LITCHFIELD COUNCIL

Community effort is essential

Council Meeting

BUSINESS PAPER

WEDNESDAY 13/12/2017

Meeting to be held commencing 6:30pm
In Council Chambers at 7 Bees Creek Road, Freds Pass

Kaylene Conrick, Chief Executive Officer

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting or a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

COUNCIL AGENDA

LITCHFIELD COUNCIL MEETING

Notice of Meeting
to be held in the Council Chambers, Litchfield
on Wednesday, 13 December 2017 at 6:30pm

Kaylene Conrick
Chief Executive Officer

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COUNCIL AGENDA

LITCHFIELD COUNCIL MEETING

Wednesday 13 December 2017

1. Open of Meeting

Audio Disclaimer
An Audio recording of this meeting is being made for minute taking purposes as authorised by the Chief Executive Officer.

2. Acknowledgement of Traditional Ownership

Council would like to acknowledge the traditional custodians of this land on which we meet on tonight. We pay our respects to the Elders past, present and future for their continuing custodianship of the land and the children of this land across generations.

3. Apologise and Leave of Absence

4. Disclosures of Interest

Any member of Council who may have a conflict of interest, or a possible conflict of interest regarding any item of business to be discussed at a Council meeting or a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

5. Confirmation of Minutes

1. THAT the minutes of the Special Council Meeting held 8 November 2017, 3 pages, be confirmed.

2. THAT the full minutes of the Council Meetings held 15 November 2017, 15 pages, be confirmed.

Minutes have been distributed under separate cover and are publicly available on Council's website http://www.litchfield.nt.gov.au/council/council-meetings/council-minutes or in hard copy by request.

6. Business Arising from the Minutes

THAT Council receives and notes the Action Sheet

Resolution Number	Resolution	Action Officer	Meeting Date	Status
15/0175/02	**Meeting Procedures By-Laws** THAT Council instruct the Acting Chief Executive Officer to begin negotiating with Parliamentary Counsel on the drafting of Meeting Procedures By-Laws for Litchfield Council.	CEO	19-11-15	Council has received draft *Drafting Instructions* from the LG Department, currently under review with officers.
16/0203	**Signage, Roadside Vans and Events on Council Land** 1. Endorse a position that no approvals will be given for signage, roadside vans or events on council owned land until such time as appropriate policy, procedures and by-laws are developed. This excludes Council Reserves which are run under management by committee or under lease to an incorporated body; 2. Develop Council by-laws to cater for the regulation of a permit system for signage within the municipality and roadside vans and events on council owned land; 3. Develop policy and procedures to support any Council by-laws which are enacted; and 4. To commence work on these by-laws, policy and procedures in 2017/18 financial year.	DCCS	21-09-16	Works will commence once the Meeting Procedure By-laws have been finalised.

16/0208	**Reconstruction of Finn Road** 1. endorse the funding applications for $4,500,000 to the NT Government Regional Economic Infrastructure Fund for the reconstruction of Finn Road at an estimated total cost of $4,650,000; and 2. allocate $250,000 (cash in kind) from its 2016/17 approved budget towards the project should its application be successful comprising: General Consultancy $80,000 Project Management (in kind) $150,000 Infrastructure Reserve $20,000 TOTAL $250,000	DIO	21-09-16	Design work near completed. Proposed works likely to start April 2018, weather permitting.

16/0234	**Improvements Berry Springs Waste Transfer Site** THAT Council undertakes the following safety works at the Berry Springs waste transfer site to improve public and staff safety at the estimated costs outlined below: Video surveillance $9,882.40 1km of new fence & gates $44,297.00 Improved facilities for staff $10,000.00 Installation of waste performance boards $6,000.00 **TOTAL $70,179.40**	DIO	19-10-16	Initial works completed. Further facility improvements at Berry Springs and Howard Springs to be decided at conclusion of Waste Strategy. All three WTS will undergo WHS audits in coming months.

16/0252/01	**Rating Strategy** THAT Council undertakes a review of Council's rating system.	DCCS	16-11-16	A report regarding review of Council's rating system will be provided at Council's February 2018 meeting.

	Litchfield Aquatic Facility Needs Analysis Report			
17/0036/4	THAT Council engages the Northern Territory Government to work together to address the gap in aquatic services in the southern part of the Litchfield municipality, in particular the provision of Learn to Swim facilities.	CEO	15-02-17	

	Queens Baton Relay			
17/0051/05	THAT Council contact NT Tourism and Culture Minister for special grant funding to cover all costs of the Queens Baton Relay and explore opportunities for lasting community benefit.	DCCS	15-03-17	Search for suitable grant funding opportunities continuing.

1718/019	**Construction of Mobile Workforce Shed, Humpty Doo WTS** THAT Council receive and note the report on the status of the $225,000 grant from Department of Housing and Community Development to construct a Mobile Work Force Shed at the Humpty Doo Waste Transfer Station; and acknowledges the grant extension received from Department of Housing and Community Development and the revised project timelines.	DIO	19-07-17	Final engineering advice being obtained ahead of tender. EOI/Tender to be prepared and advertised in November 2017, with a decision to be made in December 2017. An update report on progress will be provided at January 2018 meeting given the earlier scheduled December meeting. The Development Application is expected to be heard at the 16 March 2018 DCA Meeting with construction is planned to be finished by 30 June 2016.

1718/099	**Elected Member and Meeting Procedures Policies** THAT Council: 1. Adopt the reviewed EM05 Elected Member Benefits and Support policy as attached to report 17/0045, with the addition of an option to request a reimbursement of up to $50.00 monthly for internet access as an alternative to the device provided by Council; 2. Adopt the renamed EM06 Conflict of Interest policy as attached to report 17/0045; and 3. Adopt the reviewed EM07 Elected Member Gifts and Benefits policy as attached to report 17/0045	DCCS	15-11-17	Completed – policy updated on Council's Website and in Policy Register.

1718/100	**Draft Community Engagement Policy, Draft Strategy and Action Plan 2018-2021** THAT Council: 1. Adopts COR02 Community Engagement Policy; 2. Endorses the draft Community Engagement Strategy and Action Plan 2018 – 2021 to be released for public consultation for 21 days; and 3. Supports the CEO to trial the HQ Engagement software over the next six months, with a further report to Council at the six-month conclusion, reporting on the trial.	CEO	15-11-17	Community Engagement Strategy currently out on public exhibition.

1718/101	**Restructuring of Council Committees** THAT Council: 1. Abolish Howard Park Reserve Committee under Section 54 (5) Local Government Act.; 2. Establishes the Howard Park Reserve Committee with the Terms of Reference, as attached to Report Number 17/0060 (Attachment A); 3. Appoints Gerard Maley, Gerry Wood, Mary DePalma, Stephen McWilliams and Bronte Way for a term of three years to the Howard Park Reserve Committee; 4. Abolish Knuckey Lagoon Reserve Committee under Section 54 (5) Local Government Act.; 5. Establishes the Knuckey Lagoon Reserve Committee with the Terms of Reference, as attached to Report Number 17/0060 (Attachment B); and 6. Appoints Gary Gibson, Shane Walker, Hardy Schimmel, Frances Ricketts, Natalie Bell and Tove Tagell for a term of three years to the Knuckey Lagoon Reserve Committee; 7. Rescind the policy GOV10 Recreational Reserves Committees (Attachment C); and Council authorises the CEO to make editorial changes to the Terms of Reference, as required.	DCCS	15-11-17	Completed. Committee members informed of appointment and invite extended to future meetings. Terms of Reference loaded on Council's website. Policy GOV10 removed from Council's Website.

1718/102	**Tree Inspection on Council's Recreational Reserves and Thorak** THAT Council: 1. receives and notes the report on Tree Inspections on Council's Recreation Reserves and Thorak Regional Cemetery; 2. endorses the proposed Tree Management Program comprising qualified tree risk assessments and works and the development of a Tree Risk Management Plan; 3. approves the allocation of up to $70,000 from Council's Financial Infrastructure Reserve in the 2017/18 financial year to undertake immediate tree risk assessments on all recreational reserves and Thorak Regional Cemetery; 4. allocates the costs of undertaking a tree risk assessment for Thorak Regional Cemetery to Thorak Regional Cemetery; 5. refers to future budget development processes, the allocation of appropriate funds for tree risk assessments and works on all recreational reserves and Thorak Regional Cemetery; 6. refers the development of a Tree Risk Management Plan to the 2018/19 Budget development process as a new initiative; and 7. endorses the inclusion in recreation reserve agreements of clear roles and responsibilities regarding tree management and tree risk assessments.	DCCS	15-11-17	Ongoing – assessment at Freds Pass assessment booked for December. Quotations have been sought for all other Recreation Reserves and Thorak Regional Cemetery. Tree Risk Management Plan to be considered for 2018/2019 Budget.

1718/103	**GOV01 Policy Framework** THAT Council adopts the updated GOV01 Policy Framework.	DCCS	15-11-17	Completed – policy updated on Council's Website and in Policy Register.
1718/104	**GOV04 Whistleblowing** THAT Council adopts the GOV04 Whistleblowing policy as attached to Report Number 17/0052.	DCCS	15-11-17	Completed – policy updated on Council's Website and in Policy Register.
1718/108	**Wastewater Dump Point Investigations** THAT Council: 1. Continue further investigation into costs and feasibility of establishing a dump point; and 2. Receives a further report on the matter at a future Council meeting.	DIO	15-11-17	Investigation work continuing.

1718/109	**Litchfield Council General Election 2017** THAT Council: 1. Enter into a service agreement with the Northern Territory Electoral Commission to pursue Litchfield Council General Election 2017 non-voters; 2. Receives a report at a future Council meeting on the Commissions' response in pursuing 2017 non-voters; and Writes to the Northern Territory Election Commission to thank the Commission for its report and to continue to work with the Commission leading up to the next General Election to improve voter participation.	CEO	15-11-17	Electoral Service Agreement signed 4 December 2017. NTEC planning to issue a media release 8 December 2017 re City of Darwin and Litchfield Council pursue non-voters.

7 Presentations

8 Petitions

9 Public Forum

10 Accepting or Declining Late Items

11 Notices of Motion

12 Mayors Report

12.1 Mayor's Report

COUNCIL REPORT

Agenda Item Number:	12.1
Report Title:	Mayor's Report
Report Number:	17/0061
Meeting Date:	13/12/2017
Attachments:	Nil

Purpose

A summary of the Mayor's attendance at meetings and functions representing Council for the period 16 November 2017 to 13 December 2017.

Summary

Date	Event	Comment
16 November 17	Australian Local Government Women's Association (ALGWA) NT	Annual General Meeting
17 November 17	Territory FM weekly radio session	Weekly radio interview
21 November 17	2017 Territory Natural Resource Management (NRM) Conference	Welcome Reception Council is a sponsor of the annual conference
22 November 17	Strategic Planning	½ day workshop with Councillors to develop the new four-year strategic plan
22 November 17	NT NRM Awards & NT Landcare Awards	Gala Dinner Council is a sponsor of the annual conference
23 November 17	Strategic Planning	3-hr workshop with Councillors
24 November 17	TOPROC	Meeting and election of 2018 Chair
24 November 17	End of Year Dinner	Councillors and Executive Staff – Annual Event
28 November 17	Chief Minister	Christmas Reception
1 December 17	Territory FM weekly radio session	Weekly radio interview
7 December 17	Staff Christmas and Thank-you Breakfast	Annual Event
7 December 17	Darwin Major Business Group	End of Year Function
8 December 17	Girraween Primary School	Annual Awards Presentation

8 December 17	Henbury School	End of Year Function
10 December 17	NT Fire and Rescue Service Aged Pensioners	End of Year Function
13 December 17	LGANT	Executive Meeting

Recommendation

THAT Council receive and note the Mayor's monthly report.

13 Reports from Council Appointed Representatives

Council appoints Council representatives to external committees. *Council Appointed Representatives* provide a verbal update on activities over the past month relating to the committees to which the Councillor has been formally appointed.

Mayor Bredhauer	-	Howard East Water Advisory Committee
Cr Barden	-	AACo Community Reference Group
	-	Freds Pass Upgrade Reference Group
Cr Salter	-	Howard Springs Reserve Committee
	-	Knuckey Lagoon Reserve Committee
Cr Simpson	-	Freds Pass Sport & Recreation Management Board

14	**Finance Report**
	14.1 Finance Report November 2017

COUNCIL REPORT

Agenda Item Number:	14.1
Report Title:	Council Finance Report – November 2017
Report Number:	17/0062
Meeting Date:	13/12/2017
Attachments:	Nil

Purpose

The purpose of this report is to present the monthly finance report for the period ended 30 November 2017.

Recommendation

THAT Council receives the Litchfield Council Finance report for the period ended 30 November 2017.

Background

The current financial outlook for the period to date (July to November 2017) is continuing in line with the 2017/18 budget. A midyear budget review is underway and will be presented to Council at its January 2018 meeting. At this time the budget will be updated to incorporate the remaining allocations and expenditure for all projects carried over from the prior financial year, as well as combining any savings and/or additional expenditure, increased and/or reduced revenues that have arisen since the establishment of the 2017/18 Budget in April/May 2017.

Rates and charges have been applied to all properties with the outstanding budgeted revenue to come from rates & charges relating to future developments and payments of rates in advance. Prior year rates outstanding in November is $1,590,757, this is a reduction of $592,817 from 30 June 2017. Council is reviewing our Debt Collection processes to reduce the amount of outstanding rates.

Revenue budgeted from User Charges is not expected to reach the target due to reduced usage at Howard Park Reserve and the ceasing of Council's contract with City of Palmerston for resources provided by our Information Services department.

Expenses are occurring in line with the budget. Major expenses for the month of November included a progress payment for Freds Pass Reserve Centre Road Upgrade ($506k), the Freds Pass Reserve quarterly operational and Repairs and Maintenance payment ($178k), William & Carveth Road ($258k), and the final payment of Stage 2 - Anzac Parade pavement strengthening project ($125k).

The capital works program has commenced with Road Resealing well underway, pending weather the works are to be finalised by end of January 2018. Also, the sealing of William and Carveth Road is now complete, along with the supply and installation of Leonino Road safety railings.

Overall, Council is showing a favourable result compared to budget. There is an indication that savings are likely to be achieved in certain areas due to more competitive contract rates. A midyear budget review has commenced with results due to be reported to Council at January 2018 Ordinary meeting.

Finance Report

November 2017

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SECTION 1

CONSOLIDATED FINANCIAL STATEMENTS

The consolidated Financial Statements, including Thorak Regional Cemetery operations, are presented in the same format as the full set of *End of Financial Year Statements,* reported in Litchfield Council's Annual Report, for greater transparency.

The statements include total revenue, both operational and capital but only operational expenditure. Capital expenditure is capitalised as Infrastructure, Property, Plant & Equipment in the Balance Sheet upon completion of the projects.

CONSOLIDATED OPERATING STATEMENT

	2017/18 Budget	2017/18 YTD Actual	2017/18 Forecast	Forecast Variance +ve (-ve)	Note
REVENUE					
Rates	9,697,195	9,364,237	9,710,028	12,833	1
Statutory Charges	33,500	22,252	53,700	20,200	2
User Charges	1,217,955	643,318	1,197,155	(20,800)	3
Grants, subsidies & contributions	5,294,974	1,279,719	5,294,974	0	
Investment Income	725,000	241,692	725,000	0	
Reimbursements	0	0	0	0	
Other Income	43,000	6,321	54,700	11,700	4
TOTAL REVENUE	**17,011,624**	**11,557,539**	**17,035,557**	**23,933**	
EXPENSES					
Employee Costs	5,973,624	2,146,550	5,973,624	0	
Auditor Fees	41,000	25,752	41,000	0	
Bad and doubtful Debts	0	308	308	(308)	5
Elected Member Expenses	245,787	68,884	245,787	0	
Election Expenses	136,710	124,282	136,710	0	
Cemetery Operations	266,500	143,041	266,500	0	
Contractors	4,505,358	1,280,189	4,505,358	0	
Energy	231,600	61,037	231,600	0	
Insurance	223,599	217,948	223,599	0	
Maintenance	530,628	200,467	530,628	0	
Legal Expenses	173,000	36,469	173,000	0	
Donations and Community Support	136,250	82,042	136,250	0	
Computer / IT Costs	281,290	149,340	281,290	0	
Parts, accessories & consumables	188,000	138,314	188,000	0	
Professional Services	444,070	180,900	444,070	0	
Sundry	384,357	187,151	384,357	0	
TOTAL EXPENSES	**13,761,773**	**5,042,674**	**13,762,081**	**(308)**	
RESULT	**3,249,851**	**6,514,865**	**3,273,476**	**23,625**	

Explanations for Variances to Original Budget

Note 1 – Additional Waste Charges applied to properties.

Note 2 – Additional income from the introduction of Dog Registrations

Note 3 - Increased revenue from introduction of an Administration fee at Thorak Regional Cemetery, a reduction in the Commercial Waste revenue, a decrease in developments and subdivisions that were budgeted for 2017/18, ceasing of the Information Services contract with City of Palmerston and the reduction in usage of the Hoard Park Reserve.

Note 4 – Other income received comprises insurance claim proceeds and fuel tax credits refunds.

Note 5 - Disputed infringement – Approval granted for reversal.

CONSOLIDATED BALANCE SHEET at 30 November 2017

	31 October 2017	30 November 2017	Movement +ve (-ve)
CURRENT ASSETS			
Cash & Cash Equivalents	1,735,728	1,126,169	(609,559)
Trade and Other Receivables	5,540,402	4,773,545	(766,857)
Other Financial Assets	21,604,834	21,604,834	-
TOTAL CURRENT ASSETS	**28,880,964**	**27,504,548**	**(1,376,416)**
NON CURRENT ASSETS			
Infrastructure, Property, Plant & Equipment	265,373,326	264,184,131	(1,189,195)
Other Non-Current Assets	3,778,763	4,204,447	425,684
TOTAL NON CURRENT ASSETS	**269,152,089**	**268,388,578**	**(763,511)**
TOTAL ASSETS	**298,033,053**	**295,893,126**	**(2,139,927)**
CURRENT LIABILITIES			
Trade and Other Payables	1,378,648	819,489	559,159
Provisions	636,151	748,008	(111,857)
TOTAL CURRENT LIABILITIES	**2,014,799**	**1,567,497**	**447,302**
NON CURRENT LIABILITIES			
Provisions	374,407	374,407	-
TOTAL NON CURRENT LIABILITIES	**374,407**	**374,407**	**-**
TOTAL LIABILITIES	**2,389,206**	**1,941,904**	**447,302**
NET ASSETS	**295,643,847**	**293,951,222**	**(1,692,625)**
EQUITY			
Accumulated Surplus	39,389,183	36,695,999	(2,693,184)
Asset Revaluation Reserve	243,311,730	243,311,730	-
Other Reserves	12,942,934	13,943,493	1,000,559
TOTAL EQUITY	**295,643,847**	**293,951,222**	**(1,692,625)**

Cash and cash equivalents have reduced by $609,559 due to the payment of monthly creditors.

Trade and Other Receivables have reduced by $766,857 from 31 October 2017 due to the collection of rates and general accounts receivable. The remaining instalment is due and payable on the 28 February 2018.

Infrastructure, Property, Plant & Equipment has decreased due to depreciation recognised to date.

Other Non-Current Assets represent the projects that remain work in progress as at 30 June 2017 ie. Anzac Parade Infrastructure Upgrade, Freds Pass Reserve Capital Improvements and Freds Pass Road Infrastructure Upgrade as well as the projects commenced 2017/18 financial year.

Estimate of Net Cash position and Current ratio

The current ratio measures the liquidity of an entity. It observes the ability to pay short-term liabilities (debt and payables) with its short-term assets (cash and receivables). If the ratio is less than 1:1 Council is unable to pay its liabilities. Best practice is for the ratio to be between 1.5 and 3.
As identified in Section 5 of this report, Litchfield Council's liquidity KPI is easily met with 31 October 2017 current ratio equalling 17.55.

$$\text{Current ratio} = \frac{\text{Current Assets (less: Provision for Doubtful debt)}}{\text{Current Liabilities}}$$

$$= \frac{27{,}504{,}548}{1{,}567{,}497} = 17.55$$

Net Cash Position = 27,504,548 – 1,567,497 = $25.9 million

SECTION 2

OPERATING POSITION BY DEPARTMENT

The 2017/18 rates and charges have been applied to properties and "raised" in Council's accounts, which is reflected in both Finance and Waste Management year to date revenue totals.

Finance expenses are greater than expected as a result of insurance premiums recognised for the financial year.

Overall expenditures year to date are 36% of the annual budget. As some operational expenditures are not evenly spread across the financial year, the overall spent is reasonable, with major operational road maintenance expenditure to occur in the wet season.

	2017/18 Budget	2017/18 YTD Actual	2017/18 Forecast	Forecast Variance +ve (-ve)
REVENUE				
Finance	8,174,865	7,013,151	8,174,865	0
Information Services	27,500	3,106	3,106	(24,394)
Works	2,467,580	643,358	2,467,580	0
Planning	162,430	4,383	139,319	(23,111)
Waste Management	2,986,838	2,857,580	2,988,076	1,238
Community	79,500	39,617	74,500	(5,000)
Regulatory Services	34,000	22,752	54,200	20,200
TOTAL REVENUE	**13,932,713**	**10,583,947**	**13,901,646**	**(31,067)**
EXPENSES				
Council Leadership	1,071,161	469,936	1,071,161	0
Corporate	466,900	140,313	466,900	0
Information Services	469,156	194,129	469,156	0
Finance	1,522,941	813,752	1,522,941	0
Works	3,112,938	878,074	3,112,938	0
Planning	609,494	260,079	609,494	0
Waste Management	2,828,104	851,452	2,828,104	0
Community	1,285,840	625,652	1,285,840	0
Mobile Workforce	1,226,644	330,359	1,226,644	0
Regulatory Services	376,940	143,582	377,248	(308)
TOTAL EXPENSES	**12,970,118**	**4,707,328**	**12,970,426**	**(308)**
OPERATING RESULT	**962,595**	**5,876,619**	**931,220**	**(31,375)**

NEW INITIATIVES

In addition to Council's year-on-year operating expenses Council resolved to undertake the following New Initiatives in 2017/18. The new initiatives expenditure is included in the operating result above. The table below highlights the expenditure compared to budget to the end of November 2017.

	2017/18 Budget	2017/18 YTD Actuals	2017/18 Forecast	Comments	
Data Backup – Business Continuity	16,000	0	16,000	Yet to commence	
Private Roads Strategy	30,000	17,720	30,000	Plan in progress	
Feral Dog Program	10,000	0	10,000	Yet to commence	
Promoting Responsible Dog Ownership	10,000	90	10,000	De-sexing event to be held in January 2018	
Southport Progress Association Mira Square	5,000	0	5,000	Yet to commence	
Queen's Baton Relay	10,000	0	10,000	Event in planning stage	
Tree Management	30,000	0	30,000	Contractor engaged, to be undertaken in December	
Women's Business Network Meetings	10,000	1,976	10,000	Next meeting to be held 29 January 2018	
Mayoral Robe & Chain	3,000	0	3,000	Project initialised	
Asbestos Audits on Reserve Infrastructure	10,000	6,670	10,000	Reports delivered, training to be scheduled	
Meters on Council Bores	15,000	0	15,000	Yet to commence	
Records Management Improvement	51,000	0	51,000	Quotes sought for project	
TOTAL	**200,000**	**26,456**	**200,000**		

- On Budget - Watch Budget - Outside Budget

Please note, the following initiviative from 2016/17 have continued into the 2017/18 financial year:

- Developer Contribution Plan Review is still currently in progress, scheduled to be finalised in 2017/18;

CAPITAL BUDGET POSITION

The table below compares capital revenue and expenditure to budget to the end of November 2017.

	2017/18 Budget	2017/18 YTD Actuals	2017/18 Forecast	Forecast Variance +ve (-ve)	Note
REVENUE					
Works	1,547,377	513,954	1,547,377	0	
Waste Management	13,000	23,190	13,000	0	
Planning	763,409	3,489	763,409	0	
Mobile Workforce	30,000	2,495	30,000	0	
TOTAL REVENUE	**2,353,786**	**543,128**	**2,353,786**	**0**	
EXPENSES					
Works	3,486,230	365,340	3,486,230	0	
Waste Mgt	305,000	123,371	305,000	0	
Mobile Workforce	380,000	0	380,000	0	
TOTAL EXPENSES	**4,171,230**	**488,711**	**4,171,230**	**0**	
CAPITAL RESULT	**(1,817,444)**	**54,417**	**(1,817,444)**	**0**	

CAPITAL PROJECTS 2017/18 - WORKS

The table below summarises Council's capital works program for the 2017/18 financial year in accordance with the budget and Municipal Plan. Council is continuing to work towards completing projects from 2016/17 financial year and the 2017/18 works program are awaiting the tender process.

Infrastructure Expenditure	Estimated Date of Completion	Budget	YTD Actuals	Forecast	Forecast Variance +ve (-ve)	Comment
Projects commenced in 2015/16 and 2016/17						
Anzac Parade Upgrade	30/11/2017	*2015/16* 1,800,000	1,774,394	1,800,000	-	Stage 2 - Finalisation
Freds Pass Road Upgrade	31/12/2017	*2016/17* 1,220,500	84,750	1,220,500	-	Variation on Design in progress
TOTAL		**3,020,500**	**1,859,144**	**3,020,500**	**(1,800,000)**	
Projects commencing in 2017/18						
Road Reseal Program	30/11/2017	2,649,404	9,818	2,405,771	243,633	In progress
Re-sheeting of Roads	30/04/2018	400,000	8,411	400,000	-	In progress
Shoulder Widening	31/03/2018	300,000	0	300,000	-	Yet to commence
Safety Rails – Leonino Road	30/04/2018	100,000	88,938	100,000	-	Completed
Finn Road Upgrade	30/06/2018	-	59,196	-	-	$1.5m Road Upgrade Grant from NTG – signed agreement

Infrastructure Expenditure	Estimated Date of Completion	Budget	YTD Actuals	Forecast	Forecast Variance +ve (-ve)	Comment
						received – Budget Variation required
William Road – Sealing	15/12/2017	-	161,230	168,062	-168,062	In progress
Carveth Road – Sealing	15/12/2017	-	71,534	75,571	-75,571	In progress
TOTAL		**3,449,404**	**399,127**	**3,449,404**	**-**	

- On Budget - Watch Budget - Outside Budget

CAPITAL PROJECTS 2017/18 – RECREATION RESERVES

The table below is Council's capital projects for Recreation Reserves still in progress from the 2015/16 and 2016/17 financial years in accordance with the Budget and Municipal Plan.

Recreation Reserve Expenditure	Estimated Date of Completion	Budget	YTD Actuals	Forecast	Forecast Variance +ve (-ve)	Comment
Projects commenced in 2015/16 and 2016/17						
Howard Park Reserve – Scout Roof Upgrade	31/12/2017	**2015/16** 125,095	121,643	125,095	-	Final improvement to be made to Scout Hall to finalise Grant, Grant to be acquitted January Council meeting
Howard Park Reserve – Irrigation Upgrade	31/12/2017	**2016/17** 20,000	6,792	20,000	-	Special Purpose Grant – project completed in December 2017
FPR – Improvements	31/12/2017	**2016/17** 3,000,000	1,720,877	3,000,000	-	In Progress
TOTAL		**3,145,095**	**1,849,312**	**3,145,095**	-	

- On Budget - Watch Budget - Outside Budget

SECTION 3

CASH ON HAND & INVESTMENTS

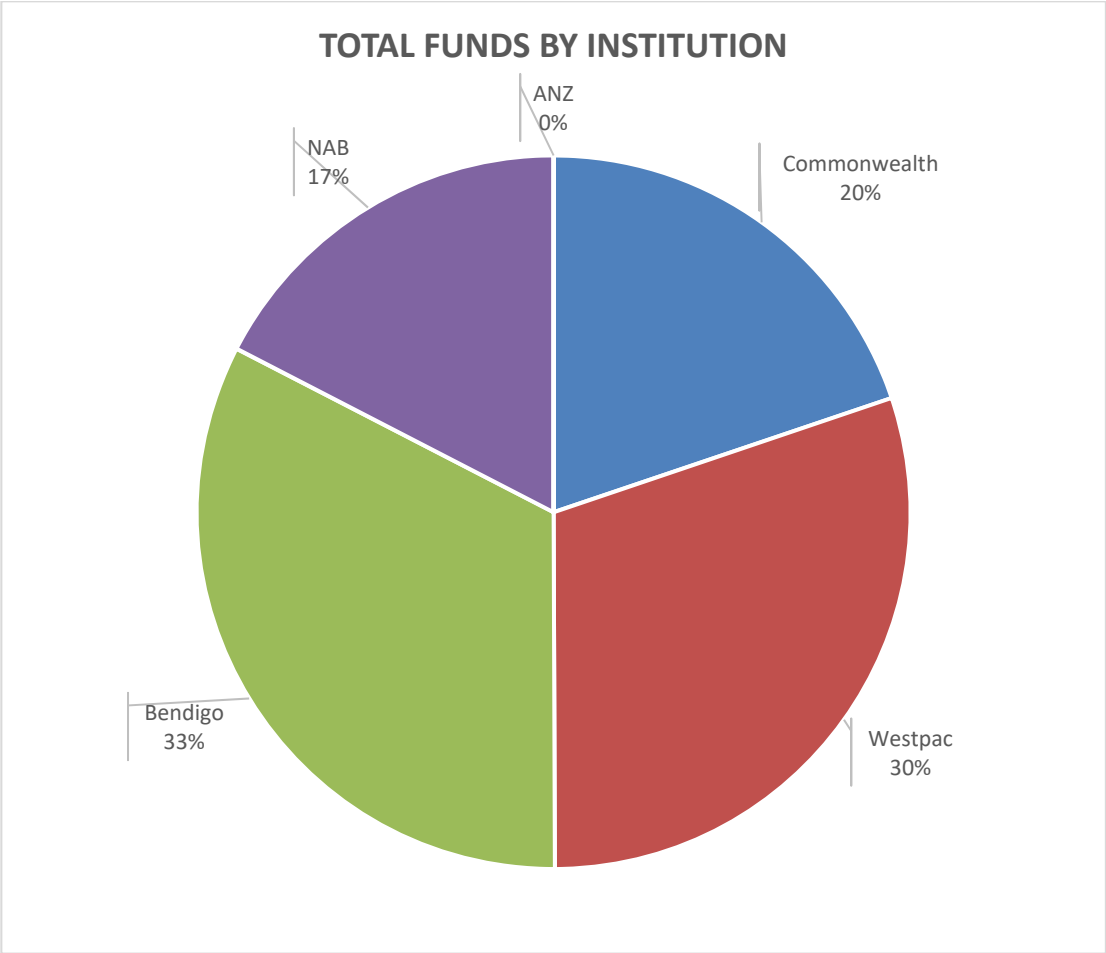
The table below represents a summary of the Cash on Hand & Investments held by Council at 30 November 2017 and compares the balance to the balance at 31 October 2017.

	31 OCTOBER 2017	30 NOVEMBER 2017	VARIANCE	COMMENT
Investments (Incl. Trust Account)	21,186,802	21,186,802	-	
Business Maxi Account	1,554,878	605,211	(949,667)	Creditor payments
Operating Account	155,601	565,281	409,680	2nd Instalment rates received
TOTAL	**22,897,281**	**22,357,294**	**(539,987)**	

Investments

Council invests cash from its operational and business maxi accounts to ensure Council is receiving the best return on its cash holdings.

Date Invested	Invested Amount	Days Invested	Invested with	Interest Rate	Due Date	Expected return to Maturity Date
04/12/2016	1,226,128	365	Bendigo	2.75%	04/12/2017	33,719
19/12/2016	1,040,000	365	Bendigo	2.80%	14/12/2017	29,120
26/09/2017	1,000,000	120	NAB	2.53%	24/01/2018	8,318
30/03/2017	1,500,000	365	NAB	2.58%	30/03/2018	38,700
27/03/2017	1,000,000	365	Bendigo	2.65%	27/03/2018	26,500
28/03/2017	1,000,000	365	Bendigo	2.65%	27/03/2018	26,500
16/10/2017	1,522,761	182	NAB	2.55%	16/04/2018	19,362
26/05/2017	1,545,533	365	Bendigo	2.65%	20/05/2018	40,957
16/06/2017	2,500,000	365	Westpac	2.55%	16/06/2018	63,750
16/06/2017	1,500,000	365	Bendigo	2.80%	10/06/2018	42,000
17/06/2017	227,003	365	Bendigo	2.75%	17/06/2018	6,243
16/08/2017	1,550,000	365	Westpac	2.66%	16/08/2018	41,230
26/08/2017	1,030,296	365	CBA	2.60%	26/08/2018	26,788
07/09/2017	1,044,927	365	CBA	2.57%	07/09/2018	26,855
21/09/2017	1,500,000	365	CBA	2.61%	21/09/2018	39,150
28/09/2017	1,000,000	365	CBA	2.62%	28/09/2018	26,200
30/11/2017	1,000,000	365	Westpac	2.63%	30/11/2018	26,400
30/06/2017	1		Bendigo			Minimum balances in savings account to holding investments
30/06/2017	152		ANZ			
TOTAL INVESTMENTS	**21,186,802**					**521,790**



FINANCIAL RESERVES

No movement from 30 June 2017.

	Balance at 1 July 2017	Transfer TO	Transfer FROM	Net Movement	Balance at 30 November 2017
Property Reserve	465,472	-	-	-	465,472
Plant and Equipment Reserve	36,683	-	-	-	36,683
Infrastructure Reserve	2,216,026	-	-	-	2,216,026
Developer Contribution Reserve	781,571	-	-	-	781,571
Waste Management Reserve	4,061,952	-	-	-	4,061,952
Election Reserve	25,044	-	-	-	25,044
Disaster Recovery Reserve	790,388	-	-	-	790,388
Strategic Initiatives Reserve	1,287,239	-	-	-	1,287,239
Unexpended Grants and Contributions	4,279,118	-	-	-	4,279,118
TOTAL	**13,943,493**	**-**	**-**	**-**	**13,943,493**

SECTION 4

DEBTORS

SUNDRY DEBTORS

Total Sundry Debtors at 30 November 2017 is $24,291 compared to $44,200 at 31 October 2017, a reduction of $19,909. Mainly as a result of payment of development fees.

Category	Current	30 Days	60 Days	90 Days and over	Balance
Waste	$3,105	$56	-$876	$3,117	$5,402
Infrastructure	$5,764	$0	$0	$11,448	$17,212
Recreation Reserves	$50	$607	$110	$910	$1,677
TOTAL	**$8,919**	**$663**	**-$766**	**$15,475**	**$24,291**
% of total sundry debtors	36.7%	2.7%	-3.1%	63.7%	

Action summary of 90 Days Debtors:

Company under Administration – further advice regarding payment status to be received from Administrators (Allowance for Doubtful Debts is recognised)	$5,907
Debtor sent to Debt Collectors	$2,301
Debtor on Payment Plan	$1,592
Debtor on Payment Plan	$1,648
Statement Re-sent	$1,655
Company under Administration	$1,462
Statement Re-sent	$910
TOTAL	**$15,475**

Please note, Sundry debtors exclude rate debtors and infringements.

FINES AND INFRINGEMENTS

At 30 November 2017 Council has 92 infringements outstanding with a balance of $25,863, a decrease of $1,439 in outstanding infringements compared to 31 October 2017.

	June 2017	July 2017	August 2017	September 2017	October 2017	November 2017
Number of Infringements outstanding	99	96	95	97	94	**92**
Balance of Infringements outstanding	$29,775	$29,170	$29,314	$29,276	$27,302	**$25,863**

Eighty-six (86) infringements have been sent to the Fines Recovery Unit (FRU), four (4) infringements have been sent a reminder letter, one (1) infringement has been issued recently and one (1) infringement has been placed on-hold under dispute.

All infringement courtesy letters have been sent in accordance with Council's policy.

OUTSTANDING RATES

Council's Debt Recovery Policy FIN05 guides the collection of outstanding rates. Recovery of rates continues to be an area of focus with Council's performance in recovering outstanding rates improving each month. Council continues to use the services of Territory Debt Collectors to collect rate assessments in arrears. Rates in arrears have reduced by $64,492 in the month of November.

The below table illustrates the split of prior years' outstanding rates:

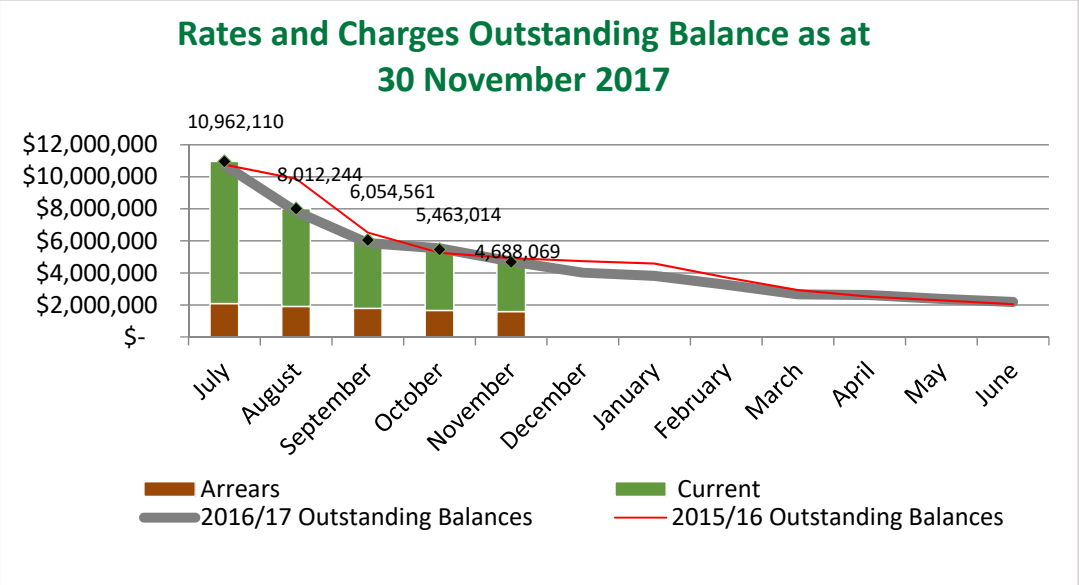
	BEGINNING OF 2017 (30 JUNE 2017)	PRIOR MONTH (OCT 2017)	CURRENT MONTH (NOV 2017)	VARIANCE
COMMERCIAL	$33,747	$24,661	$23,950	($711)
MINING	$50,174	$50,925	$50,338	($587)
NON-RATEABLE MINING	$515	$537	$542	$5
NON-RATEABLE WASTE	$21,898	$19,327	$19,180	($147)
RURAL RESIDENTIAL	$1,961,673	$1,495,904	$1,443,841	($52,063)
URBAN RESIDENTIAL	$115,566	$63,895	$52,906	($10,989)
TOTAL	**$2,183,574**	**$1,655,249**	**$1,590,757**	**($64,492)**

The below table illustrates the split of current year outstanding rates:

	PRIOR MONTH (OCT 2017)	CURRENT MONTH (NOV 2017)	VARIANCE
INSTALMENT 1	$471,795	$389,721	$82,074
INSTALMENT 2*	$1,597,331	$1,070,943	$526,388

*Instalment 2 due date 30 November 2017

The graph below tracks the total rates owing for the 2017/18 financial year by month and compares outstanding rates to the same time in the previous two financial years i.e. 2015/16 and 2016/17.



SECTION 5

FINANCE KEY PERFORMANCE INDICATORS (KPI)

Council's 2017/18 Municipal Plan includes a number of KPI's for the Finance area to meet; these are listed and reported on in the table below.

Key Performance Indicator	Target	Status	Comment
Compliance with management, statutory and regulatory budgeting and reporting	100%	🟡	
Current years rates outstanding as at 30 June 2018	<15%	🟡	
Rates coverage ratio – lowering Council's dependency on government grants and other funding sources.	>50%	🟡	Council's Original Budget for 2017/18 rates coverage ratio is 57%.
Liquidity ratio	>1:1	🟡	Current Ratio equals 17.55
Asset sustainability ratio	90%	🟡	

🟢 KPI met
🟡 KPI in progress, on track
🔴 KPI not met

SECTION 6

CREDITORS PAID

Creditor accounts paid in November 2017 are listed in below.

Cheque No.	Chq Date	Payee	Description	Amount ($)
Payroll 10	8/11/2017	LC Staff	Payroll Fortnight ending 8 November 2017	193,143.38
Payroll 11	22/11/2017	LC Staff	Payroll Fortnight ending 22 November 2017	171,350.70
816.1137-01	9/11/2017	ALLAN KING & SONS CONSTRUCTION PTY	RFT 135 - Freds Pass Centre Road Upgrade	506,128.85
814.60-01	2/11/2017	FREDS PASS SPORT & RECREATION BOARD	2nd QTR Operational and R&M Payment	178,416.70
818.930-01	23/11/2017	COLEMAN'S CONTRACTING & EARTHMOVING	RFT 119 - Rip and Reformat Road - William & Carveth Road	129,246.30
818.409-01	23/11/2017	F & J BITUMEN SERVICES PTY LTD	RFT 127 - Prime and seal road – William & Carveth Road	128,521.80
819.1137-01	30/11/2017	ALLAN KING & SONS CONSTRUCTION PTY	RFT153 - Anzac Parade - Final Payment	125,248.12
818.158-01	23/11/2017	NT ELECTRICAL GROUP	RFT151 - Electrical Upgrade Freds Pass Reserve	87,476.74
818.280-01	23/11/2017	CITY OF DARWIN	Oct 17 - Shoal Bay Weigh Bridge Charges	55,687.20
817.374-01	16/11/2017	AUSTRALIAN TAXATION OFFICE (ATO)	PAYG Withheld - Pay 10 (07/11/17)	50,236.00
814.374-01	2/11/2017	AUSTRALIAN TAXATION OFFICE (ATO)	PAYG Withheld - Pay 9 (26/10/17)	46,478.00
DD021117	3/11/2017	STATEWIDE SUPERANNUATION PTY LTD	Oct 17 - Super for pays 8 & 9	42,859.30
819.374-01	30/11/2017	AUSTRALIAN TAXATION OFFICE (ATO)	PAYG Withheld - Pay 11 (22/11/17)	42,409.00
814.268-01	2/11/2017	BYRNE CONSULTANTS	Finn Rd Drainage Upgrade	31,550.75
817.514-01	16/11/2017	VEOLIA ENVIRONMENTAL SERVICES	Oct 17 - Transfer of waste to Shoal Bay	23,916.66
814.65-01	2/11/2017	HUMPTY DOO VILLAGE GREEN MANAGEMENT	2nd QTR Operational and R&M Payment	23,725.63
818.1175-01	23/11/2017	UNIVERSITY OF TECHNOLOGY SYDNEY (UTS)	Library Needs Study - Engagement 40%	21,324.16
817.596-01	16/11/2017	AREA9 IT SOLUTIONS - HARDWARE	2x Lenovo PCs / Office 365 Annual Subscription	19,262.39
814.16-01	2/11/2017	BERRY SPRINGS RESERVE MANAGEMENT COMMITTEE	2nd QTR Operational and R&M Payment	15,994.00
817.1126-01	16/11/2017	TS Constructions NT	RFT16 - 145 New ablution block at Freds Pass	14,560.01
814.72-01	2/11/2017	LIVINGSTONE RESERVE MANAGEMENT BOARD	2nd QTR Operational and R&M Payment	14,235.38
817.414-01	16/11/2017	TOTAL EXCAVATIONS	Construct bund walls to divert water	13,985.40
817.1094-01	16/11/2017	WORKWELL CONSULTING PTY LTD	2018 Council Strategy Plan Development Plan	13,357.00
815.268-01	7/11/2017	BYRNE CONSULTANTS	Thorngate Rd - Geotechnical Survey	10,385.90
818.849-01	23/11/2017	WEX AUSTRALIA (PUMA CARD)	Oct 17 - Fuel account	10,213.19
819.930-01	30/11/2017	COLEMAN'S CONTRACTING & EARTHMOVING	RFT 119 - Maintenance Road Grade	9,828.13
819.1127-01	30/11/2017	Roy Stanton Painting Services	Painting of Council Chambers roof - Pain	9,800.00
814.1142-01	2/11/2017	OfficeMax Australia Ltd	6 Adjustable Office Desks / Stationery	9,667.15
818.290-01	23/11/2017	AUSTENG ENGINEERING SOLUTIONS	Thorak - Annual Cremator Service	9,561.20
818.810-01	23/11/2017	UHY HAINES NORTON	2016/17 Progress billing on audit fees	8,386.40

818.612-01	23/11/2017	CREMASCO CIVIL PTY LTD	Install culvert at Thorak Cemetery	8,093.80
815.1065-01	7/11/2017	Mrs M H BREDHAUER	Oct 17 - Mayor Allowances	7,747.71
817.165-01	16/11/2017	THINK WATER	Howard Park Reserve Irrigation Upgrade 5	7,471.63
816.414-01	9/11/2017	TOTAL EXCAVATIONS	Installation of flood gate	7,260.00
815.713-01	7/11/2017	IMPACT ENVIRONMENTAL CONSULTING PTY	Strategic Review of Waste Management	6,956.40
819.1088-01	30/11/2017	TALENT PROPELLER	Advertising & Shortlisting four positions	6,833.78
818.1099-01	23/11/2017	DAVE'S MINI DIGGA HIRE	Clean around headwalls & silt traps	6,765.00
816.956-01	9/11/2017	IRONWOOD CONSULTING	Oct 17 - Freds Pass Res Upgrade Project	6,187.50
818.926-01	23/11/2017	JACANA ENERGY	Oct 17 – KLR, HDWTS, HSWTS, HPR, LC, MWF	6,108.03
814.1076-01	2/11/2017	TDC (NT) PTY LTD - T/AS TERRITORY DEBT	10% Commission	5,917.84
818.596-01	23/11/2017	AREA9 IT SOLUTIONS - HARDWARE	Nov 17 - Service Agreement / New PC	5,813.50
819.1253-01	30/11/2017	Craig Burgdorf	Fit new model high speed shaft to Hyundai	5,412.57
817.176-01	16/11/2017	ASAP TREE SERVICE	Remove dead tree from verge / Remove fallen Woolybutt Tree – Whitewood Rd	4,862.00
817.144-01	16/11/2017	ORIGIN	Thorak - LP Gas Delivery	4,790.35
814.414-01	2/11/2017	TOTAL EXCAVATIONS	Repair driveway	4,763.00
814.75-01	2/11/2017	MCMINNS LAGOON RESERVE ASSOCIATION	2nd QTR Operational and R&M Payment	4,745.13
819.850-01	30/11/2017	HUMPTY DOO DEVELOPMENTS PTY LTD	Dec 17 - MWF shed lease	4,570.00
816.170-01	9/11/2017	NT RECYCLING SOLUTIONS (NTRS)	Oct 17 - Empty WTS Recycle Bins	4,515.50
817.1099-01	16/11/2017	DAVE'S MINI DIGGA HIRE	Clean out 300m of drain	4,235.00
817.187-01	16/11/2017	NORSIGN	RFT 125 - 148 posts, 3.2m x 50mm	4,151.40
817.81-01	16/11/2017	RHO SURVEYS	Check levels at Floodways	4,059.00
819.85-01	30/11/2017	TELSTRA	Nov 17 - LC Phone Account	4,021.47
816.183-01	9/11/2017	CHRIS'S BACKHOE HIRE PTY LTD	Thorak - Grave Digging for October	3,960.00
816.187-01	9/11/2017	NORSIGN	RFT 125 - Various road signs & depth marker	3,944.18
817.926-01	16/11/2017	JACANA ENERGY	Sep 17 – HSWTS, HDWTS, MWF, HPR, KLR	3,807.71
818.506-01	23/11/2017	TURBO'S TYRES	Tractor tyres & flat proofing	3,740.00
814.187-01	2/11/2017	NORSIGN	RFT 125 - Give way & Speed limit signs	3,356.98
814.12-01	2/11/2017	ALL EARTH INDUSTRIES	Clear firebreak	3,300.00
818.176-01	23/11/2017	ASAP TREE SERVICE	Cut back/remove trees & grind stumps	3,091.00
819.176-01	30/11/2017	ASAP TREE SERVICE	Remove trees/shrubs & grind stumps	3,036.00
816.176-01	9/11/2017	ASAP TREE SERVICE	Remove fallen trees & cut back vegetation	3,014.00
816.1023-01	9/11/2017	AUSLINE ENGINEERING	Fabricate Grate for Water Run Off	2,954.38
818.1053-01	23/11/2017	CSG BUSINESS SOLUTIONS PTY LTD	Oct 17 - Thorak Photocopier Rental	2,917.48
817.1304-01	16/11/2017	DJC Build	Howard Springs Scout Hall Kitchen Upgrade	2,860.00
819.1187-01	30/11/2017	Territory Natural Resource Management	Contributing Partner 2017 TNRM Conference	2,750.00
817.1253-01	16/11/2017	Craig Burgdorf	500 hr service for Cat backhoe / Fix overheating problem	2,743.84
817.690-01	16/11/2017	TOTAL HYDRAULIC CONNECTIONS (NT) Pty	Major service on compactor at Humpty Doo	2,627.34
818.414-01	23/11/2017	TOTAL EXCAVATIONS	Road erosion control	2,585.00
816.867-01	9/11/2017	ALL ASPECTS RECRUITMENT & HR SERVICE	WTS Temp Casual W/E 29/10/17	2,469.57
814.78-01	2/11/2017	POWER & WATER CORPORATION	LC Water account 16/9 to 16/10/17	2,461.20
817.506-01	16/11/2017	TURBO'S TYRES	Tyres for ute, ATV & mower	2,344.10
814.506-01	2/11/2017	TURBO'S TYRES	4 Tyres for 4WD Ute	2,332.00

819.1076-01	30/11/2017	TDC (NT) PTY LTD - T/AS TERRITORY DEBT	10% Commission	2,253.40
814.1023-01	2/11/2017	AUSLINE ENGINEERING	Replace broken mounting for cement mixer	2,194.50
815.1063-01	7/11/2017	Miss K J HUNT	Oct 17 - Deputy Mayor Allowances	2,163.50
815.1064-01	7/11/2017	Mrs C M SIMPSON	Oct 17 - Councillor Allowances	2,107.05
817.867-01	16/11/2017	ALL ASPECTS RECRUITMENT & HR SERVICE	WTS Temp Casual W/E 5/11/17	2,018.89
818.1076-01	23/11/2017	TDC (NT) PTY LTD - T/AS TERRITORY DEBT	10% Commission	2,016.42
819.867-01	30/11/2017	ALL ASPECTS RECRUITMENT & HR SERVICE	WTS Temp Casual W/E 19/11/17	2,016.41
816.906-01	9/11/2017	WARD KELLER PTY LTD	Professional Fees - Advice on road opening	1,980.00
815.1068-01	7/11/2017	Mr D S BARDEN	Oct 17 - Councillor Allowances	1,967.05
815.384-01	7/11/2017	Ms C VERNON	Oct 17 - Authority Consulting	1,848.00
819.414-01	30/11/2017	TOTAL EXCAVATIONS	Repair road shoulders	1,848.00
815.1076-01	7/11/2017	TDC (NT) PTY LTD - T/AS TERRITORY DEBT	10% Commission	1,844.12
817.806-01	16/11/2017	ZIPPY CLEANING & MAINTENANCE SERVICE	Oct 17 - Cleaning of Litchfield Council	1,789.65
818.1231-01	23/11/2017	Crown Equipment Pty Ltd	Roof and protective screen for Forklift	1,788.58
817.3-01	16/11/2017	COMM8 (COMBINED COMMUNICATIONS	Nov 17 - Tracking System Data Access	1,733.82
818.1103-01	23/11/2017	HASTING DEERING	Replace Water pump on Cat backhoe at HSWTS	1,691.39
814.867-01	2/11/2017	ALL ASPECTS RECRUITMENT & HR SERVICE	WTS Temp Casual W/E 22/10/17	1,669.60
816.612-01	9/11/2017	CREMASCO CIVIL PTY LTD	S & I Vehicle movement barriers	1,639.97
819.612-01	30/11/2017	CREMASCO CIVIL PTY LTD	S & I Vehicle movement barrier	1,639.97
815.1290-01	7/11/2017	Matchez Superannuation Fund (M Salt)	Oct 17 - Councillor Allowances	1,547.05
818.1141-01	23/11/2017	Northern Ground Maintenance	Oct 17 - Lawn mowing Howard Park Reserve	1,479.50
814.144-01	2/11/2017	ORIGIN	Thorak - LP Gas Delivery – October	1,436.50
818.731-01	23/11/2017	Vocus Communications (Amcom Pty Ltd)	Dec 17 - Supply of Amcom fibre to Council	1,329.40
817.840-01	16/11/2017	AIRCON CLEANING	Clean 4 air-conditioners at Howard Reserve	1,320.00
818.187-01	23/11/2017	NORSIGN	RFT 125 - Road signs & hazard markers	1,287.64
815.1301-01	7/11/2017	Mr A G BURGDORF	Rates Refund	1,282.83
816.162-01	9/11/2017	CIVICA PTY LTD	Managed Services and Support - Jun to Sept	1,252.90
817.78-01	16/11/2017	POWER & WATER CORPORATION	Knuckey's Lagoon Reserve Water 27/7	1,057.48
B-Pay182	30/11/2017	RTM MOTOR VEHICLE REGISTRY – MVR	Registration CA65OL Hino Tip Truck	1,052.85
819.1023-01	30/11/2017	AUSLINE ENGINEERING	Trailer modifications and repair	1,045.00
817.820-01	16/11/2017	CONSOLIDATED BEARING COMPANY (CBC)	Grease gun, oil pump & grease	1,018.27
817.1106-01	16/11/2017	KAY RUNDLE AND ASSOCIATES	Executive Coaching	990.00
816.87-01	9/11/2017	TOP END LINEMARKERS PTY LTD	RFT 126 - Road line marking	920.60
818.327-01	23/11/2017	Tiger Contracting (NT) Pty Ltd	Nov 17 - HPR - Ground Maintenance	880.00
817.1278-01	16/11/2017	Seek Limited	Three job advert packs	825.00
814.826-01	2/11/2017	NORMIST P/L (DARWIN BOLT SUPPLIES)	5 bags of rags	815.86
817.1023-01	16/11/2017	AUSLINE ENGINEERING	Make 3 spare wheel carriers & locks for	814.00
814.176-01	2/11/2017	ASAP TREE SERVICE	Arborist report on 2 trees / Hazard reduction pruning	802.00
818.1130-01	23/11/2017	Mair's Only Cleaning	Caretaking at Howard Park Recreation 20/11	790.00

818.367-01	23/11/2017	BUNNINGS GROUP LIMITED	Oct 17 - Powerpass Hardware Account	774.20
816.1130-01	9/11/2017	Mair's Only Cleaning	Caretaking at Howard Park Reserve 6/11	770.00
818.867-01	23/11/2017	ALL ASPECTS RECRUITMENT & HR SERVICE	WTS Temp Casual W/E 12/11/17	762.93
814.828-01	2/11/2017	HOWARD SPRINGS VETERINARY CLINIC	Box of Precision Glide needles & Zoletil	744.80
B-Pay181	24/11/2017	RTM MOTOR VEHICLE REGISTRY - MVR	Registration CA69WP - Nissan Navara Ute	737.85
817.51-01	16/11/2017	SOUTHERN CROSS PROTECTION	Oct 17 - Patrol Service Humpty Doo WTS	720.72
814.1113-01	2/11/2017	Graphics'll Do (Leonie Richards)	Update of Strategic Plan	720.50
816.1142-01	9/11/2017	OfficeMax Australia Ltd	Stationery	687.05
816.828-01	9/11/2017	HOWARD SPRINGS VETERINARY CLINIC	Euthanise 6 dogs	680.00
819.522-01	30/11/2017	FARMWORLD NT PTY LTD	Tractor PTO shaft cover & Fit drive belt	657.95
817.815-01	16/11/2017	JEFFRESS ADVERTISING	Council Meeting Times ads	657.32
817.941-01	16/11/2017	EVERLON BRONZE	Thorak - Plaque Order 160 X 130mm	627.00
819.508-01	30/11/2017	EASA	Oct 17 - EAP Counselling sessions	580.80
816.599-01	9/11/2017	WELDING & MAINTENANCE SERVICES NT	Welding repairs to Hyundai quick hitch	580.00
816.282-01	9/11/2017	Ecoflex NT Pty Ltd (Top End Tyre)	Remove tyres from Humpty Doo WTS	579.94
818.98-01	23/11/2017	ALL RURAL MECHANICAL	30000km Service - Holden Colorado	561.65
817.1040-01	16/11/2017	SUPER CHEAP AUTO	Tyre inflator & various workshop items	540.45
818.110-01	23/11/2017	JAPE FURNISHING SUPERSTORE	Credenza 1800 x 725 x 45	539.00
818.289-01	23/11/2017	CANDO ANTENNA & SATELLITE SYSTEMS	Replace Masthead Amplifier (faulty TV)	533.50
818.455-01	23/11/2017	MINI-TANKERS AUSTRALIA PTY LTD	Oct 17 - Thorak Fuel account	531.04
817.189-01	16/11/2017	HD ENTERPRISES P/L (HD PUMP SALES)	1 X boomless spray nozzle kit and bolts	523.95
819.599-01	30/11/2017	WELDING & MAINTENANCE SERVICES NT	Replace damaged end stops on compactor	520.00
817.1295-01	16/11/2017	Urban Development Institute	Annual LG Rural membership for 2017/18	515.00
816.1103-01	9/11/2017	HASTING DEERING	Repair of Gear Selector Switch - Backhoe	507.19
814.1299-01	2/11/2017	Coonawarra Panel Works	Insurance Excess	500.00
819.885-01	30/11/2017	HUMPTY DOO DIESEL	30,000km Service for Ford Ranger	487.75
817.826-01	16/11/2017	NORMIST P/L (DARWIN BOLT SUPPLIES)	55 m of Gal chain 8mm	435.03
818.76-01	23/11/2017	NATIONWIDE NEWS NT DIVISION	Thorak - Wet Season clean up ad	425.00
814.282-01	2/11/2017	Ecoflex NT Pty Ltd (Top End Tyre)	Remove tyres from Humpty Doo WTS	422.80
818.752-01	23/11/2017	TOTALLY WORKWEAR PALMERSTON	Thorak - Work shirts and trousers	401.40
817.906-01	16/11/2017	WARD KELLER PTY LTD (LAWYERS)	Solicitor's Representation Letter 2017	385.00
819.928-01	30/11/2017	RSEA PTY LTD	Safety boots & Safety sunglasses	382.33
814.87-01	2/11/2017	TOP END LINEMARKERS PTY LTD	RFT 126 - Road line marking	372.00
814.56-01	2/11/2017	COLEMANS PRINTING PTY LTD	Business Cards	363.00
817.326-01	16/11/2017	EYESIGHT SECURITY P/L	Oct 17 - Security and patrol at Thorak Cemetery	357.50
818.512-01	23/11/2017	SELTER SHAW PLUMBING PTY LTD	Fix water leak near LC generator	345.83
00413096	29/11/2017	Litchfield Council Petty Cash	LC P/Cash Reimbursement	343.00
817.522-01	16/11/2017	FARMWORLD NT PTY LTD	Tractor PTO cover & Air filter assembly	340.00
816.134-01	9/11/2017	FIGLEAF POOL PRODUCTS	Thorak - Bi-Monthly Water testing	309.40
818.1040-01	23/11/2017	SUPER CHEAP AUTO	Oil, clamps & wiper blades	309.12

816.126-01	9/11/2017	WATER DYNAMICS (NT) PTY LTD	Howard Park Reserve Irrigation testing	307.95
818.941-01	23/11/2017	EVERLON BRONZE	Thorak - Plaque 150 x 120mm	301.40
819.515-01	30/11/2017	JC ELECTRONIC SECURITY PTY LTD	Repair microwave link to security camera	282.43
818.129-01	23/11/2017	VANDERFIELD NORTHWEST PTY LTD	Canvas seat covers for Hino crew truck	280.83
816.1186-01	9/11/2017	Advanced Safety Systems Australia Pty	Nov 17 - ASSA membership WHS subscription	273.90
814.85-01	2/11/2017	TELSTRA	Oct 17 - Cemetery Phones	267.47
816.1076-01	9/11/2017	TDC (NT) PTY LTD - T/AS TERRITORY DEBT	10% Commission	263.34
00413095	24/11/2017	Litchfield Council Petty Cash	Thorak P/Cash Reimbursement	262.45
819.1183-01	30/11/2017	Mr D KINGSTON	Reimburse Parking fees, Cab/Ferry fares	255.24
817.411-01	16/11/2017	KENNARDS HIRE PTY LTD	Thorak - Rotary Hoe two days hire	244.25
818.1305-01	23/11/2017	Jade Electrical	Lakeview Hall - Modify wiring to connect	242.00
816.61-01	9/11/2017	GREENTHEMES INDOOR PLANT & HIRE	Oct 17 - Indoor plant hire	233.50
818.287-01	23/11/2017	HARVEY DISTRIBUTORS	4 X 20lt Washing liquid	225.32
817.581-01	16/11/2017	Food'll Do	Catering - Council Meeting 8 Nov 2017	225.00
819.581-01	30/11/2017	Food'll Do	Catering for Council Meeting on 15/11/17	225.00
819.560-01	30/11/2017	JOBFIT HEALTH GROUP PTY LTD	Pre-Employment Medical Check	209.00
818.1142-01	23/11/2017	OfficeMax Australia Ltd	Toilet paper, hand towels & stationery	208.33
817.776-01	16/11/2017	HME AIRCONDITIONING & ELECTRICAL	Fix electrical problem at Howard Springs	205.00
817.14-01	16/11/2017	AUSTRALIA POST	Postage Stamps - 2 x 100 boxes	200.00
00413093	24/11/2017	BEES CREEK SCHOOL COUNCIL INC	2017/18 - Annual School Awards	200.00
00413092	24/11/2017	GIRRAWEEN PRIMARY SCHOOL	2017/18 - Annual School Awards	200.00
00413098	29/11/2017	HOWARD SPRINGS PRIMARY SCHOOL	2017/18 - Annual School Awards	200.00
00413097	29/11/2017	MIDDLE POINT SCHOOL	2017/18 - Annual School Awards	200.00
00413094	24/11/2017	SATTLER CHRISTIAN COLLEGE	2017/18 - Annual School Awards	200.00
00413099	30/11/2017	ST Francis of Assisi Catholic Primary School	2017/18 - Annual School Awards	200.00
00413091	24/11/2017	TAMINMIN HIGH SCHOOL	2017/18 - Annual School Awards	200.00
814.928-01	2/11/2017	RSEA PTY LTD	5 X orange/Navy long sleeve work shirts	195.82
816.108-01	9/11/2017	RTM Department of Attorney General	Jul-Sept 17 FRU Fines Admin Fee	176.00
819.799-01	30/11/2017	WALGA (WA LOCAL GOV)	Position Description Classifications	176.00
814.886-01	2/11/2017	Mr R J FREEMAN	Remove tyres from rims & valves from gas	175.00
817.1076-01	16/11/2017	TDC (NT) PTY LTD - T/AS TERRITORY DEBT	10% Commission	169.40
816.790-01	9/11/2017	BOBTOW TILT TRAY SERVICES	Transport abandoned vehicle	165.00
817.995-01	16/11/2017	WILDCAT HOLDINGS (NT) PTY LTD	Bolts & nuts for cutting edge on loader	164.76
819.995-01	30/11/2017	WILDCAT HOLDINGS (NT) PTY LTD	Grease for Howard Springs WTS	158.00
816.874-01	9/11/2017	FIN BINS (VTG Waste & Recycling)	Oct 17 - LC Rubbish removal	151.67
819.941-01	30/11/2017	EVERLON BRONZE	Thorak - Brass plaque 150 x 120mm	150.70
817.70-01	16/11/2017	LOCAL GOVERNMENT ASSOCIATION NT	Symposium Dinner - Mayor & Deputy Mayor	150.00
814.1079-01	2/11/2017	LOCAL GOVERNMENT FINANCE PROFESSIONALS	Membership Fees P/E 30/09/18	147.00
B-Pay180	2/11/2017	SENSIS PTY LTD	Oct 17 - Monthly Sensis Advertisement	145.31
818.851-01	23/11/2017	OFFICEWORKS	Thorak - Paper and other stationery	144.17
818.876-01	23/11/2017	NT ICE	40 bags of ice for MWF	132.00

814.950-01	2/11/2017	METROCOUNT (MICROCOM P/L)	Road Nails 50 Pack	127.60
B Pay181	24/11/2017	RTM MOTOR VEHICLE REGISTRY - MVR	Registration, Box Trailer - TI5107	123.05
814.676-01	2/11/2017	FINAL TOUCH AUSTRALIA	Thorak - Fadeless Calm (blue) Large Urn	120.25
818.1121-01	23/11/2017	Australian Local Government Womens	2017/18 ALGWA NT Corporate Membership	120.00
818.886-01	23/11/2017	Mr R J FREEMAN	Remove tyres from rims at HDWTS	115.00
814.1133-01	2/11/2017	NT Water Filters	6 bottles of water for foyer	114.40
816.287-01	9/11/2017	HARVEY DISTRIBUTORS	Toilet Paper & Bin Liners	111.23
815.1302-01	7/11/2017	Castle Real Estate	Salary & Wages – employee elected account	100.00
816.1220-01	9/11/2017	Girraween Veterinary Hospital	Desexing Voucher for 'Diesel' AN 5873	100.00
817.1167-01	16/11/2017	Mrs T SALAU	Reimbursement for accommodation deposit	100.00
817.515-01	16/11/2017	JC ELECTRONIC SECURITY PTY LTD	Repair security camera at Howard Springs	99.00
816.1031-01	9/11/2017	LP AIRCONDITIONING PTY LTD	Put downlight back in the socket at front reception	99.00
814.876-01	2/11/2017	NT ICE	30 bags of ice	99.00
817.387-01	16/11/2017	SADDLE WORLD NT (NT GRAIN)	Supercoat Dog Food Adult Beef 18kg	96.00
814.1253-01	2/11/2017	Craig Burgdorf	Repairs to loader	93.50
817.799-01	16/11/2017	WALGA (WA LOCAL GOV)	Position Description Classification	88.00
819.1060-01	30/11/2017	Ms K CONRICK	LGANT Conference meals & taxi fare reimb	85.65
817.968-01	16/11/2017	NT FASTENERS PTY LTD	Fine thread tek screws	83.44
816.1133-01	9/11/2017	NT Water Filters	5 bottles of water for foyer	83.20
817.671-01	16/11/2017	BURSON AUTOMOTIVE PTY LTD (COOLALINGA)	Air tool oil & 2 funnel spouts	77.58
819.56-01	30/11/2017	COLEMANS PRINTING PTY LTD	Color Printer Self Inking Stamp	74.80
814.30-01	2/11/2017	TERRITORY SPRINGWATER PTY LTD	Thorak - 7 x 15 litre bottled water	73.50
814.1130-01	2/11/2017	Mair's Only Cleaning	Knuckey Lagoon Reserve Cleaning 30/10	70.00
817.1130-01	16/11/2017	Mair's Only Cleaning	Knuckey Lagoon Reserve Cleaning 13 & 17	70.00
819.1130-01	30/11/2017	Mair's Only Cleaning	Knuckey Lagoon Reserve Cleaning 27/11	70.00
818.1245-01	23/11/2017	Rural Rubbish Removal	Oct 17 - Knuckey Lagoon Reserve - Rubbish	66.00
817.300-01	16/11/2017	DARWIN OFFICE TECHNOLOGY P/L	Thorak - October photocopier costs	59.99
816.565-01	9/11/2017	CURBY'S (NT) PTY LTD	3 Name Badge Acrylic - Overlay with Magnet	59.40
818.645-01	23/11/2017	BERRY SPRINGS MECHANICAL	Rego Check - Berry Springs WTS Ute	59.00
816.189-01	9/11/2017	HD ENTERPRISES P/L (HD PUMP SALES)	Cord starter, tape & tyre patch solution	55.00
819.30-01	30/11/2017	TERRITORY SPRINGWATER PTY LTD	Thorak - 5 x 15 litre bottled water	52.50
817.30-01	16/11/2017	TERRITORY SPRINGWATER PTY LTD	Thorak - 4 x 15 litre bottled water	42.00
819.151-01	30/11/2017	HARVEY NORMAN COMPUTERS/ELECTRICAL	Digital Set Top Box with USB PVR HDMI Me	35.00
819.1294-01	30/11/2017	Clean Fun Pty Ltd (Darwin Laundries)	Wash & Dry Fold Linen	27.50
816.49-01	9/11/2017	DEPARTMENT OF LANDS PLANNING & THE	Oct 17 - Title Searches from NTG ILIS	27.40
818.92-01	23/11/2017	ST JOHN AMBULANCE AUSTRALIA (NT)	First Aid Supplies	12.65
TOTAL				**2,293,323.91**

CREDIT CARD TRANSACTIONS

Credit card transactions for November 2017 are listed in the table below.

Staff Member	Cost Code	Details	Gross ($)	GST ($)
Kaylene Conrick	3121.355.638	Amnet Broadband Internet connection	62.55	5.69
CEO	W4084.302	Qantas - CEO Airfares Perth - LGCOG Conference	423.18	38.47
	W4084.302	Cab Fares - LGANT Conference Alice Springs	87.88	0.38
	3020.330.644	Accommodation Alice Springs LGANT - Deputy Mayor	281.57	25.60
	W4084.301	Accommodation Alice Springs LGANT - CEO	241.57	21.96
Deborah Branson	W4084.301	EA Conference - Accommodation	159.00	-
Executive Assistant	3400.300.342	Conference Accommodation - Director I&O	156.31	14.21
	W4084.302	Qantas - EA Conference - Flights	866.38	78.66
	3020.330.644	Qantas - LGANT - DM Flights	818.80	74.34
	3020.375.527	Water Cooler for Meeting room	224.95	20.45
	3700.350.602	Facebook - Advertising	7.89	0.72
	3020.375.527	Tumblers & mugs	18.15	1.65
	3020.375.527	Cutlery tray & PVC Coasters	11.00	1.00
	3020.375.527	Sugar, tea & milk	10.05	-
	3020.330.644	LGANT - Accommodation Mayor	309.67	28.15
	3020.375.527	Flip top bin & sponge	13.74	1.25
	3020.330.500	Photo Print - Council Photo	5.00	0.45
	3020.330.500	Photo frame	10.00	0.91
	3050.300.644	Governance Institute Forum Registration	609.00	55.36
	3020.330.500	Monthly Subscription for Council Bulletin	9.90	0.90
	3020.330.620	Catering – Councillor Workshop	19.03	1.73
	3020.330.620	Catering – Councillor Workshop	24.11	-
Karina Gates	3130.310.645	Air fare - Conference, Finance Manager	692.88	62.99
Finance Manager	3050.310.644	Accommodation – LG HR Conference Sydney, Human Resources	434.00	39.45
	3050.310.645	Air fare – LG HR Conference Sydney, Human Resources	654.00	59.45
	23000.350.501	Freight for Cemetery	220.00	20.00
David Kingston	4040.310.644	Australia Institute of Animal Management Conference Accommodation Regulatory Services	452.81	41.18
Director of I & O	3200.310.644	Local Government Asset Management Conference – Asset Management Officer	2,308.90	209.90
	3200.310.645	Air Fare - Conference – Asset Management Officer	327.00	29.72
	3200.310.645	Air Fare – Conference - Asset Management Officer	258.32	23.48
	3200.310.644	Meals – Roads Conference – Director of I & O	36.39	3.31
	3200.310.644	Cab Fares – Roads Conference - Director of I & O	13.47	1.22
	3200.310.644	Cab Fares – Roads Conference - Director of I & O	23.94	2.18
	3200.310.644	Cab Fares – Roads Conference - Director of I & O	29.51	1.41
	3050.360.344	Medical Staff	480.00	-
Sharon Mc Taggart Regulatory Manager	4040.435.562	Security cameras for Ranger's vehicles	192.95	17.54
Glen Byrnes	3410.350.515	Staff amenities - Coffee, Milk, Tea & Sugar	78.37	-
Waste Manager	3410.350.515	Staff amenities - Cleaning products	36.80	3.35
	3410.350.500	Stationery	8.00	0.73
	3410.350.515	S/Steel Kettle	20.00	1.82
	W4238.30	Rollers & Window Screen Repairs	186.85	16.99
TOTAL			**10,823.92**	**906.60**

Links with Strategic Plan

An effective and sustainable Council

Recommending Officer:	**Silke Maynard, Director Community and Corporate Services**

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

15	**Officers Reports**

15.1 Draft Waste Strategy

15.2 Accounting Policies

15.3 December 2017 Summary Report Planning and Mining

15.4 Planning Scheme Amendment Application – Lot 12 Finn Road

15.5 Procurement of Operation and Maintenance Contract for Council Streetlights

15.6 Development Application – Prawn Farm Gunn Point

15.7 Development Application – Subdivision Bees Creek

15.8 Abandoned Vehicles Policy

COUNCIL REPORT

Agenda Item Number:	15.1
Report Title:	Draft Waste Strategy
Report Number:	17/0047
Meeting Date:	13/12/2017
Attachments:	1. Draft Waste Strategy 2. Waste Strategy Background and Discussion Paper

Purpose

The purpose of this report is to present Council with the Waste Strategy Background and Discussion Paper and the draft Waste Strategy.

Further, the report recommends that Council place the draft Waste Strategy on public exhibition inviting community comment.

Summary

In November 2016 Council commenced development of its waste strategy.

A consultant was engaged to assist Council and a community reference group (CRG) was established. The CRG met periodically to hear options and discuss technologies with the consultant and guide the development of the strategy.

A week-long community survey in January 2017 provided Council with valuable feedback on Council's waste service and in particular the performance of the three waste transfer stations that Council operates.

A draft waste strategy has now been finalised ready to be placed on public exhibition to seek community feedback. With the Christmas holiday period not far away, it is considered preferable for a three-week community feedback period occur from late January to mid February, with Council considering community feedback before adopting the final Strategy in March 2018.

Recommendation

THAT Council:

1. receives and notes the Waste Strategy Background and Discussion Paper;
2. endorses the draft Waste Strategy for the purpose of placing the document on public exhibition for a three-week consultation period inviting community comment; and
3. receives a further report on community feedback to finalise the Strategy at its March 2018 meeting.
4. Write to the Community Reference Group members and thank them for their contribution to the development of the waste strategy.

Background and Discussion

Council has been progressing the Waste Strategy throughout 2017 with the process supported by a Community Reference Group (CRG). Council engaged environmental consultant *Impact Environmental* to assist in the development of the Background and Discussion Paper and draft strategy. The Background and Discussion Paper is a supporting document to the draft Strategy and provides detail on the current situation, strategic context, benchmarking across Australia and key considerations.

The draft Waste Strategy is Council's document articulating future direction and key activities to be undertaken over the next five years. It identifies Council's objective is as follows:

> *Together, Council and the community will work to Reduce the amount of waste we generate, Reuse what we can and Recycle waste resources to reinvest back into the community, enhancing our municipality as "the best place to live in the Top End."*

In achieving this objective, the following is a portion of the draft strategy that sets out the focus areas for Council:

	Focus area	Description	Measured by
1	**Improve the cost efficiency of the waste disposal service**	Council provides waste services on a user-pays basis. That is, the cost of the service is paid by ratepayers through an annual charge. Council aims to control costs while maintaining a consistent level of service.	The cost per tonne of waste throughput via the annual waste charge is static or lower year on year[1]
2	**Reduce waste to landfill**	Recycling is an opportunity to: 1 avoid the environmental hazards of landfill 2 relieve pressure on extraction of raw materials and energy 3 preserve our environment 4 promote employment opportunities in the waste industry	The amount of dry recyclables collected is >15% of the total waste collected[2]
3	**Reduce incidence of dumped rubbish and litter**	The Litchfield Municipality is renowned for its natural beauty. The presence of litter and illegal dumping affects the visual amenity for residents and visitors.	Baseline established of the incidence of illegal dumping
4	**Maintain overall customer satisfaction of the waste service**	Our community was broadly satisfied with the waste transfer stations in the 2017 survey, so the challenge lies ahead to continuously improve and lift the user experience, especially as our population grows and changes.	> 95% of residents think the service at the transfer stations is satisfactory or better
5	**Advocate on behalf of the community**	Council is committed to advocating to government and stakeholders on a broad range of waste issues on behalf of the community.	Council drives change and support through other levels of government.

The draft Waste Strategy then sets out a five year plan of actions to deliver on the five focus areas and assigns costs for each of the actions identified.

Links with Strategic Plan

Priority # 1 – Everything you need

Legislative and Policy Implications

There are no implications for Council in relation to legislation or Council policies.

Risks

Through the development of the waste strategy Council has considered the risks associated with the actions proposed. The Background and Discussion Paper discusses the risks that should be addressed through the implementation of the Waste Strategy.

Financial Implications

The draft Waste Strategy outlines broadly the impacts of the actions on Council resources (i.e. staffing) and on capital expenditure.

