at any time throughout the occupancy. Guests and visitors must not engage in any anti- social behaviour and must minimize their impact upon the residential amenity of neighbours and local community.

If guests fail to adhere to our house rules, they will be at risk of having their booking cancelled immediately. We and/or the police may attend in person to have the guest/s removed, lockbox code and door lock/s may also be required to be changed depending on the circumstances.

If we receive any complaints about guests, they will be dealt with immediately upon receipt of said complaint. We will contact the guests informing them of the situation and any breach of house rules and based on severity of the breach then the reservation may be terminated.

We are contactable 24/7 and our phone numbers and e-mail addresses are provided to our guests upon confirmation of booking and are also advertised in the property for easy access.

We are more than happy to provide these contact details to nearby neighbours for us to be even more effective in managing our properties. Professionals and/or police may be engaged to attend during & after normal business hours to minimise disruptions to neighbours.

Any complainant will be kept informed throughout the process and will be encouraged to provide evidence to support the cause of us taking swift action. From receipt of a complaint, it is extremely rare for an issue to extend beyond just a few minutes, and we aim to resolve all issues within 5 to 10 minutes total.

7. Property Managers details for emergencies and complaints

Naomi and Shawn live on the property and will be responsible for the management of the chalets. Should any problems arise, their mobile contact details are listed below:

Mobile (Naomi)	042 876 1292
Mobile (Shawn)	042 895 0561

Our contact details are made available to all guests for properties under our management and we are obliging to provide our contact details to all adjacent neighbours in the rare chance of an issue arising. We are contactable and will attend the property in person within an hour for emergencies.

APPENDIX A – COMPLAINTS REGISTER

DATE	TIME	SOURCE OF COMPLAINT	NATURE OF COMPLAINT	HOW THE MATTER WAS RESOLVED

House Rules

These rules apply to all guests and visitors to this property

1. **Parties & Gatherings** – This property has a strict no party policy.
2. **Music & Noise** – All guests must not create excessive noise, that may disturb any surrounding properties. Amplified music, loud movies, or other such entertainment must not be audible from outside the property between 10pm to 7am every day.
3. **Outdoor Use –** All guests shall ensure that the use of the Verandahs and other outdoor areas are kept to a minimum after 10:00pm. Guests will be notified, should there be any issues that arise.
4. **Car Parking** – Car parking is to be on-site in the allocated car bays only. Guests must not block access to neighbouring driveways / properties. Use of the visitor bays is not permitted.
5. **Smoking** - This property has a strict no smoking policy. If there is a clear odour of any smoking odour upon checkout or cigarette butts have been found, guests will be charged a deodorising fee.
6. **Pets** – Pets are permitted at the property but must confirm the nature and breed prior to booking.
7. **Rubbish** - Rubbish and recycling items are to be disposed of and placed in the bins provided on the property.
8. **Security** - All doors and windows should be locked when the property is not occupied, and the security alarm used (where applicable).

Property Manager / Emergency Contact

Property Manager(s) and Residents	
Mobile (Naomi)	042 876 1292
Mobile (Shawn)	042 895 0561

13.3 APPLICATION FOR DEVELOPMENT APPROVAL RURAL INDUSTRY (WHEAT MILLING PLANT) AT LOT 42 HOY ROAD, COONABIDGEE

File	BLD/7556
Applicant	Altus Planning Pty Ltd
Location	Lot 42 Hoy Road, Coonabidgee
Owner	AU Grass Pty Ltd
Zoning	Rural Industry
WAPC No	N/A
Author	Natasha Jurmann – Statutory Planning Officer
Reporting Officer	Bob Kelly - Executive Manager Regulatory and Development Services
Refer	N/A
Appendices	1. Location Map - Lot 42 Hoy Road, Coonabidgee [**13.3.1** - 1 page] 2. Aerial Map - Lot 42 Hoy Road, Coonabidgee [**13.3.2** - 1 page] 3. Applicant's Proposal [**13.3.3** - 81 pages] 4. Bushfire Management Plan [**13.3.4** - 38 pages] 5. Schedule of Submissions (1) [**13.3.5** - 5 pages]

DISCLOSURES OF INTEREST

Nil

PURPOSE

To consider an Application for Development Approval for a Rural Industry (Wheat Milling Plant) at Lot 42 Hoy Road, Coonabidgee (subject lot).

BACKGROUND

The subject lot has an area of approximately 2.28 hectares (ha), gains access via Hoy Road and is situated in the locality of Coonabidgee.

The site is currently vacant with native vegetation present, which is proposed to be cleared via an application to the Department of Water and Environmental Regulation (DWER).

This proposal seeks approval for a 1.5ha Rural Industry (Wheat Milling Plant) comprising of the following:

- Milling shed;
- Wheat silos;

- Caretaker's dwelling;
- Hardstand area for vehicular access;
- Commercial vehicle parking; and
- Staff parking.

With respect to the operation of the proposed flour mill, the applicant proposes:

- To operate between 7am and 6pm Monday to Friday;
- To operate between 7am and 2pm on Saturday;
- To produce an average of 4 tonnes of flour per day;
- To employ up to 4 persons excluding the site manager; and
- To have one heavy rigid tipper truck with a capacity of 11m^3 visiting on average twice (2) per day.

A location plan, aerial map and the applicant's proposal are provided **(see Appendices).**

COMMENT

Stakeholder Consultation

The application was advertised in accordance with clause 64 of the Deemed Provisions for Local Planning Schemes within the *Planning and Development (Local Planning Scheme) Regulations 2015* (Deemed Provisions). This included advertising to surrounding landowners. The Shire received three submissions in support of the development.

The application was also advertised to the following State agencies for a period of 42 days in accordance with clause 66 of the Deemed Provisions:

- Department of Health (DoH);
- Department of Primary Industries and Regional Development (DPIRD); and
- Department of Fire and Emergency Services.

The comments received from State agencies reinforce the need to impose conditions.

A copy of the Schedule of Submissions and Recommended Responses, including correspondence from State agencies, is provided **(see appendices).**

PLANNING FRAMEWORK

Local Planning Scheme No. 9 (LPS 9) Planning Assessment

The subject land is zoned 'Rural Industry' under LPS 9, the objectives of which are to:

a) Provide for a range of industrial land uses on rural-living sized lots where people can work and live on the same property.

The definition of Industry - Rural under LPS 9 is as follows:

(a) an industry handling, treating, processing or packing rural products; or
(b) a workshop servicing plant or equipment used for rural purposes;

The definition of a 'Caretaker's Dwelling' under LPS 9 is as follows:

> *Means a dwelling on the same site as a building, operation, or plant or tourist facility, and occupied by a supervisor of that building, operation or plant or tourist facility.*

The applicant proposes a flour mill, being a value adding facility to process products that are grown in the region (although it is recognised that cereal grains are not a primary crop in the immediate vicinity). The applicant also intends to live on the same lot as the mill, therefore fulfilling the objective of the zone to provide for industry and living on the same lot.

The use class 'Caretaker's Dwelling' is a 'D – Discretionary' use in the Rural Industry zone which means that the use is not permitted unless the local government has exercised its discretion by granting development approval.

Rural Industry Development Standards

The General Development provisions of the 'Rural Industry' zone are provided below.

4.8.4.2 Local government may, at its discretion, consider permitting the land use "single house". In doing so, local government will be guided by the development standards in clause 4.8.9, excepting clauses 4.8.9.4 and 4.8.9.5.

Officer Comment

The application proposes a manager's residence which is to be incidental to the flour mill. With the development being associated with an industry use, the usual concerns of introducing a 'sensitive use' to the zone would not apply in this instance. Therefore, the officer is of the view that this will not have any unwanted impacts in the zone.

4.8.4.3 Refuse Storage Areas

All developments shall provide at least one refuse storage area readily accessible to service vehicles and screened from view from a public street by a close fence, wall or screen landscaping no less than 1.8 metres in height.

Officer Comment

Material being taken to the property is placed within the proposed wheat silos and the proposed outdoor storage area is located well away from boundaries.

4.8.4.4 Storage Yards

A person shall not use land for open storage purposes unless it is screened from public view by a fence or wall to the satisfaction of the local government.

Officer Comment

Material being taken to the property is placed within the proposed wheat silos and the proposed outdoor storage area is located well away from boundaries.

4.7.2.1 Provisions for Parking, Access for Loading and Unloading Vehicles

In the Town Centre, Mixed Business, General Industry, Rural Industry and Tourist zones:

(a) No land or buildings shall be developed unless provision is made for an area clear of the street for the purpose of loading or unloading goods or materials.

(b) The local government will seek to ensure that the majority of servicing vehicles will be able to leave and enter the street in a forward direction.

(c) Parking, loading and unloading and access, complete with necessary drainage, signs and marking as required by the local government, shall be provided prior to any occupation of the development or at such time as may be agreed in writing between the local government and the developer.

(d) External servicing areas shall be established and maintained to the satisfaction of the local government.

Officer Comment

In addition to the 5 parking bays and 1 disabled bay, the application proposes a large manoeuvring area and bays for trucks. This area, in addition to the proposed hardstand located on the site, will be sufficient for the purposes of parking, loading and unloading goods and materials.

The parking requirement is 4 bays for the proposed development and the applicant is proposing 5 bays. The application is seeking variations to the required standards for sizing in the bay dimensions of around 10cm. The proposed reduction complies with the Australian Standards for parking facilities and is considered to be acceptable in this instance as the parking is entirely internal and the surrounding hardstand is unlikely to result in any impacts to traffic flow or difficulties in the public realm.

General Development Standards

Setbacks

The application does not propose any structures closer than 20m to a boundary and therefore complies with the required setbacks for the zone

P*lanning and Development (Local Planning Scheme) Regulations 2015* (Deemed Provisions)

In accordance with Schedule 2, Part 9, Clause 67 of the Deemed Provisions, the local government is to have due regard to a range of matters to the extent that, in the opinion of the local government, those matters are relevant to the development the subject of the application. In this instance, the matters that are considered to be relevant have largely been addressed above with the exception of:

(c) any approved State Planning Policy.

State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP 3.7)

The proposed flour mill is classified as a High-Risk Land Use due to the combustible nature of flour. As such the applicants commissioned a Bushfire Management Plan (BMP) prepared by Bushfire West.

The report recommends that a dedicated 50,000L firefighting water tank be installed in addition to requirements such as the milling shed being constructed of non- combustible materials, and the provision of dry chemical fire extinguishers. Further information on treatment measures is included in Appendix 1 of the BMP which can be found in the **appendices.**

This notwithstanding, the officer is of the opinion that the applicant has adequately addressed the remaining Deemed Provisions. Further information with respect to these matters can be found as part of the applicant's proposal in the **appendices** and it is not proposed to replicate the information in this report**.**

Specific development standards for caretaker's dwellings are outlined under Clause 4.8.9 – Caretaker's Dwellings, each of which are addressed below:

4.8.9.1 Caretakers' dwellings may be permitted in the Mixed Business, Rural Industry and Tourism Zones.

Officer comment:

As outlined above, the use class being applied for is discretionary within the zone.

4.8.9.2 A caretaker's dwelling must be incidental to the predominant use of the site.

Officer comment:

Although a caretaker's residence requires the property to have a primary industry use, the officer is of the view that a condition need not be applied in this instance as a single house is also a discretionary use in the Rural Industry zone. Therefore the residential use need not cease in the event that the primary use does not continue. A notification will be required to be placed on the title noting that this is an industrial area and the same type of amenity that is normally expected in a residential or rural area will not be applicable.

4.8.9.3 Only one caretaker's dwelling is permitted on each lot.

Officer comment:

There is currently no residence located on the land.

4.8.9.4 The total permitted floor area of a caretaker's dwelling is 100m², measured from the external face of walls.

Officer comment:

The application proposes a floor area of 274.91m². Whilst this is large for a caretaker's residence, it should be noted that a Single House is a discretionary use in this zone and does not have a maximum size. As this is the case, the officer is of the opinion that this variation is unlikely to have an impact on the potential for other industrial type uses to operate in the zone.

4.8.9.5 Open verandahs may be permitted, but if enclosed will form part of the total calculated floor area.

Officer comment:

Two open verandahs/patios are proposed. As noted above a Single House is allowed at Council's discretion in the area.

4.8.9.6 Local government may consider the use of notifications on title to advise prospective purchasers of potential impacts from noise, dust, odour or amenity that may arise from the location of a residential land use within the zone.

Officer comment:

The officer has recommended a notification on the title that will notify potential occupants that the amenity that can be expected in the area would be lower than that of other residential or rural areas.

4.8.9.7 Local government will not consider applications for caretakers' dwellings prior to the primary site activity being either approved or constructed.

Officer comment:

Simultaneous approval is being given to the caretaker's dwelling and the primary site activity. As the intent of the Frogmore Rural Industry Estate is to provide lots which can be used for both industry and residential occupation, this proposal meets the intent of the estate.

4.8.9.8 Where simultaneous approval has been granted by local government for both a caretaker's dwelling and the main activity on the same lot, the main activity must be developed and operational prior to occupation of the dwelling.

Officer comment:

The recommendation has been conditioned so that the rural industry must commence prior to the occupation of the caretaker's residence.

4.8.9.9 Caretaker's dwellings should be carefully sited and constructed so the potential site (or estate) impacts from noise, dust, odour or amenity are minimised.

Officer comment:

The caretaker's dwelling has been located to the rear of the site, adjacent to a Rural lot and as far away from the other industries as allowed.

4.8.9.10 A caretaker's dwelling may only be occupied by the owner, manager, lessee or employee (and immediate family thereof) of the lawfully established or approved land use.

Officer comment:

The officer recommends that a notification be placed on the title stating that the caretaker's dwelling may only be occupied by the owner, manager, lessee or employee (and immediate family thereof) of the lawfully established land use. This will ensure that there are no conflicts between the proposed use and other developments in the area.

Summary

The applicant proposes the development of a wheat milling plant and associated structures on the subject site. As no objections have been received and the application meets the development requirements of the Scheme, the officer is recommending approval.

STATUTORY/LOCAL LAW IMPLICATIONS

Local Planning Scheme No. 9
Planning and Development (Local Planning Scheme) Regulations 2015
Schedule 2 – Deemed Provisions for Local Planning Schemes

POLICY IMPLICATIONS

Nil

BUDGET IMPLICATIONS

Nil

STRATEGIC IMPLICATIONS

Shire of Gingin Strategic Community Plan 2022-2032

Aspiration	3. Planning & Sustainability - Plan for Future Generations
Strategic Objective	3.3 Planning & Land Use - Plan the use of the land to meet future requirements incorporating economic development objectives and community amenity

VOTING REQUIREMENTS - SIMPLE MAJORITY

COUNCIL RESOLUTION/OFFICER RECOMMENDATION

MOVED: Councillor Johnson SECONDED: Councillor Vis

That Council grant Development Approval for a Rural Industry (Wheat Milling Plant) at Lot 42 Hoy Road, Coonabidgee, subject to the following conditions:

1. **The land use and development shall be undertaken in accordance with the approved plans and specifications, including the directions written in red ink by the Shire, unless otherwise conditioned in this Approval;**

2. **This approval is for a Rural Industry (Wheat Milling Plant) and associated Caretaker's Residence only as designated on the approved plans;**

3. **Given simultaneous approval has been granted for both a Caretaker's Dwelling and Rural Industry (Wheat Milling Plant) on the same lot, the Rural Industry (Wheat Milling Plant) must be developed and operational prior to occupation of the dwelling;**

4. Prior to commencement of the approved use, an Operational Strategy shall be submitted to and approved by the Shire of Gingin. The Operational Strategy is to be implemented thereafter to the satisfaction of the Shire of Gingin (refer Advice Note 8);

5. Stormwater from all roofed and paved areas shall be collected and contained onsite to the satisfaction of the Shire of Gingin;

6. Prior to commencement of the approved use, the car parking and manoeuvring areas shall be constructed and sealed in accordance with the approved plans and maintained in a good condition thereafter to the satisfaction of the Shire of Gingin;

7. Goods or materials must not be permanently stored within the areas dedicated to parking, landscaping or vehicle maneuvering;

8. Prior to occupation of the Development the Applicant/Owner shall execute and provide to the Shire of Gingin a notification pursuant to Section 70A of the *Transfer of Land Act 1893* to be registered on the title to the land as notification to prospective purchasers as follows:

   Bushfire Prone Area – This lot is located in a bushfire prone area. Additional planning and building requirements may apply to development on this land.

   The occupancy of the caretaker's dwelling may result in a lesser or lower enjoyment of residential living, and the application of lesser or lower prescribed environmental health standards, that would ordinarily be expected if living in the Shire's designated or zoned residential areas.

   The caretaker's dwelling may only be occupied by the owner, manager, lessee or employee (and immediate family thereof) of the lawfully established or approved land use.

9. Prior to the commencement of the approved use, the Bushfire Management Plan prepared by Bushfire West dated 2 March 2023 shall be implemented and thereafter maintained to the satisfaction of the Shire of Gingin;

10. Prior to commencement of the approved use, a new crossover (SoG STD03 – Type A refers) from Hoy Road shall be constructed to the satisfaction of the Shire of Gingin at the landowner's cost;

11. Prior to the issue of a Building Permit, the applicant is to provide an amended acoustic assessment to the Shire of Gingin for approval, that incorporates noise generated from the milling process. The approved acoustic assessment is to be implemented thereafter to the satisfaction of the Shire of Gingin;

12. The approved operating hours are as follows:

Monday – Friday: 7:00am – 6:00pm
Saturday 7:00am – 2pm
No activities shall occur prior to 7:00am, or on Sundays or public holidays.

ADVICE NOTES:

Note 1: If you are aggrieved by the conditions of this approval, you have the right to request that the State Administrative Tribunal (SAT) review the decision, under Part 14 of the *Planning and Development Act 2005*.

Note 2: If the development subject to this approval is not substantially commenced within a period of 2 years, the approval shall lapse and have no further effect.

Note 3: Where an approval has so lapsed, no development must be carried out without further approval of the local government having first been sought and obtained.

Note 4: Further to this approval, the applicant/landowner(s) may be required to submit working drawings and specifications to comply with the requirements of the *Building Act 2011* and the *Public Health Act 2016*, which are to be approved by the Shire of Gingin.

Note 5: Please be advised that this approval does not exempt the applicant from the need to obtain a clearing permit from Department of Water and Environmental Regulation for any native vegetation located on the subject site.

Note 6: Please be advised that the development is to comply with the relevant requirements of the *Food Act 2008* and the *Food Standards Code*.

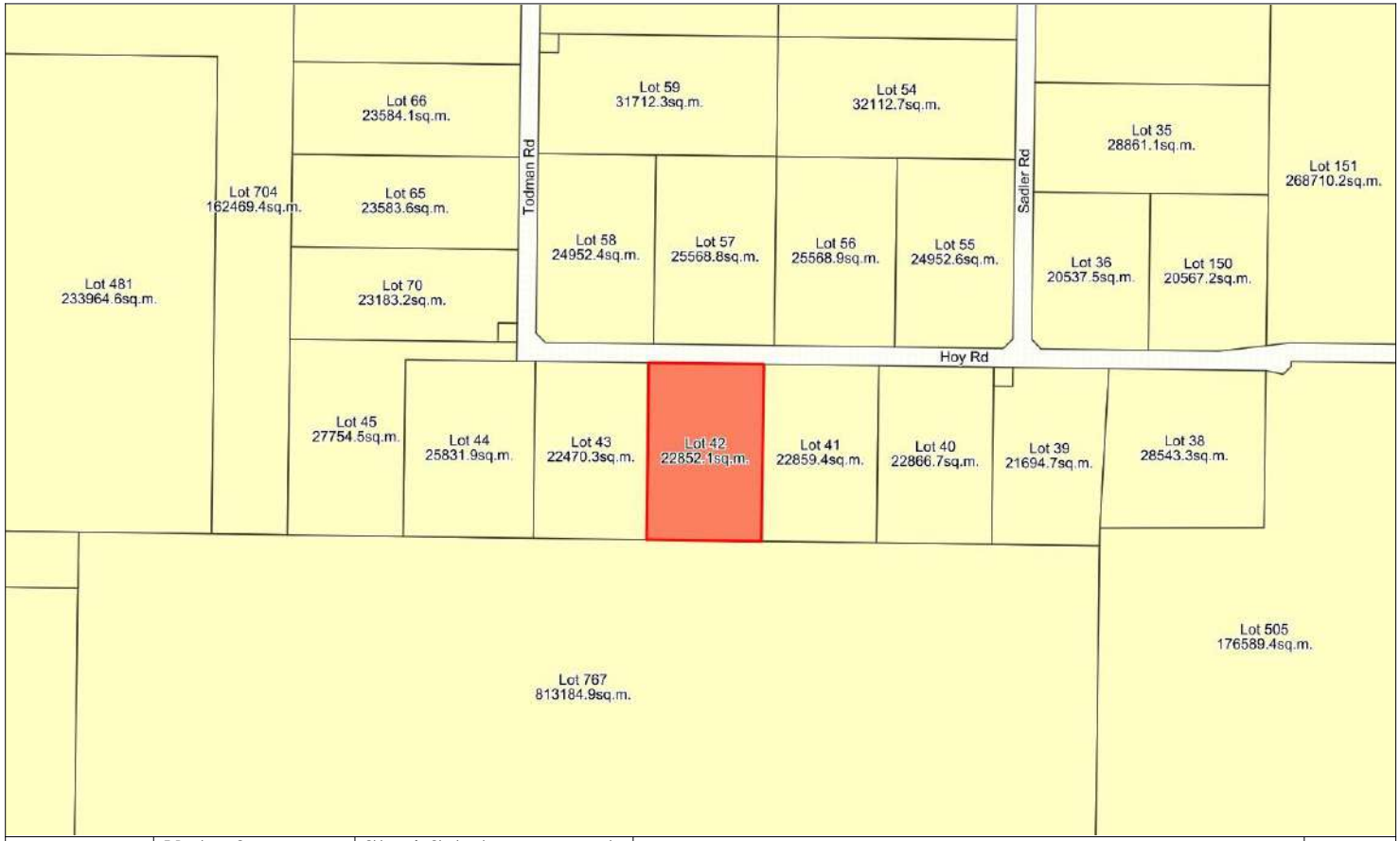
Note 7: Please be advised that the property may be re-rated to reflect the change in intensification and use approved as part of this application.

Note 8: In relation to the Operating Strategy, this is to include the information under section '2.0 Proposal' of the Application Report prepared by Altus Planning dated 27 January 2023 in addition to a Vermin Management Plan, Noise management Plan and a complaint handling procedure.

CARRIED UNANIMOUSLY
7 / 0

FOR: *Councillor Fewster, Councillor Balcombe, Councillor Johnson, Councillor Kestel, Councillor Peczka, Councillor Sorensen and Councillor Vis*

AGAINST: *Nil*



SHIRE OF GINGIN	7 Brockman St Gingin WA 6503 P: 08 9575 5100 255 Vins Way Lancelin WA 6044 P: 08 9575 5155 E: mail@gingin.wa.gov.au	Shire of Gingin does not warrant the accuracy of information in this publication and any person using or relying upon such information does so on the basis that Gingin Shire Council shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in this information.	Location Map - Lot 42 Hoy Road, Coonabidgee Scale: 1:5692 Date: 2/11/2022	N

SHIRE OF GINGIN	7 Brockman St Gingin WA 6503 P: 08 9575 5100 255 Vins Way Lancelin WA 6044 P: 08 9575 5155 E: mail@gingin.wa.gov.au	Shire of Gingin does not warrant the accuracy of information in this publication and any person using or relying upon such information does so on the basis that Gingin Shire Council shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in this information.	Aerial Map - Lot 42 Hoy Road, Coonabidgee Scale: 1:1492 Date: 2/11/2022	N

ALTUS PLANNING

Development Application for Wholemeal Wheat Milling Plant

Lot 42 Hoy Road, Coonabidgee

January 2023

TOWN PLANNING | MEDIATION | ADVOCACY

Prepared for:
AU Grass Pty Ltd

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1.0 Background

1.1 Purpose

This submission has been prepared by Altus Planning on behalf of AU Grass Pty Ltd (**the landowner**) to provide justification for a proposed wholemeal wheat milling plant and caretaker's dwelling (**proposal**) at Lot 42 Hoy Road, Coonabidgee (**subject site** or **site**) under the relevant planning framework.

In accordance with the Shire of Gingin's (**Shire**) requirements, the following is included with this application:

- Shire's Development Application Form;
- Certificate of Title (refer **Attachment 1** of this Report);
- Proposed Development Plans (refer **Attachment 2** of this Report);
- Acoustic Report (refer **Attachment 3** of this Report); and
- Bushfire Attack Level Assessment (refer **Attachment 4** of this Report).

1.2 Property Description

The subject site measures approximately 2.2847ha in aggregate and exists as an uncleared rectangular north facing lot. Located along the south side of Hoy Road, the subject site is accessed through the same road and abuts land of a similar zoning, nature and dimension.

Neighbouring properties to the subject site and within the broader locality consist of similar sized Rural Industry lots, whilst the rear boundary of subject site is bounded by General Rural zoning lots.

An aerial image of the subject site and immediate surrounding with cadastral overlay is provided in Figure 1 below.

Figure 1: Aerial/cadastre of subject site and surrounds (Source: PlanWA)

2.0 Proposal

The proposed vegetated area to be cleared for the purpose of accommodating the wholemeal wheat milling plant and its associated use will make up approximately 1.5ha of the 2.23ha sized property. This area includes space for the wheat milling shed, wheat silos, caretaker's dwelling, hardstand area for vehicular access, commercial vehicle parking, and staff parking.

The milling plant shed is to be constructed of colorbond sheeting walls and roofing with glass wool roof insulation. The ceiling will be present with standard 10mm plasterboards and R1.5 insulation batts. The shed windows will be glazed of 6mm laminated. The access door will be a colorbond door. During the operations all of the windows and the access door are closed. The two roller doors are open only for delivery.

In terms of the hardstand area, the majority of the site will be compacted red gravel road base, however there will be small portions of concrete slabs extruding up to 2m from the warehouse, to mitigate against the movement of gravel/dust from the

outdoor area into the warehouse (in the situation where a vehicle needs to be stored indoors, i.e. a skid-loader or pallet jack).

2.1 Description of Activities

The primary purpose of this proposal is to facilitate the production of wholemeal flour through the milling process. Specifically, the operations consist of receiving raw materials (wheat), processing (milling of wheat) and packaging of product (wholemeal wheat flour). The processed product is then dispatched and distributed to a warehouse off-site. The plant is to be of a small-scaled operation, with production output anticipated to be average at 4 tonnes per day.

The owner and/or employees of wheat milling operation are to reside on the property in the caretaker's dwelling on the southern portion of the subject site as per development plans in **Attachment 2**. This will include any normal activities associated with usage of such residential dwelling.

2.2 Operating Hours

Operations of the wheat milling plant are between Monday to Friday from 7am – 6pm and 7am to 2pm on Saturday. The plant will not operate on Sundays or public holidays.

2.3 Staff and Visitors

As of current, the proposed development is to be for a small-scale owner-operator business. The milling plant will be operated by the owner and one (1) additional staff member. However, in anticipation of future expansion, it may be possible for the business to employ up to three (3) additional subcontractors/ employees. As such, approval is sought for a maximum of three (3) employees on site at any one time.

The plant will not be open to the public or for retail. Therefore, there will be no customers or visitors to the plant except for delivery and occasional suppliers, or servicing of plant.

Visitors to the caretaker's dwelling on the subject site are anticipated to be consistent with the normal use for residential purposes.

2.4 Traffic Movements and Access

All access and traffic movements are consistent with what is to be expected within a rural industrial area, with movements of both private and commercial vehicles.

From an operations perspective, it is anticipated that the plant will be serviced by one (1) heavy rigid tipper truck. The vehicle is to be an Isuzu FVZ1400 Tipper Truck TT050 with the specification of an $11m^3$ tipping body and a 6x4 axle configuration. It is also proposed that one (1) forklift and eager loading system will be used on-site for the wheat silo.

The heavy rigid tipper truck is to be loaded up on site and dispatched. The average duration of vehicles to remain on site during the loading times is expected to be 30 minutes to 1 hour maximum. There are no anticipated 'peak' hours of operation, as the truck will average two (2) visits each day, for a total of four (4) vehicle movements. This does of course exclude vehicle movements of the owner operator, which are expected to be either one (1) vehicle movement (to and from the site) or none, at times where the owner/operator is residing at the caretaker's dwelling. It is acknowledged however that as this application proposes a maximum number of three (3) employees at any one time (to compensate for future business growth/expansion), the provision of parking proposed is considered adequate.

Access and egress are available via the existing dual crossover and one-way crossover which adjoin the Hoy Road reserve, with the former allowing one half for access and the other for egress – this is represented as 'Gate 2' on the development plans and will be the primary entry point for commercial vehicles. The primary exit point will be the singular crossover at 'Gate 1' or, the exit at 'Gate 2'. This allows sufficient and full forward gear access through the site and onto the road network. Turnaround dimensions are to be in accordance with the specifications as per Shire's requirements and a path of travel for vehicles is annotated within the site plan, demonstrating appropriate dimensions for manoeuvring into and out of the site in forward gear.

Construction of the crossover meets the Shire's specifications using ferricrete gravel and road base materials to form an unsealed hard surface area. The same method of construction is applied to the hardstand area and driveway.

Privatised vehicle movement to and from the site is reflective of the number of employees and residents on site which is anticipated to be between one (1) – two (2) and upwards to three (3) in the future.

2.5 Vehicle Parking

The application proposes five (5) car parking bays, inclusive of an accessible parking bay in front of the milling shed/office building. These bays will service the employees of the proposed operations.

A loading and unloading area for commercial vehicles is designated to be in front of the silo on the hardstand area. There is no proposed commercial vehicle parking on subject site given that such vehicles are anticipated to only be on-site for approximately one (1) hour in the loading/unloading bay. The site will not act in any way as a transport depot or for the storage of commercial vehicles.

2.6 Waste Management

As part of the milling operations, the usual by-products of white flour milling process are not present due to the plant being of wholemeal flour operations which incorporates the co-products into its processed flour. This eliminates the need to address any additional by-product waste treatment.

Waste from the screening process of wheat will be minimal and can be disposed of safely using the usual tip bin commonly in industrial area. Septic systems will connect to both the milling shed and caretaker's dwelling as shown on the proposed development plans.

2.7 Acoustic Management

An acoustic report has been prepared by Acoustic Engineering Solutions (AES) as commissioned by AU Grass Pty Ltd in support of the proposed development application. The report can be found at **Attachment 3.**

The acoustic report provides an acoustic assessment based on worst-case operational scenarios which are modelled to represent daily operations of the plant, delivery and truck associated activities.

Clause 5.2 of the report compiles a conclusion of the five (5) noise modelling scenarios as outlined under Clause 3.4. Scenarios 1 and 2 generate continuous noise emissions, and then their noises should be assessed against the assigned noise levels LA10.

Assuming a worst-case maximum of five (5) deliveries per day, the total time of onsite truck driving is less than 2.5 minutes (about 1% of any 4-hour period), therefore, the assigned noise levels LA1 apply to scenario 3.

Truck door closing is a short event. The noise from a truck door closing is predicted in LAmax level and the assigned noise levels LAmax apply for scenario 4. Table 5-2 of the report presents the compliance assessment for the day of Monday to Saturday. It is shown that all of the adjusted noise levels are much lower than the assigned noise levels for all scenarios.

This demonstrates that full compliance is achieved for the proposed wheat milling plant. It is therefore satisfied that the proposed development is compliant with Environmental Protection (Noise) Regulations 1997.

2.8 Landscaping

The existing landscaping on-site and within the verge is generally consistent with the surrounding rural industrial area. Apart from the proposed cleared area to make way for buildings, access and bushfire preventions; the remaining vegetation is proposed to be retained on site. This accounts to approximately 7,300m^2 of landscaping or approximately 35.6% of the site.

Vegetation proposed to be removed are of poor or invasive condition. Otherwise, removal of vegetation is for the purpose of accommodating the proposed operations and additionally for the creation of firebreak and bushfire management measures.

3.0 Planning Framework

3.1 Shire of Gingin Town Planning Scheme No. 9

The subject site is zoned 'Rural Industry' under the Shire's Town Planning Scheme No. 9 (**TPS9** or **Scheme**). The subject site is not located within a structure plan or any other defined planning policy area.

The objectives of 'Rural Industry' zone as set out in clause 3.2.5 of TPS9 are as follows:

> a) *provide for a range of industrial land uses on rural-living sized lots where people can work and live on the same property.*

The development is consistent with the aforementioned objectives as it is an industrial use with the ability to accommodate the landowner and/or employee(s) to reside and work on the same property.

3.1.1 Land Use

Table 1 of TPS9 sets out the various defined land uses and their permissibility within each respective zone. It is submitted that the land use 'Industry-Rural' best describes the proposed wheat milling plant.

In this regard, Schedule 1 of TPS9 provides the definition of 'Industry-Rural' as follows:

> *(a) an industry handling, treating, processing or packing rural products; or*
> *(b) a workshop servicing plant or equipment used for rural purposes;*

As per Table 1 – Zoning Table of TPS9, 'Industry-General' is an 'A' use within 'Rural Industry' zone and therefore is capable of approval at the Shire's discretion, following public consultation and providing that it complies with relevant development standards and requirements of the Scheme.

It is noted in respect to provision (b) above, LPS9 does not define what 'rural products' are. We maintain that the production of flour from wheat can be considered a 'rural product' as:

- The production of flour from wheat is considered to be a rural-industry operation as opposed to a purely industrial use, which could be located in a metropolitan area; and
- Incoming wheat deliveries are generally delivered from rural properties in the region. The wheat deliveries are not coming from metropolitan areas and as such the flour that is produced can appropriately be considered as a 'rural product'.

The application also proposes a caretaker's dwelling. Schedule 1 of TPS9 provides the definition of 'Caretaker's Dwelling' as follows:

a) means a dwelling on the same suite as a building, operation, or plant or tourist facility, and occupied by a supervisor of that building, operation or plant or tourist facility.

A caretaker's dwelling is to be assessed against the provisions under clause 4.8.9 – Caretaker's Dwellings. An assessment of the proposed caretaker's dwelling against the provisions under clause 4.8.9 is provided in the latter sections of this report.

3.2.1 Development Standards and Requirements

The following series of tables provides assessment against the relevant development standards and requirements prescribed by TPS9.

Site Requirements:

TPS9: Table 2 – Site Requirements	
Requirement	**Proposed Development**
Minimum Setbacks Front: Caretaker's Dwelling (6m); Other uses (20m) Side: 20m Rear: 20m	Complies – The proposed development meets all the setback requirements as demonstrated in the development plans in **Attachment 2**, and all buildings/structures are >20m from all boundaries.
Maximum Site Coverage 50%	Complies – The total site coverage of development has been calculated by including the caretaker's dwelling, warehouse, silos and water tanks. It is maintained that the bin store area and outdoor storage area do not contribute to site coverage as they are unenclosed (not roofed). The total area of structures on site totals 795.31m^2. As the area of the subject site totals 2.28ha, the total site coverage is to 3.48% and is therefore well under the maximum requirement.
Maximum Plot Ratio 0.5	**Proposed Plot Ratio** Complies - 0.035
Landscaping	**Proposed Landscaping**

Minimum 5% of site area – screening of non-residential uses from street required.	Complies - 35.6% of the site will remain as landscaping.

Table 1: Assessment of proposed development under TPS9 – Site requirement.

Parking Requirements

TPS9: Clause 4.7.2.1 – Parking Provision		
Requirement		**Proposed Development**
(i)	no land or buildings shall be developed unless provision is made for an area clear of the street for the purpose of loading or unloading goods or materials.	The proposed loading and unloading area will be within the property boundary. This is located in front of the silo away from flow of traffic.
(ii)	the local government will seek to ensure that the majority of servicing vehicles will be able to leave and enter the street in a forward direction.	Proposed development has sufficient manoeuvring space and the driveway allows forward gear entry and exit.
(iii)	parking, loading and unloading and access, complete with necessary drainage, signs and marking as required by the local government, shall be provided prior to any occupation of the development or at such time as may be agreed in writing between the local government and the developer.	All is provided within the lodged application and where information is missing, can be provided as further information during assessment of the application.
(iv)	external servicing areas shall be established and maintained to the satisfaction of the local government.	N/A

Table 2: Assessment of proposed development under TPS9 – Parking provision.

TPS9: Table 3 – Parking Requirements		
Type	**Requirement**	**Proposed Development**
Industry	1 per 100m2 gross lettable area or 2 per unit, whichever is the greatest	Complies - GLA of Warehouse: 400m^2 Required bays – 4 Provided bays – 5

Table 3: Assessment of proposed development under TPS9 – Parking requirement.

It is acknowledged that there is no parking requirements for a Caretaker's Dwelling under Table 3 of LPS9. It is maintained that given that the area immediately surrounding the caretaker's dwelling has ample space for informal parking, and that

the application proposes bays in excess of the requirement by one (1) bay, that this arrangement can be considered appropriate.

TPS9: Table 4 – Parking Dimensions	
Requirement (Parking Angle 90°)	**Proposed Development**
Width of bay: 2.6m Length of bay: 5.5m Depth of bay: 5.5m	Variation sought – Width of bay: 2.4m Length of bay: 5.4m Depth of bay: 5.4m
Minimum manoeuvring depth: 6m Minimum total depth: 11.5m	Minimum manoeuvring depth: >6m Minimum total depth: >11.5m

Table 4: Assessment of proposed development under TPS9 – Parking dimensions.

It is acknowledged that the width, length and depth of the bays fall short of the minimum requirements under Table 4 of LPS9, though it is noted that clause 4.5 of LPS9 allows for variations to development standards and requirements. The dimensions of the car parking bays have been provided in accordance with AS2890.1 – Parking Facilities.

Zone Specific Development Standards

TPS9: 4.8.4 – Rural Industry Zone	
Requirement	**Proposed Development**
Clause 4.8.4.1 Lot sizes shall be between 1 and 4 hectares.	The lot size of development is 2.2847ha and complies with the requirement.
Clause 4.8.4.2 Local government may, at its discretion, consider permitting the land use "single house". In doing so, local government will be guided by the development standards in clause 4.8.9, excepting clauses 4.8.9.4 and 4.8.9.5.	The caretaker's dwelling on subject site is 274.91m^2. As such, the dwelling exceeds the maximum permitted floor area of 100m^2. Given the non-compliance with clause 4.8.9.4 for the caretaker's dwelling, the building may still be considered for approval under this clause as a 'Single Dwelling' under clause 4.8.4.2.
Clause 4.8.4.3 Refuse Storage Areas All developments shall provide at least one refuse storage area readily accessible to service vehicles and screened from view from public street by a close fence, wall or screen landscaping no less than 1.8m in height.	Bin storage area provided and are screened from public view via the warehouse. Please refer to development plans contained within **Attachment 2**.
Clause 4.8.4.4	There is an outdoor storage area proposed, however this is located

A person shall not use land for open storage purposes unless it is screened from public view by a fence or wall to the satisfaction of the local government.	approximately 92.3m from the primary street boundary and is screened via the bin storage area and warehouse.

Table 5: Assessment of proposed development under TPS9 – 4.8.4 Rural Industry Zone.

Requirements for Caretaker's Dwellings

TPS9: 4.8.9 – Caretaker's Dwellings	
Requirement	**Proposed Development**
Clause 4.8.9.1 Caretaker's dwellings may be permitted in the Mixed Business, Rural Industry and Tourism Zones.	Complies - The proposed caretakers dwelling is located within Rural Industry area.
Clause 4.8.9.2 A caretaker's dwelling must be incidental to the predominant use of the site.	The proposed dwelling is on the same site of the proposed flour milling plant and is incidental to the primary purpose of subject site.
Clause 4.8.9.3 Only one caretaker's dwelling is permitted on each lot.	There is only one proposed caretaker's dwelling on subject land.
Clause 4.8.9.4 The total permitted floor area of a caretaker's dwelling is 100m^2, measured from the external face of walls.	The total floor area of caretaker's dwelling is 274.91m^2. However, this can still be considered for approval under clause 4.8.4.2 or as a variation under clause 4.5 of LPS9.
Clause 4.8.9.5 Open verandahs may be permitted, but if enclosed will form part of the total calculated floor area.	There is no enclosed veranda for this proposal.
Clause 4.8.9.6 Local government may consider the use of notifications on title to advise prospective purchasers of potential impacts from noise, dust, odour or amenity that may arise from the location of a residential land use within the zone.	To be at the discretion of the Shire.
Clause 4.8.9.7 Local government will not consider applications for caretaker's' dwellings prior to the primary	Noted – can be included as a condition of approval.

site activity being either approved or constructed.	
Clause 4.8.9.8 Where simultaneous approval has been granted by local government for both a caretaker's dwelling and the main activity on the same lot, the main activity must be developed and operational prior to occupation of the dwelling.	Noted – can be included as a condition of approval.
Clause 4.8.9.9 Caretaker's dwellings should be carefully sited and constructed so the potential site (or estate) impacts from noise, dust, odour or amenity are minimised.	The dwelling is to be located on the south-eastern portion of the subject site away from the milling plant on the north-western portion of the property to ensure sufficient distance and minimizing the impact from the plant operation.
Clause 4.8.9.10 A caretaker's dwelling may only be occupied by the owner, manager, lessee or employee (and immediate family thereof) of the lawfully established or approved land use.	The caretaker's dwelling is to be occupied by the owner and immediate family only.

Table 6: Assessment of proposed development under TPS9 – 4.8.9 Caretaker's Dwellings

4.1 Planning and Development (Local Planning Schemes) Regulations 2015

In accordance with Schedule 2 ("Deemed Provisions") of the *Planning and Development (Local Planning Schemes) Regulations 2015* (**LPS Regulations**), the local government is to have due regard to the relevant matters for consideration outlined under Clause 67(2).

The following matters are considered relevant to the proposed development and are addressed in the following table.

Clause 67(2) Matter	Justification
(a) The aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;	The relevant provisions under the Shire's TPS9 have been addressed under Section 4.1 of this Report. The proposed development is considered to be consistent with these provisions and appropriate for the site and the locality.
(b) The requirements of orderly and proper planning including any	This Report has justified the proposal under the relevant provisions of TPS9 and the

Clause 67(2) Matter		Justification
	proposed local planning scheme or amendment to this Scheme that has been advertised under the *Planning and Development (Local Planning Schemes) Regulations 2015* or any other proposed planning instrument that the local government is seriously considering adopting or approving;	relevant objectives of the planning framework. The proposal is therefore submitted to be in accordance with the requirements of orderly and proper planning.
(c)	any approved State planning policy;	The proposal aims to be consistent with the relevant objectives and provisions of SPP3.7 with respect to minimising bushfire risk. Refer to Attachment 4 of this Report.
(d)	any environmental protection policy approved under the *Environmental Protection Act 1986* section 31(d);	All native vegetation is protected under the *Environmental Protection Act 1986* and any clearing of native vegetation usually requires a clearing permit unless an exemption applies. Under Regulation 5, Item 1 of the act, clearing of native vegetation for the lawful construction of a building or structure such as a factory and handstand, on a property, being clearing which does not together with all other limited clearing on the property within the financial year, exceeds five hectares is exempt, if the clearing is to the extent necessary. This exemption allows clearing without a clearing permit for a building and handstand where planning approval and building licence has been obtained from the Shire and the clearing is not within an environmentally sensitive area (ESA). It is noted that no ESA occurs on the subject site.
(fa)	any local planning strategy for this Scheme endorsed by the Commission;	The Shire's Local Planning Strategy establishes the Shire's direction in terms of future population and employment, and outlines the broad strategies for housing, industrial, shopping and business activities.

Clause 67(2) Matter	Justification
	It is maintained that the proposal is not inconsistent with the aims of the strategy and delivers a business operation that can provide for future employment opportunities.
(m) the compatibility of the development with its setting, including — (i) the compatibility of the development with the desired future character of its setting; and (ii) the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely effect of the height, bulk, scale, orientation and appearance of the development;	The proposed development complements the surrounding rural industry properties and their associated activities. It is consistent with the future character and setting of the broader locality. The proposal is consistent with the development adjoining the land and within the broader locality given the industrial nature of the proposal. The height, bulk and scale are proportionate to the size of the lot and complements the rural setting.
(n) The amenity of the locality including the following – (i) Environmental impacts of the development; (ii) The character of the locality; (iii) Social impacts of the development;	(i) Although there is clearing proposed on the site, the environmental impact of such clearing is minimal, and is exempt under Section 5, Item 1 of the Environmental Protection Act 1986 as described above under (d). Further, the clearing of vegetation is also partially to satisfy the requirements of SPP3.7 – Planning for Bushfire Prone Areas, and the Shire's firebreak requirements. (ii) The character of the locality is formed of rural living sized land holdings, the majority of which have been cleared for industrial activities. The proposal seeks maintain some of the vegetation on site and (iii) There are not considered to be any social impacts as a direct result of the proposed development.
(o) the likely effect of the development on the natural environment or water resources and any means that are	There are no waterways or water source running underneath the subject site which

Clause 67(2) Matter		Justification
	proposed to protect or to mitigate impacts on the natural environment or the water resource;	will be impacted by the proposed development.
(p)	whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;	All vegetation that can be retained, will be retained. Vegetation to be removed is only for the purpose of accommodating the development.
(q)	the suitability of the land for the development taking into account the possible risk of flooding, tidal inundation, subsidence, landslip, bush fire, soil erosion, land degradation or any other risk;	There are no water courses on, or within proximity, of the subject site. It is therefore understood not to be affected by any flooding. An accompanying BMP is currently being prepared by BushfireWest that will endeavour to mitigate against the BAL level determined for the subject site. This report will aim to confirm that any bushfire risk can be adequately addressed so as not to present an extreme or unacceptable risk. The site is otherwise suitable for the proposal having regard to its environmental rehabilitation benefits.
(s)	the adequacy of — (i) the proposed means of access to and egress from the site; and (ii) arrangements for the loading, unloading, manoeuvring and parking of vehicles;	Access and egress, arrangement for parking and loading/unloading of subject site has been addressed in section 3.4 of this Report.
(t)	the amount of traffic likely to be generated by the development, particularly in relation to the capacity of the road system in the locality and the probable effect on traffic flow and safety;	The traffic of the development should be consistent with its surrounding and will not significantly increase use or impact on the traffic flow.