The draft Waste Strategy estimates that there will be in the first five years additional expenditure of about $180,000 in the first year, falling each year to become less than $30,000 in the fifth year.

Cost estimates do not include any significant capital expenditure, which may be needed depending on the outcomes of some of the actions. As part of the development of the 2018/19 budget a budget submission will be made for the execution of Year 1 actions.

Community Engagement

Council will seek community feedback on the draft Waste Strategy. The draft Strategy will be on public exhibition for a period of 3 weeks from Friday 19 January to Sunday 11 February 2018.

Council will engage with the community in the following ways:

- The draft Waste Strategy and the Background and Discussion Paper will be placed on Council's website;
- Council will conduct a Facebook campaign to raise awareness;
- Council will provide flyers to residents at waste transfer stations in the first 10 days and then again in the last 3 days highlighting the community feedback process
- Council will place several hard copies at Taminmin Library and at Council's Reception.

Recommending Officer:	**Kaylene Conrick, Chief Executive Officer**

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

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LITCHFIELD COUNCIL

Waste Strategy 2018 – 2023
Background and Discussion Paper

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PART 1 Introduction

1.1 The need for a waste strategy

"Waste is a significant environmental issue. Disposal of waste consumes land, produces pollution to the atmosphere, soil and groundwater, and represents a loss of potential resources including embodied energy and materials." – Northern Territory Waste Strategy, 2015.

In 2016, Litchfield Council embarked on the development of a waste strategy for the Litchfield municipality, as identified in its 2016-17 Municipal Plan. A number of key local issues highlight the need for improved and more sustainable waste management practices in Litchfield, and to properly manage the long-term viability of sustainable waste practices in the municipality, these issues need to be addressed.

This Background and Discussion Paper outlines Council's existing services and new opportunities, while identifying plans for how Council can better manage waste. It identifies targets and strategies to achieve our goals within the broader regional context, and deliver Council's overall strategy for an efficient service to our community. The Paper provides a considerable body of background information that sets the basis for Council's Waste Strategy, which is provided under separate cover and available on Council's website www.litchfield.nt.gov.au

Cost pressures from increasing fees for waste disposal at the Shoal Bay Landfill	The Shoal Bay landfill is the only such waste disposal facility in the Top End.
Community expectations for a clean, efficient and cost-effective waste service	Revenues from waste management does not generate income for Council; the waste charge paid by households balances the ongoing costs associated with operation, recycling and disposal.
Low landfill diversion rates of household dry recyclables and food organics	Diversion of waste from landfill, at 33%, significantly outperforms the NT average of 9%. However, other jurisdictions such as the ACT, NSW, SA and VIC all average over 60%. This gap is primarily a result of low collection of household dry recyclables in Litchfield (such as paper, cardboard, glass, plastic, etc) and no viable destination for food organics.
The need to gather more data to complete the picture	We need to gain a greater understanding of the composition of loads that enter the transfer stations to identify where our efforts are best targeted.
Growth of smaller 'urban style' lots	Future urban residential development at Holtze and expansion of residential development at Coolalinga and other Rural Activity Centres may require a different service level than rural lots.

1.2 Scope

The primary purpose of this Discussion Paper is to present the existing and historical performance of Council's management of waste, address gaps and identify opportunities that will benefit Council, the community and the environment. The Paper focuses itself primarily on the household waste stream, where Council has the ability and responsibility to make decisions on behalf of the community. The Waste Strategy emerges from this paper.

It sets a five year horizon and contains concrete actions for Council. The results of the first five years of actions will guide Council towards a new set of actions for the next five years. Council anticipates that the Strategy will be reviewed periodically.

In preparing this Discussion Paper, the Litchfield community was included in several ways: a community reference group (CRG) was formed from interested local persons and this group was briefed regularly throughout the work to provide feedback from a community perspective; Council also conducted a wide-reaching community survey regarding Council's waste management approach.

Council acknowledges the significant work of environmental consultant Impact Environmental Pty Ltd, who provided considerable guidance and technical expertise throughout the development of this Discussion paper. The engagement of Impact Environmental was in response to one of Council's New Initiatives outlined in the 2016-17 Municipal Plan.

1.3 Council's strategic role

Council carries out its important functions by doing six key things related to waste management:

Service Delivery	We employ and subcontract capable staff who are responsible for the daily operation of the the waste transfer stations. We review services regularly to ensure they deliver what the community wants in the most cost-effective way.
Advocate	We advocate for the interests of our community at Northern Territory and Commonwealth level and also with various industry and sector groups.
Fund	We provide funding for a number of activities and events run by members of the local community through a community grant program.
Regulate	Within our mandates, we are in a position to regulate, at a local level, many areas that contribute to a high quality of life for Litchfield residents and visitors.
Work with community	Community support and involvement is essential, so we need the community to champion our waste objectives.
Partner	The amenities that make Litchfield a great place to live are not solely provided by Council. Partnerships with schools, the NT EPA and local businesses assist Council in it's goal of providing a desirable place to live.

1.4 The Litchfield municipality

Located in the Top End of the Northern Territory, Litchfield municipality covers an area of 3,100 square kilometres and includes coastal and riverine areas, rainforests and lagoons. It borders the cities of Darwin and Palmerston and its other boundaries are Van Diemen Gulf to the north, the Adelaide River to the east, and the Coomalie Community Government Council to the south.

Source: Google Maps

Litchfield municipality boundary

Litchfield will play an important role in accommodating urban growth in the Darwin Region over the next 40 to 50 years. Its rural activity centres are Berry Springs, Howard Springs, Humpty Doo and Coolalinga and future major urban development zones are in the areas of Holtze, Noonamah, Weddell and Murrumujuk.

Early development of the locality was shaped by 'broad acre' subdivision and ventures into agriculture. The formalisation of access roads and reticulation of electricity gave rise to re-subdivision into smaller rural parcels, particularly two and eight hectare lots. The population began increasing and continues to do so.

The initial interest in semi-commercial hobby farms gave way to growing demand for the rural lifestyle; predominantly on the two hectare lots. Developing as an alternative to suburban living, Litchfield has emerged with a distinct identity and its own constraints and opportunities.

1.5 Litchfield in five years

Priority Areas, Litchfield Strategic Plan 2016-2020

Council's goal is to provide the community with a cost-effective waste management service. Council desires to achieve waste minimisation and recycling targets in line with national averages. Promoting environmental awareness throughout Litchfield and developing a 'we can' attitude within the community will enable Litchfield to move towards achievable waste management outcomes and highlight the ability to implement the Litchfield Strategic Plan 2016-2020, which maps out how Litchfield can become "***the best place to live in the Top End***." The Strategic Plan maps out the priority areas and the priority areas guide the development of five overarching Waste Management goals.

Waste management goals

	Focus area	Description	Measured by
1	**Improve the cost efficiency of the waste disposal service**	Council provides waste services on a user-pays basis. That is, the cost of the service is paid by ratepayers through an annual charge. Council aims to control costs while maintaining a consistent level of service.	The cost per tonne of waste throughput via the annual waste charge is static or lower year on year[1]
2	**Reduce waste to landfill**	Recycling is an opportunity to: 1 avoid the environmental hazards of landfill 2 relieve pressure on extraction of raw materials and energy 3 preserve our environment 4 promote employment opportunities in the waste industry	The amount of dry recyclables collected is >15% of the total waste collected[2]
3	**Reduce incidence of dumped rubbish and litter**	The Litchfield municipality is renowned for its natural beauty. The presence of litter and illegal dumping affects the visual amenity for residents and visitors.	Baseline established of the incidence of illegal dumping
4	**Maintain overall customer satisfaction of the waste service**	Our community was broadly satisfied with the waste transfer stations in the 2017 survey, so the challenge lies ahead to continuously improve and lift the user experience, especially as our population grows and changes.	> 95% of residents think the service at the transfer stations is satisfactory or better
5	**Advocate on behalf of the community**	Council is committed to advocating to government and stakeholders on a broad range of waste issues on behalf of the community.	Council drives change and support through other levels of government.

1. taking into account CPI increases
2. Assumes level of service remains unchanged

PART 2 The Litchfield waste management system

2.1 Overview

Council's waste management system includes three waste transfer stations located at Berry Springs, Howard Springs and Humpty Doo. Residents are responsible for the delivery of their mixed waste and recyclable material to these facilities.

Mixed waste is deposited into skip bins which are then transported via a contractor to the Shoal Bay landfill site, a facility owned by the City of Darwin and which is the only landfill servicing the Top End.

Recyclables are collected in front lift bins and processed at a privately owned and managed materials recovery facility in Berrimah, Darwin. Bulky materials such as concrete, green waste, wood waste and scrap steel are stockpiled and recycled or reused offsite.

The first table displays the most recent 12 month aggregated tonnes of material received by Council's three transfer stations and the following table breaks down the tonnes between each WTS.

Overall waste amounts 2016/2017

Material	Destination	Unit
Mixed waste	Landfill at Shoal Bay	8683 t
Scrap metal	Sold to recycler	1207 t
Mulch	Sold for reuse	4313 t
Crushed concrete	Sold for reuse	616 t
Wood mulch	Sold for reuse	271 t
Cardboard	Collected by recycler	142 t
Paper, glass, cans and plastics	Collected by recycler	129 t
Batteries	Collected by recycler	109 t
Used oil	Collected by recycler	54 kL
Tyres	Collected by recycler	23 t

Combines as dry recyclables

WTS comparison 2016/2017

Waste Transfer Centre	Humpty Doo	Howard Springs	Berry Springs	Combined
Total waste to landfill	4952 t	2029 t	1709 t	8683 t
Total waste recycled	2732 t	1046 t	437 t	4215 t
Vehicles (trips per annum)	69 750	64 568	Data not available	-

^ estimate only as assumptions made to convert some volumes to tonnes

Humpty Doo has the highest proportion of waste to landfill. This figure is somewhat distorted, as roughly 60% of the waste received is delivered by private waste hauler trucks that provide a kerbside collection to residents and businesses. Due to this, Humpty Doo draws in waste from across the municipality, whereas Berry Springs and Howard Springs only serve residents in their immediate vicinity. The recycling tonnages are also varied. Concrete is only accepted at Humpy Doo where it is crushed and sold. Berry Springs does not offer the scrap metal and wood waste mulching that is available at the other two transfer stations.

2.2 Humpty Doo

Humpty Doo has a high service level, this being defined as the service quality for a given activity. It is the largest and most recently constructed WTS. Residents enter the site via a weighbridge and gatehouse and have a large amount of recycling options available. The general waste disposal area is undercover; waste is unloaded onto the tipping floor rather than being dropped directly into a skip bin, as this provides improved safety for residents.

Humpty Doo service level

Service	Level
Operators	1 gatekeeper 1 operator
Plant	1 front-end loader 1 skid steer loader
Waste Disposal	Covered waste disposal area Low tip height
Resource Recovery	Cardboard, dry recyclables, green waste, wood waste, concrete, car batteries, scrap metal, waste oil, tyres

It must be noted that roughly 60% of waste delivered to the WTS is by commercial collection trucks. These collectors provide a kerbside collection service to households and businesses in the Municipality. As a result, fewer vehicles need to use Humpty Doo and the other WTSs than would otherwise do so.

The Humpty Doo WTS is capable of meeting future waste needs generated by growth in the surrounding area. The disposal area can handle significantly more vehicles, as evidenced by only half of the disposal bays being frequently used at present. However, planned changes to how commercial operators are charged will affect vehicle numbers. The WTS has a large footprint for bulky waste, which will enable scrap metal, green waste and concrete stockpiles to upscale with population growth. The site can accommodate the relocation of the mobile work force, which will offer opportunities for plant and resource sharing.

2.3 Howard Springs

Howard Springs has a medium service level due to its older, uncovered disposal area and the lack of a weighbridge. Wastes such as concrete, bricks and tyres are not accepted.

Howard Springs service level

Service	Level
Operators	1 gatekeeper 1 operator
Plant	1 backhoe loader
Waste Disposal	Open air disposal into skips
Resource Recovery	Cardboard, dry recyclables, green waste, wood waste, car batteries, scrap metal, waste oil

The Howard Springs WTS sees only 40% of the tonnages delivered to Humpty Doo, yet it is used by 5,000 vehicles per month which is comparable to the 6,000 vehicles per month that use Humpty Doo. The tonnage discrepancy is due to the fact that commercial collection trucks are required to deliver their waste to Humpty Doo – when this is accounted for, both sites have similar resident usage and tonnages.

Over the course of the waste strategy, expansion of residential development at Coolalinga and future residential development at Holtze will lead to sustained increases in the number of residents that use the Howard Springs WTS. It is expected that such development will result in increased tonnages to landfill, although the rate of increase is unclear, as it was found that while the Litchfield population grew 20% from 2011 to 2016, the waste to landfill figures remained relatively unchanged. It is not known whether this trend will continue into the future, as preliminary figures for 2017 indicate that there has been a significant drop in waste tonnages across the three transfer stations. The driver for change to the Howard Springs WTS site will primary be based around ensuring the site can handle increased vehicle movements associated with an increased population.

2.4 Berry Springs

Berry Springs WTS has a similar configuration to Howard Springs although it also has a lower service level due to its lower level of supervision, absence of a gatehouse and fewer recycling options for residents. Wastes such as wood waste, concrete, bricks and tyres are not accepted at this WTS.

Berry Springs service level

Service	Level
Operators	1 gatekeeper 1 operator
Plant	1 backhoe loader
Waste Disposal	Open air disposal into skips
Resource Recovery	Cardboard, dry recyclables, wood waste

Expected population growth in the Berry Springs area will eventually necessitate changes to the WTS configuration. At present the Berry Springs WTS receives a comparable amount of material to the Howard Springs WTS. The lack of a gatehouse and site supervision means that loads are unable to be inspected and there is no record of vehicles entering and exiting the site. A charge is unable to be levied on loads of green waste to cover the cost of shredding, unlike the process at the Humpty Doo and Howard Springs facilities.

The lack of supervision during the middle of the day has led to occasional incidents of illegal dumping of waste, such as chemical containers and truck loads of farm waste. The illegal dumping reduces the amenity of the site and can pose a risk for residents, staff and the environment.

Sustained growth in the Berry Springs area may result in an expectation for a service level similar to Howard Springs, such as a manned gatehouse and access to recycling, particularly as Berry Springs is the most distant WTS. Balancing the expectations and needs of existing residents with new arrivals will be best achieved by monitoring the satisfaction of WTS users via surveys.

2.5 Seasonal variations

Operating the transfer stations at Berry Springs and Howard Springs in the wet season presents additional challenges as the tipping/unloading area is open to the weather. The tonnage data was examined to investigate whether rainfall into the open skip bins was increasing the weight and, in turn, the amount payable at Shoal Bay landfill. The table below displays the average difference between the wet season (November-April) and dry season (May-October).

Wet and dry season comparison 2012-2016

WTS	Average difference between wet and dry season tonnages	Difference to Humpty Doo
Berry Springs	2.9%	0.5%
Howard Springs	3.2%	0.8%
Humpty Doo	2.4%	-

Differences in waste composition between the wet and dry seasons could be attributed to a range of factors, such as the dry season seeing more tourists visit the area, and the wet season having Christmas holidays. The data indicates that there is very little difference that can be attributed to rainfall between covered and uncovered tipping areas, thus the Humpty Doo everage difference can be used as a benchmark.

2.6 Recycling

When all materials are considered, the diversion from landfill is around 33%. This is largely due to mulch and wood waste sales, concrete crushing and the collection of scrap metal and due less to household recyclable material.

The following table shows the proportions of total waste generation received at the transfer stations that is recycled. The tonnages used for recyclable material below are not exact figures, as only Humpty Doo has a weighbridge.

Additionally, there are a number of materials measured in cubic metres when they leave the site, making comparison of data approximate. Total recovery is considered all recyclables as a portion of the total generation, whereas household diversion is restricted to dry recyclables such as paper, cardboard, plastics and cans.

Recycling comparison 2016/2017

WASTE TRANSFER CENTRE	Humpty Doo	Howard Springs	Berry Springs	Combined
Total Generation^	8067 t	3139 t	2188 t	13 394 t
Total Recovery^	2732 t	1046 t	437 t	4215 t
Total Recovery %	34%	33%	20%	31%
Dry Recyclables Diversion^	181 t	105 t	86 t	372 t
Dry Recycables Diversion Rate %	2%	3%	4%	-

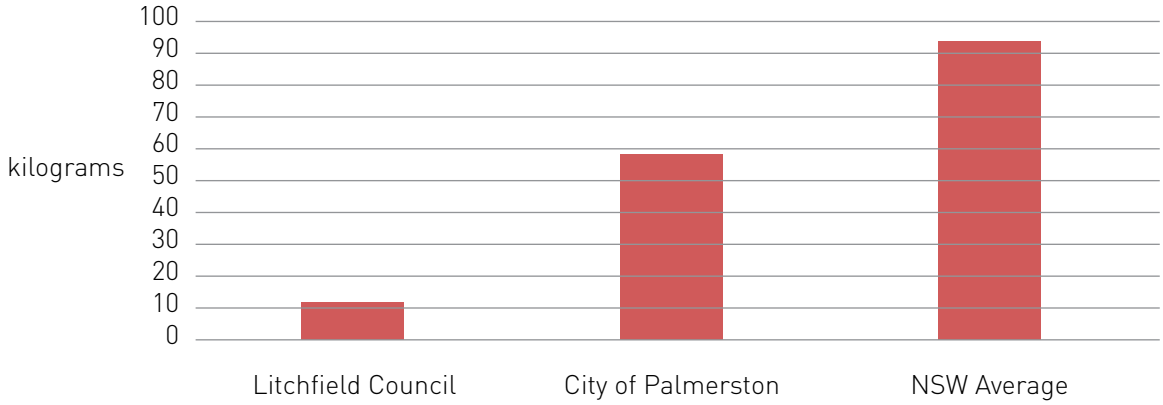
^ Estimate only as assumptions have made to convert volumes to tonnes.

It is worth noting that Humpty Doo WTS did not significantly outperform Howard Springs WTS on a percentage basis. This is despite the fact that significant upgrades totalling $3.3 million were completed at the Humpty Doo WTS in 2012. This suggests that infrastructure improvements at the WTSs must be complemented by programs to encourage a change in recycling efforts.

Household recyclables

There is minimal diversion of household dry recyclables delivered to the transfer stations. In all, just 372 tonnes were diverted from landfill in 2016/2017, a small amount when compared to the roughly 8700 tonnes of waste disposed at Shoal Bay. On average, Litchfield Council collects substantially less recycling per person than the City of Palmerston, which in turn is outperformed by the average for NSW.

Annual Dry Recyclables Collected per Person



\Palmerston provides residents with access to a similar WTS that is free for residents - the key difference being the availability of kerbside recycling which reduces the amount of recyclable waste taken to the facility by residents. The NSW performance reflects a waste levy that penalises landfill and takes into account the widespread provision of kerbside recycling, along with decades of sustained investment in recycling education.

Bulky materials

The recovery of bulky materials, such as green waste, wood waste, concrete and steel, contributes the most to Council's diversion of waste from landfill. Residents are charged a nominal fee, which partially covers mulching or crushing of the material by contractors.

In November 2016, Council waived the fee for disposal of green waste to encourage community clean up in preparation for the approaching cyclone season. It was a successful initiative, with a doubling of the number of vehicles delivering green waste to the transfer stations. This initiative was repeated in November 2017.

Mulching of green waste costs Council $40 to $50 per tonne; increased tonnages result in an increased cost to Council. It could not be determined whether the spike was caused by additional green waste that would normally remain on the property or whether residents simply took the opportunity to deliver waste that may have been delivered at another time of the year.

2.7 Cost

After infrastructure (roads, reserves, drainage, buildings, etc) Council spends the highest amount of money on waste management, representing nearly 20% of Council's budget. In 2016-2017, the total budget for waste management was $3,149,048. The top four expense categories were:

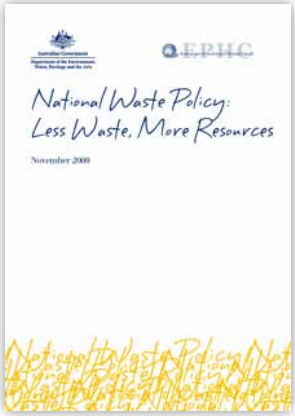
- Employment 34%
- Fees for Disposal at Shoal Bay 24%
- Transport fee to Shoal Bay 15%
- Materials and Contracts 12%

Council recovers (via a waste charge on each rateable lot) the full cost of its waste management services each year. Therefore, any reduction in operational cost is a reduction in the waste charge to the ratepayer.

PART 3 The strategic context

3.1 Overview

The strategic context for waste management is important to understand. Every level of government has a role to play in working with the community to see waste managed in an economic and sustainable manner.



Strategic context for waste management in Litchfield

3.2 Litchfield Strategic Plan 2016-2020

Council's Strategic Plan 2016 – 2020 comprises four priorities for our community, and within those, we work on 20 outcomes that we know matter to our communities. This is underpinned by actions taken to ensure an effective and sustainable Council. The Waste Strategy is a key element to delivering the Litchfield Council Strategic Plan 2016 – 2020, and Council's vision of making Litchfield the best place to live in the Top End.

Everything you need	The transfer stations represent essential infrastructure required by the community.
A great place to live	Residents use the transfer stations weekly, so with an increased focus on site layout and amenity, the stations can offer an improved user experience and become more than just a place to enter and exit as quickly as possible.
A beautiful natural environment	Efforts to increase resource recovery will lead to a more sustainable community in Litchfield. Reduced litter and illegal dumping will improve the amenity and protect the renowned natural environment.
A Vibrant Economy	Reuse and recycling creates employment opportunities inside the Litchfield municipality rather than sending waste outside the Council area.

Within Priority #1 – Everything you need, Council's goals for waste management as outlined in the 2016-2020 Strategic Plan are:

- Landfill is minimised via a combination of incentives, redesigned WTS processes, and community education.
- Revenue is maximised from glass, steel, crushed concrete, green waste and wood waste.
- Littering and dumping enforcement methods are investigated.
- The location and function of the proposed regional waste facility meets Litchfield's regional needs.

3.3 Northern Territory context

National data on waste is limited. The most recent useful data dates to 2010-11[1] where the Federal Government published an Australia wide dataset of waste tonnages displayed below. It shows the tonnage generation per person and diversion rate for each state/territory in Australia, the diversion rate being the process of diverting waste from landfills for recycling.

Table 9 - Waste generation Australia 2015/2016

State/ Territory	Generation	Disposal	Recycling	Diversion rate
	Units: Tonnes/ person/ year			
ACT	2.56	0.54	1.93	79%
NSW	2.38	0.83	1.49	65%
NT	**1.32**	**1.2**	**0.06**	**9%**
Qld	1.68	0.8	0.8	52%
SA	2.36	0.54	1.74	77%
Tas	1.18	0.8	0.31	33%
Vic	2.18	0.83	1.3	62%
WA	2.56	1.57	0.92	39%

Disposal of waste in the NT as a whole was almost exclusively to landfill, with a diversion rate away from landfill of only 9%. The low diversion rate for the NT is largely due to two factors: scattered and sparsely populated remote communities and a lack of incentives to recycle and avoid landfill. Though the data is over 6 years old, it is useful to show relative performance and still provides a useful indicator in 2017. The intervening years have seen states such as NSW, Victoria, SA and WA introduce and steadily increase their landfill levies to drive higher levels of recycling. The levy is a price tool that is only paid on waste actually landfilled – wastes that are recycled do not attract a levy. NSW charges a levy of $133.10/t of waste (metro), Victoria $60.52, South Australia $57.00 and Western Australia $55.00. A portion of the funds raised by waste levies are returned to councils and businesses via grants programs. In this way, it is both a carrot and stick approach to drive recycling. It is likely that other states have further increased their lead over the NT since the above dataset was compiled.

Northern Territory Government

The *Northern Territory Environment Protection Authority Act, 2012* commenced on 1 January 2013. The Act established the Northern Territory Environment Protection Authority (NT EPA) as an independent regulatory authority.

The NT EPA draws its powers from the *Waste Management and Pollution Control Act, 1998* under which environmental protection approvals and licences are issued. Humpty Doo and Howard Springs transfer stations operate under environmental protection licences. Annual inspections are carried out on each of Council's transfer stations; to date there have been no issues raised by the NT EPA.

The Berry Springs waste transfer station is not required to be licensed due to the fact that there are no listed wastes stored on site (batteries, tyres, waste oil etc.).

[1] Department of Environment and Energy, (2013), National Waste Report.

In July 2015, the NT EPA published the Waste Management Strategy for the Northern Territory 2015-2022, detailing the key aspects for understanding and improving waste management and recycling performance throughout the NT. Actions are grouped into the following categories shown below.

NT EPA Waste Management Strategy Actions

NT EPA goal	Litchfield's contribution
Engagement and education: Engage and educate on reducing waste generation and minimising the impacts of waste disposal	Poor – At present, Council has no resources allocated for community waste education.
Improve waste management: Promote waste reduction and resource recovery in the Territory	Average/Good – Council recycles at a rate above the Territory average; that being said, it is the lowest jurisdiction average in Australia. Council provides residents with the opportunity to recycle at each of the transfer stations. More effort needs to be made to discover why the facility is not being effectively utilised and to encourage residents to do so.
Improve waste data collection, monitoring and analysis	Average – Two of the three transfer stations have a gatehouse that record the incoming waste. Council has not conducted an audit of loads that enter the site to document the waste composition.
Improve the regulatory framework: Bring Territory landfills towards best practice management	Good – Council's transfer stations are regularly inspected and meet the requirements of the NT EPA.
Reporting and Public Reviews: Maintain transparency and ongoing improvements in waste management outcomes in the Territory	Good – Council has involved the community throughout the strategy development, with a reference group and surveys.

The NT EPA Waste Strategy does not commit to any hard targets as seen in other states and territories, such as a percentage diversion from landfill or reduction in littering – most states in Australia have set targets of between 60-90% landfill diversion by 2020. This provides an incentive for state and territory governments to create economic or policy conditions to help achieve these targets. These targets are often adopted in the local government strategies in order to secure funding for projects that drive recycling.

Emergency Waste Management

The Top End of the Northern Territory is naturally prone to tropical cyclone events, with two to three cyclones affecting the region between November and April each year. In the event of an emergency, the Department of Infrastructure, Planning and Logistics (Engineering Group) will be responsible for coordinating the operation of waste management facilities while also managing the clean-up.

3.4 Federal Government

The Federal Government developed a National Waste Policy in 2009 that sets a 10-year framework of priorities and guiding principles for managing resource recovery issues and relevant stakeholder relationships. This initiative includes extended producer responsibility and related initiatives to concentrate attention on problematic waste streams such as electronic waste (e-waste) and hazardous materials.

The National Television and Computer Recycling Scheme was established in 2011 to provide Australian householders and small business with access to industry-funded collection and recycling services for televisions and computers. However, the NT is considered 'remote', which has seen the implementation not progress as quickly as in other parts of Australia.

As a result, residents of Litchfield do not have access to free e-waste disposal. This is likely to be the case for most other product stewardship schemes driven by the Federal Government; if they eventually do make it to the NT, it is likely that the collection points will be in Darwin and not in the Litchfield Municipality. Council will advocate on behalf of residents for the widening of product stewardship schemes.

3.5 Top End Regional Organisation of Councils

Litchfield Council is a member of the Top End Regional Organisation of Councils (TOPROC), which is committed to the sustainable development of the Greater Darwin Region and meets regularly to explore common issues and generate potential solutions. TOPROC membership is made up of Mayors and CEOs from the following Councils:

- Belyuen Community Government Council
- Coomalie Community Government Council
- Darwin City Council
- Litchfield Council
- Palmerston City Council
- Wagait Shire Council.

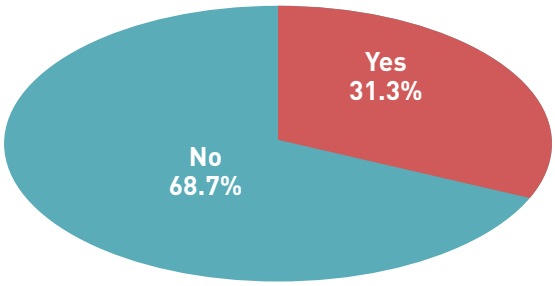
TOPROC has been advocating for a regional waste landfill to be developed in the Litchfield Municipality, initially as an emergency waste management site and, in the longer term, as a future alternative to Shoal Bay. If this facility transitions from only emergency-derived waste management (such as a cyclone or major flood) to become an alternative landfill to the Shoal Bay facility, then it would provide local employment opportunities and reduce the haulage cost to Litchfield Council for waste disposal. It is anticipated that the emergency waste facility will be established within the next three to four years.

PART 4 Community involvement

To guide the strategy development, Council formed a community reference group (CRG). The CRG is comprised of eight residents who volunteered to bring community perspectives to the strategy development.

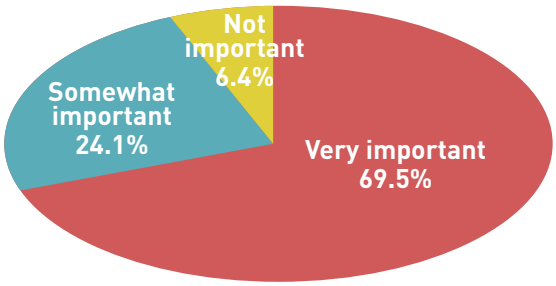
Survey Question 13

Q13: Do you believe Council should consider a kerbside waste and recycling collection service or some other waste collection service, even if it means increasing the rates?



Survey Question 7

Q7: How important is it to you for Council to offer the opportunity to recycle various wastes?



In addition, Council engaged directly with Litchfield residents through a community survey. The CRG assisted by reviewing the questionnaire and suggesting changes.

Feedback was sought on Council's waste management service from Wednesday 1 February to Friday 10 February 2017. On five of the days, Council staff were on site at the three transfer stations to assist residents in completing surveys. Residents were provided with multiple avenues to complete the survey, including online, on an iPad and paper surveys.

Survey results

The survey received 937 responses - representing nearly 8% of the voting age population of the Litchfield municipality[2]. This sample size is considered to provide statistically strong data. Key feedback included:

- 97% of residents thought the waste management service at the transfer stations was either great or average, with only 3% saying it was poor.
- Nearly half of residents use the transfer stations once per week. A quarter use it multiple times per week and the other quarter less than weekly. Any home recycling schemes will need to take this into consideration.
- Over 90% of residents sort their recycling at home. For Council to promote recycling rates, it may need to provide a means of assisting residents at their homes.
- 70% of residents thought recycling was important.
- 69% of residents thought Council should not offer a kerbside waste collection service, thus demonstrating that the community supports the existing transfer station model. The strategy should reflect this support.

[2] Profile i.e. (2011), Census data.

PART 5 Why the current system needs to evolve

5.1 The effect of low recycling rates

The continuation of a 'business as usual' approach to waste management will probably result in the majority of Litchfield's waste continuing to be landfilled at Shoal Bay. This represents a missed opportunity to:

- Avoid the environmental hazard of waste transport and landfill operations
- Reduce the need for the extraction of raw materials and energy,
- Reduce the cost of transportation of waste to landfill, and
- Preserve our world class natural environment.

Across Australia, the NT has the lowest diversion of waste from landfill. This low mark presents a leadership opportunity for Litchfield Council. If Council can successfully increase the diversion of waste from landfill, it will provide a template for other regional councils that do not offer kerbside collection of waste.

5.2 Growth and the waste haulage contract

Tonnages to landfill have steadily declined from 2011-2016; yet during this period it is estimated that the Litchfield population grew around 20%[3]. The tonnage decline goes against the conventional wisdom that population growth and waste are linked. Since the recycling of bulky waste has been steady and the capture of household dry recyclables low, there are several possible reasons why the tonnes to landfill have been declining:

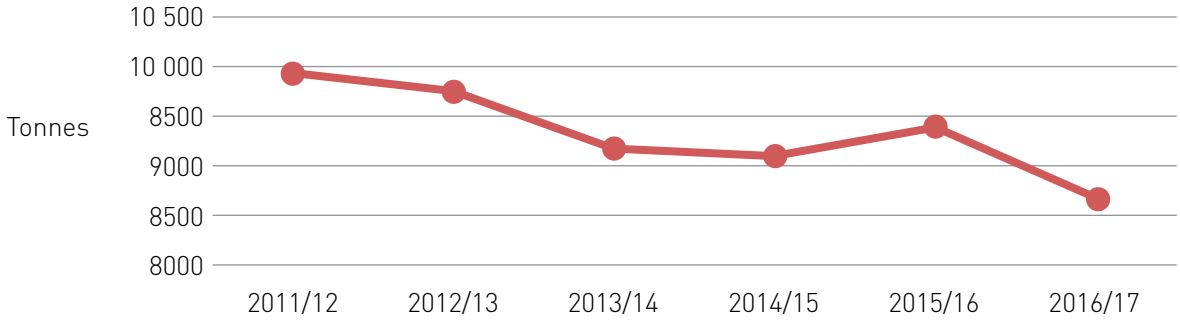
- Litchfield households are consuming less over time than the typical Australian household.
- Waste is being disposed at other facilities, or
- Residents manage their waste at home via burning or other methods.

It must be noted that Council does not have an accurate way to measure population in the municipality. There have been a number of large construction projects, such as the Inpex LNG gas plant, that have drawn workers to the NT. Litchfield in particular has been a popular destination, as the large lots can accommodate multiple dwellings, some temporary and some more permanent, constructed on land that would normally have only one house. This results in a large but unquantified transient population that won't necessarily be living in Litchfield after the construction phase[3] of these projects winds down.

3 ABS, (2011), census data

Council cannot rely on this unusual trend to continue. The impact of population growth must be considered over the term of the next contract and will require flexibility in both directions. Fewer collections may be needed with successful increases to recycling or population decrease, while more collections may be necessary if the rapid population growth continues.

Howard Springs Transfer Station Waste Disposal – Annual Tonnes to Shoal Bay



[3] ABS, (2011), Census Data.

Waste haulage contract

Council's previous five year transport contract expired in December 2016; an extension is currently being used. Council has the option to seek another one year interim arrangement for a maximum one year for waste disposal in order to prepare for the next multi-year contract, or alternatively Council could proceed with a new multi-year contract now.

It will be important for the next contract to separate out the steel collection from the waste haulage – at present Council earns no revenue from the scrap. A separate steel contract could result in Council earning upwards of $20,000 per year.

In setting the term of the next contract, Council must consider the potential impact of population growth and how this will affect the rate of waste disposal at the transfer stations. It will not be important, however, for Council to make any provision for a landfill destination change, as the regional landfill, if it is developed during the contract's term, will likely only provide airspace for emergency event-related waste such as that generated after a cyclone.

Strategic Action: *In early 2018 Council will need to establish a new contract for waste disposal. The opportunity with the next contract is to separate out the steel collection from the waste haulage – at present Council earns no revenue from the scrap. The potential impact of population growth over the term of the next contract will necessitate flexibility in both directions: fewer collections may be needed with successful increases to recycling, while more collections may be necessary if the rapid population growth continues.*

Urban land, urban mentality

The response to the community survey clearly indicated that there was a minority of support for a Council-run kerbside collection across the Litchfield Municipality. Nevertheless, Litchfield is the fastest growing municipality in the NT and residential development at Coolalinga and other Rural Activity Centres will expand in coming years and an expected new residential suburb at Holtze also in the same timeframe may lead to changing expectations for the service level provided by Council. If subsequent ten year growth, matches recent ten year growth Litchfield will require an additional 500 dwellings within the near term of five to ten years.

Small urban-style lots will become more common as part of this demographic change for several reasons:

- As zoning changes there will be a steady supply of large lots available for subdivision.
- Smaller lots will be more affordable for homeowners and renters.
- New arrivals relocating from Darwin or other cities may prefer smaller lot sizes.

These new households will not have the same space to store waste as the existing properties with acreage. This can already be seen with over half of the small lots in Coolalinga having a kerbside collection of waste provided by private contractors.

The priority for Council is achieving the service level expected by residents. If the existing transfer station model continues to meet the expectations of existing and new residents, then no changes are required. However, if there is a divergence in expectations, Council may need to investigate partnering with other municipalities or private operators to provide waste services, such as kerbside pick-up, to defined areas.

Around 150-200 urban style premises in a defined area would be required before the benefits of a collection partnership could be investigated. Council will need to demonstrate to residents that the benefits offered by a compulsory suburb wide collection are greater than the existing model of engaging private collectors.

Given that waste services are user pays, a special rate could be applied to these suburbs. Across Australia, this is a common practice where farming communities surround a township. Residents who live in the 'town' pay a higher waste charge to reflect the increased service level offered by a kerbside collection. Council may need to introduce new by-laws in order to allow for differential waste charges.

Council should be ready to consider whether and how to introduce such a service to existing and future urban communities.

Strategic action: *Council could monitor the peak flows of traffic to ensure that opening hours remain reasonable, as well as the frequency of removal of full bins from the WTS to landfill. Where it is found that the WTSs are nearing operational capacity, Council could investigate options to expand or reconfigure the sites to maintain service levels following local population increases.*

Council could also work with the NT Government to track the development of any new suburbs and the number of infill urban lots being released and monitor development, to ensure that waste management techniques are sufficient and suitable.

5.3 Understanding the waste composition

Before committing to change, it is important to quantify the potential for diversion of waste from landfill. Council needs a greater understanding of the waste being delivered to the transfer stations, in particular the amount of recyclables and food organics that are being sent to landfill at Shoal Bay. Waste audits are the most common way of determining the composition; they are frequently used in other states where consistent methodologies for undertaking such audits have been in place for long periods. This information will be used to calculate potential benefits and cost-effectiveness of changes to recycling.

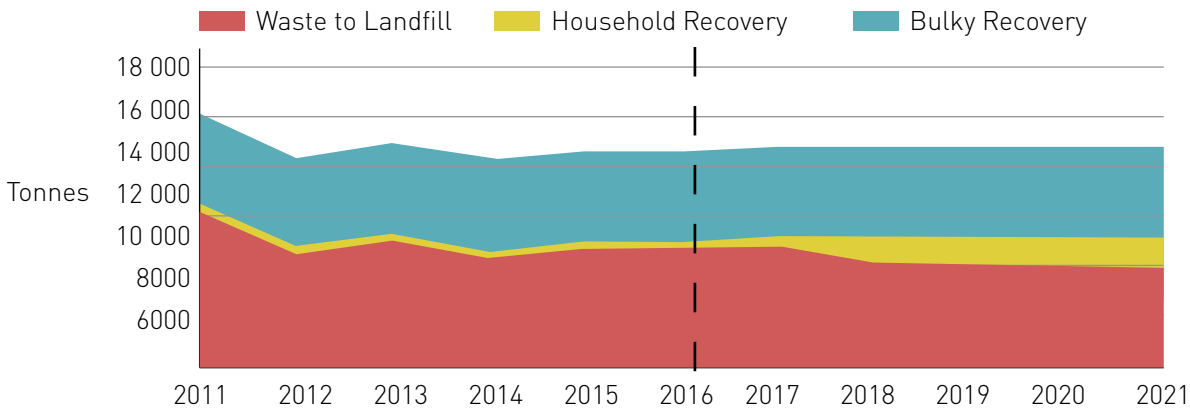
Strategic action: *Waste audits are the first step necessary for Council to quantify the amount of recyclables and food waste being sent to landfill. At Litchfield, this would be achieved by diverting randomly selected vehicles to a separate tipping area where the loads can be visually inspected.*

5.4 Household dry recyclables

The recovery of bulky materials, such as green waste, concrete and steel, contribute the most to Council's diversion of waste from landfill. However, this process is already largely optimised. The greatest increase to recycling rates involves dry recyclables, such as paper, cardboard, plastics, glass and cans. A useful rule of thumb is that dry recyclables form about 20% of the waste collected from households across Australia with a kerbside recycling bin. Council will need to aim for this figure if it wishes to deliver a best practice waste service to residents.

A target dry recyclables diversion rate of greater than 15% within 10 years is achievable with the right incentives in place. Expressed in today's tonnages, it will mean growing the annual tonnes of household dry recyclables from shy of 300 to over 1,500.

A target 15% can be achieved within four years; the thin orange line represents the household recovery of recyclables and it expands within a few years. Left of the black line is the historic performance and to the right is a projection which assumes that from 2018 Council will combination a mix of incentives, support and infrastructure at the transfer stations to encourage greater recycling. Potential incentives to be trialled are located and detailed in Appendix 1.



Howard Springs Transfer Station Waste Disposal

It is important that Council initially try to boost recycling using the current infrastructure, as past upgrades to Humpy Doo WTS did not result in a noticeably better capture of household recycling than Howard Springs or Berry Springs WTS.

Strategic action: *Council could trial a mixture of incentives over a six-month period to see which incentives promote the greatest increase in recycling. Should it be found that recycling is significantly improved by providing covered facilities such as a shed, then the costs and benefits of such a purpose-built structure could be considered at the conclusion of the trial.*

Methodology for Estimating Diversion Rate:

Best practice examples of collecting dry recyclables in Australia typically involve kerbside collection. If Litchfield is to benchmark itself against the top performers, it will need to compare on a like for like basis: this will need to exclude items such as furniture, which are not capable of being collected in a 240L wheelie bin.

For the purpose of this report it was assumed that 85% of the waste delivered to Shoal Bay is comprised of objects that would fit in a wheelie bin; the actual percentage can be determined via the waste audits. Based on 85% of the 2016/2017 tonnages, Litchfield would need to be collecting about 1,500 tonnes of dry recyclables to achieve a diversion of 18%, which would be equivalent to the typical kerbside recycling service.

Supporting separation at home

In the community survey, over 90% of residents reported that when they do separate recyclables, it's done at home rather than at the transfer station. This presents a challenge as there is limited information on proven ways to increase separation of recyclables without a kerbside collection – most Australian case studies are related to the 92% of households in Australia that have a kerbside recycling system. Council will need two pieces of information from the waste audits in order to best support residents to recycle at home: the types of recyclables that are going to landfill, and how those recyclables are being delivered to the transfer stations (such as in garbage bags mixed in with waste or separated in plastic containers).

Strategic action: *Education material could be developed based on the types of recyclables that are being landfilled and Council could examine if providing dedicated recycling containers is likely to help residents.*

Green waste

The recovery of green waste and wood waste contributes significantly to Council's diversion of waste from landfill, and residents are charged a nominal fee that partially covers contractors mulching of the material. The November 2016 Council trial of waiving the fee for disposal of green waste, to encourage community clean up in preparation for the approaching cyclone season, drove a doubling of the number of vehicles delivering green waste to the transfer stations. This initiative will be repeated in November 2017.

Strategic action: *Council could continue to offer free green waste disposal during the month of November to encourage clean-ups before the cyclone season.*

Council-run recycling shed

Separate recycling drop-off windows at Walcha, NSW

Council spends around $55,000 per year to divert dry recyclables from landfill; this covers collection and separation by the contractor. High level assumptions about material prices put the current value of Council's dry recyclables at around $20,000 - $30,000 once they are separated. Council can potentially capture this value by having residents separate the material into different bins.

This will require several steps:

1. Council must first increase the amount of dry recyclables captured, this is necessary to create an economy of scale around the materials.
2. Council must then identify an incentive so residents are willing to separate plastic, paper and coloured glass into different bins. This will enable Council to negotiate with the collection contractor who will provide a revised price based on collecting the skip bins of higher value separated materials.
3. After demonstrating that the concept is viable, Council can investigate the potential to invest in bailing and storage and whether it is profitable to sell the material directly.

The risk in jumping straight to Step 3 is that labour costs and infrastructure, such as bailers and undercover storage will certainly erode any potential for cost savings, not to mention that residents may not be willing to spend time separating recyclables. Around 600-900 tonnes per year of dry recyclables will need to be captured before the benefits of a Council run system begin to outweigh the risks. Experience from other Councils is that unless established with a strong business case, operational controls and a strong after-market, a recycling shed often does not deliver the desired result. Council should look at this option more carefully before deciding how to proceed.

Container Deposit Scheme

Council currently accepts (at no charge), containers eligible for the deposit and collects the deposit from a third party when Council takes the containers to that facility. The revenue from this amounts to around $10,000-$15,000 per year from the Container Deposit Scheme (CDS) and this money is returned to the community through Council's Community Grants Scheme. Recently, a private enterprise explored establishing a private facility in Humpty Doo and has commenced operation mid-November 2017. Council has several options, including:

- Formalise a drop-off point at the transfer station and offer the CDS to residents, potentially competing with any private operator offering a CDS drop-off facility; or
- Continue to receive eligible containers for free and rely on the convenience to residents of a one-stop drop off for all wastes at the transfer station. The drop-off point could be enhanced with educational material about the benefits to the community of people providing containers to Council for free, rather than using a different facility in return for cash.

In the case of the first option, the revenue for Council's Community Grant Scheme will be compromised. In the case of the second option, Council will see a lower influx of containers, but will be able to retain all the revenue generated. It is anticipated that the second option will be more viable for Council and beneficial for residents wishing to recycle containers eligible for deposit.

Depending on the future potential impact to this revenue, Council will be able to develop branding to be used with the grants to help spread the recycling message and engage the community. The branding will link community efforts with recycling to helping make Litchfield "the best place to live in the Top End."

Strategic action: *Council should investigate whether to:*

- *Formalise a drop-off point at the transfer station and offer the CDS to residents, potentially competing with any private operator offering a CDS drop-off facility, or*
- *Continue to receive eligible containers for free and rely on the convenience to residents of a one-stop drop off for all wastes at the transfer station. In this case, the drop-off point could be enhanced with educational material about the benefits to the community of people providing containers to Council for free, rather than using a different facility in return for cash.*
  Council could develop branding to be used with the grants to help spread the recycling message and engage the community.

5.5 Food organics

The amount of food organics generated and disposed of by households in Litchfield is unknown. It is likely that a large portion ends up in landfill at Shoal Bay, though with the majority of residents living on acreage there is likely to be some proportion that is composted or fed to animals. Anecdotal feedback from the Humpty Doo WTS operators indicate that there are significant amounts of organics present in the rear loader trucks due to the strong odour and wetness of the waste when tipped onto the floor, indicating that those residents who utilise a private kerbside pickup service are putting food organics into the kerbside bin.

In other parts of Australia, food waste has been found to make up to 35%-40% of the total kerbside waste generated by households each year[4]. For this reason, it has been made a high priority by a number of jurisdictions. The most common method for food waste management is a dedicated kerbside bin where the garden organics and food are collected together and taken to a composting facility. It is noted that the high priority status elsewhere is a result of their dry recyclables collection being highly optimised, an area where Litchfield Council will need to focus its efforts first. Council will need to quantify the amount of food present through a waste audit. A centralised infrastructure solution is not possible in Litchfield due to the small population. Council is best placed to support residents at home by running educational workshops and providing information to users of the transfer stations.

Strategic action: *If waste audits find large amounts of food waste then Council could investigate the benefits of providing educational workshops and information about home composting kits.*

[4] Department of Environment, (2009), National-food-waste-assessment

5.6 Waste education

Council's 2017-18 budget does not provide allowance for waste education. The changes that flow from the strategy will likely require resources to engage with the community. Activities such as workshops and brochure design can be subcontracted, but these require coordination effort that existing staff are unlikely to be in a position to deliver. There will also be opportunities for engaging with residents using the Council website and Facebook. Examples could be promoting good behaviour and highlighting the damage of disinterest or non-participation. It could also involve providing regular updates on the initiatives both at the transfer stations and in the wider community.

In delivering a Waste Strategy, Litchfield will be assisting the NT EPA to achieve the goals of the Northern Territory Waste Strategy and may qualify for EPA grants of up to $20,000 related to waste projects which can help fund the actions from our Strategy.

Strategic action: *Council could investigate external funding options such as through the NT EPA to support continuing waste education.*

5.7 Commercial waste costing residents

Example of typical rear loader collection truck

Around 60% of mixed waste tonnages delivered to the Humpty Doo transfer stations is by private collection trucks. Humpty Doo WTS is the only WTS to accept private collection trucks because of the weigh-bridge facilities to measure the amount of waste. These provide kerbside collection services to households and businesses in the municipality. Council's waste service operates on a cost recovery basis where each household contributes, via the waste charge, toward the cost of disposing the community's waste at the Shoal Bay landfill. Businesses do not pay a waste charge, meaning households end up footing the bill each for each tonne of commercial waste that requires disposal.

Council cannot determine what portion of loads are from households as opposed to businesses when the waste is emptied from trucks. Council should therefore pursue an approach whereby any mixed loads of residential and commercial waste entering the Humpty Doo transfer station will be charged at the commercial rate. This will ensure that the waste service is providing value for money for all Litchfield residents. Council should monitor vehicle numbers to ensure that the transfer stations are capable of handling increases in the numbers of households who deliver their waste directly.

Strategic action: *Since private collectors deliver mixed truckloads of household and commercial waste to the Humpty Doo WTS and do not contribute to the cost of Council's waste service (only residential properties), they should be charged for waste disposal service.*

Commercial recycling

The provision of recycling opportunities to the business community of Litchfield is not widespread. This may be because there are not enough businesses to justify a dedicated recycling truck, as well as because the price of landfill at Shoal Bay is cheaper than the cost of sorting collected recyclables from businesses. As more businesses are opened in the Coolalinga area and in the future, Holtze, there may arise a demand for recycling. This will likely be driven by a bottom-up demand and so can be supported by Council through education. Other jurisdictions have used a waste levy to substantially increase the cost of landfill, resulting in the collection of recyclables becoming widespread. The price of landfill at Shoal Bay and the presence of a levy are issues that are outside Council's direct influence which limits Council to an advocacy role.

Some centres, such as Coolalinga, have also seen rapid growth in supermarkets and retail outlets. Increasing amounts of product is packed in 'disposable' containers of waxed cardboard or polystyrene, which present recycling challenges.

Strategic action: *Council could work with business owners in the municipality to find out what current limitations exist around recycling. Businesses that are successfully recycling can be promoted to residents.*

5.8 Problem wastes

Some wastes should not be sent to landfill and require special treatment. These problem wastes include paint, oils, e-waste, gas bottles, fire extinguishers, car batteries, household batteries, smoke detectors and fluorescent globes, household cleaners, pool and hobby chemicals and pesticides. Litchfield residents are limited to recycling oil and car batteries at the transfer stations. These services are available because waste oil recycling is funded by the Federal Government's product stewardship scheme and car batteries are a valuable commodity. Providing recycling at the transfer stations for the other materials listed above is not economically viable in Litchfield, as to be received they must be transported to the south east of Australia at high cost. In other jurisdictions, the recycling of problem waste is made available through funding from landfill levies. Council's best action regarding problem wastes will be to advocate for the expansion of the Federal Government's product stewardship schemes to include services to regional Councils.

Strategic action: *Council could advocate for future product stewardship schemes to be made available in regional areas.*

5.9 Illegal dumping

Council does not have any by-laws in place to pursue and prosecute littering and illegal dumping. The majority of illegal dumping occurs on Crown land and the NT Government highway road reserves where Council does not have the authority to act. It will require partnership with these authorities to prevent illegal dumping. Development of fast food restaurants in Coolalinga has resulted in increased littering along roads and this is expected to rise further when additional fast food outlets are opened. Council may need to partner with the owners and operators to tackle this issue should it arise.

Strategic action: *Council could engage with fast food outlets by establishing a stakeholder working group to discuss roadside littering from fast food and identify measures to reduce the incidence of such littering and the role fast food outlets might play.*
Council could work on establishing amenity protection by-laws providing Council with greater enforcement ability.

5.10 Waste transfer station amenity

At present, the transfer stations are typically bare and lack vegetation. Aesthetics and a visually pleasing site can assist in user compliance and help reinforce the resource recovery ethos. The aesthetic appearance of the transfer stations could be improved by vegetation screening and improving signage, however, consideration must be given to line of sight from the gatehouse to ensure the site can be effectively monitored. Consideration may also be given to the establishment of community gardens or other visual enhancements, such as waste to art installations. This could be achieved by partnering with schools and community groups.

Strategic action: *Council could lift transfer station amenity through the use of vegetation and custom artwork created from reused materials.*
There is an opportunity to trial a community purpose garden at Humpty Doo. Feedback from the trial could be adopted into any plan to replicate a garden at other sites.

Rebranding

Another way of promoting recycling is to promote the evolving purpose of Council's waste transfer facilities. While the transfer stations primarily act to transfer waste from the user to Council with eventual disposal to landfill, there is already a considerable amount of recycling occurring with concrete and green waste, for example. These materials are processed on site at Humpty Doo and then on-sold. In this sense, the transfer stations act to recover resources, as much as handling waste.

Strategic action: *Council could seek to re-brand the transfer stations as Resource Recovery Centres, to represent a shift towards a more sustainable future. Branding can assist in influencing community thinking and behaviour.*

5.11 NT EPA compliance

Landfill closure

Council has old landfills adjacent to the transfer stations at Berry Springs and Howard Springs. Under the current legislation, the remediation can remain uncompleted whilst the sites remain in use as a waste facility. Both landfills have been covered with an interim cap of soil, but the final cost of a long-term cap is yet to be determined and has not been budgeted for. Closing a landfill properly involves the construction of a clay cap that prevents water from percolating through the waste. There is ongoing maintenance required, such as filling cracks in the cap and, in some cases, slashing grass that grows on the surface. Council must ensure that it builds a substantial reserve to cover the cost of final capping when it is found to be required. The size of the reserve required will be quantified with the preparation of a landfill closure plan that details the works required by the NT EPA. As the transfer stations at Berry Springs and Howard Springs will be used for the foreseeable future, Council has the opportunity to spread the capital cost of closure across a long timeframe, which will lessen the burden on ratepayers.

Strategic action: *The disused landfills at Berry Springs and Howard Springs have an interim cap of soil in place and, at some point in time, landfill remediation will be needed. Council will need to develop a landfill closure plan that estimates the capital costs associated with remediation and then investigate funding options for implementation.*

Berry Springs Upgrades

The Berry Springs waste transfer station is not required to hold an environment protection licence as there is no listed waste accepted on site – no batteries, tyres, waste oil, etc. As the most distant transfer station from landfill and recycling sites, Council will monitor the changing demands regarding disposal of these wastes as the population of the area increases. If the community desires disposal of tyres and batteries, then Council will need to submit an application for a license with the NT EPA.

In 2016, Council established a community working group for the Berry Springs WTS to guide the implementation of improvements based on a recent audit. Several improvements were completed, including fencing and security cameras. Berry Springs WTS is currently not staffed fulltime, with a presence in the early mornings and the afternoons. Berry Springs WTS is opened longer than Council's other two transfer stations by 7 hours per week; 6am-7pm seven days a week. The opening hours should be brought in line with Council's other transfer stations as part of providing adequate staffing and continuous supervision. Secondly, a gatehouse or some other facility that enables monitoring of vehicle numbers and waste tonnages, as well as provides on-site facilities for staff, should be installed.

Council will also need to determine the feasibility of connecting the gatehouse to utility services, such as power and water, or whether the site is best serviced from off-grid power and water. A power line is located on the northern side of Cox Peninsula Road and there is no mains water nearby. The likelihood of establishing a suitable water bore is low.

Strategic action: *Council should consider matching the opening hours at Berry Springs with Council's other transfer stations as part of providing adequate staffing and continuous supervision.*
Council should consider installing a gatehouse or some other structure that enables monitoring of vehicle numbers and waste tonnages, as well as provides on-site facilities for staff. As part of this, Council will need to determine the feasibility of connecting the gatehouse to utility services, such as power and water or whether the site is best serviced from off-grid power and water.

5.12 New regional landfill

The construction of a regional landfill inside Litchfield Municipality will have the greatest benefit to Council if it is capable of handling putrescible waste. A putrescible landfill provides two strategic opportunities: it would break the monopoly that Shoal Bay holds on landfill and Council will have a shorter haulage distance, resulting in lower costs. The Shoal Bay landfill has considerable capacity to expand and City of Darwin estimates that there are several decades of airspace available. The greatest threat to that airspace is a cyclone event or some other natural disaster that results in widespread generation of green waste and demolition waste. In such a scenario, the Shoal Bay landfill would likely exceed its capacity from one single large event. Therefore, it is anticipated that only an emergency waste disposal site is to be investigated for the short to medium term. An emergency-only waste facility has marginal benefit to Litchfield Council's waste management, that benefit being a reduction in the risk that the transfer stations become overstretched during cleanup after a major natural event. An emergency waste site only provides no option to Council to reduce landfill transport costs, reduce gate fee costs or undertake treatment of different waste streams.

Through TOPROC, Council may pursue options for a smaller scale domestic and general waste landfill cell to complement the emergency landfill, and should this be pursued, there would be landfill cell construction costs that may fall primarily to Litchfield Council and possibly other regional councils.

Even then, Council is unlikely to see appreciable savings on the gate fee at a new landfill over the existing landfill at Shoal Bay, as modern landfills tend to have similar cost structures due to strict requirements surrounding environmental standards and the use of similar operational methods to bury the waste. One option to lower a new landfill gate fee could be for Council to contribute funding towards the landfill development. Essentially, Council would be buying a slice of the landfill which it could fill over time. This approach is common in Sydney where councils lock in a 10 year price for landfill gate fees. Shoal Bay has not needed to offer discounted long term gate fees due to their existing monopoly.

Strategic action: *An emergency waste management site is urgently required for the Top End based on the capacity of the Shoal Bay to manage a natural disaster and TOPROC has expressed interest in pursuing the development of such a site.*
For a new regional landfill facility, Council could use its advocacy role to promote the benefits of a second putrescible landfill servicing the Top End.

5.13 Emergency situation waste management

In the event of an emergency, the Department of Infrastructure, Planning and Logistics (Engineering Group) has the power to take control of the transfer stations while managing the clean-up. Council needs to prepare an emergency waste storage plan for the municipality in collaboration with Northern Territory Emergency Services and the Department of Infrastructure, Planning and Logistics. This will designate areas of the transfer stations (preferably hardstands) where waste can be stockpiled in the event of a large influx. It will ensure that the sites are used in a manner that will enable Council to quickly return to normal operations while the emergency waste is progressively removed.

Strategic action: *Council should work with Northern Territory Government to determine how and where waste will be stockpiled in the event of an emergency. This should be documented in a municipality disaster waste plan for each WTS.*

5.14 Site safety

Safety of WTS operators and public users is of paramount importance to Council. Council has identified a number of safety hazards and assessed the risks. The biggest risk to users is falling from a height when unloading into skip bins at Berry Springs and Howard Springs. Humpty Doo has eliminated this risk by using a push pit disposal method. Neither Berry Springs nor Howard Springs have wheel stops or pictorial signage at the disposal area. There are several methods available to Council to control this risk.[5]

- Use of wheel stops and line markings to keep all vehicles a safe distance from edges,
- Install safety signs at all disposal points – pictorial diagrams work best,
- Provide supervision and instruction to everybody using the facility.

The transfer stations are likely to benefit from a WHS audit, which will identify other safety improvements that can be made to the sites. The audit would ideally include an assessment of user practices and the flexibility in methods for transfer of waste from vehicles and trailers.

Strategic action: *Council could conduct regular WHS audits at all three transfer stations for public and staff safety to identify improvement opportunities.*

[4] SafeWorkNSW, (2015), Falling from heights at waste management facilities.

PART 6 Waste strategy formulation

6.1 Approach

Litchfield Council has considered the matters raised in this Discussion Paper and in particular, the suggested strategic actions. Under separate cover, Council has presented a Waste Strategy that summarises some of the information in this Discussion Paper and sets out the selection actions, the timeline and costs involved.

6.2 Options that can be considered into the future

Council researched a wide variety of options to meet the objectives of the Waste Strategy and the background to these were outlined in the previous section of this Paper. In order to set a meaningful strategic direction, some options will need to be set aside as, they are currently unable to deliver the objectives during the term of the strategy. These options are outlined in the following table, to give future readers, in a different strategic environment, an understanding of Council's strategic rationale. This approach will ensure that the Strategy is the best possible one for Litchfield and addresses the needs and desires of the community.

Options not currently meeting strategy objectives

Option	Description
Council run kerbside collection of waste and recycling	The community survey found that the majority of residents were satisfied with the current WTS service level and were not willing to consider a compulsory, council-wide kerbside collection as seen in Palmerston and Darwin. The option to retain the current system and introduce a kerbside collection is not possible without a large increase in the waste charge per property per year; this will not represent a value for money waste service, since private collectors are already providing this service to households in the Litchfield municipality. Despite this, Council will need to consider when and how suburb specific kerbside collections are introduced for future urban areas, such as Holtze.
User-pays waste disposal at the transfer stations	A user-pays system, where people pay for the amount of waste they dispose, is an equitable way to recover the cost of operating the transfer stations from those that use it most. Other councils around Australia often combine a charge on waste with free disposal of recycling; this is an incentive tool for increasing the diversion of waste from landfill. The community reference group believed that most residents would not support this as an option. The concept was not covered in the community survey. A future survey will seek feedback from the community.
Composting food waste at the transfer stations	Council will use waste audits to gain a greater understanding of the amount of food waste that is delivered to the transfer stations. Large scale composing of food waste at the transfer stations is not a viable option, due lack of economies of scale and licencing issues around odour and vermin. Council will support residents to manage their food waste at home.
Council funded recycling of problem wastes	Apart from car batteries, recycling of problem wastes is dependent on external funding either from product stewardship schemes or directly from the state or territory government. Without this funding, it is prohibitively expensive and would not represent value for money considering the small tonnages. Council will advocate for the expansion of product stewardship schemes to service regional areas.
Investment in automation and technology at transfer stations	Some transfer stations in other jurisdictions utilise automated gate entry and other automation systems to reduce reliance on staffing or allow existing staff to devote more time to assisting at disposal and recycling areas rather than at the gatehouse. Council has found that the current arrangement which involves face to face contact with residents at the gatehouse is useful in providing verbal assistance and instructions, and helps to maintain connection between Council and the community. There are some technical challenges associated with automated entry systems such as entry tag failure, loss of entry tags by residents and system failure requiring manual entry and in effect these result in the need for retaining some level of staffing at the gatehouse. These challenges would therefore need to be effectively managed in order to maintain a suitable level of service. Council proposes to revisit automated entry to site at a later stage, once other site improvements have been implemented and the changes in site usage arising from those changes are better understood.

Option	Description
Alternative waste treatment	This includes a broad range of infrastructure technologies such as energy from waste and mechanical biological treatment. These technologies rely upon two factors that are not present in Litchfield or the Northern Territory at present: a large quantity of waste (>100,000 tonnes per year) with small transport distances and a strict regulatory environment that taxes waste sent directly to landfill. Other states that have these factors, such as NSW and VIC, have not been able to adopt Alternative Waste Treatment as a viable alternative to landfill.

6.3 Review and improvement

In any long-term strategy, there is a need to review actions regularly and measure progress in achieving objectives. The Waste Strategy includes agility to respond to changing waste disposal trends, more pronounced population changes and other matters not fully seen or understood at this point.

Council reviews its Strategic Plan regularly and prepares each year its Municipal Plan (annual business plan) each year. Given the Waste Strategy will work in alignment with both the Strategic Plan and the Municipal Plan, any significant changes in Council's strategic direction may trigger a review of our Waste Strategy.

On an annual basis, Council will undertake the following:

- Review the results of the actions undertaken the previous year in the effectiveness against the waste objectives.
- Consider any regional or national waste data that may point to a shift in waste management habits, changes in waste treatment technologies or changes to operational costs and external fee structures.
- Consider community feedback collected as part of Council's Annual Community Survey and later, the Waste Management Survey.
- Consider any changes to external funding programs, or improved alignment of Council's waste management.

Appendix 1 – Recycling trials

Identifying incentives for increasing dry recyclables capture in Litchfield transfer stations

While the majority of councils across Australia collect domestic waste from residences, Litchfield Council charges an annual fee for access to Council's waste transfer facilities. The gate fee for non-household waste at other council waste transfer stations is a price per tonne or per vehicle type, paid at the entrance to the site. It provides a price incentive to recycle: waste attracts a charge while dry recyclables such as paper, cardboard, cans, glass, etc. are free.

Community feedback indicates this is not a supported option in Litchfield. Council must therefore trial other incentives which can encourage residents to separate recyclables at the transfer station. Trialling options for recycling will provide Council with a range of data that will be analysed to determine the optimal conditions and arrangements for Litchfield residents to recycle waste.

Objective: The objective is an increase in the amount of dry recyclables collected.

Length: The trials would occur sequentially over a period of six months.

Method: Initially, two incentives are proposed to be trialled: a reward based incentive and a social incentive.

The reward based incentive will need to offer residents a nominal benefit for recycling. This could be done in the form of vouchers for free trailer loads of mulch when they arrive with separated loads.

The social incentive will trial a recycling operator who will patrol the disposal area and encourage residents to recycle. A local labour hire contractor could be used, as this will be a temporary position. The recycling operator would be needed all day on weekends and during the morning/afternoon weekday peaks.

The reward based incentive will be trialled at Howard Springs, the social incentive at Humpty Doo.

Determining success or failure: The primary measurement for success will be an increase in the number of recycling bins emptied at the transfer stations. At Humpty Doo the weight of the recyclables can be calculated via the weighbridge.

The tonnages to Shoal Bay, while more accurate than the numbers of recycling bins emptied, will not be a reliable indicator as this weight has been declining steadily over the last five years.

Considerations: Council must first use the waste audits to gain a greater understanding of how recyclables are delivered to the transfer stations and whether they are being disposed of along with waste. The results of the audits may reveal another more appropriate incentive that has not been considered here.

This trial as a basis for action: With recyclables collection data and the cost of the trial in hand, Council will be able to make an informed decision on which changes to the operation of the transfer stations will be the most cost effective at increasing recycling.

LITCHFIELD COUNCIL

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Waste Strategy 2018 – 2023

...it all comes back to reuse and recycling

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Litchfield Council: setting our direction in waste management

*Together, Council and the community will work to **Reduce** the amount of waste we generate, **Reuse** what we can and **Recycle** waste resources to reinvest back into the community, enhancing our municipality as "the best place to live in the Top End."*

In 2016, Litchfield Council commenced development of a waste strategy for the Municipality. Council in its 2016-2020 Strategic Plan identified the development of a waste strategy as essential to developing improved and more sustainable waste management practices to support our growing population, which now exceeds 25,000.

This Waste Strategy outlines Council's plans to continue to improve the way we manage waste in the Litchfield Municipality. It identifies targets and strategies to achieve our goals within the broader regional context, while delivering Council's overall strategy for a cost-effective waste management service to our community.

This Strategy sets out the current waste situation, the challenges Council faces, the strategic context and the five focus areas that Council will concentrate on over the next five years. Additional information supporting this Strategy can be found in the accompanying Background and Discussion Paper used as the basis for developing this Strategy.

This paper is available on Council's website www.litchfield.nt.gov.au.

Waste management in Litchfield: the current situation

Council's waste management service includes three waste transfer stations (WTS) located at Humpty Doo, Howard Springs and Berry Springs. Once waste is brought to any of these transfer stations, it is either processed and on-sold back to the community, goes on to other recycling ventures or goes to the only landfill facility in the Top End - the City of Darwin's Shoal Bay facility near Leanyer. People are responsible for the delivery of their waste and recyclable material to our transfer stations. Mixed waste is deposited into skip bins, which are then transported via a contractor to the Shoal Bay landfill. Recyclables are collected in front lift bins and processed at a privately owned and managed materials recovery facility in Berrimah, Darwin. Bulky materials such as concrete, green waste, wood waste and scrap steel are stockpiled and recycled or reused offsite.

Regarding quantities, Council's 2016-17 waste figures are shown as a breakdown of waste types (in tonnes) of material received at Council's transfer stations. Council has calculated the proportions of total waste received at the transfer stations that is recycled.

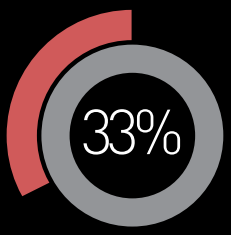
Material	Destination	Unit
Mixed waste	Landfill at Shoal Bay	8683 t
Scrap metal	Sold to recycler	1207 t
Mulch	Sold for reuse	4313 t
Crushed concrete	Sold for reuse	616 t
Wood mulch	Sold for reuse	271 t
Cardboard	Collected by recycler	142 t
Paper, glass, cans and plastics	Collected by recycler	129 t
Batteries	Collected by recycler	109 t
Used oil	Collected by recycler	54 kL
Tyres	Collected by recycler	23 t

Combines as dry recyclables

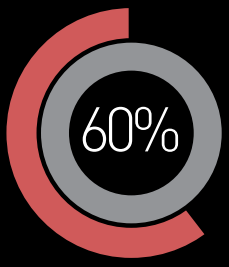
* estimate only as assumptions made to convert some volumes to tonnes

Recycling: where we stand

Total recovery rate



Litchfield WTS



National Average

Our figures indicate that Humpty Doo WTS receives and sends to landfill about the same amount of waste as Berry Springs WTS and Howard Springs WTS combined. When all materials are considered, the diversion from landfill is around 31%, thanks largely to mulch and wood waste sales, concrete crushing and the collection of scrap metal. With other states having diversion from landfill rates of around 60%, there is work to be done in Litchfield to increase recycling, especially for dry recyclables, which has significant scope to expand from its current rate of around 3%.

Waste Transfer Centre	Humpty Doo	Howard Springs	Berry Springs	Combined
Vehicles (trips per annum)	69 750	64 568	Data N/A	-
Total waste generated^	8067 t	3139 t	2188 t	13 394 t
Total waste to landfill	4952 t	2029 t	1709 t	8683 t
Total waste recycled	2732 t	1046 t	437 t	4215 t
Total recovery rate^^	34%	33%	20%	31%
Dry recyclables ^^^	181 t	105 t	86 t	372 t
Dry recyclables rate	2%	3%	4%	3%

^ estimate only as assumptions made to convert some volumes to tonnages

Total recovery is considered all recyclables as a portion of the total waste generation. It is interesting that Humpty Doo WTS does not significantly outperform Howard Springs WTS on a recycling percentage basis, even after considering the site upgrades at Humpty Doo WTS completed in 2012. This suggests that infrastructure improvements at the WTSs must be complemented by programs to encourage a change in recycling efforts.

What are our key challenges?

Council faces challenges in providing a cost-efficient service that meets community needs and values the environment. These challenges are:

Cost pressures from increasing fees for waste disposal at the Shoal Bay Landfill	The Shoal Bay landfill is the only such waste disposal in the Top End.
Community expectations for a clean, efficient and cost-effective waste service	Revenue from waste management does not generate income for Council; the waste charge paid by households balances the ongoing costs associated with operation, recycling and disposal.
Low landfill diversion rates of household dry recyclables and food organics	Diversion of waste from landfill, at 33%, significantly outperforms the NT average of 9%. However, other jurisdictions such as the ACT, NSW, SA and VIC all average over 60%. This gap is primarily a result of low collection of household dry recyclables in Litchfield (such as paper, cardboard, glass, plastic, etc) and no viable destination for food organics.
The need to gather more data to complete the picture	We need to gain a greater understanding of the composition of loads that enter the transfer stations identify where our efforts are best targeted.
Growth of smaller 'urban style' lots	Future urban residential development at Holtze and expansion of residential development at Coolalinga and other Rural Activity Centres may require a different service level than rural lots.

The strategic context

The strategic context for waste management is important to understand.

Every level of government has a role to play in working with the community to see waste managed in an economic and sustainable manner.

The **National Waste Policy 2009** has four key aims that relate to avoiding the generation of waste; managing waste as a resource; treating waste in a safe, scientific and environmentally sound manner ;and contributing to sustainability improvements. These aims are captured in the waste management hierarchy.

Council is mindful of the **NT Waste Management Strategy 2015-2022** and its objectives. The NT Strategy states:

> *"Waste is a significant environmental issue. Disposal of waste consumes land, produces pollution to the atmosphere, soil and groundwater, and represents a loss of potential resources including embodied energy and materials."*

Council's Strategic Plan 2016 – 2020 comprises four priorities for our community, and within those, we work on 20 outcomes that we know matter to our communities. This is underpinned by actions taken to ensure an effective and sustainable Council. The Waste Strategy is a key element to delivering the Litchfield Council Strategic Plan 2016 – 2020, and Council's vision of making Litchfield the best place to live in the Top End.

Everything you need	The transfer stations represent essential infrastructure required by the community.
A great place to live	Residents often use the transfer stations weekly, so with an increased focus on site layout and amenity, the stations can offer an improved user experience.
A beautiful natural environment	Efforts to increase resource recovery will lead to a more sustainable community in Litchfield. Reduced litter and illegal dumping will improve the amenity and protect the renowned natural environment.
A Vibrant Economy	Reuse and recycling can create employment opportunities inside the Litchfield municipality rather than sending waste outside the Council area.

Priority #1 Everything you need

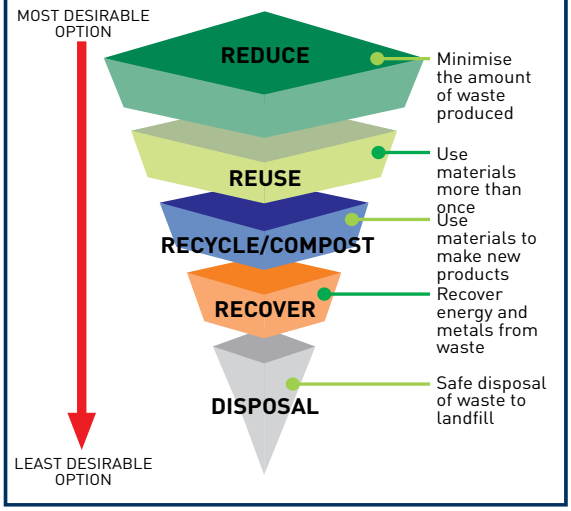
This priority encompasses Council's approach to waste management. Council's strategic goals for waste management are:

- Waste to landfill is minimised, along with disposal costs to residents, through a combination of incentives, redesigned WTS processes, and community education.
- Revenue is maximised from waste products, such as glass, steel and green waste.
- Littering and dumping enforcement methods are investigated.
- The location and function of a future new regional waste facility meets Litchfield's future needs.

Priority # 1:
Everything you need

	Council Role						
	Service Delivery	Advocacy	Community Engagement	Revenue/ Fund	Regulations	Partnering	For more information
Roads							
Programmed road upgrades and maintenance to safe standards, including school zones	●						10 Year Road Programme
Accident black spots are policed and signed to reduce avoidable injuries		●					
Bike-friendly roadways designed, with designated pathways, where possible	●					●	
Roads are protected from undue wear due to heavy machinery					●		
Traffic management on major arterial roads (e.g., Stuart Highway) enables peak traffic flow		●					
Public Transport							
Gaps in bus service and frequency are filled		●					
People who are isolated are served with additional transport options		●					
Waste							
Landfill is minimised, along with disposal costs to residents, because of a combination of incentives, redesigned WTS processes, and community education	●		●		●		10 Year Waste Management Plan
Revenue is maximised from waste products, such as glass, steel and green waste				●		●	
Dumping enforcement methods are investigated					●		
The location and function of the proposed Regional Waste Facility meets Litchfield's current and future needs		●					
Cleanliness							
The quality and efficiency of roadside management is reviewed and improved	●						
Water							
Planners and utilities provide quality water supply, drainage and sewage systems, for residential, recreation and commercial purposes		●					
Drainage							
Programmed drain upgrades and maintenance to prevent wet season flooding and enable routine drainage	●						10 Year Drainage Improvement Plan

The Waste Management Hierarchy



National Waste Policy 2009

NT Waste Management Strategy 2015–2022

Waste is a significant environmental issue. Disposal of waste consumes land, produces pollution to the atmosphere, soil and groundwater, and represents a loss of potential resources including embodied energy and materials

Litchfield Strategic Plan

Litchfield Waste Strategy

What you told us: our 2017 waste survey

To guide the development of a waste strategy, Council sought nominations and formed a community reference group comprised of eight residents who volunteered to bring community perspectives to the project. We also engaged directly with Litchfield residents through a community survey. Over a period of ten days in February 2017, Council received 937 responses to our 15-question survey, a fantastic response! What you told us was interesting:

- 97% of residents thought the waste management service at the transfer stations was either great or average, with only 3% saying it was poor.
- Nearly half of residents use our waste transfer stations once per week. A quarter use it multiple times per week and the other quarter less than weekly.
- Over 90% of residents sort their recycling at home.
- 70% of residents thought recycling was important.
- 69% of residents thought Council should not offer a kerbside waste collection service, further demonstrating the community supports for the existing transfer station model.

New regional waste management facility

The construction of a new regional landfill, earmarked to be within the Litchfield Municipality, will have a great benefit to Council as well as the broader region, especially if it is capable of handling putrescible waste. A putrescible landfill provides two strategic opportunities: it provides an alternative and competition to Shoal Bay landfill and Council will have a shorter haulage distance, resulting in lower costs.