4.2 State Planning Policy 3.7 - Planning in Bushfire Prone Areas

The subject site is located within a designated bushfire prone area. As previously stated, a Bushfire Attack Level (**BAL**) report has been prepared by Bushfire Perth Pty

Ltd in support of the proposal and is included within the appendices as **Attachment 4**. In summary, the findings of the BAL report are as follows:

- The assessment of this site/development at the subject site was undertaken on 21 November 2022 by Natalia Smirnova, a BPAD Accredited Level 1 Practitioner for the purpose of determining the Bushfire Attack Level in accordance with AS3959 - 2018 Simplified Procedure (Method 1);
- Fire Danger Index (**FDI**) - The fire danger index for this site has been determined in accordance with Table 2.1 of the report or otherwise determined in accordance with a jurisdictional variation applicable to the site. The determined FDI is FDI 80; and
- The resultant BAL level for the site is BAL-FZ. As mentioned above, regardless of the BAL result, a BMP is currently being prepared to mitigate against this level of risk.

It is acknowledged that as a high-risk land use, a BMP is required regardless of the BAL rating. It is further noted that at the time of lodgement, and due to an unanticipated demand for bushfire reports among several consultants, the BMP will not be ready for submission as 'additional information' until mid-February 2023. What is sought is that the application is assessed whilst the BMP is prepared in the interim, with the results of the BMP being assessed once submitted to the Shire. Given the land use is classified as 'A' within the Scheme's zoning table, a 90-day statutory period is permitted. It is likely that the BMP will be submitted within the first 30-40 days of this statutory period.

Based on the above, the proposal meets SPP3.7 and its associated Guidelines subject to the implementation of the BMP.

4.0 Conclusion

The landowner is seeking development approval for a wholemeal wheat milling plant on the subject site.

For the reasons outlined in this Report, our view is that the proposed development is suitable for the site and is consistent with both the planning framework (including the relevant policy objectives of SPP3.7 and existing rural industry activities in the immediate locality. Accordingly, it is submitted that the proposal warrants approval.

We trust that this information is to your satisfaction and welcome the opportunity to review a draft suite of conditions of approval. We otherwise look forward to your prompt and favourable determination.

Altus Planning

Attachment 1 - Certificate of Title

TOWN PLANNING | MEDIATION | ADVOCACY

WESTERN AUSTRALIA

REGISTER NUMBER	
42/P17506	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

VOLUME 1877 FOLIO 410

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts
REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 42 ON PLAN 17506

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

AU GRASS PTY LTD OF 2 NEWINGTON PASS ELLENBROOK WA 6069

(T P183956) REGISTERED 17/6/2022

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

1. *P183957 MORTGAGE TO NATIONAL AUSTRALIA BANK LTD REGISTERED 17/6/2022.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

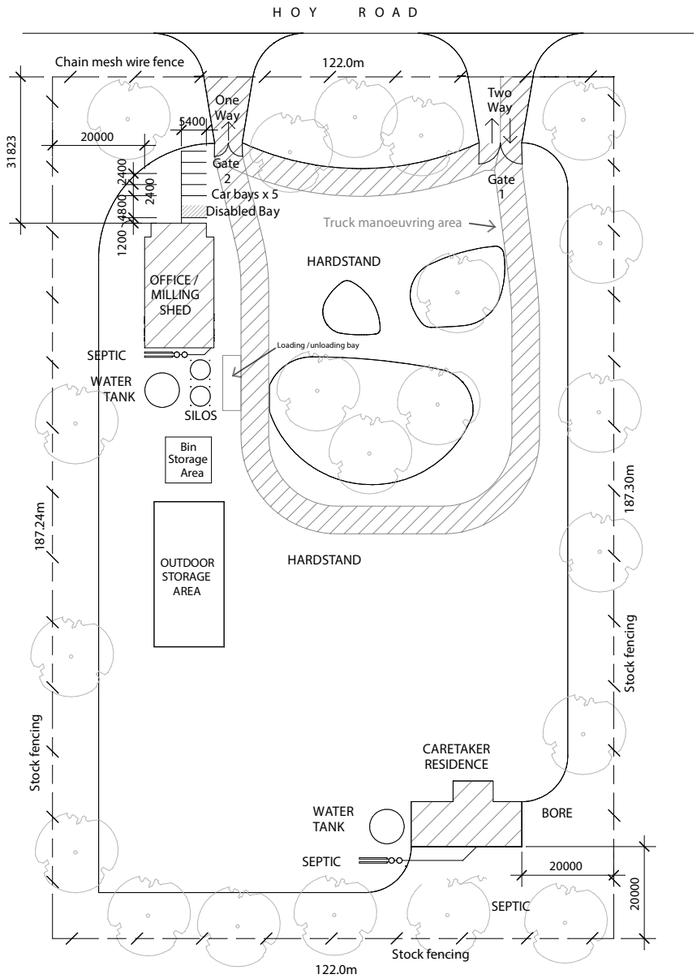
The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1877-410 (42/P17506)
PREVIOUS TITLE: 1877-432
PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.
LOCAL GOVERNMENT AUTHORITY: SHIRE OF GINGIN

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING L349703

Attachment 2 - Development Plans

TOWN PLANNING | MEDIATION | ADVOCACY



NORTH

SITE PLAN

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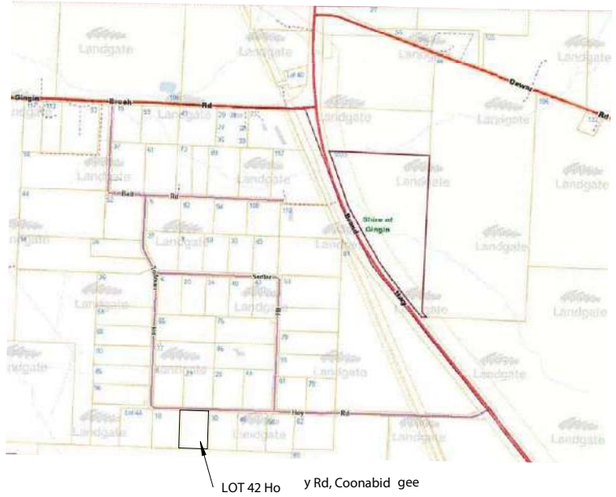


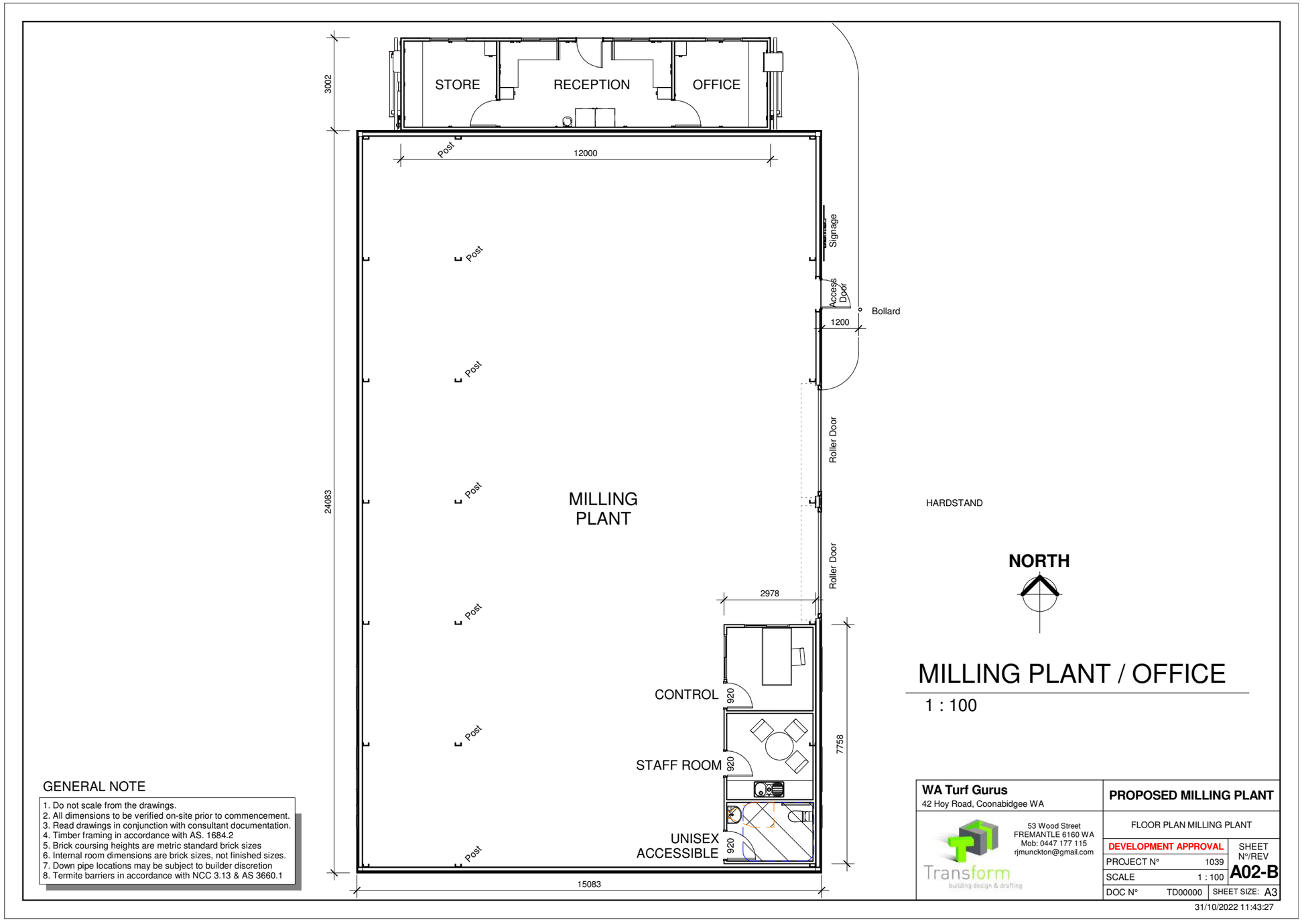
LOCALITY PLAN

1 : 2000

GENERAL NOTE

1. Do not scale from the drawings.
2. All dimensions to be verified on-site prior to commencement.
3. Read drawings in conjunction with consultant documentation.
4. Timber framing in accordance with AS. 1684.2
5. Brick coursing heights are metric standard brick sizes
6. Internal room dimensions are brick sizes, not finished sizes.
7. Down pipe locations may be subject to builder discretion
8. Termite barriers in accordance with NCC 3.13 & AS 3660.1

WA Turf Gurus 42 Hoy Road, Coonabidgee WA	PROPOSED MILLING PLANT
Transform building design & drafting 53 Wood Street FREMANTLE 6160 WA Mob: 0447 177 115 rjmunckton@gmail.com	SITE PLAN DEVELOPMENT APPROVAL — SHEET N°/REV A01-B PROJECT N° 1039 SCALE As indicated DOC N° TD00000 — SHEET SIZE: A3



MILLING PLANT / OFFICE

1 : 100

GENERAL NOTE

1. Do not scale from the drawings.
2. All dimensions to be verified on-site prior to commencement.
3. Read drawings in conjunction with consultant documentation.
4. Timber framing in accordance with AS. 1684.2
5. Brick coursing heights are metric standard brick sizes
6. Internal room dimensions are brick sizes, not finished sizes.
7. Down pipe locations may be subject to builder discretion
8. Termite barriers in accordance with NCC 3.13 & AS 3660.1

WA Turf Gurus 42 Hoy Road, Coonabidgee WA	**PROPOSED MILLING PLANT**
Transform building design & drafting 53 Wood Street FREMANTLE 6160 WA Mob: 0447 177 115 rjmunckton@gmail.com	FLOOR PLAN MILLING PLANT
DEVELOPMENT APPROVAL	SHEET N°/REV A02-B
PROJECT N° 1039	
SCALE 1 : 100	
DOC N° TD00000	SHEET SIZE: A3

31/10/2022 11:43:27

CARETAKER RESIDENCE

1 : 100

NORTH

WA Turf Gurus 42 Hoy Road, Coonabidgee WA	**PROPOSED MILLING PLANT**
Transform building design & drafting 53 Wood Street FREMANTLE 6160 WA Mob: 0447 177 115 rjmunckton@gmail.com	FLOOR PLAN CARETAKER RESIDENCE
DEVELOPMENT APPROVAL	SHEET N°/REV A03-B
PROJECT N° 1039	
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DOC N° TD00000	SHEET SIZE: A3

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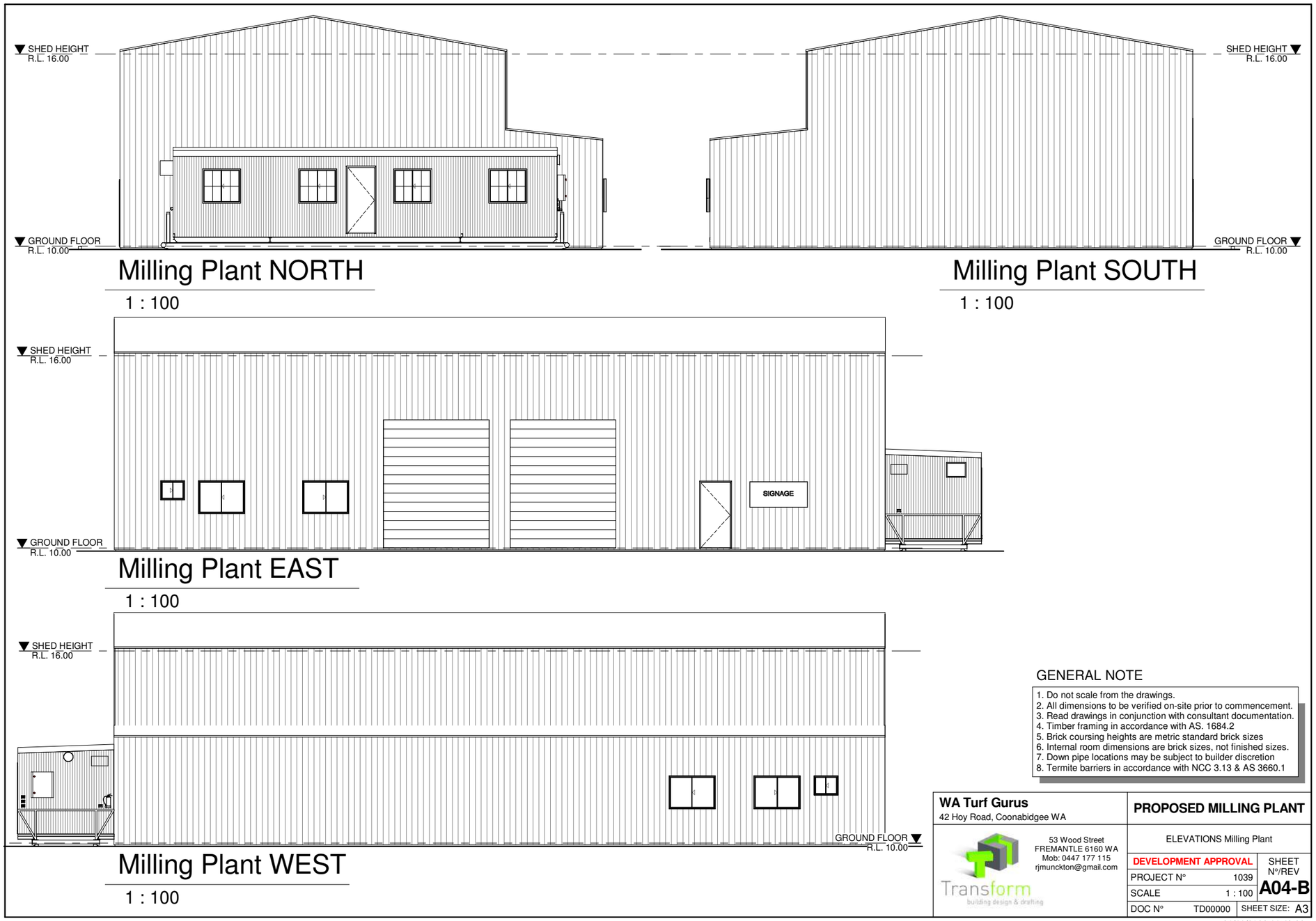

GENERAL NOTE

1. Do not scale from the drawings.
2. All dimensions to be verified on-site prior to commencement.
3. Read drawings in conjunction with consultant documentation.
4. Timber framing in accordance with AS. 1684.2
5. Brick coursing heights are metric standard brick sizes
6. Internal room dimensions are brick sizes, not finished sizes.
7. Down pipe locations may be subject to builder discretion
8. Termite barriers in accordance with NCC 3.13 & AS 3660.1

WA Turf Gurus 42 Hoy Road, Coonabidgee WA	**PROPOSED MILLING PLANT**
Transform building design & drafting 53 Wood Street FREMANTLE 6160 WA Mob: 0447 177 115 rjmunckton@gmail.com	ELEVATIONS Milling Plant DEVELOPMENT APPROVAL PROJECT N° 1039 SCALE 1 : 100 DOC N° TD00000 SHEET N°/REV A04-B SHEET SIZE: A3

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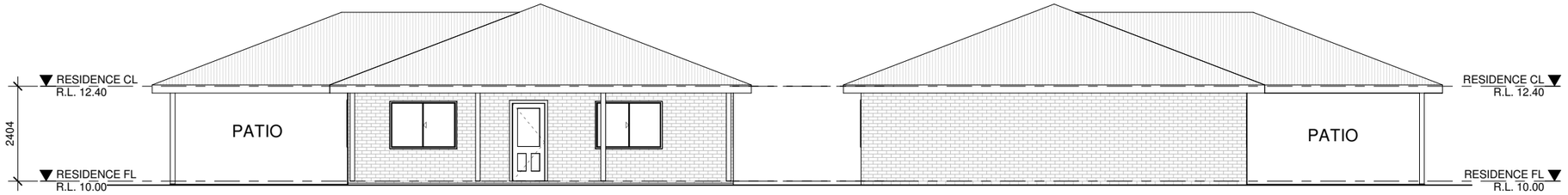
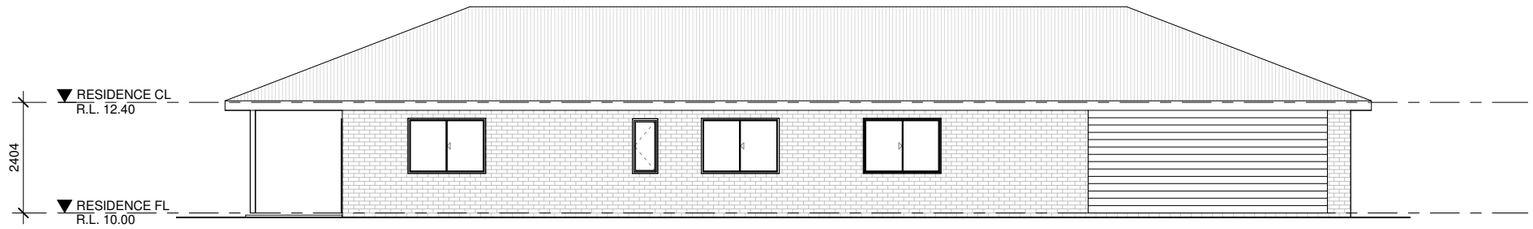


Caretaker Residence WEST

1 : 100

Caretaker Residence EAST

1 : 100



Caretaker Residence SOUTH

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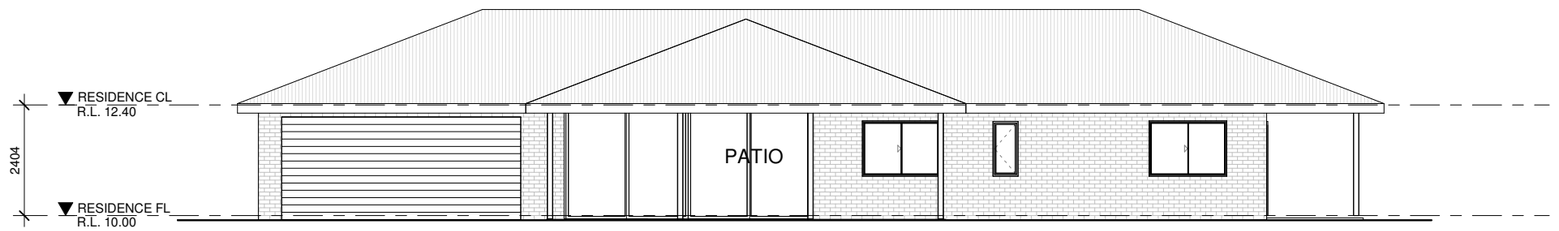

Caretaker Residence NORTH

1 : 100

WA Turf Gurus
42 Hoy Road, Coonabidgee WA

Transform
building design & drafting

53 Wood Street
FREMANTLE 6160 WA
Mob: 0447 177 115
rjmunckton@gmail.com

PROPOSED MILLING PLANT

ELEVATIONS Caretaker Residence

DEVELOPMENT APPROVAL		SHEET N°/REV A05-B
PROJECT N°	1039	
SCALE	1 : 100	
DOC N°	TD00000	SHEET SIZE: A3

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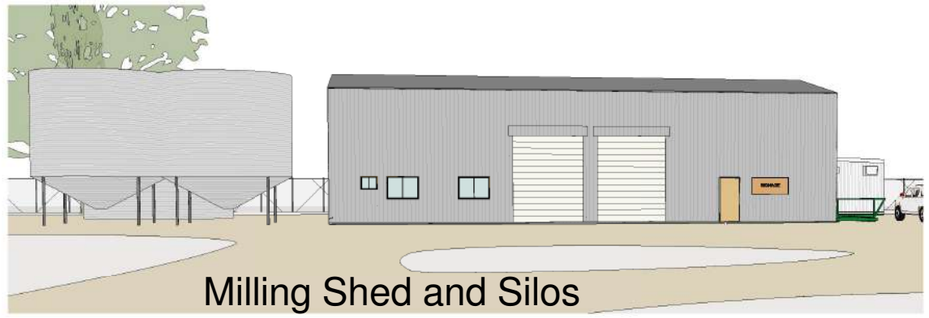
Caretaker Residence

Milling Shed internal

Milling Shed



Milling Shed and Silos

Hoy Road View

PROPOSED MILLING PLANT

42 Hoy Road, Coonabidgee

Transform
building design & drafting

Attachment 3 – Acoustic Report

TOWN PLANNING | MEDIATION | ADVOCACY

ACOUSTIC REPORT

FOR

PROPOSED MILLING PLANT

4 January 2023

AES-890294-R01-A-04012023

Acoustic Engineering Solutions
www.acousticengsolutions.com.au

DOCUMENT CONTROL

Prepared for:	**AU Grass Pty Ltd**
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	CoonabidgeeWA 6503
Contact:	Gurpreet Singh

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	roy.ming@acousticengsolutions.com.au
	0408 944 982
Revision:	A
Date:	4 January 2023
Doc NO:	AES-890294-R01-A-04012023

Acoustic Engineering Solutions

ABN: 64 451 362 914

EXECUTIVE SUMMARY

Acoustic Engineering Solutions (AES) has been commissioned by AU Grass Pty Ltd to prepare an acoustic report as a supporting document for the development application of a proposed wheat milling plant. The milling plant operates between 7am and 6pm during the weekdays and between 7am and 2pm on Saturday excluding public holidays. This report presents an environmental noise assessment of the proposed wheat milling plan. The aim of this assessment is to determine whether or not the proposed wheat milling plant would comply with the Environmental Protection (Noise) Regulations 1997 (the Regulations).

An acoustic model is created and the following four worst-case operational scenarios are modelled:

Scenario 1 represents the worst-case daily operation.
Scenario 2 represents the delivery activities.
Scenario 3 represents short events of truck driving onsite.
Scenario 4 represents short events of truck-door closing.

Five closest residential and industrial receivers are selected for the detailed assessments of noise impact. Noise levels are predicted for the worst-case meteorological conditions. The predicted worst-case noise levels are adjusted to account for their dominant characteristics according to the Regulations and then assessed against the criteria set by the Regulations. The compliance assessment concludes that full compliance is achieved for the proposed wheat milling plant.

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1.0 INTRODUCTION

A wheat milling plant is proposed to operate at 42 Hoy Road Coonabidgee. An acoustic report is required to undertake an environmental noise impact assessment to determine whether or not the noise emissions from the proposed wheat milling plant would comply with the Environmental Protection (Noise) Regulations 1997 (the Regulations).

Acoustic Engineering Solutions (AES) has been commissioned by AU Grass Pty Ltd (AU Grass) to prepare the acoustic report.

1.1 DEVELOPMENT SITE

Figure 1 in APPENDIX A presents an aerial view of the development site and the surrounding area, including the selected receivers.

Figure 2 to Figure 4 in APPENDIX A present the site/floor plans and 3D views. The milling plant shed is constructed of colorbond sheeting walls and roofing with glass wool roof insulation. Ceiling will be present with standard 10mm plasterboards and R1.5 insulation batts. The shed windows are glazed of 6mm laminated. The access single door is a colorbond door. During the operations all of the windows and the access door are closed. The two roller doors are open only for delivery.

The wheat milling plant is proposed to operate between 7am and 6pm during the weekdays but between 7am and 2pm on Saturday excluding public holidays.

Delivery happens during the operational hours with one forklift and eager loading system for wheat silo. HR (Heavy Rigid) trucks are mostly used for delivery but occasionally single semi-trick may also be used.

Five car-parking bays are available in the front of the shed. The site boundary fences are steel bar/mesh fencing.

2.0 NOISE CRITERIA

Noise management in Western Australia is implemented through the Environmental Protection (Noise) Regulations 1997 (the Regulations). The Regulations set noise limits which are the highest noise levels that can be received at noise-sensitive (residential), commercial and industrial premises. These noise limits are defined as 'assigned noise levels' at receiver locations. Regulation 7 requires that "noise emitted from any premises or public place when received at other premises must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind".

Table 2-1 presents the assigned noise levels at various premises.

Table 2-1: Assigned noise levels in dB(A)

Type of Premises Receiving Noise	Time of Day	Assigned Noise Levels in dB(A)[1]		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area	0700 to1900 hours Monday to Saturday	45 + Influencing factor	55 + Influencing factor	65 + Influencing factor
	0900 to1900 hours Sunday and public holidays	40 + Influencing factor	50 + Influencing factor	65 + Influencing factor
	1900 to2200 hours all days	40 + Influencing factor	50 + Influencing factor	55 + Influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays	35 + Influencing factor	45 + Influencing factor	55 + Influencing factor
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial premises	All hours	60	75	80
Industrial and utility premises other than those in the Kwinana Industrial Area	All hours	65	80	90

For highly noise sensitive premises, an "influencing factor" is incorporated into the assigned noise levels. The influencing factor depends on road classification and land use zonings within circles of 100 metres and 450 metres radius from the noise receiver locations.

[1] Assigned level L_{A1} is the A-weighted noise level not to be exceeded for 1% of a delegated assessment period.
Assigned level L_{A10} is the A-weighted noise level not to be exceeded for 10% of a delegated assessment period.
Assigned level L_{Amax} is the A-weighted noise level not to be exceeded at any time.

2.1 CORRECTIONS FORCHARACTERISTICSOF NOISE

Regulation 7 requires that that "noise emitted from any premises or public place when received at other premises must be free of:

(i) tonality;
(ii) impulsiveness; and
(iii) modulation.

when assessed under Regulation 9".

If the noise exhibits intrusive or dominant characteristics, i.e. if the noise is impulsive, tonal, or modulating, noise levels at noise-sensitive premises must be adjusted. Table 2-2 presents the adjustments incurred for noise exhibiting dominant characteristics. That is, if the noise is assessed as having tonal, modulating or impulsive characteristics, the measured or predicted noise levels have to be adjusted by the amounts given in Table 2-2. Then the adjusted noise levels must comply with the assigned noise levels. Regulation 9 sets out objective tests to assess whether the noise is taken to be free of these characteristics.

Table 2-2: Adjustments for dominant noise characteristics

Adjustment where noise emission is not music. These adjustments are cumulative to a maximum of 15 dB.			Adjustment where noise emission is music	
Where tonality is present	Where Modulation is present	Where Impulsiveness is present	Where Impulsiveness is not present	Where Impulsiveness is present
+5 dB	+5 dB	+10 dB	+10 dB	+15 dB

2.2 INFLUENCING FACTOR

Five (5) closest receivers are selected for the detailed assessment of noise impacts, as shown in Figure 1 in APPENDIX A. R1 and R4 represent the closest residential receivers while the others represent the closest industrial receivers.

Influencing factor varies from residence to residence depending on the surrounding land use. No busy roads are located with 450m. Therefore, the transport factor is zero.

Figure 5 in APPENDIX A presents the town planning scheme map 7 of the Shire of Gingin. The proposed milling plant is located within a "Rural Industry" zone. All of the closest properties are used for "industrial" purposes but some of them are also used for occasional residences or caretaker house. No commercial zone is located with 450m to R1 and R4.

Table 2-3 presents the calculation of influencing factor for R1/R4 and Table 2-4 presents the assigned noise levels for the selected receivers.

Table 2-3: Calculation of influencing factors.

Receivers	Transport Factor in dB	Industrial Land			Influencing Factor in d(B)
		Within 100m Radius	Within 450m Radius	dB	
R1	0	90%	53%	14	14
R4	0	100%	86%	19	19

Table 2-4: Day-time assigned noise levels in dB(A) for Monday to Saturday

Receivers	Day-time[2] Assigned Noise Levels in dB(A)		
	L_{A10}	L_{A1}	L_{Amax}
R1	59	69	79
R2	65	80	90
R3	65	80	90
R4	64	74	84
R5	65	80	90

[2] 0700 to 1900 hours for Monday to Saturday.

3.0 NOISE MODELLING

3.1 METHODOLOGY

An acoustic model is developed using SoundPlan v8.0 program, and the CONCAWE[3,4] prediction algorithms are selected for this study. The acoustic model is used to predict noise levels at the selected receivers and generate noise level contours for the area surrounding the subject site.

The acoustic model does not include noise emissions from any sources other than from the proposed milling plant. Therefore, noise emissions from neighbouring industrial premises, aircraft, road traffic, birds, etc are excluded from the modelling.

3.2 INPUT DATA

3.2.1 Topography

The ground elevation contours of the subject site and its surrounding area are obtained from the Landgate website. The ground is assumed to be absorptive.

The proposed shed is digitised to the acoustic model together with the existing buildings and sheds in the area of interest.

The site boundary fences are not considered because steel bar/mesh fences have little impact on the noise propagation.

3.2.2 Noise Sensitive Premises

Five (5) closest receivers are selected for the detailed assessments of noise impact, as shown in Figure 1 in APPENDIX A. The site and surrounding area are zoned as "Rural Industrial". All of the closest properties are used for "industrial" purposes but some of them are also used for occasional residences or caretaker house.

One person lives in R1 while someone live occasionally in R4 but also operates trucks and machines there. The others are used for workshops and industrial receivers. All of the receivers are the ground receivers (1.5m above the ground).

3.2.3 Source Noise Levels

The letter of the milling plant equipment supplier states that the noise level of milling plant is 70 dB(A) when operating inside an enclosed shed.

[3]CONCAWE (Conservation of Clean Air and Water in Europe) was established in 1963 by a group of oil companies to carry out research on environmental issues relevant to the oil industry.
[4]The propagation of noise from petroleum and petrochemical complexes to neighbouring communities, CONCAWE Report 4/81, 1981.

As advised, two air-conditioners will be installed for the office and staff room with their outdoor units sitting on the ground. Table 3-1 presents the sound power levels of air-conditioners and other sources. The overall sound power levels of air-conditioners and water pump were provided by AU Grass but their spectra are obtained from the AES database for similar sources. The sound power levels of 4T forklift and a driving semi-truck were measured for the other AES consulting projects.

Table 3-1: Sound power levels.

Equipment	Number	Sound Power Level in dB(A)
Air-conditioner	2	68
Toilet Ventilation Outlet	1	62
Small Water Pump	1	80
Driving Semi-Truck		98
4T Forklift	1	89
Truck Door Closing L_{AMax}		91

3.3 METEOROLOGY

SoundPlan calculates noise levels for defined meteorological conditions. In particular, temperature, relative humidity, wind speed and direction data are required as input to the model. For this study the worst-case day-time meteorological conditions[5] are assumed, as shown in Table 3-2.

Table 3-2: Worst-case day-time meteorological conditions.

Time of day	Temperature Celsius	Relative Humidity	Wind speed	Pasquill Stability Category
Day (0700 --- 1900)	20° Celsius	50%	4 m/s	E

[5]The worst case meteorological conditions were set by the EPA (Environmental Protection Act 1986) Guidance note No 8 for assessing noise impact from new developments as the upper limit of the meteorological conditions investigated.

3.4 NOISE MODELLING SCENARIOS

AU Grass advised:

- The wheat milling plant operates between 7am and 6pm during the weekdays and between 7am and 2pm on Saturday excluding public holidays.
- The wheat milling plant has 3 full-time staff.
- All windows and access door are closed during the operations.
- The two roller doors are open only during un/loading.
- Two (2) air-conditioning units are installed for the office and staff room and their outdoor units sit on the ground (outside the shed).
- No wall-mounted or ceiling cooling fans will be installed inside the shed.
- The toilet ventilation outlet is wall-mounted.
- One small water pump is located inside the shed.
- Delivery (no more 5 deliveries per day) happens during the operational hours with one forklift and eager loading system for wheat silo. HR (Heavy Rigid) trucks are used for delivery but occasionally single semi-trick may also be used.
- Five car-park bays are located in the front of the shed.
- Low speed limit (20km/hour) will be imposed onsite.
- The site boundary fences are steel bar/mesh fencing.

Based on the provided information, the following four worst-case operational scenarios are modelled:

Scenario 1: Daily operation with the following sources operating simultaneously:

- All machines in the wheat milling plant (all of the shed doors and windows are closed);
- Two air-conditioning units;
- One toilet ventilation; and
- One water pump.

Scenario 2: Scenario 1 plus delivery activities:

- A 4T forklift operating outside the shed; and
- The two roller doors are fully open.

Scenario 3: A semi-truck slowly drives onsite.

Scenario 4: A truck door is closed in the front of shed roller doors.

Scenario 1 represents the worst-case daily operation. The wheat milling plant is assumed to operate simultaneously with all of the other mechanical plant onsite.

Scenario 2 represents delivery activities. The engine of delivery truck is assumed to be switched off during the un/loading.

Scenario 3 represents onsite truck driving. For worst-case operation, a driving semi-truck is assumed because it radiates higher noise than a HR truck. Because SoundPlan cannot model a moving source, a line source represents a driving truck and the predicted noise level is the average of noise received during the truck driving period. All of the vehicles are allowed to

entry the site from Gate 1 only. The distance is 80m between the roller doors and gate 1 but 50m between the roller doors and gate 2. The time for a delivery truck driving onsite (return) at the limited onsite driving speed of 20km/hour is:

- <24 seconds if truck exists from gate 2; but
- <29 seconds if truck exists from gate 1.

For the 5 (maximum) deliveries per day, the total time of delivery trucks driving onsite is less than 1% of any 4 -hour period.

Scenario 4 represents short events of truck-door closing. A truck-door-closing is modelled as a point source. The barrier effect of truck bodies is not considered in the acoustic model and the predicted noise levels may be higher than the actual levels in truck body shadow areas.

4.0 MODELLING RESULTS

4.1 POINT MODELLING RESULTS

Table 4-1 presents the predicted worst-case A-weighted overall noise levels. For scenario 4, the predicted noise levels are in L_{AMax} level. The highest noise level is predicted at R5 is for all of the scenarios.

Table 4-1: Predicted worst-case noise levels in dB(A).

Receivers	Scenario 1	Scenario 2	Scenario 3	Scenario 4
R1	23.0	25.0	31.5	20.9
R2	21.4	23.9	40.3	20.1
R3	23.7	39.1	41.5	37.2
R4	20.6	37.6	39.6	36.8
R5	25.9	42.7	44.8	41.6

4.2 NOISE CONTOURS

Figure 6 and Figure 9 in APPENDIX B present the worst-case noise level contours at 1.5m above the ground. These noise contours represent the worst-case noise propagation envelopes, i.e., worst-case propagation in all directions simultaneously.

Figure 9 shows the worst-case noise level L_{AMax} contours.

5.0 COMPLIANCE ASSESSMENT

5.1 TONALITY ADJUSTMENT

According to Table 2-2, the predicted noise levels shown in Table 4-1 should be adjusted by:

- 5 dB if the noise received exhibits tonality; or
- 10 dB if the noise received exhibits impulsiveness.

Scenario 1 to 3 consider mechanical noises and may radiate tonal components. Therefore, a 5dB tonality adjustment applies to the predicted noise levels for scenarios 1 to 3.

Scenario 4 considers the truck-door closing noise only. The truck-door closing noise may exhibit implusiveness and then a 10dB adjustment applies.

Table 5-1 presents the adjusted worst-case A-weighted noise levels.

Table 5-1: Adjusted noise levels in dB(A).

Receivers	Scenario 1	Scenario 2	Scenario 3	Scenario 4
R1	28.0	30.0	36.5	30.9
R2	26.4	28.9	45.3	30.1
R3	28.7	44.1	46.5	47.2
R4	25.6	42.6	44.6	46.8
R5	30.9	47.7	49.8	51.6

5.2 COMPLIANCE ASSESSMENT

Scenarios 1 and 2 generate continuous noise emissions, and then their noises should be assessed against the assigned noise levels L_{A10}. For the maximum (5) number of deliveries per day, the total time of onsite truck driving is less than 2.5 minutes (about 1% of any of 4-hour period), therefore, the assigned noise levels L_{A1} apply to scenario 3.

Truck door closing is a short event. The noise from a truck door closing is predicted in L_{Amax} level and the assigned noise levels L_{Amax} apply for scenario 4.

Table 5-2 presents the compliance assessment for the day of Monday to Saturday. It is shown that all of the adjusted noise levels are much lower than the assigned noise levels for

all scenarios. This demonstrates that full compliance is achieved for the proposed wheat milling plant.

Table 5-2: Day-time compliance assessment for Monday to Saturday.

Receivers	Assigned Levels L_{A10} in dB(A)	Adjusted Noise Levels in dB(A)		Assigned Levels L_{A1} in dB(A)	Adjusted in dB(A)	Assigned Levels L_{Amax} in dB(A)	L_{Amax} in dB(A)
		Scenario 1	Scenario 2		Scenario 3		Scenario 4
R1	59	28.0	30.0	69	36.5	79	30.9
R2	65	26.4	28.9	80	45.3	90	30.1
R3	65	28.7	44.1	80	46.5	90	47.2
R4	64	25.6	42.6	74	44.6	84	46.8
R5	65	30.9	47.7	80	49.8	90	51.6

APPENDIX A AERIAL VIEW

Figure 1: Aerial view of the subject site and surrounding area.

Client: AU Grass Pty Ltd
Project: Acoustic Report

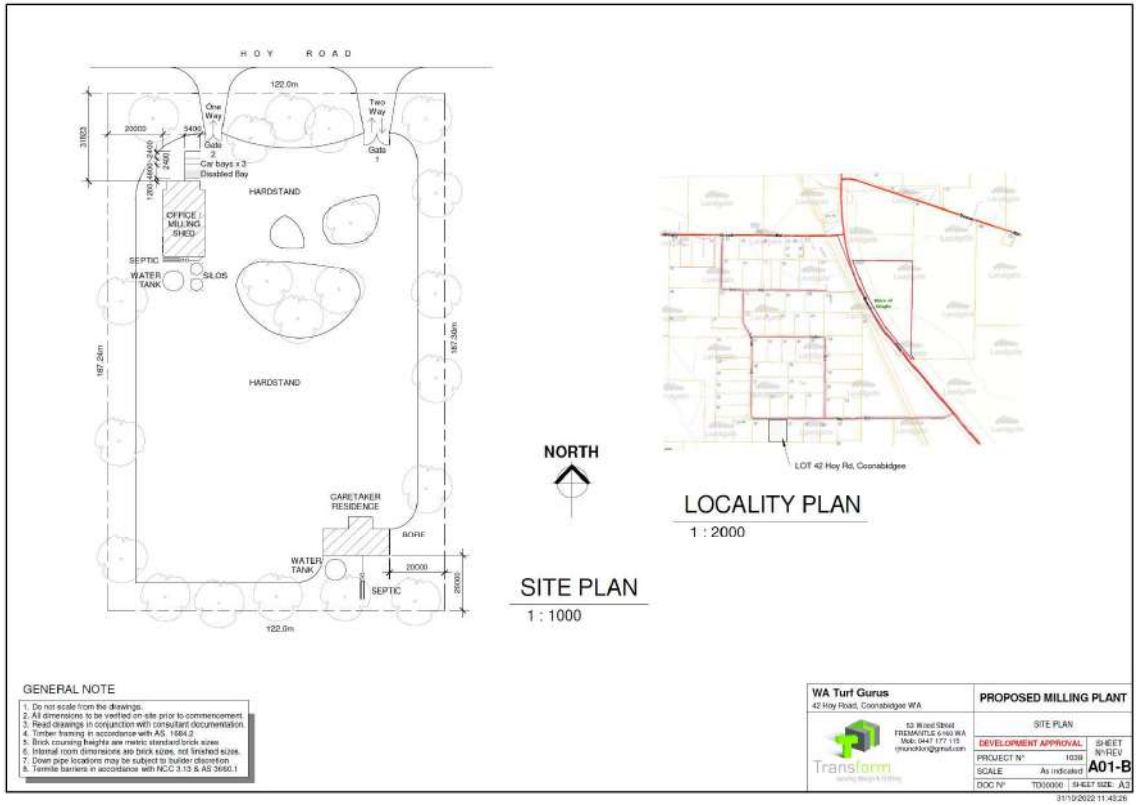

Figure 2: Site plan.

Client: AU Grass Pty Ltd
Project: Acoustic Report

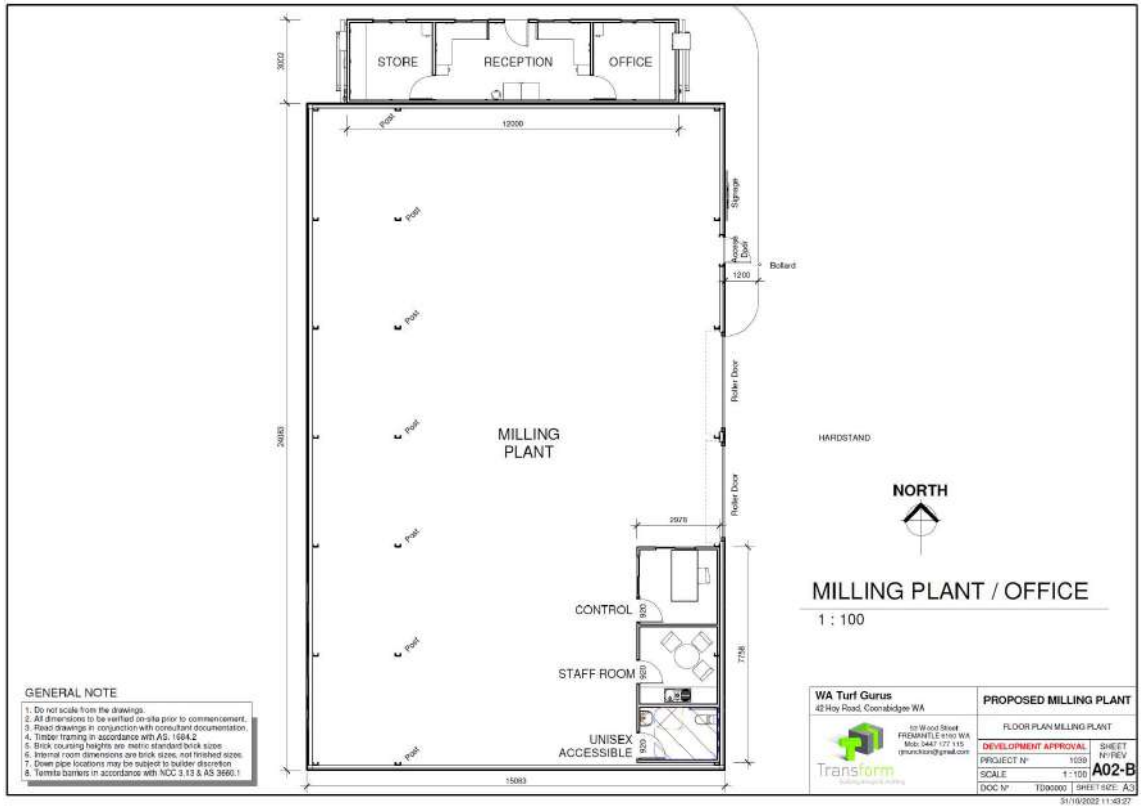

Figure 3: Shed floor plan.

Figure 4: 3D views.