The Shoal Bay landfill facility still has considerable capacity to expand, with estimates that there are several decades of airspace available. The greatest threat to that airspace is a cyclone event or some other natural disaster resulting in widespread generation of green waste and demolition waste. In such a scenario, the Shoal Bay landfill would likely exceed its capacity from one single large event. At this point in time, the need for an emergency waste disposal site is the greatest priority (rather than a fully operating landfill alternative) and work is currently being led by Top End Regional Organisation of Councils (TOPROC), of which Litchfield Council is a member. An emergency-only waste facility has marginal benefit to Litchfield Council's waste management service; which is a reduction in the risk that the transfer stations become overstretched during clean-up after a major natural disaster event.

Our strategy explained: five focus areas and five years of actions

Council has considered how the Priorities outlined in *Council's Strategic Plan 2016-2020* relate to our waste challenges and we have identified five overarching goals for our Waste Strategy, outlining what we want to achieve for each area.

Our Waste Strategy includes a series of actions for the next five years; these actions have been mapped with a timeline. The actions are summarised below and described in more detail on subsequent pages. Where costs are known year on year, these are provided. Some actions identify infrastructure upgrades; these upgrades are excluded from the action tables as their costs are mot yet known.

The results of actions undertaken in the first five years will guide Council towards a further set of actions for the following five years.

	Focus area	Description	Measured by
1	**Improve the cost efficiency of the waste disposal service**	Council provides waste services on a user-pays basis. That is, the cost of the service is paid by ratepayers through an annual charge. Council aims to control costs while maintaining a consistent level of service.	The cost per tonne of waste throughput via the annual waste charge is static or lower year on year[1]
2	**Reduce waste to landfill**	Recycling is an opportunity to: 1 avoid the environmental hazards of landfill 2 relieve pressure on extraction of raw materials and energy 3 preserve our environment 4 promote employment opportunities in the waste industry	The amount of dry recyclables collected is >15% of the total waste collected[2]
3	**Reduce incidence of dumped rubbish and litter**	The Litchfield Municipality is renowned for its natural beauty. The presence of litter and illegal dumping affects the visual amenity for residents and visitors.	Baseline established of the incidence of illegal dumping
4	**Maintain overall customer satisfaction of the waste service**	Our community was broadly satisfied with the waste transfer stations in the 2017 survey, so the challenge lies ahead to continuously improve and lift the user experience, especially as our population grows and changes.	> 95% of residents think the service at the transfer stations is satisfactory or better
5	**Advocate on behalf of the community**	Council is committed to advocating to government and stakeholders on a broad range of waste issues on behalf of the community.	Council drives change and support through other levels of government.

1. taking into account CPI increases
2. Assumes level of service remains unchanged

	Year 1	Year 2	Year 3	Year 4	Year 5
	$179 000	**$150 000**	**$80 000**	**$25 000**	**$27 000**
1	1.1 Tender for waste haulage				
	1.2 Enforce commercial waste charge				
	1.3 Ensure service level matches community expectations				Summary
			1.4 Develop Berry Springs and Howard Springs landfill remediation plans		
	1.5 Provide free green waste disposal for the month of November				
		1.6 Prepare disaster waste plans			
			1.7 Unlock value in dry recyclables		
2	2.1 Conduct Waste Audits				
		2.2 Trial different incentives to boost recycling			
		2.3 Support home separation of recycling			
		2.4 Support food waste mgmt. at home			
		2.5 Invest in waste education			
	2.6 Rename waste transfer station to resource recovery centre				
3	3.1 Establish and engage with community action group				
			3.2 Establish by-laws regarding litter and illegal dumping		
4	4.1 Complete operational improvements at Berry Springs				
	4.2 Improve Humpty Doo recyclable containers drop-off				
	4.3 Develop branding for Council's Community Grants Scheme				
	4.4 Improve WTS safety				
				4.5 Future-proof Howard Springs and Berry Springs	
			4.6 Improve WTS amenity		
5	5.1 TOPROC development of emergency waste facility				
	5.2 Product stewardship				
	5.3 Open dialogue with businesses				
		5.4 Waste planning for new land development			

Note: Details on costs are provided in subsequent action descriptions

1 Improve the cost efficiency of the waste disposal service

Measured by: The cost per tonne of waste throughput via the annual waste charge is static or lower year on year

1.1 New waste haulage contracts	Council's previous five-year transport contract for waste haulage to Shoal Bay landfill expired in December 2016; an extension to the contract was exercised. In early 2018 Council will begin a new contract for waste disposal. The opportunity with the next contract is to separate out the steel collection from the waste haulage – at present Council earns no revenue from the scrap. A separate steel contract could result in revenue to Council of up to $20,000 per year. Council will consider the potential impact of population growth over the term of the next contract. This will necessitate flexibility in both directions: fewer collections may be needed with successful increases to recycling, while more may be necessary if the rapid population growth continues. **Timeframe for action:** By early 2018 **Capital consideration:** $5000 for tender process (contractor) **Operational consideration:** To be determined with tender process
1.2 Enforce commercial waste charge on all loads delivered by private contractors	Private waste collectors are being subsidised by households paying the waste charge. Private collectors deliver mixed truckloads of household and commercial waste to the Humpty Doo WTS. Businesses do not contribute to the cost of Council's waste service (only residential properties), and as such they should not receive a free waste disposal service. Therefore, Council will enforce the commercial waste charge on all loads delivered by private waste collectors. **Timeframe for action:** Year 1 **Capital consideration:** $2500 for signage at each WTS **Operational consideration:** Nil
1.3 Ensure service level matches community expectations	A survey undertaken in 2017 found that the community was satisfied with the existing transfer station system. Council will ensure that this service continues to meet the needs of the community as the population grows and changes over time. Council will include in its annual community survey questions relating to the performance of, and satisfaction with, Council's waste management service. In the fifth year, another waste management specific survey, similar to the 2017 waste survey will be conducted to monitor Council's progress of its Waste Strategy and community perceptions and satisfaction in greater detail. Since the 2017 survey found a willingness for residents to respond to an online survey, this will be the primary method of delivery. **Timeframe for action:** Yearly **Capital consideration:** $2000 for 5th year survey promotion **Operational consideration:** Staff time to review annual data
1.4 Develop Berry Springs and Howard Springs landfill remediation plans	Council has considered the liability for any landfill remediation required at the disused landfills at Berry Springs and Howard Springs. At present the sites have an interim cap of soil in place and at some point in time, landfill remediation will be needed. Council will first need to develop a landfill closure plan that estimates the capital costs associated with remediation and then investigate funding options for implementation. **Timeframe for action:** Year 3 to 5 **Capital consideration:** $5000 for each closure plan (contractor) **Operational consideration:** Nil

1.5 Continue free green waste disposal in November for 2018 to 2020	After successful trials in 2016 and 2017, Council will continue to offer free green waste disposal during the month of November for three further years to encourage clean-ups before the cyclone season. This will be reviewed in 2021. Tonnages to the WTSs will be monitored to determine any long term financial and operational impacts. **Timeframe for action:** Year 1 to 3 **Capital consideration:** Nil **Operational consideration:** $5000 per year in forgone fees
1.6 Prepare disaster waste plan for each site	Council will work with Northern Territory Emergency Services and the Department of Infrastructure, Planning and Logistics (Engineering Group) to designate how and where waste will be stockpiled in the event of an emergency. This will be documented in a municipality disaster waste plan for each WTS. **Timeframe for action:** Year 2 to 3 **Capital consideration:** $5000 per site **Operational consideration:** Staff time for meetings & drafting plan
1.7 Unlock value in dry recyclables	Recovery of dry recyclables such as paper, cardboard, plastics and glass is currently performed at a cost to Council; this covers the collection and processing at a materials recovery facility. The recyclables have value, but this is dependent on effectiveness of separation of items. Council will first need to boost recycling tonnages and secondly identify an incentive that encourages residents to spend the time necessary to separate the recyclables into individual bins. With recyclables separated, Council will be able to negotiate a more favourable collection price, which should result in a lower expenditure for the waste service. Should the costs/benefit analysis of a recycling shed or shelter be favourable, and funding be available, Council will seek to lift recycling rates through providing a purpose-built recycling shed at one or more of the transfer stations. **Timeframe for action:** Year 3 to 4 **Capital consideration:** $40 000 for a cost/benefit analysis Construction cost – to be determined **Operational consideration:** To be determined

2 Reduce waste to landfill

Measured by: The amount of dry recyclables collected is >15% of the waste sent to Shoal Bay

2.1 Conduct waste audits	Waste audits are the first step necessary for Council to quantify the amount of recyclables and food waste being sent to landfill. At Litchfield, this would be achieved by diverting randomly selected vehicles to a separate tipping area where the loads can be visually inspected. **Timeframe for action:** Year 1 **Capital consideration:** $15 000 for waste audit (contractor) **Operational consideration:** Nil
2.2 Trial different incentives to boost recycling at each WTS	The waste community survey found that nearly 70% of residents preferred the current waste service provided through the transfer stations over a Council-run kerbside collection. 70% also believed recycling was very important; however the low capture rate of household dry recyclables relative to other jurisdictions indicates that either disposal of recyclable material as general waste is too easy or recycling is too hard. Council will first try to boost recycling using the current infrastructure. This is important as past upgrades to Humpy Doo have not resulted in a noticeably better capture of household recycling then Howard Springs or Berry Springs. The waste audits will shed light on how materials are arriving at WTSs and whether Council can add additional infrastructure to encourage recycling. Council will trial a mixture of incentives over a six-month period to see which incentives promote the greatest increase in recycling. Should it be found that recycling is significantly improved by providing covered facilities, such as a shed, then the costs and benefits of such a purpose-built structure will be considered at the conclusion of the trial. **Timeframe for action:** Year 2 **Capital consideration:** $20 000 for trials **Operational consideration:** One operator assigned for 6 months - $80,000
2.3 Support separation of recyclables at home	The waste community survey found that when residents recycle, over 90% do the separation at home. Council requires two further pieces of information from the waste audits in order to best support residents: the types of recyclables that are going to landfill and how recyclables are being delivered to the WTSs (such as in garbage bags mixed in with waste or separated in plastic containers). Any further action Council takes will be informed by the audit results. Education material will be developed based on the types of recyclables that are being landfilled and Council will examine if providing dedicated recycling containers is likely to help residents. **Timeframe for action:** Year 2 **Capital consideration:** $5,000 for development of educational materials and if required, $15,000 for home recycling containers **Operational consideration:** Nil

2.4 Support food waste management at home	Council will first determine the amount of food present in household waste using the audits. Any further action Council takes will be informed by the audit results. If there is only a small amount of food waste, Council will attempt to remove barriers to composting by arranging how-to workshops and providing pamphlets to transfer station users. If the audit finds large amounts of food waste, then Council will investigate the benefits of providing information about home composting kits. **Timeframe for action:** Year 2 to 3 **Capital consideration:** $5000 for development of educational materials **Operational consideration:** Nil
2.5 Invest in waste education	Council does not have a budget allocation for waste education. Planned changes arising from this Strategy will require the allocation of additional resources beyond the capacity of existing staff. Council will investigate external funding options such as through the NT EPA (grants up to $20,000); however this funding is project based and not recurrent. **Timeframe for action:** Year 2 to 3 **Capital consideration:** Nil **Operational consideration:** $5000 per year
2.6 Rename Waste Transfer Stations	One way of promoting recycling is to promote the evolving purpose of Council's waste transfer facilities. While the transfer stations primarily act to transfer waste from the user to Council with eventual disposal to landfill, there is already a considerable amount of recycling occurring, for example with concrete and green waste. These materials are processed on site at Humpty Doo and then on-sold. In this sense, the transfer stations act to recover resources as much as handling waste. Council will seek to re-brand the transfer stations as Resource Recovery Centres, to represent a shift towards a more sustainable future. Branding can assist in influencing community thinking and behaviour. **Timeframe for action:** Year 1 **Capital consideration:** Nil **Operational consideration:** $5000

3 Reduce incidence of dumped rubbish and litter

Measured by: Baseline established of the incidence of illegal dumping

3.1 Establish and engage with community action group	With the recent expansion of Coolalinga shopping precinct and the establishment of fast food outlets, Council has witnessed a rise in roadside littering from labelled food and beverage containers. This is expected to rise further when additional fast food outlets are opened. Council will establish a stakeholder working group to identify measures to reduce the incidence of such littering and engage with fast food outlets to determine the role they may play. The group will also consider other forms of roadside littering and identify ways to better control its occurrence. **Timeframe for action:** Year 1, ongoing **Capital consideration:** Nil **Operational consideration:** Reduced demand on Mobile Work Force
3.2 Establish by-laws regarding litter and illegal dumping	Council does not currently have by-laws in place to pursue and prosecute littering and illegal dumping. In addition, illegal dumping often occurs on Crown land, which is not within Council's jurisdiction or responsibility. Council will work on establishing amenity protection by-laws providing Council with greater enforcement ability. **Timeframe for action:** Year 3 to 4 **Capital consideration:** Nil **Operational consideration:** Nil

4 Maintain overall customer satisfaction

Measured by: >95% of residents think the service provided by transfer stations is satisfactory or greater.

4.1 Implement remaining operational changes at Berry Springs

In 2016, Council established a community working group for the Berry Springs WTS to guide the implementation of improvements based on a recent audit. Several improvements were completed with further actions to explore.

Berry Springs WTS is currently not staffed fulltime, with a presence only in the early mornings and the afternoons. Berry Springs WTS is open one hour longer each day than Council's other two transfer stations, closing at 7pm seven days a week.

The opening hours should be brought in line with Council's other transfer stations as part of providing adequate staffing and continuous supervision.

Secondly, a gatehouse or some other structure that enables monitoring of vehicle numbers and waste tonnages, as well as providing on-site facilities for staff, should be installed.

Council will also need to determine the feasibility of connecting the gatehouse to utility services such as power and water or whether the site is best serviced from off-grid power and water. A power line is located on the northern side of Cox Peninsula Road and there is no mains water nearby. The likelihood of establishing a suitable water bore is low.

Timeframe for action: Year 1

Capital consideration: $30 000 for gatehouse

$100,000 for mains power connection, water tank

Operational consideration: Nil

4.2 Improve container deposit drop-off point at Humpty Doo

There is no drop-off location in the Litchfield municipality where residents can claim the 10c rebate from the Container Deposit Scheme (CDS).

Council currently accepts (at no charge), containers eligible for the deposit and collects the deposit from a third party when Council takes the containers to that facility.

The revenue from this practice amounts to around 10,000-$15,000 per year and this is returned to the community through Council's Community Grants Scheme.

Recently, a private enterprise explored establishing a private facility in Humpty Doo and this is expected to commence operation mid-November 2017.

Council has several options, including:

- Formalise a drop-off point at the transfer station and offer the CDS to residents, potentially competing with any private operator offering a CDS drop-off facility; or
- Continue to receive eligible containers for free and rely on the convenience to residents of a one-stop drop off for all wastes at the transfer station. The drop-off point could be enhanced with educational material about the benefits to the community of people providing containers to Council for free, rather than using a different facility in return for cash.

In the case of the first option, the revenue for Council's Community Grant Scheme could be compromised. In the case of the second option, Council will see a lower influx of containers, but will be able to retain all the revenue generated. It is anticipated that the second option will be more viable for Council and beneficial for residents wishing to recycle containers eligible for deposit.

Timeframe for Action: Year 1

Capital Consideration: Nil

Operational consideration: dependent on option selected

4.3 Develop branding for grants awarded from CDS revenue	The annual CDS rebate paid to Council is in the $10,000-$15,000 range. These funds support Council's Community Grants Scheme providing funds to local community groups. Depending on the future potential impact to this revenue, as outlined in Item 4.2, Council will be able to develop branding to be used with the grants to help spread the recycling message and engage the community. The branding will link community efforts with recycling to helping make Litchfield "the best place to live in the Top End." **Timeframe for Action:** Year 1 **Capital Consideration:** $1500 for graphic design and printing **Operational consideration:** Nil
4.4 Improve WTS safety	Council will conduct regular audits at all three transfer stations for public and staff safety to identify improvement opportunities. **Timeframe for Action:** Year 1 to 2 **Capital Consideration:** $10 000 for WHS review Safety improvement costs to be determined **Operational consideration:** Nil
4.5 Future-proof Howard Springs and Berry Springs	Population growth in Howard Springs and Berry Springs will place additional demand on these transfer stations, particularly at the general waste disposal area. Council will monitor the peak flows of traffic to ensure that tipping times remain reasonable, as well as the frequency of removal of full bins from the site to landfill. Where it is found that the sites are nearing operational capacity, following local population increases, Council will investigate options to expand or reconfigure the sites to maintain service levels. **Timeframe for Action:** Year 4 to 5 **Capital Consideration:** $30 000 to investigate reconfiguration of sites Reconfiguration costs to be determined **Operational consideration:** Nil
4.6 Improve WTS amenity	Council wants to create a 'look and feel' to the transfer stations that conveys sustainability and the ethos associated with recycling. This will involve the use of vegetation and custom artwork created from reused materials. As residents frequently use the transfer stations, there is also an opportunity to trial a community purpose garden at Humpty Doo. Feedback from the trial can be adopted into any plan to replicate a garden at other sites. **Timeframe for Action:** Year 3 to 5 **Capital Consideration:** $10,000 for each transfer station **Operational consideration:** Nil

5 Advocate on behalf of the community

Measured by: Increased profile of Litchfield waste management and support from other levels of government

5.1 TOPROC development of emergency waste facility	TOPROC has been advocating for a landfill to be developed in the Litchfield Municipality for some years. An emergency waste management site is urgently required for the Top End based on the limited capacity of the Shoal Bay to manage a natural disaster. Experience in other states, such as Queensland, have highlighted the importance of such a facility in the event of a major disaster. In the long term, Council's objective is for such a facility to be expanded as a fully working landfill. This would provide employment opportunities and potentially reduce the haulage and disposal costs for waste disposal. The approval and construction of such an emergency site will be in partnership with the Northern Territory Government. Council will use its advocacy role to promote the benefits of a second putrescible landfill servicing the Top End. **Timeframe for Action:** Ongoing **Capital Consideration:** Nil **Operational consideration:** Staff time to attend TOPROC meetings
5.2 Product stewardship	There are several industry-led product stewardship schemes to ensure products are diverted from landfill and disposed of safely. These product schemes at present include e-waste, tyres, batteries and paints. Due to the lack of economies of scale, these schemes are generally not available in the Territory. Council will advocate for future product stewardship schemes to be made available in regional areas. **Timeframe for Action:** Ongoing **Capital Consideration:** Nil **Operational consideration:** Nil
5.3 Open dialogue with businesses	Coolalinga has seen rapid growth in fast food restaurants and supermarkets. Increasing amounts of food is packed in disposable containers of waxed cardboard or polystyrene, which present littering and recycling challenges. Council will work with business owners in the municipality to find out what current limitations exist around recycling. Businesses that are successfully recycling can be promoted to residents. **Timeframe for Action:** Ongoing **Capital Consideration:** Nil **Operational consideration:** Nil
5.4 Waste Planning for Urban Land Release	In the coming years, Litchfield will see an increase in the number of urban style lots in new suburbs such as Holtze. There may be an expectation from new residents in urban settings, for municipal waste services, such as kerbside collection. Council will track the number of urban lots being released and monitor development. Council will need to work with the NT Government on the development of any new suburbs and ensure that appropriate waste management is provided. **Timeframe for Action:** : Year 2 to 4 **Capital Consideration:** Nil **Operational consideration:** Staff time for consultation

Review and improvement

In any long-term strategy, there is a need to review actions regularly and measure progress in achieving objectives.

The Waste Strategy includes flexibility to respond to changing waste disposal trends, more pronounced population changes and other matters not fully seen or understood at this point.

Council reviews its 2016-2020 Strategic Plan regularly and each year prepares its Municipal Plan (annual business plan). Given the Waste Strategy will work in alignment with both the Strategic Plan and the Municipal Plan, any significant changes in Council's strategic direction may trigger a review of our Waste Strategy.

On an annual basis, Council will undertake the following:

- Review the results of the actions undertaken the previous year in the effectiveness against the waste objectives.
- Consider any regional or national waste data that may point to a shift in waste management habits, changes in waste treatment technologies or changes to operational costs and external fee structures.
- Consider community feedback collected as part of Council's annual community survey and, later, the waste management survey.
- Consider any changes to external funding programs or improved alignment of Council's waste management activities to funding programs.

What's next?

Council is keen for the community to see our waste strategy in action, so we will be providing regular updates on our website and through social media of key actions and achievements. Any key changes on the ground will be explained to the community ahead of time.

LITCHFIELD COUNCIL
Community effort is essential

Contact Us

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COUNCIL REPORT

Agenda Item Number:	15.2
Report Title:	Accounting Policies
Report Number:	17/0065
Meeting Date:	13/12/2017
Attachments:	A – FIN01 Asset Disposal Policy B – FIN02 Rates Policy C – FIN04 Financial Reserve Policy D – FIN14 Investment Policy E – FIN13 Borrowing Policy

Purpose

To present to Council accounting policies for review and approval.

Summary

The report refers to several accounting policies that are either due to be reviewed or have been identified as insufficient.

The below table lists the changes on those attached policies as a summary:

POLICY	POLICY AREA	REASON FOR REVIEW	PROPOSED CHANGES
FIN01 Asset Disposal	Council Policy	Insufficient polices currently in place Rescind LC31 and LC37 dealing with disposal of assets and land.	Remove the procedural content, bringing it in line with legislation to reflect a policy statement by Council for considerations made in the process of selling assets including land.
FIN02 Rates	Council Policy	Insufficient policy currently in place Rescind LC06	Policy outlines the adoption of Unimproved Capital Valuation (UCV) as basis for rates as required by legislation and reflect current rating structure as determined by Council.
FIN04 Financial Reserves	Council Policy	Review was due and current policy is not in line with Council direction in accordance with the Long Term Financial Plan.	- Combine the asset related reserves to one reserve to reduce reserves and confusion. - Move Unexpended Capital Works Reserve under asset related Reserves. - move the Waste Management reserves to other internally restricted reserves to allow funds to be utilised for strategic

POLICY	POLICY AREA	REASON FOR REVIEW	PROPOSED CHANGES
			work, in line with the Waste Management Strategy. - increase description of Strategic Initiative Reserve to include Information Technology. - adding the Thorak Regional Cemetery Reserve. - include Surplus distribution for Waste Revenue and Thorak surplus. - establish distribution of working capital annually to reserves. A full explanation on the impact on reserve balances is included under financial implications in this report.
FIN14 Investment	Council Policy	Due for review	No changes proposed, policy is in line with legislation and presents prudent (low risk appetite) approach of Council and is reflective of current market opportunities.
FIN13 Borrowing	Council Policy	Rescind LC04 which currently only refers to the holding of Credit Cards. This is not required in policy as legislation and allows for those borrowings without the requirement of a policy. Council does require a policy if it wants to consider any other borrowing.	Policy provides high-level statement of Council's position when considering borrowing as part of budget deliberations.

Taking into consideration the amount of policies Council holds and recent discussions held with Councillors, it is also suggested to extend the review period for Council policies from three to four years. This will ensure that each Council policy will be reviewed once in each term of Council.

Recommendation

"THAT Council

1. Amend the review period of Council policies from three to four years in the GOV01 Policy Framework;

2. Rescind policy LC31 Disposal of Assets and LC37 Land Acquisition Disposal Lease;

3. Adopt FIN01 Asset Disposal Policy as attached to report in Attachment 1;

4. Rescind LC06 Rates Policy;

5. Adopt FIN02 Rates Policy as attached to report number in Attachment 2;

6. Adopt FIN04 Financial Reserves Policy as attached to report in Attachment 3;

7. Rescind LC10 Investment Policy;

8. Adopt FIN14 Investment Policy as attached to report in Attachment 4;

9. Rescind LC04 Borrowing Policy; and

10. Adopt FIN13 Borrowing Policy as attached to report in Attachment 5."

Background

The attached policies require approval by Council in line with GOV01 Policy Framework.

Links with Strategic Plan

Effective and sustainable Council

Legislative and Policy Implications

All presented polices are in line with legislation.

Risks

There is a risk of noncompliance should Council not review and adopt policies.

Financial Implications

The changes to the FIN04 Financial Reserves policy will be reflective in the reserve balances. The following table outlines the changes based on the financial reserve balances in accordance with 30/06/2017 audited financial statements and forecast balances at 30/06/2018, in line with the current budget.

Name of Reserve	Balance as per 30/06/17	NEW Balance as per FIN04	Including the working capital as per 30/06/17	Balance as per 30/06/2018
Externally restricted Reserves				
Developer Contributions	781,571	781,571	781,571	1,263,832

Name of Reserve	Balance as per 30/06/17	NEW Balance as per FIN04	Including the working capital as per 30/06/17	Balance as per 30/06/2018
Unexpended Grants and Contributions	4,279,118	4,279,118	4,279,118	4,054,118
Internally restricted Asset Related Reserves				
Property	465,472	0	0	0
Plant and Equipment	36,683	0	0	0
Infrastructure	2,216,026	0	0	0
Waste Management	4,061,952	Moved to Internally Restricted Other Reserves		
Asset		3,720,852	10,922989	9,944,258
Unexpended Capital Works Reserve	0	0	0	0
Internally Restricted Other Reserves				
Waste Management		4,061,952	4,061,952	3,928,572
Election	25,044	100,000	100,000	100,000
Disaster Recovery	790,388	500,000	500,000	500,000
Strategic Initiatives	1,287,239	500,000	500,000	500,000
Cemetery	212,044	212,044	212,044	145,514
TOTAL	**14,155,537**	**14,155,537**	**21,357,674**	**20,436,294**

The working Capital of the organisation is used to replenish the financial reserves. It is a prudent and transparent approach of Council to commit all available funds for future use. Council has not followed this strategy in the past, which is why a calculation as per 30/06/2017 will see additional funds transferred to the financial reserves.

Working capital calculation as per 30/06/2017:

Item of Financial Statements	
Total Current Assets	23,990,643
(LESS: Total Current Liabilities)	2,293,224
(LESS: Externally restricted Reserves)	5,060,689
(LESS: Internally restricted Reserves)	9,094,848
= WORKING CAPITAL	7,541,882
(LESS: Non-current Employee Provisions)	339,745
= NET WORKING CAPITAL	**7,202,137**

Community Engagement

Not applicable

Recommending Officer: **Silke Maynard, Director Community and Corporate Services**

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

Name	FIN01 Asset Disposal
Policy Type	Administrative
Responsible Officer	Director of Community and Corporate Services
Approval Date	13/12/2017
Review Date	13/12/2021
Document ID	

1. Purpose

This policy governs the disposal of Litchfield Council assets including the disposal of land.

The purpose of this policy is to provide unambiguous and transparent direction for the disposal of assets to:

- Promote fair and effective competition to the greatest possible extent;
- Consider any potential benefit to the community;
- Ensure best value for money is achieved; and
- Ensure the same accountability for disposal of assets that of purchasing assets.

2. Principles

This policy follows the accounting treatment set out in AASB140 (Investment Property) and AASB116 (Property, Plant & Equipment), as well as other legislative requirements.

Asset de-recognition occurs on disposal or when no future economic benefit is expected from an asset.

3. Definitions

For the purposes of this Policy, the following definitions apply:

Term	Definition
Asset	An asset is a resource controlled by Council as a result of past events and from which future economic benefits are expected to flow to the entity for more than 12 months. Assets include tangible items like property, plant and equipment and intangible assets like software.
Useful life	The useful life of an asset is the period over which an asset is expected to be available for use by Council.
Depreciable amount	The depreciable amount is the cost of an asset, or fair value less its residual value.
Residual value	The residual value is the estimated amount that Council would currently obtain from disposal of the asset, after deducting the estimated costs of disposal, if the asset were already of the age and in the condition expected at the end of its useful life.

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4. Policy Statement

4.1. Reasons for Disposal

Any sale or disposal of assets should be consistent with the Council's objectives set out in strategic plans. When considering options for the sale and disposal of assets, Council will look for opportunities to advance the objectives of the Council's Strategic Plan.

Council may dispose assets due to renewal programs in line with Asset Management Plans.

4.2. Method of Disposal

The following practices of disposal are approved by Council:

- Open tender
- Disposal due to renewal
- Quotation sought by officers for external party to sell on behalf of council
- Selected tender
- Direct sale to Council officers
- Other means directed by council

The following items should be considered selecting the method of disposal:

- Potential to obtain best price;
- Number of known potential purchasers;
- Current and possible preferred future use of the asset;
- Opportunity to promote local economic growth and development;
- Total estimated value of the sale;
- Delegation limits taking into consideration accountability, responsibility, operational efficiency and urgency of the sale;
- Compliance with statutory and other obligations.

4.3. Approval for Disposal

Council has delegated authority for disposal of assets, except the sale of land, under section 32 of the Local Government Act to the Chief Executive Officer as documented in the delegation manual.

Approval of disposal of assets shall be sought in line with the delegation manual in writing and should include the following information as a minimum:

- Identification of asset (linkage to financial asset register)
- Reason for disposal
- Method of disposal
- Timeframe of disposal

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- Application of proceeds

Property which has been purchased, or the purchase of which has been contributed to, by a funding source, may not be disposed of unless the terms of the funding agreement have been met. This includes any requirement to gain approval form the funding body to dispose of property.

4.4. Proceeds from Sale of Assets

Proceeds from the sale of assets should be applied to a particular purpose:

- Reduction of any debt associated with the asset acquisition or upgrade since the original purchase or construction
- Offset of cost of replacement assets required for operations arising from the asset sale
- Specific Reserve Fund
- Other specific purpose as determined by Council resolution

4.5. Financial Recognition of Disposal

When an asset is sold and its selling price varies from the carrying amount in Council's balance sheet, a gain or loss on disposal will be recognised directly to the Income Statement in accordance with AASB 140 or AASB 116 respectively.

If an asset is derecognised before it has been fully depreciated, the carrying amount represents a loss on disposal and will be expensed.

Where an asset disposed of has been subject to revaluation, the net increment in the asset revaluation reserve relating to the disposed asset will be transferred to Accumulated Surplus. The amount transferred must not exceed the balance of the asset revaluation.

Partial disposal of an asset is recognised if a partial renewal/replacement has taken place and the carrying value of that disposed part in regards to AASB 116 can be identified.

Alternatively, if the fair value of the replaced part cannot be identified, the cost of the replacement is added in the carrying amount of the asset and the fair value shall be reassessed at revaluation.

5. Associated Documents

Litchfield Council Financial Policies and Procedures

Litchfield Delegation Manual

6. References and Legislation

Northern Territory Local Government Act

Northern Territory Local Government (Administration) Regulations

Northern Territory Local Government (Accounting) Regulations

Australian Accounting Standards

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Ministerial Guidelines

Local Government Guidelines

7. Review History

Date Reviewed	Description of changes (Inc Decision No. if applicable)
13 December 2017	New policy, rescinding policy LC31 andLC37

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Name	FIN02 Rating Policy
Policy Type	Council
Responsible Officer	Director Community and Corporate Services
Approval Date	13/12/2017
Review Date	13/12/2021

1. Purpose

The purpose of this policy is to set out Council's approach to rating in the Litchfield Municipality.

2. Scope

This policy applies to all rateable properties within the Municipality.

3. Definitions

For the purposes of this Policy, the following definitions apply:

The Act	Local Government Act Northern Territory
NT Planning Scheme	Northern Territory Planning Scheme

4. Policy Statement

Rates are a system of taxation and are not reflective of the services, infrastructure or facilities used by any property owner or resident.

4.1 Basis for Rates

4.1.1 Council applies rates on the basis of zoning and location.

4.1.2 Pursuant to Section 149 of the Act, Council adopts the Unimproved Capital Value method as the basis for determining the assessed value of allotments within the Municipality. The Unimproved Capital Value of land is set by the NT Valuer General.

4.1.4 In accordance with section 148(1) of the Local Government Act rates are based on differential valuation-based charges calculated as a proportion of the assessed value of each allotment for the following properties:

Central Business, Future Development, Tourist Commercial, Commercial, Service Commercial, Caravan Park, General Industry, Development, Light Industry

4.1.5 In accordance with section 148(1) of the Local Government Act rates are based on a fixed rate for the following properties:

Rural Residential, Rural Living, Rural, Horticulture, Agriculture, Single Dwelling Residential; Multiple Dwelling Residential, Medium Density Residential, High Density Residential, Community Living, Public Open Space, Organised Recreation, Heritage, Restricted Development, Conservation, Community Purpose, Specific Use, Utilities, Mining Tenements and Pastoral Lease

4.1.6 The Valuation-based charge may be subject to a specified minimum amount.

5. Associated Documents

Litchfield Council Municipal Plan

Litchfield Council Long Term Financial Plan

6. References and Legislation

Northern Territory Local Government Act

Northern Territory Local Government (Administration) Regulations

Northern Territory Local Government (Accounting) Regulations

Australian Accounting Standards

Ministerial Guidelines

Local Government General Instructions

7. Review History

Date Reviewed	Description of changes (Inc Decision No. if applicable)
13 December 2017	New Policy, rescinding LC06

Name	~~FIN24~~FIN04 Financial Reserves
Policy Type	Council Policy
Responsible Officer	Director of Corporate Services
Approval Date	13/12/2017
Review Date	13/12/2021
Document ID	LITCHFIELD-454211611-3

1 Purpose

To ensure sustainable and responsible financial management of Litchfield Council, through consistent identification, administration and usage of externally and internally restricted reserves.

2 Principles

Litchfield Council follows the requirements in content and timing stipulated by the Local Government Act, Local Government (Accounting) Regulations, Local Government (Administration) Regulations and the principals of the Australian Accounting Standards.

3 Definitions

For the purposes of this Policy, the following definitions apply:

Financial Reserves	The term includes Asset Revaluation Reserves under Australian accounting Standards and other reserves as described in this policy.
Asset Revaluation Reserves	Reserves required by the Australian Accounting Standards and are not cash backed reserves.
Internally Restricted Reserves	Reserves established by Council to ensure that sufficient funds are available when required for a specific purpose. These reserves are cash backed.
Externally Restricted Reserves	Reserves that are subject to external restrictions in their purpose. These reserves are cash backed.

4 Policy Statement

4.1 Classification of Financial Reserves

4.1.1 Asset Revaluation Reserves

This reserve is established under the requirements of the Australian Accounting Standards. It reflects the increments or decrements of fixed asset values as result of an asset revaluation.

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4.1.2 Externally Restricted Reserves

The following criteria apply to externally restricted reserves:

- The reserve is subject to legal requirements that govern the use of the funds; or
- The reserve includes funds that have not been utilised for the purpose for which they were received, and an obligation or requirement to return funds to its contributor exist.

The following Council reserves are externally restricted reserves:

Externally Restricted Reserves	
Unexpended Grants and Contributions	This reserve holds the balance of unexpended grants and contributions received from external contributors. The funds are held in this reserve until expensed in line with the funding conditions. External restrictions apply in line with the individual funding agreements.
Developer Contribution Reserve	This reserve holds contributions received by Council by developers in line with the Litchfield Council Developer Contribution Plan. Restrictions apply as set out in both the Plan and under provisions outlined in the Planning Act.

4.1.3 Internally Restricted Reserves

The following criteria apply to internally restricted reserves:

- The reserve is not subject to legal requirements governing the use of the funds; or
- The reserve has been established for a specific internal purpose, however, if that purpose does not eventuate or Council changes its priorities the funding can be diverted to other purposes

Litchfield Council distinguishes between two categories of internally restricted reserves:

- Asset Related Reserves that are related to fixed assets and are established for the funding of renewal, replacement or upgrading of existing assets and/or the establishment of new assets in line with Council's Asset Management Plan, Long Term Financial Plan, Municipal Plan and strategic goals.
- Other reserves that are not related to fixed assets and are established by Council for a specific purpose. Individual internal restrictions are placed on these reserves.

The following Council reserves are internally restricted reserves:

Internally Restricted Reserves: Asset Related Reserves	
~~Property Reserve~~	~~The reserve holds funding for renewal, replacement or upgrading of existing assets and/or the establishment of new assets in line with Council's Asset Management Plan for Property.~~
~~Plant and Equipment Reserve~~	~~The reserve holds funding for renewal, replacement or upgrading of existing assets and/or the establishment of new assets in line with Council's Asset Management Plan for Plant and Equipment~~.

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~~Infrastructure~~ Asset Reserve	The reserve holds funding for renewal, -replacement or upgrading of existing assets and/or the establishment of new assets in line with Council's Asset Management Plans ~~for Infrastructure~~..
Unexpended Capital Works Reserve	This reserve holds the balance of unexpended capital works funds that are requested to be carried forward to the following financial year.
~~Waste Management Reserve~~	~~The reserve holds funding for renewal, replacement or upgrading of existing assets and/or the establishment of new assets in line with Council's Asset Management Plan for Waste Management.~~
Internally Restricted Reserves: Other Reserves	
Waste Management Reserve	The reserve holds funding for activities related to Waste Management. This could be the renewal, replacement or upgrading of existing assets and/or the establishment of new assets in line with Council's Asset Management Plan for Waste Management or strategic development of the Waste Service delivery.
Election Reserve	The reserve will fund expenses related to Local Government ~~elections and~~ By-Elections that are unplanned.
Disaster Recovery Reserve	This reserve will fund expenses occurred due to storms, storm surges, and floods or any other natural disaster. The fund will enable Litchfield Council to recover from these disasters and return to operations.
Strategic Initiatives Reserve	This reserve will fund strategic initiatives and Information Technology improvements for the future development of Litchfield Council in line with the Municipal Plan and the Long Term Financial Plan. Specific initiatives must be identified in order to have funds allocated.
~~Unexpended Capital Works Reserve~~	~~This reserve holds the balance of unexpended capital works funds that are requested to be carried forward to the following financial year.~~
Thorak Regional Cemetery	This reserve holds the funds available for Thorak Regional Cemetery.

4.2 Establishment of Financial Reserves

Asset Revaluation Reserves	Establishment of the reserve follows the Australian Accounting Standards.
Externally Restricted Reserves	A reserve will be established for any value if there is a legal requirement or a requirement under the Australian Accounting Standards.
Internally Restricted Reserves	The establishment of a new reserve must be authorised by Council and shall not be established for an amount less than $100,000.

4.3 Transfer of funds in/out Financial Reserves

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For financial management purposes all reserve transfers must be detailed separately.

Asset Revaluation Reserves	Transfer of funds follow the Australian Accounting Standards.
Externally Restricted Reserves	Transfer of funds are restricted to the individual funding agreements. Council must authorise transfers by Council resolution.
Internally Restricted Reserves	Transfer of funds are restricted by the internal purpose of the reserve. All transfers must be authorised by Council resolution.

4.3.1 All transfers for reserves shall be assessed at least annually during the preparation of the budget and the Long Term Financial Plan. Distribution of surplus funds at the end of the financial year shall be utilised under this policy and do not require authorisation by Council resolution.

4.3.2 Surplus Funds collected as a Waste Charge or otherwise associated with waste shall be transferred to the Waste Management Reserve at the end of each financial year.

4.3.3 Surplus Funds collected through the operation of THorak Regional Cemetery shall be transferred to the Thorak Regional Cemetery Reserve at the end fo each financial year.

4.3.~~2~~4 Available Net Working Capital shall be calculated at the end of the financial year with the following calculation:

Item of Financial Statements	**Explanation**
Total Current Assets	
(LESS: Total Current Liabilities)	Immediate financial commitments
(LESS: Externally restricted Reserves)	Financial commitment
(LESS: Internally recstricted Reserves)	Financial commitment of Council
= WORKING CAPITAL	
(LESS: Non-current Employee Provisions)	Whilst not an immediate financial commitment, Council identifies the importance of those commitments to current employees
= NET WORKING CAPITAL	

Unless otherwise determined by Council resolution, the Net Working Capital ~~Funds~~ shall be utilised to replenish reserve balances in 4.4 in the first instance and then transferred to the Asset Reserve. ~~Funds collected as a Waste Charge or otherwise associated with waste shall be added to the Waste Management Reserve. Left over funds shall be distributed to the following reserves, or as determined by Council resolution:~~
~~75% Infrastructure Reserve~~
~~20% Property Reserve~~

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~~5% Plant & equipment Reserve~~

4.3.5~~3~~ The total of all reserves shall not exceed the current assets held by Council. Required adjustments at the end of the financial year will be made in line with the ~~surplus~~ Net Working Capital distribution mentioned above and do not need authorisation by Council resolution.

4.4 Maintaining Balance of Financial Reserves

Election Reserve	This reserve shall be maintained at no more than $100,000.
Disaster Recovery Reserve	This reserve shall be maintained at or near $500,000. ~~Where external funds are received after an event for the purpose of disaster recovery, these funds shall be used to replenish this reserve.~~
Strategic Initiatives Reserve	This reserve shall be maintained at no more than $500,000.

4.5 Reporting on Financial Reserves

Council is required under Part 7 (15) (2) (c) of the Local Government (Accounting) Regulations to disclose all reserves set aside for a specific purpose in its annual financial statement. In addition to this reserves are reported on as follows:

- A detailed statement with movements as part of the annual budget.
- A detailed statement with actual performance compared to annual budget as part of the budget review reports.
- A statement of balances as part of the monthly finance report.

5 Associated Documents

5.1 Litchfield Council Policies
5.2 Litchfield Council Municipal Plan
5.3 Litchfield Council Long Term Financial Plan
5.4 Litchfield Council Asset Management Plans
5.5 Litchfield Council Asset Management Policy
5.6 Litchfield Council Subdivisional Guidelines
5.7 Litchfield Council Developer Contributions Plan

6 References and Related Legislation

6.1 Northern Territory Local Government Act
6.2 Northern Territory Local Government (Administration) Regulations
6.3 Northern Territory Local Government (Accounting) Regulations
6.4 Australian Accounting Standards

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6.5 Ministerial Guidelines

7 Review History

Date Reviewed	Description of changes (Inc Decision No. if applicable)
17 September 2015	New policy 15/0097/02
13 December 2017	Review

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Name	FIN14 Investment Policy
Policy Type	Council
Responsible Officer	Director Community and Corporate Services
Approval Date	13/12/2017
Review Date	13/12/2021

1. Purpose

This Investment Policy establishes Litchfield Council's approach to investing funds not required to meet immediate liquidity needs.

2. Scope

This policy applies to all investment decisions relating to Council's surplus funds.

3. Definitions

For the purposes of this Policy, the following definitions apply:

4. Policy Statement

Council is required to ensure that there are proper policies and procedures in place to safeguard its assets in accordance with the Local Government (Accounting) Regulations. An investment policy is essential to these requirements.

In exercising the power to invest, consideration is to be given to preservation of capital, liquidity, and the return of investment:

- Preservation of capital is the principal objective of the investment portfolio. Investments are to be made in a manner that seeks to ensure the security and safeguarding of the investment portfolio. This includes managing credit and interest rate risk within identified thresholds and parameters.
- The investment portfolio must ensure there is sufficient liquidity to meet all reasonably anticipated cash flow requirements, as and when they fall due, without incurring significant costs due to the unanticipated sale of an investment.

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- The investment is expected to achieve a predetermined market average rate of return that takes into account the Council's risk tolerance. Any additional return target set by Council must also consider the risk limitation and prudent investment principles.

4.1. Prudent Person Standard

The investment will be managed with the care, diligence and skill that a prudent person would exercise. Staff are to manage the investment portfolios to safeguard the portfolios in accordance with the spirit of this Investment Policy, and not for speculative purposes.

4.2. Ethics and Conflicts of Interest

Staff shall refrain from personal activities that would conflict with the proper execution and management of Council's investment portfolio. This policy requires staff to disclose any conflict of interest to the CEO.

4.3. Approved Investments

Without approval by resolution of Council, investments are limited to:

- Interest bearing deposits such as bank accounts and term deposits;

4.4. Prohibited Investments

This investment policy prohibits any investment carried out for speculative purposes including:

- Derivative based instruments;
- Principal only investments or securities that provide potentially nil or negative cash flow; and
- Stand alone securities issued that have underlying futures, options, forwards contracts and swaps of any kind. This policy also prohibits the use of leveraging (borrowing to invest) of an investment.

4.5. Risk Management Guidelines

Investments obtained must comply with key criteria as indicated below relating to:

a) Portfolio Credit Framework: limit overall credit exposure of the portfolio.

b) Counterparty Credit Framework: limit exposure to individual counterparties/institutions.

c) Term to Maturity Framework: limits based upon maturity of securities.

d) Protection of Principal: investments entered into must be structured to minimise risk of loss of principal.

e) Grant Funding Conditions: conditions related to grant funding available to invest must be complied with.

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4.5.1. Overall Portfolio Limits

To control the credit quality on the entire portfolio, the following credit framework limits the percentage of the portfolio exposed to any particular credit rating category.

S&P Long Term Rating	S&P Short Term Rating	Direct Investment Maximum %	Managed Fund Maximum %
AAA	A-1+	100%	100%
AA	A-1	100%	100%
A	A-2	60%	80%

4.5.2. Counterparty Credit Framework

Exposure to an individual counterparty/institution will be restricted by its credit rating so that single entity exposure is limited, as detailed in the table below:

S&P Long Term Rating	S&P Short Term Rating	Direct Investment Maximum %	Managed Fund Maximum %
AAA	A-1+	45%	50%
AA	A-1	35%	45%
A	A-2	20%	40%

If any of the council's approved investments are downgraded such that they no longer fall within approved credit rating category documented within the investment policy, they must be divested as soon as practicable. Investments fixed for greater than 12 months are to be approved by Council and reviewed on a regular term and invested for no longer than 5 years.

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4.5.3. Term to Maturity Framework

The investment portfolio is to be invested within the following maturity constraints:

Overall Portfolio Term to Maturity Limits	
Portfolio % < 1 year	100% Max; 40% Min
Portfolio % > 1 year	60%
Portfolio % > 3 year	35%
Portfolio % > 5 year	25%
Individual Investment Maturity Limits	
ADI	5 years
Non ADI	3 years

4.6. Investment Advisor

The council's investment advisor must hold an Australian Financial Securities Licence issued by the Australian Securities and Investment Commission and their appointment as advisor must be approved by resolution of Council. The advisor approved by council resolution must be an independent person who has no actual or potential conflict of interest in relation to investment products being recommended and is free to choose the most appropriate product within the terms and conditions of the investment policy. The advisor must be representative of a recognised reputable firm of investment advisors.

4.7. Measurement

The investment return for the portfolio is to be annually reviewed by an independent financial advisor by assessing the market value of the portfolio. The market value is to be assessed by Council at least once a month to coincide with monthly reporting.

DRAFT

4.8. Benchmarking

Performance benchmarks (must be established here in this policy).

Investment	Performance Benchmark
Cash	Cash Rate
Enhanced / Direct Investments	UBSWA Bank Bill
Diversified	CPI + appropriate margin over rolling 3 year periods (depending upon composition of fund)

4.9. Reporting and Review

A monthly report must be provided to Council in support of the monthly statement of activity. The report must detail the investment portfolio in terms of performance, percentage exposure of total portfolio, maturity date and changes in market value.

An Investment Strategy must run in conjunction with the investment policy. (The Investment Policy and Strategy may be presented as one document). The investment strategy must be reviewed by an independent investment adviser every six months with a more formal review once a year. The Strategy must outline:

- Council's cash flow expectations;
- Optimal target allocation of investment types, credit rating exposure, and term to maturity exposure and;
- Appropriateness of overall investment types for Council's portfolio.

This Investment Policy will be reviewed at least once a year or as required in the event of legislative changes. Documentary evidence must be held for each investment and details thereof maintained in an investment Register. Certificates must be obtained from the financial institutions confirming the amounts of investments held on the Council's behalf as at 30 June each year and reconciled to the Investment Register.

5. Associated Documents

Litchfield Financial Management Policy

6. References and Legislation

Northern Territory Local Government Act

Northern Territory Local Government (Administration) Regulations

DRAFT

Northern Territory Local Government (Accounting) Regulations

Australian Accounting Standards

Ministerial Guidelines

Local Government General Instructions

7. Review History

Date Reviewed	Description of changes (Inc Decision No. if applicable)
10/04/2012	Approved
11/10/2012	Amendments made.
13/12/2017	Policy in new template, rescind LC10

DRAFT

Name	FIN13 Borrowing
Policy Type	Council
Responsible Officer	Director of Community and Corporate Services
Approval Date	13/12/2017
Review Date	13/12/2021
Document ID	

1. Purpose

This policy sets out the circumstances under which Council might use debt as a source of funds and principles to be applied in relation to borrowing.

2. Principles

Council is committed to operating in a financially sustainable manner and in accordance with its Long-Term Financial Plan and principles of financial sustainability.

Council considers that debt funding may be appropriate in the following circumstances:

- fund the acquisition, construction, expansion or refurbishment of a major capital asset or other expansion in capital works, or;
- The Council is satisfied it can manage the risk and meet the debt repayments in the context of long term financial planning and financial sustainability

Debt will not be used to cover recurrent operating expenses.

Council generally prefers to minimise debt and financial risk.

3. Definitions

For the purposes of this Policy, the following definitions apply:

Term	Definition
Borrowings	Any form of financial accommodation for example, an overdraft, a loan, hire purchase or instalment purchase agreement and the present value of future payments under a finance lease.

4. Policy Statement

Council recognises that borrowing for capital works is an important funding source for Local Government and that the full cost of Infrastructure should not be borne entirely by present-day ratepayers, but be contributed to by future ratepayers who will also benefit.

DRAFT

External borrowings will be limited to the funding of significant items of capital expenditure:

- the life of which is expected to exceed the term of any funds borrowed
- that cannot be funded from other sources
- that are within the contexts of affordability, risk and financial sustainability

Borrowings are to be utilised for the purpose for which the loan was raised. If a borrowing is undertaken and the final cost is less than the total approved loan amount, resulting in unexpended loan funds, unexpended loan funds will be placed in a reserve until a suitable use of the funds is identified.

Where a loan is raised by Council to obtain an asset and the loan has not been repaid when the asset is sold, Council will consider, on the basis of costs and benefits, first applying the proceeds of the sale to the repayment of the loan source.

Repayment of the debt period to be no longer than the weighted average estimated useful life of the related assets purchased, or 20 years whichever is the lesser.

5. Associated Documents

Litchfield Council Financial Policies and Procedures

Litchfield Delegation Manual

6. References and Legislation

The Northern Territory Local Government Act sets out the requirements for Council borrowing.

Northern Territory Local Government (Administration) Regulations

Northern Territory Local Government (Accounting) Regulations

Australian Accounting Standards

Ministerial Guidelines

Local Government General Instructions

7. Review History

Date Reviewed	Description of changes (Inc Decision No. if applicable)
12/11/2008	PA08/CAM/012
11/10/2012	PA12/CAM/012
13/12/2017	Update in line with Ministerial Guidelines and update to new policy number rescind LC04

DRAFT

COUNCIL REPORT

Agenda Item Number:	15.3
Report Title:	December 2017 Summary Report Planning and Mining
Report Number:	17/0066
Meeting Date:	13/12/2017
Attachments:	Attachment A: Letters of support for Development Applications, subject to normal Council conditions. Attachment B: Letters of support for Development Applications, subject to specific issues being adequately addressed. Attachment C: Letters of non-support or objection to Development Applications for reasons related to areas of Council authority. Attachment D: Letters of objection to Development Applications for reasons related to other issues. Attachment E: Letters of Comment for Mining Applications

Purpose

The purpose of this report is to provide to Council a summary of development and mining applications received and comments provided for the period of 4 November 2017 to 1 December 2017.

Summary

For the noted period, Council provided comments on six development applications, two of which are provided as full reports in this Council agenda.

Of the remaining applications, two were supported subject to normal Council conditions and one was supported subject to specific issues being adequately addressed.

For the noted period, Council provided comments on 0 mining applications.

All letters of comment are provided for information in Attachments A, B, C, D, and E.

Recommendation

THAT Council

1. receive the December 2017 Summary Planning and Mining Report;
2. notes for information the responses provided to Development Assessment Services within Attachments A, B, C, and D to this report; and
3. notes for information the responses provided to the Department of Primary Industries and Resources within Attachment E to this report.

Background and Discussion

DEVELOPMENT APPLICATIONS

The following is a summary of all Development Applications received and comments provided for the period of 4 November 2017 to 1 December 2017.

Council Outcome on Development Applications	No. Applications
Development applications supported, subject to normal Council conditions	2
Development applications supported, subject to specific issues being adequately addressed	2
Development applications not supported/objected to for reasons related to Council issues	1
Development applications objected to for reasons not directly related to Council issues	0

Of the above applications, two are provided with a separate report within this Council Agenda. Additional detail is provided below on all other applications.

For all development applications, should the applications be approved by the Consent Authority, the applications may be subject to Council's normal Development Permit conditions in regards to areas of Council authority, including, but not necessarily limited to, access and stormwater drainage.

Development Applications supported, subject to normal Council conditions

The table below describes the Development Applications that are supported by Council.

Responses to these Development Applications are provided as Attachment A to this report.

Application Number and Address	Purpose and Summary
PA2017/0500 Section 2996 (27) Lauder Road, Herbert, Hundred of Strangways.	This application is proposing an independent unit on a 2.12Ha site with an independent effluent system. The proposal shows that the independent unit will not exceed 80sqm and does not require an additional driveway. The proposal seems compliant with the NT Planning Scheme and does not propose any negative impacts on Council's infrastructure.
PA2017/0508 Section 6552 (38) Grice Crescent, Coolalinga, Hundred of Bagot.	This application is proposing a Unit Title Subdivision for two duplexes that were recently developed and then cleared by Council in August 2017 as they satisfactorily met Council's Standards.

Development Applications supported, subject to specific issues being adequately addressed

The table below describes the Development Applications that are supported by Council only if the specific issues outlined are adequately addressed.

Responses to these Development Applications are provided as Attachment B to this report.

Application Number and Address	Purpose and Summary	Specific Issues to be Addressed
PA2017/0528 NT Portions 2626 (3820) Gunn Point Road, Koolpinyah.	This is a subdivision to create 2 lots, with the intent of providing legal road access for the future development of the Prawn Hatchery as part of Project Sea Dragon. The subdivision is to create a separate lot in the in the south-western corner leaving the parent parcel with a total land size of 25.94sqkm. As there are no formal road reserves within the subject site (NT Portions 2626) the application has proposed a new road opening of Murrumujuk Drive which is an extension of Northern Territory Government owned road, Gunn Point road. The application has specified an allowance for a 100m width corridor along the southern boundary. The specifications of the road extension are consistent with the characteristics of an arterial road, for example, Gunn Point Road.	It is unclear from this proposal if the proposed a new road opening of Murrumujuk Road is intended to be a Council road or a Northern Territory Government road. Given the characteristics of the road are that of an arterial road and proposed to be an extension of an NTG owned road (Gunn Point Road) Council prefers that the road be the responsibility of the NTG as it is not suitable to be a Council owned asset. Council requests that the extension of this road be dedicated to NTG on any plan of subdivision.

Development Applications not supported/objected to for reasons related to Council issues

There were no development applications during this period that were not supported or objected to solely for reasons related to Council issues

Development Applications objected to for reasons not directly related to Council issues

There were no development applications in this period not supported or objected to solely for reasons not related to Council issues.

MINING APPLICATIONS

There were no mining applications in this time period.

Links with Strategic Plan

Priority # 2 – A great place to live

Legislative and Policy Implications

Not applicable to this report

Risks

Not applicable to this report

Financial Implications

Not applicable to this report

Community Engagement

Not applicable to this report

Recommending Officer: **Wendy Smith, Acting Director Infrastructure and Operations**

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

Attachment A

Responses to Development Applications supported, subject to normal Council conditions

LITCHFIELD COUNCIL

Community effort is essential

28 November 2017

Development Assessment Services
Department of Infrastructure, Planning and Logistics
GPO Box 1680
Darwin NT 0801

RE: Letter of Comment Development Application

PA2017/0500
Section 2996 (27) Lauder Road, Herbert, Hundred of Strangways
Independent unit with an independent effluent disposal system

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Thank you for the Development Application referred to this office on 03/11/2017, concerning the above. This letter may be tabled at Litchfield Council's next Council Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration by the Authority:

Council <u>supports</u> the granting of a Development Permit for the following reasons:

a) The proposal seems compliant with the NT Planning Scheme and reasonable for the zoning of this site

b) There are not expected to be any negative effects upon Council's road reserve and waste services as a result of this proposal.

c) The proposal only has one driveway crossover noted on the plan. Any additional crossovers requested shall be applied for through Council and separate to this Development Application.

Should the application be approved, the Council requests the following conditions be included as Condition Precedents in any Development Permit issued by the consent authority:

a) The crossover and driveway shall meet Litchfield Council's requirements, and the following change to the proposed plans is required:
   i. Council requires amended plans illustrating the proposed access to the new dwelling on the site from the adjacent road.

Should the application be approved, the following condition(s) pursuant to the *Planning Act* and Council's responsibility under the *Local Government Act* are also recommended for inclusion in any Development Permit issued by the consent authority:

a) The kerb crossovers and/or driveways to the site are to meet the technical standards of Litchfield Council. The owner shall remove disused crossovers; provide

footpaths/cycleways, as required by Litchfield Council; collect stormwater and discharge it to the drainage network; and undertake reinstatement works; all to the technical requirements and satisfaction of the Director Infrastructure and Operations, Litchfield Council, and at no cost to Litchfield Council.

b) Soil erosion control and dust control measures must be employed throughout the construction stage of the development to the satisfaction of the consent authority.

c) Any developments on or adjacent to any easements on site in favour of Council shall be carried out to the requirements and satisfaction of the Director Infrastructure and Operations, Litchfield Council.

Should the application be approved, the following notes are recommended for inclusion in any Development Permit issued by the consent authority:

a) Inspection fees and charges may apply in accordance with Litchfield Council's current Fees and Charges. Additional information can be found at www.litchfield.gov.nt.au.

b) A *Works within a Road Reserve Permit – Works Associated with a Development Permit* is required from Litchfield Council before commencement of any work within the road reserve, which would include creation of any driveway crossover connecting to Litchfield Council's road network.

c) Notwithstanding any approved plans, signs within Litchfield Council's municipal boundaries are subject to approval under Clause 6.7 of the NT Planning Scheme.

If you require any further discussion in relation to this application, please contact **Litchfield Council's Planning and Development division** on 08 8983 0600 and you will be directed to the appropriate officer to address your query.

Yours faithfully

Wendy Smith
A/Director Infrastructure and Operations

LITCHFIELD COUNCIL

Community effort is essential

10 November 2017

Development Assessment Services
Department of Infrastructure, Planning and Logistics
GPO Box 1680
Darwin NT 0801

RE: Letter of Comment Development Application

PA2017/0508
Section 6552 (38) Grice Crescent, Coolalinga, Hundred of Bagot
Unit Title Subdivision to create 2 lots

Thank you for the Development Application referred to this office on 30/10/2017, concerning the above. This letter may be tabled at Litchfield Council's next Council Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration by the Authority:

Council <u>supports</u> the granting of a Development Permit for the following reasons:

a) The application appears to comply with the NT Planning Scheme provisions for a unit title subdivision.

b) There are not expected to be any negative effect upon Council's infrastructure as a result of this proposal.

Should the application be approved, the following condition(s) pursuant to the *Planning Act* and Council's responsibility under the *Local Government Act* are also recommended for inclusion in any Development Permit issued by the consent authority:

a) **A monetary contribution is required to be paid to Litchfield Council in accordance with its development contribution plan for the upgrade of roads and drainage infrastructure as a result of this development.** The contribution payable is in accordance with that for Catchment Area 13C, in which the site falls within the Council's *Developer Contributions Plan for Roads and Drainage*.

b) Engineering design and specifications for the proposed and affected roads, street lighting, stormwater drainage, vehicular access, pedestrian/cycle corridors, and streetscaping shall be to the technical requirements and approval of Litchfield Council, with all approved works constructed at the developer's expense.

Note: Design drawings should be approved by Litchfield Council prior to construction of the works.

c) All existing or proposed easements or reserves required for the purposes of stormwater drainage, roads, access or for any other purpose, shall be made available free of cost to, and in favour of, Litchfield Council and/or neighbouring property owners.

Should the application be approved, the following notes are recommended for inclusion in any Development Permit issued by the consent authority:

a) Inspection fees and charges may apply in accordance with Litchfield Council's current Fees and Charges. Additional information can be found at www.litchfield.gov.nt.au.

b) A *Works within a Road Reserve Permit – Works Associated with a Development Permit* is required from Litchfield Council before commencement of any work within the road reserve, which would include creation of any driveway crossover connecting to Litchfield Council's road network.

If you require any further discussion in relation to this application, please contact **Litchfield Council's Planning and Development division** on 08 8983 0600 and you will be directed to the appropriate officer to address your query.

Yours faithfully

Wendy Smith
A/Director Infrastructure and Operations

Attachment B

Responses to Development Applications supported, subject to specific issues being adequately addressed

LITCHFIELD COUNCIL

Community effort is essential

15 November 2017

Development Assessment Services
Department of Infrastructure, Planning and Logistics
GPO Box 1680
Darwin NT 0801

RE: Letter of Comment Development Application

PA2017/0528
NT Portions 2626 (3820) Gunn Point Road, Koolpinyah
Subdivision to create 2 lots

Thank you for the Development Application referred to this office on 03/11/2017, concerning the above. This letter may be tabled at Litchfield Council's next Council Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration by the Authority:

Council <u>supports</u> the granting of a Development Permit for the following reasons:

a) The proposal seems compliant with the NT Planning Scheme and reasonable for the zoning of this site.

b) There are not expected to be any negative effects upon Council's stormwater infrastructure as a result of this proposal.

provided the following issues are adequately addressed:

a) It is unclear from this proposal if the new road opening of Murrumujuk Drive is to be a Council road or a Northern Territory Government (NTG) road. The specifications detail a 100m width corridor. This is characteristic of an arterial road, similar to Gunn Point Road, the NTG arterial road from which Murrumujuk Drive extends. Arterial roads are the responsibility of the NTG and are not suitable to be Council owned assets. Council will require the extension of this road to be dedicated to NTG on any plan of subdivision.

Should the application be approved, the Council requests the following conditions be included as Condition Precedents in any Development Permit issued by the consent authority:

a) The following change to the proposed plans is required:
   i. Council will require the extension of this road to be dedicated to the Northern Territory Government on any plans of subdivision.

Should the application be approved, the following condition(s) pursuant to the *Planning Act* and Council's responsibility under the *Local Government Act* are also recommended for inclusion in any Development Permit issued by the consent authority:

a) **A monetary contribution is required to be paid to Litchfield Council in accordance with its development contribution plan for the upgrade of roads and drainage infrastructure as a result of this development.** The contribution payable is in accordance with that for Catchment Area 7, in which the site falls within the Council's *Developer Contributions Plan for Roads and Drainage*.

b) Engineering design and specifications for the proposed and affected roads, street lighting, stormwater drainage, vehicular access, pedestrian/cycle corridors, and streetscaping shall be to the technical requirements and approval of Litchfield Council, with all approved works constructed at the developer's expense.

   Note: Design drawings should be approved by Litchfield Council prior to construction of the works.

c) Soil erosion control and dust control measures must be employed throughout the construction stage of the development to the satisfaction of the consent authority.

d) All existing or proposed easements or reserves required for the purposes of stormwater drainage, roads, access or for any other purpose, shall be made available free of cost to, and in favour of, Litchfield Council and/or neighbouring property owners.

Should the application be approved, the following notes are recommended for inclusion in any Development Permit issued by the consent authority:

a) Inspection fees and charges may apply in accordance with Litchfield Council's current Fees and Charges. Additional information can be found at www.litchfield.gov.nt.au.

b) A *Works within a Road Reserve Permit – Works Associated with a Development Permit* is required from Litchfield Council before commencement of any work within the road reserve, which would include creation of any driveway crossover connecting to Litchfield Council's road network.

c) Notwithstanding any approved plans, signs within Litchfield Council's municipal boundaries are subject to approval under Clause 6.7 of the NT Planning Scheme.

If you require any further discussion in relation to this application, please contact **Litchfield Council's Planning and Development division** on 08 8983 0600 and you will be directed to the appropriate officer to address your query.

Yours faithfully

Wendy Smith
A/Director Infrastructure and Operations

Attachment C

Responses to Development Applications not supported/objected to for reasons related to Council issues

There were no Development Applications not supported/objected to for reasons related to Council issues during this time period.

Attachment D

Responses to Development Applications objected to for reasons not related to Council issues

There were no Development Applications objected to for reasons not related to Council issues during this time period included as Attachments to this report.

Attachment E

Responses to Mining Applications

There were no Mining Applications responded to during this time period.

COUNCIL REPORT

Agenda Item Number:	15.4
Report Title:	PA2017/0542, a Planning Scheme Amendment Application to rezone from Zone R (Rural) to Zone RL (Rural Living) at Lot 12 (69) Finn Road, Berry Springs, Hundred of Ayers
Report Number:	17/0067
Meeting Date:	20/11/2017
Attachments:	Attachment A: Planning Scheme Amendment Application PA2017/0542. Attachment B: Council's letter of comment for PA2017/0542, a Planning Scheme Amendment Application to rezone from Zone R (Rural) to Zone RL (Rural Living) at Lot 12 (69) Finn Road, Berry Springs, Hundred of Ayers.

Purpose

The purpose of this report is to provide a summary and assessment to Council of PA2017/0542, a Planning Scheme Amendment Application to rezone from Zone R (Rural) to Zone RL (Rural Living) at Lot 12 (69) Finn Road, Berry Springs, Hundred of Ayers, included as Attachment A.

Summary

The proposal is for a rezoning, which requires a Planning Scheme Amendment.

The report also presents for Council information the Letter of Comment on PA2017/0542 provided to the consent authority on 01/12/2017, included as Attachment B.

This report concludes that Council can provide comments on the application that support could be considered given the proximity to the Berry Springs Rural Activity Centre and other parcels in Zone RL (Rural Living), while noting that future prospects for subdivision of the site would be limited at this time. However, this may not preclude the validity of rezoning the site in anticipation of future subdivision opportunities in combination with other adjacent sites. Rezoning of the site, however, should not be interpreted as endorsement of or any specific rights for future site subdivision.

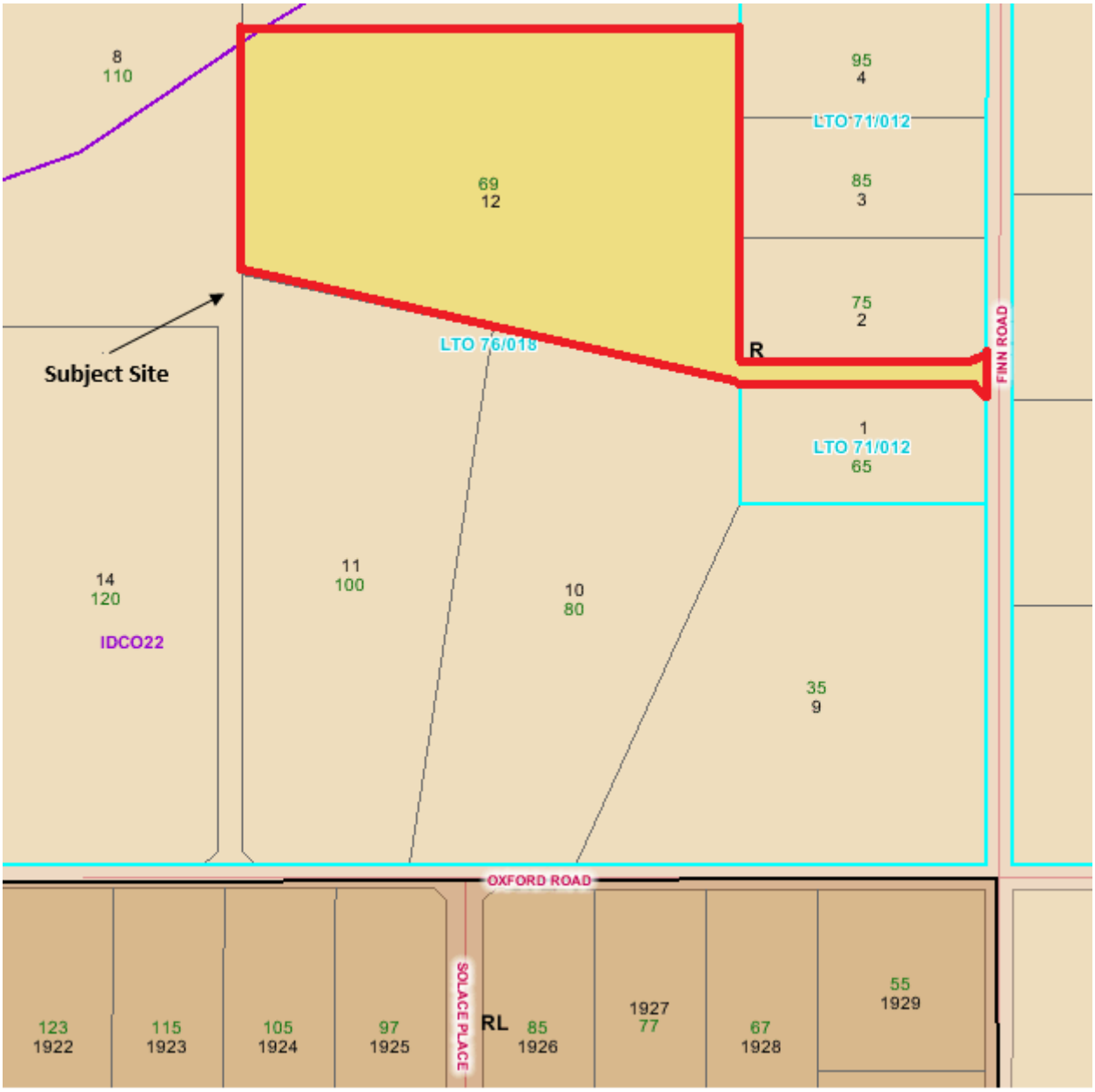
Recommendation

THAT Council endorse Attachment B, Council's Letter of Comment for PA2017/0542, a Planning Scheme Amendment Application to rezone from Zone R (Rural) to Zone RL (Rural Living) at Lot 12 (69) Finn Road, Berry Springs, Hundred of Ayers, the assessment of which is summarised above and reviewed in detail within the body of this report.

Background

Site and Surrounds

The subject site is 69 Finn Road, a 10.62Ha parcel in Zone R (Rural). All lots immediately adjacent to the subject site are also in Zone R (Rural). The subject site is situated close to Oxford Road, the lots on the south side of which comprise a recently completed subdivision with all lots in Zone RL (Rural Living). Lot 9 at 35 Finn Road recently applied for rezoning from Zone R (Rural) to Zone RL (Rural Living), which Council supported; however, no decision has been made on that application by the Minister. The site contains one residential dwelling and two associated sheds.



Source: NT Atlas and Spatial Directory

Site Development History

No planning history or past applications have been lodged for this site.

Current Proposal

The application is proposing that 69 Finn Road, Berry Springs be rezoned from Zone R (Rural) to Zone RL (Rural Living). The application is quite limited in information and indicates that the intent is to maximise the use of the land; however; the future development plans are unclear.

Application Assessment

Council can consider support for the rezoning of the site from Zone R (Rural) to Zone RL (Rural Living), noting that the site is approximately 1km from the centre of the Berry Springs Rural Activity Centre and other lots in proximity from the subject site, on Oxford Road, have recently been rezoned to Zone RL.

In terms of the intention to rezone, Council notes that that the application objective is to "make best use of the land resources." This statement is presumed to refer to future subdivision potential due to the ability to provide reduced lot sizes (from 8Ha in Zone R (Rural) to 2Ha in Zone RL (Rural Living)). As Zone R (Rural) allows more potential development types than Zone RL (Rural Living), the statement cannot be presumed to allow for more development potential due to development type.

The site is currently connected to Council's road reserve through a 200m long, 20m wide battle-axe. If the intent is to further subdivide this parcel after it has been rezoned to Zone RL (Rural Living), it is important to note that Council does not accept adjacent battle-axe lot designs and would require a 30m wide road reserve to provide access to any subdivision proposal on this subject site.

With the current parcel configuration, it is unlikely any future subdivision of this site on its own could be supported by Council, as it would be unable to meet Council's Development and Subdivision Standards for legal access. However, future subdivision of this site combined with other adjacent parcels may be possible, if other adjacent sites were also rezoned in the future.

Given the above situation, full impacts upon Council infrastructure as a result of this proposal are unclear, as the future development possibilities for the site are unknown at this time, but could be considered at such time as any future subdivision or further development of the site is proposed.

Conclusion

It is recommended that Council provide comments on the application that support could be considered given the proximity to the Berry Springs Rural Activity Centre and other parcels in Zone RL (Rural Living), while noting that future prospects for subdivision of the site would be limited at this time. However, this may not preclude the validity of rezoning the site in anticipation of future subdivision opportunities in combination with other adjacent sites. Rezoning of the site, however, should not be interpreted as endorsement of or any specific rights for future site subdivision.

Links with Strategic Plan

Priority # 2 – A great place to live

Legislative and Policy Implications

Not applicable to this report.

Risks

Not applicable to this report.

Financial Implications

Not applicable to this report.

Community Engagement

Not applicable to this report.

Recommending Officer: **Wendy Smith, Acting Director Infrastructure and Operations**

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

NORTHERN TERRITORY OF AUSTRALIA
Planning Act

Proposal to amend a Planning Scheme - section 13(1)

1. LAND INFORMATION (FOR PROPOSED CHANGE IN ZONING ONLY)

~~Town~~/**Hundred**/~~Locality~~: **Ayers**
Parcel Number(s) and/or Unit number: **Lot 12**
LTO Plan: **LTO76/018**
Number and Street Name: **69 Finn Road, Berry Springs**

and

Existing Zone: **R**
Proposed Zone: **RL**
Tenure: **Freehold**

Is the proponent the land owner? ~~YES~~ / **NO**

2. PROPONENT INFORMATION

PROPONENT INFORMATION

ILIS Customer no. (if known):
Company name (if applicable): **Earl James and Associates**
ABN or ACN (if applicable): **ABN 30 112 988 625**
Title: Mr Mrs Miss Ms Dr Other:
Family name(s):
Given name(s):
Preferred name(s):
Postal address: **GPO Box 884**
Darwin NT 0801

Telephone no. (business hours): **89812492**
Mobile no.:
Facsimile no.: **89815205**
Email address: **kdodd@eja.com.au**

3. DESCRIPTION OF PROPOSED AMENDMENT

Attach a detailed statement describing the proposed amendment. **ATTACHMENT A**

and

Where the proposed amendment relates to a published document, the title of the document proposed to be amended:

4. REASON(S) FOR PROPOSAL

Attach a detailed statement describing why the proposed amendment should be considered.	**ATTACHMENT B**

5. APPLICANT TO SIGN AND/OR AFFIX SEAL

The application is complete and all required documentation is attached.

_____ 21/4/2017

Signature(s) **for Earl James and Associates** Date

PRIVACY NOTE:
The Department of Planning and Infrastructure, on behalf of the Minister, is authorised under the *Planning Act* to collect the information on this form, or otherwise provided by you, to consider a proposal to amend a Planning Scheme. Failure to provide the information in full may result delays processing the proposal.

Some of the personal information provided by you on this application may be publicly available, as part of a public exhibition process. The information may also be provided to other NT Government agencies, the Australian Valuation Office, local governments and Commonwealth Government Departments and agencies, as required by law.

Collection of personal information on this form is done in accordance with the privacy legislation contained within the *Information Act 2002 (NT)*. For more information please refer to the Department of Planning and Infrastructure privacy statement located at www.dpi.nt.gov.au

Any personal information provided can be subsequently accessed by you on request. If you have any queries please contact the Manager Development Assessment Services on 8999 6109.

earl james & associates

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10 Harvey St Darwin NT 0800
ABN 30 112 988 625

Lot 12, LTO76/018, Hundred of Ayers

INTRODUCTION

Lot 12 is located at 69 Finn Road in Berry Springs and is owned by local residents, Kris Butler and Lucas Lawson

The improvements on the property comprise a residence and associated sheds but the vast majority of the land is not being utilised.

In order to make best use of the land resource, Kris and Lucas are proposing to amend the NT Planning Scheme (NTPS) and change the zone of the subject area from R (Rural) to RL (Rural Living). This decision has been made after firstly considering the physical characteristics of the land, confirming that the parcel does **not** overlay the Berry Springs Dolomite Aquifer and taking into account the access strip that extends from Finn Road.

The application is made in accordance with Section 13(1) of the Planning Act.

SITE DETAILS

Lot 12 was created in 1976 by a 69 Finn Road, Berry Springs with the area under title being in excess of 10.62 hectares.

It is approximately 45 kilometres from Darwin and 25 kilometres from Palmerston. The most direct access from Darwin is through Palmerston, along Channel Island Road, Jenkins Road and then directly south along Finn Road. Alternative access is also available along the Stuart Highway and then along Cox Peninsula Road to the intersection with Finn Road.

The site is less than 1 kilometre from the Berry Springs commercial area.

The boundary dimensions are depicted on survey plan LTO76/018 and this is included as Attachment A. The title certificate is included as Attachment B.

The subdivision that created Lot 12 provided for future subdivision by including a 20 metre wide access strip through to Finn Road with truncations to allow for site lines.

Land unit mapping published by the Department of Environment and Natural Resources (DENR) indicates that the land is made up entirely of land unit 3cwhich is described as – *flat to gently undulating upland surface; slopes 1-3%; shallow very gravelly yellow massive earths; Eucalypt Wooodland and minor Open Woodland.*

The land is not constrained by seasonal water logging and no part of the subject parcel is identified as being a Priority Environmental Management area.