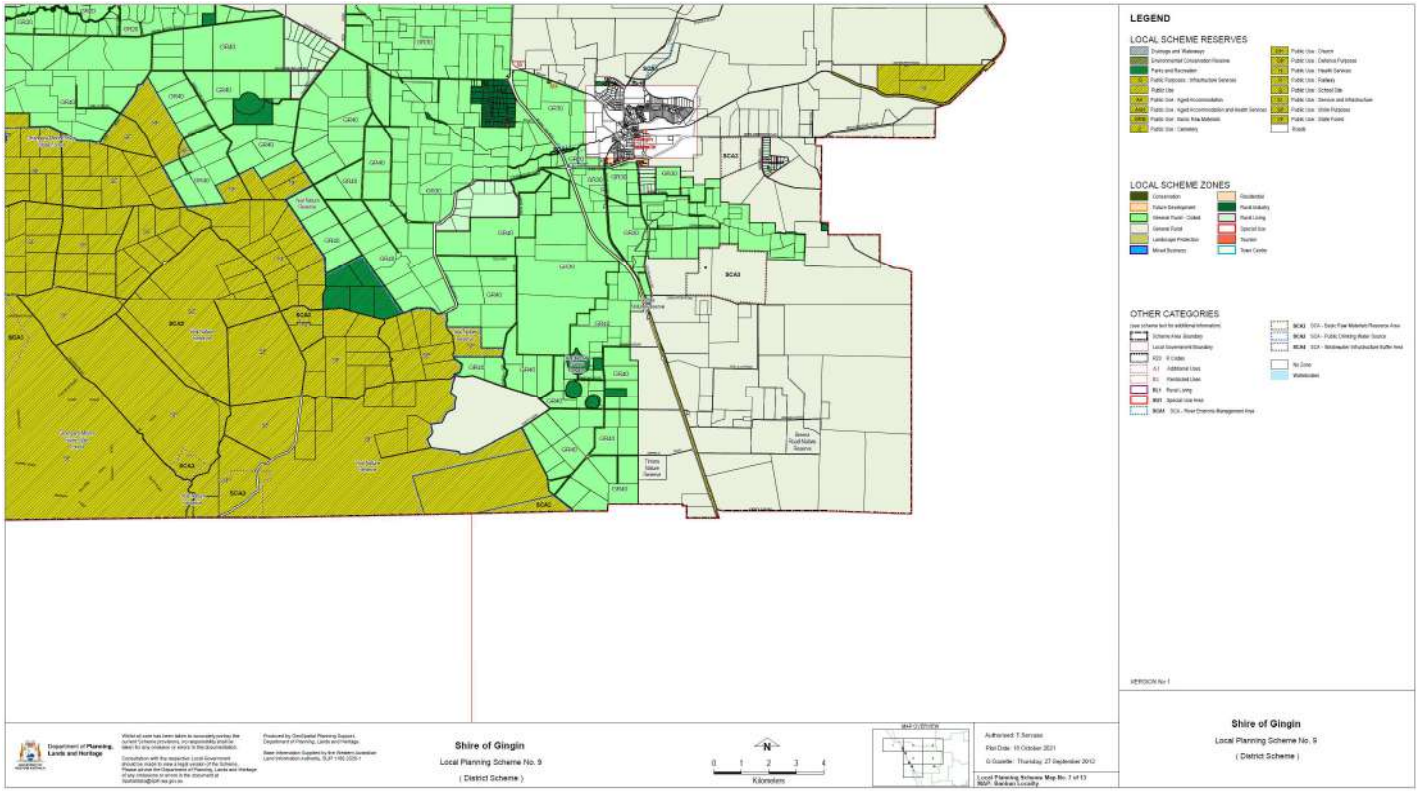

Figure 5: Town planning scheme map 7 of the Shire of Gingin.

APPENDIX B NOISE CONTOURS

Figure 6: Worst-case noise level contours for scenario 1.

Figure 7: Worst-case noise level contours for scenario 2.

Figure 8: Worst-case noise level contours for scenario 3.

Figure 9: Worst-case noise level L_{Amax} contours for scenario 4.

Attachment 4 - Bushfire Attack Level Report

TOWN PLANNING | MEDIATION | ADVOCACY

AS3959 Bushfire Attack Level (BAL) Assessment Report

Download this report from https://jobcomplete.com.au/checker

Site Details			
Address	L42 Hoy Rd		
Suburb	Coonabidgee	**State**	WA
Local Government Area:	Shire of Gingin		
Description of Building Works:	Class 1a		

Report details			
Report/Job Number	#NL8645	**Client Reference #:**	L42 Hoy Rd
Assessment Date	21-11-2022	**Report Version:**	1
Report Is Valid Until:	30-11-2023	**Report Date:**	30-11-2022

BPAD Accredited Practitioner Details	
Company Name:	Bushfire Perth Pty Ltd
Contact Details:	Rod@Balrating.com.au - 0416 985 859
Representative	Roddy Cameron
BAL Rating	I hereby declare that I am a BPAD accredited bushfire practitioner. Accreditation No. BPAD - 37279 Signature R Cameron Date As above

Disclaimer: The measures or recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building will not be damaged in a bushfire.Reliance on the assessment and determination of the Bushfire Attack Level contained in this report should not extend beyond a period of 12 months from the date of issue of the report. If this report was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner name in this report and where required an updated report issued.

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BAL Assessment Report

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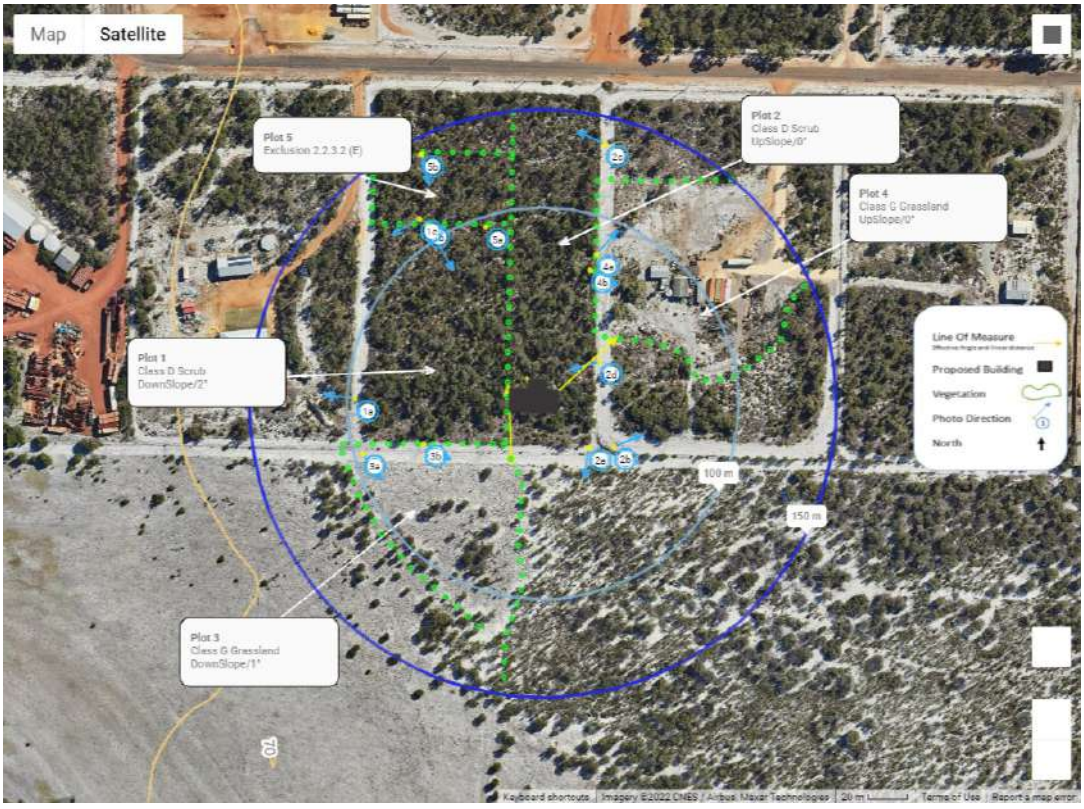
BAL Assessment Report

Site Assessment & Site Plans

The assessment of this site / development at 42 Hoy Rd Coonabidgee was undertaken on 21-11-2022 by Natalia Smirnova a BPAD Accredited level 1 Practitioner for the purpose of determining the Bushfire Attack Level in accordance with AS3959 - 2018 Simplified Procedure (Method 1).



Plot	Vegetation Classification	Effective Slope	Separation (m)	Exclusions *	BAL
1	Class D Scrub	Downslope/2°	1	-	BAL-FZ
2	Class D Scrub	Upslope/0°	1	-	BAL-FZ
3	Class G Grassland	Downslope/1°	27	-	BAL-12.5
4	Class G Grassland	Upslope/0°	41	-	BAL-12.5
5	Exclusion 2.2.3.2 (E)	-	-	E	BAL-LOW

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Vegetation Classification

All vegetation within 100m of the site / proposed development was classified in accordance with Clause 2.2.3 of AS3959-2018. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Plot 1a	Vegetation-Class D Scrub	Slope-Downslope/2°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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Plot 1b	Vegetation-Class D Scrub	Slope-Downslope/2°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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Plot 1c	Vegetation-Class D Scrub	Slope-Downslope/2°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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Plot 2a	Vegetation-Class D Scrub	Slope-Upslope/0°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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Plot 2b	Vegetation-Class D Scrub	Slope-Upslope/0°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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BAL Assessment Report

Plot 2c	Vegetation-Class D Scrub	Slope-Upslope/0°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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Plot 2d	Vegetation-Class D Scrub	Slope-Upslope/0°	BAL-FZ

Scrub vegetation typically with continuous horizontal and vertical vegetation structures, greater than 2 metres high.

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Plot 3a	Vegetation-Class G Grassland	Slope-Downslope/1°	BAL-12.5

Grassland over 100mm in height at the time of the assessment, this area was not maintained and is therefore classified as grassland to allow for re-growth.

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Plot 3b	Vegetation-Class G Grassland	Slope-Downslope/1°	BAL-12.5

Grassland over 100mm in height at the time of the assessment, this area was not maintained and is therefore classified as grassland to allow for re-growth.

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Plot 4a	Vegetation-Class G Grassland	Slope-Upslope/0°	BAL-12.5

Grassland over 100mm in height at the time of the assessment, this area was not maintained and is therefore classified as grassland to allow for re-growth.

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Plot 4b	Vegetation-Class G Grassland	Slope-Upslope/0°	BAL-12.5

Grassland over 100mm in height at the time of the assessment, this area was not maintained and is therefore classified as grassland to allow for re-growth.

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Plot 5a	Vegetation-Exclusion 2.2.3.2 (E)	Slope (-)	BAL-LOW

Exclusion clause 2.2.3.2 E - Non-vegetated areas, including waterways, roads, footpaths, building and rock outcrops

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Plot 5b	Vegetation-Exclusion 2.2.3.2 (E)	Slope (-)	BAL-LOW

Exclusion clause 2.2.3.2 E - Non-vegetated areas, including waterways, roads, footpaths, building and rock outcrops

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BAL Assessment Report

Determined Bushfire Attack Level

Relevant Fire Danger Index

The fire danger index for this site has been determined in accordance with Table 2.1 or otherwise determined in accordance with a jurisdictional variation applicable to the site.

Fire Danger Index

FDI 80 ☑
Table 2.4.3

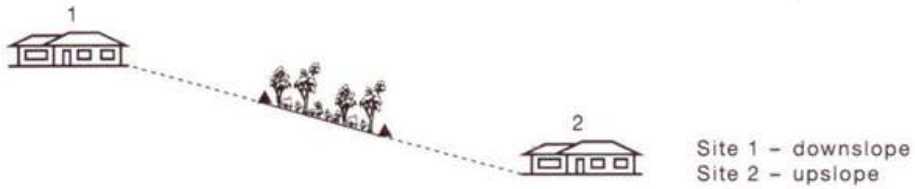
Potential Bushfire Impacts

The potential bushfire impact to the site / proposed development from each of the identified vegetation plots are identified below.

Plot	Vegetation Classification	Effective Slope	Separation (m)	Exclusions *	BAL
1	Class D Scrub	Downslope/2°	1	-	BAL-FZ
2	Class D Scrub	Upslope/0°	1	-	BAL-FZ
3	Class G Grassland	Downslope/1°	27	-	BAL-12.5
4	Class G Grassland	Upslope/0°	41	-	BAL-12.5
5	Exclusion 2.2.3.2 (E)	-		E	BAL-LOW

Table 1: BAL Analysis - *Exclusions refer to clause 2.2.3.2 as found in AS3959-2018

Diagram Explaining Slopes



Determined Bushfire Attack Level (BAL)

The Determined Bushfire Attack Level (highest BAL) for the site / proposed development at 42 Hoy Rd Coonabidgee has been determined in accordance with clause 2.2.6 of AS3959-2018 using the above analysis.

Bushfire Attack Level Determined On 21-11-2022	BAL-FZ

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BAL Assessment Report

Radiant Heat Levels

BAL rating	*Explanation*	*Risk*
BAL - LOW	There is insufficient risk to warrant any specific construction requirements but there is still some risk.	BAL - LOW
BAL - 12.5	There is a risk of ember attack. The construction elements are expected to be exposed to a heat flux not greater than 12.5 kW/m2.	LOW
BAL - 19	There is a risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to radiant heat.	MODERATE
BAL - 29	There is an increased risk of ember attack and burning debris ignited by windborne embers and a likelihood of exposure to an increased level of radiant heat.	HIGH
BAL - 40	There is a much increased risk of ember attack and burning debris ignited by windborne embers, a likelihood of exposure to a high level of radiant heat and some likelihood of direct exposure to flames from the fire front	VERY HIGH
BAL - FZ	There is an extremely high risk of ember attack and burning debris ignited by windborne embers, and a likelihood of exposure to an extreme level of radiant heat and direct exposure to flames from the fire front.	EXTREME

The Australian Standard AS3959-2018 Construction of buildings in bushfire prone areas

The Australian Standard AS3959 describes comprehensive methodology of assessing bushfire attacks and advises specific construction details for dwellings to diminish the risk of combustion caused by burning embers, radiant heat or direct flame contact generated by a bushfire and its intensity on the dwelling.

Construction Requirements

BAL rating	Requirements	AS3959-2018 Page number
LOW	No construction requirements Section 4	
BAL 12.5	Construction sections 3 and 5	pg42
BAL 19	Construction sections 3 and 6	pg50
BAL 29	Construction sections 3 and 7	pg58
BAL 40	Construction sections 3 and 8	pg67
BAL FZ	Construction sections 3 and 9	pg74

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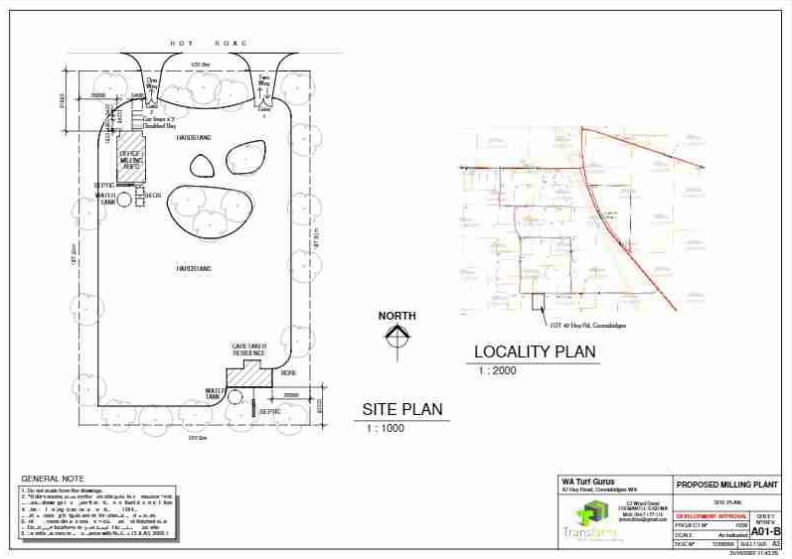
BAL Assessment Report

Appendix 1 - Site Plan showing setbacks

This report has been generated taking into consideration the information provided by client at the time of placing their booking with this office. If any amendments are made to this information the client is responsible to contact this office to confirm that the changes do not conflict with the issued BAL rating.

All recommendations, projections and assessments associated with the current project are made in good faith on the basis of information available to the assessor at the time of assessment; and the level of implementation of bushfire protection measures will depend on the actions of the landowners or occupiers over which this office has no control.



Appendix 2

Exclusions

Areas of Vegetation that do not trigger a BAL rating BAL-LOW (i.e. low threat) according to AS3959 includes the following:

- Vegetation of any type more than 100 m from the site.
- Single areas of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified.
- Multiple areas of vegetation less than 0.25 ha in area and not within 20 m of the site or each other.
- Strips of vegetation less than 20 m wide (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20 m of the site or each other, or other areas of vegetation being classified.
- Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
- Low threat vegetation, including grassland managed in a minimal fuel condition. maintained lawns, golf courses, maintained public reserves and parkland, vineyards, orchards, cultivated gardens, commercial nurseries, nature strips and wind breaks

Disclaimer Statement

Disclaimer

This report is distributed under the understanding that this office and its assessor are not responsible for any results of any actions taken on the basis of the information contained within this document or for any errors in or omission from it. Some or all of the information contained within this report may have been provided by a 3rd party, this office and its assessors are not responsible for any inaccuracy or misrepresentation of information provided to them to complete this report. It should be understood that the main reason of this document is to look into diminishing the impact and danger of a bushfire in an identified bushfire prone area to the residents of the District.

It must be outlined that fuel loading and weather conditions prevailing at the time of bushfire event may persuade high intensity fire to occur posing a risk to lives and property. This must be taken into consideration by any person living or staying within a bushfire prone area. This Bushfire Attack Level Assessment is based on site conditions described as at the date of its assessment indicated by this report. Any changes to the current vegetation type, structure and fuel loadings will modify the bushfire attack level and invalidate this report.

-- End of BAL assessment --

BALrating.com.au

Asset Protection Zones

What Is An Asset Protection Zone?

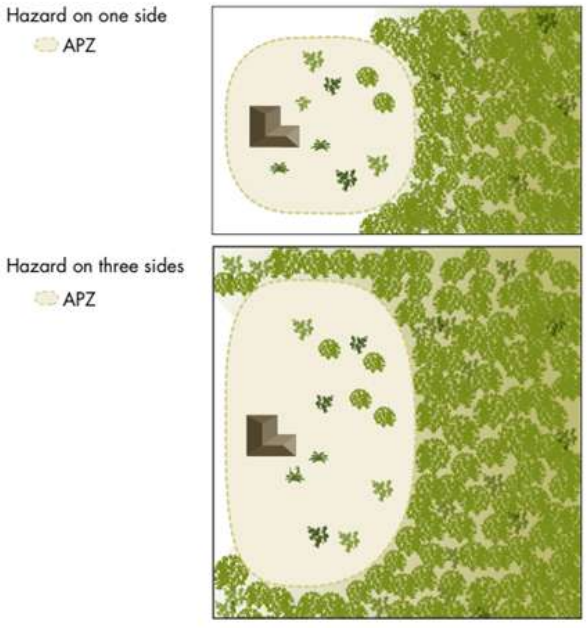
An Asset Protection Zone (APZ) is a fuel reduced area surrounding a built asset or structure. This can include any residential building or major building such as farm and machinery sheds, or industrial, commercial or heritage buildings. An APZ provides:

- a buffer zone between a bush fire hazard and an asset;
- an area of reduced bush fire fuel that allows suppression of fire;
- an area from which backburning may be conducted; and
- an area which allows emergency services access and provides a relatively safe area for firefighters and home owners to defend their property.

Potential bush fire fuels should be minimised within an APZ. This is so that the vegetation within the planned zone does not provide a path for the transfer of fire to the asset either from the ground level or through the tree canopy.

Design of Asset Protection Zone

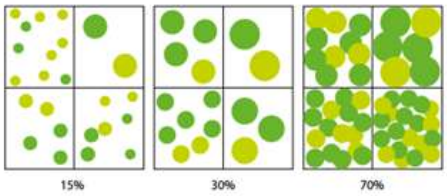
The proportion of the APZ reflect the distance from the hazard to ensure adequate separation is achieved



Tree Canopy Cover

Tree canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

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



Steps Required To Setup And Maintain An Asset Protection Zone (APZ)

Asset Protection Zone (APZ) means a low fuel area immediately surrounding habitable buildings and is to meet the following requirements:

- **Minimum width:**
  Measured from any external wall or supporting post or column of the proposed building or the building envelope, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/mÂ² (BAL-29)
- **Sheds:**
  should not contain flammable materials.
- **Location:**
  wholly within the development site
- **Objects:**
  within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Trees (> 5 metres in height):**
  trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.No tree crowns overhang the building.
- **Shrubs (0.5 metres to 5 metres in height):**
  should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height):**
  can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:**
  Should be managed to maintain a height of 100 millimetres or less. Cut before every fire season

  Cut before every fire season

It is the responsibility of the owner to ensure that the APZ is created and maintained through appropriate design to ensure their property complies with the APZ standards outlined above. All Bushfire attack level ratings (BAL ratings) has been calculated with the conditions that are found on site at the time of assessment. It is very important that as the owner/owners of 42 Hoy Rd Coonabidgee understand that any modifications to the site do not disregard the advice contained on asset protection zones. Allowing vegetation to grow around a building in a bushfire prone area will greatly increase the risk to your site and invalidate your bushfire attack level rating that is currently rated as BAL-FZ

More information on asset protection zones can be found by contacting your local shire at the Shire of Gingin

Additional Comments

Bushfire Attack Level (BAL) Certificate

Determined in accordance with AS3959-2018

This Certificate has been issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme. The certificate details the conclusions of the full Bushfire Attack Level Assessment Report (full report) prepared by the Accredited Practitioner.

Property Details and Description of Works

Address: L42 Hoy Rd

Suburb: Coonabidgee **State:** WA

Local Government Area Shire of Gingin

Report / Job Number: #NL8645 Report Date: 30-11-2022

Determination of Highest Bushfire Attack Level

AS3959 Assessment Procedure	Vegetation Classification	Effective Slope	Separation Distance	BAL
Method 1	Class D Scrub	Upslope/0°	1m	BAL-FZ

BPAD Accredited Practitioner Details

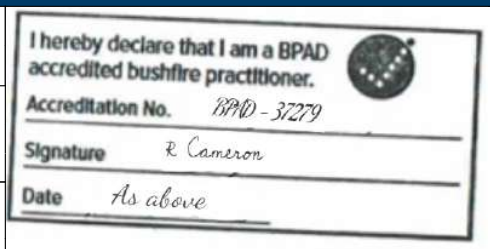
Name

Roddy Cameron

Company Details

Bushfire Perth Pty Ltd, Booking@BALRating.com.au - 0416 985 859

I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS3959-2018



Reliance on the assessment and determination of the Bushfire Attack Level contained in this certificate should not extend beyond a period of 12 months from the date of issue of the certificate. If this certificate was issued more than 12 months ago, it is recommended that the validity of the determination be confirmed with the Accredited Practitioner and where required an updated certificate issued.

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference:	Lot 42 [P017506] Hoy Road		
Suburb:	Coonabidgee	**State:** WA	**P/code:** 6503
Local government area:	Gingin		
Description of the planning proposal:	Flour (Wheat) Milling Plant		
BMP Plan / Reference Number:	230202	**Version:** B	**Date of Issue:** 02/03/2023
Client / Business Name:	AU Grass Pty Ltd		

Reason for referral to DFES	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	☐	☒
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	☐	☒
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	☐	☒
Strategic planning proposal (including rezoning applications)	☐	☒
Minor development (in BAL-40 or BAL-FZ)	☐	☒
High risk land-use	☒	☐
Vulnerable land-use	☐	☒

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

High Risk - potential for flour dust to be an explosive combustion source.

Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name Jeremy Durston	**Accreditation Level** Level 3	**Accreditation No.** BPAD-36525	**Accreditation Expiry** 30/04/2024
Company Bushfire West Pty Ltd		**Contact No.** 0403328835	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner **Date** 02/03/2023

BushfireWest

Bushfire Management Plan

Development:

Flour Milling Plant & Caretaker Residence,

Lot 42 Hoy Road, Coonabidgee

FPA AUSTRALIA BRONZE MEMBER Fire Protection Association Australia

Ref: 230202
Version: B
Mar 2023

REPORT DETAILS

Subject Land

Land ID	Plan P017506 [42]
Address	Lot 42 Hoy Road, Coonabidgee 6503
Land area	2.2847 ha
Zoning	Rural Industry
Local Government	Gingin
Proposal description	Flour (Wheat) Milling Plant incorporating: milling shed with office; storage silos; caretaker residence; water tanks; associated vehicle access with hardstand areas.
Site assessment date	7 Feb 2023

Document Reference

Ref: 230202	Date	Purpose
A	23 Feb 2023	Consultation draft.
B	2 Mar 2023	Development application.

Author

Practitioner	Accreditation Level	Accreditation No.
Jeremy Durston	Level 3	BPAD-36525

Report Limitations

Bushfire and weather conditions can be extremely dangerous and unpredictable. The management of bushfire risk will depend on, among other things, the actions of property owners and/or occupiers over which the author has no control.

All surveys, forecasts, projections and recommendations made in this report are made in good faith on the basis of information available at the time. All maps included herein are indicative in nature and are not to be used for accurate calculations.

Notwithstanding anything contained therein, the author will not, except as the law may require, be liable for any loss or other consequences arising out of the services provided.

Jeremy Durston
jeremy@Bushfire West.com.au
Bushfire West Pty Ltd

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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Appendix 1 – Schedule of Bushfire Mitigation Measures
Appendix 2 – Asset Protection Zone Standards
Appendix 3 – Driveway Standards
Appendix 4 – Firefighting Water Standards
Appendix 5 – Vegetation Assessment

1. Proposal Details

Background & Purpose of Report

This Bushfire Management Plan (BMP) is for the development of a Flour Milling Plant with Caretaker Residence at Lot 42 Hoy Road, Coonabidgee. The primary purpose of this report is to provide the required bushfire planning information to inform the assessment of the development application. The BMP assesses the proposal against *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7) and the associated *Guidelines for Planning in Bushfire Prone Areas v1.4* (the Guidelines). The required bushfire protection measures are specified in accordance with the Guidelines.

Additionally, the proposal is determined to be a 'High Risk Land Use' with respect to the milling dust hazard from the proposed operations having the potential to cause or contribute to a bushfire in the wider locality. A higher-order risk assessment and appropriate risk treatment measures are therefore required to address the onsite hazards.

The assessment within this report determines the bushfire risk of the proposed development to be tolerable, and a range of risk treatment measures are provided to specifically address the potential onsite hazard. In combination with the general bushfire planning requirements of the Guidelines, these measures are considered appropriate to manage the assessed bushfire threat.

Subject Site & Existing Conditions

The subject land is currently undeveloped and generally comprises remnant vegetation with firebreaks and some boundary fencing. The site is located within the southern section of a Rural Industry subdivision with broad-scale agricultural land adjacent to the south (Figure 1). Hoy Road provides direct road access, connecting with Brand Hwy to the east and providing a through-connection to Gingin Brook Road to the north. No reticulated water supply is installed. The subject land is within a bushfire prone area, as designated by the *Western Australia State Map of Bush Fire Prone Areas.*

Proposal Description

The proposal of 'Flour (Wheat) Milling Plant' comprises a milling shed with office, storage silos, caretaker residence, water tanks and associated vehicle access with hardstand areas. The development plans are depicted in Figures 2 & 3.

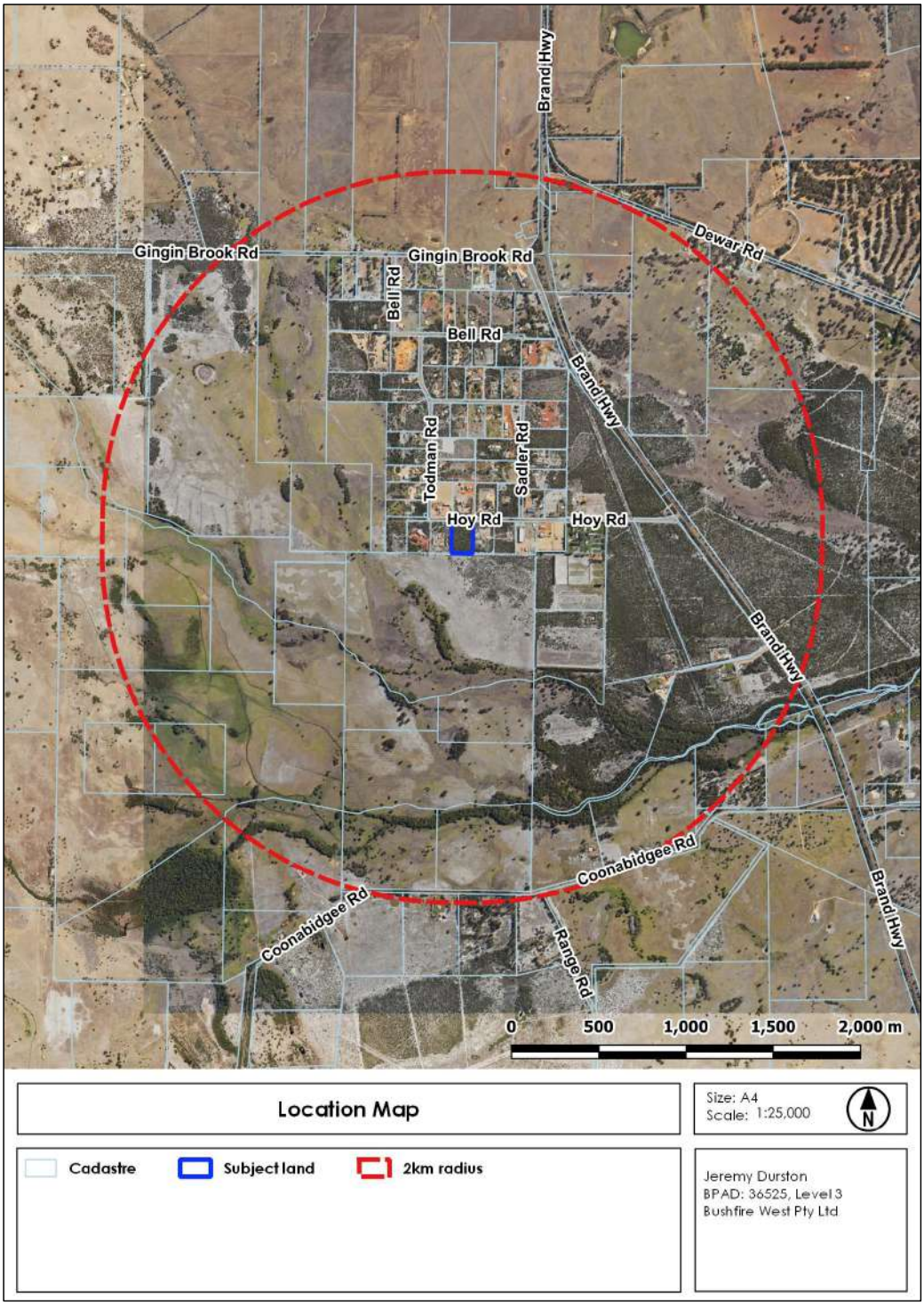


Figure 1: *Site Location*

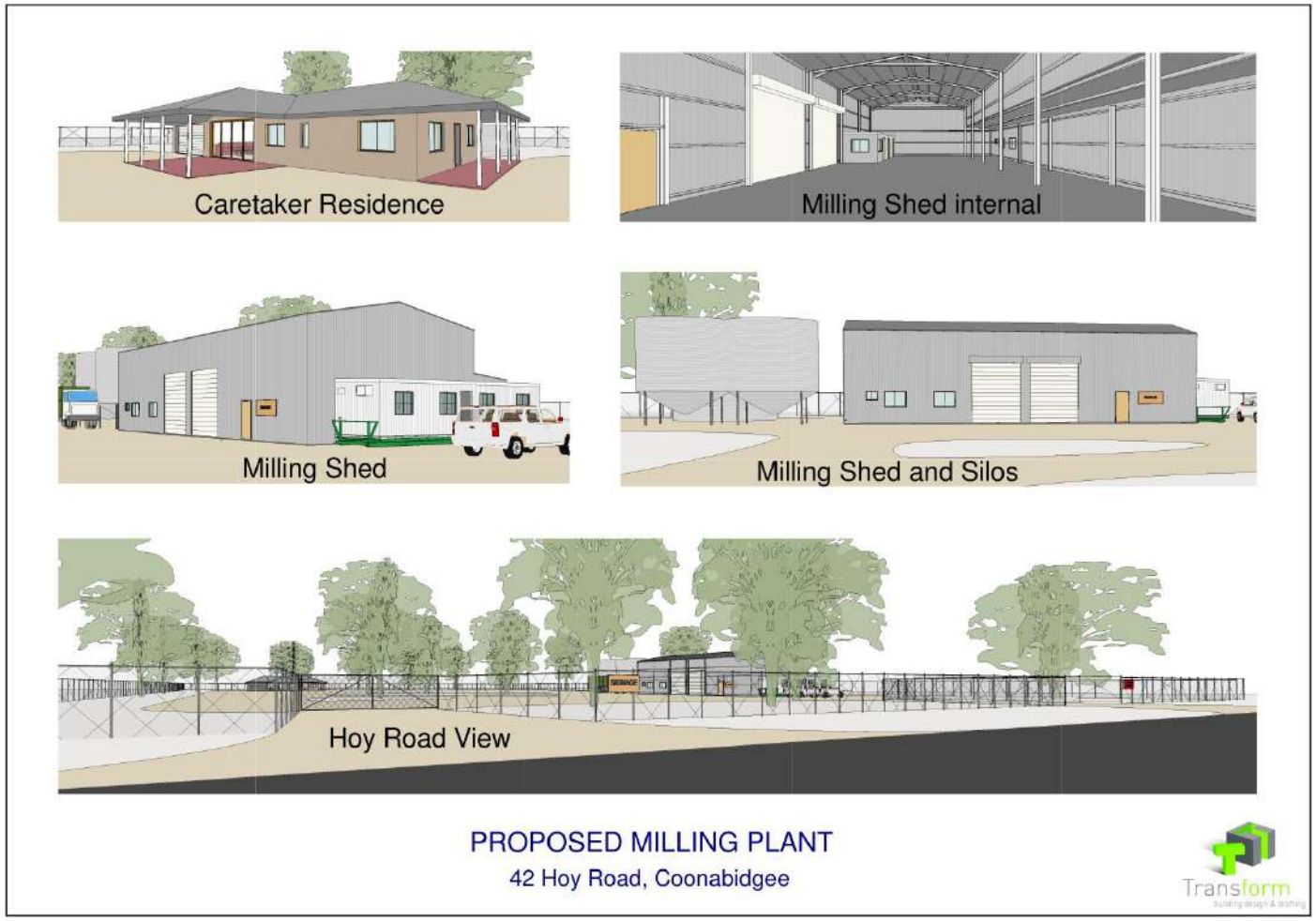


Figure 2: *Elevation Plans*

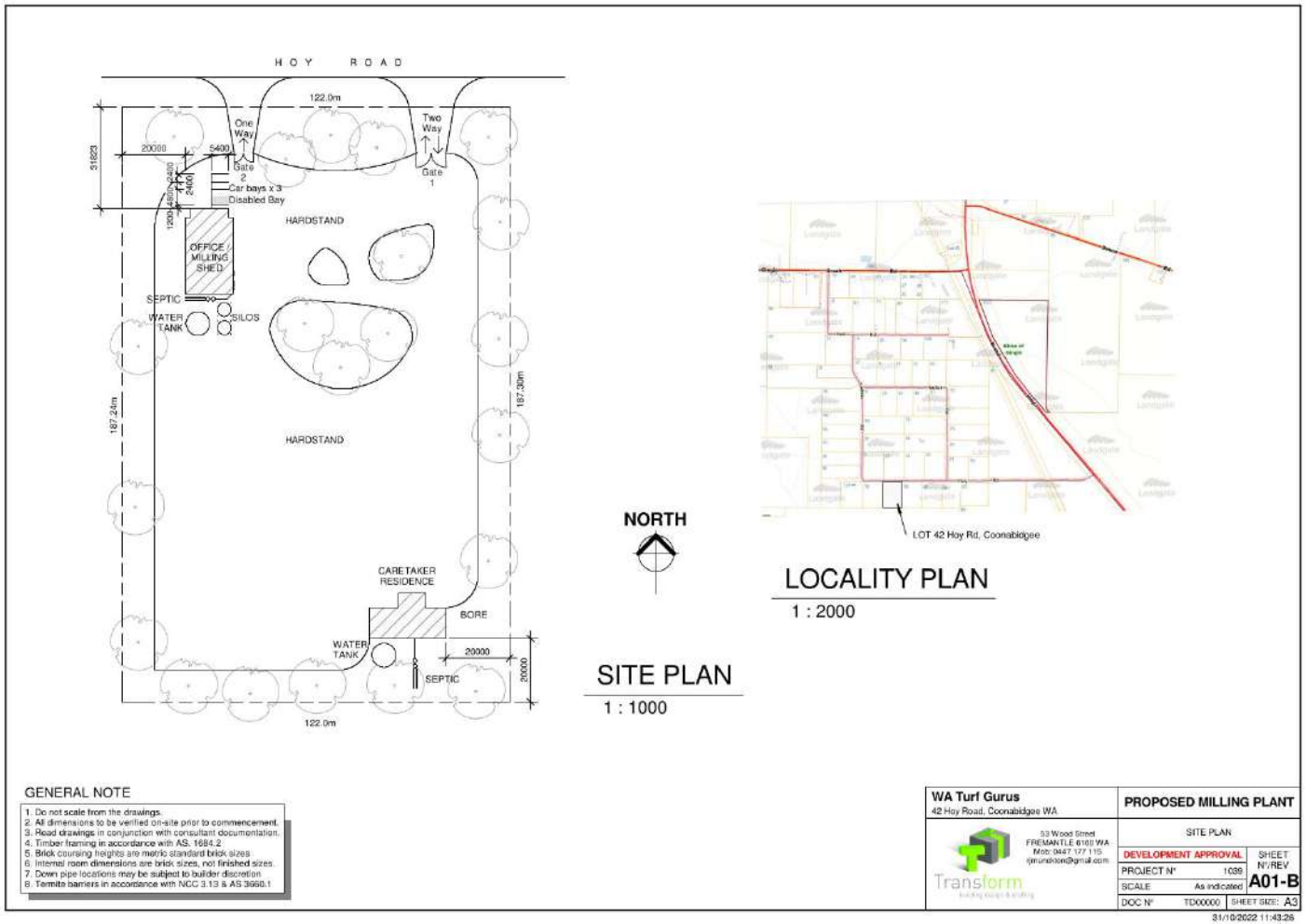


Figure 3: *Development Site Plan*

2. Environmental Considerations

The subject land is included within previous assessments identified by the WA Environmental Protection Authority Spatial Index of Environmental Reports (i.e. identified in the 'DWER-060' dataset), however no designated Environmentally Sensitive Area subject to clearing regulations is identified (i.e. not identified in the 'DWER-046' dataset).

The subject land will require substantial vegetation clearing and modification to enable the proposed development and to establish the Asset Protection Zone detailed within this report. The Asset Protection Zone is not required to be entirely cleared of vegetation, however any remaining vegetation should be landscaped for low bushfire threat, with reference to the applicable Asset Protection Zone standards detailed in Appendix 1.

All required permits must be applied for and granted by the relevant authority prior to any clearing, thinning and/or modification of native vegetation.

3. Bushfire Assessment Inputs

Effective Slope

Effective slopes were assessed in accordance with *AS3959-2018 Construction of buildings in bushfire prone areas* (AS3959). Slope data was measured on site and cross referenced with Landgate elevation data. The effective slopes beneath applicable vegetation areas are recorded in Table 1.

Bushfire Fuels

The location and extent of classified vegetation structures, including low-threat exclusions, within 150 metres of the proposed development were assessed in accordance with AS3959-2018 and mapped in Figure 4. The areas of classified vegetation and low-threat exclusions, post-development, are detailed in Appendix 5 and summarised below.

Table 1 *Areas of classified vegetation and exclusions, post-development:*

Assessment Area	Vegetation Classification	Effective Slope
1	Subject land to be modified & maintained as a low threat APZ. Exclusions 2.2.3.2 (e)&(f)	n/a
2	Class D Scrub	Downslope 1 deg
3	Class G Grassland	Downslope 1 deg
4	Class D Scrub	Downslope 1 deg
5	Class D Scrub	Upslope/flat
6	Class D Scrub	Upslope/flat
7	Exclusions 2.2.3.2 (e)&(f)	n/a
8	Exclusions 2.2.3.2 (e)	n/a

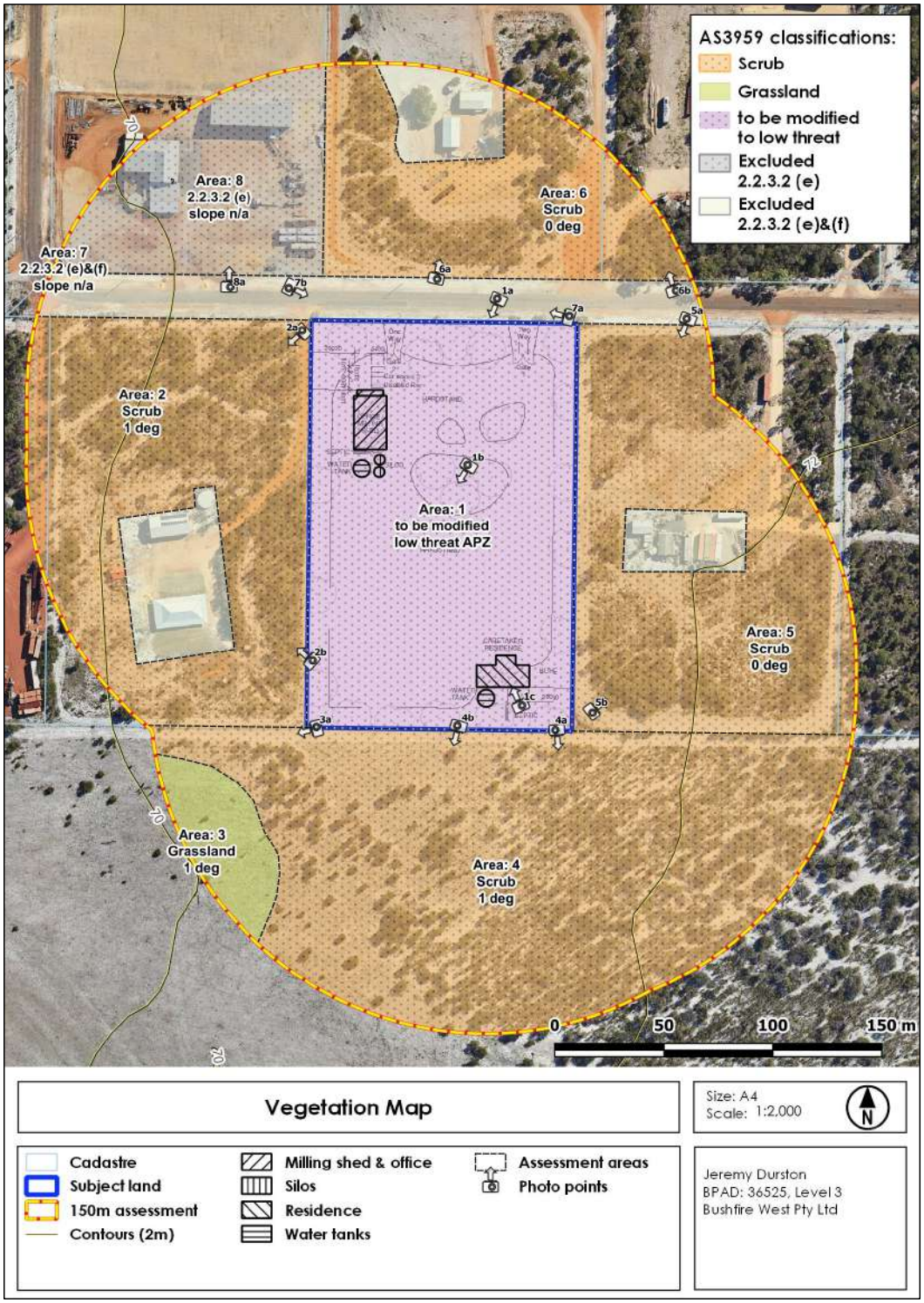


Figure 4: *Vegetation Classifications Map*

4. Bushfire Assessment Outputs

Potential Bushfire Impact

The potential, post-development radiant heat impacts to the site in accordance with AS3959-2018 (Method 1) are summarised as follows:

Table 2: *BAL rating variables (AS3959-2018 Method 1)*

Vegetation Classification	Slope	BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5
Class D Scrub	>0 to 5 deg	<11m	11to<15m	15 to<22m	22 to<31m	31 to<100m
Class D Scrub	Flat & upslope	<10m	10 to<13m	13 to<19m	19 to<27m	27 to<100m
Class G Grassland	>0 to 5 deg	<7m	7 to<9m	9 to<14m	14 to<20m	20 to<50m
Exclusions 2.2.3.2	n/a	n/a	n/a	n/a	n/a	n/a

BAL Contour Map

BAL Contour Mapping has been prepared in accordance with the Guidelines to determine the post-development BAL ratings for the relevant development components (Figures 5 & 6). The resulting BAL ratings are summarised as follows:

Table 3: *BAL ratings, post-development (AS3959 Method 1)*

Development Components	Highest BAL Rating
Milling Shed	BAL-29
Office	BAL-29
Silos	BAL-19
Caretaker residence	BAL-29
Industrial & domestic water tanks	exempt
Vehicle access ways, hardstand areas, low threat landscaping	exempt

All relevant onsite development is thus capable of achieving acceptable ratings of BAL-29 or lower subject to the installation and maintenance of the required Asset Protection Zone.

5. Bushfire Hazard Issues

The following hazard issues are identified:

- The bushfire hazards are areas of remnant Scrub vegetation throughout the subject land and surrounding area, in addition to agricultural grasslands.
- The proposed milling operations represent a potential onsite hazard that may cause or contribute to a bushfire.
- An Asset Protection Zone is required to minimise the hazard from any remnant onsite vegetation and landscaping.
- The public road network provides two access alternatives and multiple egress destinations.
- No reticulated water supply is available. Onsite firefighting water is required with sufficient capacity to service the milling area and caretaker residence, with respect to the potential onsite hazards.
- The subject land, proposed development and firefighting water all need to be accessible by firefighting vehicles and appliances.

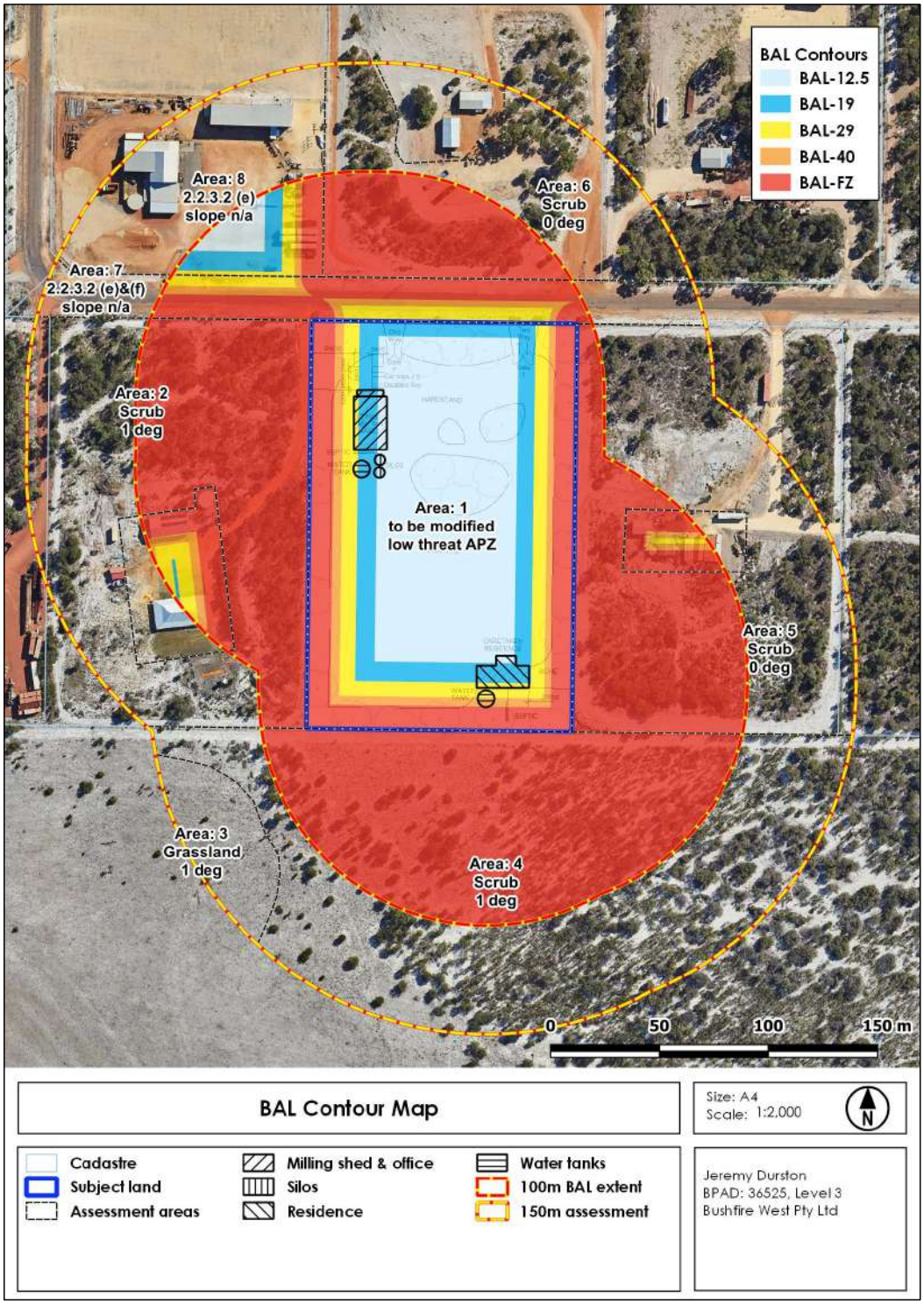


Figure 5: *BAL Contour Map*

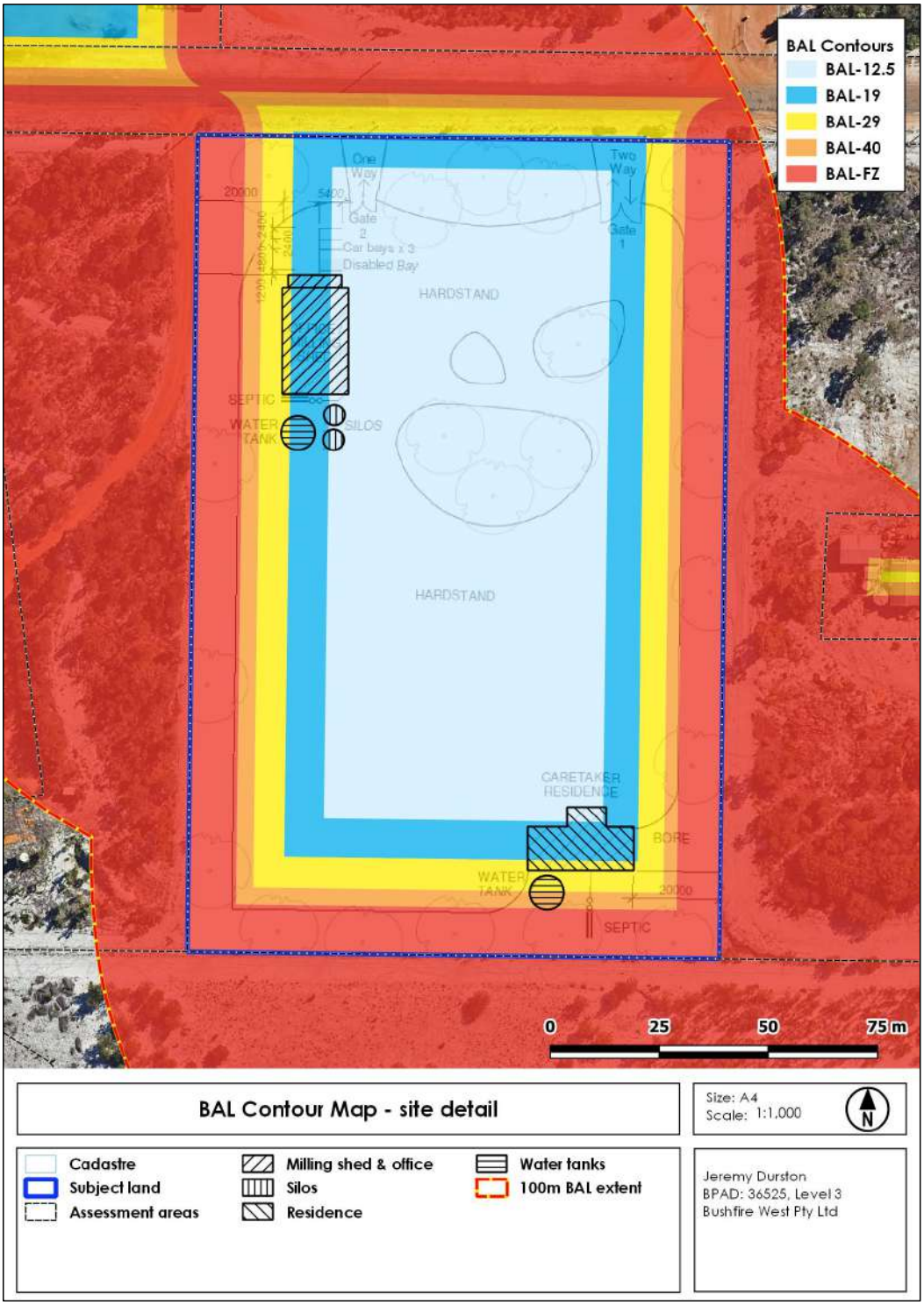


Figure 6: *BAL Contour Map – detailed site view*

6. Assessment against the Bushfire Protection Criteria

Following is an assessment against the bushfire protection criteria detailed in Appendix 4 of the *Guidelines for Planning in Bushfire Prone Areas Version A.4* (the Guidelines), including the applicable Acceptable Solutions for each element.

Table 4: *Assessment against the bushfire protection criteria of the Guidelines*

Element	Acceptable Solution (A)	Compliance	Notes/Requirements
1. Location	A1.1 Development location	**Yes**	Complies. The location is capable of achieving acceptable ratings of BAL-29 or lower for relevant development.
2. Siting of Development	A2.1 Asset Protection Zone	**Yes, to comply**	To comply. An Asset Protection Zone extending over the entire subject land is to be installed and maintained to the standards specified by the Guidelines.
3. Vehicular Access	A3.1 Public roads	**Yes**	Complies. Existing Roads comply with the technical requirements of the Guidelines Table 6 Column 1.
	A3.2a Multiple access routes	**Yes**	Complies. Existing Roads provide connections to multiple access routes.
	A3.2b Emergency access way	n/a	Not applicable. A3.2a is achieved instead.
	A3.3 Through-roads	n/a	Not applicable to a development application.
	A3.4a Perimeter roads	n/a	Not applicable to a development application.
	A3.4b Fire service access route	n/a	Not applicable to a development application.
	A3.5 Battle-axe	n/a	Not applicable to a development application.
	A3.6 Private driveways	**Yes, to comply**	To comply. The driveway is to be suitable for firefighting vehicles and appliances to access the milling site and caretaker residence, in accordance with the Guidelines.
4. Water	A4.1 Identification of future water supply	n/a	Not applicable to a development application.
	A4.2 Provision of water for firefighting purposes	**Yes, to comply**	To Comply. A dedicated 50,000L firefighting water tank is required incorporating the standards specified by the Guidelines.

7. Bushfire Risk Assessment

Potential Onsite Hazard

Flour dust can act as a potentially explosive combustion source when accumulated in a confined or poorly ventilated space. The flour milling process can create concentrated air-borne dust that, if ignited, may trigger an explosive chain reaction.

The flour milling process is therefore an activity that may potentially cause a bushfire, or otherwise intensify and prolong a bushfire impacting the site. For this reason, the proposal is determined to be a 'High Risk Land Use' that requires appropriate assessment and risk treatments.

Likelihood of Bushfire

The subject land is within a bushfire prone area designated by the *Western Australia State Map of Bush Fire Prone Areas* with respect to the areas of remnant vegetation and agricultural land throughout the locality. The site, therefore, may reasonably be expected to experience a bushfire event at some time in the future.

The DBCA Fire History dataset (DBCA-060) indicates a major bushfire incident impacted the site during the 2002/2003 bushfire season, and other bushfire incidents have been regularly recorded within the local area, most recently in 2021. Based on historical evidence, the likelihood of a bushfire impacting the site has accordingly been assessed using the following matrix:

***Table 5**: Likelihood Matrix*

Likelihood	Recurrence (Years)
Almost Certain	1
Likely	**20**
Possible	50
Unlikely	100
Very Unlikely	200

Due to the history of fire activity in the locality the chance of a bushfire impacting the site is assessed as ***Likely***; i.e. expected to occur over a twenty year time-frame.

Bushfire Management Objectives

The primary bushfire management objectives are to avoid unacceptable bushfire threats to people, property, infrastructure and the environment. Once overall risk levels have been identified, assessed and fully considered then risks may then be accepted if determined to be tolerable. The adoption of specific bushfire protection measures aims to manage risk to the extent possible by practical means.

Potential Consequences

The key consequences of a bushfire impacting the site are:

- Loss of life, or harm to people.
- Loss of property and/or infrastructure.
- Loss of environment.

The site is located within a Rural Industry zoned subdivision comprising lots generally 2ha or greater in size, surrounded by broader agricultural lands and landscape-scale native vegetation areas. The Gingin townsite and Gingin South Bush Fire Service are located to the east of the site approximately 6km by travel distance. It is expected that a bushfire will be promptly identified and attended by the fire brigade. Within this context:

- The site will require a small workforce and the surrounding population density is low.
- The property and infrastructure densities are also low, with no major infrastructure installations nearby.
- The local Coonambidgee Complex and Yanga Complex vegetation structures have regenerated after historically fire activity.

On balance, with respect to the above considerations, the potential vulnerability of the location is assessed as ***Low***.

As assessed elsewhere within this report, the bushfire hazard vegetation in the locality generally comprises Scrub interspersed with agricultural land, with landscape-scale areas of native vegetation at some distance removed. Development within the subdivision is expected to provide for a mosaic of native vegetation areas to be maintained. Significant expansion of native vegetation areas is not expected within the Rural Industry zoned land.

The overall threat represented by this combination of bushfire hazards is assessed as ***Medium***.

The consequences of Low vulnerability subject to potentially Medium bushfire threat is assessed according to the following matrix:

Table 6: Consequence Rating Matrix

Vulnerability	**Threat**			
	Low	**Medium**	**High**	**Extreme**
High	Moderate	Major	Catastrophic	Catastrophic
Moderate	Minor	Moderate	Major	Catastrophic
Low	Minor	**Minor**	Moderate	Major

The potential consequence rating is thus assessed to be ***Minor***.

Risk Assessment

The risk rating of the site based on the likelihood of bushfire and the potential consequences is determined as follows:

Table 7: Risk Rating Matrix

Likelihood	Consequence			
	Minor	Moderate	Major	Catastrophic
Almost certain	High	Very High	Extreme	Extreme
Likely	Medium	High	Very High	Extreme
Possible	Low	Medium	High	Very High
Unlikely	Low	Low	Medium	High

The risk rating is assessed to be ***Medium***.

The bushfire risk of the site, assessed at an overall Medium rating, is considered to be characteristic of Rural Industry zoned land located within a Bushfire Prone Area. The proposal is not, therefore, assessed as exposing people, property, infrastructure or the environment to unacceptable risk.

The risk is thus determined to be **Tolerable** provided appropriate risk treatment strategies are adopted for the site.

8. Risk Treatment Strategies

The 'Schedule of Bushfire Mitigation Measures' is attached to this document as Appendix 1.

The Schedule of Bushfire Mitigation Measures may be updated or amended over time, subject to periodic review of the potential hazards and the available mitigation alternatives. Following is the initial combination of recommended strategies to address the assessed bushfire risk:

Design & Construction

a) Milling shed, silos and water tanks to be constructed of non-combustible materials.
b) Milling shed and silos to be ventilated as regulated.
c) Milling shed to be fitted with dust extractor(s).

Fire Protection / Suppression

d) Dry chemical fire extinguishers located within buildings.
e) External firefighting water tank supply of 50,000L.
f) External, shielded, nonelectric firefighting pump with sufficient hose to service the external areas of the milling shed, silos, office and vehicle hard stand areas.
g) The onsite firefighting water supply is to be fitted with approved couplings for ready access by firefighting appliances.

Firefighting Access

h) Vehicle access for trucks including clear turnaround capability for fire appliances to access all onsite buildings and structures.
i) Install firebreaks with 3m width and 4.5m vertical clearance immediately inside all external boundaries of the property.
j) Accessible vehicle hard stand within 4m of the firefighting water tank outlet valve.

Vegetation Management & Landscaping

k) Any onsite landscaping and/or retained vegetation to be maintained for low bushfire threat to the standards of an Asset Protection Zone.

Site Management

l) Implement milling practices to minimise flour dust.
m) Regular removal and offsite disposal of accumulated milling dust.
n) Manage and minimise the risk from potential ignition sources, such as electrical equipment, milling machinery, internal combustion engines, or any required hot works or maintenance.
o) Manage incoming and outgoing delivery vehicle movements.
p) Install clearly visible signage advising the onsite hazards.
q) Prohibit the smoking of cigarettes, e-cigarettes, or other smoking implements in the vicinity of the milling shed and grain storage.

Bushfire Awareness & Response

r) Monitor DFES & Emergency channels for potential bushfire conditions.
s) Cease milling operations on days when a Fire Danger Index of 'Extreme' or 'Catastrophic' is forecast.
t) Remain alert and ready to cease milling operations if a Bushfire 'Advice' is issued for the locality.
u) Cease milling operations if a Bushfire 'Watch & Act' or 'Emergency Warning' is issued for the locality.

Emergency & Evacuation Planning

v) Develop and adopt appropriate emergency management and evacuation procedures for the site.
w) Account for all onsite staff and any contractors or visitors.

Staff Training

x) Staff induction and ongoing training including for onsite hazards, site management, bushfire awareness & responses, firefighting pump/hose & extinguishers, emergency plans & evacuation procedures.

9. Implementation and Management

The responsibilities for implementing and maintaining the required bushfire protection measures are summarised in Table 8.

Table 8: *Implementation & Management Schedule*

Developer & Landowner – ongoing responsibilities	
Implement the Schedule of Bushfire Mitigation Measures included in Appendix 1, incorporating the following standards from the Guidelines for Planning in Bushfire Prone Areas:	
A	Install and maintain an Asset Protection Zone over the entire subject land in accordance with '*Schedule1: Standards for Asset Protection Zones*' from the Guidelines for Planning in Bushfire Prone Areas, as detailed in Appendix 2.
B	Install and maintain the driveway, including turnaround areas near the milling shed and caretaker residence, in accordance with the Guidelines for Planning in Bushfire Prone Areas, as detailed in Appendix 3.
C	Install and maintain the 50,000L firefighting water tank with approved fittings accessible by firefighting appliances, in accordance with '*Schedule 2: Water Supply Dedicated for Bushfire Firefighting Purposes*' from the Guidelines for Planning in Bushfire Prone Areas, as detailed in Appendix 4.

10. Conclusion

The objective of this report is to avoid unacceptable bushfire threats, either impacting upon the site or from the inherent hazards from the proposed development itself.

The development site is assessed as capable of achieving the required bushfire protection measures from the *Guidelines for Planning in Bushfire Prone Areas v1.4*. Furthermore, the assessment of the onsite hazards associated with the proposal determines the bushfire risk to be Tolerable, subject to the adoption of a range of risk treatment measures.

In the author's professional opinion, the proposed development demonstrates compliance with the *Guidelines for Planning in bushfire Prone Areas* subject to the measures detailed within this report. The proposal is thus acceptable under State Planning Policy 3.7.

Appendix 1

Schedule of Bushfire Risk Treatment Measures

Item	Schedule of Bushfire Risk Treatment Measures -- Lot 42 Hoy Road Coonabidgee	Category	Timing
A	Milling shed, silos and water tanks to be constructed of non-combustible materials.	Design & Construction	Prior to commencement.
B	Milling shed and silos to be ventilated as regulated.	Design & Construction	Prior to commencement.
C	Milling shed to be fitted with dust extractor(s).	Design & Construction	Prior to commencement.
D	Dry chemical fire extinguishers located within buildings.	Fire Protection / Suppression	Prior to commencement and ongoing.
E	External firefighting water tank supply of 50,000L.	Fire Protection / Suppression	Prior to commencement and ongoing.
F	External, shielded, nonelectric firefighting pump with sufficient hose to service the external areas of the milling shed, silos, office and vehicle hard stand areas.	Fire Protection / Suppression	Prior to commencement and ongoing.
G	The onsite firefighting water supply is to be fitted with approved couplings for ready access by firefighting appliances.	Fire Protection / Suppression	Prior to commencement and ongoing.
H	Vehicle access for trucks including clear turnaround capability for fire appliances to access all onsite buildings and structures.	Firefighting Access	Prior to commencement and ongoing.
I	Install firebreaks with 3m width and 4.5m vertical clearance immediately inside all external boundaries of the property.	Firefighting Access	Prior to commencement and ongoing.
J	Accessible vehicle hard stand within 4m of the firefighting water tank outlet valve.	Firefighting Access	Prior to commencement and ongoing.
K	Any onsite landscaping and/or retained vegetation to be maintained for low bushfire threat to the standards of an Asset Protection Zone.	Vegetation Management & Landscaping	Prior to commencement and ongoing.
L	Implement milling practices to minimise flour dust.	Site Management	Prior to commencement and ongoing.
M	Regular removal and offsite disposal of accumulated milling dust.	Site Management	Ongoing.
N	Manage and minimise the risk from potential ignition sources, such as electrical equipment, milling machinery, internal combustion engines, or any required hot works or maintenance.	Site Management	Prior to commencement and ongoing.
O	Manage incoming and outgoing delivery vehicle movements.	Site Management	Ongoing.

P	Install clearly visible signage advising the onsite hazards.	Site Management	Prior to commencement.
Q	Prohibit the smoking of cigarettes, e-cigarettes, or other smoking implements in the vicinity of the milling shed and grain storage.	Site Management	Ongoing.
R	Monitor DFES & Emergency channels for potential bushfire conditions.	Bushfire Awareness & Response	Ongoing.
S	Cease milling operations on days when a Fire Danger Index of 'Extreme' or 'Catastrophic' is forecast.	Bushfire Awareness & Response	Ongoing
T	Remain alert and ready to cease milling operations if a Bushfire 'Advice' is issued for the locality.	Bushfire Awareness & Response	Ongoing
U	Cease milling operations if a Bushfire 'Watch & Act' or 'Emergency Warning' is issued for the locality.	Bushfire Awareness & Response	Ongoing
V	Develop and adopt appropriate emergency management and evacuation procedures for the site.	Emergency & Evacuation Planning	Prior to commencement and ongoing.
W	Account for all onsite staff and any contractors or visitors.	Emergency & Evacuation Planning	Ongoing
X	Staff induction and ongoing training including for onsite hazards, site management, bushfire awareness & responses, firefighting pump/hose & extinguishers, emergency plans & evacuation procedures.	Staff Training	Prior to commencement and ongoing.

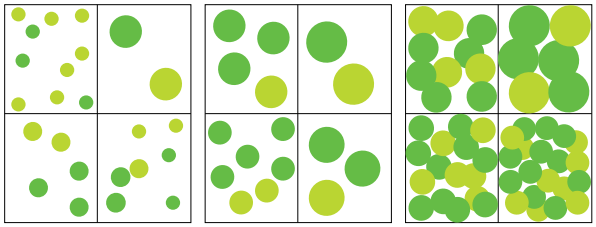
Appendix 2

Asset Protection Zone Standards

source: Department of Planning, Lands & Heritage,
Guidelines for Planning in Bushfire Prone Areas version 1.4

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Fences within the APZ	• Should be constructed from non-combustible materials (for example, iron, brick, limestone, metal post and wire, or bushfire-resisting timber referenced in Appendix F of AS 3959).
Fine fuel load (Combustible, dead vegetation matter <6 millimetres in thickness)	• Should be managed and removed on a regular basis to maintain a low threat state. • Should be maintained at <2 tonnes per hectare (on average). • Mulches should be non-combustible such as stone, gravel or crushed mineral earth or wood mulch >6 millimetres in thickness.
Trees* (>6 metres in height)	• Trunks at maturity should be a minimum distance of six metres from all elevations of the building. • Branches at maturity should not touch or overhang a building or powerline. • Lower branches and loose bark should be removed to a height of two metres above the ground and/or surface vegetation. • Canopy cover within the APZ should be <15 per cent of the total APZ area. • Tree canopies at maturity should be at least five metres apart to avoid forming a continuous canopy. Stands of existing mature trees with interlocking canopies may be treated as an individual canopy provided that the total canopy cover within the APZ will not exceed 15 per cent and are not connected to the tree canopy outside the APZ. Figure 19: Tree canopy cover – ranging from 15 to 70 per cent at maturity  15% 30% 70%
Shrub* and scrub* (0.5 metres to six metres in height). Shrub and scrub >6 metres in height are to be treated as trees.	• Should not be located under trees or within three metres of buildings. • Should not be planted in clumps >5 square metres in area. • Clumps should be separated from each other and any exposed window or door by at least 10 metres.
Ground covers* (<0.5 metres in height. Ground covers >0.5 metres in height are to be treated as shrubs)	• Can be planted under trees but must be maintained to remove dead plant material, as prescribed in 'Fine fuel load' above. • Can be located within two metres of a structure, but three metres from windows or doors if >100 millimetres in height.