The effective operation of the existing, on-site effluent disposal system on the property indicates that the soils are suitable for on-site wastewater treatment and disposal.

Reticulated water is not available in this locality so DENR was consulted in relation to the availability of groundwater. DENR has advised that Lot 12 overlies the aquifer called the South Alligator Group Hardys Creek which has an estimated sustainable yield of 410ML/yr. DENR's assessment concluded that a lot yield of 3 additional lots from a subdivision of Lot 12 could be accommodated within the sustainable yield of the aquifer.

The potable water supply for proposed residents (under the existing or proposed zoning) will come from ground water, complemented by harvested rainwater.

Reticulated power is available in Finn Road and this reticulation could be extended to service future lots developed under an RL zone. The details of the design and construction of new reticulation, and/or augmentation of existing reticulation, will be confirmed with the Power and Water Corporation after, firstly, the consideration of the current rezoning application and a subsequent Development Application (DA).

THE PROPOSAL

The subject land is within Locality 14 – Litchfield South as defined by the Litchfield Planning Concepts and Land Use Objectives (LUO's). The intent of this zone is to *continue the development predominantly of 8 hectare lots to accommodate a range of land uses including rural living, agriculture (including horticulture and aquaculture), recreation, tourist, commercial and community purposes.*

Development within Locality 14 since the LUO's were prepared has seen the creation of additional 8 hectare allotments however there has also been significant areas developed as 2 hectare allotments and still further areas rezoned to facilitate lots smaller than 8 hectares.

The intent of Locality 14 is to develop opportunities for rural living and the current proposal to amend the NTPS is consistent with that intent.

One of the issues identified in the LUO's is recognition that the large lots provide a degree of buffering between land use activities. This would be the case in a situation where a buffer was required between horticultural activities and rural living, however this is not the case with the subject land.

The Litchfield Subregional Land Use Plan 2016 identifies the Berry Springs Rural Activity Centre along the southern side of Cox Peninsula Road.

The rural living lots that have recently been developed on Oxford Road, and the lots that may eventuate from the current rezoning proposal (albeit only a small number of lots) will complement the activities identified for the Activity Centre

The Darwin Regional Land Use Plan (DRLUP) makes reference to the 'rural activity centres' such as Berry Springs. The DRLUP makes the following reference…

Rural activity centres will create the opportunity to provide housing choice outside the urban area while minimising the impacts of smaller lots on established rural lifestyle areas. These centres will also assist in establishing the economic viability of the infrastructure required to support such development and encourage increased local employment and development of local community facilities and services, including public transport.

Rural activity centres (district centres) such as Berry Springs will be the focus of smaller lot development in the rural areas and the rural living allotments will provide a transition to the larger rural allotments.

As previously mentioned this application is seeking to rezone Lot 12 from R (Rural) to RL (Rural Living).

The intention is to then subdivide the relevant area to create allotments in accordance with the RL zone but this will be the subject of a separate Development Application.

The maximum, potential lot yield from a subdivision under the RL zone would be 4 lots however a final yield would be determined by a more detailed assessment and consultation with the relevant stakeholders.

The uses available within the two zones, as defined by the NTPS, are very similar however the RL zone, as indicated by the name (Rural Living) is more focused on rural residential uses as opposed to specific uses associated with rural industry. The impact on existing, adjacent residents is likely to be less than if the land was developed to its full potential under the Rural zoning.

The land immediately abutting Lot 12 is zoned R and is ether vacant or used for rural living.

Consequently development of the subject land for rural living is compatible with the adjacent, existing land uses.

Whilst domestic traffic movements will increase, albeit minimally, under the proposed zoning, there are likely to be significantly less heavy vehicle movements than if the land was utilised for the allowable, Rural uses. The change will be negligible to residents on Finn Road as this road is now used by traffic as an access through to Channel Island Road and on to Palmerston and Darwin.

Traffic generated by an RL subdivision will have the option of travelling north along Finn Road or utilising Cox Peninsula Road.

Conclusion

This application is proposing the rezoning of part of Lot 12, LTO76/018, Hundred of Ayers from R (Rural) to RL (Rural Living).

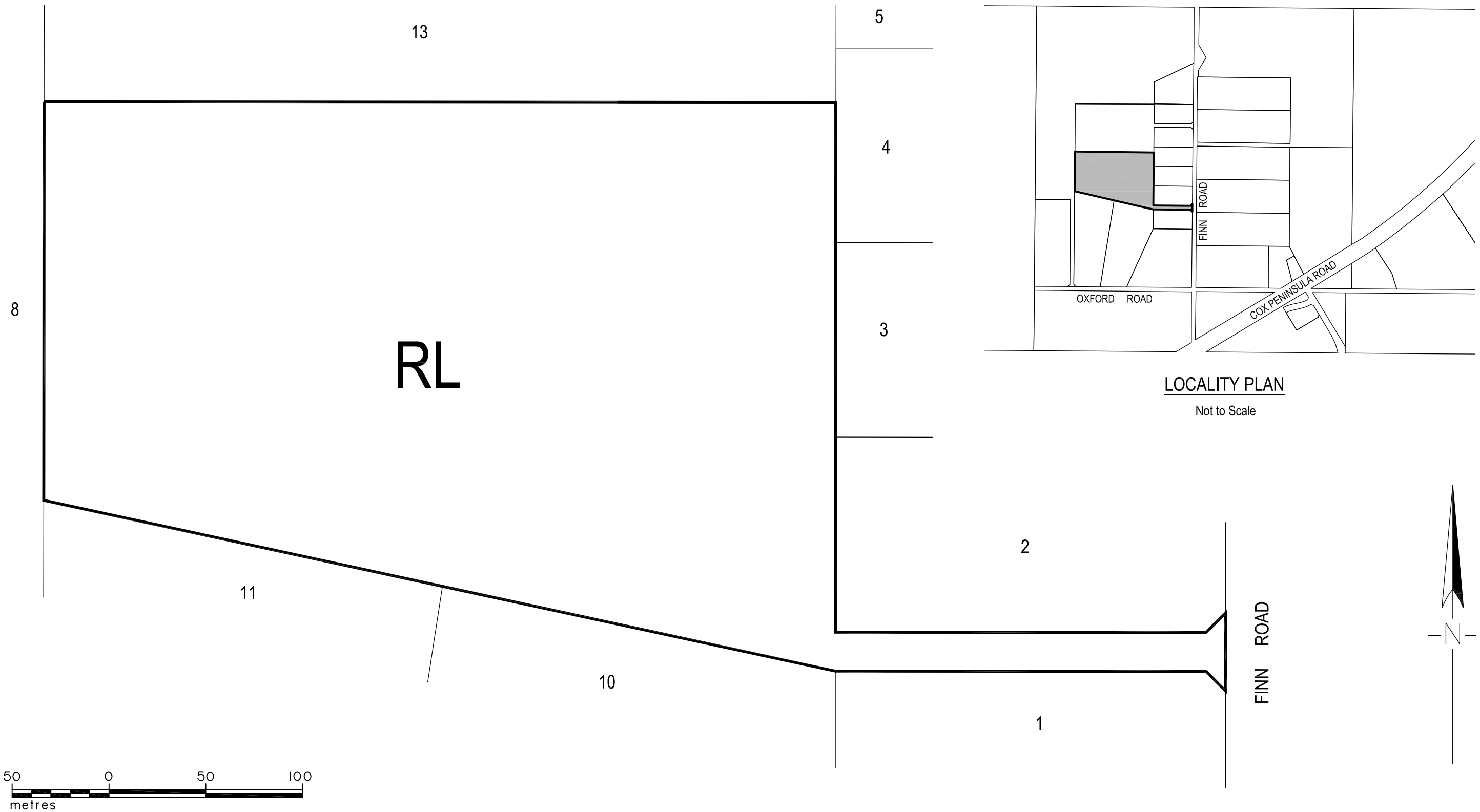
The Government is facilitating the development of urban allotments in Palmerston and this is also supported by private residential development in both Palmerston and Darwin. The rezoning now being proposed will facilitate the development of rural allotments in close proximity to Palmerston and the Berry Springs activity centre and these lots will complement the ongoing urban development.

The land uses that will result from the proposed change in zoning are very similar to the uses under the current zoning and consequently the impact on the existing residents in the area will be minimal. Site inspection and details obtained from Government sources in relation to the site's physical characteristics have not identified any impediments to a small subdivision that will create rural living allotments.

A more comprehensive Land Suitability Assessment will be undertaken as part of a future Development Application process, in order to determine an appropriate lot yield, should the Minister agree to the proposed Planning Scheme Amendment.

There are established commercial and community uses in close proximity to the subject land and the expansion of the Berry Springs district centre has been identified in Government planning documents.

The rezoning proposal is an appropriate use of a land resource and will result in new living options that will enhance the existing amenity of the area.



LOCALITY PLAN

Not to Scale

SURVEY & PLANNING CONSULTANTS
10 HARVEY STREET
DARWIN NT 0801
PH. (08) 89812494
FAX. (08) 89815205
darwin@eja.com.au
earl james & associates

LOT 12 LTO 76/018
HUNDRED OF AYERS

PROPOSED ZONE

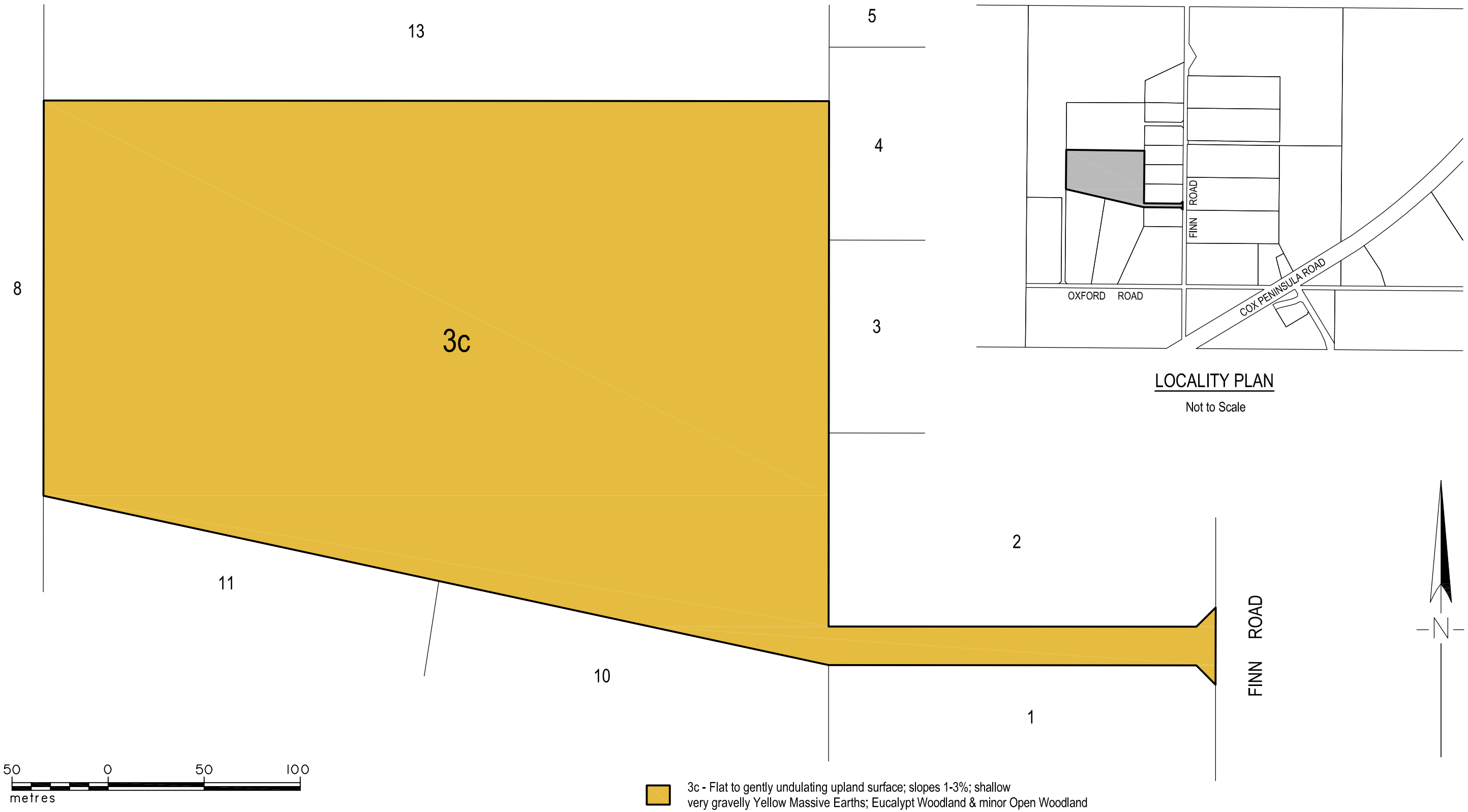
Client: **LUCAS LAWSON**

Licensed Surveyor:
Date:

Drawn by: RM
Date: 28.02.17
Cad File: 10011-5.DWG

Scale: 1:2000 (A3)
Datum:

Drawing No: 17/10011/5



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darwin@eja.com.au
earl james & associates

LOT 12 LTO 76/018
HUNDRED OF AYERS

LAND UNITS

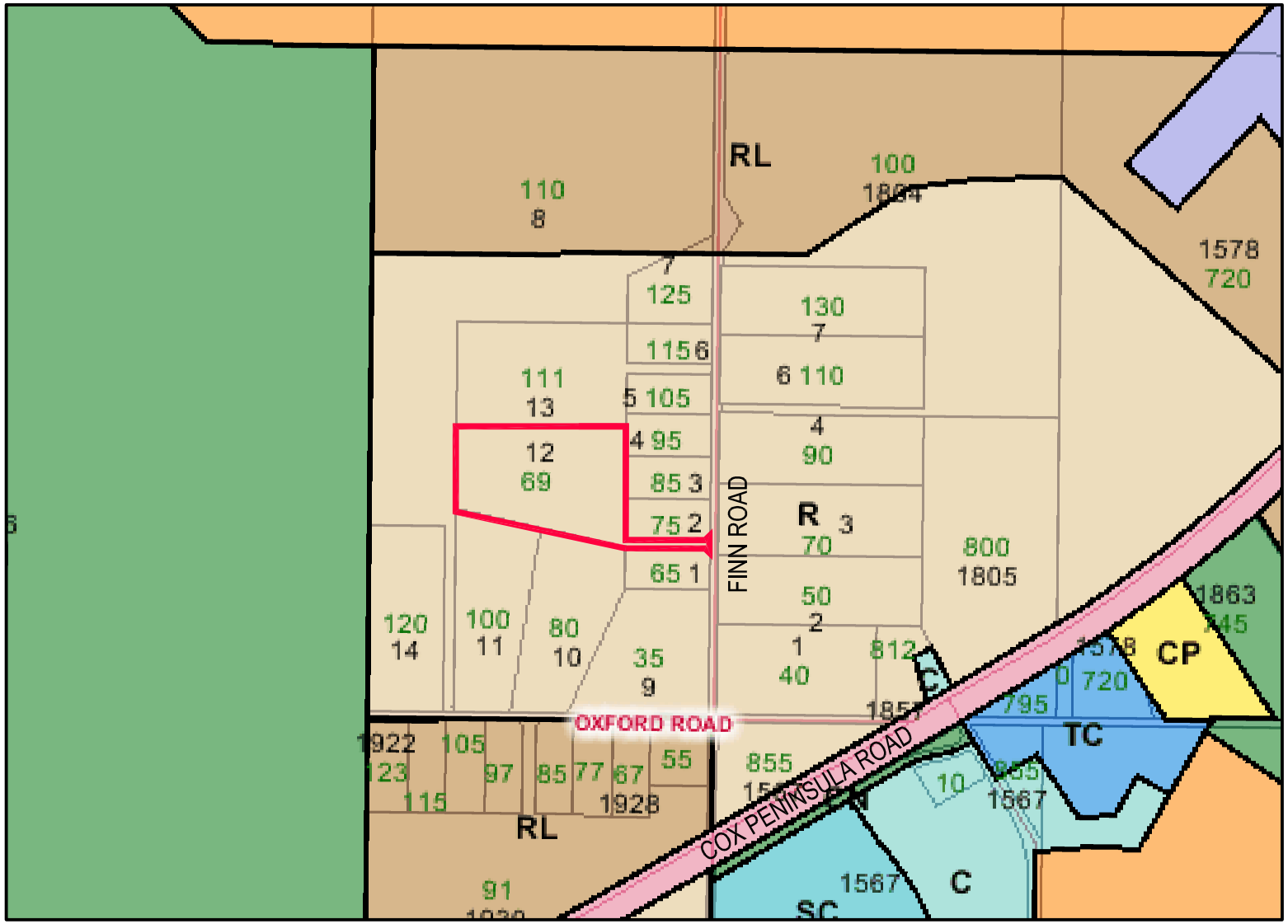
Client: **LUCAS LAWSON**

Licensed Surveyor:
Date:

Drawn by: RM
Date: 28.02.17
Cad File: 10011-6.DWG

Scale: 1:100 (A3)
Datum: A.H.D.

Drawing No: 17/10011/6



eja
earl james & associates

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FAX. (08) 89815205
darwin@eja.com.au

300 0 300
metres

LOT 12 LTO 76/018
HUNDRED OF AYERS

EXISTING ZONES

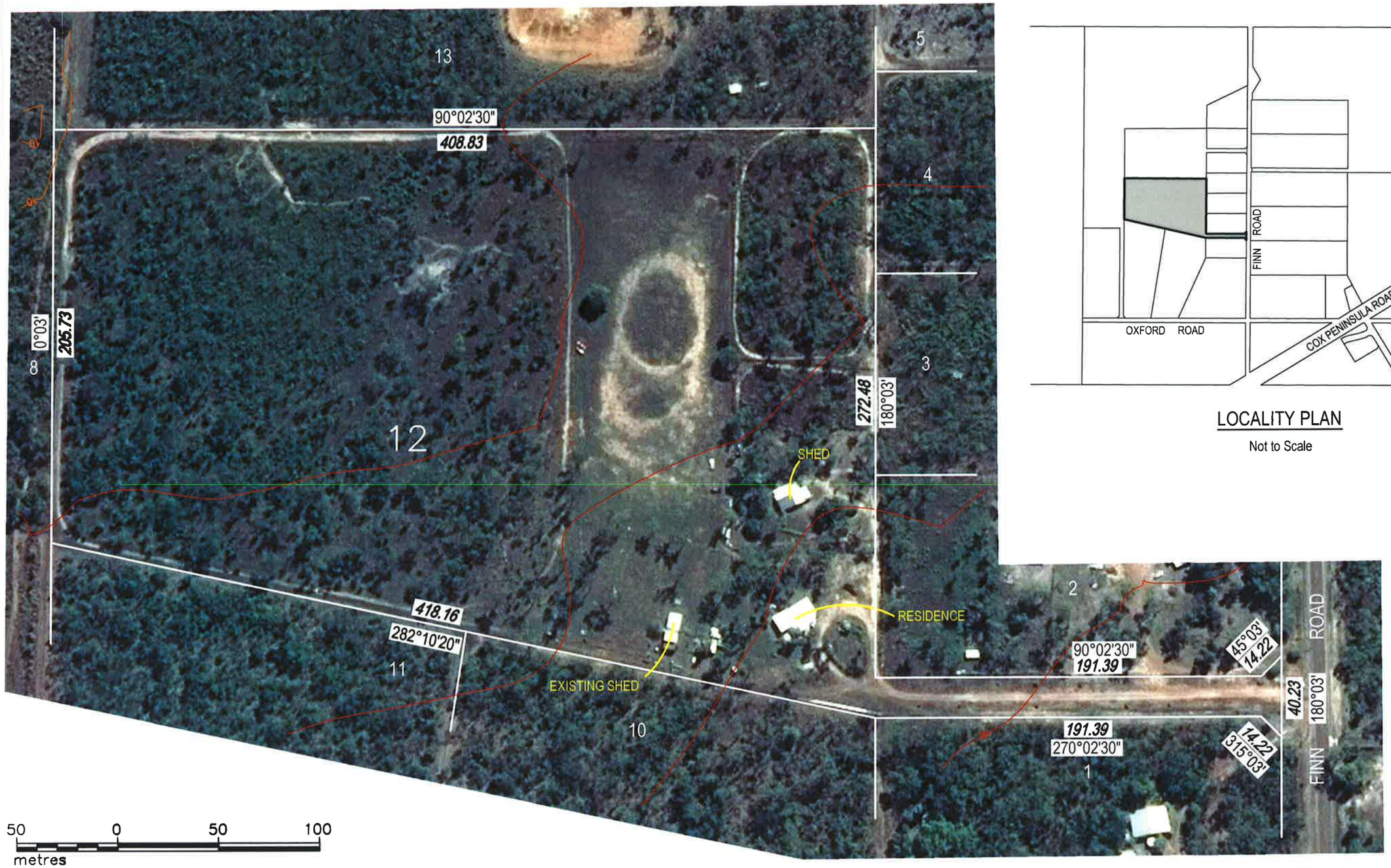
Client: **LUCAS LAWSON**

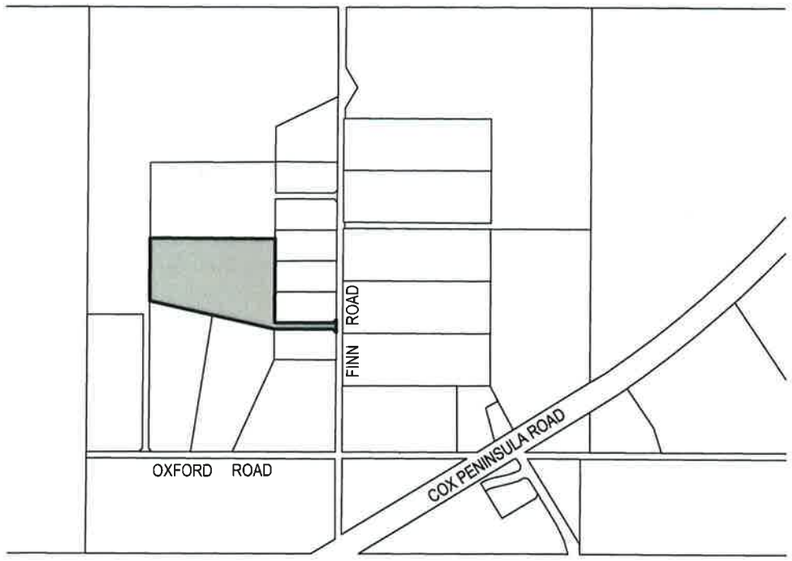
Licensed Surveyor: .....
Date:.....

Drawn by: RM
Date: 28.02.17
Cad File: 10011-7.DWG

Scale: 1:15000 (A4)
Datum:

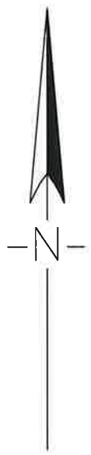
Drawing No: 17/10011/7





LOCALITY PLAN

Not to Scale



eja
earl james & associates

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PH. (08) 89812494
FAX. (08) 89815205
darwin@eja.com.au

Note
All areas and dimensions are subject to survey
Aerial photo obtained from Google
Contours obtained from DIPL

LOT 12 LTO 76/018
HUNDRED OF AYERS

SITE DETAILS

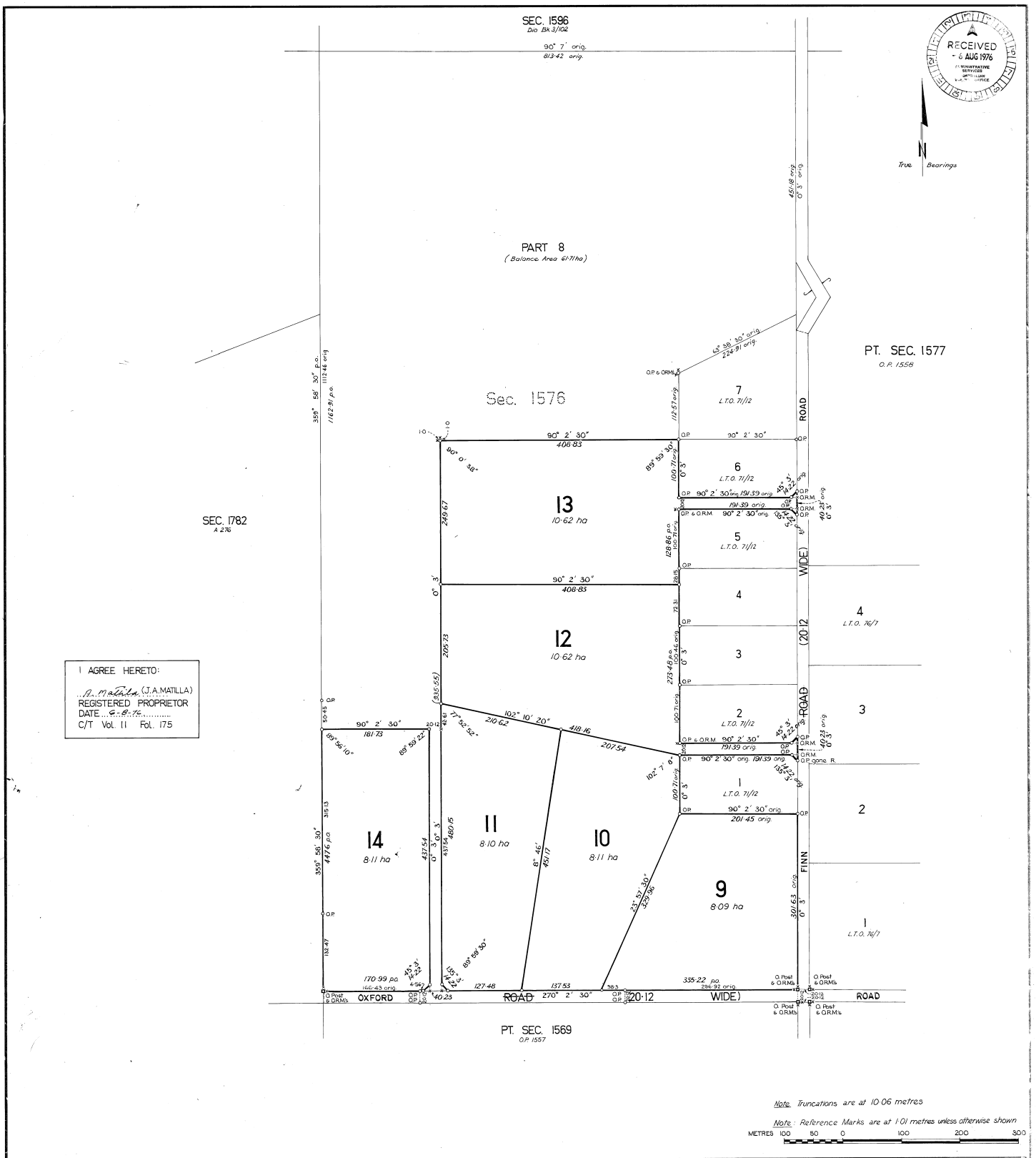
Client: **LUCAS LAWSON**

Licensed Surveyor:
Date:

Drawn by: KD
Date: 24.4.17
Cad File: 10011-8.DWG

Scale: 1:2000 (A3)
Datum: A.H.D.

Drawing No: 17/10011/8



SURVEYOR'S CERTIFICATE

I, S. W. LEA hereby certify that the survey represented on this plan was carried out by me or under my immediate supervision and was completed on 24-2-76 and that this survey has been executed in accordance with the Licensed Surveyors Ordinance 1923–1937 and the Regulations thereunder.

Date 1st March 1976 — Licensed Surveyor

SURVEY APPROVED

6-9-1976 — Surveyor-General

File No. LTO 76/18
Instruction No.
Field Book No. LTO 76/18
Drawn
Charted on
Compared with F.B.
Examined 30-9-76
Calculation Book No. File LTO 76/18 Folios 6-9

Passed — Assistant Chief Draft'man
Date 3-9-76

AMENDMENTS

No.	REFERENCE	DETAILS	APPROVED	DATE

NORTHERN TERRITORY ADMIN.

LOTS 9 – 14
SUBDIVISION OF LOT 8 OF L.T.O. 71/12
Hundred of Ayers, County of Palmerston

LEGEND
Concrete Block
Concrete Post
Post, Peg or Stake
Reference Mark
Lockspit
Fence Post

AZIMUTH
A. Assumed from L.T.O. 71/12
B. Observed at ... and related to the ... Meridian of Longitude. Convergence ... of arc.
C. From Latitude Datum ... derived from ...

SCALE 1 : 3000

LTO 76/18
Deposited with R.G. 23.6.77

B/N 8003

LITCHFIELD COUNCIL
Community effort is essential

14 December 2017

Lands Planning
Department of Infrastructure, Planning and Logistics
GPO Box 1680
Darwin NT 0801

RE: Letter of Comment Planning Scheme Amendment Application

PA2017/0542
Lot (12) 69 Finn Road, Berry Springs, Hundred of Ayers
Rezone from R (Rural) to RL (Rural Living)

Thank you for the Planning Scheme Amendment Application referred to this office on 17/11/2017, concerning the above. This letter may be tabled at Litchfield Council's next Council Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration by the Authority:

Council can provide the following comments in relation to the application:

a) Council can consider support for the rezoning of the site from Zone R (Rural) to Zone RL (Rural Living), noting that the site is approximately 1km from the centre of the Berry Springs Rural Activity Centre and other lots in proximity from the subject site, on Oxford Road, have recently been rezoned to Zone RL.

b) However, in terms of the intention to rezone, Council notes that that the application objective is to "make best use of the land resources." This statement is presumed to refer to future subdivision potential due to the ability to provide reduced lot sizes (from 8Ha in Zone R (Rural) to 2Ha in Zone RL (Rural Living)). As Zone R (Rural) allows more potential development types than Zone RL (Rural Living), the statement cannot be presumed to allow for more development potential due to development type.

   The site is currently connected to Council's road reserve through a 200m long, 20m wide battle-axe. If the intent is to further subdivide this parcel after it has been rezoned to Zone RL (Rural Living), it is important to note that Council does not accept adjacent battle-axe lot designs and would require a 30m wide road reserve to provide access to any subdivision proposal on this subject site.

   With the current parcel configuration, it is unlikely any future subdivision of this site on its own could be supported by Council, as it would be unable to meet Council's Development and Subdivision Standards for legal access. However, future subdivision of this site combined with other adjacent parcels may be possible, if other adjacent sites were also rezoned in the future.

   Rezoning of the site should not be interpreted as endorsement of or any specific rights for future site subdivision.

c) Given the above situation, full impacts upon Council infrastructure as a result of this proposal are unclear, as the future development possibilities for the site are unknown at this time, but could be considered at such time as any future subdivision or further development of the site is proposed.

If you require any further discussion in relation to this application, please contact **Litchfield Council's Planning and Development division** on 08 8983 0600 and you will be directed to the appropriate officer to address your query.

Yours faithfully

Wendy Smith
Acting Director Infrastructure and Operations

DRAFT

CITY OF DARWIN
ABN 11 503 313 301

Civic Centre Harry Chan Avenue
Darwin NT 0800
GPO Box 84 Darwin NT 0801
E darwin@darwin.nt.gov.au
P 08 8930 0300
F 08 8930 0311

5 December 2017

Please quote: 2350906 NN:kw

Ms Kaylene Conrick
CEO
LITCHFIELD COUNCIL
PO BOX 446
HUMPTY DOO NT 0836
Via email: kaylene.conrick@litchfield.nt.gov.au

Dear Kaylene

Street Lighting Transition - Update

In reference to our letter to you dated 18 May 2017, I am writing to update you on City of Darwin's progress with its street light transition planning.

City of Darwin (Council) has awarded its Maintenance of Street and Public Lighting Contract to Aussie Mandias Pty LTD (trading as Top End RACE). This contract commences on 1 January 2018 and the contractor is responsible for all maintenance of Council owned street lights, including replacement of faulty luminaires with LED luminaires.

Council is also developing a program for replacement of all luminaires, however this aspect of the contract hasn't been awarded at this time as it is subject to finance to allow for the purchasing of the luminaires. It is anticipated that this will occur within the next 6 months and if it does occur, it would be awarded to Top End RACE in accordance with the current contract in place.

As discussed in our previous letter, our offer of working together jointly remains and we believe there is the opportunity for Litchfield Council to contract City of Darwin for the provision of street lighting maintenance services within its municipality. We consider this arrangement possible through the Local Government Act and Local Government (Accounting) Regulations, particularly Part 13, Division 1, paragraph 30 of the Regulations.

If agreed, Council would provide the services outlined within its Contract with Top End RACE to the service levels adopted by Council. The rates Council will charge for maintenance works are included in Attachment A and the service levels are included in Attachment B, with detail of the contract to be provided separately.

.../2

Litchfield Council would be required to supply the luminaires and smart controls for the contractor, however there may be future opportunity for this to be coordinated with Council's planned supply contracts that will be awarded in the coming months.

Council is committed to working with Litchfield Council to ensure that the maintenance services for Litchfield street lights will be provided from 1 January 2018. Can you please confirm that Litchfield Council is intending to enter into this arrangement with Council.

If you have any further queries please contact Nadine Nilon on 8930 0417 or nadine.nilon@darwin.nt.gov.au.

Yours sincerely

BRENDAN DOWD
CHIEF EXECUTIVE OFFICER

Encl:
Attachment A – Schedule of Rates
Attachment B – Service Levels

.../3

Attachment B – Service Levels

- Handle fault reports via a 24 hour a day, 7 day a week call handling facility and via a website.
- Respond to customers within 2 days of their communication.
- Complete maintenance activities within 7 business days of a fault being reported for a fault involving a single outage that is not due to an electricity supply issue.
- Complete maintenance activities within 3 business days of a fault being reported involving multiple outages of Category V lighting or lighting of a pedestrian crossing or otherwise identified as urgent.
- Complete maintenance activities within 15 business days of a fault being reported for a fault involving an electricity supply issue.
- Respond (attend the site) within a maximum of 2 hours to any reported emergency situation and make safe as soon as practicable.
- Meet reporting requirements as outlined within the contract.

COUNCIL REPORT

Agenda Item Number:	15.5
Report Title:	Procurement of Operation and Maintenance Contract for Council Streetlights
Report Number:	17/0068
Meeting Date:	13/12/2017
Attachments:	Letter of 5 December 2017 from City of Darwin

Purpose

The purpose of this report is to seek Council endorsement for the procurement of a streetlight operation and maintenance contract with City of Darwin in accordance with Local Government Accounting Regulations.

Summary

City of Darwin recently entered into 2 x three-year contracts with Top End RACE for the following:

- operation and maintenance services for streetlights;
- supply of streetlight luminaires.

In line with previous briefings to Councillors, City of Darwin and Litchfield Council have discussed for some months now, an intention for Litchfield Council to receive a streetlight operation and maintenance service from the City of Darwin contractual arrangements, via a service agreement.

A letter from the CEO of City of Darwin was received by Council on 5 December 2017, offering the opportunity for Council to negotiate with Darwin in relation to their contracted service. The negotiation will centre around City of Darwin offering to Council the services it has contracted from Top End RACE, with a service fee applied by City of Darwin for administrative purposes.

Council's streetlight operation and maintenance needs are not as expansive as those sought by City of Darwin, however the contract is structured to include rates for different services, so Council is able to select which services it would like City of Darwin to provide. The three-year term of the contract between City of Darwin and Top End RACE suits Council's requirements.

Section 30 of the *Local Government (Accounting) Regulations* allows contracting of this nature and Council's Procurement Policy FIN03 reflects the requirements and exemptions in the Regulations.

In line with Section 4.7.2 of the policy, Council is able to become a party to another contract, in this case a contract between another local government authority and a supplier, on the condition that the supply has been authorised by resolution of Council. The policy also states that a Council resolution of this nature is to be made public on Council's website.

Recommendation

THAT Council:

1. authorises the Chief Executive Officer to negotiate with City of Darwin to enter into agreement for City of Darwin to provide selected services from its contract with Top End RACE for operation and maintenance of streetlights;
2. authorises the Chief Executive Officer to enter into a supply agreement with the City of Darwin for operation and maintenance services for streetlights and supply of streetlight luminaires, should negotiations outlined in Part 1 be acceptable; and
3. publish this decision on Council's website.

Background and Discussion

As previously advised to Council.

Links with Strategic Plan

Priority # 1 – Everything you need

Legislative and Policy Implications

NIL

Risks

It is expected that entering into contract with City of Darwin for the operation and maintenance of streetlights and the supply of luminaires will not pose any unreasonable risks for Council or risks beyond what would normally be encountered in a direct contract between Council and a supplier.

Financial Implications

The cost for the first calendar year (1 January to 31 December 2018) for operation and maintenance of Council's streetlights is likely to be in the order of $50,000.

The costs for supply of luminaires is dependent on the failure rate across the year. National failure rates are in the order of 5-7%, meaning that Council would be looking at 13-18 luminaire replacements per year or about $5,500-$7,500. This excludes other costs such as rectification of wiring faults or replacement of other equipment.

Further, the cost implications will also depend on a future decision by Council regarding the swap-out program of existing MV and HPS luminaires with LED luminaires. If such a program were to occur over three years for complete conversion to LED luminaires, costs could be in the order of $40,000 in the first year. This will be explored through the budget submission process.

Community Engagement

Should Council resolve in line with this report's recommendation, the resolution will be placed on the Council's website.

Recommending Officer:	Kaylene Conrick, Chief Executive Officer

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

COUNCIL REPORT

Agenda Item Number:	15.6
Report Title:	PA2017/0529, a Development Application for an intensive animal husbandry (prawn farm) including 2 x 3-bedroom single dwellings in 2 x single storey buildings at NT Portions 2626 (3820) Gunn Point Road, Koolpinyah
Report Number:	17/0069
Meeting Date:	20/12/2017
Attachments:	Attachment A: Development Application PA2017/0529. Attachment B: Council's letter of comment for PA2017/0529, a Development Application for an intensive animal husbandry (prawn farm) including 2 x 3-bedroom single dwellings in 2 x single storey buildings at NT Portions 2626 (3820) Gunn Point Road, Koolpinyah.

Purpose

The purpose of this report is to provide a summary and assessment to Council of PA2017/0529, a Development Application for an intensive animal husbandry (prawn farm) including 2 x 3-bedroom single dwellings in 2 x single storey buildings at NT Portions 2626 (3820) Gunn Point Road, Koolpinyah, included as Attachment A.

Summary

The proposal is for development of a prawn farm and 2 single dwellings, which requires an application.

The report also presents for Council information the Letter of Comment on PA2017/0529 provided to the consent authority on 15/11/2017, included as Attachment B.

This report concludes that Council should support the application given the location and the proposal being consistent with the requirements of the NT Planning Scheme. Given the characteristics of the proposed new road are that of an arterial road and proposed to be an extension of an NTG owned road (Gunn Point Road) in PA2017/0528, it is preferred that the road be the responsibility of the NTG as it is not suitable to be a Council owned asset. It is recommended that Council requests that the extension of this road be dedicated to NTG on any plan for this development proposal.

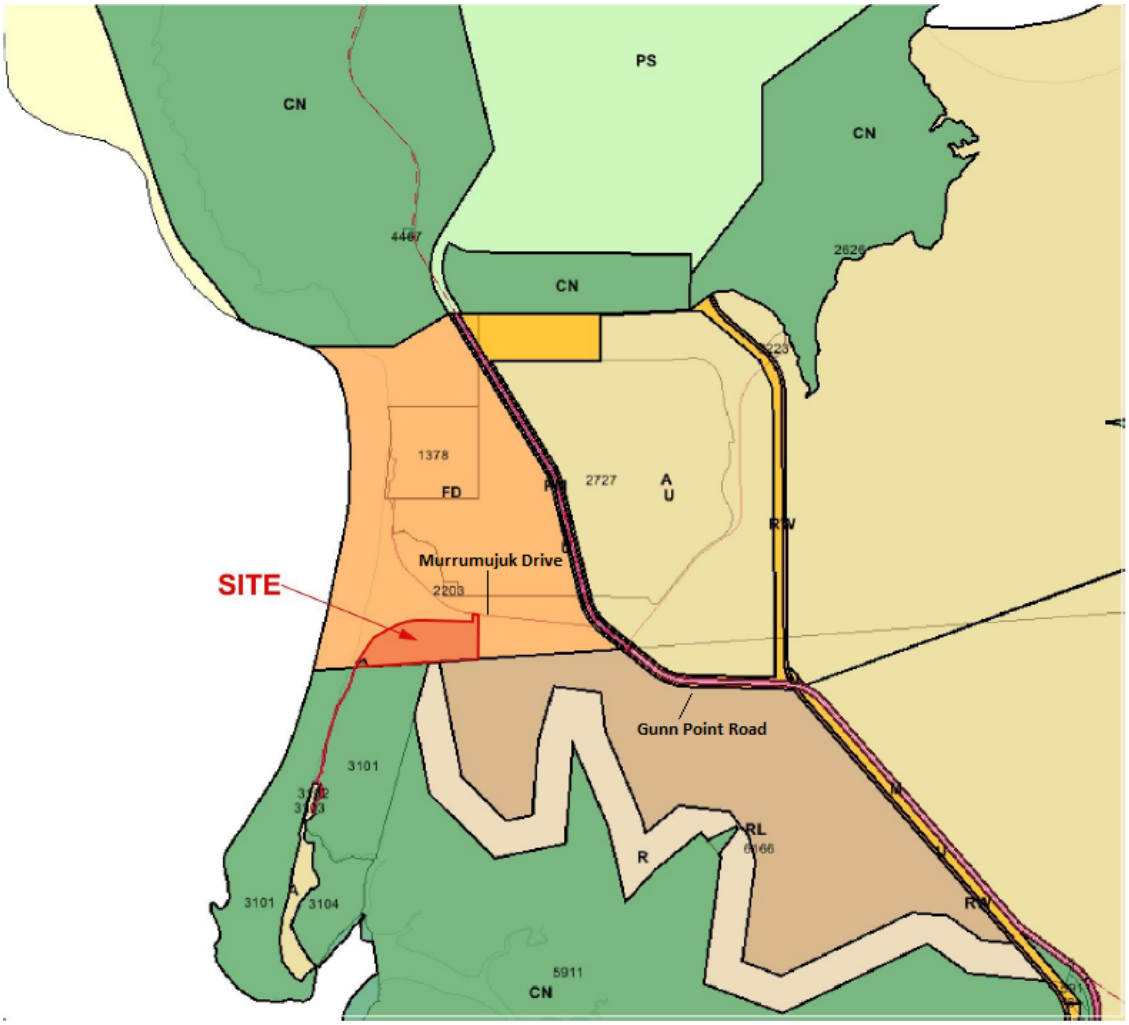
Recommendation

THAT Council receive for information Attachment B, Council's Letter of Comment for PA2017/0529, a Development Application for an intensive animal husbandry (prawn farm) including 2 x 3-bedroom single dwellings in 2 x single storey buildings at NT Portions 2626 (3820) Gunn Point Road, Koolpinyah, the assessment of which is summarised above and reviewed in detail within the body of this report.

Background

Site and Surrounds

The subject site is part of NT Portion 2626 (3820) Gunn Point Road, which is in Zone FD (Future Development). This site is to be subdivided from NT Portion 2626 in a separate application and will total 130.5Ha in land size. The subject site is situated adjacent to parcels in Zone RL (Rural Living), R (Rural) and CN (Conservation). There are no building structures currently on the land and the access to the site remains unclear. There is no immediate development in the immediate vicinity of the subject site.



Source: PA2017/0529 Application

Site Development History

There is no past planning history for this site.

Current Proposal

The application is proposing development of an intensive animal husbandry (prawn hatchery as part of Project Sea Dragon by Seafarms Group Ltd) including 2 x 3-bedroom single dwellings in 2 single storey dwellings. The hatchery itself is to occupy 14.5ha of the 130.5ha total land size with all breeding and rearing operations to take place inside sheds. The prawn production will require clean seawater, so therefore an inlet pipe will extend 1km from the coast and be constructed accordingly so that marine life and debris don't get trapped in the pipe. Movements in and out of the site are expected to be relatively low with predominate use of light vehicles; however, trucks will attend the site five times a week. The single dwellings will provide accommodation for its workers. Appropriate parking will also be provided.

The subject site is within the south-western boundary of NT Portion 2626 and as there are no formal road reserves to the subject site, the application indicates a new road opening of Murrumujuk Drive which is an extension of Northern Territory Government owned road, Gunn Point Road. This road is to be created as part of a separate subdivision application. The application has specified an allowance for a 100m wide corridor along the southern boundary; however, it is unclear who is to take ownership of the new proposed road.

Application Assessment

Council can support this development application in Zone FD (Future Development). The application is compliant with the requirements of the NT Planning Scheme; however, it is uncertain what impacts it will have on Council infrastructure. It is unclear from the application if Council will have stormwater or driveway access concerns. It is understood that there is a new road proposed in separate subdivision application PA2017/0528, which has been illustrated in the site maps for this application. More information is required on the ultimate ownership of the proposed new road, Murrumujuk Drive. This road is currently proposed as a 100m wide arterial road. Council will require a road of that nature to be owned and managed by the Northern Territory Government. If this road is owned by the Northern Territory Government, there will be no stormwater or driveway access concerns.

To protect the rural amenity, it is preferred that the site be screened to the greatest extent possible from the street frontage, preferably with dense landscaping.

Conclusion

It is recommended that Council support the application given the location and the proposal being consistent with the requirements of the NT Planning Scheme. Given the characteristics of the proposed new road are that of an arterial road and proposed to be an extension of an NTG owned road (Gunn Point Road) in PA2017/0528, it is preferred that the road be the responsibility of the NTG as it is not suitable to be a Council owned asset. It is recommended that Council requests that the extension of this road be dedicated to NTG on any plan for this development proposal.

Links with Strategic Plan

Priority # 2 – A great place to live

Legislative and Policy Implications

Not applicable to this report.

Risks

Not applicable to this report.

Financial Implications

Not applicable to this report.

Community Engagement

Not applicable to this report.

Recommending Officer: Wendy Smith, Acting Director Infrastructure and Operations

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

June D'Rozario & Associates
Consulting Town Planners & Economists

Unit 2, 85 Cavenagh Street, Darwin NT Australia 0800
GPO Box 780, Darwin NT Australia 0801
Telephone 08 89 81 1284
Email drozario@ozemail.com.au

APPLICATION FOR DEVELOPMENT CONSENT
PRAWN HATCHERY
PART NT PORTION 2626 HUNDRED OF BAGOT (3820 GUNN POINT ROAD, GUNN POINT LOCALITY)

1. NATURE OF THE APPLICATION

The application is made under section 46(1) of the Planning Act 1999.

The application is for consent to develop part of NT Portion 2626 for a prawn hatchery as part of Project Sea Dragon by Seafarms Group Ltd.

The hatchery site is to be subdivided from NT Portion 2626, and will comprise approximately 130.5 ha at the south-western corner of NT Portion 2626.

The proposal is shown in the attached drawings sets by GHD.

2. CONTEXT

The proposed prawn hatchery is one component of Project Sea Dragon (PSD). It will produce post larvae to service the stocking requirements of the grow-out farm at Legune Station – see below. PSD is a large-scale integrated land-based prawn aquaculture project in Northern Australia that is designed to produce high-quality prawns all year round to meet growing global demand for clean seafood.

PSD will be a staged development of up to 10,000 ha of production ponds, and associated breeding, growing, harvesting, and processing facilities across Northern Australia.

As well as the hatchery, PSD facilities include a Founder Stock Centre at Exmouth WA, a Core Breeding and Broodstock Maturation Centre at Point Ceylon NT, a Grow-out Farm at Legune Station NT, and a processing plant at Kununurra WA.

PSD will establish a new export industry in Northern Australia, estimated to generate $1.7B in export revenue at full production, and will generate 1,500 direct jobs.

The project has received major project status from the Commonwealth, Western Australian and Northern Territory Governments.

3. LAND DESCRIPTION

The location of the site is shown in the locality diagram in Figure 1.

Figure 1 : Locality diagram

NT Portion 2626 is a parcel of approximately 26 km^2, between Shoal Bay and Adam Bay, north-east of Darwin. The project site is approximately 70 km from Darwin GPO by road, and 50 km from Palmerston.

The project site will have an area of approximately 130.5 ha and will be located in the south-western corner of NT Portion 2626.

The project site will abut the northern boundary of Tree Point Conservation Area.

The existing reserve of Gunn Point Road terminates at the southern boundary of NT Portion 2626, and there are no other roads formally constituted on the northern side of this boundary. Vehicle access to lots on the northern side of the boundary is by right of way (eg. to Leeder's Creek boat ramp), or by access easement (eg. to Portion 2203 and Section 4345, and Section 3104), or by tracks established for the former Gunn Point Prison Farm, or by other tracks cut through NT Portions 2626 and 2727.

The extract of the survey plan for NT Portion 2626 in Figure 2 shows the termination of Gunn Point Road at the southern boundary.

A formal road reserve has been established in Section 3101 (Tree Point Conservation Reserve and Tree Point Community), but this road is not contiguous with Gunn Point Road and connects to Gunn Point Road through an access easement in NT Portion 2626 in favour of Section 3104 (Tree Point community).

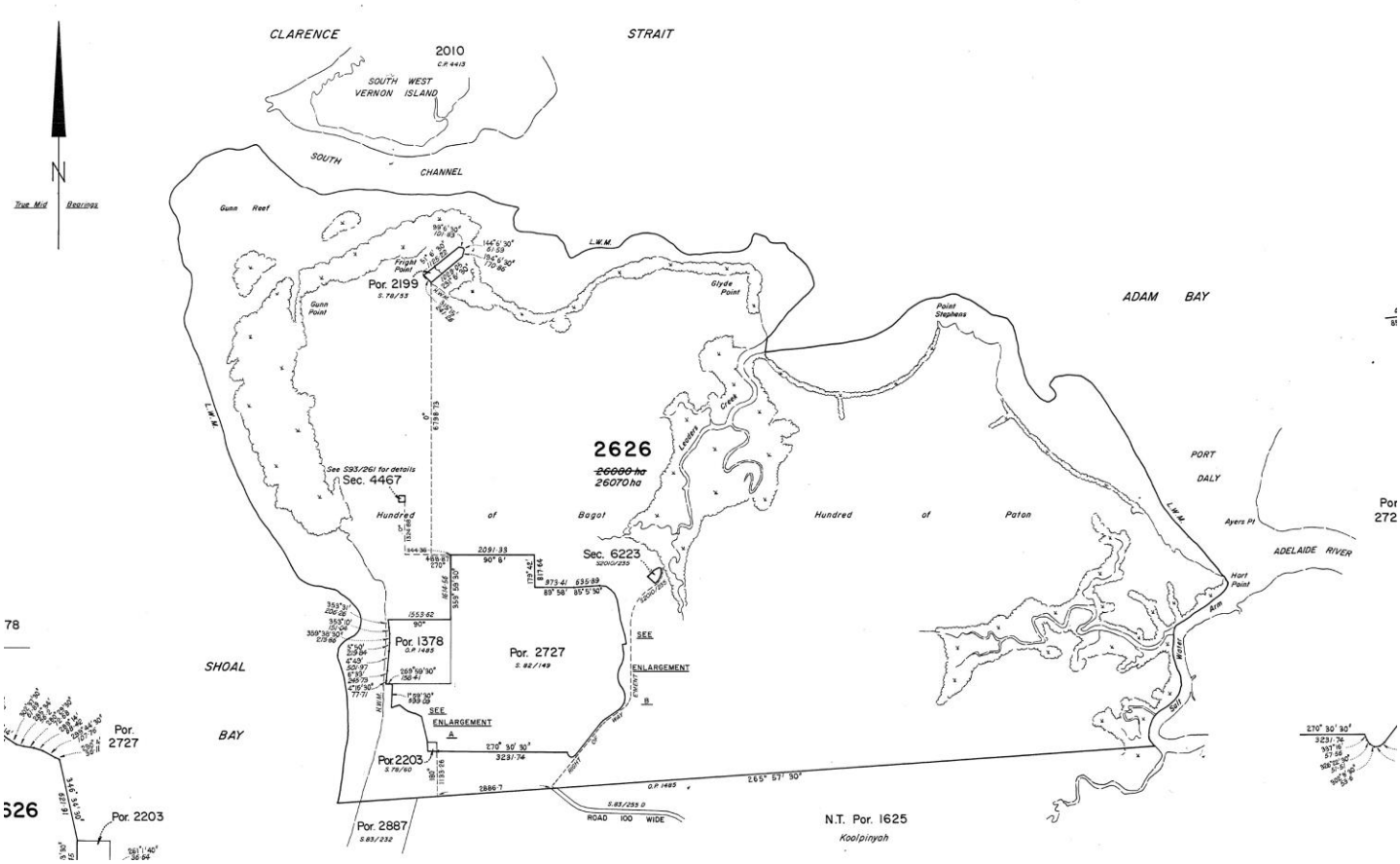


Figure 2 : Extract of Survey Plan S84/179

The project site drains from a central ridge running north-south to Shoal Bay on the western side, and to the eastern boundary. Elevation varies from 27 AHD in the approximate centre of the site to 3 AHD near the coastline.

Gradient on the western side of the site is approximately 2.5%, while on the eastern side it is less than 0.5%.

Land Units mapping for Litchfield shows that Land Units 1c, 2b1, 3a, 3e, 8b and 9a are present on the project site. The distribution of land units on the site is shown in Figure 3.

Most of the site is in Land Units 2b1 and 3a, with a relatively small portion in Land Unit 1c, and negligible areas in Land Units 3e, 8b and 9a.

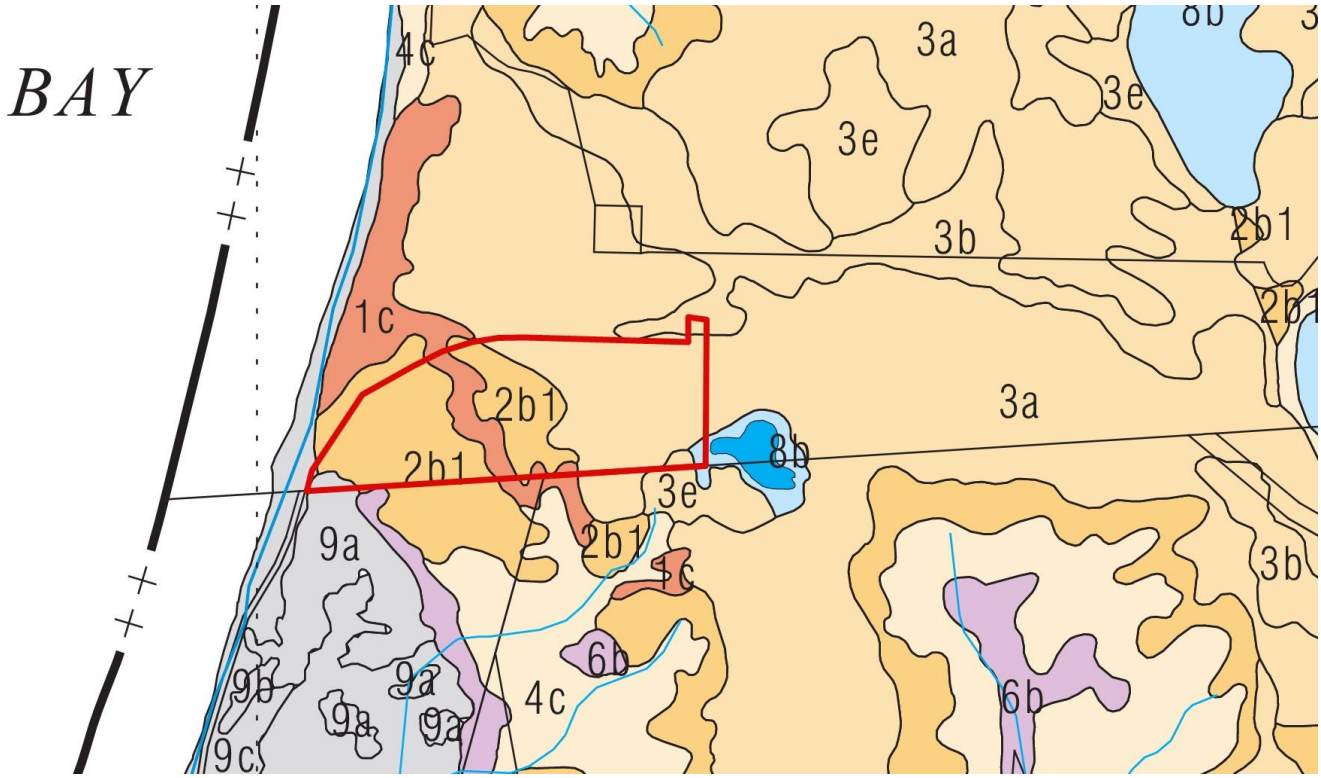


Figure 3 : Extract of Land Unit Map
(Source : Department of Infrastructure, Planning and Environment **Litchfield Shire Land Units**

Land Unit 2b1[1] is characterised by gentle side slopes of 2 to 5% gradient. Soils are generally moderately deep gravelly yellow massive earths, grading through the soil profile to sandy loam to sandy clay or light clay at depth. Soils are well drained.

Land Unit 3a is characterised by flat to very gently undulating upland surfaces, with gradient of 0.5 to 2%. Soils are deep red massive earths and minor yellow massive earths, grading through the soil profile to sandy loam over sandy clay loam to light clay at depth. Soils are well drained.

Land Unit 1c describes low scarps and short steep slopes, mostly on lateritic sediments. Soils are very gravelly shallow lithosols and rapidly drained.

Land Unit 3e describes drainage areas within gently undulating upland surfaces, with imperfectly drained soils and high wet season water table. On the project site, this land unit adjoins a swampy depression just outside the site boundary, which is represented by Land Unit 8b. These areas are very small and are located in the south-eastern corner of the project site.

Land Unit 9a covers a very small area in the south-western corner of the site. This land unit describes estuarine fringes, which are inundated by tides. Soils consist of saline muds.

[1] Land unit classifications and descriptions follow PJ Fogarty, B Lynch & B Wood **The Land Resources of the Elizabeth, Darwin and Blackmore Rivers** Conservation Commission of the Northern Territory Technical Report No 15

Waterlogged soils on the project site correspond to the small areas in Land Units 3e, which contains moderate to high levels of soil waterlogging, and Land Units 8b and 9a, which contain severe levels of waterlogging. Waterlogged soils are shown in Figure 4.

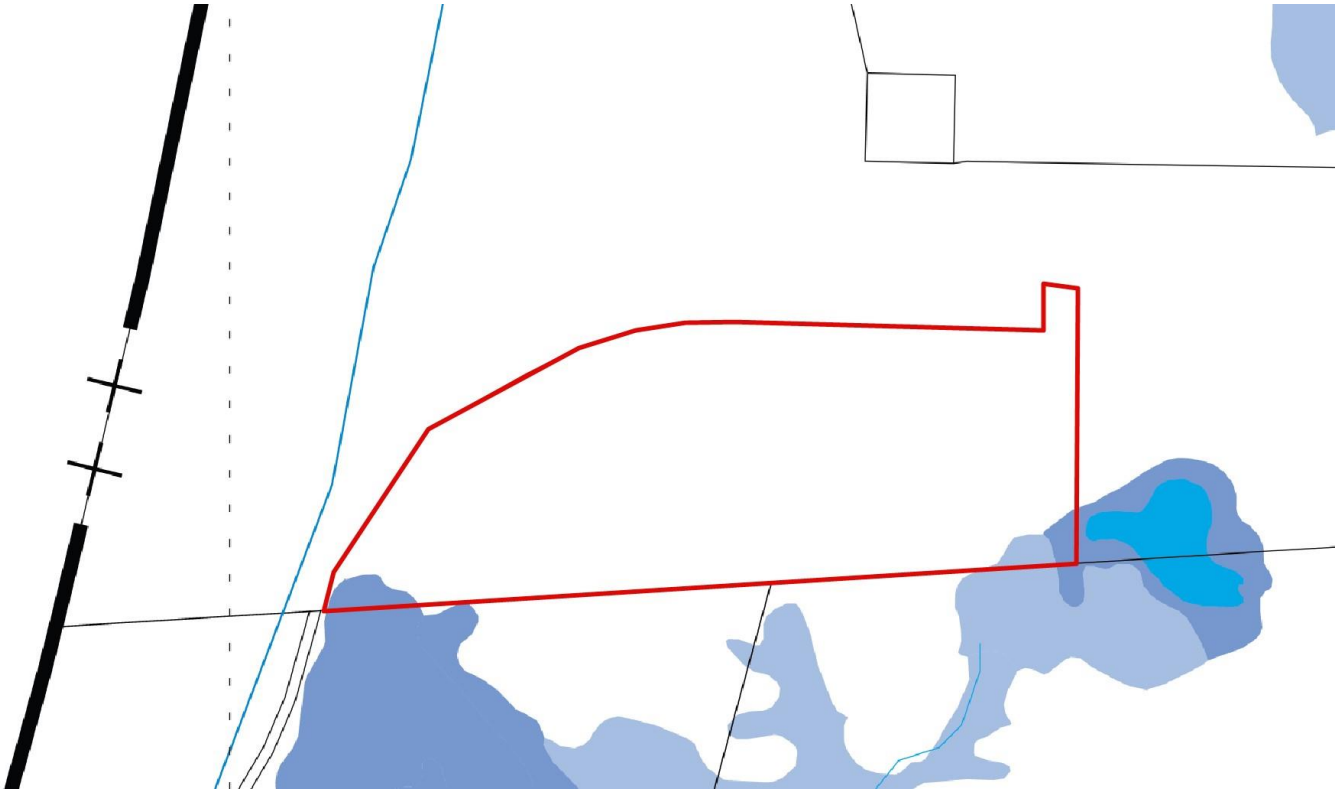


Figure 4 : Extract of Waterlogged Soils Map
(Source : Department of Infrastructure, Planning and Environment **Litchfield Shire Seasonally Waterlogged Soils)**

Acid sulfate soils may be present on the site. Their occurrence is being ascertained as part of environmental investigations being undertaken for the site.

A very small area of the site is subject to storm surge. Figure 5 shows the primary storm surge contour (AEP 1%) to the year 2100. Figure 6 shows the secondary storm surge contour (AEP 0.1%).

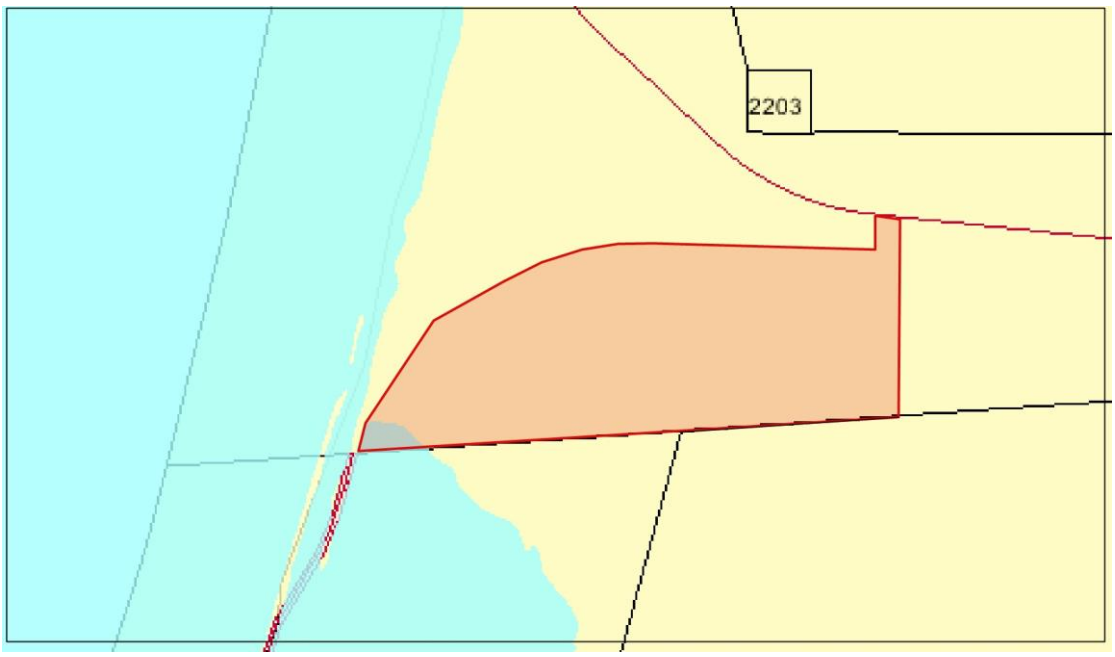


Figure 5 : Area of site affected by primary storm surge

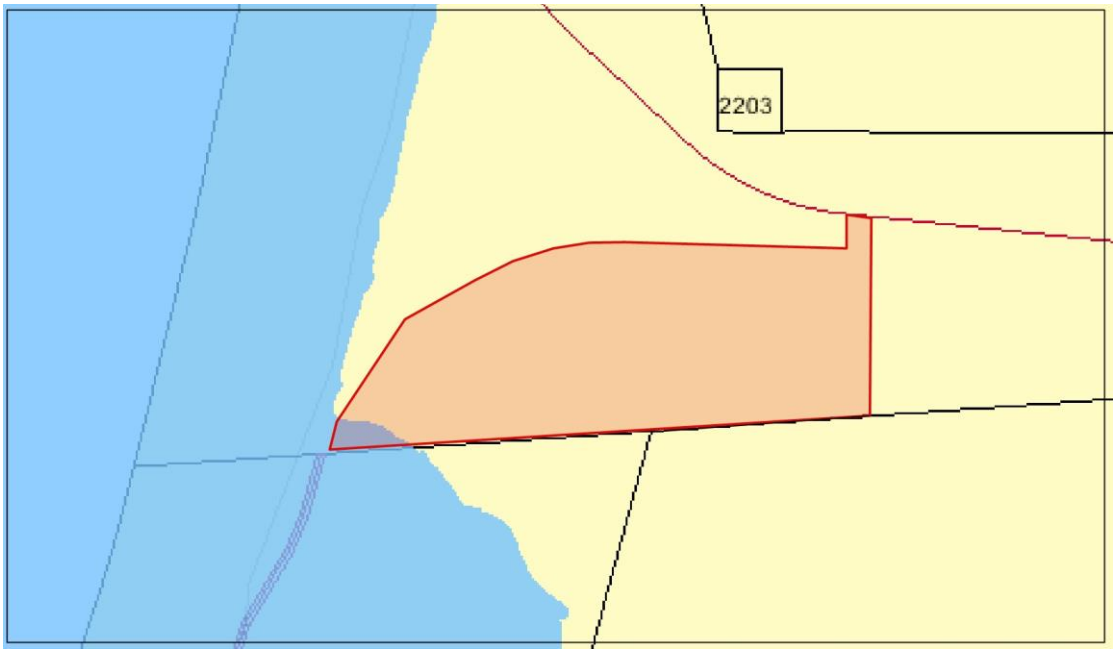


Figure 6 : Area of site affected by secondary storm surge

There are no registered bores on the project site, although there are numerous bores in the other parts of NT Portion 2626 and in NT Portion 2727, which were used as part of horticulture and forestry activities conducted by the former prison farm.

Parts of NT Portion 2626 in the vicinity of the project site were previously used for grazing conducted as an activity of the former prison farm, and quarrying for gravel. Some quarry permits remain active. Gunn Point Peninsula contains a number of recreational fishing, hunting, and camping sites, and the area is also used by off-road vehicle enthusiasts. Remnant buildings and infrastructure of the prison farm remain in NT Portion 2727, but there are no buildings or infrastructure on the project site. An aerial image of the site is in Figure 7.

Figure 7 : Aerial image of the site (Source image : Google Earth)

Except for a very small area in the south-western corner of the project site, the project site is zoned FD (Future Development). The south-western corner is zoned CN (Conservation). The land on the southern boundary of the site is zoned CN (Conservation), R (Rural) and RL (Rural Living).

The land on the southern boundary zoned CN incorporates Tree Point Conservation Area.

The alignment of Gunn Point Road on the eastern boundary of Zone FD is zoned PM (Proposed Main Road), and there are utility corridors following the same alignment.

An extract of the zoning map is in Figure 8.

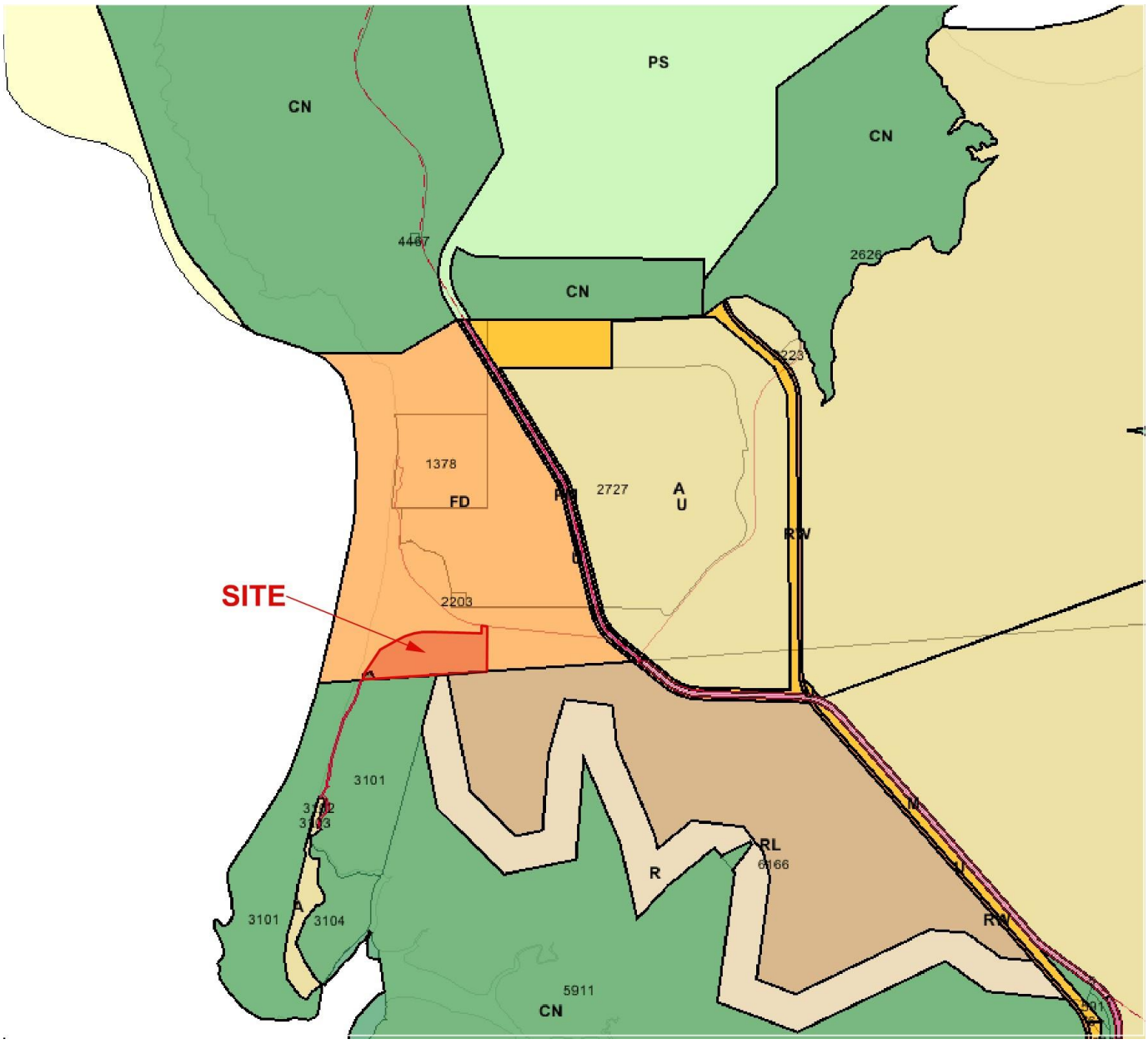


Figure 8 : Extract of Zoning Map

4. RELATED APPLICATION

Implementation of the hatchery proposal requires the project site to be subdivided from NT Portion 2626. Accordingly, a subdivision application is being made contemporaneously with this application for consent to the hatchery proposal.

Murrumujuk Drive, from which the hatchery will obtain road access, is a proposed road and is not currently incorporated in a formal road reserve. The subdivision application will include opening approximately 4 km of Murrumujuk Drive, from the end of the current reserve of Gunn Point Road to the turn-off to Tree Point.

A copy of the proposed subdivision drawings is at Annexure 1.

5. DETAILS OF THE PROPOSAL

As noted earlier in this statement, the proposed prawn hatchery is a component of Project Sea Dragon (PSD), a large-scale land-based integrated prawn aquaculture project being undertaken by Seafarms Group Ltd, with other production components located in Exmouth and Kununurra in WA, and Point Ceylon and Legune Station in NT.

Seafarms Group is Australia's largest producer of farmed prawns, currently producing 1,500 tonnes of prawns per year from its Queensland operations.

The production chain for prawns for consumption involves a series of steps, which include –

- Wild stock will be caught and screened for disease, to provide the foundation for broodstock. This will take place in Exmouth.

- High-performing stock will be developed and bred selectively to supply the hatchery at Gunn Point. This will take place at Point Ceylon (Bynoe Harbour)

- Broodstock will be supplied to the hatchery at Gunn Point to grow prawns from spawn to post-larvae stage. The hatchery will produce approximately 100 million post larvae each week.

- Post larvae will be trucked to a grow-out farm at Legune Station, where prawns will be harvested.

- Harvested prawns will be transported to a processing plant in Kununurra, where they will be processed and packaged for shipment through northern ports.

The geographic separation of the stages of the production process is to reduce bio-security risks to reinforce Australia's global reputation as a producer of clean food.

The hatchery complex will comprise mainly a collection of sheds to house various functions involved in the production of post larvae. As well as post larvae rearing sheds, housing tanks in which the post larvae are bred, there will be sheds for growing algae and artemia for feedstock.

The buildings and infrastructure will be constructed in a modular arrangement, and will include buildings and structures for –

- Broodstock spawning and hatching
- Larvae rearing
- Algae laboratory and growout
- Artemia production
- Food preparation (for breeding stock), laboratory and office
- Site office and reception
- Administration
- Staff showers and toilets
- Workshop and pallet storage
- Water treatment and storage
- Pumps and filtration
- Settlement ponds
- Power station, waste transfer, and incinerator
- 2 x 3-bedroom staff dwellings

All breeding and rearing operations will take place in tanks inside sheds.

The hatchery facilities will occupy approximately 14.5 ha of the site.

The proposal will include excavation and filling, and preliminary estimates are that there will be an excess of excavation over fill material of about 14,000 m^3.

Prawn production will require clean seawater, and the onsite facilities will include a seawater intake pipeline and pumping station, as well as seawater storage ponds and a water treatment system. The intake pipe will extend one kilometre from the coast, and will be fitted with a mesh filter to prevent debris and small marine animals becoming trapped in the pipe.

Three seawater storage ponds will hold 5 days' supply of water, to ensure continuity of operations. After treatment, seawater will be stored in tanks. The storage ponds are designed for a 1% AEP rainfall event, and will be located outside the storm surge zone.

Freshwater supply for human consumption, and to condition post larvae during the wet season prior to transfer to the Legune Station grow-out farm, will be sourced from PWC's bore that currently supplies water to Tree Point Community. PWC has confirmed that there is sufficient capacity to supply the project without affecting other users or groundwater resources.

Wastewater from hatchery operations will be held in settlement ponds before being discharged. The discharge pipeline will extend 2 km from the coastline, to minimise the effect on the waters of Shoal Bay and the risk of discharged water entering the intake pipe.

Sediment from settlement ponds will be removed periodically and removed to an onsite sediment storage area of about 30 m^2 for drying, after which it can be used for top dressing or fill.

All ponds will be lined with HDPE membranes, to prevent seepage into groundwater.

Power supply will be by two diesel generators. The generators will be enclosed in sound-insulated containers, and the generator compound will be bunded.

The facility will include an incinerator for the disposal of waste prawns. The incinerator will be a double-chamber system in which prawn waste is burned in the primary chamber, and hot gases and emissions are burned in the secondary chamber. On the estimated volume of waste, the incinerator will operate for 3 hours per week.

Other waste will be separated and stored at a waste transfer station, from where it will be collected by a licensed contractor and disposed of at an approved disposal site.

The power station, incinerator, and waste transfer station are grouped together, and will be located more than 500 m from the nearest residence and Tree Point Conservation Area, which are regarded as sensitive receptors under the EPA's guidelines[2].

The area is unsewered, and wastewater treatment will be by systems compliant with the Department of Health's Code of Practice for Small On-site Sewage and Sullage Treatment Systems.

The hatchery will operate around the clock, and for reasons of security and necessity for staff to be available on site, two staff dwellings are included in the proposal.

As noted earlier in this statement, there is currently no formal road access to the project site. To provide formal road access to the project site, about 4 km of the alignment of Murrumujuk Drive is to be opened as part of a cognate subdivision application to excise the project site from NT Portion 2626.