ELEMENT 2: SITING AND DESIGN OF DEVELOPMENT

SCHEDULE 1: STANDARDS FOR ASSET PROTECTION ZONES

OBJECT	REQUIREMENT
Grass	• Grass should be maintained at a height of 100 millimetres or less, at all times. • Wherever possible, perennial grasses should be used and well-hydrated with regular application of wetting agents and efficient irrigation.
Defendable space	• Within three metres of each wall or supporting post of a habitable building, the area is kept free from vegetation, but can include ground covers, grass and non-combustible mulches as prescribed above.
LP Gas Cylinders	• Should be located on the side of a building furthest from the likely direction of a bushfire or on the side of a building where surrounding classified vegetation is upslope, at least one metre from vulnerable parts of a building. • The pressure relief valve should point away from the house. • No flammable material within six metres from the front of the valve. • Must sit on a firm, level and non-combustible base and be secured to a solid structure.

** Plant flammability, landscaping design and maintenance should be considered – refer to explanatory notes*

Appendix 3

Driveway Standards

source: Department of Planning, Lands & Heritage,
Guidelines for Planning in Bushfire Prone Areas version 1.4

ELEMENT 3: VEHICULAR ACCESS

PERFORMANCE PRINCIPLE	ACCEPTABLE SOLUTIONS
P3iv Vehicular access is provided which allows emergency service vehicles to directly access all habitable buildings and water supplies and exit the lot without entrapment.	**A3.6 Private driveways** There are no private driveway technical requirements where the private driveway is: • within a lot serviced by reticulated water; • no greater than 70 metres in length between the most distant external part of the development site and the public road measured as a hose lay; and • accessed by a public road where the road speed limit is not greater than 70 km/h. In circumstances where all of the above conditions are not met, or the private driveway is in a non-reticulated water area, the private driveway is to meet all the following require: • requirements in Table 6, Column 4; • passing bays every 200 metres with a minimum length of 20 metres and a minimum additional trafficable width of two metres (i.e. the combined trafficable width of the passing bay and constructed private driveway to be a minimum six metres); and • turn-around area as shown in Figure 28 and within 30 metres of the habitable building.

Table 6: Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public roads	2 Emergency access way[1]	3 Fire service access route[1]	4 Battle-axe and private driveways[2]
Minimum trafficable surface (metres)	In accordance with A3.1	6	6	4
Minimum horizontal clearance (metres)	N/A	6	6	6
Minimum vertical clearance (metres)	4.5			
Minimum weight capacity (tonnes)	15			
Maximum grade unsealed road[3]	As outlined in the IPWEA Subdivision Guidelines	1:10 (10%)		
Maximum grade sealed road[3]		1:7 (14.3%)		
Maximum average grade sealed road		1:10 (10%)		
Minimum inner radius of road curves (metres)		8.5		

Notes:

[1] To have crossfalls between 3 and 6%.

[2] Where driveways and battle-axe legs are not required to comply with the widths in A3.5 or A3.6, they are to comply with the Residential Design Codes and Development Control Policy 2.2 Residential Subdivision.

[3] Dips must have no more than a 1 in 8 (12.5% -7.1 degree) entry and exit angle.

EXPLANATORY NOTES

E3.6 Private driveways

In areas serviced by reticulated water, where the road speed limit is not greater than 70 km/h, and where the distance from the public road to the further part of the habitable building is no greater than 70 metres, emergency service vehicles typically operate from the street frontage.

In the event the habitable building cannot be reached by hose reel from the public road, then emergency service vehicles will need to gain access within the property. Emergency service vehicles will also need to gain access within the property, where access to reticulated water (fire hydrants) is not possible. In these situations, the driveway and battle-axe (if applicable) will need to be wide enough for access for an emergency service vehicle and a vehicle to evacuate.

Turnaround areas should be available for both conventional two-wheel drive vehicles of residents and Type 3.4 fire appliances. Turn-around areas should be located within 30 metres of habitable buildings. Circular and loop driveway design may also be considered.

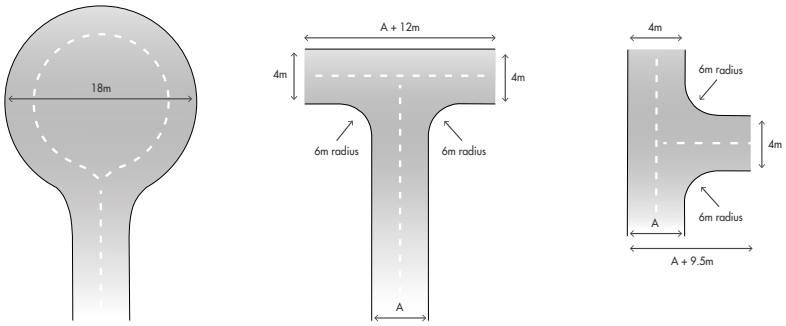


Figure 28: Design requirements for a turn-around area for a private driveway or battle-axe

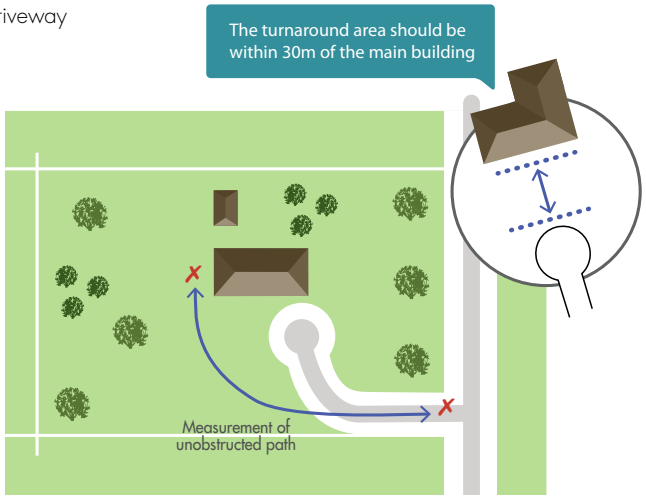


Figure 29: Design requirements for a private driveway where required under A3.6

Appendix 4

Firefighting Water Standards

source: Department of Planning, Lands & Heritage,
Guidelines for Planning in Bushfire Prone Areas version 1.4

SCHEDULE 2: WATER SUPPLY DEDICATED FOR BUSHFIRE FIREFIGHTING PURPOSES

2.1 Water supply requirements

Water dedicated for firefighting should be provided in accordance with Table 7 below, and be in addition to water required for drinking purposes.

Table 7: Water supply dedicated for bushfire firefighting purposes

PLANNING APPLICATION	NON-RETICULATED AREAS
Development application	10,000L per habitable building
Structure Plan / Subdivision: Creation of 1 additional lot	10,000L per lot
Structure Plan / Subdivision: Creation of 3 to 24 lots	10,000L tank per lot **or** 50,000L strategic water tank
Structure Plan / Subdivision: Creation of 25 lots or more	50,000L per 25 lots or part thereof Provided as a strategic water tank(s) or 10,000L tank per lot

2.2 Technical requirements

2.2.1 Construction and design

An above-ground tank and associated stand should be constructed of non-combustible material. The tank may need to comply with AS/NZS 3500.1:2018.

Below ground tanks should have a 200mm diameter access hole to allow tankers or emergency service vehicles to refill direct from the tank, with the outlet location clearly marked at the surface. The tank may need to comply with AS/NZS 3500.1:2018. An inspection opening may double as the access hole provided that the inspection opening meets the requirements of AS/NZS 3500.1:2018. If the tank is required under the BCA as part of fire hydrant installation, then the tank will also need to comply with AS 2419.

Where an outlet for an emergency service vehicle is provided, then an unobstructed, hardened ground surface is to be supplied within four metres of any water supply.

2.2.2 Pipes and fittings

All above-ground, exposed water supply pipes and fittings should be metal. Fittings should be located away from the source of bushfire attack and be in accordance with the applicable section below, unless otherwise specified by the local government.

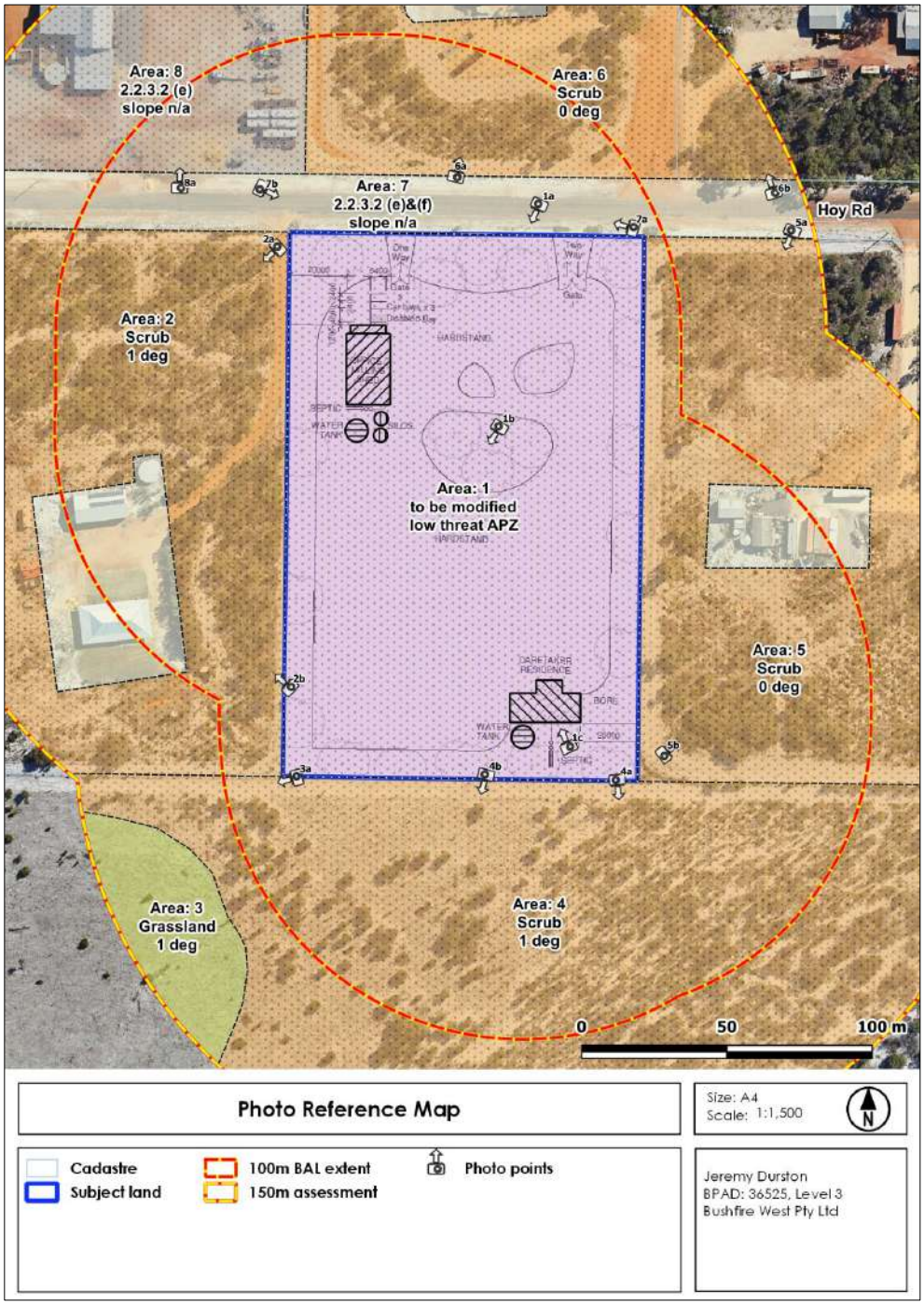
2.2.2.1 Fittings for above-ground water tanks:

- Commercial land uses: 125mm Storz fitting; or
- Strategic water tanks: 50mm or 100mm (where applicable and adapters are available) male camlock coupling with full flow valve; or
- Standalone water tanks: 50mm male camlock coupling with full flow valve; or
- Combined water tanks: 50mm male camlock coupling with full flow valve or a domestic fitting, being a standard household tap that enables an occupant to access the water supply with domestic hoses or buckets for extinguishing minor fires.

2.2.2.2 Remote outlets

In certain circumstances, it may be beneficial to have the outlet located away from the water supply. In such instances in which a remote outlet is to be used, the applicant should consult the local government and DFES on their proposal.

Appendix 5 – Vegetation Assessment



Area 1	
Classification	Pre-development: Class D Scrub Post-development: Exclusions 2.2.3.2 (e)&(f)
Effective Slope	n/a
Notes	Subject land currently predominately Banksia and Grasstrees, required to be fully modified to an Asset Protection Zone.

Photo ID: 1a

Photo ID: 1b

Photo ID: 1c

Area 2	
Classification	Class D Scrub
Effective Slope	Downslope 1 deg.
Notes	Predominately Banksia below 4m in height with Grasstrees.

Photo ID: 2a

Photo ID: 2b

Area 3	
Classification	Class G Grassland
Effective Slope	Downslope 1 deg
Notes	Agricultural land comprising pasture with isolated shade trees.

Photo ID: 3a

Area 4	
Classification	Class D Scrub
Effective Slope	Downslope 1 deg.
Notes	Predominately low Melaleuca and Banksia below 3m in height with grass.

Photo ID: 4a

Photo ID: 4b

Area 5	
Classification	Class D Scrub
Effective Slope	Flat/upslope
Notes	Predominately Banksia to 4m in height with low Melaleuca and Grasstrees.

Photo ID: 5a

Photo ID: 5b

Area 6	
Classification	Class D Scrub
Effective Slope	Flat/upslope
Notes	Predominately Banksia below 4m in height with Grasstrees and isolated, introduced Eucalypts.

Photo ID: 6a

Photo ID: 6b

Area 7	
Classification	Exclusions 2.2.3.2 (e)&(f)
Effective Slope	n/a
Notes	Hoy Road and verges, predominately non-vegetated with grass patches maintained below 100mm.

Photo ID: 7a

Photo ID: 7b

Area 8	
Classification	Exclusions 2.2.3.2 (e)
Effective Slope	n/a
Notes	Section of fully developed Rural Industry land cleared of all vegetation.

Photo ID: 8a

SCHEDULE OF SUBMISSIONS RECEIVED BEFORE PUBLIC NOTICE PERIOD

PROPOSED WHEAT MILLING PLANT ON LOT 42 HOY ROAD, COONABIDGEE

<table>
<tr><th>No.</th><th>Submission Detail</th><th>Recommended Response</th></tr>
<tr><td>Ratepayer</td><td>Submitter has the following concerns:

- Rodent Control
- All transfer of products be carried out in an enclosed environment to prevent any dust or spillage creating an undesirable impact on other property owners/tenants in the area.
- Truncated entry and exit points to the property to prevent damage to roads</td><td>A condition has been recommended to manage potential rodents as a result of the application.

A condition has been applied for a crossover specification upgrade to prevent damage to the roads in the area</td></tr>
<tr><td>DFES</td><td>- Comments in the DA report relating to landscaping indicate that 35.6% of the vegetation on the site is being retained. The BMP states that the entire site will be managed to APZ standard. While these comments are not necessarily contradictory, the decision maker should be confident that there is an appropriate mechanism applied to manage vegetation on site to an appropriate standard to ensure accuracy of the BMP outputs.

1. Policy Measure 6.5 c) Compliance with the Bushfire Protection Criteria
Element | Assessment | Action
Vehicular Access | A3.6 – insufficient information
The proposal details a majority of the site being constructed as hardstand, and a driveway providing access to the buildings at the northern end of the site, however no clear access is detailed to the building at the southern end of the site. While the hardstand is noted, a clear access path (including turning area) should be provided to clearly

demonstrate compliance with | Modification to the BMP is required. Please demonstrate compliance or provide substantiated evidence of a performance principle-based solution</td><td>Noted.</td></tr>
</table>

No.	Submission Detail		Recommended Response
		A3.6 to ensure compliance with the Guidelines. Updated plans should be provided.	
	Water	**A4.2 – comment only** The BMP notes the provision of a 50,000L dedicated fire water tank. It is understood that this relates to fire fighting requirements for the proposed Milling Plant. Given that the proposal includes a residential element, a 10,000 litre water tank dedicated for fire-fighting purposes should be provided for this property. The tank must be constructed from non - combustible materials and the adjacent hard-standing should achieve BAL-29 or below and be accessible to a type 3.4 appliance. In reference to the above, it is noted that the water provisions detailed will be able to meet requirements for planning assessment against SPP 3.7. DFES' Built Environment Branch or Hazardous Materials teams may provide further comments at building stage when additional details are	Comment only

No.	Submission Detail	Recommended Response
	available. **2. AS3959 Construction Standards** **Issue** / **Assessment** / **Action** **Building Construction Standards** — As the proposal includes a class of building not covered by AS3959:2018, it is suggested that all buildings be constructed to utilise all of the aspects of AS3959 that apply to the appropriate Bushfire Attack Level (BAL). This is consistent with Clause 78E(1) of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* which requires the local government to have regard to the bushfire construction requirements of the Building Code of Australia. In addition, Clause 5.8.3 of *Applying SPP 3.7* in the Guidelines reads as follows: *The bushfire construction provisions of the Building Code of Australia do not apply to Class 4 to Class 9 buildings. In these instances* *the applicant has the discretion to utilise any or all* — Comment only	

No.	Submission Detail	Recommended Response
	of the elements of AS3959 in the construction of the building that they deem appropriate. Although BAL construction standards do not guarantee the survival of the occupants or building, DFES does support the improved bushfire resilience provided by AS3959 construction. **Recommendation – Compliance with Acceptable Solutions not fully demonstrated – modifications required** The development application and the BMP have largely identified issues arising from the bushfire risk assessment and considered how compliance with the bushfire protection criteria can be achieved. However, modifications to the BMP are necessary to ensure it accurately identifies the bushfire risk and necessary mitigation measures. As these modifications will not affect the development design, these modifications can be undertaken without further referral to DFES.	
DPIRD	Whilst DPIRD does not object to the concept itself of a wheat milling plant, DPIRD offers the following comments. The property contains native vegetation, which based on several of the photos in the BAL Assessment Report, appears to be good quality *Banksia* and *Xanthorrhoea* scrub land on white sandy soils. Any clearing requires a permit from the Department of Water and Environmental Regulation (DWER). Based on the Google Earth imagery (dated 8/2/2023), it appears that clearing is already underway, and this is also indicated in some of the photos in the BAL Assessment Report. The mapped soil-landscape unit is the Bassendean Sand Gavin Phase (212Bs_G). This deep white unstructured sand is at significant risk of wind and water erosion. The acoustic assessment focusses on the truck movements associated with the facility. Whilst the truck noise is relevant, the assessment should also provide more detail on the noise generated from the milling process itself, as this is a potentially noisy activity.	An advice note has been applied for the clearing of native vegetation. A condition requiring noise engineering to be submitted for the milling plant.

No.	Submission Detail	Recommended Response
	The acoustic assessment assumes that the ground is absorptive, which is reasonable based on the soil being a deep white unstructured sand. This may of course change if external materials are introduced during construction. As noted in the application, flour dust is a potentially explosive combustion source. This risk is best addressed through engineering solutions aimed at eliminating the risk, especially of airborne flour particles.	

14 REPORTS - OPERATIONS AND ASSETS

Nil

15 MOTIONS OF WHICH PREVIOUS NOTICE HAS BEEN GIVEN

Nil

16 COUNCILLORS' OFFICIAL REPORTS

16.1 LANCELIN PRIMARY SCHOOL ANZAC DAY SERVICE, LANCELIN ANZAC DAY DAWN SERVICE AND LOWER COASTAL NEIGHBOURHOOD WATCH

File:	GOV/20-1
Councillor:	F J Peczka
Report Date:	16 May 2023

1. 6 April 2023 – attended ANZAC Day service at Lancelin Primary School. Excellent presentation by the students.

2. 25 April 2023 – attended and presented ANZAC wreaths on behalf of the Shire of Gingin and the Ledge Point Bush Fire Brigade at the ANZAC Day Dawn Service at Lancelin hosted by the Lancelin and Coastal Districts RSL. Fantastic presentation and although numbers were slightly down due to it being mid-week it is estimated there were around 350 attendees.

3. 3 May 2023 – attended the Lower Coastal Neighbourhood Watch meeting held at the Seaview Park Community Hall.

16.2 WALGA AVON MIDLAND ZONE MEETING

File:	GOV/20-1
Councillor:	L Balcombe
Report Date:	16 May 2023

I attended a meeting of the WALGA Avon Midland Zone on 14 April 2023 with the CEO. This is the first Zone meeting I have attended in person and I found it very interesting. It was interesting to hear what other Councils are going through and some of the issues that they are facing.

16.3 MINDAROO FOUNDATION COMMUNITY WORKSHOP

File:	GOV/20-1
Councillor:	A Vis (Deputy Shire President)
Report Date:	16 May 2023

The Mindaroo Foundation held its first community workshop in relation to a community resilience plan for the Shire on 7 May 2023. Councillors Fewster and Balcombe also attended. There was limited community attendance but we expected that. The good news is that they are progressing and want to set up a working group to get some projects happening.

This is a very good initiative for the Shire and it's good that it can complement some of the mitigation work. I personally think there is room to also talk about some of the coastal hazard matters when they start to talk about corporate investment as well.

16.4 SEABIRD ANZAC DAY CEREMONY

File:	GOV/20-1
Councillor:	F Johnson
Report Date:	16 May 2023

I attended the ANZAC Dawn Service at Seabird and did a presentation. Numbers were down a little with approximately 85 in attendance.

16.5 GUILDERTON ANZAC DAY CEREMONY

File:	GOV/20-1
Councillor:	E Sorensen
Report Date:	16 May 2023

I attended and presented a wreath at the Guilderton ANZAC Day service. We had a very good attendance.

16.6 GINGIN ANZAC DAY CEREMONIES AND MINDAROO FOUNDATION COMMUNITY WORKSHOP

File:	GOV/20-1
Councillor:	C W Fewster (Shire President)
Report Date:	16 May 2023

I attended both the Gingin community and Gingin District High School (GGDHS) ANZAC services, which were both very well attended. The community service was fantastic, but I think that the GGDHS service in particular is getting better and better every year and I was very impressed with the attitude of the students attending.

I also attended the Mindaroo Foundation community resilience workshop on 7 May 2023. Unfortunately there were limited numbers in terms of community attendance, but once people start attending a few of these workshops they will understand the benefits that might arise. I strongly encourage members to promote the project and to attend. The second workshop will be held in September and they really want community input.

17 NEW BUSINESS OF AN URGENT NATURE

Nil

18 MATTERS FOR WHICH MEETING IS TO BE CLOSED TO THE PUBLIC

Nil

19 CLOSURE

There being no further business, the Shire President declared the meeting closed at 4:21 pm.

The next Ordinary Council Meeting will be held in Council Chambers at the Shire of Gingin Administration Centre, 7 Brockman Street, Gingin on 20 June 2023, commencing at 3:00pm.