NT Government will survey the road reserve subject to the subdivision proposal receiving a development permit.

Seafarms has entered into a project development agreement with NT Government, and as part of that agreement, NT Government has committed funds and undertaken to construct this section of Murrumujuk Drive to at least a two-lane sealed rural road standard.

[2] NT EPA **Guideline for the Disposal of Waste by Incineration** 2013

Traffic movements in and out of the project site will be relatively low, comprising –

- travel of 26 staff who will commute each day, and visitors. These movements will be by passenger and light vehicles.
- truck movements for transport of broodstock to the site and post larvae from the site; for delivery of feed and diesel; and service and waste collection.

Trucks engaged in the transport of broodstock and post larvae will attend the site 5 times each week.

Deliveries of feed and diesel will take place once each week, and service and waste collection vehicles will attend the site 3 times each week.

The proposal includes 47 parking bays in two parking areas, as well as two parking bays attached to each staff dwelling. Parking has been assessed having regard to the number of employees and the likely requirement for visitor parking. The facility will employ a total of 28 people.

For reasons of bio-security and safety, the hatchery complex will be fenced.

6. MATTERS TO BE TAKEN INTO ACCOUNT

Section 46 (3) sets out the matters to be addressed in a development application. Section 51 sets out the matters to be considered by the consent authority.

(a) the Planning Scheme as it applies to the land to which the application relates - s. 46(3)(a) and s. 51(a);

The land is zoned FD – Future Development under the NT Planning Scheme. This is an interim zone that identifies an area that is intended for future rezoning and development in accordance with an Area Plan, where an Area Plan applies.

Clause 14.0 states that the interpretation of the Planning Scheme and the determinations of the consent authority are to be consistent with any Area Plan and associated planning principles in this Part (ie. Part 8) applicable in the circumstances.

There is no Area Plan covering the area in which the project site is located in Part 8 of the Planning Scheme.

The proposed hatchery falls within the definition of "intensive animal husbandry" in the Planning Scheme, where that term is defined as a commercial enterprise of :

(a) the keeping and feeding of animals, including poultry and pigs, in sheds, stalls, ponds, compounds or stockyards; or

(b) aquaculture

Intensive animal husbandry (aquaculture) is permissible in Zone FD, subject to clauses 6.1 and 10.1.

The two staff houses answer the definition of "single dwelling" – a building containing one dwelling only – and are permissible in Zone FD, subject to clauses 6.1, 6.5.1, 7.3, and 7.5.

Some of the buildings will be commercially available demountable structures. These buildings include the two dwellings, the administration building, the reception and office building, the staff amenities buildings, and the generator. Clause 6.8 applies to these structures.

A very small part of the project site is subject to storm surge, which requires consideration of clause 6.14.

As the proposal involves excavation and fill, consideration of clause 6.16 is required.

Clause 6.1 – General Height Control

This clause imposes a maximum height for buildings of 8.5 m above ground level.

All the buildings will be single-level buildings.

The height of commercially available demountable buildings is unlikely to exceed 5.5 m at their highest point, even when mounted on piers.

Of the other buildings, the largest buildings are the sheds used for broodstock spawning and hatching, larvae rearing and artemia production. The height at the roof ridge of sheds used for broodstock is 5.6 m.

The height at the roof ridge of sheds used for larvae rearing is 6.2 m, and sheds for artemia production will have a height at the roof ridge of 5.4 m.

Accordingly, the height of all buildings will be below the maximum height of 8.5 m.

Clause 6.5.1 – Parking

This clause applies only to the staff dwellings, as the zoning table for Zone FD does not list this clause as one of the control clauses for intensive animal husbandry.

This clause requires two parking bays for each dwelling, and this number is provided adjoining each dwelling.

Although clause 6.5.1 is not specified as a control clause for the hatchery, the proposal includes 47 parking bays in two parking areas. The staff car park adjoining the main administration building near the hatchery module will contain 35 bays, and there will be 12 bays in the car park adjoining the reception and office building near the site entrance.

The facility will employ a total of 28 staff across all shifts. Parking provision is 1.8 bays/employees, not including two employees resident on the site for whom parking is provided at the dwellings. It is considered that the number of bays provided is more than sufficient for staff and visitors.

Clause 6.5.3 - Parking layout

Parking bays numbered 8 and 12 in the layout labeled "HAC Module Parking Layout" on the drawing sheet named Parking Layout Details do not show a 1.0 m extension to the access aisle. However, the width of the access aisle is 9.0 m, which is more than sufficient to permit convenient entry and exit from these bays.

In all other respects, the parking layout complies with clause 6.5.3.

Clause 6.8 – Demountable Structures

The purpose of this clause is to ensure that demountable structures do not diminish visual amenity.

The consent authority is required to be satisfied that demountable buildings will be architecturally embellished to enhance their appearance, and that they will be visually consistent with adjoining or nearby development.

The visual quality of the demountable buildings is shown in the architectural drawings. They are similar in appearance to buildings ordinarily constructed in connection with commercial, education, industrial, rural industry, and community services complexes.

There is no adjoining or nearby development, but the demountable buildings will be visually consistent with other buildings that are to be constructed in the hatchery complex.

Clause 6.14 – Land Subject to Flooding and Storm Surge

The purpose of this clause is to reduce risk to people and property, and reduce the costs to the community caused by flooding and storm surge.

Storm surge mapping, extracted in Figures 5 and 6, shows a very small area in the south-western corner of the project site affected by storm surge. There is virtually no difference in the area affected by primary and secondary storm surge.

This clause says that development in the primary storm surge zone should be limited to open space, recreation, non-essential public utilities and short-stay camping and caravanning.

The proposal does not include any development in the storm surge zone.

Clause 6.16 – Excavation and Fill

The purpose of this clause is to ensure that excavation and filling of land does not adversely affect adjacent land or waters, and is suited to the intended future use of the site.

Excavation and filling is proposed as part of the construction of the hatchery, and will result in an estimated excess of excavation over fill of 14,000 m^3. These earthworks relate to the construction of internal roadways, building pads, drainage infrastructure, and ponds. By clause 6.16.2, a separate application for earthworks is not required, and clause 6.16 does not apply to the proposal.

The subject matter of clause 6.16.3(b) to (d) will be addressed in the Notice of Intent being submitted concurrently with this application for development consent.

Clause 7.3 – Building Setbacks

This clause applies only to the two staff dwellings. It requires a minimum setback from the street of 6.0 m, and 1.5 m from side and rear boundaries.

The dwellings are set back about 930 m and 1.8 km from the proposed road boundary. As each of the dwelling sites has a site area more than 2,000 m^2, it is extremely unlikely that the dwellings will encroach into side and rear setbacks.

Clause 7.5 – Private Open Space

This clause applies to single dwellings on sites less than 600 m^2 in area and to multiple dwellings. As both the dwelling sites have an area more than 2,000 m^2, this clause has no application to the proposal.

Clause 10.1 – Animal Related Use and Development

The purpose of this clause is to minimise the adverse effects of animal related activities on the environment and ensure that these activities do not detract from the amenity of the locality.

The animal breeding, keeping, and rearing activities of the hatchery will all take place in tanks inside sheds. These activities do not of themselves create a risk of water pollution or erosion, and do not emit noise, offensive odours, or dust.

The facility is part of a production chain that will produce high-quality product for export, and will operate with the highest standards of animal health and bio-security. Consequently, attraction of flies and vermin, and the risk of spreading infectious disease are extremely remote.

Waste prawns will be disposed of by incineration on the site, or removed by a licensed contractor. The proposal includes an incinerator, which will consist of a double-chamber system where the prawn waste is burned in the primary chamber, and hot gases and emissions are burned in the secondary chamber. On the estimated volume of waste, the incinerator will operate for 3 hours per week. The incinerator will be located more than 500 m from the nearest dwelling, which is in accordance with the NT EPA guideline[3].

It is unlikely that there will be any excessive emissions from incineration of waste prawns.

Clause 2.7 – Reference to Policy

The Litchfield Subregional Land Use Plan 2016 is a document in the Schedule to this clause.

This clause requires the consent authority to have regard to the policies and planning concepts in documents listed in the Schedule, and to ensure that a proposed use or development is consistent with them.

The Litchfield Subregion Land Use Structure shows an area in Murrumujuk approximating the extent of Zone FD in this locality as designated for "Urban/Peri-urban" use. The southern boundary of this land use designation coincides with the southern boundary of NT Portion 2626, putting the project site in the south-western corner of a future urban or per-urban area.

Clause 2.7.2 states that, where there is an inconsistency between any applicable policy and the Planning Scheme, the provisions of the Planning Scheme will prevail.

The proposed development is permissible in Zone FD. Accordingly, to the extent that there is any inconsistency, the provisions of Zone FD prevail, and the proposal is not in conflict with this clause.

[3] NT EPA **Guideline for Disposal of Waste by Incineration** 2013

(b) any proposed amendments to the Planning Scheme - s. 51(b);

(c) an interim development control order, if any, in respect of the land to which this application relates - s. 46(3)(b) and s. 51(c); and

(f) a matter that the Minister has, under section 85, directed it to consider in relation to development applications generally - s. 51(f)

There are no proposed planning scheme amendments, interim development control orders, or ministerial directions relevant to this land.

(d) an environmental protection objective within the meaning of the *Waste Management and Pollution Control Act* that is relevant to the land to which this application relates - s. 51(d); and

(s) any beneficial uses, quality standards, criteria, or objectives, that are declared under section 73 of the *Water Act* - s. 51(s)

By s 18 of the *Waste Management and Pollution Control Act*, any beneficial use, quality standard, criterion or objective declared under s 73 of the *Water Act* is an environmental protection objective.

The project site is within an area for which there are two current declarations of beneficial uses. The current declarations are for Darwin Harbour between Charles Point and Gunn Point, and watercourses that drain into the harbour, and for Elizabeth and Howard Rivers Region.

The declared beneficial uses for Darwin Harbour for saline waters up to the high water mark are aquaculture, environment, and cultural. For all natural waterways, the declared beneficial uses are agriculture, environment, cultural, and rural stock and domestic.

Declared water quality objectives for Darwin Harbour are those specified in Tables 8 and 9 of Water Quality Objectives for the Darwin Harbour Region Background Document, and where not specified for a particular objective, the declared water quality objectives are those in Chapters 3 to 5 of ANZECC Guidelines for Fresh and Marine Water Quality[4].

The declared beneficial uses for Elizabeth and Howard River Regions for ground water are agriculture, environment, public water supply, and rural stock and domestic. The declared water quality objectives are the same as for Darwin Harbour, and in addition Chapter 6 of the ANZECC Guidelines and NHMRC's Australian Drinking Water Guidelines[5].

[4] NT Government Gazette No G27 7 July 2010 p 6
[5] NT Government Gazette No G27 7 July 2010 p 4

For surface waters, the declared beneficial uses are aquatic ecosystem protection and recreational water quality and aesthetics, and the water quality objectives are those in Chapters 2 and 3 of the ANZECC Guidelines[6].

Water quality issues are addressed in the proponent's Notice of Intent (NOI). The proponent has carried out investigations and modelling of the effect of the proposed development on water quality in Darwin Harbour. The findings of the investigation, reported in the NOI, are that the concentration of nutrients in discharged water will not exceed the water quality objectives for aquatic ecosystem protection for Darwin Harbour.

The proposal does not involve extraction of groundwater, and all ponds will be lined with HDPE membranes to prevent seepage into groundwater. Consequently, the proposal will have no effect on groundwater quality.

It is also noted that the area of the site that will be disturbed is relatively small, and that most of the site vegetation will be retained. Vegetation is most dense in the eastern half of the site, and hatchery infrastructure is minimal in this part of the site. The area of disturbance will be about 28 ha including internal roads, buildings, ponds, hardstand areas, and firebreaks. This is approximately 21% of the site area.

It is unlikely that the proposal will adversely affect the declared beneficial uses.

There are no other environmental protection objectives that are relevant to this land.

(e) any submission made under section 49 in relation to the development application - s. 51(e)

The proponent has discussed the project's requirements with relevant service agencies. As noted earlier in this statement, NT Government has committed to constructing road access to the project site, and has asked the proponent to open the road reserve as part of a subdivision application.

Water supply has been discussed with PWC, which has confirmed that supply is available.

Any issues raised from public notification of the proposal will be dealt with as they arise and are made known to the proponent.

[6] NT Government Gazette No G5 9 February 2000 p 5

(g) if a public environmental report, or an environmental impact statement has been prepared or is required under the *Environmental Assessment Act* in relation to the proposed development - the report or statement and the results of any assessment of the report or statement under that Act by the Minister administering that Act - s. 46(3)(c) and s. 51(g); and

The proponent has submitted a Notice of Intent (NOI) concurrently with this application.

The NOI identifies potential environmental impacts and outlines measures to avoid and mitigate adverse impacts. Details of investigations conducted and findings of investigations are also included in the NOI.

(h) the merits of the proposed development as demonstrated in the application - s. 46(3)(d) and s. 51(h); and

(n) the potential impact on the existing and future amenity of the area in which the land is situated- s. 46(3)(h) and s. 51(n)

The proposal is a critical component of Project Sea Dragon (PSD), which has received major project status from Commonwealth, Western Australian and NT Governments because of its capability to become the world's largest integrated land-based aquaculture development.

PSD has an estimated project value of $2B, and will have direct and indirect job-creation potential numbering in the thousands, and export revenue of $1.7B at full production.

PSD will deliver high-quality seafood to the global market, using clean and sustainable production methods.

The project site has been selected for its site attributes, which give it the ability to supply post larvae in a clean and bio-secure environment, whilst being located in relatively close proximity to sources of labour and services.

The proposal has been designed to minimise the impact on the environment. The proponent conducted extensive modelling to inform the design of seawater intake and discharge infrastructure to minimise the effect of nutrient concentrations.

Field surveys of vegetation across the site have determined the siting of buildings and infrastructure to avoid areas of sensitive vegetation, minimise vegetation clearing, and maintain wildlife corridors.

Disturbance to drainage lines and wetlands has been avoided in the design of the facility, and vegetation buffers required by Land Clearing Guidelines[7] have been maintained.

The proponent has submitted a Notice of Intent, addressing all relevant environmental issues.

Design and siting of buildings and infrastructure has also considered the amenity of people who will be living on the project site. The service node consisting of the power generators, incinerator and waste transfer station will be located a minimum distance of 500 m from staff houses.

Beyond the project site, the nearest residents are small clusters of housing on Tree Point Peninsula, which vary in distance between 2.5 km and 3.5 km from the project site. Because of distance from the facility, the effect on the amenity of these residents is expected to be negligible.

The proposal will not encroach on the access and water easement to Tree Point community (Section 3104), and will not affect access to Tree Point Conservation Area.

The proposal will not affect access to any recreational or fishing site along the Shoal Bay coastline or Gunn Point Peninsula.

Traffic movements associated with the proposed development are relatively low, and upon sealing of the access to the project site, will be accommodated on a completely sealed network through Litchfield.

The proposal will result in improved water supply for Tree Point Community, as a result of PWC's upgrade to supply the project.

It is submitted that the proposed development is unlikely to present any adverse effect on the amenity of the area in which it is situated.

[7] Department of Natural Resources, Environment, The Arts and Sport **Land Clearing Guidelines** 2010

(j) the capability of the land to which the proposed development relates to support the proposed development and the effect of the development on the land and on other land, the physical characteristics of which may be affected by the development - s. 51(j)

Seafarms evaluated several sites for the Project Sea Dragon hatchery. The project site was selected because –

- it has access to clean seawater all year round
- it is relatively flat land
- it is relatively close to Darwin, Palmerston, and established localities in Litchfield
- it will have good sealed road access
- it is remote from industry and other aquaculture operations

There are no physical constraints that limit the development of the site for the prawn hatchery.

The site will adjoin an access and water supply easement in favour of the community at Tree Point (Section 3104), and will not affect access to Tree Point Conservation Area or the beach.

The proposed development will not affect the physical characteristics of any other land.

(k) the public facilities or public open space available in the area in which the land is situated and the requirement, if any, for the facilities, or land suitable for public recreation, to be provided by the developer - s. 46(3)(f) and s. 51(k)

There is no requirement for additional public facilities or public open space to be provided by the developer.

The site adjoins Tree Point Conservation Area, and most of the Gunn Point Peninsula consists of public open space and conservation areas, as shown in the extract of the zoning map.

The hatchery operation will include a very small residential component of only two dwellings, which does not justify the provision of additional public open space.

(m) the public utilities or infrastructure provided in the area in which the land is situated, the requirement for public facilities and services to be connected to the land and the requirement, if any, for those facilities, infrastructure or land to be provided by the developer for that purpose - s. 46(3)(g) and s. 51(m)

As part of the project development agreement, NT Government has committed to constructing sealed road access to the project site. The road reserve will be opened as part of a cognate subdivision application. The applicant has been requested to extend the road opening past the entry to the project site to the access easement to Tree Point.

The proponent will supply its own power in the form of diesel generators.

Freshwater supply is to be supplied by PWC from its bore on Gunn Point Road. PWC has agreed to provide a service connection and has confirmed that there is sufficient capacity to supply the project's operations without affecting other users.

Wastewater systems will be provided in compliance with the Department of Health's Code of Practice for Small On-site Sewage and Sullage Treatment Systems. Most of the site contains soils that are suitable for these systems.

(p) the public interest - s. 46(3)(j) and s. 51(p)

The proposal is a critical component of Project Sea Dragon (PSD), which has received major project status from Commonwealth, Western Australian and NT Governments, because of its economic impact in developing Northern Australia, and consequent job creation and export revenue earning capacity.

In addition to economic benefits, PSD has negotiated an Indigenous Land Use Agreement for development of the Legune Station component. Native title holders support the project, because it provides the opportunity for indigenous people to participate meaningfully in the development of Northern Australia. In addition to a major jobs package, the IULA includes establishment of a ranger group, and a rigorous regime to protect sacred sites.

Although the IULA does not relate specifically to the hatchery site, it is a significant public interest issue for PSD as a whole.

At the localised hatchery level, PSD has triggered an NT Government planning study to upgrade and realign Gunn Point Road. Road development resulting from this study will benefit users of Gunn Point Peninsula, who visit for camping, fishing, hunting, and other recreational activities, as well as quarry owners, and will stimulate flow-on economic activity.

Regarding the matters specified in this paragraph –

- CPTED principles will follow as a consequence of the hatchery being a secure facility for bio-security reasons, and by the 24-hour operation with staff working or resident on the site around the clock.

- Water safety is not relevant in this case, because all ponds will be within security fences and water impoundments will not be accessible to the public.

- The buildings will be accessible to people with disabilities. All buildings will be single level buildings, and where they are erected on piers, they will include ramps to the entries. Parking bays for disabled drivers will be provided in each of the car parks.

(q) in the case of a proposed subdivision of land on which a building is situated - whether the building will cease to comply with the *Building Act* if the proposed development were to proceed - s. 46(3)(k) and s. 51(q)

This application does not include subdivision. Subdivision of the site and opening a section of Murrumujuk Drive is being conducted under a separate subdivision application.

(r) any potential impact on natural, social, cultural or heritage values - s. 51(r)

A field study conducted for the Notice of Intent assessed the likelihood of occurrence 31 threatened fauna species[8]. The study concluded that none of the evidence it compiled indicated that the site potentially supports important habitat for threatened fauna.

It suggested filed surveys for the Black-footed Tree Rat and Bare-rumped Sheath-tailed Bat, but concluded that the limited extent of the project footprint did not indicate that the project would result in any significant impact to threated fauna if reasonable environment management practices were followed.

Significant numbers of *Cycas armstrongii* are found on the site. Most of these are in the eastern half of the site, where they are not affected because vegetation will remain undisturbed. Buildings and infrastructure have been located to minimise vegetation removal while meeting separation distances between other features, such as the incinerator and dwellings. Where removal of *Cycas* specimens cannot be avoided, the proponent will apply for a permit under the Territory Parks and Wildlife Act to relocate the specimens.

[8] Austecology **Fauna Habitat Assessment – PSD Gunn Point Stage 1 Hatchery** July 2017

The Aboriginal Areas Protection Authority issued an Authority Certificate for an earlier version of the hatchery layout. Following changes to the layout to respond to environmental considerations, the proponent will seek an amendment to the certificate.

An archaeological study and field survey conducted for the Notice of Intent concluded that, despite the proximity to shell middens on the beach, no cultural archaeological material was found on the site, and the only European heritage item (a brick and terracotta culvert) was in the conservation area outside the site.

The use of Gunn Point Peninsula by recreational fishers, hunters, campers, and off-road drivers may be regarded as a social value. The project will not affect access to popular fishing spots or the beach, or to recreational facilities provided at Tree Point Conservation Area, although informal tracks cut through the project site will be closed.

(t) other matters it thinks fit;

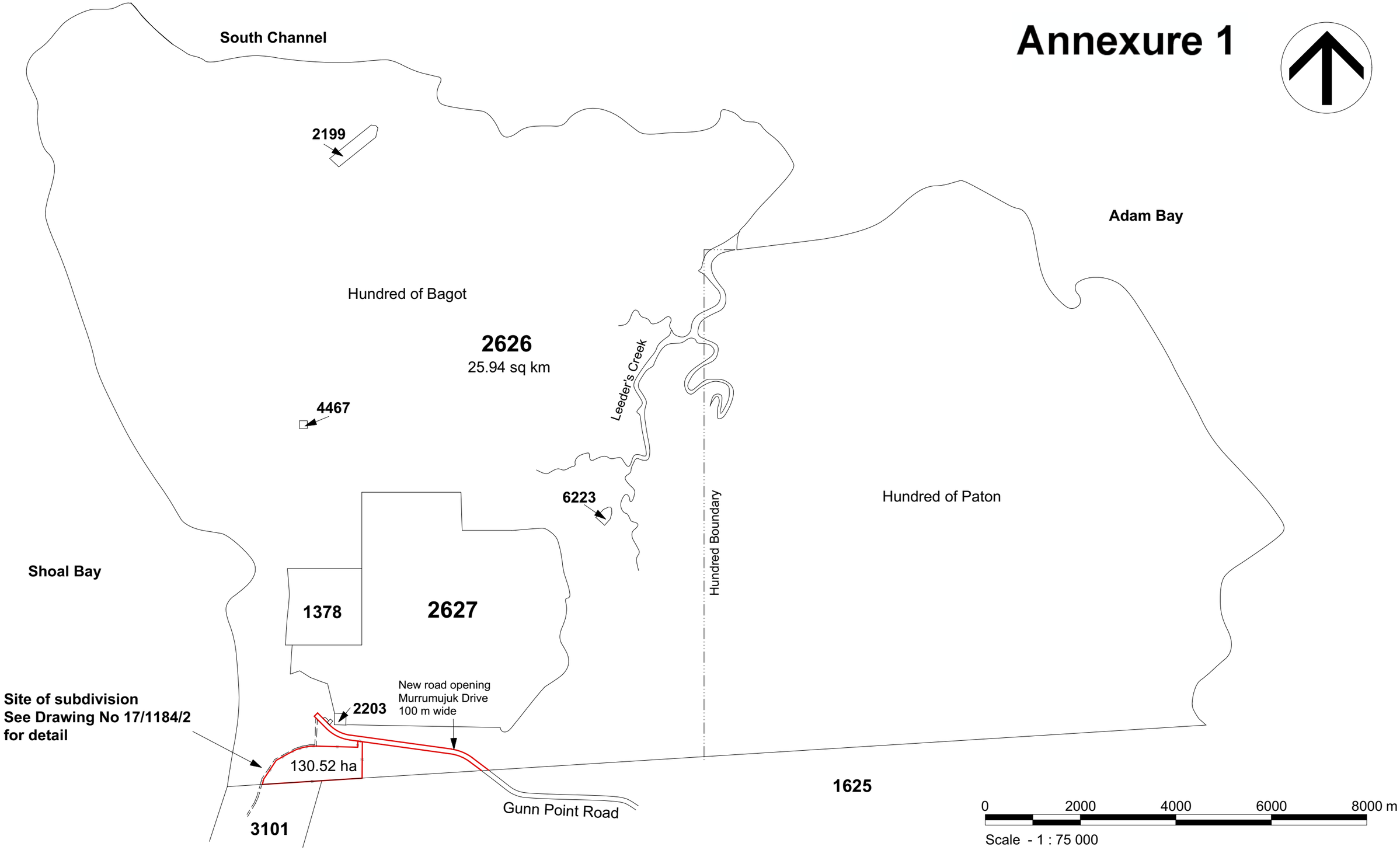
There are no other matters that have not been dealt with under other heads of consideration.

JUNE D'ROZARIO

Annexures :

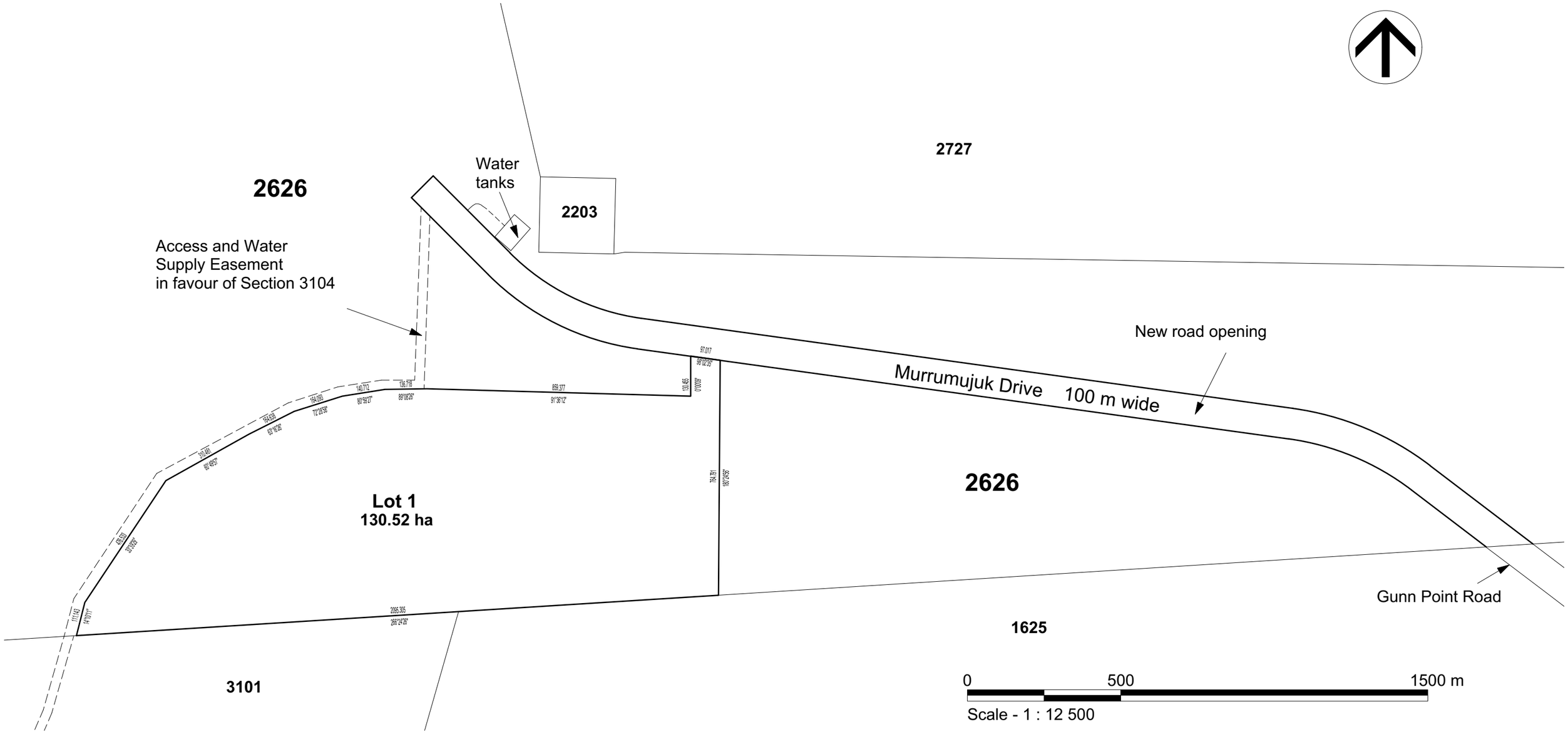
Annexure 1 : Subdivision Proposal

Annexure 1



PROPOSED SUBDIVISION OF NT PORTION 2626 GUNN POINT LOCALITY

Drawing No : 17/ 1184/1
Date : October 2017



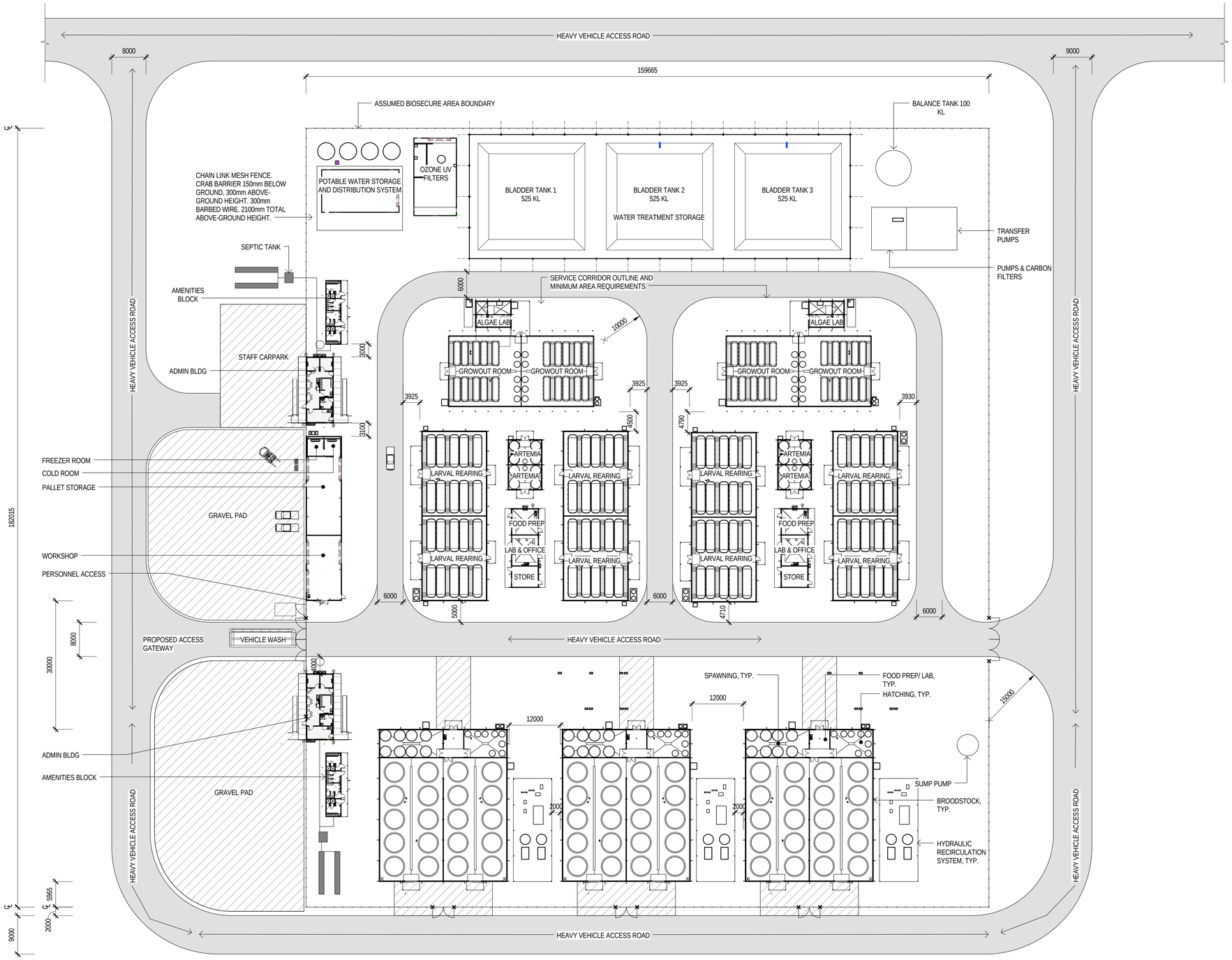
NOTES

1. Murrumujuk Drive is to be surveyed as part of road opening.
2. Area, dimensions and bearings of Lot 1 are approximate and are subject to survey.
3. Access and Water Supply Easement is in favour of Section 3104 - Dealing No 347913.

PROPOSED SUBDIVISION OF NT PORTION 2626 GUNN POINT LOCALITY

Drawing No 17/1184/2
Date : October 2017

June D'Rozario & Associates



HATCHERY STAGE 1 - OVERALL FLOOR PLAN

SCALE 1 : 500

GROSS FLOOR AREA SCHEDULE PER MODULE					
ROOM	TOTAL TANKS	TANK TYPE	No. ROOMS	GROSS ROOM AREA	TOTAL GROSS AREA
BROODSTOCK	60	T23000	3	1452.5 m²	4357.5 m²
SPAWNING	18	T7000			
HATCHING	18	T2000			
LARVAL REARING	80	PB20000 (PSD SPECIAL)	8	640 m²	2560 m²
ALGAE GROW OUT	20	T2000	4	610 m²	1220 m²
	40	PB10000			
ALGAE LAB	-	-	2		
ARTEMIA	16	BESPOKE (TB)	4	94 m²	188 m²
	4	T1100			
ADMINISTRATION	-	-	1	155 m²	155 m²
FOOD PREP & LAB	-	-	1	118.4 m²	236.8 m²
WORKSHOP / STORE	-	-	1	318 m²	318 m²
AMENITIES BLOCK	-	-	1	54 m²	54 m²
WATER TREATMENT STORAGE	3	BLADDER TANK 525KL	-	-	-
	1	BALANCE TANK 100KL	-	-	-
FRESH WATER STORAGE	4	POLY TANK 30KL	-	-	-
				TOTAL GFA	9089.3 m²

NOTES:
1. FOR SITE ROAD LAYOUT, REFER TO DRAWING NO. 43-22399-C401.
2. FOR ALGAE LAB & GROW OUT DETAILS, REFER TO DRAWING NO. 43-22399-A406.
3. FOR ARTEMIA DETAILS, REFER TO DRAWING NO. 43-22399-A411.
4. FOR BROODSTOCK, SPAWNING & HATCHING DETAILS, REFER TO DRAWING NO. 43-22399-A416.
5. FOR LARVAL REARING DETAILS, REFER TO DRAWING NO. 43-22399-A421.
6. FOR FOOD PREP, LAB & OFFICE DETAILS, REFER TO DRAWING NO. 43-22399-A426.
7. FOR ADMINISTRATION BUILDING DETAILS, REFER TO DRAWING NO. 43-22399-A431.
8. FOR WORKSHOP AND STORAGE BUILDING DETAILS, REFER TO DRAWING NO. 43-22399-A436.
9. FOR AMENITIES BLOCK DETAILS, REFER TO DRAWING NO. 43-22399-A451.
10. FOR OFFICE AND RECEPTION BUILDING DETAILS, REFER TO DRAWING NO. 43-22399-A461.

GHD BASIS OF DESIGN - 29.02.16

STAGE 1 DEVELOPMENT	
COMMENTS	AREA
TOTAL SITE AREA	29040 m²

NOTE: SW UV DISINFECTION AT POINT OF USE

NOTE: PRE SITE PLACEMENT LAYOUT

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
H	TITLE AMENDMENT	VG	DE	RK	27.09.17
G	MINOR AMENDMENTS	VG	DE	RK	22.06.16
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16

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0 5 10 15 20 25 m
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Drafting Check J.NOYNAY* | Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale
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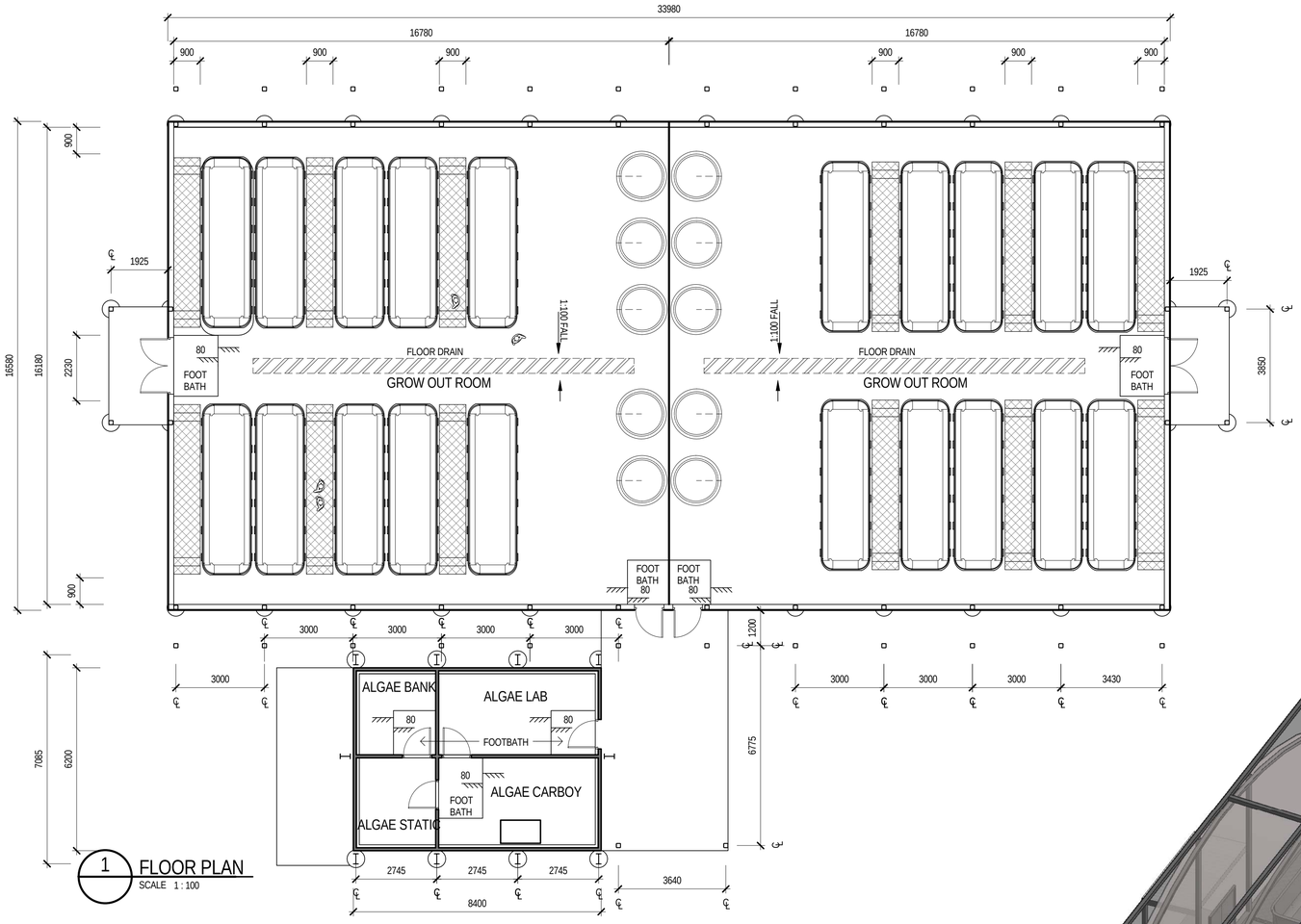
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
HATCHERY MODULE FLOOR PLAN

Original Size **A1** Drawing No: **43-22399-A401** Rev: **H**

Plot Date: 27/09/2017 4:34:07 PM Cad File No: C:\Users\vgoh\Documents\Revit Local Files\HAC_vgoh.rvt



1 FLOOR PLAN
SCALE 1 : 100

ROOM SCHEDULE	
NAME	AREA
GROW OUT ROOM	271.47 m²
GROW OUT ROOM	271.47 m²
ALGAE BANK	7.12 m²
ALGAE LAB	14.60 m²
ALGAE CARBOY	15.66 m²
ALGAE STATIC	7.64 m²
GROSS FLOOR AREA	610m2

TANK SCHEDULE			
ROOM	TYPE	CAPACITY	NO.
GROWOUT	PB10000	10 m3	20
	T2000	2 m3	10

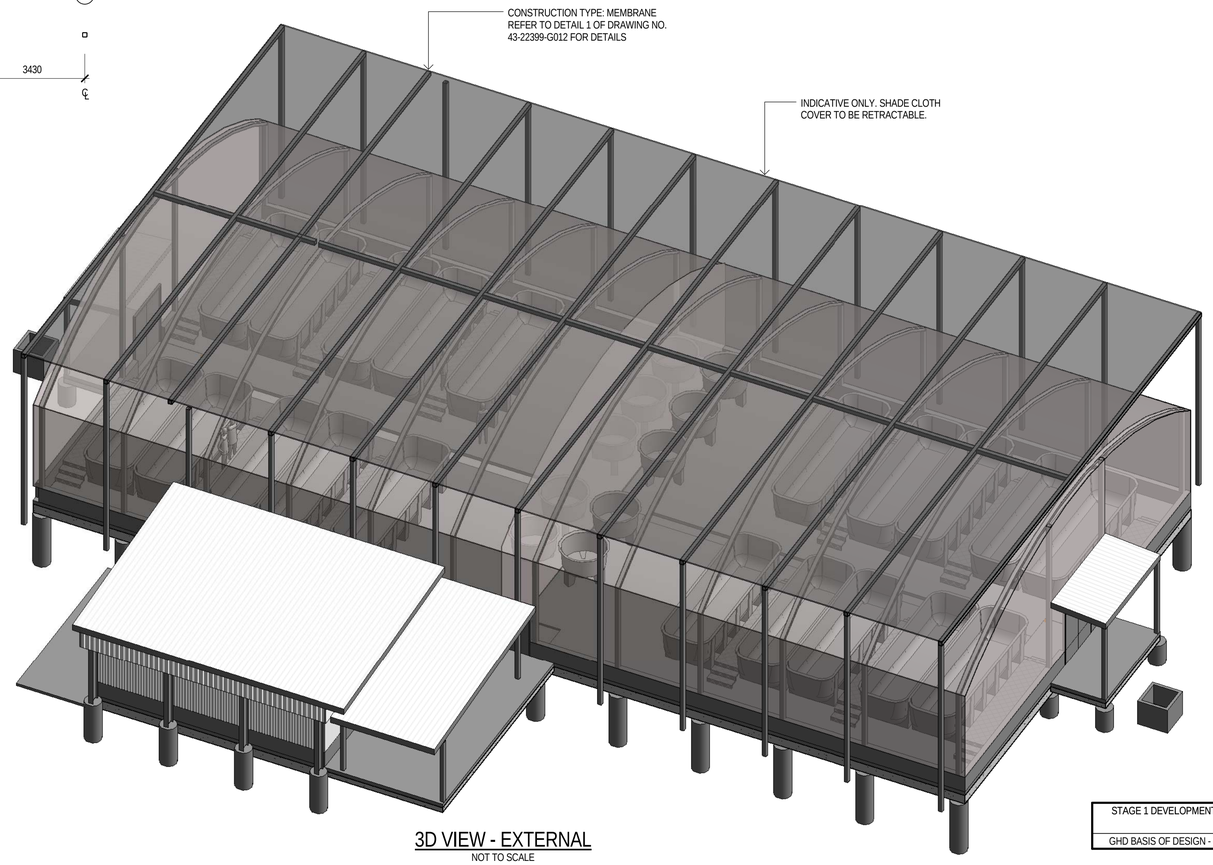
NOTE: TANKS SUPPLIED BY AJAY OR SIMILAR. REFER B.O.D FOR TANK DETAILS.

LEGEND

- BOX DRAIN
- RAISED METAL WALKWAY
- CONCRETE

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H402.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E421.
3. FOR STRUCTURAL LAYOUT, REFER TO DRAWING NO. 43-22399-S407.
4. FOR MECHANICAL LAYOUT, REFER TO DRAWING NOS. 43-22399-M401 AND 43-22399-M402.

3D VIEW - INTERNAL PERSPECTIVE
NOT TO SCALE



3D VIEW - EXTERNAL
NOT TO SCALE

HATCHERY STAGE 1 - ALGAE LAB & GROWOUT MODULE

STAGE 1 DEVELOPMENT ONLY
GHD BASIS OF DESIGN - 29.02.16

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

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Designer R.KOENIG
Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 100
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Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
ALGAE LAB & GROW OUT - MODULE 1 OF 2

Original Size **A1**
Drawing No: 43-22399-A406
Rev: F

Plot Date: 20/05/2016 7:04:32 PM
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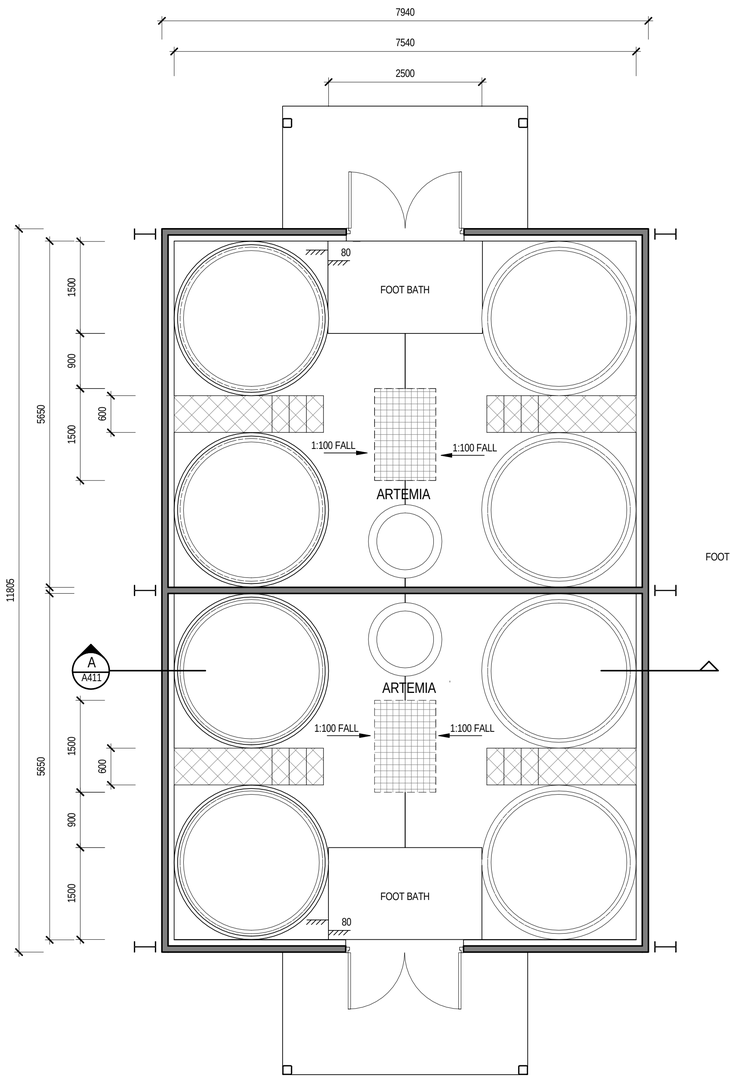
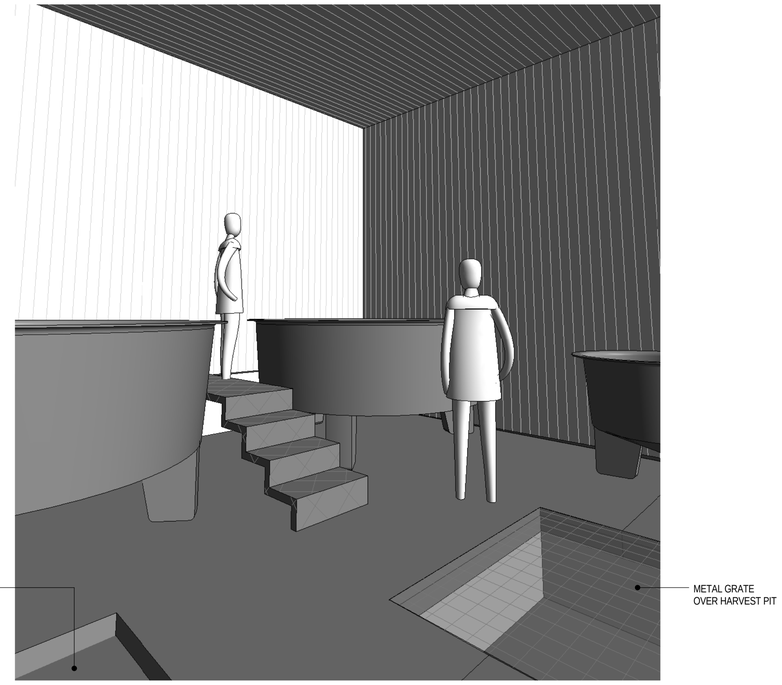
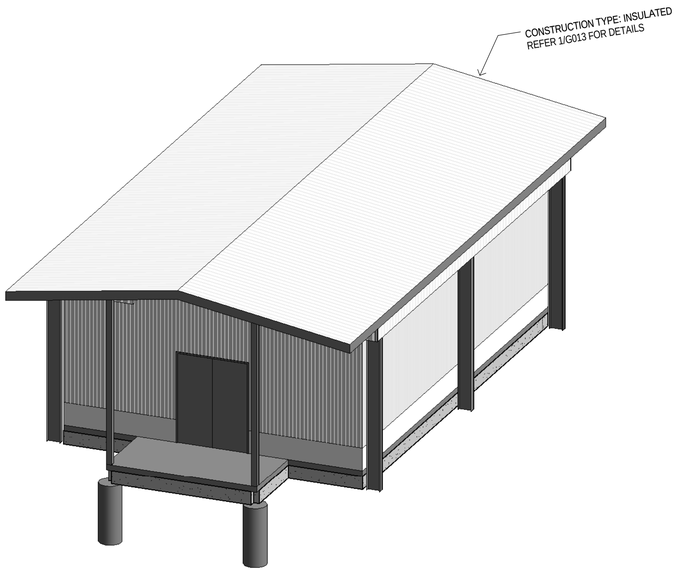


1 CBC - FLOOR PLAN
SCALE 1 : 50



HAC - 3D VIEW - INTERNAL PERSPECTIVE
NOT TO SCALE



HAC - 3D VIEW - EXTERNAL
NOT TO SCALE

ROOM SCHEDULE	
NAME	AREA
ARTEMIA	42.6 m²
ARTEMIA	42.6 m²

GROSS FLOOR AREA	94 m2

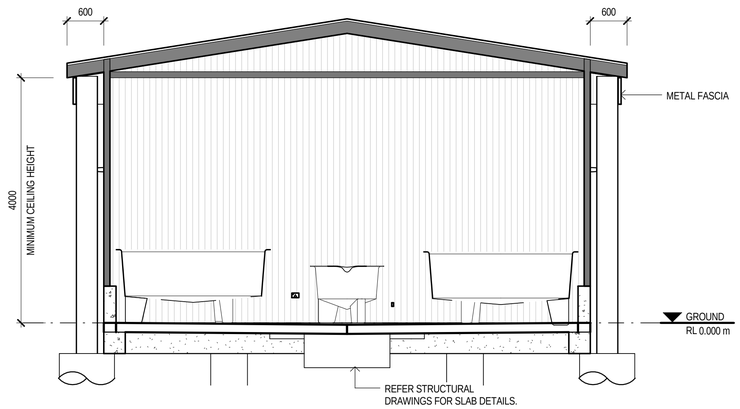
TANK SCHEDULE			
ROOM	TYPE	CAPACITY	NO.
ARTEMIA	BESPOKE	5 m3	4
	BESPOKE	1 m3	1

NOTE: TANKS SUPPLIED BY AJAY OR SIMILAR. REFER B.O.D FOR TANK DETAILS.

LEGEND

RAISED METAL WALKWAY

HARVEST PIT



A A411 SECTION
SCALE 1 : 50

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 15.02.16

HAC STAGE 1 - ARTEMIA MODULE 1 OF 1

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
E	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
D	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
C	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
B	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
A	ISSUE FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 500 1000 1500 2000 2500 mm
SCALE 1:50 AT ORIGINAL SIZE

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Designer R.KOENIG
Drafting Check
Design Check Checker
Approved (Project Director) Approver
Date
Scale 1 : 50
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Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
ARTEMIA - MODULE 1 OF 1

Original Size **A1** **Drawing No: 43-22399-A411** **Rev: E**

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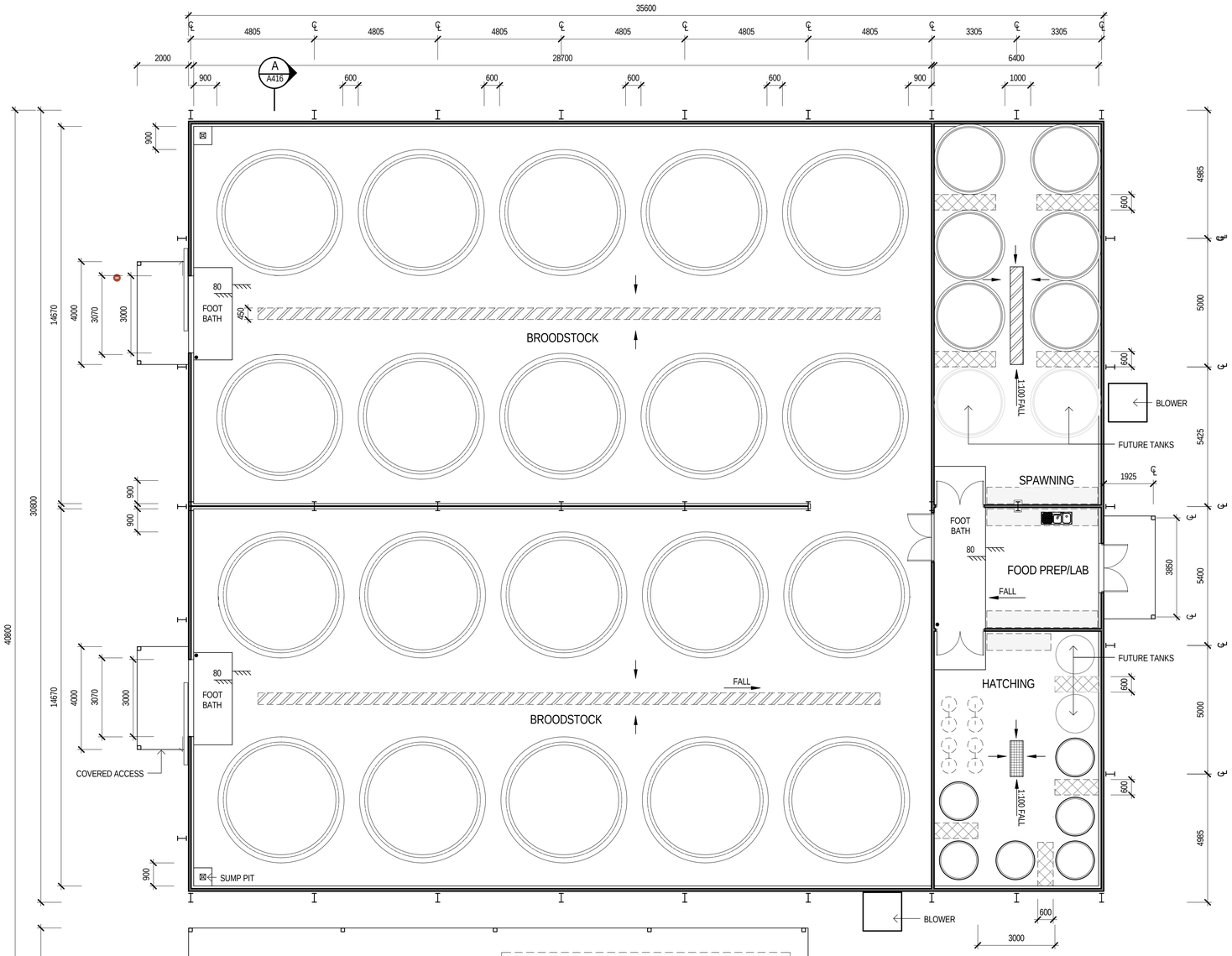
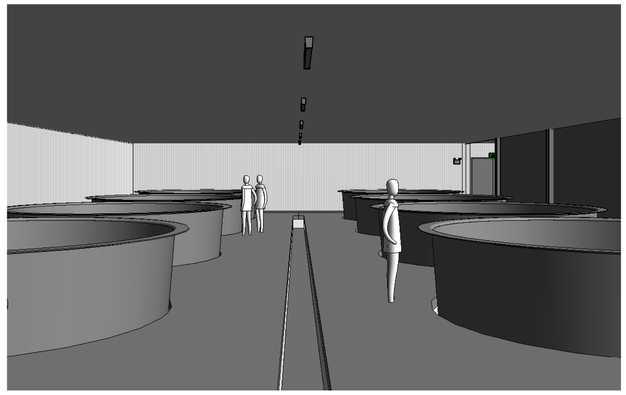


1 A416 FLOOR PLAN
SCALE 1 : 100



INTERNAL PERSPECTIVE
NOT TO SCALE

ROOM SCHEDULE	
NAME	AREA
BROODSTOCK	421.47 m²
FOOD PREP/LAB	30.14 m²
HATCHING	63.42 m²
BROODSTOCK	421.47 m²
SPAWNING	94.20 m²
COVERED SERVICES AREA	216.90 m²

GROSS FLOOR AREA	1452.5 m2

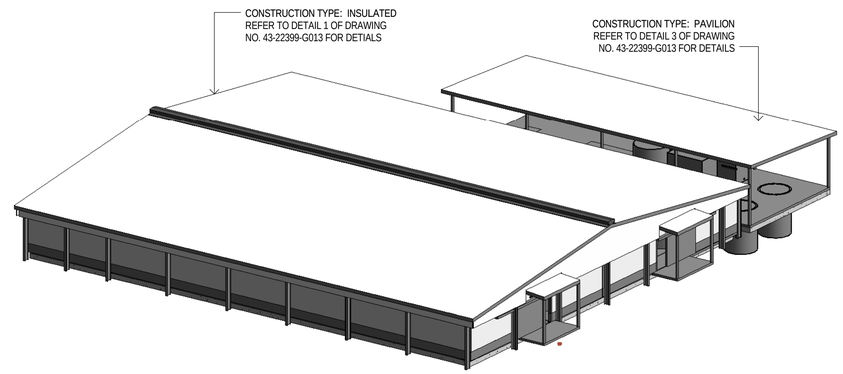
TANK SCHEDULE			
ROOM	TYPE	CAPACITY	NO.
BROODSTOCK	T23000	20 m3	20
SPAWNING	T7000	5 m3	6-8
HATCHING	T2000	2.5 m3	8

NOTE: TANKS SUPPLIED BY AJAY OR SIMILAR. REFER B.O.D FOR TANK DETAILS.

LEGEND

- WORK BENCH
- BOX DRAIN
- HARVEST PIT
- RAISED METAL WALKWAY
- CONCRETE

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H404.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E423.
3. FOR STRUCTURAL LAYOUT, REFER TO DRAWING NO. 43-22399-S409.
4. FOR MECHANICAL LAYOUT, REFER TO DRAWING NOS. 43-22399-M404 TO 43-22399-M407.



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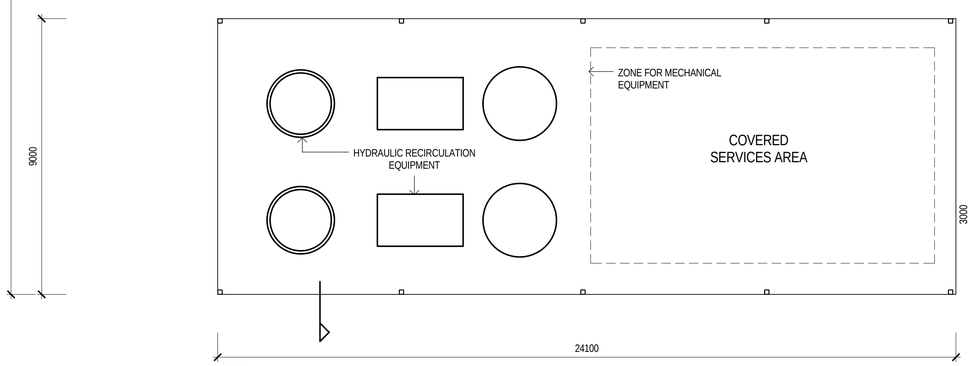

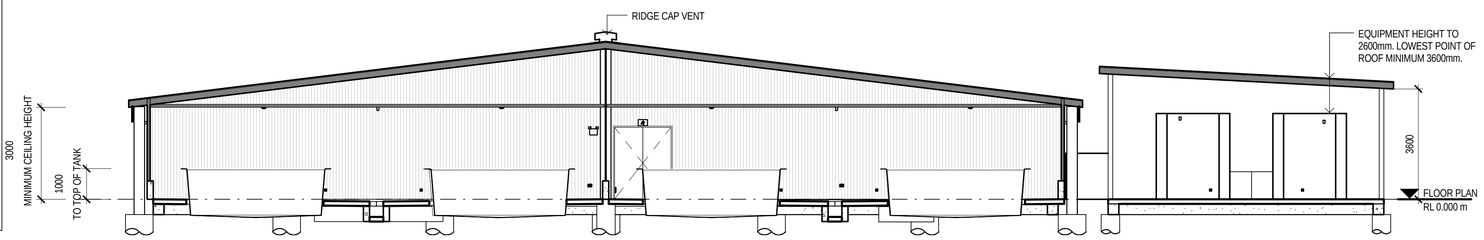

A A416 SECTION
SCALE 1 : 100

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 29.02.16

HATCHERY STAGE 1 - BROODSTOCK, SPAWNING & HATCHING MODULE

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

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Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 100
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Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
BROODSTOCK, SPAWNING & HATCHING - MODULE 1 OF 3

Original Size **A1**
Drawing No: 43-22399 - A416
Rev: F

Plot Date: 20/05/2016 7:39:55 PM
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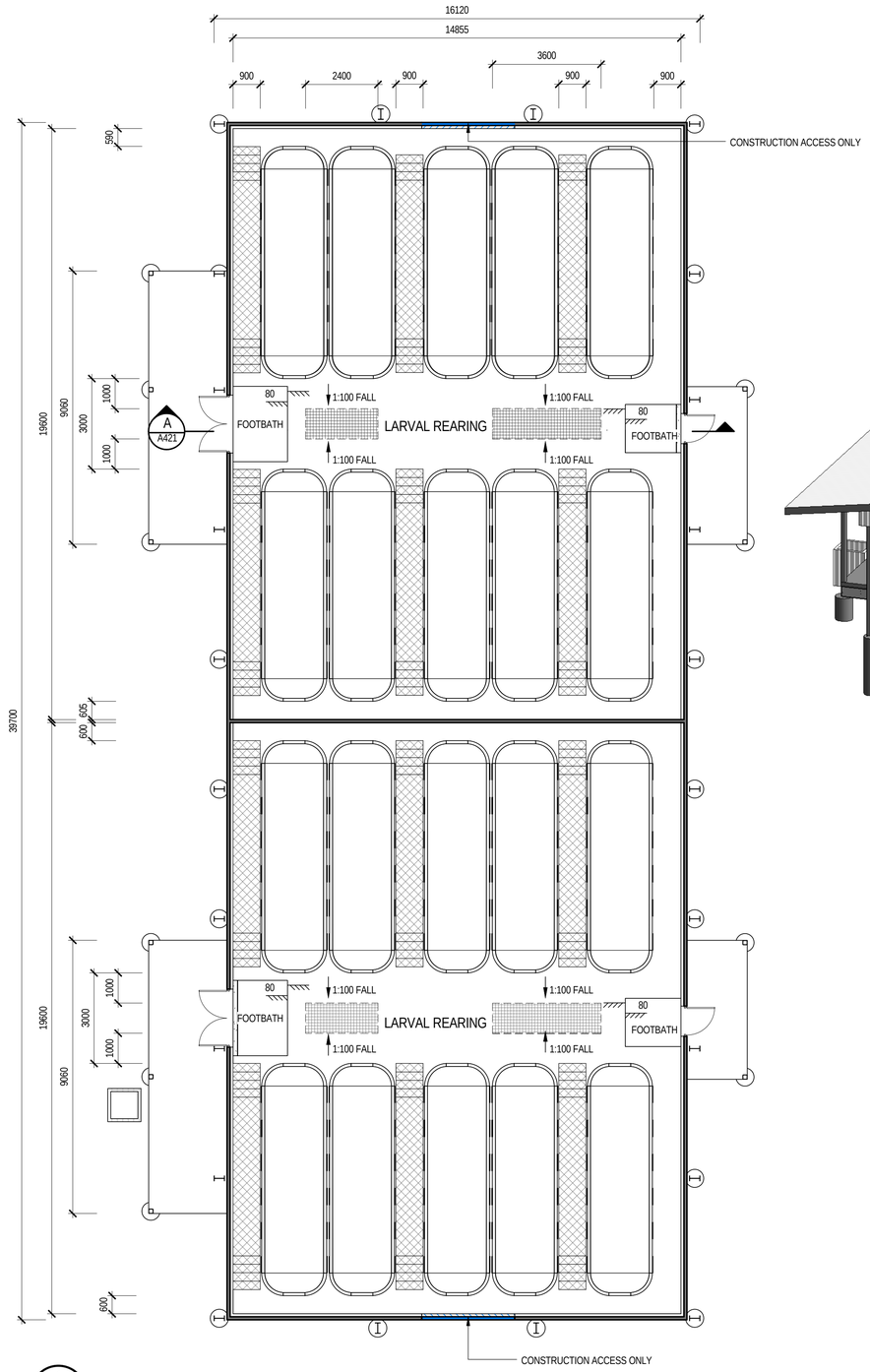
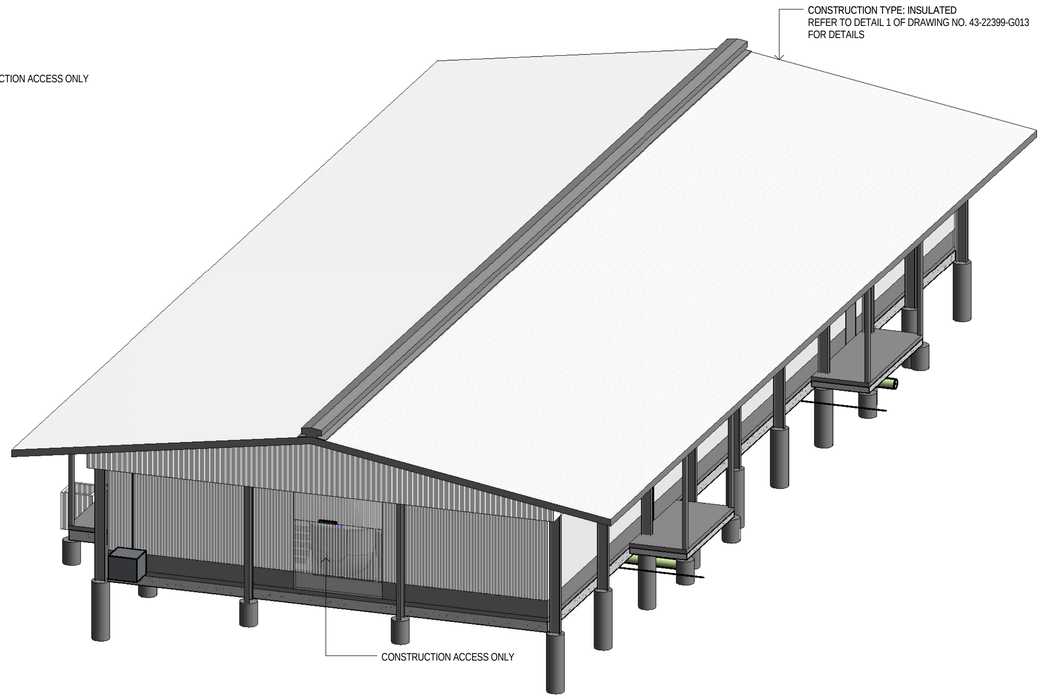
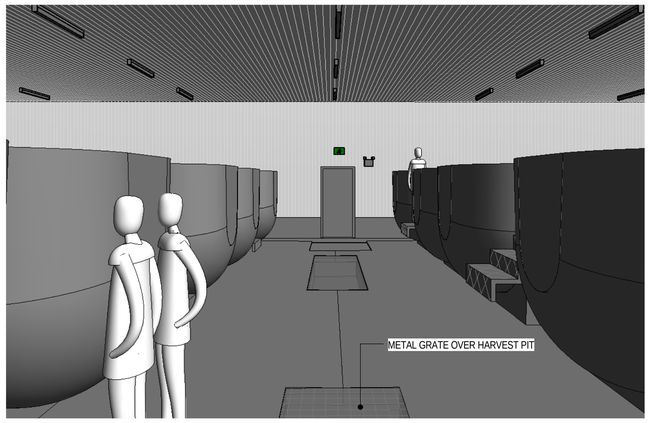


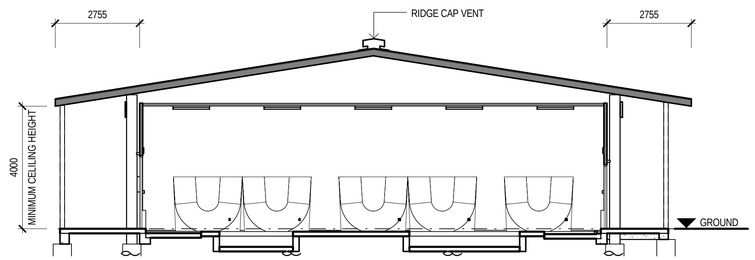
1 FLOOR PLAN
SCALE 1 : 100



3D VIEW - EXTERNAL
NOT TO SCALE



3D VIEW - INTERNAL PERSPECTIVE
NOT TO SCALE



A A421 SECTION
SCALE 1 : 100

ROOM SCHEDULE	
NAME	AREAa
LARVAL REARING	291.16 m²
LARVAL REARING	291.19 m²
GROSS FLOOR AREA	640 m2

TANK SCHEDULE			
ROOM	TYPE	CAPACITY	NO.
LARVAL REARING	BESPOKE	20 m3	20

NOTE: TANKS SUPPLIED BY AJAY OR SIMILAR. REFER B.O.D FOR TANK DETAILS.

LEGEND

- HARVEST PIT
- RAISED METAL WALKWAY
- CONCRETE

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H405.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E424.
3. FOR STRUCTURAL LAYOUT, REFER TO DRAWING NO. 43-22399-S410.
4. FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22399-M408.

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 29.02.16

HATCHERY STAGE 1 - LARVAL REARING MODULE

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 1000 2000 3000 4000 5000 mm
SCALE 1:100 AT ORIGINAL SIZE

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Designer R.KOENIG
Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1:100
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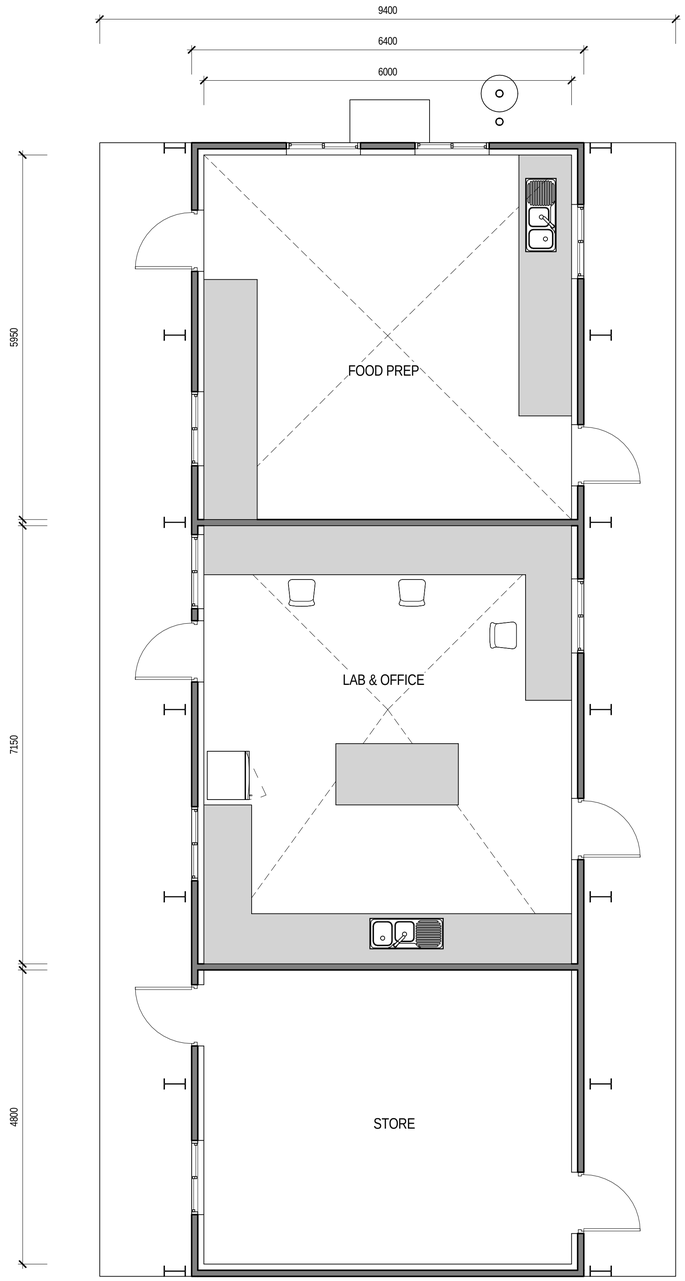
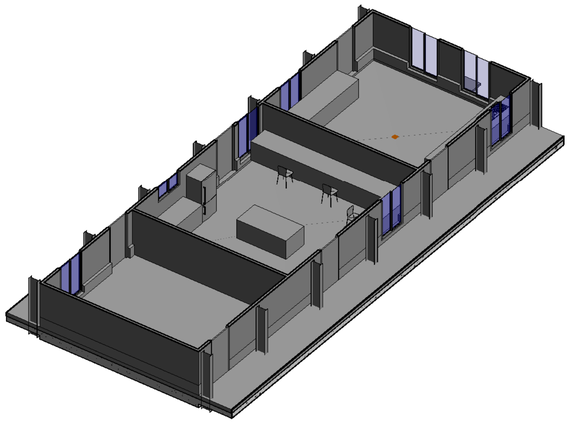
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
LARVAL REARING - MODULE 1 OF 4

Original Size **A1**
Drawing No: 43-22399-A421
Rev: F

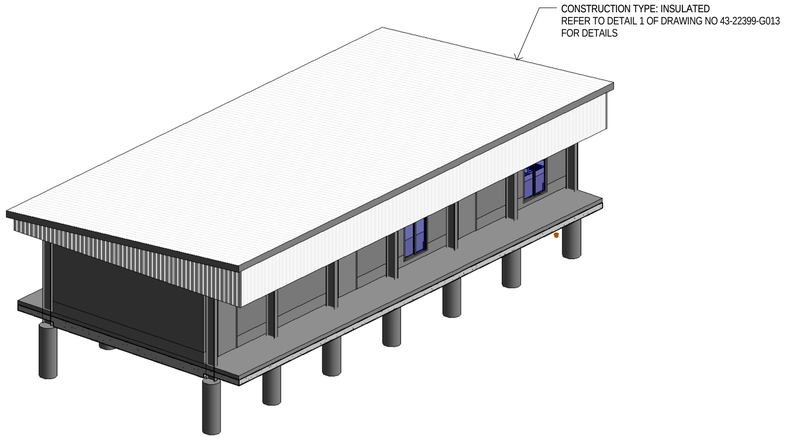
Plot Date: 20/05/2016 7:49:44 PM
Cad File No: C:\Users\vgoh\Documents\Revit Local Files\LARVAL REARING_vgoh.rvt



1 FLOOR PLAN
SCALE 1 : 50



3D VIEW - PLAN
NOT TO SCALE



3D VIEW - EXTERNAL
NOT TO SCALE

ROOM SCHEDULE	
NAME	AREA
FOOD PREP	35.70 m²
LAB & OFFICE	42.90 m²
STORE	28.80 m²

GROSS FLOOR AREA	173.9m²

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H406.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E425.
3. FOR STRUCTURAL LAYOUT, REFER TO DRAWING NO. 43-22399-S411.
4. FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22399-M409.

HATCHERY STAGE 1 - FOOD PREP, LAB & OFFICE MODULE

STAGE 1 DEVELOPMENT ONLY
GHD BASIS OF DESIGN - 29.02.16

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

Note: * indicates signatures on original issue of drawing or last revision of drawing

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SCALE 1:50 AT ORIGINAL SIZE

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Drafting Check J.NOYNAY*
Design Check A.BRETTS*
Approved (Project Director) R.KOENIG*
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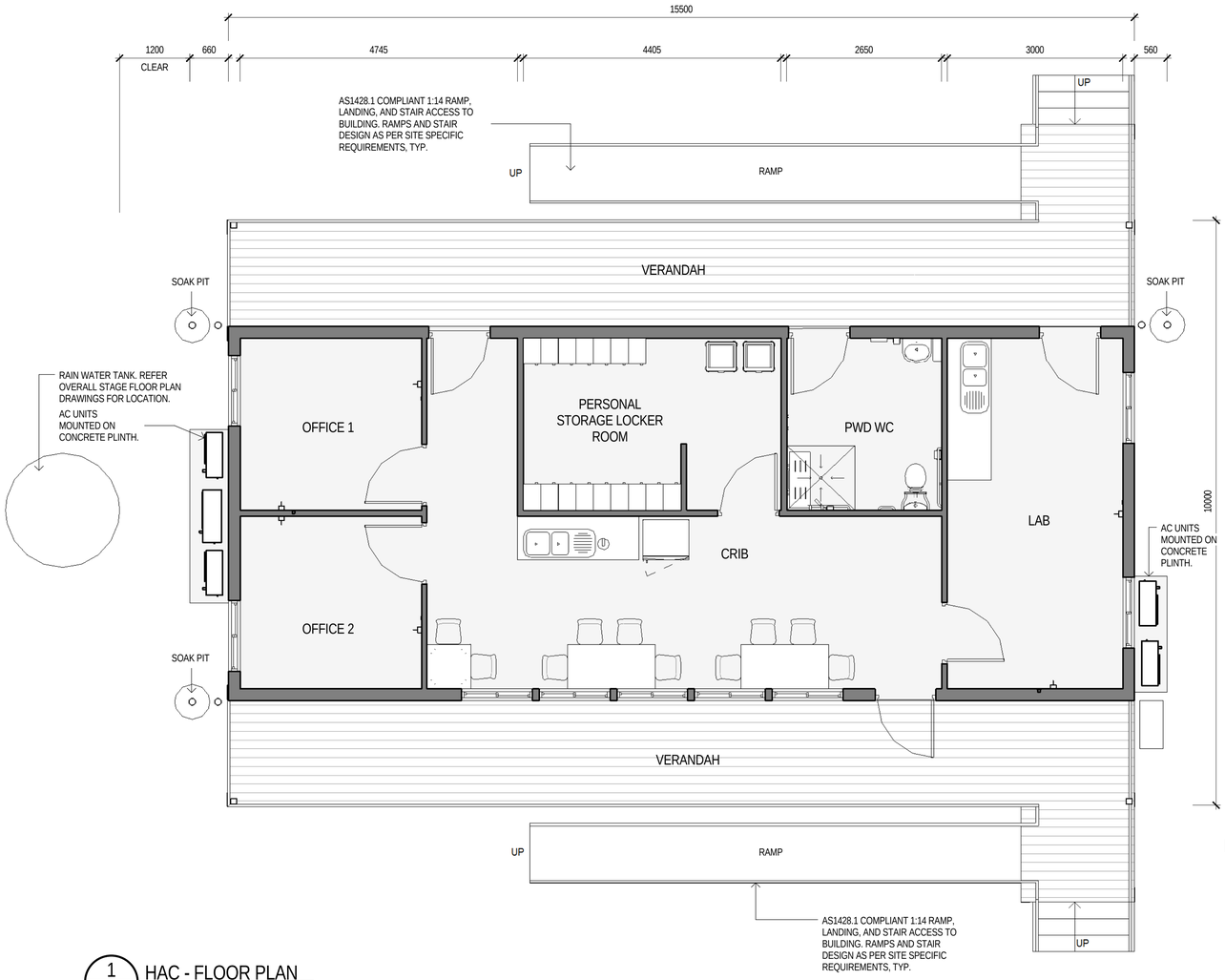
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING FACILITIES PROGRAM**
Title **HAC STAGE 1**
FOOD PREP, LAB & OFFICE - MODULE 1 OF 2

Original Size **A1** Drawing No: **43-22399-A426** Rev: **F**

Plot Date: 23/05/2016 9:59:26 AM Cad File No: C:\Users\vgoh\Documents\Revit Local Files\FOOD PREP & LAB_vgoh.rvt



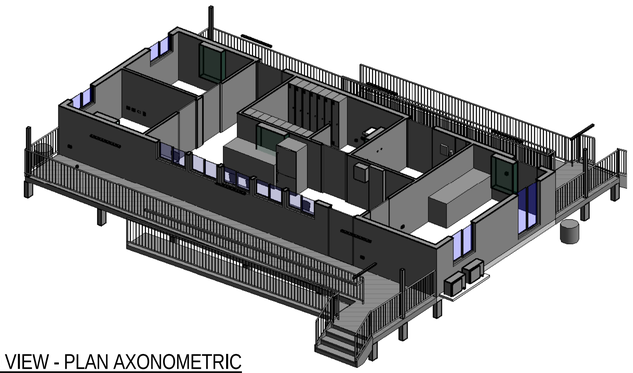
1 HAC - FLOOR PLAN
SCALE 1 : 50

ROOM SCHEDULE	
NAME	AREA
PWD WC	7.82 m²
PERSONAL STORAGE LOCKER ROOM	12.88 m²
OFFICE 1	9.15 m²
OFFICE 2	9.15 m²
CRIB	30.68 m²
LAB	18.00 m²
VERANDAH	31.68 m²
VERANDAH	31.65 m²

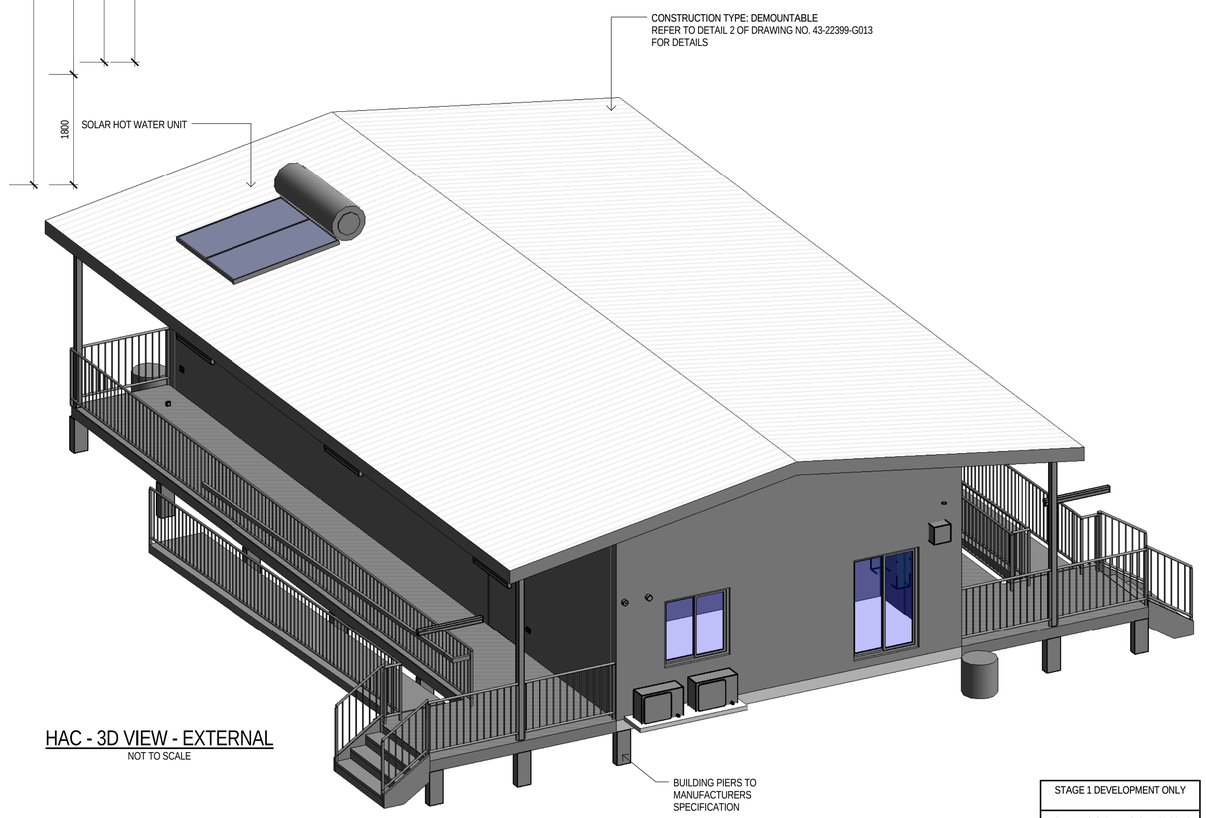
GROSS FLOOR AREA	155m²

NOTE: DESIGN IS BASED ON DEMOUNTABLE 'DONGA' CONSTRUCTION

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H407.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E426.
3. FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22399-M410.



HAC - 3D VIEW - PLAN AXONOMETRIC
NOT TO SCALE



HAC - 3D VIEW - EXTERNAL
NOT TO SCALE

HATCHERY STAGE 1 - ADMINISTRATION BUILDING MODULE

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 29.02.16

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	10.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

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Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 50
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Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
ADMINISTRATION BUILDING - MODULE 1 OF 2

Original Size **A1**
Drawing No: 43-22399-A431
Rev: F

Plot Date: 20/05/2016 7:55:24 PM
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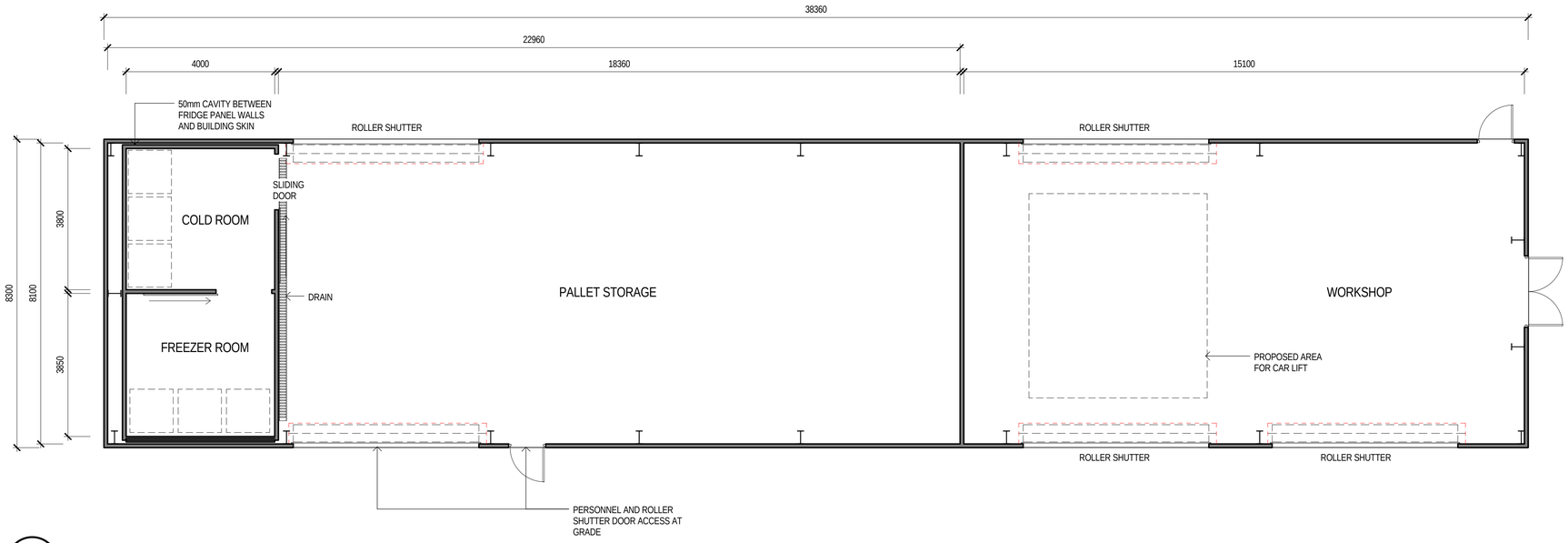


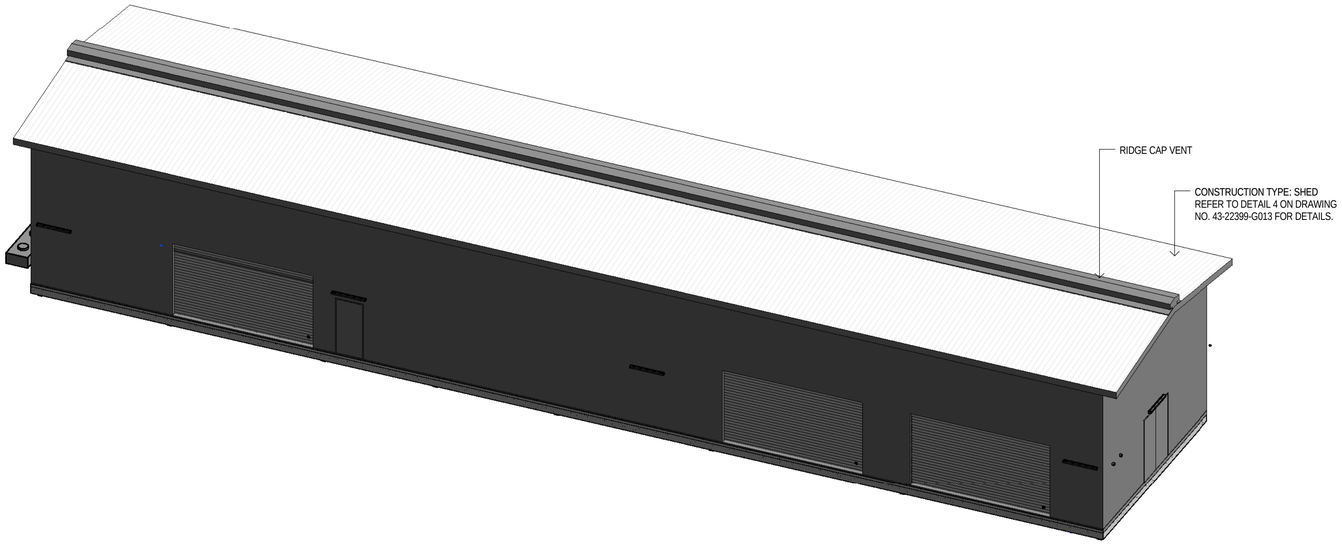
1 HAC - FLOOR PLAN

SCALE 1 : 75

ROOM SCHEDULE	
NAME	AREA
PALLET STORAGE	148.73 m²
WORKSHOP	122.31 m²
COLD ROOM	15.20 m²
FREEZER ROOM	15.40 m²

GROSS FLOOR AREA	318m²

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H408.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E427.
3. FOR STRUCTURAL LAYOUT, REFER TO DRAWING NO. 43-22399-S413.
4. FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22399-M411.



HAC - 3D VIEW - EXTERNAL

NOT TO SCALE

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 16.02.2016

HATCHERY STAGE 1 - WORKSHOP AND STORAGE BUILDING

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

Note: * indicates signatures on original issue of drawing or last revision of drawing

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Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 75

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Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
WORKSHOP AND STORAGE BUILDING

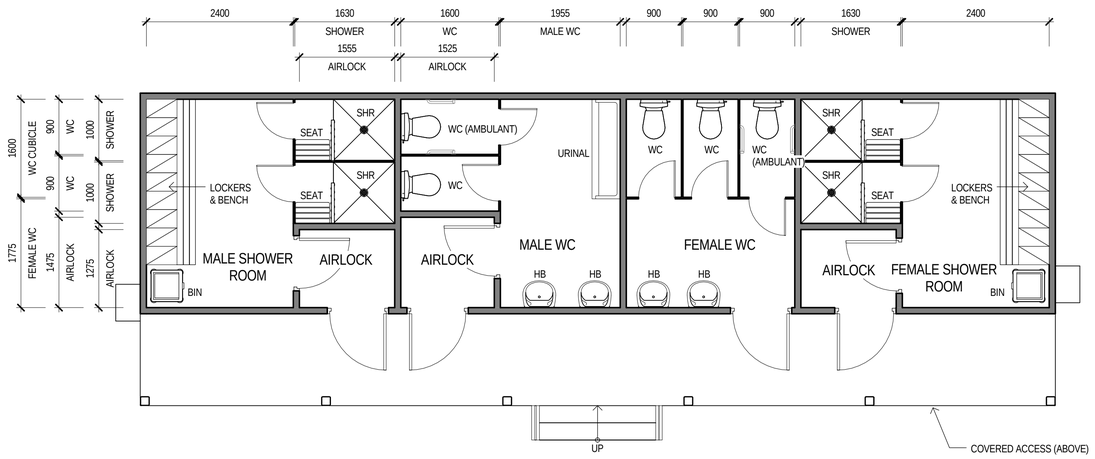
Original Size **A1** Drawing No: **43-22399-A436** Rev: **F**

Plot Date: 20/05/2016 8:01:18 PM Cad File No: C:\Users\vgoh\Documents\Revit Local Files\WORKSHOP & STORE COMBINED_vgoh.rvt

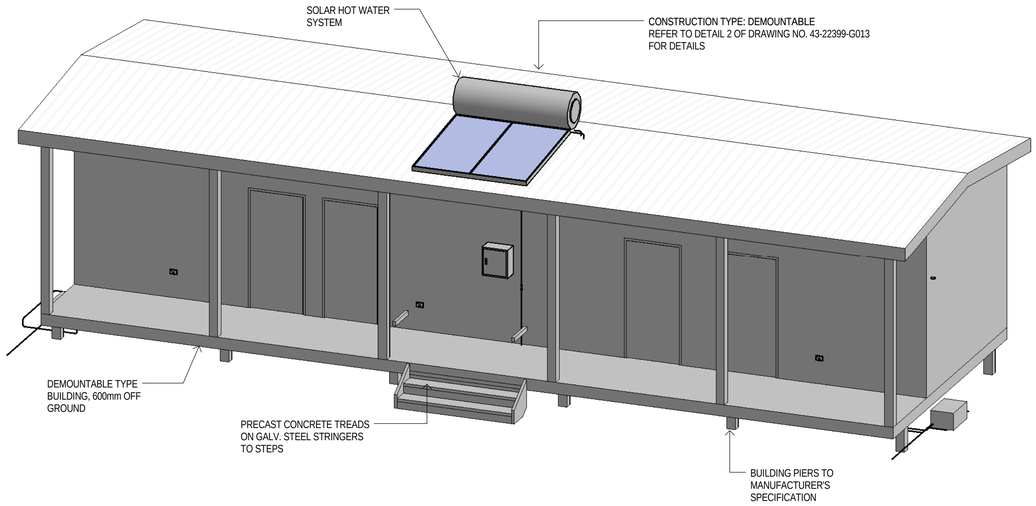
ROOM SCHEDULE	
NAME	AREA
MALE WC	9.61 m²
FEMALE WC	9.35 m²
FEMALE SHOWER ROOM	11.51 m²
AIRLOCK	1.98 m²
MALE SHOWER ROOM	11.51 m²
AIRLOCK	1.98 m²
AIRLOCK	2.25 m²
GROSS FLOOR AREA	54m²

NOTE: DESIGN BASED ON DEMOUNTABLE 'DONGA' CONSTRUCTION

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H409.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E428.
3. FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22399-M412.



1 HAC - FLOOR PLAN
SCALE 1 : 50



HAC - 3D VIEW - EXTERNAL
NOT TO SCALE

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 29.02.16

HATCHERY STAGE 1 - AMENITIES BLOCK

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	CG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

Note: * indicates signatures on original issue of drawing or last revision of drawing

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Designer R.KOENIG
Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 50
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Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1 AMENITIES BLOCK**

Original Size **A1**
Drawing No: 43-22399-A451
Rev: F

Plot Date: 20/05/2016 8:04:17 PM
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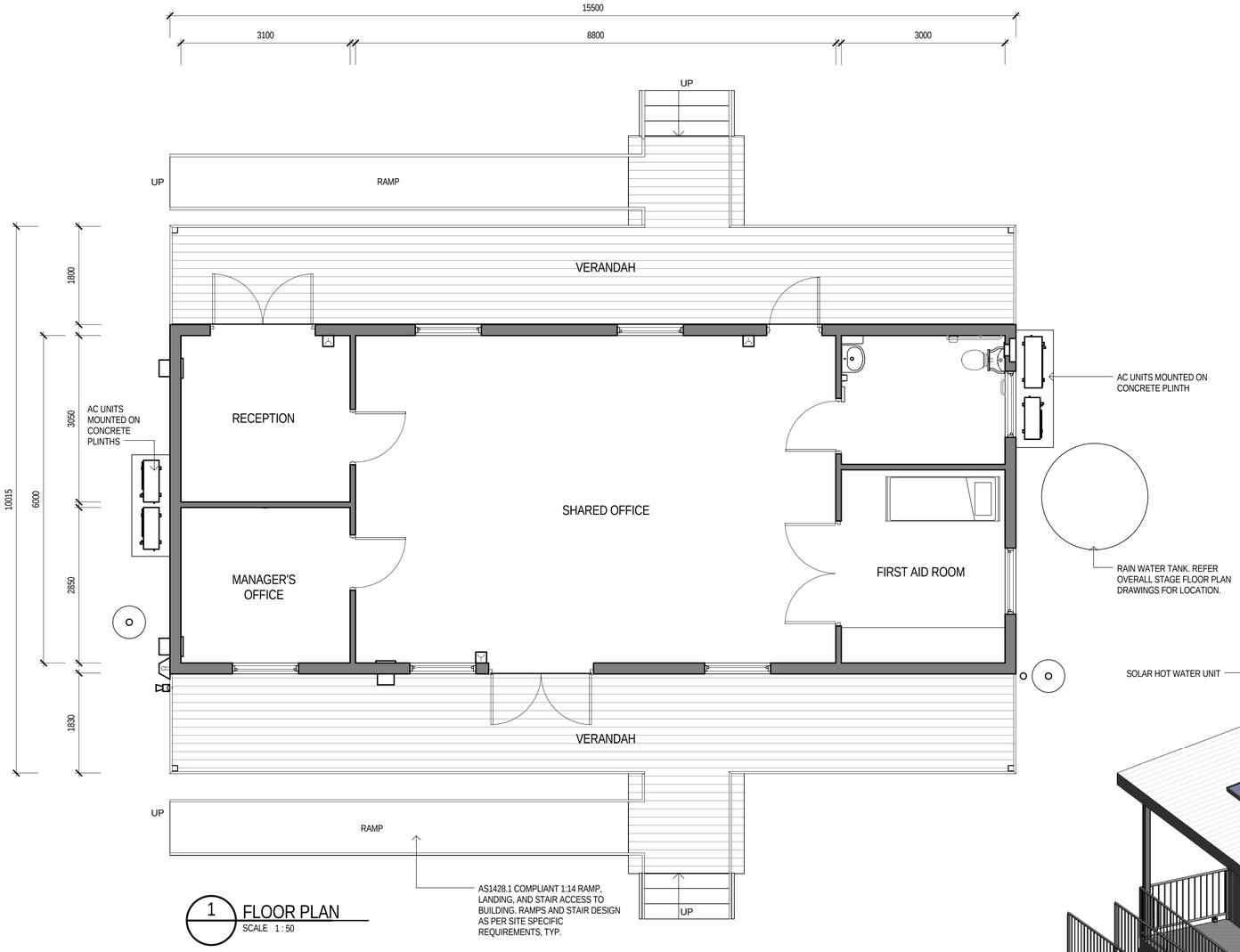
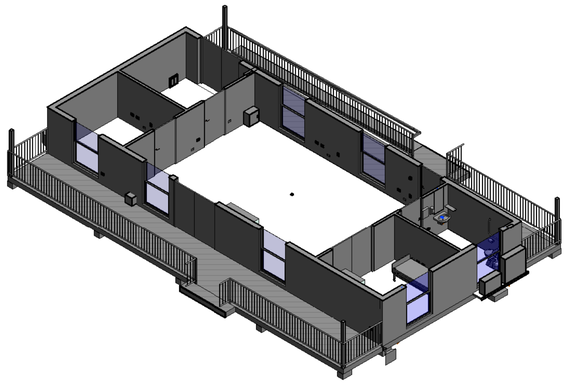


1 FLOOR PLAN
SCALE 1 : 50

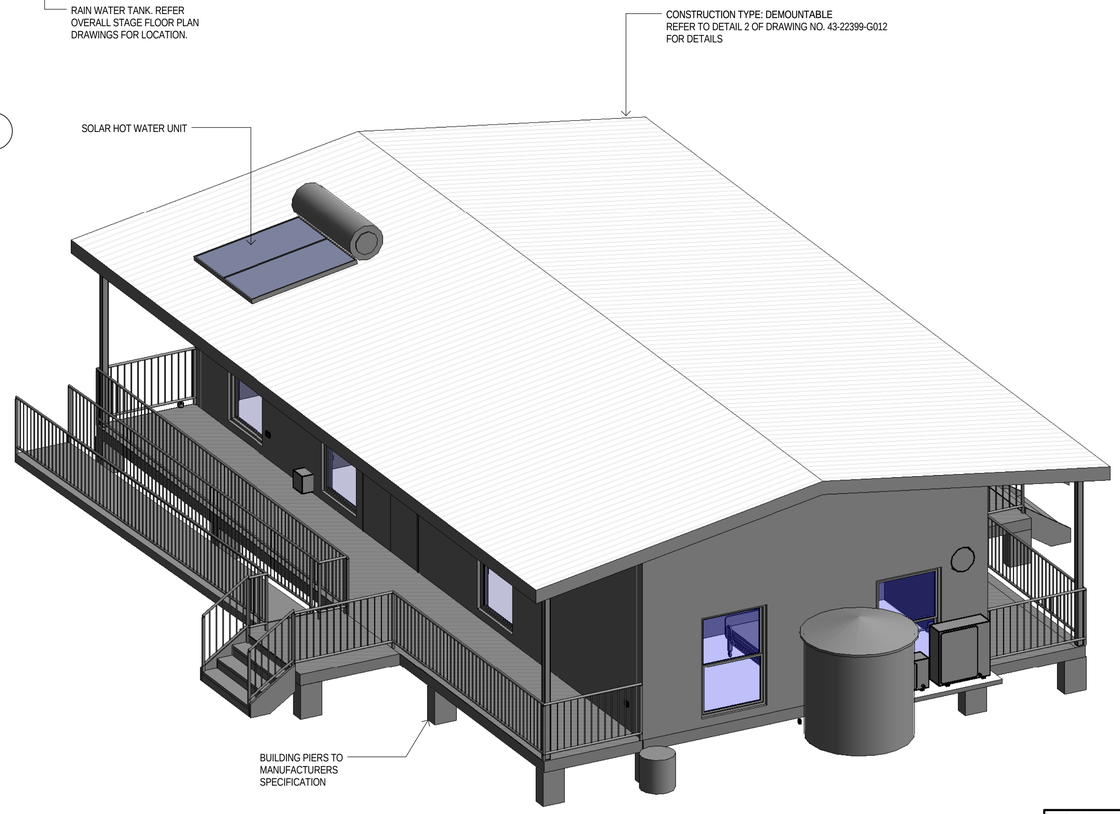
ROOM SCHEDULE	
Name	Area
RECEPTION	9.41 m²
MANAGER'S OFFICE	8.84 m²
SHARED OFFICE	52.67 m²
FIRST AID ROOM	10.62 m²
VERANDAH	28.49 m²
VERANDAH	25.20 m²
EN 5	Not Enclosed
EN 6	Not Enclosed
EN 5	Not Enclosed
EN 6	Not Enclosed
EN 5	Not Enclosed
EN 6	Not Enclosed
EN 5	Not Enclosed
EN 6	Not Enclosed
EN 5	Not Enclosed
EN 6	Not Enclosed
GROSS FLOOR AREA	155m²

NOTE: DESIGN IS BASED ON DEMOUNTABLE 'DONGA' CONSTRUCTION

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22399-H410.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22399-E429.
3. FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22399-M413.



3D VIEW - PLAN AXONOMETRIC
NOT TO SCALE



3D VIEW - EXTERNAL
NOT TO SCALE

STAGE 1 DEVELOPMENT ONLY
GHD BASIS OF DESIGN - 29.02.16

HATCHERY STAGE 1 - OFFICE AND RECEPTION BUILDING

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
F	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
E	CLIENT DESIGN REVIEW	CJJ	DE	RK	03.05.16
D	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
C	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16
B	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	22.03.16

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Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 50
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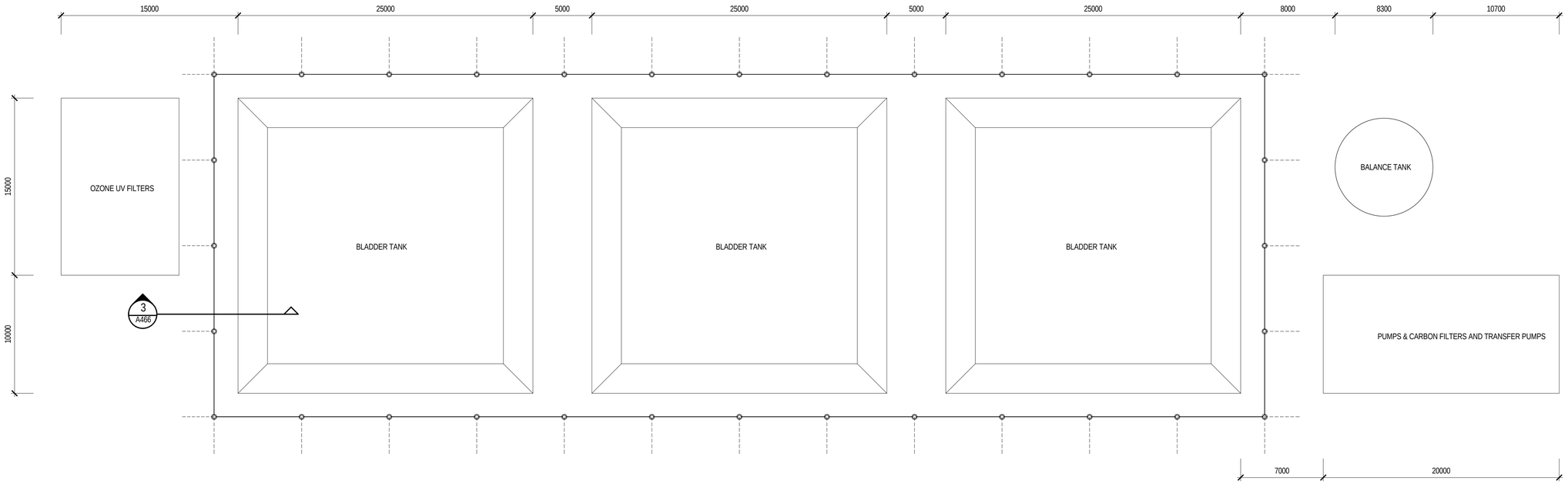
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
OFFICE AND RECEPTION BUILDING

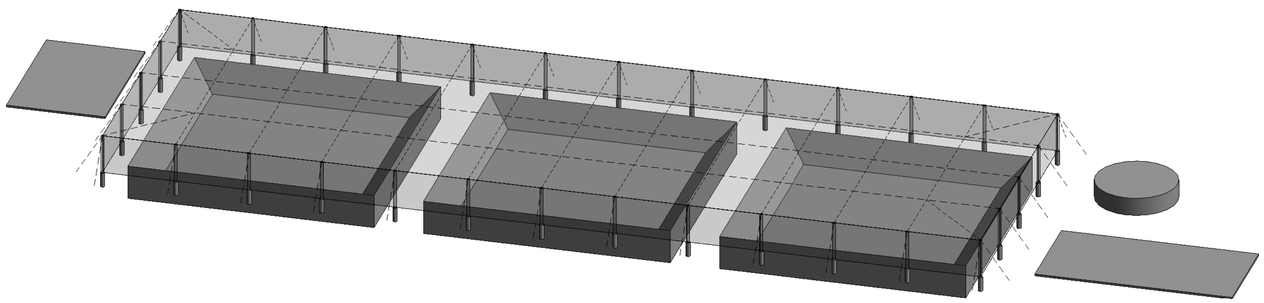
Original Size **A1**
Drawing No: 43-22399-A461
Rev: F

Plot Date: 20/05/2016 8:11:12 PM
Cad File No: C:\Users\vgoh\Documents\Revit Local Files\RECEPTION AND OFFICE BUILDING_vgoh.rvt

NOTE: REFER TO DRAWING NO. A401 FOR DETAILS



1 GROUND
SCALE 1 : 200



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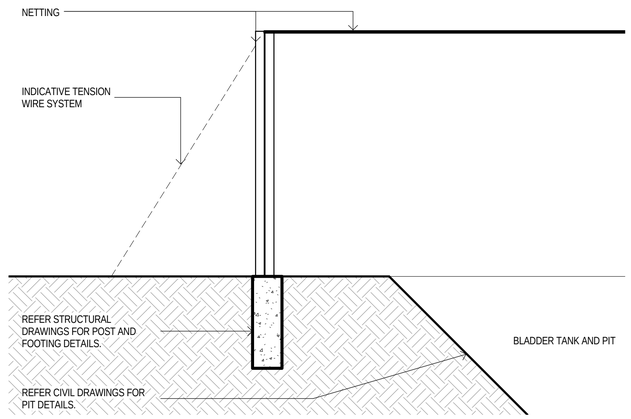
SCALE



3 A466 SECTION
SCALE 1 : 50

STAGE 1 DEVELOPMENT ONLY

GHD BASIS OF DESIGN - 15.02.16

HATCHERY STAGE 1 - WATER TREATMENT AND STORAGE

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
C	ISSUED FOR 100% FEASIBILITY DESIGN	VG	DE	RK	20.05.16
B	INTERNAL DESIGN REVIEW	VG	DE	RK	14.04.16
A	ISSUE FOR COST ESTIMATE	VG	DE	RK	31.03.16

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0 2000 4000 6000 8000 10000mm
SCALE 1:200 AT ORIGINAL SIZE

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Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale As indicated
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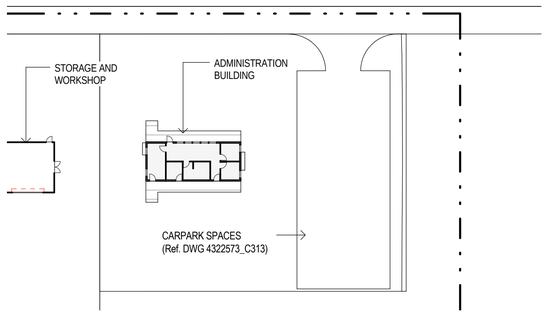
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1**
WATER TREATMENT STORAGE

Original Size **A1**
Drawing No: 41-22399-A466
Rev: C

Plot Date: 24/05/2016 10:58:00 AM
Cad File No: C:\Users\vgoh\Documents\Revit Local Files\43-22399-HAC-WATER TREATMENT STORAGE_vgoh.rvt



2 ADMINISTRATION AND CARPARK
SCALE 1 : 500

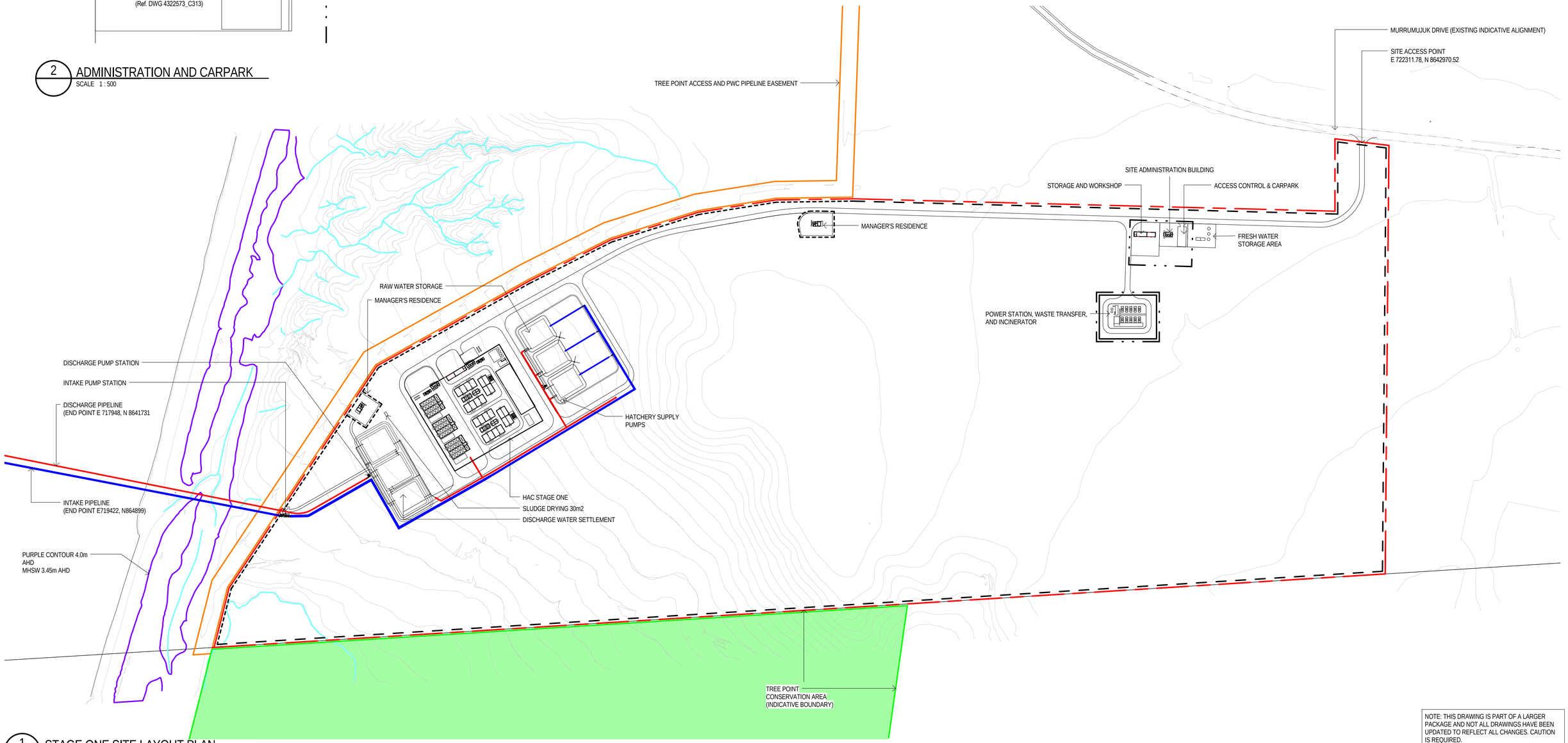
GENERAL LEGEND

- TREE POINT CONSERVATION AREA (INDICATIVE BOUNDARY)
- SITE BOUNDARY
- INTAKE PIPELINE
- DISCHARGE PIPELINE
- TREE POINT ACCESS AND PWC PIPELINE EASEMENT
- 4.0m AHD
- WATERCOURSE

FENCE TYPE LEGEND

- MOTION LIGHTING (SECURITY)
- SECURITY FENCING 2m WITH 3no. ROWS BARBED WIRE AT TOP
- RURAL FENCE - STANDARD CATTLE FENCE
- RURAL FENCE - DOG FENCE

NOTE: GATE LOCATIONS TO BE DETERMINED



1 STAGE ONE SITE LAYOUT PLAN
SCALE 1 : 3500

NOTE: THIS DRAWING IS PART OF A LARGER PACKAGE AND NOT ALL DRAWINGS HAVE BEEN UPDATED TO REFLECT ALL CHANGES. CAUTION IS REQUIRED.

FOR APPROVAL

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	25.09.17

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Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
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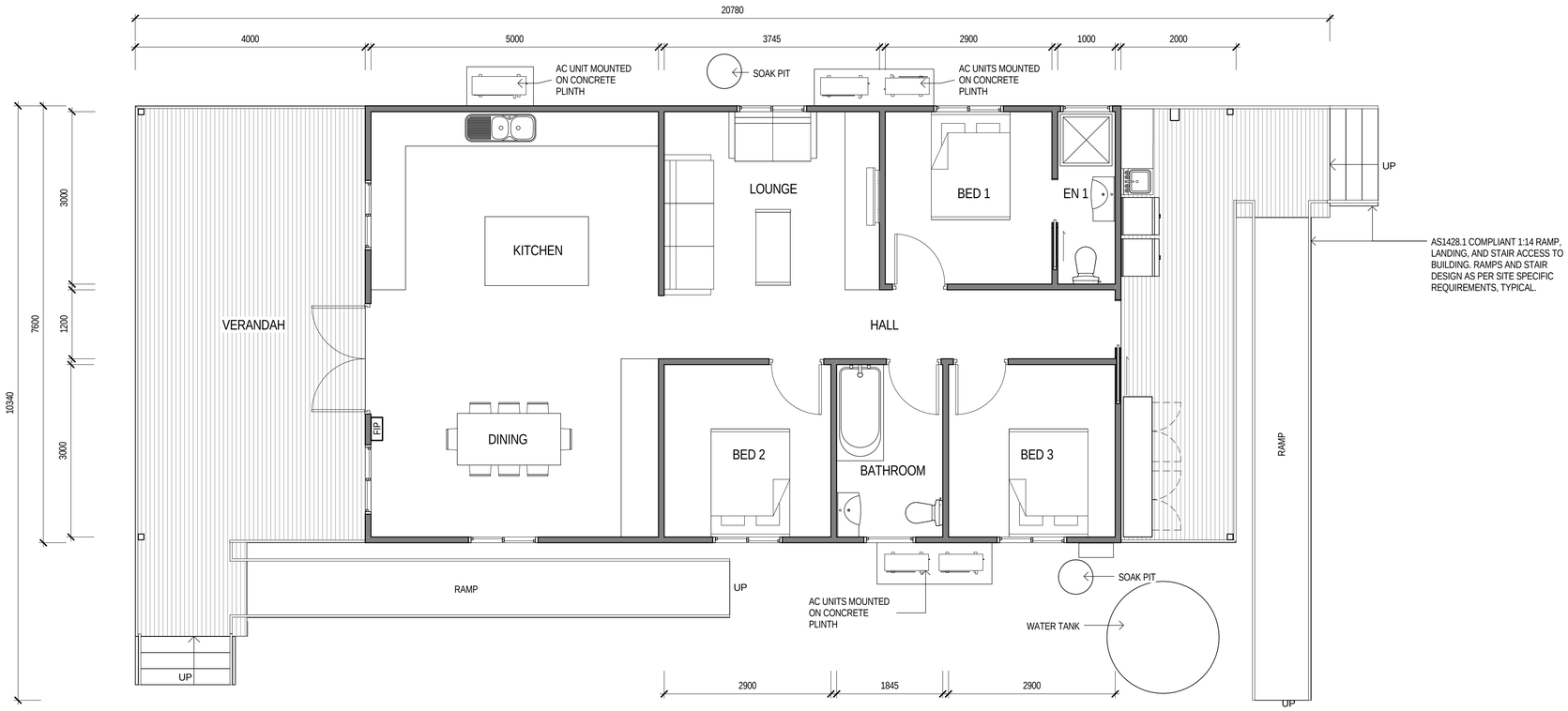
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT HATCHERY STAGE 1**

Original Size **A1**
Drawing No: **43-22573-A303**
Rev: **A**

Plot Date: 5/10/2017 2:57:52 PM
Cad File No: C:\Users\lbremer\Documents\Revit Local Files\43-22573-GUNN POINT SITE - HAC_lfrench.rvt



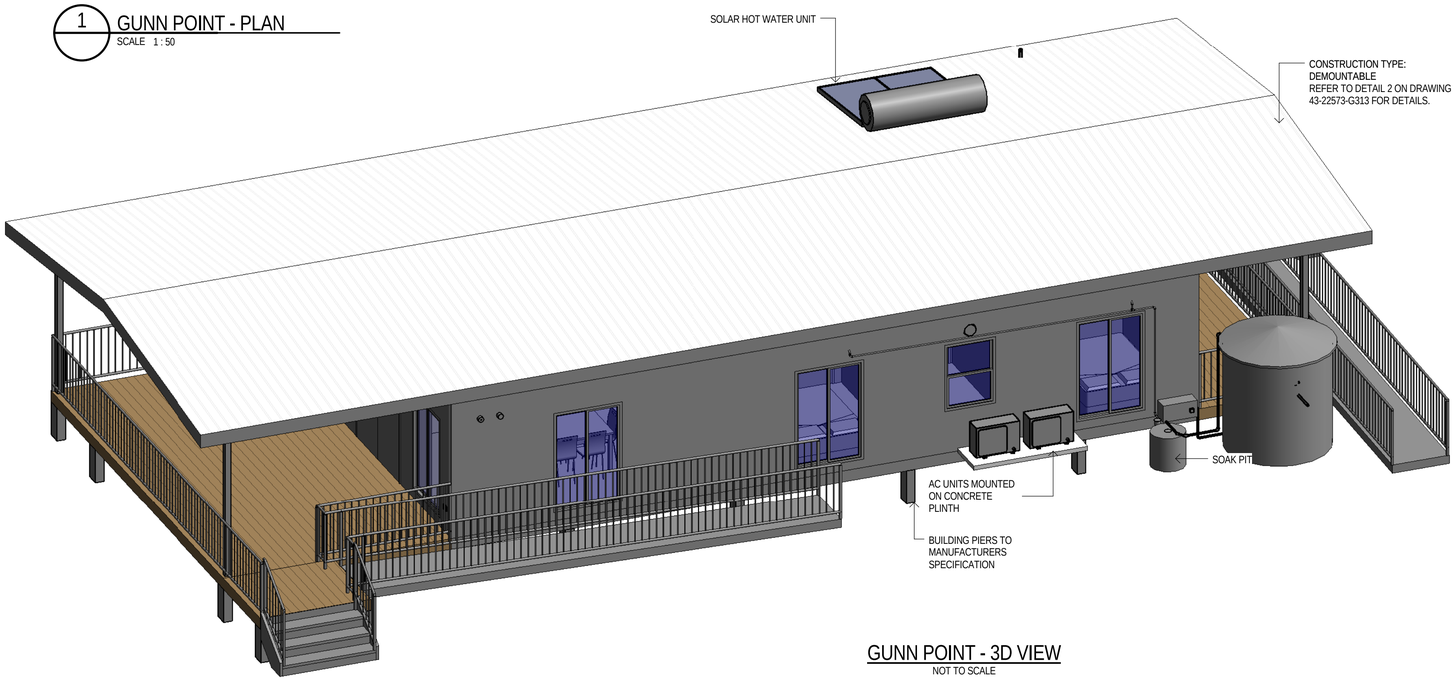
1 GUNN POINT - PLAN
SCALE 1 : 50

ROOM SCHEDULE	
Name	Area
BATHROOM	5.54 m²
BED 1	8.70 m²
BED 2	8.70 m²
BED 3	8.70 m²
DINING	18.50 m²
EN 1	3.00 m²
HALL	9.71 m²
KITCHEN	18.50 m²
LOUNGE	11.42 m²
VERANDAH	30.35 m²

GROSS FLOOR AREA	215m²

NOTE: LAYOUT DESIGN AND SIZE BASED ON COMMERCIALLY AVAILABLE DEMOUNTABLE 'DONGA' CONSTRUCTION

NOTES:
1. FOR HYDRAULIC LAYOUT, REFER TO DRAWING NO. 43-22573-H327.
2. FOR ELECTRICAL LAYOUT, REFER TO DRAWING NO. 43-22573-E317.
3.FOR MECHANICAL LAYOUT, REFER TO DRAWING NO. 43-22573-M302.



GUNN POINT - 3D VIEW
NOT TO SCALE

NOTE: THIS DRAWING IS PART OF A LARGER PACKAGE AND NOT ALL DRAWINGS HAVE BEEN UPDATED TO REFLECT ALL CHANGES. CAUTION IS REQUIRED.

GHD BASIS OF DESIGN - 29.02.16

GUNN POINT - MANAGER'S RESIDENCE

FOR APPROVAL

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 500 1000 1500 2000 2500 mm
SCALE 1:50 AT ORIGINAL SIZE

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Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 50
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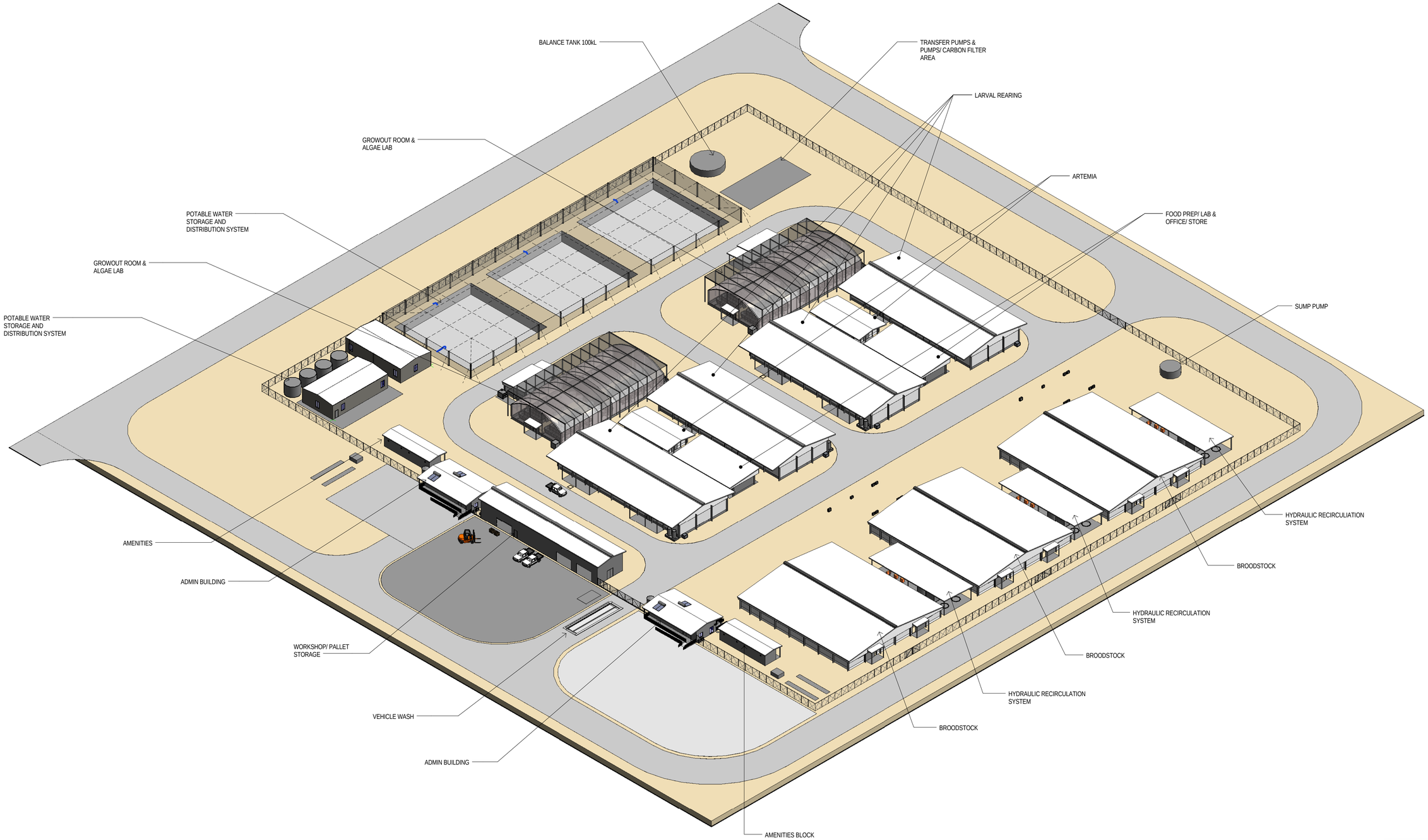
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT MANAGER'S RESIDENCE**

Original Size **A1**
Drawing No: 43-22573-A306
Rev: A

Plot Date: 20/09/2017 4:13:50 PM
Cad File No: C:\Users\vgoh\Documents\Revit Local Files\43-22573-MANAGER'S RESIDENCE_vgoh.rvt



HATCHERY STAGE 1 - SITE OVERVIEW

NOT TO SCALE

GHD BASIS OF DESIGN - 29.02.16

NOTE: REFER PROJECT 43-22399 FOR BASIS OF DESIGN

STAGE 1 DEVELOPMENT ONLY	
COMMENTS	AREA
TOTAL SITE AREA	29040 m²

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
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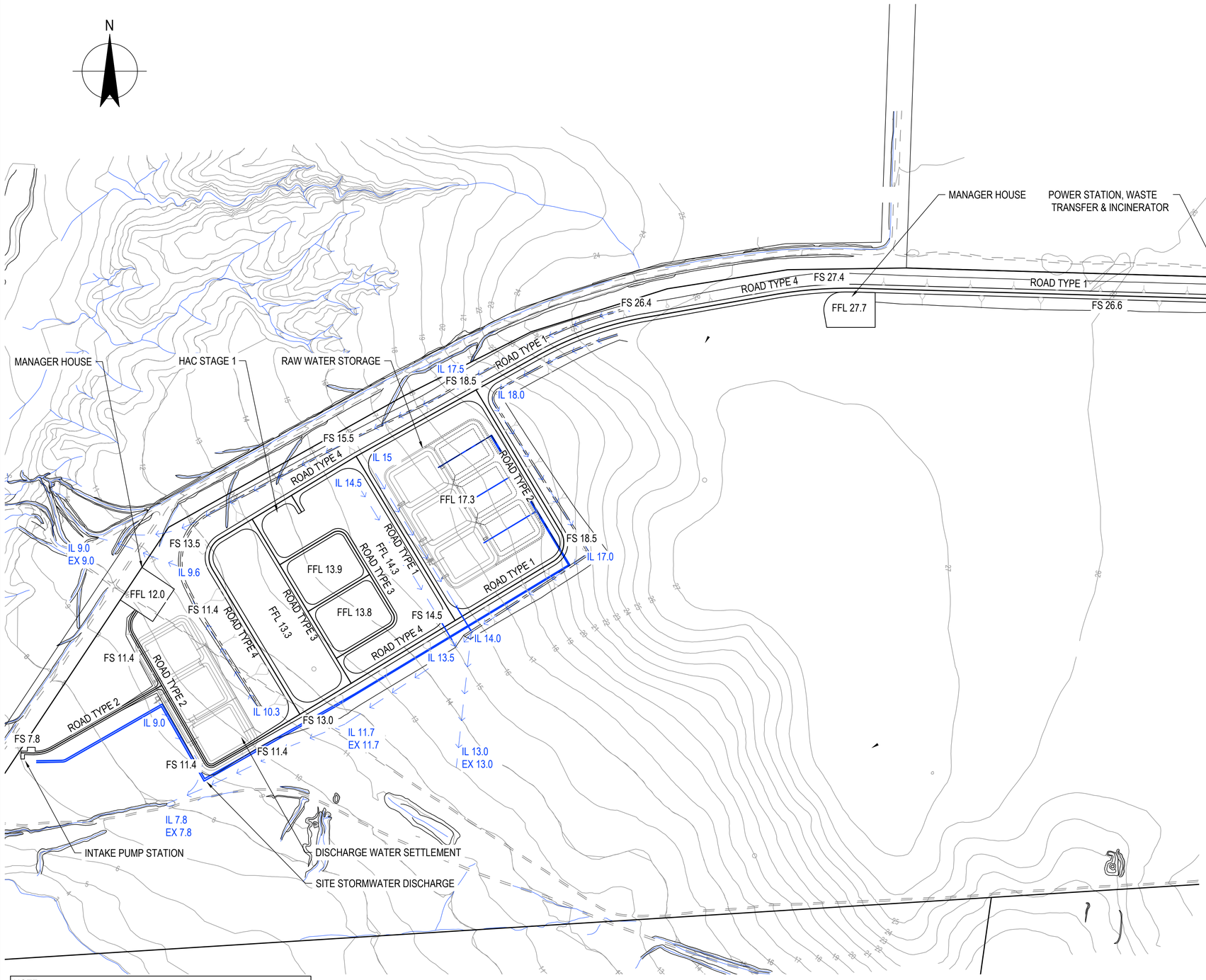
Drafting Check	J.NOYNAY*	Design Check	A.BRETT*
Approved (Project Director)	R.KOENIG*		
Date			
Scale	As Indicated	This Drawing must not be used for Construction unless signed as Approved	

Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC STAGE 1 SITE OVERVIEW**

Original Size **A1** **Drawing No: 43-22573-A402** **Rev: A**

Plot Date: 6/10/2017 11:05:16 AM Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-HAC_jasanjuan.rvt



NOTES

1. REFER TO DRAWINGS 43-22573-C311 AND 43-22573-C312 FOR TYPICAL CROSS SECTION DETAILS.

STAGE 1 EARTHWORKS VOLUMES

CUT = 84,000 m³

FILL = 70,000 m³

BALANCE = 14,000 m³ (EXCESS CUT OVER FILL)

NOTE: VOLUMES ARE BASED ON LIDAR WITH ACCURACY +- 20% AND ASSUMING EXCAVATION IS POSSIBLE AND ALL MATERIAL IS SUITABLE

LEGEND

	CENTRE LINE
	EDGE OF SHOULDER
21	EXISTING CONTOURS
	OFFLET DRAINS
	CROSS DRAINAGE
	FORMALISED DRAINAGE
	DRAINAGE CULVERT
IL 0.0	INVERT LEVEL OF TABLEDRAIN OR BOTTOM OF BATTER.
FS 0.0	ROAD LEVEL
FFL 0.0	FINISHED FLOOR LEVEL
EX 0.0	EXISTING SURFACE LEVEL

NOTE:

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HATCHERY - SITE ROAD LAYOUT

SCALE 1:5000

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR REVIEW	BC	DE	RK	28.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

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SCALE 1:2500 AT ORIGINAL SIZE

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Designer B.CAMERER
Drafting Check
Design Check
Approved (Project Director)
Date
Scale 1:2500
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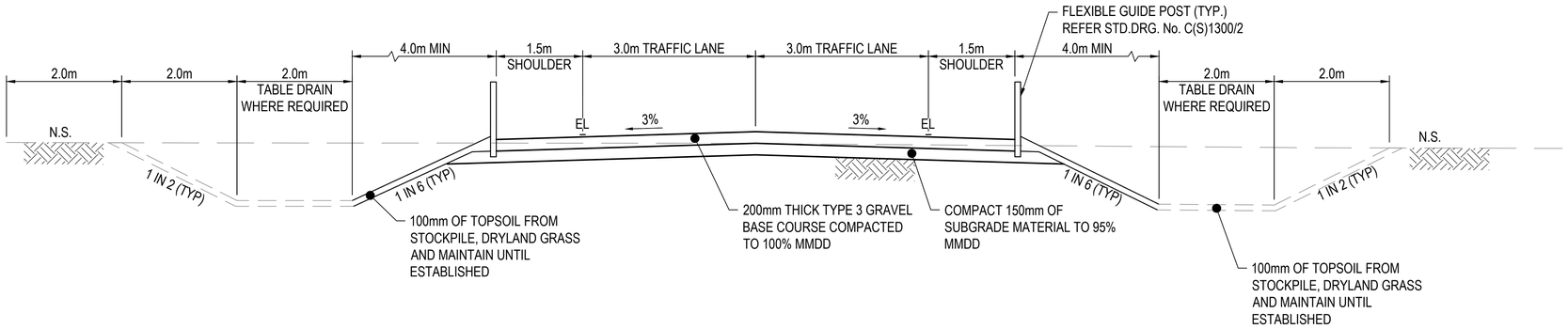
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC - STAGE 1**
SITE ROAD LAYOUT PLAN

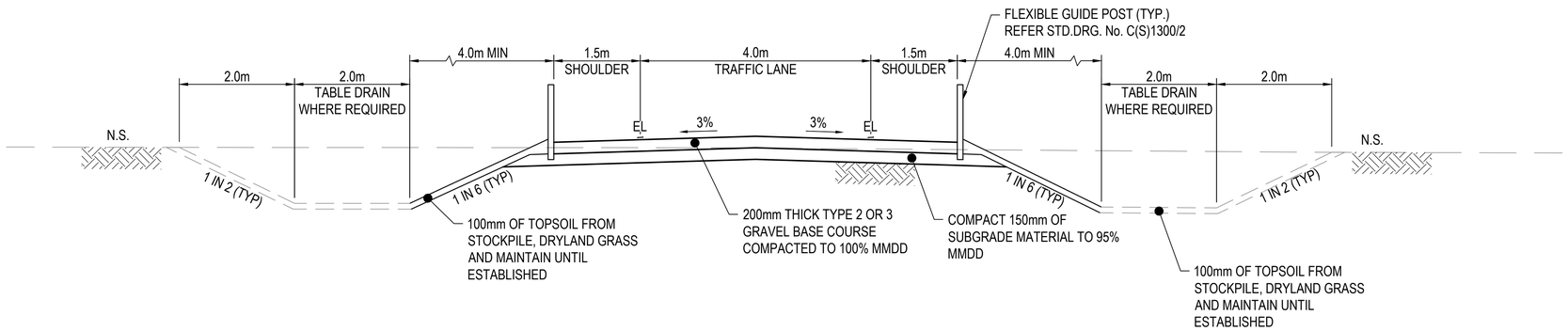
Original Size **A1** Drawing No: **43-22573-C302** Rev: **A**

Plot Date: 28 September 2017 - 11:15 AM Plotted by: Bart Camerer Cad File No: G:\43\22573\CADD\Drawings\43-22573-C302.dwg



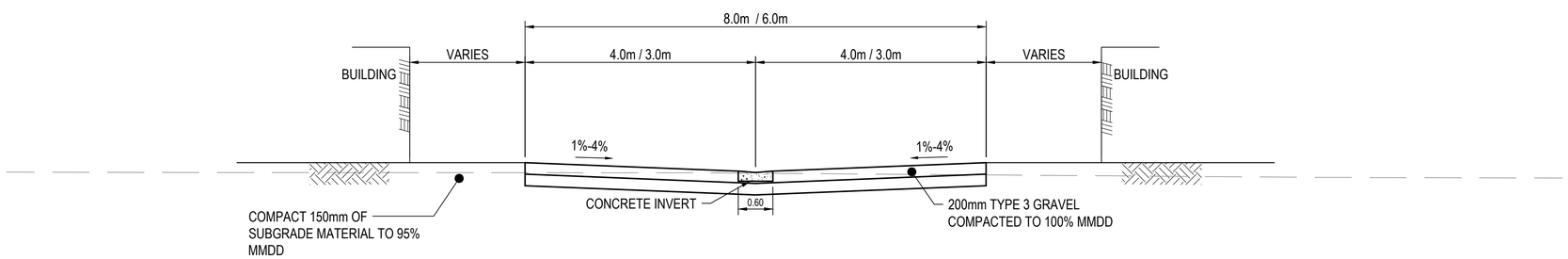
TYPICAL CROSS SECTION - SITE ACCESS ROAD (TYPE 1)

SCALE 1:50



TYPICAL CROSS SECTION - SINGLE ACCESS ROAD (TYPE 2)

SCALE 1:50



TYPICAL CROSS SECTION - CONCRETE INVERT ACCESS ROAD (TYPE 3)

SCALE 1:50

NOTE:

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No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	BC	DE	RK	26.09.17

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0 0.5 1.0 1.5 2.0 2.5m

SCALE 1:50 AT ORIGINAL SIZE

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Drafting Check | Design Check
Approved (Project Director)
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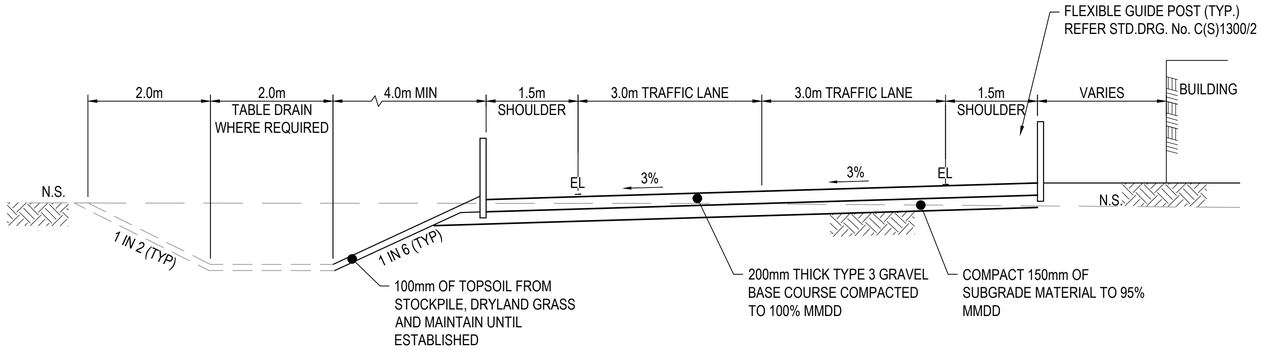
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
TYPICAL CROSS SECTIONS SHEET 1 OF 2

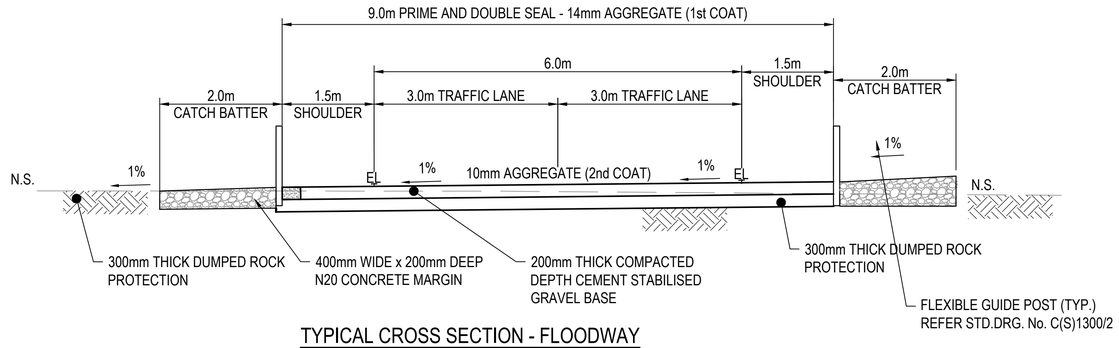
Original Size **A1** **Drawing No: 43-22573-C311** **Rev: A**

Plot Date: 26 September 2017 - 3:17 PM Plotted by: Bart Camerer Cad File No: G:\43\22573\CADD\Drawings\43-22573-C311.dwg



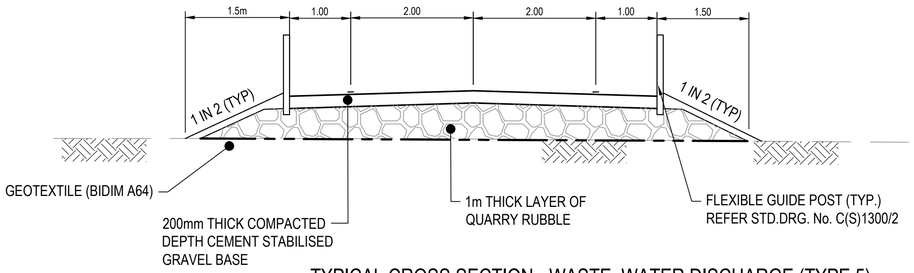
TYPICAL CROSS SECTION - SITE ACCESS ROAD (TYPE 4)

SCALE 1:50



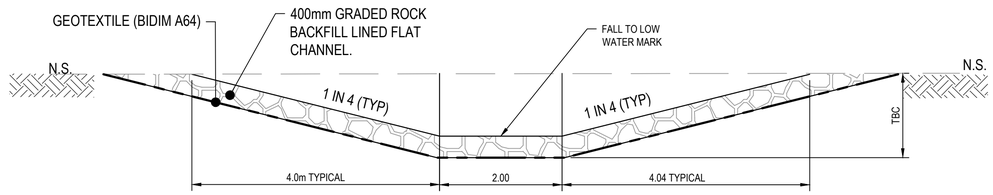
TYPICAL CROSS SECTION - FLOODWAY

SCALE 1:50



TYPICAL CROSS SECTION - WASTE WATER DISCHARGE (TYPE 5)

SCALE 1:50



TYPICAL CROSS SECTION - WASTE WATER DISCHARGE (TYPE 6)

SCALE 1:50

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A	ISSUED FOR CLIENT APPROVAL	BC	DE	RK	26.09.17

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0 0.5 1.0 1.5 2.0 2.5m

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Date
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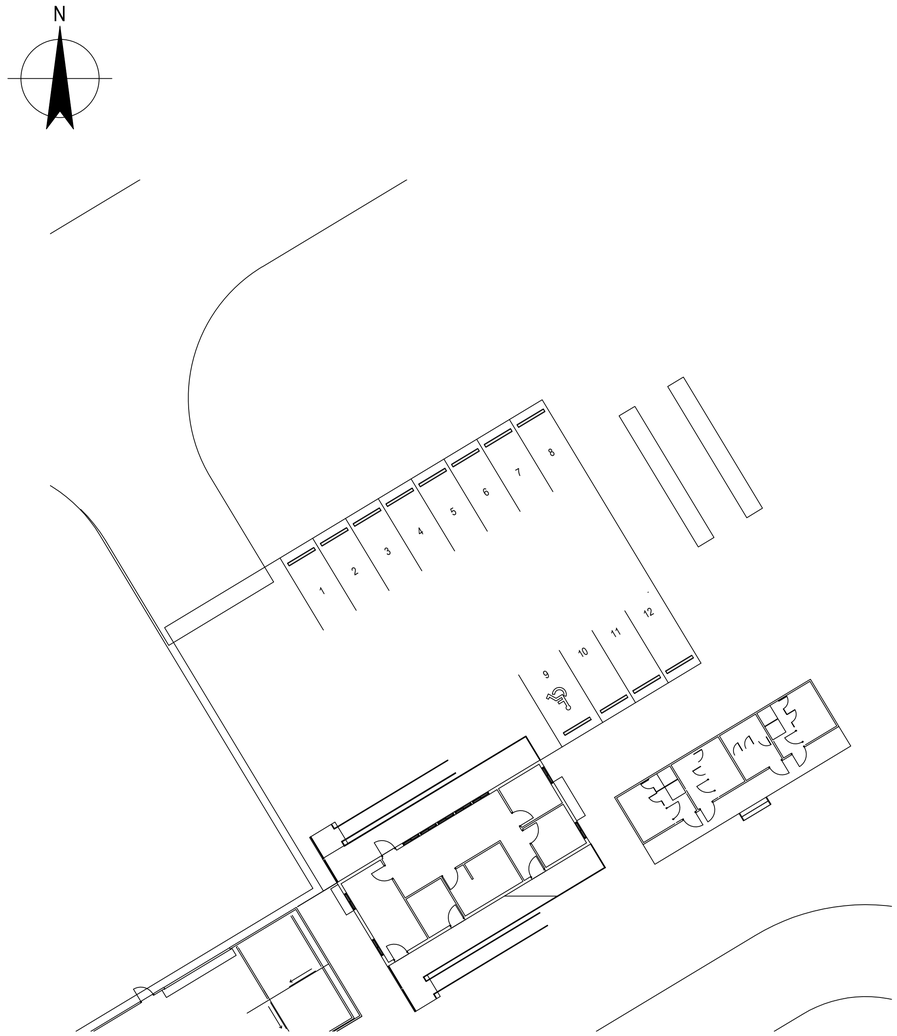
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
TYPICAL CROSS SECTIONS SHEET 2 OF 2

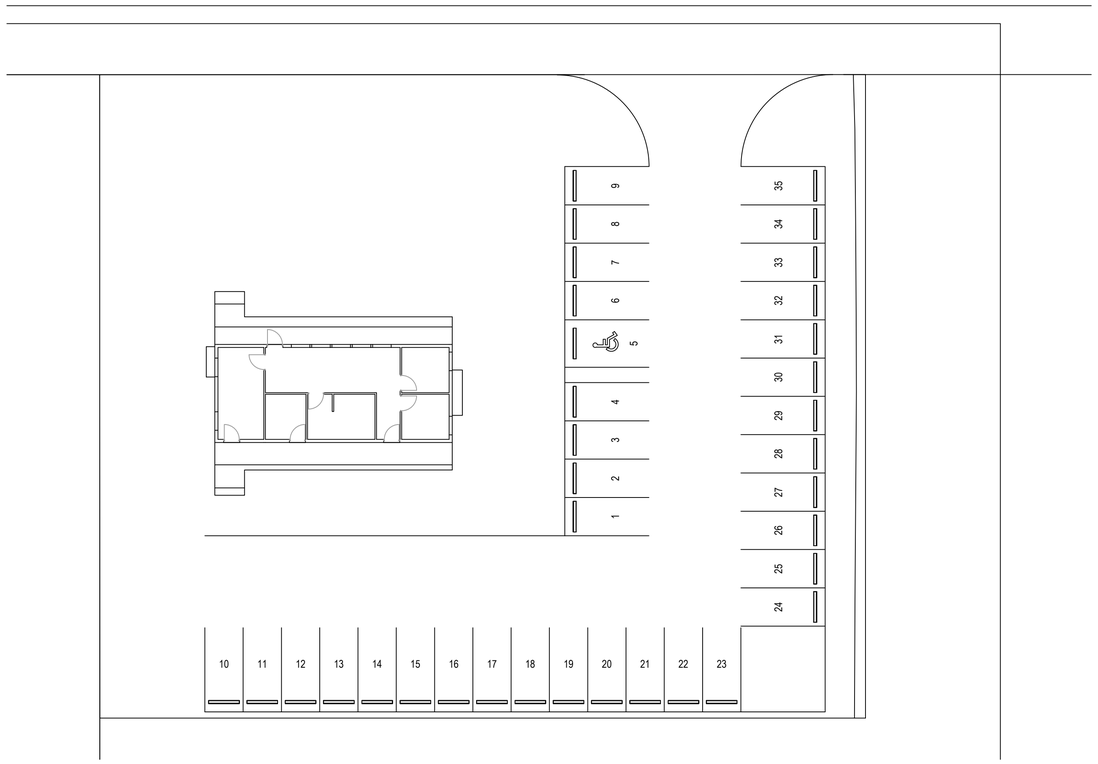
Original Size **A1** Drawing No: **43-22573-C312** Rev: **A**

Plot Date: 26 September 2017 - 3:23 PM Plotted by: Bart Camerer Cad File No: G:\43\22573\CADD\Drawings\43-22573-C312.dwg



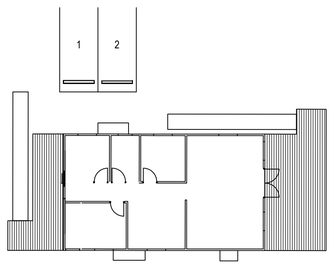
HAC MODULE PARKING LAYOUT

SCALE 1:200



MAIN ADMINISTRATION BUILDING
PARKING LAYOUT

SCALE 1:200



MANAGER'S RESIDENCE
PARKING LAYOUT

SCALE 1:200

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No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR REVIEW	JAS	DE	RK	18.10.17

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0 2000 4000 6000 8000 10000mm

SCALE 1:200 AT ORIGINAL SIZE

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Approved (Project Director)
Date
Scale 1:200
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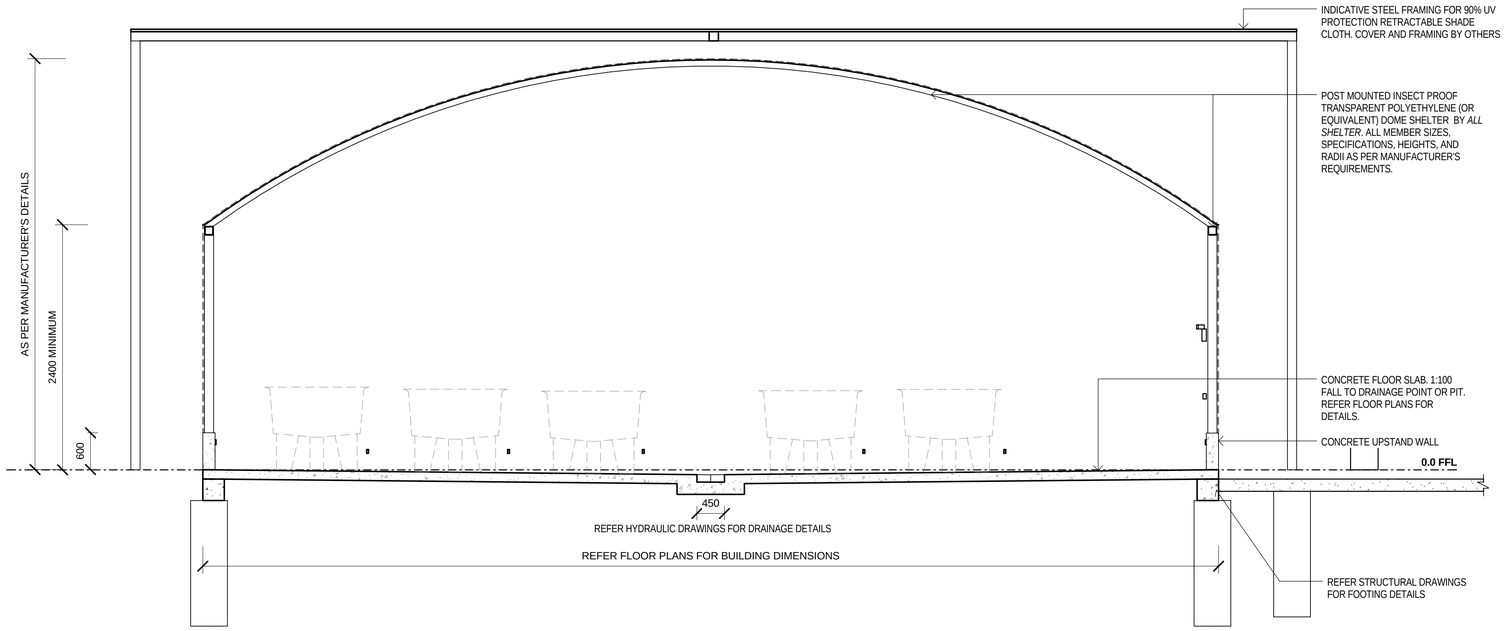
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **HAC - STAGE 1**
PARKING LAYOUT DETAILS

Original Size **A1** Drawing No: **43-22573-C313** Rev: **A**

Plot Date: 18 October 2017 - 1:56 PM Plotted by: Jovel San Juan Cad File No: G:\43\22573\CADD\Drawings\43-22573-C313.dwg



1 MEMBRANE

SCALE 1 : 50

CONSTRUCTION TYPE APPLIES TO:
ALGAE GROWOUT BUILDINGS

NOTES:
1. ALL PROPRIETRY STRUCTURES TO BE DESIGNED & CERTIFIED BY MANUFACTURER. DESIGN WINDLOADS IN ACCORDANCE WITH AS/NZ 1170.2.

STAGE 1 DEVELOPMENT ONLY
STAGE 1 OF 4

GHD BASIS OF DESIGN - 29.02.16

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0 500 1000 1500 2000 2500 mm
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Designer S.OLANDRIA
Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 50
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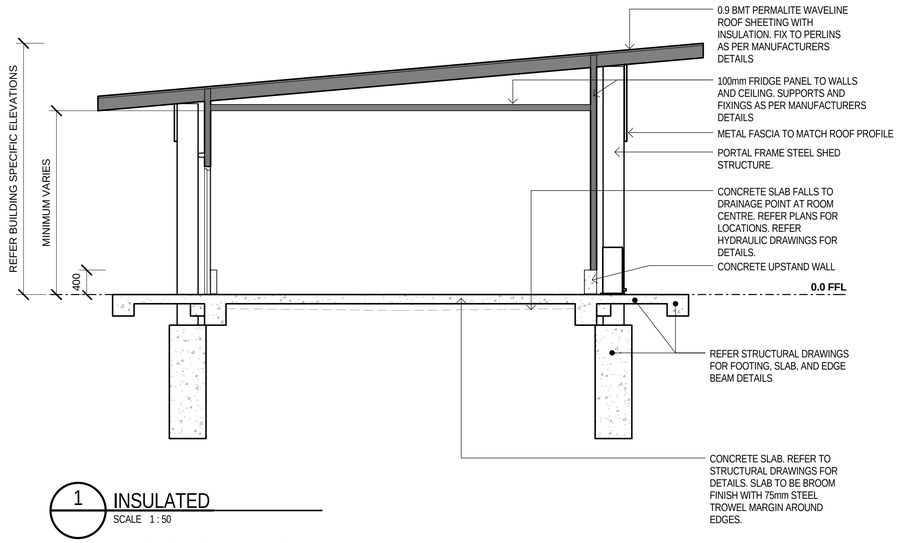
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
TYPICAL CONSTRUCTION DETAILS SHEET 1 OF 2

Original Size **A1** **Drawing No: 43-22573-G312** **Rev: A**

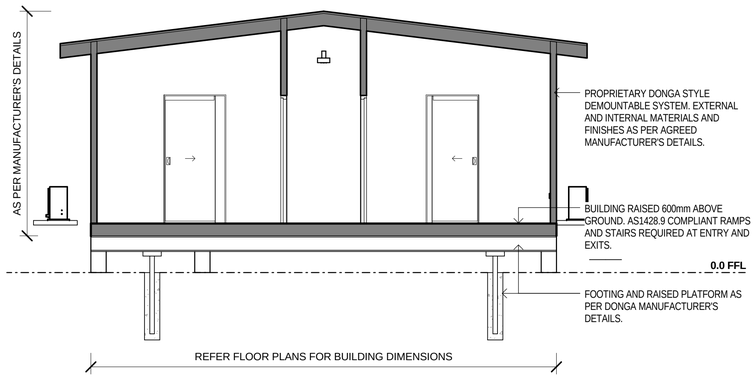
Plot Date: 3/10/2017 4:47:38 PM
Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-TYPICAL CONSTRUCTION DETAILS_jasanjuan.rvt



1 INSULATED

SCALE 1 : 50

CONSTRUCTION TYPE APPLIES TO:
ALGAE LAB BUILDINGS
LARVAL REARING BUILDINGS
ARTEMIA BUILDINGS
FOOD PREPARATION AND LAB BUILDINGS
BROODSTOCK BUILDINGS



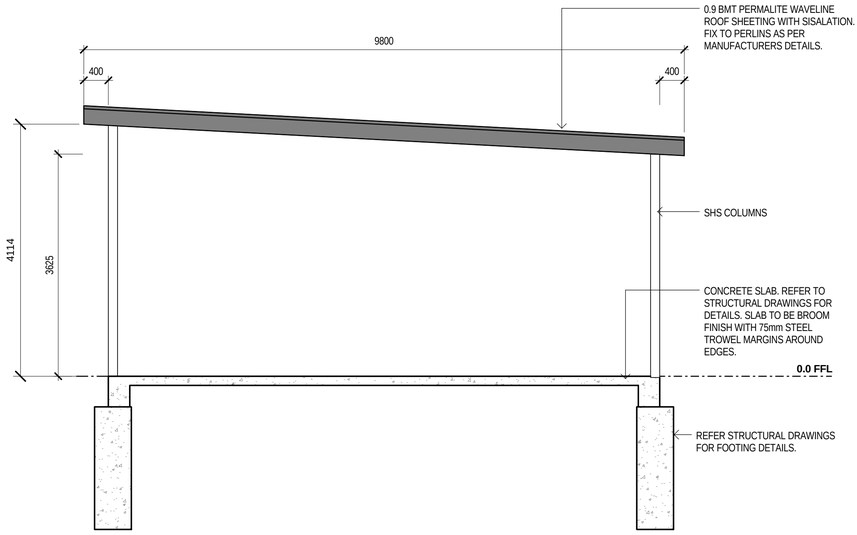
2 DEMOUNTABLE (DONGA)

SCALE 1 : 50

CONSTRUCTION TYPE APPLIES TO:
ADMINISTRATION BUILDINGS
8 BED DORMITORY ACCOMMODATION
MANAGER'S RESIDENCE
AMENITY BLOCKS

NOTE:
DEMOUNTABLE BUILDING DESIGNS BASED ON COMMERCIALLY AVAILABLE SIZES.

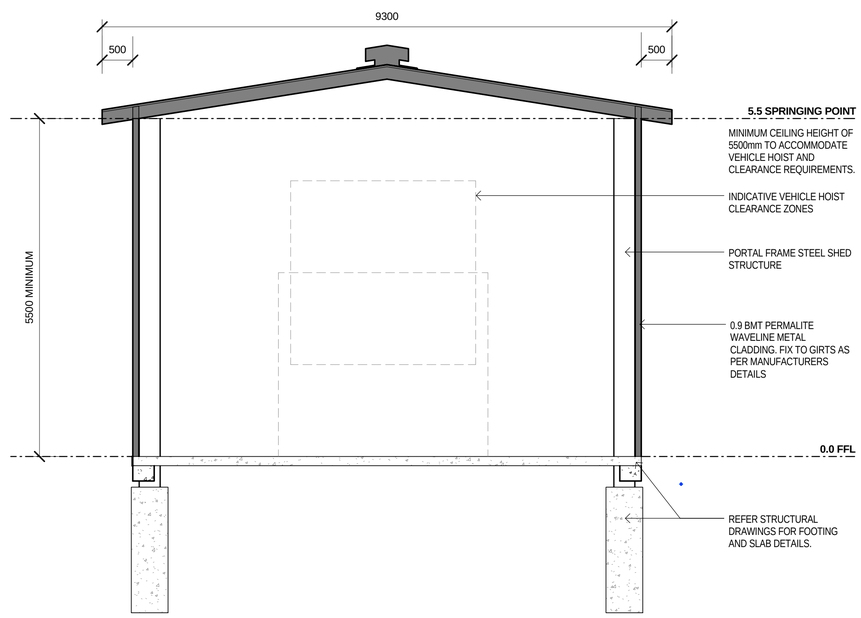
NOTES:
1. ALL PROPRIETRY STRUCTURES TO BE DESIGNED & CERTIFIED BY MANUFACTURER. DESIGN WINDLOADS IN ACCORDANCE WITH AS/NZ 1170.2.



3 PAVILION CONSTRUCTION

SCALE 1 : 50

CONSTRUCTION TYPE APPLIES TO:
HYDRAULIC SERVICES PAVILIONS RELATED TO BROODSTOCK BUILDINGS.



4 SHED

SCALE 1 : 50

CONSTRUCTION TYPE APPLIES TO:
WORKSHOP AND PALLET STORAGE BUILDINGS

NOTE: THIS DRAWING IS PART OF A LARGER PACKAGE AND NOT ALL DRAWINGS HAVE BEEN UPDATED TO REFLECT ALL CHANGES. CAUTION IS REQUIRED.

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No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	25.09.17

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0 500 1000 1500 2000 2500 mm
SCALE 1:50 AT ORIGINAL SIZE

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Designer S.OLANDRIA
Drafting Check J.NOYNAY*
Design Check A.BRETT*
Approved (Project Director) R.KOENIG*
Date
Scale 1 : 50
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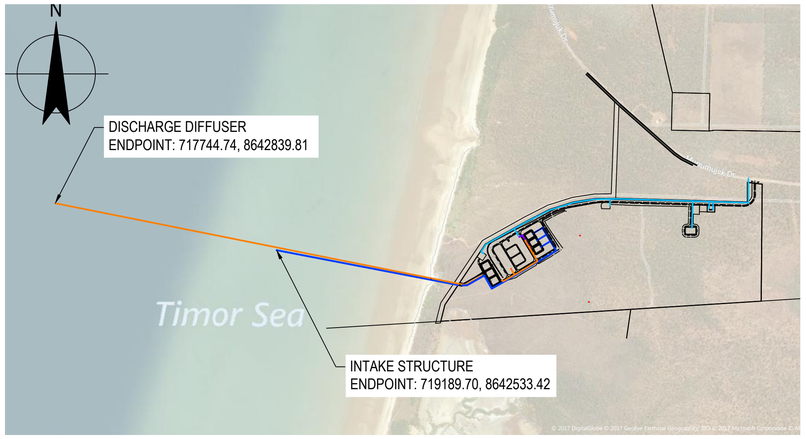
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
TYPICAL CONSTRUCTION DETAILS SHEET 2 OF 2

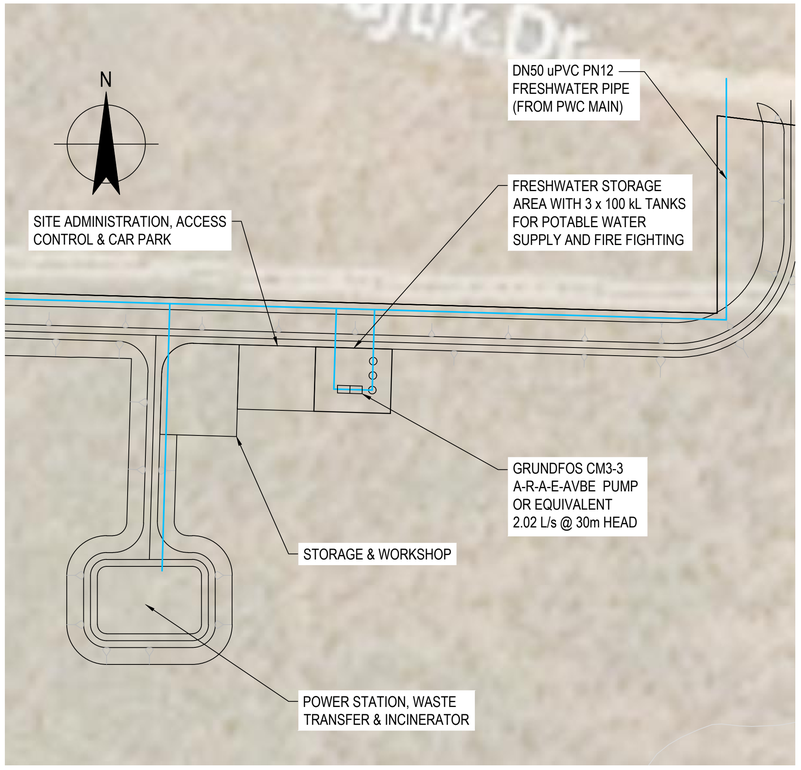
Original Size **A1**
Drawing No: 43-22573-G313
Rev: A

Plot Date: 3/10/2017 4:47:46 PM
Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-TYPICAL CONSTRUCTION DETAILS_jasanjuan.rvt



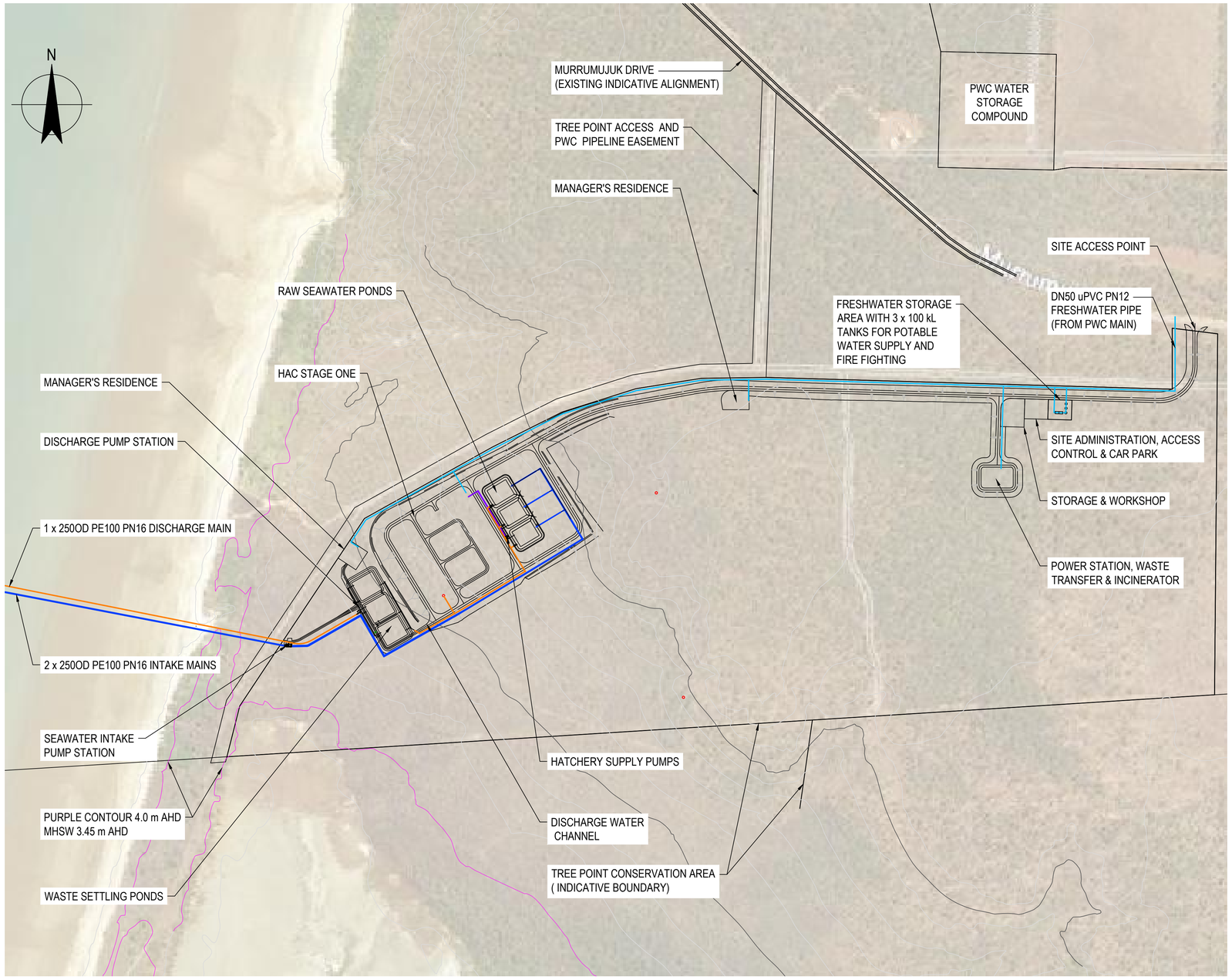
KEY PLAN

SCALE 1:20000



SITE ADMINISTRATION PLAN

SCALE 1:2000



STAGE 1 SITE PIPING PLAN

SCALE 1:5000

LEGEND:

- SEAWATER INTAKE PIPE
- RAW WATER PIPE
- FRESH WATER PIPE
- WASTE DISCHARGE PIPE

NOTE:

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PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	JN	DE	RK	05.10.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 200 400 600 800 1000m — SCALE 1:20,000 AT ORIGINAL SIZE

0 50 100 150 200 250m — SCALE 1:5000 AT ORIGINAL SIZE

0 20 40 60 80 100m — SCALE 1:2000 AT ORIGINAL SIZE

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Drawn J.NOYNAY | Designer L.MONTEITH
Drafting Check | Design Check
Approved (Project Director)
Date
Scale AS SHOWN
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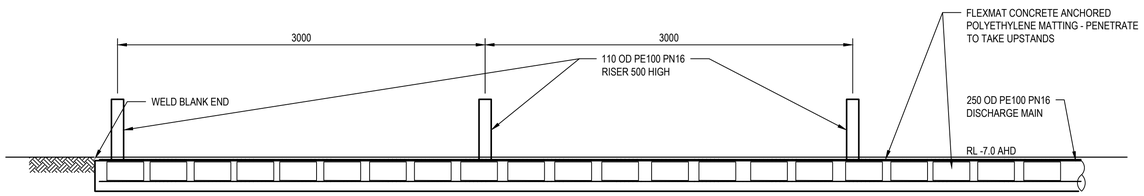
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM**
Title **GUNN POINT STAGE 1 SITE PIPING PLAN**

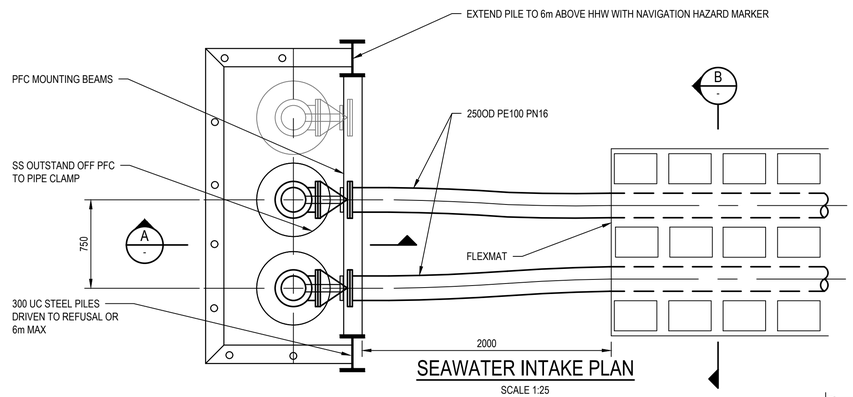
Original Size **A1** Drawing No: **43-22573-H301** Rev: **A**

Plot Date: 5 October 2017 - 4:52 PM Plotted by: Jon Noynay Cad File No: C:\Users\jnoynay\Desktop\Seafarms Drawings\43-22573-H301.dwg



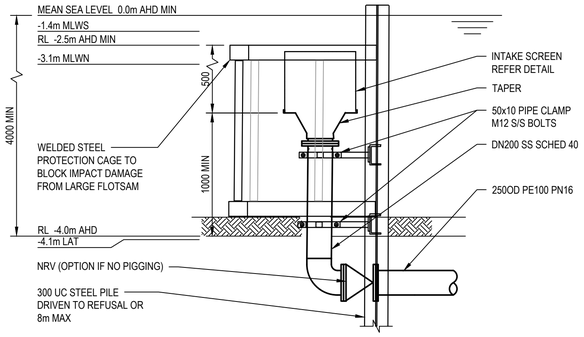
DISCHARGE DIFFUSER DETAIL

SCALE 1:25



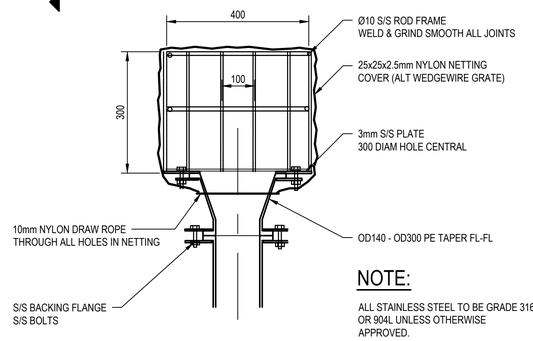
SEAWATER INTAKE PLAN

SCALE 1:25



A - SECTION

SCALE 1 : 25

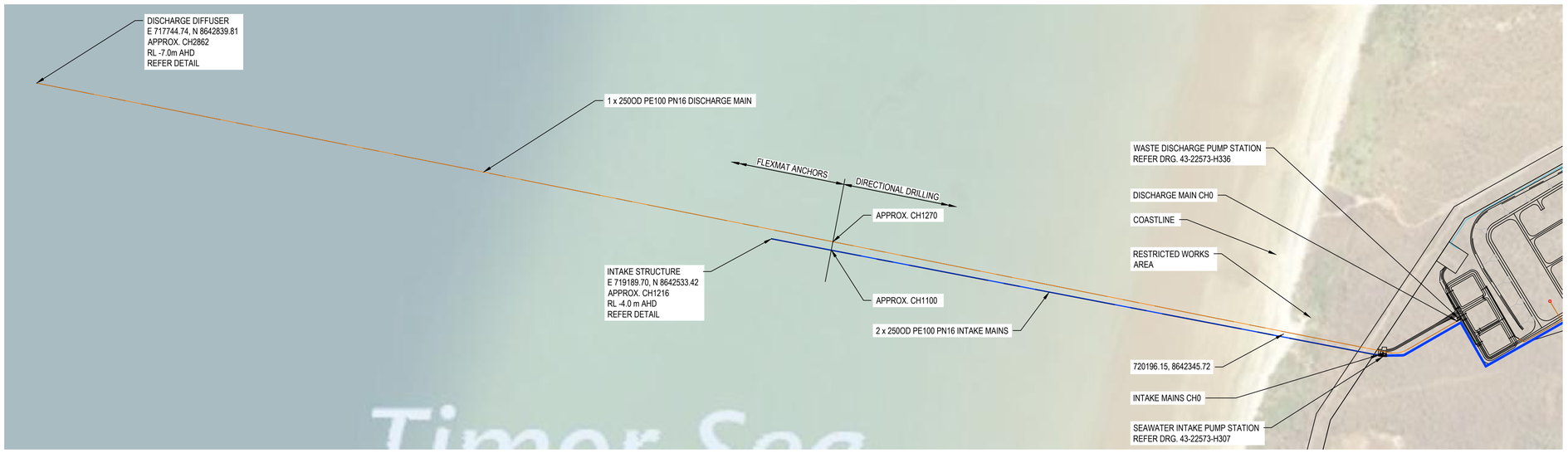


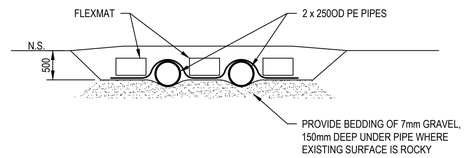
NOTE:

ALL STAINLESS STEEL TO BE GRADE 316L OR 904L UNLESS OTHERWISE APPROVED.

INTAKE SCREEN DETAILS

SCALE 1:25





TYPICAL FLEXMAT ANCHOR DETAILS

B - SECTION

SCALE 1 : 25

NOTES:

1. PRELIMINARY DESIGN BASED ON LEVEL INFORMATION SUPPLIED BY PSD, FOR DETAILED DESIGN A BATHYMETRY SURVEY SHOULD BE UNDERTAKEN.
2. NO GEOTECHNICAL INFORMATION ON THE ALIGNMENT WAS AVAILABLE AND ASSUMES SANDY CONDITIONS.
3. DETAILED BATHYMETRY AND GEOTECHNICAL INFORMATION MAY LEAD TO THE ALIGNMENT CHANGING DURING DETAIL DESIGN.

THIS DRAWING HAS BEEN REVISED TO REFLECT CHANGES DIRECTED BY SEA DRAGON PTY LTD ON SEPTEMBER 2016. THE MAIN CHANGE RELATES TO A REDUCTION IN SEAWATER DEMAND FROM THE INITIAL 100% FEASIBILITY DESIGN. AS DIRECTED BY SEA DRAGON PTY LTD NOT ALL THE DRAWINGS IN THE INITIAL 100% FEASIBILITY DESIGN WHICH HAVE BEEN IMPACTED BY THESE CHANGES HAVE BEEN REVISED. CARE SHOULD BE TAKEN WHEN USING DRAWINGS WITH THIS NOTE IN CONJUNCTION WITH THE WHOLE SET.

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	RSL	DE	RK	25.09.17

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0 250 500 750 1000 1250mm
SCALE 1:25 AT ORIGINAL SIZE

0 50 100 150 200 250m
SCALE 1:5000 AT ORIGINAL SIZE

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Drafting Check | Design Check
Approved (Project Director)
Date
Scale AS SHOWN
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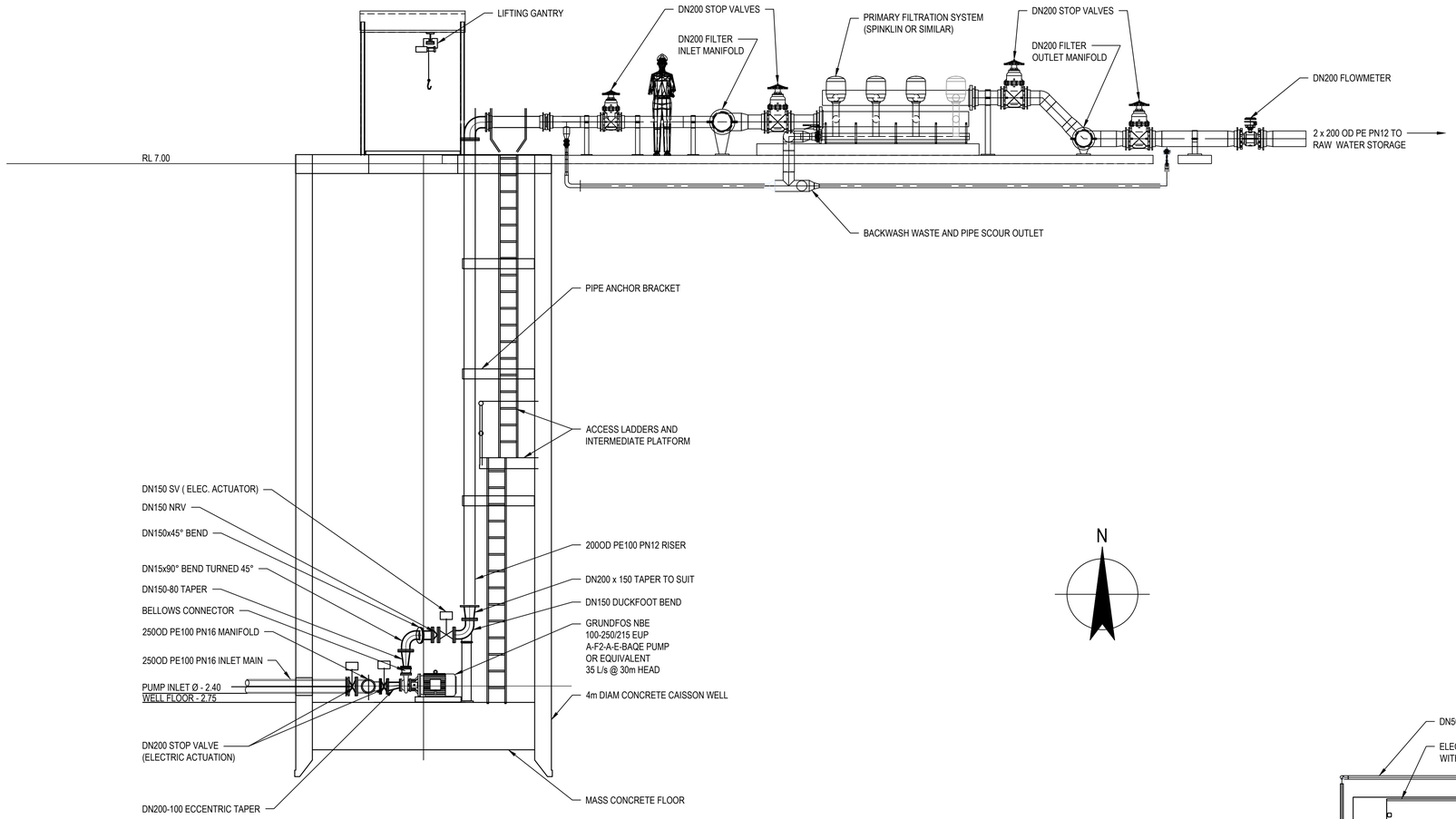
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
SEAWATER INTAKE PIPE PLAN & DETAILS

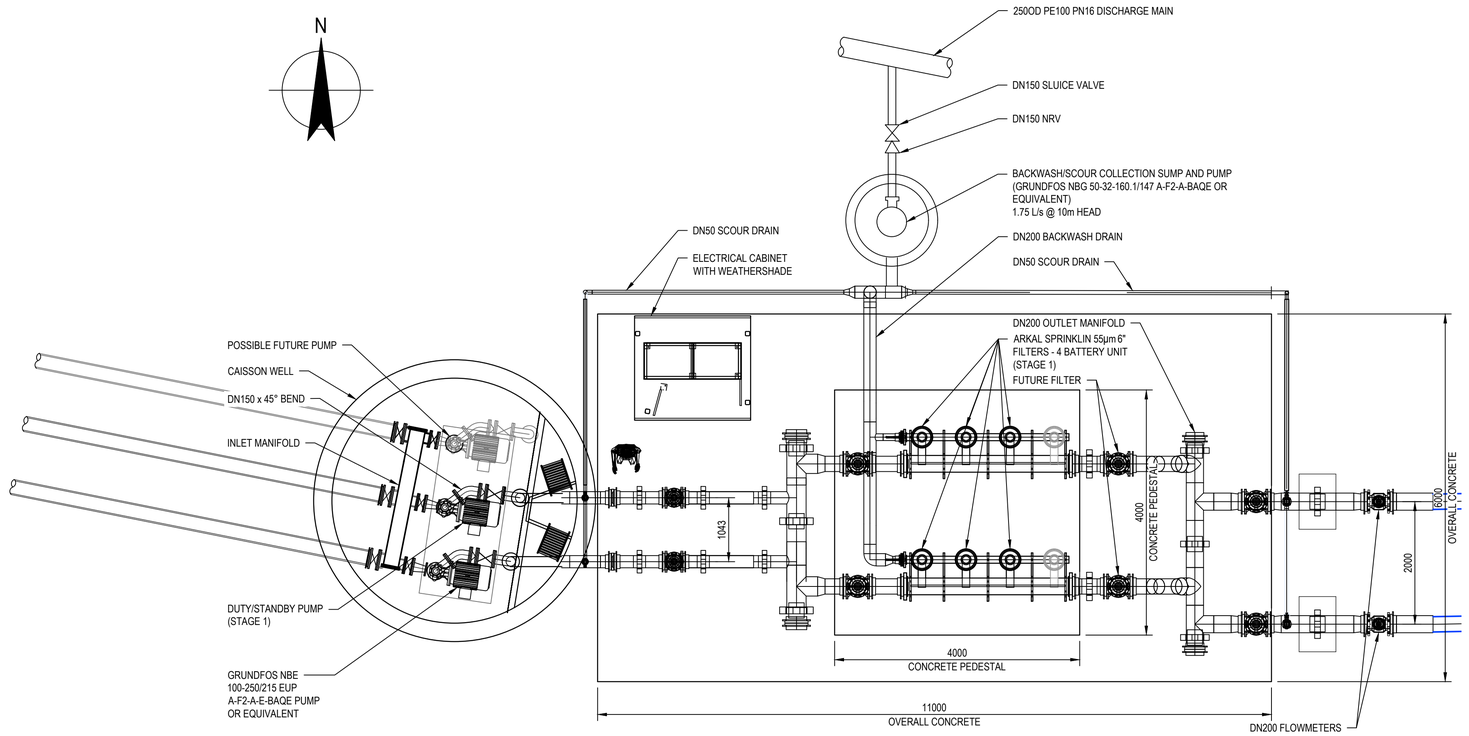
Original Size **A1** Drawing No: **43-22573-H306** Rev: **A**

Plot Date: 28 September 2017 - 11:59 AM Plotted by: Jon Noynay Cad File No: G:\43\22573\CADD\Drawings\43-22573-H306.dwg



SEAWATER INTAKE PUMP STATION SECTION

SCALE 1:50



SEAWATER INTAKE PUMP STATION PLAN

SCALE 1:50

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No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	JN	DE	RK	25.09.17

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0 500 1000 1500 2000 2500mm
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Drafting Check | Design Check
Approved (Project Director)
Date
Scale 1 : 50
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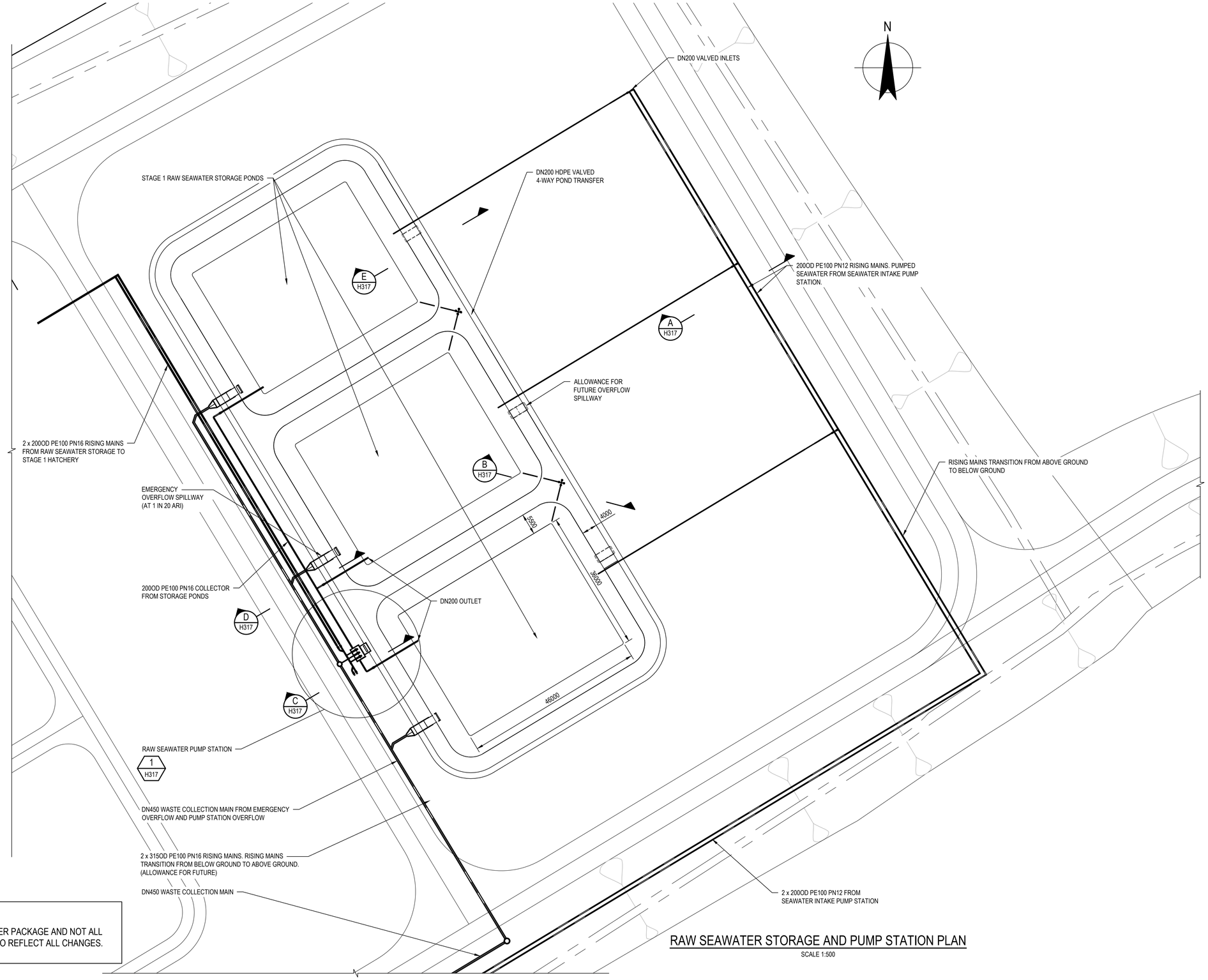
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT SEAWATER INTAKE PUMPS & FILTER LAYOUT**

Original Size **A1** Drawing No: **43-22573-H307** Rev: **A**

Plot Date: 27 September 2017 - 5:13 PM Plotted by: Jon Noynay Cad File No: G:\43\22573\CADD\Drawings\43-22573-H307.dwg



NOTE:

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RAW SEAWATER STORAGE AND PUMP STATION PLAN

SCALE 1:500

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR REVIEW	RSL	DE	RK	

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 5000 10000 15000 20000 25000mm

SCALE 1:500 AT ORIGINAL SIZE

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Drafting Check | Design Check
Approved (Project Director)
Date
Scale 1:500
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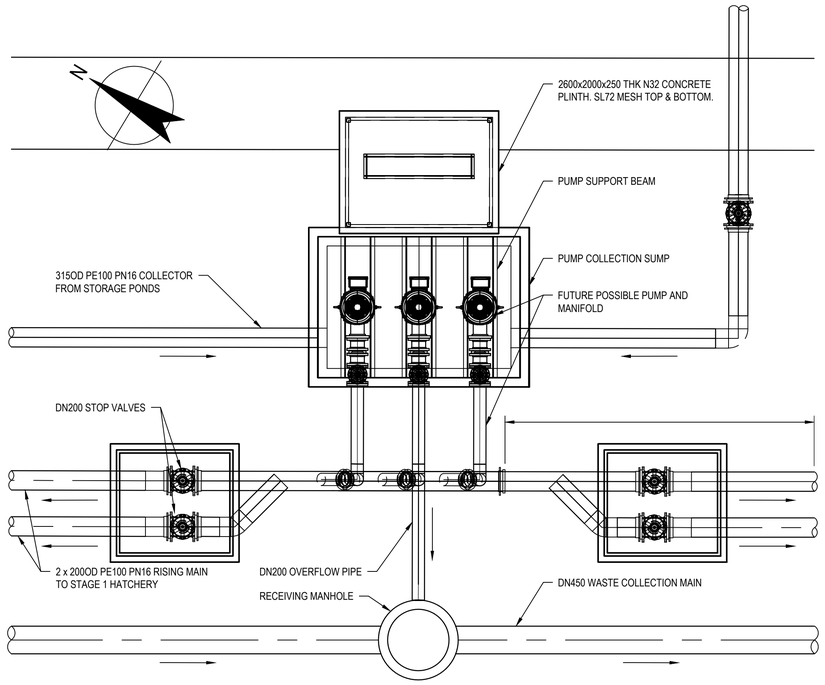
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
RAW SEAWATER STORAGE LAYOUT

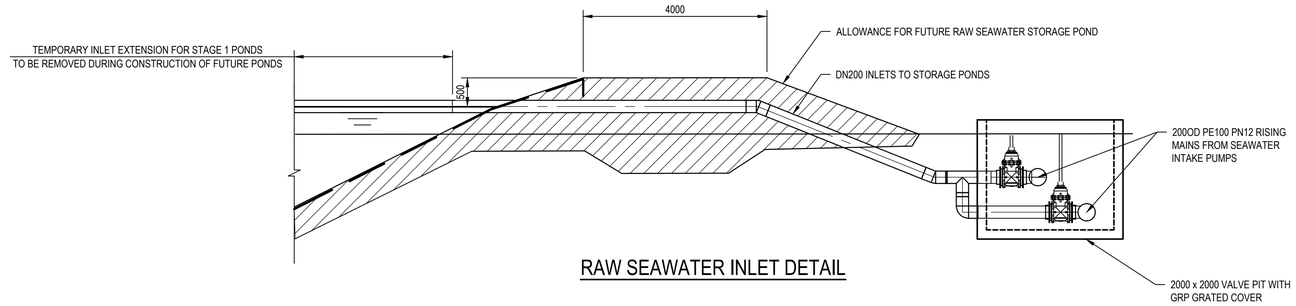
Original Size **A1** Drawing No: **43-22573-H316** Rev: **A**

Plot Date: 17 October 2017 - 4:46 PM Plotted by: Jovel San Juan Cad File No: G:\43\22573\CADD\Drawings\43-22573-H316.dwg



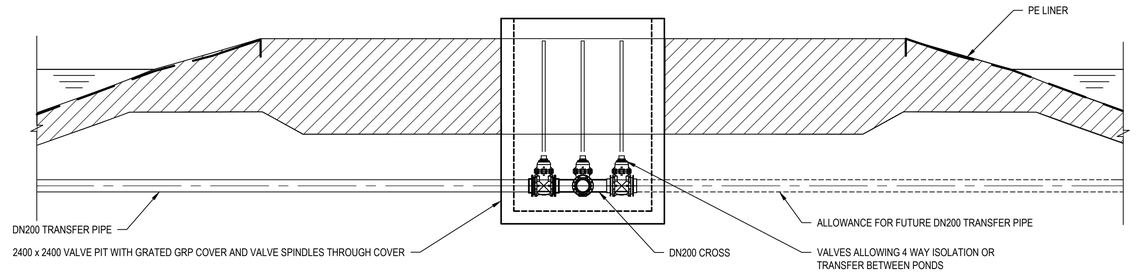
RAW SEAWATER SUPPLY PUMP LAYOUT

1 / H316 DETAIL
SCALE 1 : 50



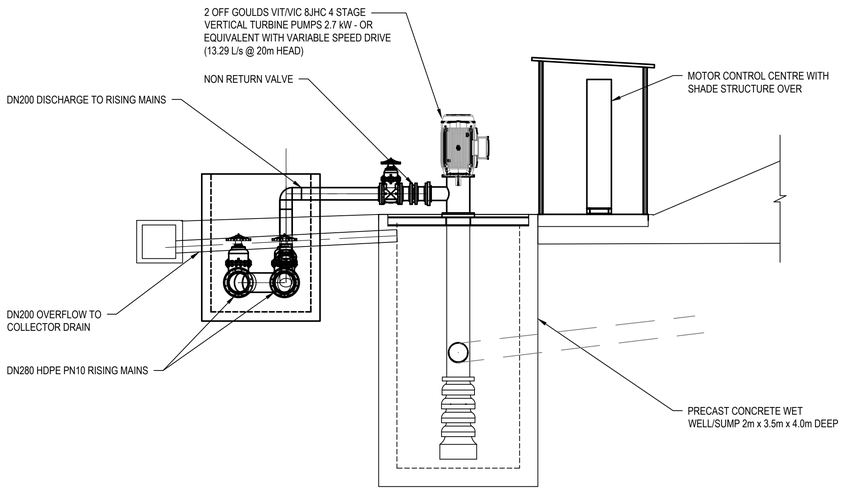
RAW SEAWATER INLET DETAIL

A / H316 SECTION
SCALE 1 : 50

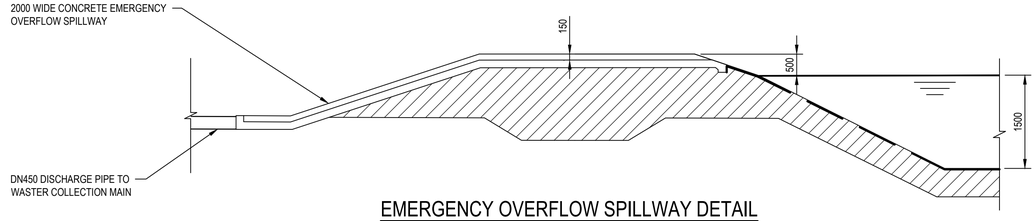


POND TRANSFER DETAIL

B / H316 SECTION
SCALE 1 : 50

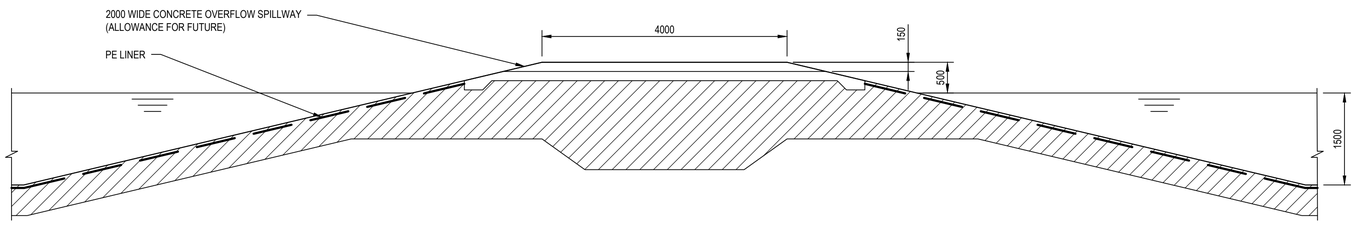


C / H316 SECTION
SCALE 1 : 50



EMERGENCY OVERFLOW SPILLWAY DETAIL

D / H316 SECTION
SCALE 1 : 50



ALLOWANCE FOR FUTURE OVERFLOW SPILLWAY DETAIL

E / H316 SECTION
SCALE 1 : 50

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No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	JN	DE	RK	25.09.17

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Drafting Check | Design Check
Approved (Project Director)
Date
Scale 1:50
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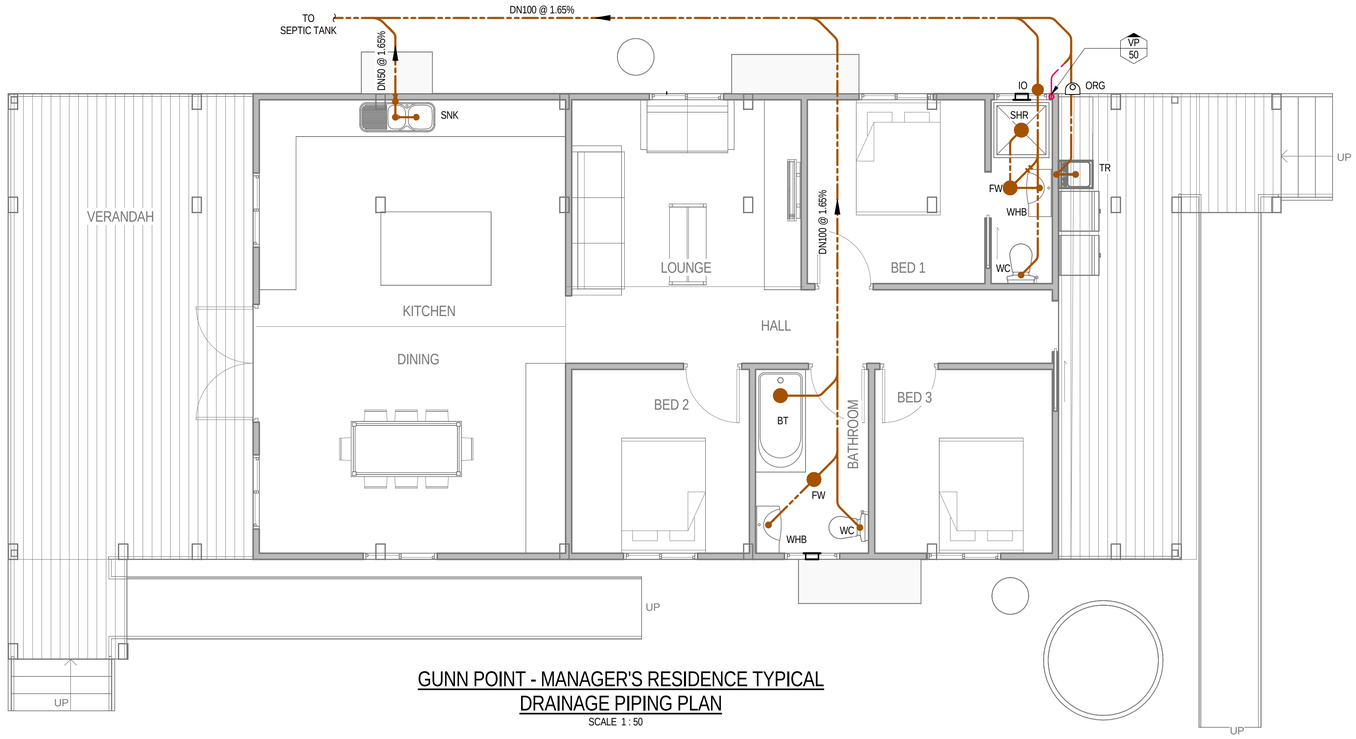
Client: PROJECT SEA DRAGON PTY LTD
Project: BREEDING PROGRAM FACILITIES
Title: GUNN POINT - RAW SEAWATER STORAGE PIPEWORK DETAILS

Original Size A1 | Drawing No: 43-22573-H317 | Rev: A

Plot Date: 27 September 2017 - 5:28 PM Plotted by: Jon Noynay Cad File No: G:\43\22573\CADD\Drawings\43-22573-H317.dwg

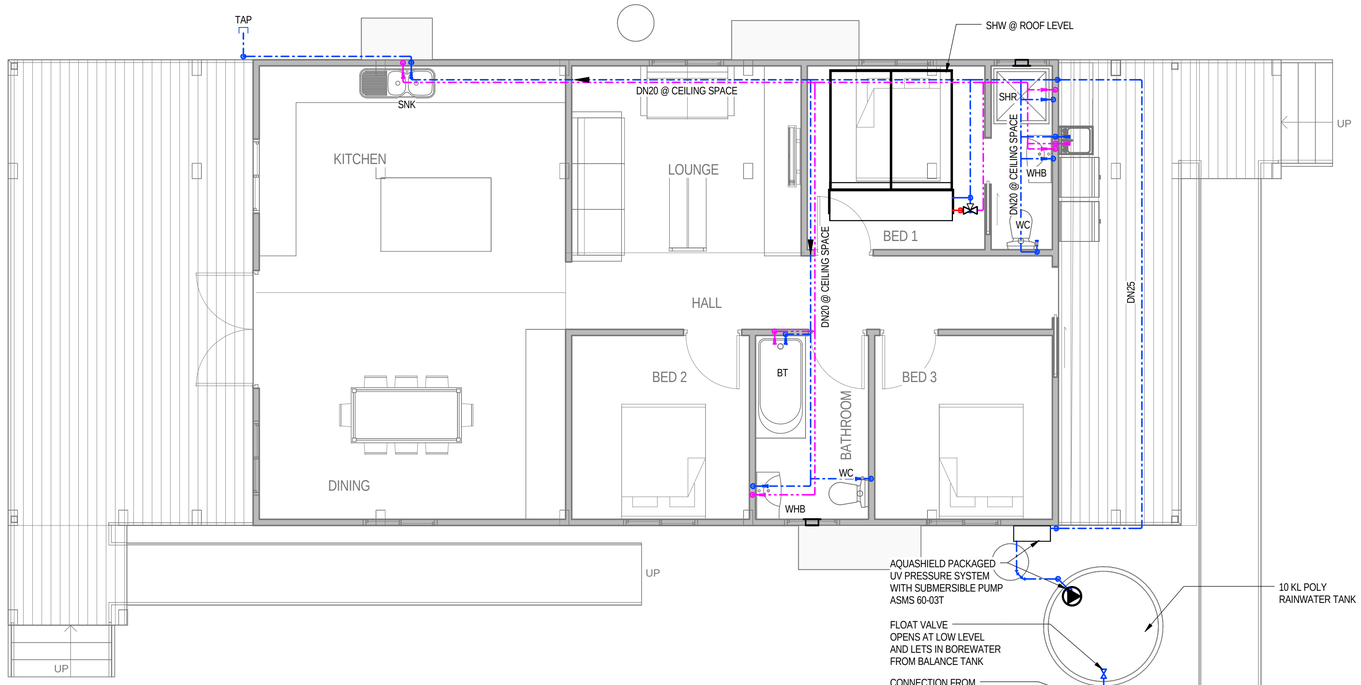


GUNN POINT - MANAGER'S RESIDENCE TYPICAL DRAINAGE PIPING PLAN

SCALE 1 : 50

LEGEND:

- SANITARY PIPE LINE
- VENT PIPE LINE
- COLD WATER PIPE LINE
- HOT WATER PIPE LINE
- TEMPERED WATER PIPE LINE
- ISOLATION VALVE
- TEMPERING VALVE



GUNN POINT - MANAGER'S RESIDENCE TYPICAL WATER PIPING PLAN

SCALE 1 : 50

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No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	SZ	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 500 1000 1500 2000 2500 mm
SCALE 1:50 AT ORIGINAL SIZE

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Designer O. BEEBE
Drafting Check
Design Check
Approved (Project Director)
Date
Scale 1 : 50

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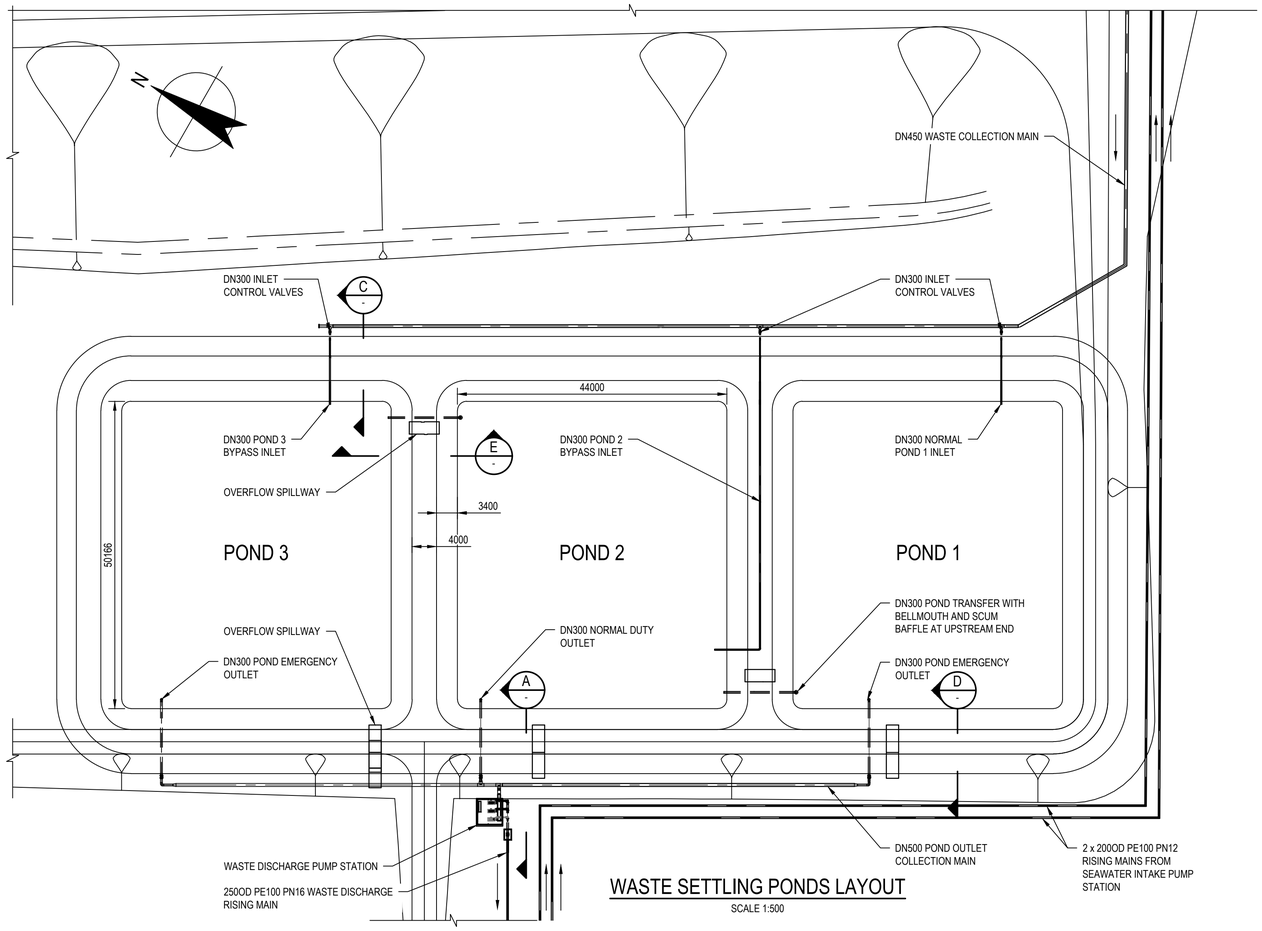
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT - PIPING PLAN**
MANAGER'S RESIDENCE - MODULE 1 OF 2

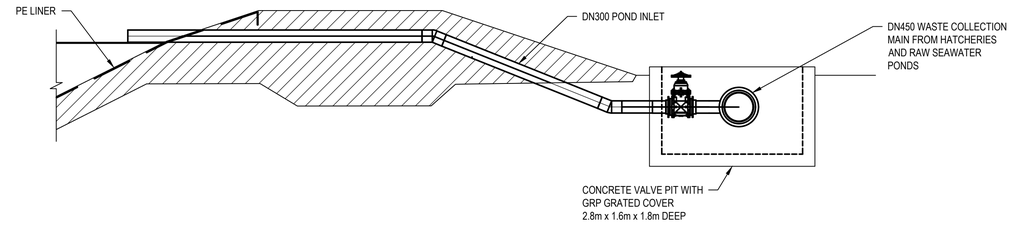
Original Size **A1**
Drawing No: 43-22573-H327
Rev: A

Plot Date: 27/09/2017 11:09:02 AM
Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-MANAGER'S RESIDENCE_jasanjuan.rvt



WASTE SETTLING PONDS LAYOUT

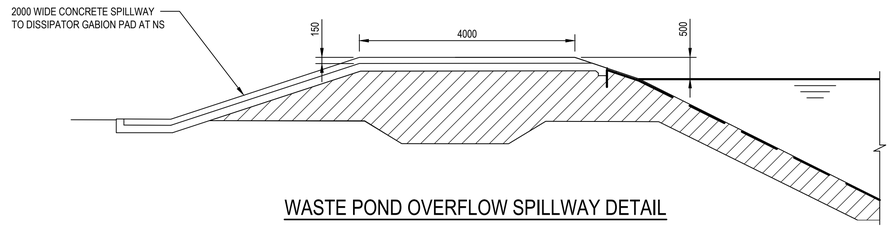
SCALE 1:500



WASTE POND INLET DETAIL

C / - SECTION

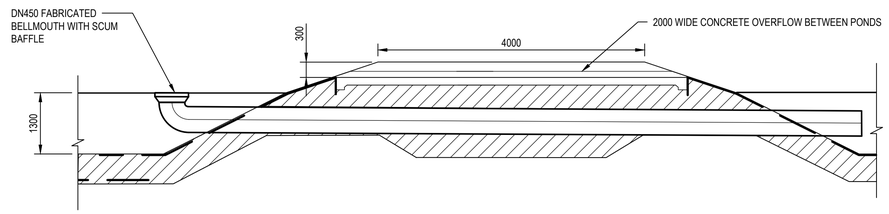
SCALE 1 : 50



WASTE POND OVERFLOW SPILLWAY DETAIL

D / - SECTION

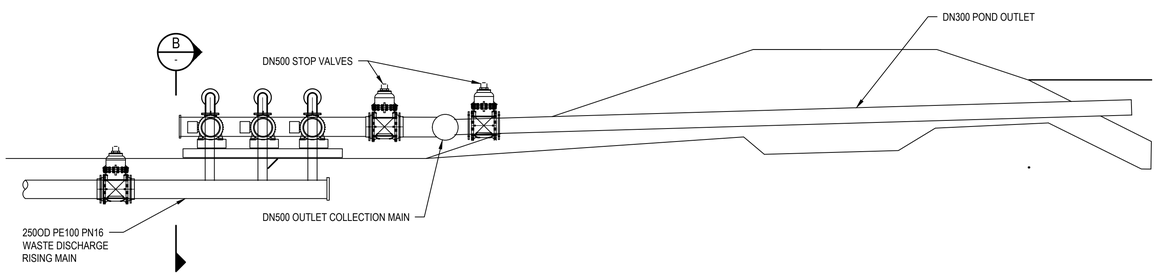
SCALE 1 : 50



WASTE POND TRANSFER DETAIL

E / - SECTION

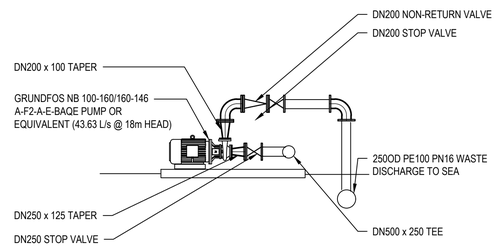
SCALE 1 : 50



WASTE POND OUTLET DETAIL

A / - SECTION

SCALE 1 : 50



WASTE DISCHARGE PUMP STATION

B / - SECTION

SCALE 1 : 50

NOTE:

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THIS DRAWING HAS BEEN REVISED TO REFLECT CHANGES DIRECTED BY SEA DRAGON PTY LTD ON SEPTEMBER 2016. THE MAIN CHANGE RELATES TO A REDUCTION IN SEAWATER DEMAND FROM THE INITIAL 100% FEASIBILITY DESIGN. AS DIRECTED BY SEA DRAGON PTY LTD NOT ALL THE DRAWINGS IN THE INITIAL 100% FEASIBILITY DESIGN WHICH HAVE BEEN IMPACTED BY THESE CHANGES HAVE BEEN REVISED. CARE SHOULD BE TAKEN WHEN USING DRAWINGS WITH THIS NOTE IN CONJUNCTION WITH THE WHOLE SET.

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	JN	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 5000 10000 15000 20000 25000mm
SCALE 1:500 AT ORIGINAL SIZE

0 500 1000 1500 2000 2500mm
SCALE 1:50 AT ORIGINAL SIZE

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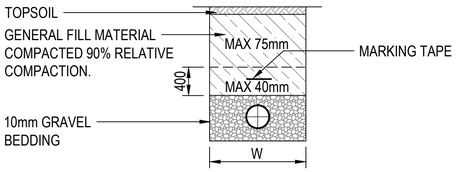
Drawn J. NOYNAY | Designer L. MONTEITH
Drafting Check | Design Check
Approved (Project Director)
Date
Scale AS SHOWN
This Drawing must not be used for Construction unless signed as Approved

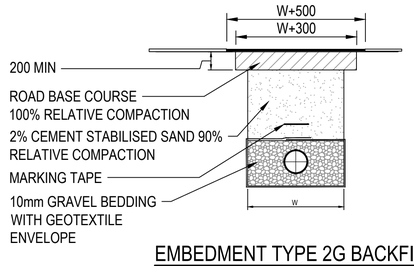
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT WASTE SETTLING POND LAYOUT**

Original Size **A1** Drawing No: **43-22573-H336** Rev: **A**

Plot Date: 3 October 2017 - 2:44 PM Plotted by: Jon Noynay Cad File No: G:\43\22573\CADD\Drawings\43-22573-H336.dwg

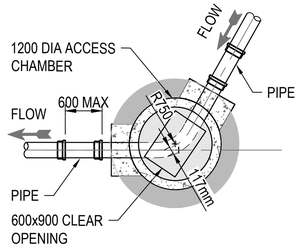


EMBEDMENT TYPE 2G BACKFILL
TYPE A UNDEVELOPED AREAS
NTS

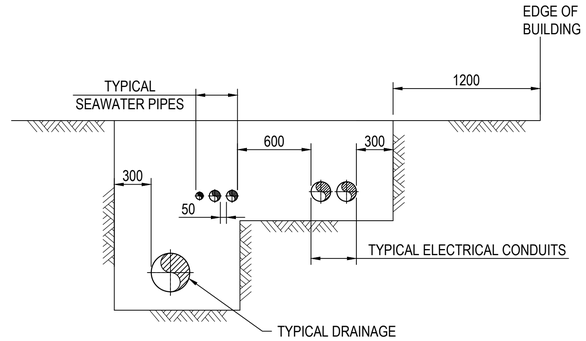


EMBEDMENT TYPE 2G BACKFILL
TYPE C ROAD CROSSING
NTS

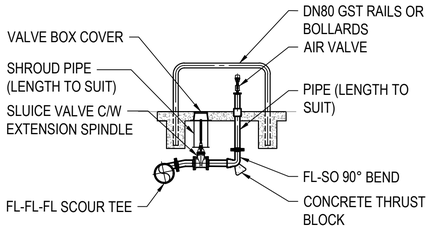
TYPICAL TRENCH DETAILS
NTS



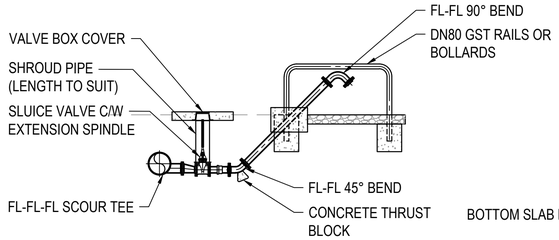
TYPICAL ACCESS CHAMBER DETAIL
NTS



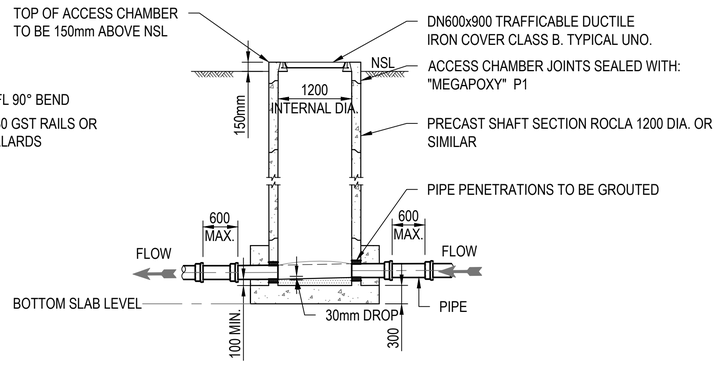
TYPICAL SHARED SERVICES TRENCH OFFSET DISTANCES
CROSS SECTION DETAIL
NTS



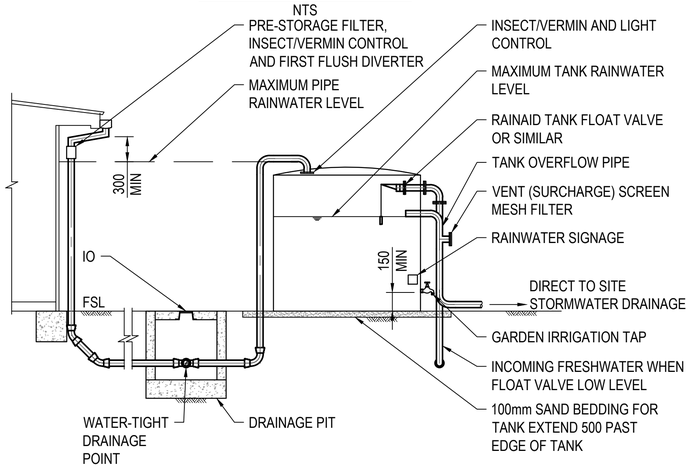
TYPICAL AIR VALVE DETAIL
(BELOW GROUND PIPE)
NTS



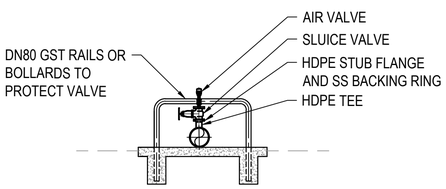
TYPICAL SCOUR VALVE DETAIL
(BELOW GROUND PIPE)
NTS



TYPICAL ACCESS CHAMBER WITH PRE-CAST BASE
NTS



TYPICAL RAINWATER TANK DETAIL
NTS



TYPICAL AIR VALVE DETAIL
(ABOVE GROUND PIPE)
SCALE 1:50

NOTE:

1. 5m EACH SIDE OF AIR VALVE CONSTRUCT EARTHEN BERM OR CONCRETE CRADLE TO RESTRAIN VALVE FROM MOVEMENT DUE TO TEMPERATURE CHANGE IN HDPE PIPE.

NOTE:

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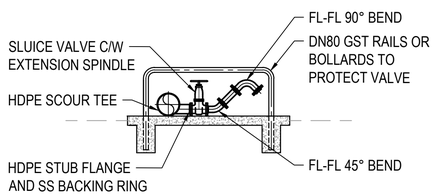
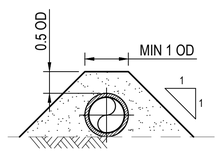


TYPICAL SCOUR VALVE DETAIL
(ABOVE GROUND PIPE)
SCALE 1:50

NOTE:

1. 5m EACH SIDE OF SCOUR VALVE CONSTRUCT EARTHEN BERM OR CONCRETE CRADLE TO RESTRAIN VALVE FROM MOVEMENT DUE TO TEMPERATURE CHANGE IN HDPE PIPE.



TYPICAL EARTHEN BERM OVER
ABOVE GROUND HDPE PIPE
NTS

NOTES:

1. USE NATIVE SURPLUS MATERIAL FROM OTHER SITE EXCAVATIONS IF AVAILABLE
2. LENGTH OF BERM TO BE 3 x OD AND SPACING TO BE 100m BETWEEN BERMS.
3. BERM PROVIDES LATERAL RESTRAINT TO MOVEMENT OF PIPE ARISING FROM TEMPERATURE CHANGES
4. AN ALTERNATIVE OPTION TO THE EARTHEN BERM IS A PRECAST CONCRETE CRADLE SUCH AS EVO-CRETE PIPE CRADLE OR SIMILAR

GENERAL HYDRAULIC NOTES:

1. DIMENSIONS IN MILLIMETRES UNO.
2. IN GENERAL WHERE RISING MAINS (PUMPED MAINS) ARE ABOVE GROUND THEY ARE TO BE HDPE AND BELOW GROUND TO BE PVC.
3. IN GENERAL INTERNAL PIPING IN BUILDINGS TO BE PVC WITH SWJ
6. HDPE PIPES TO BE BUTT FUSION WELDED AND WHERE CONNECTED TO DIEL FITTINGS HDPE STUB FLANGES AND STAINLESS STEEL BACKING RINGS ARE TO BE USED.
9. WHERE WELDED HDPE RISING MAINS ARE USED THEY ARE CONSIDERED TO BE FULLY RESTRAINED AND DO NOT REQUIRE THRUST BLOCKS ARE CONSIDERED RESTRAINED.
12. ALL RRJ/UNRESTRAINED PIPES ARE TO BE SUPPORTED BY THRUST BLOCKS OR A MINIMUM OF 2 FULL LENGTHS OF WELDED/RESTAINED PIPE BOTH SIDES OF BENDS.
13. THRUST BLOCKS WHERE REQUIRED TO BE TO CONSTRUCTED TO WSA-03.
14. AIR VALVES CONSTRUCTED AT HIGH POINTS IN RISING MAINS TO SUIT TOPOGRAPHY.
15. SCOUR VALVES TO BE CONSTRUCTED AT LOW POINTS IN RISING MAINS TO SUIT TOPOGRAPHY.
16. TREATED SEAWATER PUMPED LINES WITHIN THE STAGES TO BE CONSTRUCTED AT 0.5% GRADES WITH VALVED DRAINAGE PITS AT LOW POINTS TO ALLOW REGULAR FLUSHING AND CLEANING OF PIPES.
17. SEAWATER LINES WITHIN BUILDINGS TO BE INSTALLED SUCH THAT LOW POINTS INCLUDED A BALL VALVE TO ALLOW COMPLETE FLUSHING OF LINES TO ALLOW CLEANING.
18. RAINWATER TANKS TO BE INSTALLED AS PER LOCATIONS ON DRAWINGS AND TO BE CONNECTED AS PER TYPICAL RAINWATER DETAIL.
19. WHERE RAINWATER TANKS SUPPLY POTABLE WATER THE WATER IS TO BE TREATED VIA PACKAGED FILTRATION AND UV SYSTEM AS PER DRAWINGS. WHERE THE FRESHWATER ISN'T TREATED SIGNS SHOULD BE ERECTED NEAR TAP/HOSE POINTS STATING NON DRINKING WATER.

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL;	JN	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

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Drawn J. NOYNAY | Designer O. BEEBE
Drafting Check | Design Check
Approved (Project Director)
Date
Scale NOT TO SCALE
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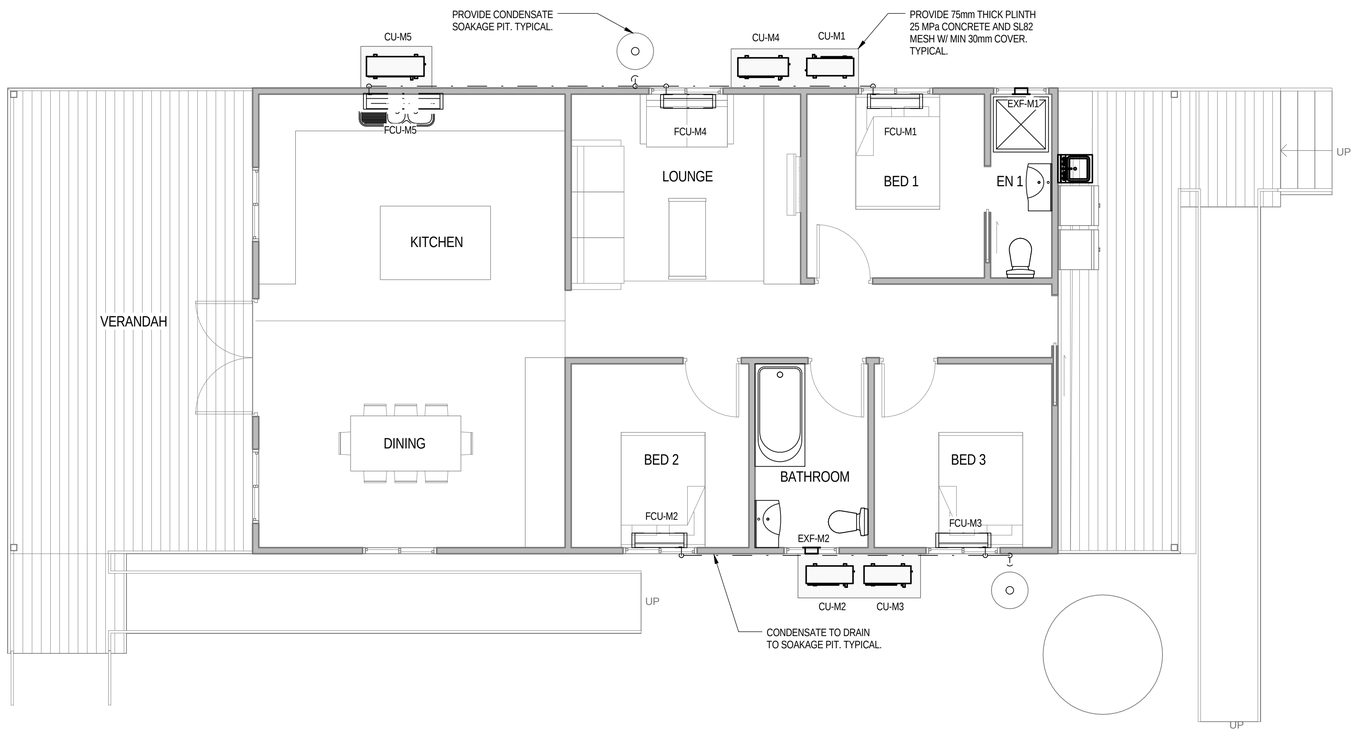
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
TYPICAL HYDRAULIC DETAILS

Original Size **A1** Drawing No: **43-22573-H346** Rev: **A**

Plot Date: 27 September 2017 - 1:47 PM Plotted by: Jon Noynay Cad File No: G:\43\22573\CADD\Drawings\43-22573-H346.dwg



GUNN POINT - MANAGER'S RESIDENCE MECHINCAL SERVICES

SCALE 1 : 50

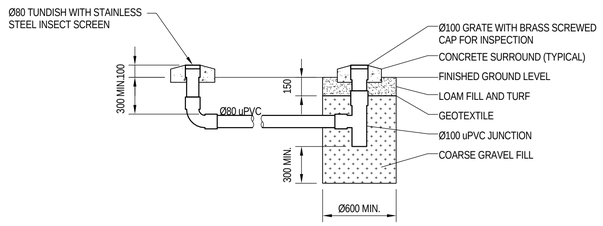
FAN SCHEDULE

REF	MANUFACTURER / MODEL	DESCRIPTION	AIR QTY (L/s)	ESTIMATED EXT. STATIC RESISTANCE (Pa)	POWER REQUIREMENTS (V/PH/Hz/kWe)	MAX SPL @ 3m (dBA)	CONTROL
EXF-M1	FANTECH / RP204	THROUGH WALL EXHAUST	50	15	240 / 1 / 50 / 0.03	39	INTERLOCK WITH ROOM LIGHTS. C/W AS20 BACKDRAFT SHUTTER.
EXF-M2	FANTECH / RP204	THROUGH WALL EXHAUST	50	15	240 / 1 / 50 / 0.03	39	INTERLOCK WITH ROOM LIGHTS. C/W AS20 BACKDRAFT SHUTTER.

SPLIT AC UNIT SCHEDULE

REF	AREA SERVED	MANUFACTURER / MODEL	DESCRIPTION	S/A QTY (L/s)	O/A QTY (L/s)	COOLING CAPACITY (kW)			AIR ON COIL (°C)		POWER REQUIREMENTS (V/PH/Hz/kWe)	CONTROL
						TOT.	SENS.	LAT.	DB	WB		
FCU-M1 / CU-M1	MANAGER'S RESIDENCE - BED 1	DAIKIN FTKM35PVMA / RKM35PVMA	RC INVERTER WALL SPLIT	135	NIL	2.63	2.01	0.62	24.0	17.1	240 / 1 / 50 / 0.86	PROPRIETARY ONLY
FCU-M2 / CU-M2	MANAGER'S RESIDENCE - BED 2	DAIKIN FTKM25PVMA / RKM25PVMA	RC INVERTER WALL SPLIT	90	NIL	2.25	1.49	0.76	24.0	17.1	240 / 1 / 50 / 0.51	PROPRIETARY ONLY
FCU-M3 / CU-M3	MANAGER'S RESIDENCE - BED 3	DAIKIN FTKM25PVMA / RKM25PVMA	RC INVERTER WALL SPLIT	90	NIL	2.27	1.52	0.75	24.0	17.1	240 / 1 / 50 / 0.51	PROPRIETARY ONLY
FCU-M4 / CU-M4	MANAGER'S RESIDENCE - LOUNGE	DAIKIN FTKM46PVMA / RKM46PVMA	RC INVERTER WALL SPLIT	155	NIL	4.00	2.58	1.42	24.0	17.1	240 / 1 / 50 / 1.24	PROPRIETARY ONLY
FCU-M5 / CU-M5	MANAGER'S RESIDENCE - KITCHEN / DINING	DAIKIN FTXM85PVMA / RXM85PVMA	RC INVERTER WALL SPLIT	340	NIL	7.45	5.45	2.00	24.0	17.1	240 / 1 / 50 / 2.49	PROPRIETARY ONLY

AIR ON CONDENSER COIL 35°C



SOAKAGE PIT DETAIL

NOT TO SCALE

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FOR APPROVAL

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	GRI	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or drawing and revision of drawing

0 500 1000 1500 2000 2500mm
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Drafting Check	J.NOYNAY*	Design Check	G.CHARLES
Approved (Project Director)	R.KOENIG		
Date			
Scale	As indicated	This Drawing must not be used for Construction unless signed as Approved	

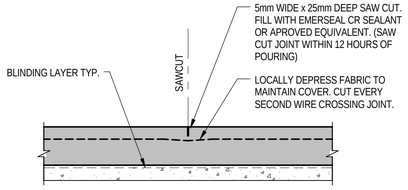
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT - MECHANICAL SERVICES MANAGER'S RESIDENCE - MODULE 1 OF 2**

Original Size **A1** **Drawing No: 43-22573-M302** **Rev: A**

Plot Date: 26/09/2017 10:51:01 AM Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-MANAGER'S RESIDENCE_jasanjuan.rvt

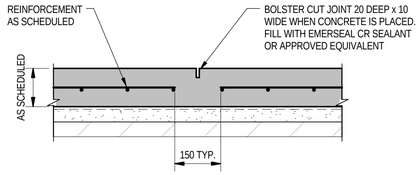
NOTES:

1. REFER TO 43-22573-G306, 43-22573-G307 & 43-22573-G308 FOR GENERAL NOTES.



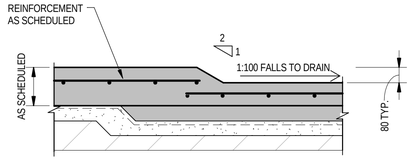
TYPICAL SAW CUT JOINT DETAIL (SCJ)

SCALE 1 : 10



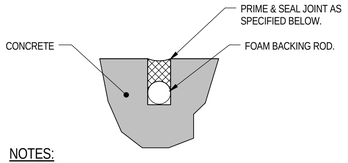
TYPICAL TOOL JOINT DETAIL

SCALE 1 : 10



TYPICAL FOOT BATH DETAIL

SCALE 1 : 10

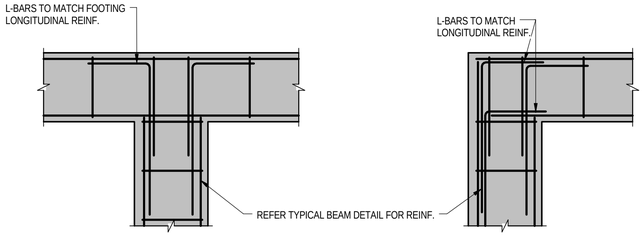


NOTES:

1. THE JOINT SHALL BE PROTECTED WITH TAPE UNTIL IT IS SEALED
2. THE JOINT IS TO BE PREPARED, PRIMED AND SEALED WITH EMERSEAL OR STRICTLY IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, NO EARLIER THAN 30 DAYS AFTER THE CONCRETE IS POURED.

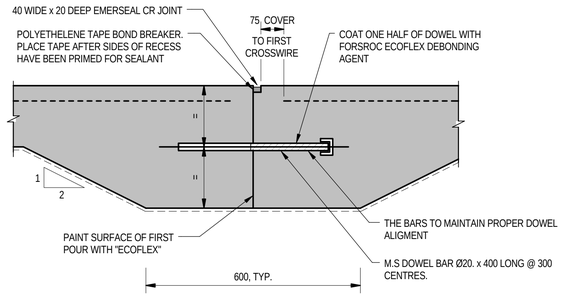
TYPICAL JOINT FILLING DETAIL

SCALE 1 : 10



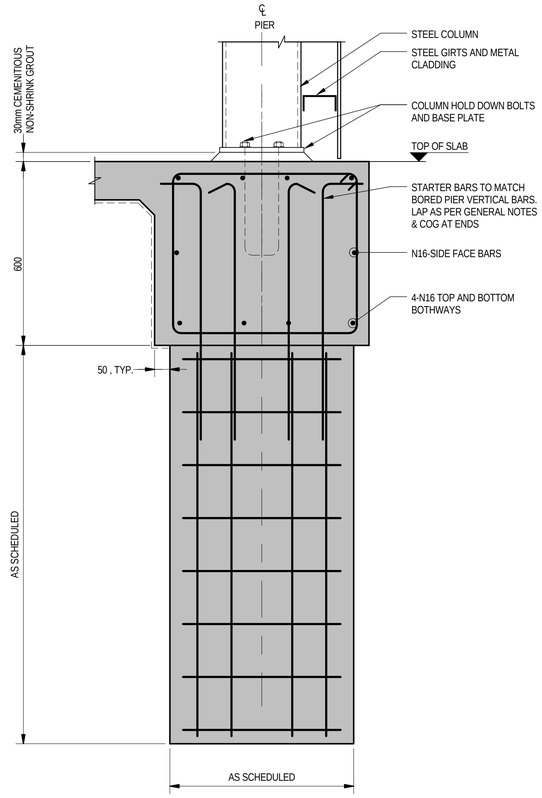
TYPICAL EDGE BEAM CORNER DETAILS

SCALE 1 : 20



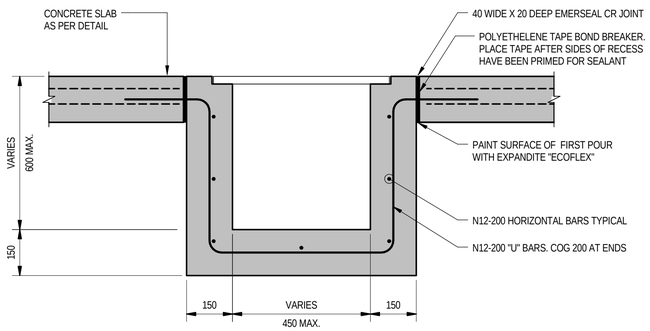
TYPICAL DOWELLED LONGITUDINAL CONSTRUCTION JOINT (CJ)

SCALE 1 : 10



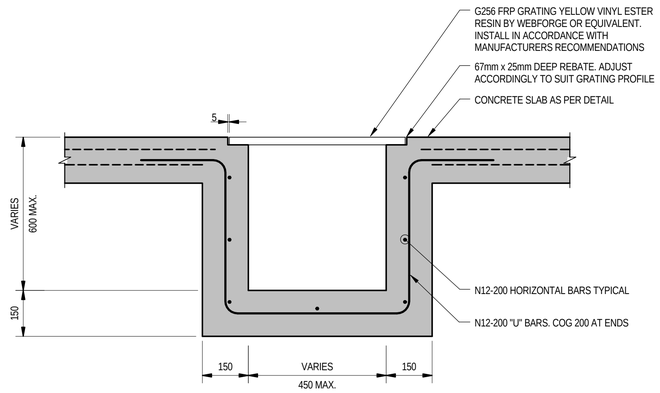
TYPICAL BORED PIER DETAIL 1

SCALE 1 : 10



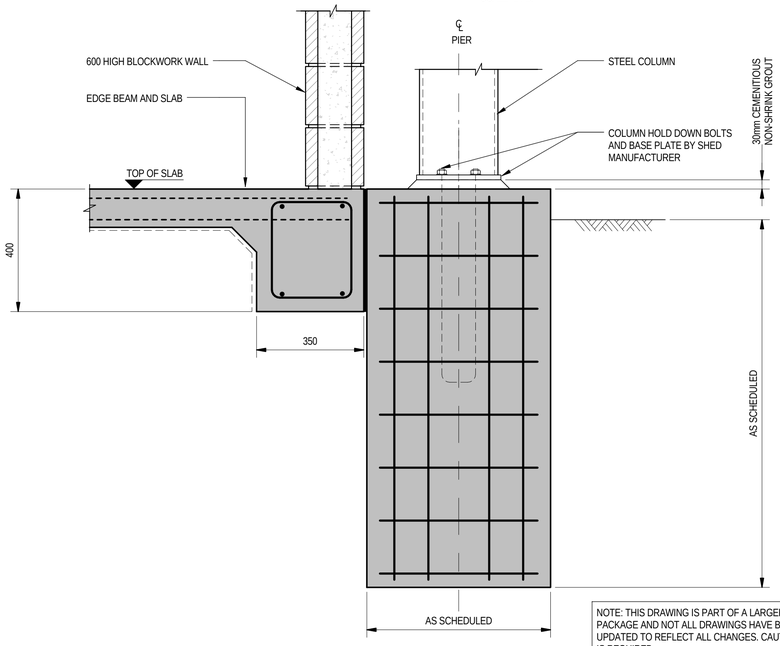
TYPICAL TRENCH/ SUMP CONSTRUCTION JOINT (CJ2)

SCALE 1 : 10



TYPICAL TRENCH DETAIL

SCALE 1 : 10



TYPICAL BORED PIER DETAIL 2

SCALE 1 : 10

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PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	CJJ	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

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SCALE 1:10 AT ORIGINAL SIZE

0 200 400 600 800 1000 mm
SCALE 1:20 AT ORIGINAL SIZE

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Drawn	C.JOHNSON	Designer	S.OLANDRIA
Drafting Check	J.NOYNAY	Design Check	J.RAPLEY
Approved (Project Director)	R.KOENIG		
Date			
Scale	As indicated	This Drawing must not be used for Construction unless signed as Approved	

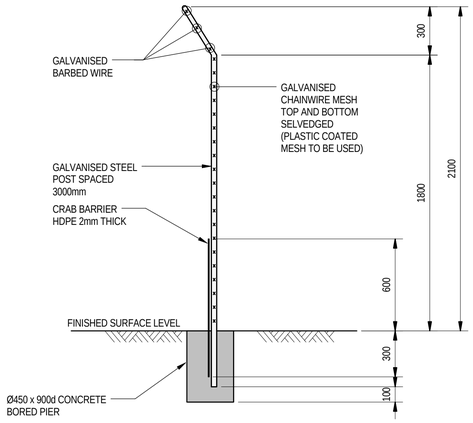
Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT**
TYPICAL STRUCTURAL DETAIL - SHEET 1 OF 2

Original Size **A1** **Drawing No: 43-22573-S310** **Rev: A**

Plot Date: 29/09/2017 3:00:48 PM Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-GUNN POINT SITE - HAC_jasanjuan.rvt

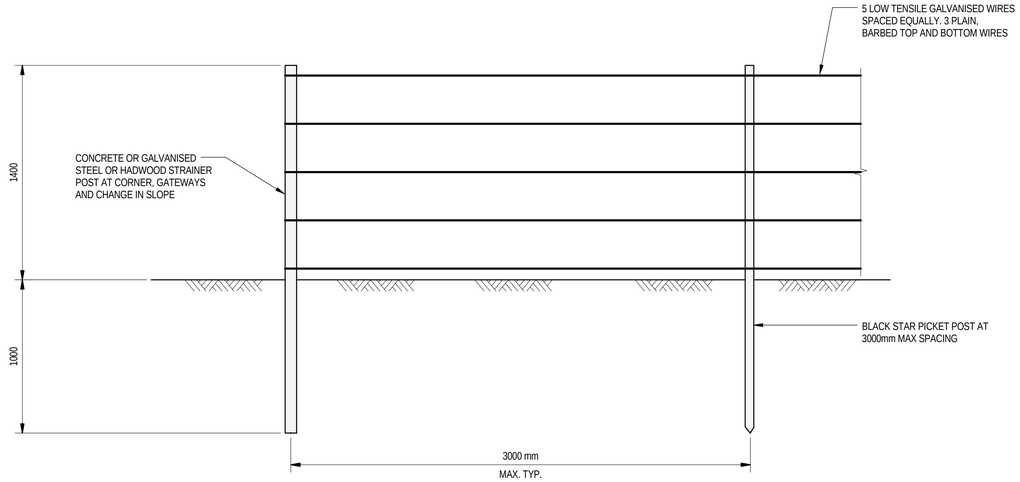
NOTES:

1. REFER TO 43-22573-G306, 43-22573-G307 & 43-22573-G308 FOR GENERAL NOTES.



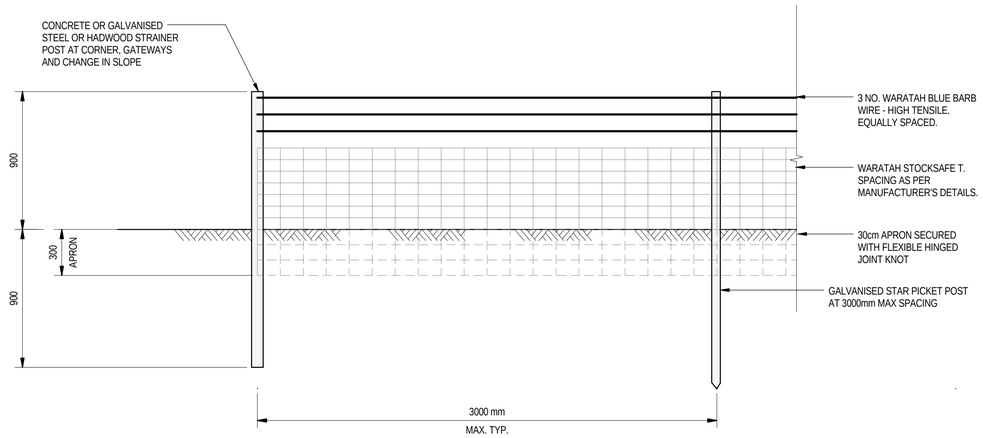
TYPICAL BIOSECURITY FENCE DETAIL

SCALE 1 : 20



TYPICAL PLAIN BOUNDARY FENCE

SCALE 1 : 20



3 TYPICAL BOUNDARY DOG FENCE - ELEVATION

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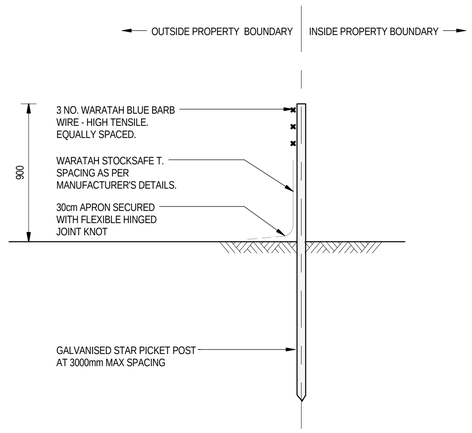

4 TYPICAL BOUNDARY DOG FENCE - SECTION

SCALE 1 : 20

FOR APPROVAL

No	Revision	Drawn	Job Manager	Project Director	Date
A	ISSUED FOR CLIENT APPROVAL	VG	DE	RK	25.09.17

Note: * indicates signatures on original issue of drawing or last revision of drawing

0 200 400 600 800 1000 mm

SCALE 1:20 AT ORIGINAL SIZE

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Approved (Project Director)	R.KOENIG*		
Date	25.05.16		
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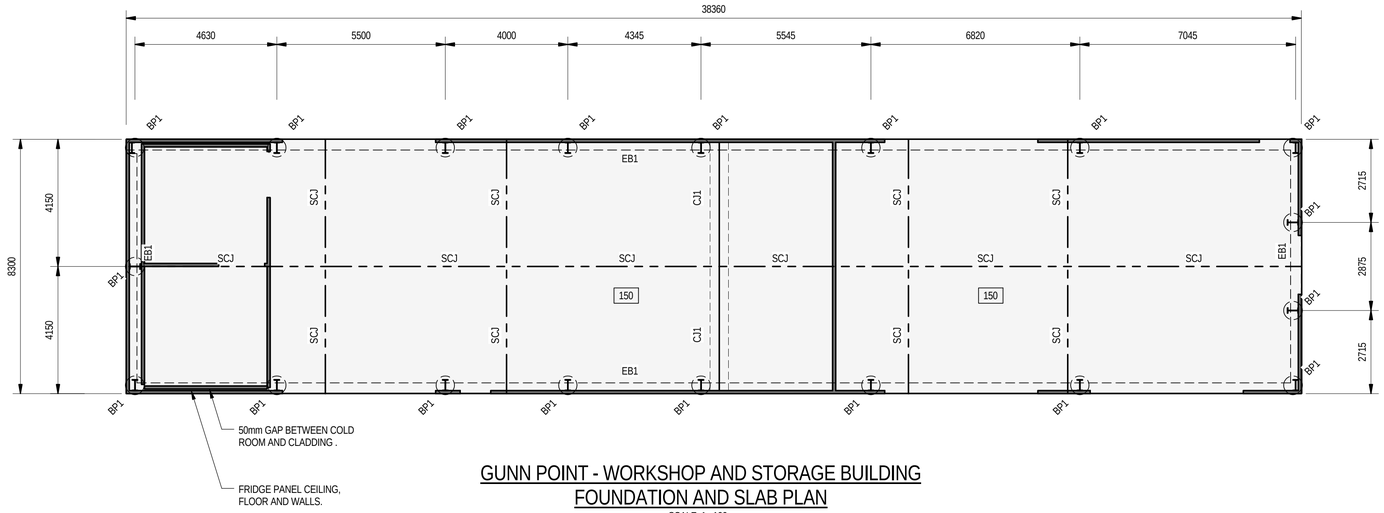
Client **PROJECT SEA DRAGON PTY LTD**

Project **BREEDING PROGRAM FACILITIES**

Title **GUNN POINT**
TYPICAL STRUCTURAL DETAIL - SHEET 2 OF 2

Original Size **A1** **Drawing No: 43-22573-S311** **Rev: A**

Plot Date: 21/09/2017 2:00:20 PM Cad File No: C:\Users\vgoh\Documents\Revit Local Files\43-22573-TYPICAL STRUCTURAL DETAILS_vgoh.rvt



GUNN POINT - WORKSHOP AND STORAGE BUILDING FOUNDATION AND SLAB PLAN

SCALE 1 : 100

LEGEND

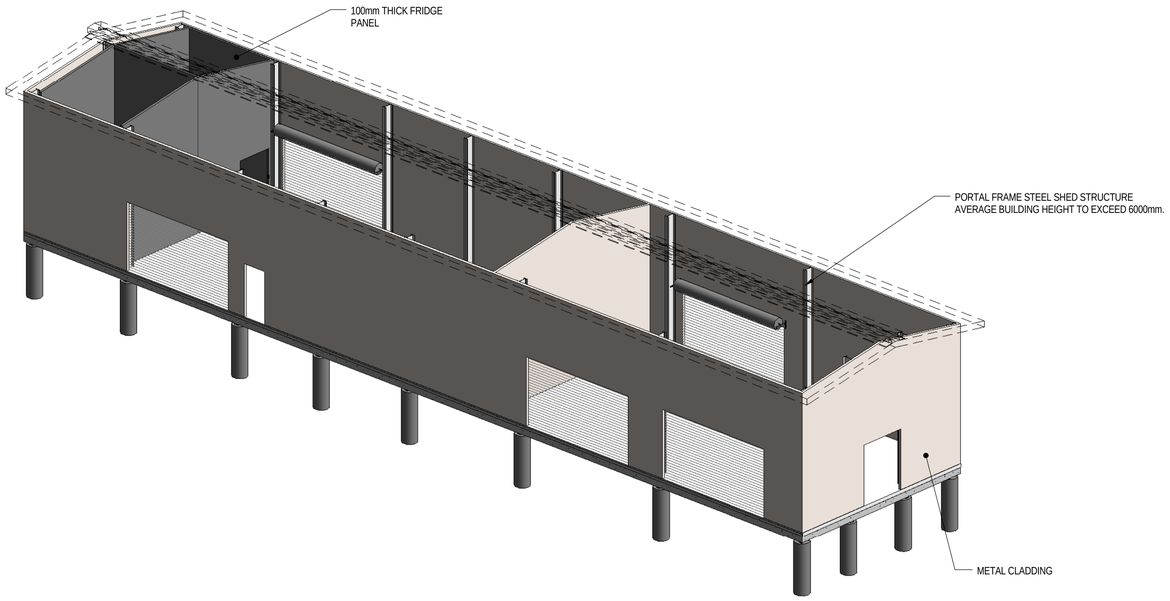
150	- DENOTES 150 THICK N40 CONCRETE SLAB WITH SL72 MESH TOP AND BOTTOM.
SCJ	- DENOTES SAWCUT JOINT
CJ1	- DENOTES CONSTRUCTION JOINT ONE

NOTES:

1. REFER TO 43-22573-G306 & 43-22573-G307 & 43-22573-G308. FOR GENERAL NOTES.
2. REFER TO 43-22573-G313 FOR TYPICAL CONSTRUCTION DETAILS.
3. REFER TO 43-22573-S310 & 43-22573-S311 FOR TYPICAL STRUCTURAL DETAILS.

FOOTING SCHEDULE

MARK	SIZE	COMMENTS
EB1	350w X 400d	2-N16 TOP AND BOTTOM, R10 LIGS AT 600 CENTRES EDGE BEAM
BP1	Ø900 x 2000d	12- N20 BARS WITH R10 LIGS AT 300 CENTRES. BORED PIER
SCJ	REFER TO DETAIL	SAW CUT JOINT
CJ1	REFER TO DETAIL	CONSTRUCTION JOINT



3D VIEW - STRUCTURAL

NOT TO SCALE

NOTE: THIS DRAWING IS PART OF A LARGER PACKAGE AND NOT ALL DRAWINGS HAVE BEEN UPDATED TO REFLECT ALL CHANGES. CAUTION IS REQUIRED.

PRELIMINARY

No	Revision	Drawn	Job Manager	Project Director	Date
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0 1000 2000 3000 4000 5000 mm

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Drawn	C.JOHNSON	Designer	S.OLANDRIA
Drafting Check	J.NOYNAY	Design Check	J.RAPLEY
Approved (Project Director)	R.KOENIG		
Date			
Scale	As indicated	This Drawing must not be used for Construction unless signed as Approved	

Client **PROJECT SEA DRAGON PTY LTD**
Project **BREEDING PROGRAM FACILITIES**
Title **GUNN POINT - BUILDING FOUNDATION WORKSHOP AND STORAGE BUILDING**

Original Size **A1** Drawing No: **43-22573-S321** Rev: **A**

Plot Date: 29/09/2017 3:02:37 PM Cad File No: C:\Users\jasanjuan\Documents\Revit Local Files\43-22573-WORKSHOP & STORE COMBINED_jasanjuan.rvt

PROJECT SEA DRAGON
STAGE 1 HATCHERY - GUNN POINT
NOTICE OF INTENT

EXECUTIVE SUMMARY

INTRODUCTION

Project Sea Dragon Overview

This NOI has been prepared for the Project Sea Dragon Stage 1 Hatchery (the Project) proposed to be developed at Gunn Point in the Northern Territory. The Stage 1 Hatchery is a component of a larger project, Project Sea Dragon. Project Sea Dragon is a large, fully integrated, prawn aquaculture project located in northern Australia. Project Sea Dragon will be delivered as an integrated production system, providing reliable, long-term, high quality and large scale production of Black Tiger prawns (*Penaeus monodon*). Project Sea Dragon focuses on sustainable land use and integrated design practices to maintain surrounding river and coastal environments and support adjacent agricultural land uses.

Project Proponent

The project proponent is Project Sea Dragon Pty Ltd, a wholly owned subsidiary of Seafarms. Seafarms is an Australian agri-food company which operates, builds and invests in sustainable aquaculture production platforms producing high-quality seafood. Seafarms is currently Australia's largest producer of farmed prawns – growing, processing and distributing the well-known Crystal Bay Prawns® premium brand. Seafarms has existing operations in Cardwell and Ingham, Queensland, and is a major supplier of prawns to Coles and Woolworths on the east coast of Australia. These farms are serviced by a hatchery near Flying Fish Point (Innisfail), Queensland. The company is one of Australia's largest prawn aquaculture enterprises.

STAGE 1 HATCHERY DESCRIPTION

The Stage 1 Hatchery has the sole purpose of producing post-larval prawns for the Stage 1 Legune Grow-out Facility, located at Legune Station over 800 km from the proposed Project site. The Stage 1 Hatchery involves:

- the breeding, spawning, and rearing of larval prawns until they are 15 days into the post-larval stage within the Stage 1 Hatchery module;
- the supply, storage, use and discharge of seawater and freshwater;
- the generation of power;
- the construction and operation of ancillary infrastructure such as waste management facilities, sewerage systems, road infrastructure, managers accommodation and site administration.

Breeding, Spawning and Rearing of Larval Prawns: Hatchery Module

To supply 1,120 ha of ponds at the Stage 1 Legune Grow-out Facility, the Stage 1 Hatchery module will require 700 male and 700 female broodstock prawns per week from the Project Sea Dragon Broodstock Maturation Centre in Point Ceylon. These broodstock will be high health, Specific Pathogen Free, of superior pedigree, mature and in breeding condition.

Within the Stage 1 Hatchery module there will be three buildings in which broodstock, spawning and hatching take place. Within each of these buildings there will be 20 tanks for holding the broodstock. The broodstock will be held in these tanks until they are ready to spawn, at which time they will be transferred to the spawning tanks. Once they have completed spawning, the broodstock will be transferred back to the broodstock tanks.

Eggs produced during spawning will be harvested and transferred to the hatching tanks where they are hatched.

Nauplii (the first larval stage after hatching) harvested from the hatching tanks will be transferred to the larval rearing buildings. The Stage 1 Hatchery module will contain four buildings designated for larval rearing.

Each larval rearing building will contain 20 parabolic tanks. The prawn larvae will be grown out in the larval rearing tanks for 24-25 days at which time they will be at the post larval stage (i.e. 15 days into the post-larval stage) and ready for transfer to the Grow-out Facility on Legune Station. The Stage 1 Hatchery will produce up to 16.2 million post larvae per week.

Algae provide an important food source for the larval prawns. Algae will be produced in the two algal laboratories and two grow-out rooms within the Stage 1 Hatchery module. Algae will be grown in batch culture, typically in an enriched seawater media. Algae are fed to the prawns at the earliest stage of their development. The common brine shrimp, Artemia, are also used in the early stage diet of prawns. Artemia are cultured from cysts which are obtained commercially. Two specific Artemia rooms are included in the design of the Stage 1 Hatchery module.

Water Supply, Storage, Use and Discharge

The Stage 1 Hatchery utilises both seawater and freshwater in the production of post-larval prawns.

Seawater will be sourced from offshore and piped to the Hatchery via seawater intake pipelines. The pipes will be buried by horizontal directional drilling methods under the fore dune and beach for as far as possible into the intertidal zone. After this point, the pipes will then be laid on the seabed using fleximat concrete anchors. At the seaward end of the pipes, an inlet structure will be anchored via a driven pile. It will be fitted with a maximum of 100 mm aperture mesh screen to limit the intake of marine debris and fauna. In times of pumping, the velocity of seawater intake at the mesh screen will be less than 0.25m/sec. The routine replacement and/or cleaning of these intake screens of biofouling is the only maintenance activity requiring repeated access to the pipe's seaward termination point. The seawater will be extracted by pumping it ashore and will be delivered to three seawater storage ponds, which will be sized to hold enough seawater for at least five days of normal operations. The seawater pump will typically only operate from mid to high tide daily. The average daily intake of seawater during operations is 954 kL.

Freshwater will be supplied by Northern Territory Power and Water Corporation (PWC) and sourced from the existing bore suppling water to Gunn Point (bore number RN 26138). The maximum daily requirement for freshwater during operations is 44.25 kL.

Wastewater discharged from the Hatchery module will be stored in three settlement ponds for a minimum of 60 hours prior to being discharged to the receiving environment. This will allow the discharge water to settle and solids to separate. Discharge water will be pumped from the settlement ponds via a closed high density polyethylene (HDPE) pipe. The discharge pipeline will be constructed as described above for the intake pipelines. Water will be discharged directly into Shoal Bay at approximately 2 km offshore. The discharge point has been strategically located to minimise the impact on the receiving environment and, for biosecurity reasons, minimise recirculation of discharge water in the sea water intake pipe. The average daily discharge rate of wastewater during operations is 954 kL.

Sediment which accumulates in the seawater storage and discharge settlement ponds will be periodically removed. To remove sediment from the ponds, the ponds will be drained first and the sediment will be hosed into a sediment trap, where it is left to dry. Once dry it will be removed using hand tools such as shovels and transported to the designated sediment storage area for solar drying and aeration. If the sludge and sediment cannot be solar dried then removal of wet sludge will be by small suction line and pump to a commercially available de-sludging truck, such as that used in septic tank maintenance.

Power Demand and Generation

Power demand for operation of the Stage 1 Hatchery is in the order of 0.5 to 1.5 MW (i.e. 0.6 to 1.8 MVA, using a power factor of 0.83). Power will be generated on-site using two standalone diesel generating sets with fuel storage. Each generating set will be containerised in a self-bunded and sound attenuating enclosure with connection points for fuel, coolant, and lubricants. Onsite fuel storage volume will be approximately 5 to 7 days of consumption, with the site proposing to store 100 kL of diesel fuel.

DESIGN PROCESS

To avoid and minimise potential environmental, social and cultural heritage impacts, extensive analysis was undertaken to determine the optimum layout and design of the Stage 1 Hatchery on the Gunn Point site. Avoidance and mitigation measures focused on minimising potential impacts associated with vegetation clearance, the intake and discharge of water, and the operation of infrastructure such as the power station and the incinerator.

Vegetation Clearance

In accordance with the Northern Territory Planning Scheme Land Clearing Guidelines (DNREAS 2010): the results of vegetation and flora field surveys were used to inform the layout of the facilities to avoid direct impacts to sensitive vegetation communities and limit development in areas with higher densities of *Cycas armstrongii*; vegetation buffers and corridors have been maintained to maximise connectivity, and avoid impacts to wildlife movement; direct impacts to drainage areas and wetlands have been avoided and required buffer distances have been maintained; and where possible, slopes greater than 2% have been avoided, and whilst it is not possible to avoid slopes greater than 2% entirely (an Erosion and Sediment Control Plan will be implemented to mitigate the risk of erosion during vegetation clearance works).

Water Intake and Discharge

To minimise the potential impact of discharge waters on the receiving environment, as well as the risk of recirculation through the intake pipe, a feasibility assessment of the intake and discharge locations was undertaken (Water Technology 2017).

The feasibility assessment involved numerical modelling of the discharge waters using over 20 different configurations of the intake and discharge points, and accounting for seasonal and inter-annual variation. Based on this extensive analysis the final locations selected represent the optimal configuration to minimise water quality impacts (i.e. there are only minimal increases in nutrient concentrations due the location of the discharge point in deep water) and to minimise intake recirculation (which is not desirable from an operational perspective).

Air Quality and Noise

Modelling undertaken by GHD (2017) found that a buffer of 100 m is required between the power station/incinerator and sensitive receptors to meet the requirements for air quality. The modelling also showed that a buffer of 470 m is required to meet the requirements for noise. These results were incorporated into the design process for the Stage 1 Hatchery and a buffer distance of 500 m has been maintained between sensitive receptors (e.g. staff accommodation, protected areas) and the power station/waste transfer station. This also satisfies the requirements for buffer distances outlined in the NT EPA Guideline for Disposal of Waste by Incineration (NT EPA 2013).

ENVIRONMENTAL VALUES

The following gives a brief description of the environmental values of the site and how they might be affected by the proposed Project. It includes an overview of the mitigation and management measures that are proposed to ameliorate any impacts to these values that might arise from construction or operation of the proposed Project.

Geology, Geomorphology and Soils

The geology of the Project area and surrounds is described by the 1:100,000 Koolpinyah Geological Map Sheet. Basement geology on the Gunn Peninsula consists of deeply weathered and eroded rocks from the Early Proterozoic (represented by the Partridge Group), and the Lower Cretaceous rocks of the Bathurst Island Formation.

The Project area is underlain by tertiary soils and laterite overlying Wangarlu Mudstone which in turn overlies the Koolpinyah Dolomite. Generally, the tertiary soils and laterite underlying the Project area are a competent mix of silt, sand and gravel. Soils on the lateritic plain in the eastern portion of the Project area consist of relatively deep red or yellow massive earths while soils on the slopes towards the western portion of the Project area consist of more shallow gravelly earths. Both soil types are moderately to rapidly draining.

The Project will not impact in any way upon geology or geomorphology. With reference to soils, site clearing and earthworks will occur between April and May in 2019 to February 2020. This is considered one of the optimal times to undertake clearing, as soils are moist (reducing the chance of wind erosion) but without a high likelihood of rain (reducing the chance of erosion as a result of rainfall). Measures are outlined in the EMP (Appendix B) to protect against wind erosion and rainfall. Due to the nature of the soils there is considered to be little likelihood of encountering acid sulfate soils across much of the Project site. An ASS risk map will be prepared and management of any ASS found will be in accordance with the Queensland Acid Sulfate Soil Technical Manual (Dear et. al. 2014).

With the timing of earthworks and the implementation of the aforementioned procedures for erosion and sediment control as well as acid sulfate soils, the proposed Project will not result in any significant impacts to soils.

Noise

Ambient noise levels are very low, with only natural noise occurring within the region. There are no existing industrial noise sources.

Noise impacts as a result of the project are expected to be minor. The nearest existing sensitive receptor to the Project is the Tree Point Community, three kilometres to the south. No noise impacts to this community as a result of construction or operation of the Project are anticipated.

An impact assessment was conducted for the operational noise that will be generated by the Project. The most significant source of operational noise will be the power station, however, this will only exceed guidelines for sleep criteria for a distance of 470 m from the only source of significant noise, which is the power generation facility. As such, the nearest residence (one of the on-site managers' house) has been located 500 m from the power generation facility.

Noise impacts on industrial receptors are not expected outside 50 m from the facility. The closest industrial receptor is the site administration, access control point and warehouse which is approximately 150 m to the north-east.

Air Quality

Air quality for the area is very good, with no nearby sources of industrial pollution.

No impacts to air quality arising from construction are anticipated.

The site will contain an incinerator and power station consisting of two CAT32 diesel generators, packaged in containers. Results of the worst-case air quality modelling show that the predicted NO_2 levels will meet the emissions criteria at a distance of 100 m from the power facility. As the minimum distance required to meet the noise requirements of the facility is 470 m, the power station is situated 500 m from the nearest sensitive receptor, hence is located in excess of the separation distance required . As such, no additional mitigation is required.

The incinerator will be located 500 metres from any sensitive receptor (which, in this instance is the nearest manager's house, and the Tree Point Conservation Area) in accordance with the NT EPA Guideline for Disposal of Waste by Incineration.

No significant impacts to air quality as a result of the proposed Project are anticipated.

Marine Environment

Construction

During construction of the intake and outfall pipelines there is the potential for the construction activities to create minor elevations in turbidity through disturbance of the sea bed. However, the area to be disturbed is small relative to the scale of Shoal Bay, and the disturbance will be localised, short term and temporary in nature.

Spills or leaks of hydrocarbons or other contaminants such as chemicals from construction vessels or vehicles are considered a very low risk and will be controlled via operational procedures and environmental management plans required to detect and respond to any unplanned accidental releases to ameliorate impact to the environment. As such, there are not expected to be any significant impacts to water quality resulting from construction of the Project's marine infrastructure.

There may be some minor and localised impacts to coastal features and processes such as bathymetry or sediment transport and deposition. Use of horizontal directional drilling to bury the pipes under the dunes, beach and for as far as possible into the intertidal zone, will minimise the potential impacts in these locations. Beyond that, where directional drilling is no longer possible, detailed design of the pipe bedding will ensure that adequate scour protection is provided. As such, whilst there may be minor changes to coastal processes around the pipelines, they are unlikely to be changes to an extent that cause a significant impact to coastal values.

Operation

The Project will discharge on average, 954 kL/day of water used to grow the post-larvae. The discharged water will have elevated nutrients, derived from the feeding of the prawns. As such, nutrients and algae (which is a food source) will leave the facility in the form of uneaten prawn feed residues and prawn excreta (faeces and moults). The concentration of nutrients in the discharge water were conservatively assumed to be 2 mg/L Total Nitrogen (TN), 0.4 mg/L Total Phosphorus (TP) and 20 µg/L chlorophyll α. Numerical modelling has shown that the discharge of 954 kL/day from the facility, at 2 mg/L TN, 0.4 mg/L TP and 20 µg/L chlorophyll α (noting that the quality of the discharge is expected to be better than these levels) will not cause any exceedance of the Water Quality Objectives for Aquatic Ecosystem Protection for Darwin Harbour.

Hence, by definition, there will be no significant impact to the water quality of Shoal Bay or Hope Inlet as a result of the Project.

Groundwater

In the Gunn Peninsula area there are two separate groundwater aquifers; a shallow unconfined aquifer in the lateritic subsoil layer and a deep aquifer confined to weathered dolomite.

No abstraction of groundwater will take place and the seawater intake and discharge ponds will be lined with a HDPE membrane to prevent any seepage to groundwater. Hence there are no anticipated impacts on groundwater as a result of the construction and operation of the Project.

Terrestrial Flora and Vegetation

The only vegetation to be cleared is that required to facilitate the Project footprint only (i.e. only the footprint of the infrastructure and the required firebreaks will be cleared – the rest of the site will remain vegetated). As such, the Project will involve clearing a maximum of 28.93 ha of vegetation while the remainder of the vegetation on the site (101.07 ha) will be retained. The vegetation communities to be cleared are well represented in the Litchfield Shire area, and the clearing represents less than 1% of the extent of each vegetation type within the shire.

The site has been subject to degrading processes, particularly as a result of the past fire regime, uncontrolled recreational use, and invasive pest and weed species. This is more pronounced in the western third of the site, closer to the beach. As such, the majority of the Project infrastructure was preferentially sited in areas of degraded habitat in the western third of the site to minimise impacts to flora and vegetation values. It is not considered that the removal of 28.93 ha of vegetation communities that are well represented in the local area, and are largely degraded, would have a significant impact upon local biological diversity and ecological integrity.

The vulnerable cycad *Cycas armstrongii* is a common species on site, with population densities of between 800 to 1,000 cycads per hectare in the eastern half of the site. They are less common in the western half of the site, and avoidance of those parts of the site with higher densities of this species was a key consideration in planning the site layout. However, to comply with the air quality and noise separation requirements for the incinerator and the generators, these facilities were required to be located in areas with comparatively higher densities of *C. armstrongii.* Upon finalisation of detailed design, and once the exact numbers of *C. armstrongii* required to be removed are known, an application for a permit to take or interfere with wildlife under the *Territory Parks and Wildlife Act 2006* (TPWC Act), will be sought. The preferred option is to salvage cycads from the site for sale to developers for landscaping.

Targeted surveys for *Typhonium praetermissum*, and the Melville Island Desmodium (*Desmodium tiwiense*) (two other threatened species with the potential to be present in the development footprint) are proposed prior to commencement of construction. If any individuals of these species are found to be present within the footprint, an application for a permit to take or interfere with wildlife under the TPWC Act will be sought. Both species are likely to be able to be translocated and this would be investigated further if the species are found to be present within the footprint.

Operation of the facility is unlikely to pose any significant threat to any vegetation community or threatened species. In fact, the weed and fire management regimes that will be implemented as part of the Project will likely have a positive impact upon flora and vegetation, when compared with the current situation. Currently, the site shows evidence of increased fire regimes (likely as a result of inappropriate recreational use) and also has outbreaks of weeds that increase the fuel load, such as Gamba Grass and Perennial Mission Grass. Management of fire and these weeds will have a positive effect on vegetation communities and *C. armstrongii*, or any other threatened species that may occur within the site. As such, construction and operation of the proposed Project is considered unlikely to have a significant impact upon flora or vegetation.

Terrestrial Fauna and Shorebirds

Sixteen species of conservation significant terrestrial fauna listed under the TPWC Act are known, or considered likely or possible to occur in and around the Project site.

The terrestrial habitat to be cleared to facilitate the Project is not considered to be unique or critical habitat for any of these species. The site has been subject to degrading processes, particularly as result of the past fire regime, uncontrolled recreational use, and invasive pest and weed species. This is more pronounced in the western third of the site, closer to the beach.

The habitats in the eastern parts of the site (i.e. outside of the main part of the Project footprint) were found to have more resources for fauna species than the western parts of the Project site. As such, the majority of the Project infrastructure was preferentially sited in areas of degraded habitat in the western third of the site to minimise impacts to flora and fauna values.

The clearing will be restricted to those areas required to be cleared to facilitate the Project footprint only (i.e. only the footprint of the infrastructure and the required firebreaks will be cleared – the rest of the site will remain vegetated). The areas to be cleared for the Project infrastructure are unlikely to be important habitat for any of threatened fauna species that may utilise the site and the removal of ~29 ha of habitat that would largely be considered marginal for these species is unlikely to result in a significant impact to any threatened species.

Loss of habitat resources (e.g. tree hollows) and conditions as a result of inappropriate fire regimes, habitat degradation due to exotic invasive grasses and/or feral animals, and human interference, are regarded as key threats to the conservation significant fauna that may potentially use the site. The proposed action will not exacerbate any of these threatening processes. Operation of the facility is unlikely to pose any threat to any of these species. In fact, the weed and fire management regimes that will be implemented as part of the Project will likely have a positive impact upon habitat for these species, when compared with the current situation.

The Project will have a minimal impact upon the intertidal zone and impacts will be restricted to those required for construction of the intake and outfall pipelines. The nutrients contained in the aquaculture water to be discharged in to the marine environment will be well within levels considered acceptable under the Darwin Harbour Water Quality Objectives for Aquatic Ecosystem Protection. As such there will not be any significant impact to feeding resources or habitat for migratory shorebirds in Shoal Bay.

In terms of Commonwealth matters, an assessment of the potential impacts to terrestrial species and shorebirds listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was undertaken in accordance with the MNES significant impact guidelines (DoE 2013). The assessment revealed that there is not considered to be a real chance or possibility that the Project will result in a significant impact upon any threatened or migratory species listed under the EPBC Act.

Marine Fauna

The marine habitat to be affected by the Project is restricted to the seabed over which the intake and outlet pipelines will be placed. The habitat is sand and mud and does not provide any unique values, being well represented throughout Shoal Bay.

Marine fauna of conservation significance listed under the TPWC Act and/or the EPBC Act are considered likely or possible to occur in the waters surrounding the Project. These species are all transient or migratory animals that will not be confined to one area. The ability of conservation significant marine fauna to transit through the Project area is not likely to be affected by the minor loss of ubiquitous habitat as a result of the placement of the intake and outfall pipes.

The potential impacts to marine fauna as a result of the Project, and the proposed design solutions and mitigation measures, are as follows:

- changes in water quality as a result of construction activities, or discharge of the aquaculture water
- entrainment or impingement of species in intake pipes during operation
- localised short-term noise and vibration disturbance during construction
- light spill from facilities affecting migration or navigation of marine turtles
- introduction or spread of marine pests.

As explained above (see 'Marine Environment'), there are not expected to be any significant impacts to water quality as a result of construction or operation of the Project. Hence, there will be no significant impact to any marine species as a result of a reduction in the water quality of Shoal Bay or Hope Inlet.

The intake point will be fitted with a screen covered with mesh sized at 100 mm or less to exclude marine fauna. The intake velocity has been designed to be less than 0.25 m/sec at the mesh screen and less than 1 m/sec within one meter of the mesh screen - all fish are able to swim against this velocity, and this is less than the speed of currents in Shoal Bay during spring tides. As such there is negligible potential to impinge or entrain fish or turtles, and hence there is highly unlikely to be a significant impact to any species as a result of entrainment or impingement.

The most likely impact resulting from underwater noise emitted during the construction and operation of the Project are changes in the behaviour of aquatic fauna. Aquatic fauna in the vicinity of the pipelines may vacate or avoid the area following commencement of underwater works such as pile driving. Any behavioural change caused by noise from the Project is likely to localised and temporary with aquatic fauna expected to resume normal behavioural patterns in the waters surrounding the Project within a short time-frame. As such, no significant impacts to any species as a result of noise or vibration are expected.

Construction and operational lighting has the potential to affect marine turtles by altering use of visual cues for orientation, navigation or other purposes. However, given that turtles do not nest within the Project area or adjacent habitats (the nearest nesting beach is located around 18 km from the Project area), it is unlikely the artificial light will interfere with the breeding success and population longevity of marine turtles. A vegetated buffer will be retained between the facility and the beach. Lighting will be limited to only that which is essential and will be designed in accordance with the Environmental Assessment Guideline for Protecting Marine Turtles from Light Impacts (WAEPA 2010). Hence, no significant impacts to turtles as a result of light spill from the Project to the marine environment are anticipated.

To ensure the accidental escape of prawns from the Stage 1 Hatchery does not occur the outlets on the tanks are screened. The likelihood of accidental escape of prawns from these facilities is considered negligible. Furthermore, the assessment of the risk of a disease from the grow-out facility impacting on a wild prawns and/or other aquatic fauna concluded that the risk is very low, and therefore no significant impacts to marine species are anticipated.

In terms of Commonwealth matters, an assessment of the potential impacts to marine species listed under the EPBC Act was assessed in accordance with EPBC Act Significant Impact Guidelines 1.1 (DoE 2013). Based on the assessment provided in the EPBC referral (Appendix I), the proposed action is not considered likely to result in a significant impact to any conservation significant marine fauna.

Significant Sites or Features

The Tree Point Conservation Area is located directly to the south of the proposed Project site, and the facility proposes to intake from, and discharge aquaculture water into, the Shoal Bay Site of Conservation Significance.

However, there are no anticipated impacts to these sites of conservation significance. The following measures have been put in place to protect the Tree Point Conservation Area from potential impacts as a result of the proposed Project:

- Seawater storage ponds and discharge settlement ponds have been designed to cater for an 100 ARI event to minimise the risk of uncontrolled discharges ort stormwater runoff into the Tree Point Conservation Area,
- Vegetation surrounding the facility will be retained to manage stormwater runoff as well as provide a buffer between the Project facilities and the Tree Point Conservation Area.
- In accordance with the NT EPA Guideline for Disposal of Waste by Incineration, the recommended buffer of 500 m between the incinerator and the Tree Point Conservation Area (a sensitive receptor) has been adhered to

There are no anticipated significant impacts to water quality as a result of the construction or operation of the facility (see 'Marine Environment' above), so in turn there are no anticipated significant impacts to the Shoal Bay Site of Conservation Significance.

Cultural Heritage

The Larrakia, Tiwi and Wulna people are the indigenous users of the Gunn Peninsula.

An application for an Authority Certificate was applied for and subsequently granted by the Aboriginal Areas Protection Authority (AAPA) for an earlier layout of the Stage 1 Hatchery. Subsequently Project layout has been amended to accommodate environmental constraints (i.e. avoidance of high densities of *Cycas armstrongii,* compliance with buffer requirements under the NT Land Clearing Guidelines and the NT Guideline for Disposal

of Waste by Incineration and the air and noise modelling) and an amendment to the Authority Certificate will be sought to accommodate these changes.

An archaeological assessment, including a desktop assessment and field survey was undertaken to support this NOI. There are no recorded Indigenous or non-Indigenous sites in the Project footprint. Therefore, no impacts are anticipated to sacred sites or archaeological sites or places.

A protocol for unexpected finds is included in the EMP.

Socio-economic

From a socio-economic perspective this development is low-impact/high value. There are minimal social risks and genuine potential for social net benefits arising from the action.

In terms of the potential social impacts, the Stage 1 Hatchery has been designed to take into account beach access and the prevailing uses of the land both on, and in the vicinity of, the site. Access to the beach will not be impeded by the proposal and the final engineering design is to construct the intake and outfall pipelines using horizontal directional drilling, meaning that the pipelines will be buried and that both access and the beach itself, are protected. Discharge of the aquaculture water into Shoal Bay will have no impact upon recreational fishing or visual amenity as the quality of the water to be affected by the discharge from the Project will remain within levels considered acceptable under the Darwin Harbour Water Quality Guidelines. At a maximum, the direct social impact will be to exclude visitors from the 130.5 ha site. This reduction is considered insignificant in the total amount of land available in the Gunn Point/Glyde Point area. When operational the hatchery will employ about 28 FTE and will be self-contained, meaning that it will not require surrounding infrastructure or facilities other than the existing water supply from the PWC borefield. Thus there will be no automatic consequential impact on the area immediately surrounding the site from the workforce.

There is not considered to be any potential for the Project to have a significant negative impact upon the socio-economic environment.

Climate Change

To assess the potential impact of climate change on the coastal environment and the coastal infrastructure proposed as part of the Project, a risk assessment methodology was adopted. The potential climate change effects that could impact the physical processes operating on the coastal environment of the Project area are:

- sea level rise
- tropical cyclone intensity and frequency.

The risk posed by climate change to intake and discharge infrastructure has been accommodated by designing intake and discharge facilities setback from the present-day coastline to allow for any changes as a result of increased inundation to 2100. Detailed design of the intake and outfall pipes and bedding will consider the potential for increased wave conditions into the future. Where the pipes are buried, they will be deep enough such that they do not become exposed during erosion events. The likely extent of erosion caused by shoreline recession by 2100 will be considered in the detailed design of the Project facilities.

RISK ASSESSMENT

A risk assessment based on a standard semi-quantitative risk assessment consistent with the AS/NZS ISO 31000:2009 'Risk Management – Principles and Guidelines' was undertaken as part of this NOI.

The environmental risk assessment identified 35 construction related risks and 27 operational risks.

There were no risks identified and assessed for construction or operations that had an extreme or high risk rating. All residual risks were either rated medium, low or very low, with the majority of residual risks during construction having a 'low' risk rating and the majority during operations having a 'very low' risk rating.

These risks are considered able to be successfully managed and mitigated through inclusion of the identified control measures into the EMP procedures.

Ongoing monitoring and management will be undertaken to test the effectiveness of the nominated controls, audit their implementation and identify other measures or different approaches that may be required to achieve and maintain acceptable risk levels. Measures to do so are outlined in the EMP for the Project.

ENVIRONMENTAL MANAGEMENT PLAN

To ensure that the appropriate environmental management practices are implemented, Seafarms has developed a draft Environmental Management Plan for the construction and operational stages of the Project. The draft EMP clearly describes the management activities, mitigation and control measures that will be adopted to minimise environmental impacts and enhance the benefits of the Project.

CONCLUSION

The construction and operation of the proposed facility may cause localised impacts to water quality, marine species, and terrestrial species. However, with the implementation of the control, management and mitigation measures described in this NOI, none of these potential impacts are considered likely to be significant in nature.

Level 5, Energy House
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DARWIN NT 0800

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PARAP NT 0804
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Facsimile: (08)8923 7601
Email: nt.landcorporation@nt.gov.au

ABN: 74 284 633 687

NTLC

NORTHERN TERRITORY LAND CORPORATION

File Ref: NTLC2016/0175
Your Ref:

Mr Chris Mitchell
Director
Seafarms
PO Box 7312
Cloisters Square
PERTH WA 6850

Dear Mr Mitchell

Re: Seafarms Project - NT Portion 2626, Gunn Point

NT Portion 2626 is held under Crown Lease Perpetual 311 and owned by the NT Land Corporation.

The Corporation hereby grants consent to Seafarms to lodge any relevant planning application/s with Development Assessment Services over the area outlined on the attached plan on NTP 2626, in accordance with the requirements of the Planning Act.

In providing this authorisation, the Corporation in no way endorses the contents of the application but merely provides authorisation for the application to be lodged and considered by Development Assessment Services.

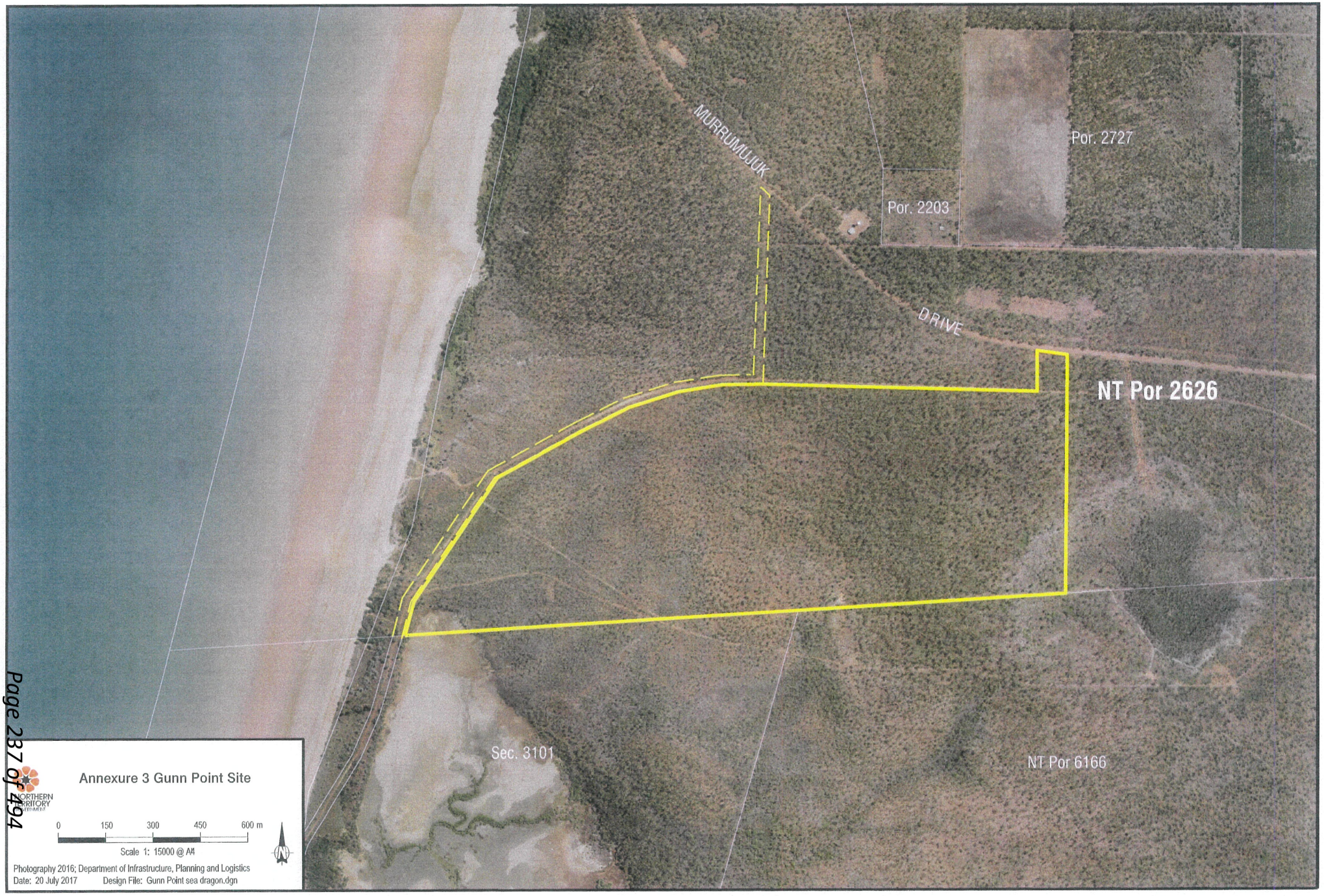
If you have any questions please contact Helen Gordon on 8999 3863 or email at nt.landcorporation@nt.gov.au.

Yours sincerely

JOHN COLEMAN
Chairman

5 October 2017

CC: Andrew Kirkman, Chief Executive, Department of Lands Planning and Logistics.


MURRUMUJUK
DRIVE
Por. 2727
Por. 2203
NT Por 2626
Sec. 3101
NT Por 6166
Annexure 3 Gunn Point Site
0
150
300
450
600 m
Scale 1: 15000 @ A4
Photography 2016; Department of Infrastructure, Planning and Logistics
Date: 20 July 2017
Design File: Gunn Point sea dragon.dgn

LITCHFIELD COUNCIL

Community effort is essential

15 November 2017

Development Assessment Services
Department of Infrastructure, Planning and Logistics
GPO Box 1680
Darwin NT 0801

RE: Letter of Comment Development Application

PA2017/0529
NT Portions 2626 (3820) Gunn Point Road, Koolpinyah
Intensive Animal Husbandry (prawn farm) including 2 x 3-bedroom single dwellings in 2 x single storey buildings.

Thank you for the Development Application referred to this office on 03/11/2017, concerning the above. This letter may be tabled at Litchfield Council's next Council Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration by the Authority:

Council <u>supports</u> the granting of a Development Permit for the following reasons:

a) The proposal appears compliant with the NT Planning Scheme and is not in conflict for the zoning of this site.

b) Council supports the development of suitable industry within our municipality.

provided the following issues are adequately addressed:

a) It is unclear from the proposal if Council will have stormwater or driveway access concerns. More information is required on the ultimate ownership of the proposed new road. It is understood that a new road that is proposed in PA2017/0528 to access the subject site. Council will require this road as currently proposed as a 100m wide arterial road, to be owned and managed by the Northern Territory Government. If owned by NTG, Council will have no stormwater or driveway access concerns. If other arrangements are made for the access road, Council's standards for stormwater drainage and driveway access shall be met.

b) To protect the rural amenity Council prefers the new development onsite to be screened to the greatest extent possible from the street frontage, preferably with dense landscaping.

Should the application be approved, the following condition(s) pursuant to the *Planning Act* and Council's responsibility under the *Local Government Act* are also recommended for inclusion in any Development Permit issued by the consent authority:

a) The kerb crossovers and/or driveways to the site are to meet the technical standards of Litchfield Council. The owner shall remove disused crossovers; provide footpaths/cycleways, as required by Litchfield Council; collect stormwater and discharge it to the drainage network; and undertake reinstatement works; all to the technical requirements and satisfaction of the Director Infrastructure and Operations, Litchfield Council, and at no cost to Litchfield Council.

b) Soil erosion control and dust control measures must be employed throughout the construction stage of the development to the satisfaction of the consent authority.

c) Any developments on or adjacent to any easements on site in favour of Council shall be carried out to the requirements and satisfaction of the Director Infrastructure and Operations, Litchfield Council.

Should the application be approved, the following notes are recommended for inclusion in any Development Permit issued by the consent authority:

a) Inspection fees and charges may apply in accordance with Litchfield Council's current Fees and Charges. Additional information can be found at www.litchfield.gov.nt.au.

b) A *Works within a Road Reserve Permit – Works Associated with a Development Permit* is required from Litchfield Council before commencement of any work within the road reserve, which would include creation of any driveway crossover connecting to Litchfield Council's road network.

c) Notwithstanding any approved plans, signs within Litchfield Council's municipal boundaries are subject to approval under Clause 6.7 of the NT Planning Scheme.

If you require any further discussion in relation to this application, please contact **Litchfield Council's Planning and Development division** on 08 8983 0600 and you will be directed to the appropriate officer to address your query.

Yours faithfully

Kaylene Conrick
Chief Executive Officer

COUNCIL REPORT

Agenda Item Number:	15.7
Report Title:	PA2017/0401, a Development Permit for subdivision to create 13 lots in 5 stages at Section 4580, Section 4579, Section 4185, Lot 16, and Lot 17 (175, 195, 205, 155A, and 155B) Lowther Road and Lot 13 and Lot 14 (298 and 296) Bees Creek Road, Bees Creek, Hundred of Strangways
Report Number:	17/0071
Meeting Date:	13/12/2017
Attachments:	Attachment A: PA2017/0401, a Development Permit for subdivision to create 13 lots in 5 stages at Section 4580, Section 4579, Section 4185, Lot 16, and Lot 17 (175, 195, 205, 155A, and 155B) Lowther Road and Lot 13 and Lot 14 (298 and 296) Bees Creek Road, Bees Creek, Hundred of Strangways. Attachment B: Council's letter of comment for PA2017/0401, a Development Permit for subdivision to create 13 lots in 5 stages at Section 4580, Section 4579, Section 4185, Lot 16, and Lot 17 (175, 195, 205, 155A, and 155B) Lowther Road and Lot 13 and Lot 14 (298 and 296) Bees Creek Road, Bees Creek, Hundred of Strangways.

Purpose

The purpose of this report is to provide a summary and assessment to Council of PA2017/0401, a Development Permit for subdivision to create 13 lots in 5 stages at Section 4580, Section 4579, Section 4185, Lot 16, and Lot 17 (175, 195, 205, 155A, and 155B) Lowther Road and Lot 13 and Lot 14 (298 and 296) Bees Creek Road, Bees Creek, Hundred of Strangways, included as Attachment A.

Summary

The proposal is for subdivision, which requires an application.

The report also presents for Council information the Letter of Comment on PA2017/0401 provided to the consent authority on PA2017/0401, a Development Permit for subdivision to create 13 lots in 5 stages at Section 4580, Section 4579, Section 4185, Lot 16, and Lot 17 (175, 195, 205, 155A, and 155B) Lowther Road and Lot 13 and Lot 14 (298 and 296) Bees Creek Road, Bees Creek, Hundred of Strangways, included as Attachment B.

This report concludes that Council should strongly object to the application by lodging a Section 49 objection to the proposal, detailing the series of concerns with road design, construction, and staging; legal access; stormwater drainage; and provision of vegetated buffers to protect amenity as required by the site zoning.

Recommendation

THAT Council receive for information Attachment B, Council's Letter of Comment for PA2017/0401, a Development Permit for subdivision to create 13 lots in 5 stages at Section 4580, Section 4579, Section 4185, Lot 16, and Lot 17 (175, 195, 205, 155A, and 155B) Lowther Road and Lot 13 and Lot 14 (298 and 296) Bees Creek Road, Bees Creek, Hundred of Strangways, the assessment of which is summarised above and reviewed in detail within the body of this report.

Background

Site and Surrounds

The subject site is comprised of five privately-owned residential parcels and two Crown land parcels used currently for public services. The site borders Lowther Road to the north and the Crown land parcels adjoin the site to the east and provide access to Bees Creek Road.

The five residential parcels are located in Zone SL18, a Specific Use Zone that designates particular requirements for developing these specific parcels of land. Broadly, the zone allows for development of lots of one hectare in size, which is smaller than the typical two hectare minimum for the surrounding lots in Zone RL (Rural Living), while also applying additional requirements for vegetated setbacks to Lowther Road and the surrounding residential parcels, clearing of native vegetation, and wastewater management provision.

Of note, there is one parcel within Zone SL18 – Lot 24 (155C) Lowther Road – that is not part of this current application.

Several of the parcels in this locality that are outside of this current application are serviced by a series of complicated right of way easements through Section 4580 and Lot 13, which are part of this application and which will be affected by the proposals within the application.

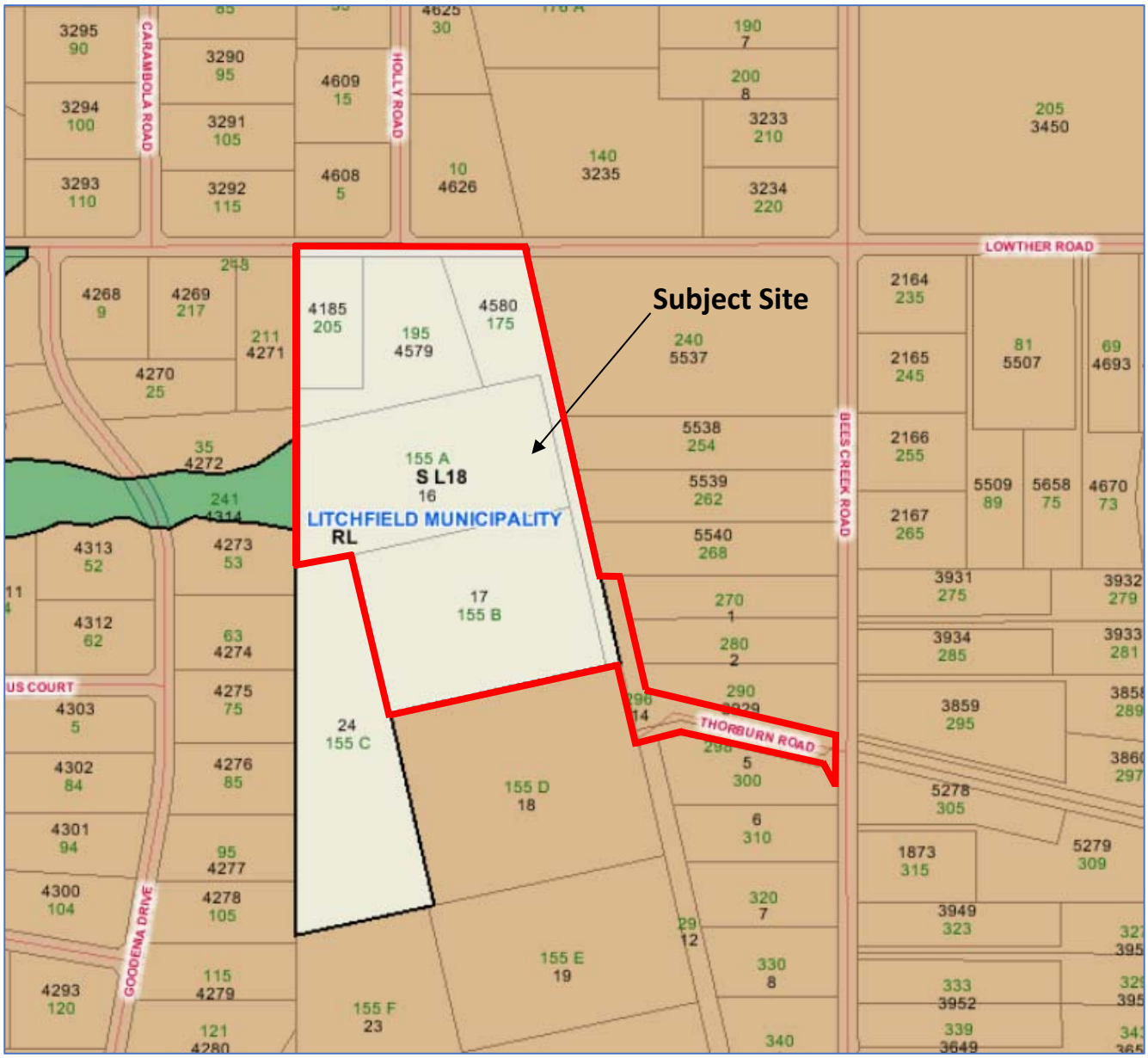
All of the residential lots except Section 4580 appear to be developed with residential uses.

The two Crown land parcels are located in Zone RL (Rural Living); however, these are considered remnant parcels originally dedicated to the Commonwealth for servicing purposes, namely a future public road and power and water reserve, are not considered suitable to be developed for residential purposes.

Lot 13 currently contains a sealed strip that is commonly referred to as "Thorburn Road". Thorburn Road is not a Council-owned road but is private road that is part of the roads Council has currently agreed to maintain as a municipal service under Council Policy LC29.

Lot 14 is a roughly L-shaped parcel, with the north south corridor containing power lines and an above ground water pipeline.

The surrounding sites are all located in Zone RL (Rural Living) and rea typically two hectares in size, though a couple of adjacent parcels at the north eastern and south eastern corners of the subject site are ten hectares in size.



Source: NT Atlas and Spatial Directory

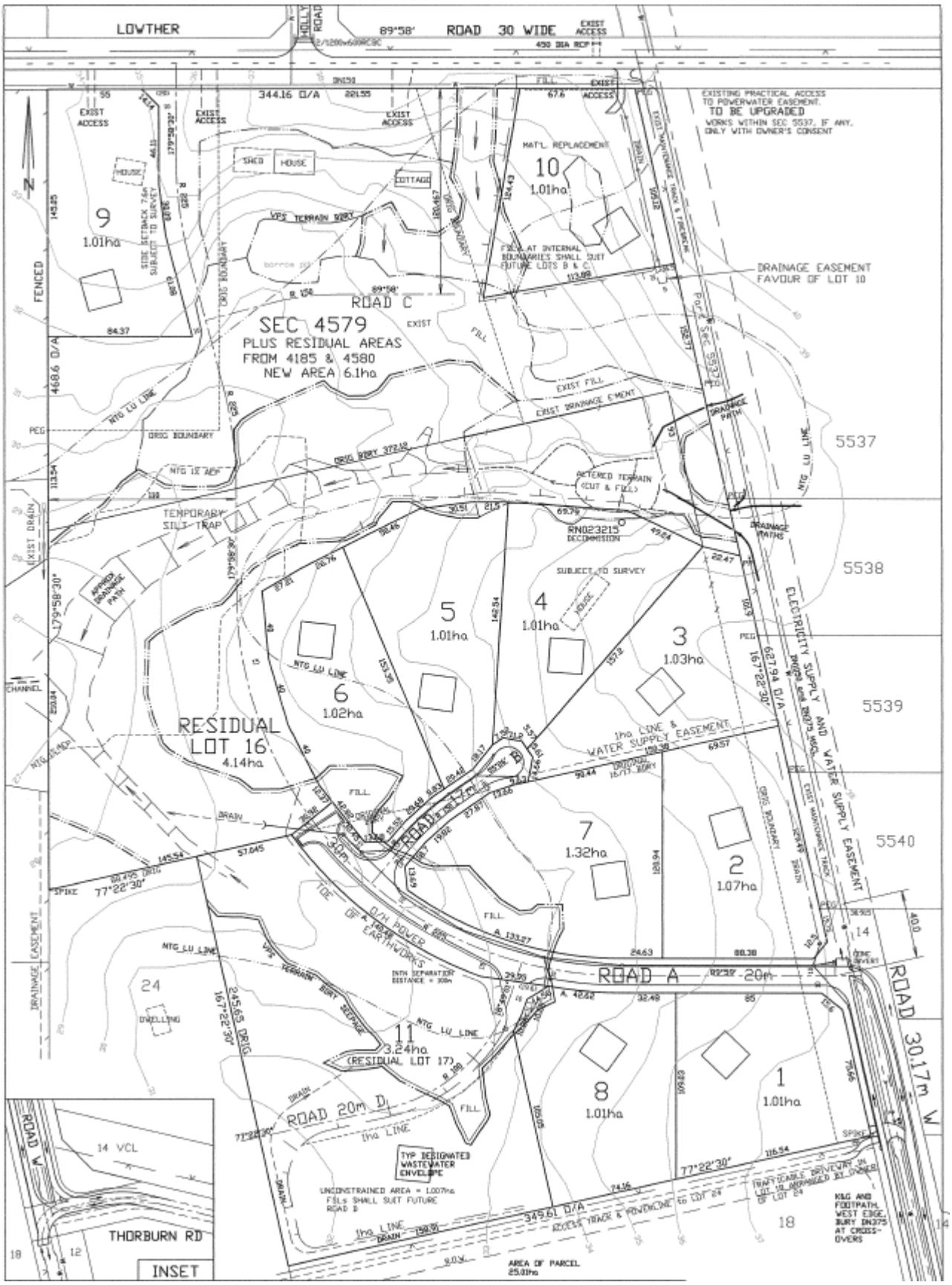
Site Development History

The subject site that is located in Zone SL18 was part of a lengthy rezoning process beginning in 2014. The original rezoning proposal was amended several times until the current SL18 zoning was approved in June 2016.

There have been no other formal development applications to subdivide the site since the approval of the rezoning.

Current Proposal

The application proposes to subdivide the site into 13 residential lots in 5 stages.



Source: PA2017/0401

The information provided in the report is rather confusing, as it discusses both this subject application in five stages, plus an additional two prospective future applications and attempts to provide some information for all of the above.

The application is also vague on details for creating legal access to the site through the existing Thorburn Road connection, particularly in the north south section, shown in the above image as Road W. It is unclear how this road will be formed or whether Crown land, who own the land, or Power and Water Corporation, who have authority over the easements and pipeline, are accepting of the road proposal. In particular, the arrangement of the road around the pipeline is unclear, with it appearing the applicant is suggesting that one lane of traffic could be formed on either side of the pipeline.

The application also proposes that the road reserve is not provided until Stage 2 of the project and that the road is not constructed until Stage 3 of the project. The application proposes that some parts of roads be 20m in width and other parts be 30m in width. Kerb and gutter is proposed in this rural area as well and the stormwater drainage plan provided is based on these roads and drainage assumptions. The application also references using City of Darwin standards for roads and the responsibility for creation and payment of road construction is unclear.

The application proposes that Zone SL18 be amended to allow amended vegetation setbacks from those required by the specific use zone.

A wastewater management plan containing a Land Capability Assessment is provided, as is a Land Suitability Assessment.

Application Assessment

The application is manifestly unclear in what is actually being proposed, and at which stages different portions of the proposal are expected to occur, including references within the application to additional future applications expected to be lodged in the future and requests to amend the NT Planning Scheme within this Development Application. It is not considered that the application fully or adequately lays out the proposal in a manner that allows complete assessment of the proposal. At a minimum, the following items must be addressed for Council to be able to assess the application and determine whether or not any support can be given at any time for the proposal.

This entire proposal relies on getting legal access from Bees Creek Road through the current Thorburn Road corridor to service the newly proposed lots. At the moment, the application does not appear to propose to construct Thorburn Road or to create a road reserve or any other legal right of way access in this location. Council will not accept access to multiple new lots within this subdivision without legal access to the site and formal construction of a road within either Lot 14 or part Lot 13 and part Lot 14 to Council's satisfaction. A road reserve must be created as part of this subdivision to allow the subdivision to move forward. It is unclear whether or not the Northern Territory Government has given permission for this road reserve to be created over their land (Lot 13 and Lot 14).

Plans for the upgrading of Thornburn Road, and the likely relocation of pavement seal to Lot 14, as well as the necessary upgrades to the Bees Creek Road intersection must be reviewed immediately with Council. A full upgrade of Thorburn Road and the intersection with Bees Creek Road will be

required as part of this subdivision, to Council's standards, prior to issuing any titles for the any new lots, and at no cost to Council.

There is concern about how a road reserve would be created over the north-south portion of Lot 14, which contains an above ground pipeline. The application does not give suitable attention to this impediment to a road and proposes that the road may be able to built with a divided carriageway around the pipeline. The road reserve provided is not adequate to provide for such a design and Council will not accept a pipeline through the middle of a Council road. Council has no confirmation from the application as to whether or not Power and Water Corporation would allow for the pipeline to be buried beneath the road.

Further, the application appears to state that even if a road reserve is created from Bees Creek Road to the southern portion of the subdivision, that this road reserve would not be created until Stage 2 and that a road would not be constructed until Stage 3. Council would not be in a position to sign off on any lots within the subdivision or allow titles to be granted for new lots until such time as a road is constructed within a legal road reserve, to Council's standards.

The application proposes a mixture of 20m and 30m wide road reserves and indicates the intention for kerb and gutter. Council's standards for one hectare lots is a rural road profile, without kerb and gutter, of a minimum of 30m in width. Plans must be amended to address that requirement. Further, the application proposes to use City of Darwin cross-sections for roads within this subdivision, which is not appropriate or acceptable in the Litchfield Council area.

Further, Council's standards do not encourage the use of cul-de-sacs and the NT Planning Scheme and Litchfield Subregional Land Use Plan 2016 require an interconnected local road network. Therefore, it is considered that a development of this size should consider an additional connection to Lowther Road, in coordination with Council.

Due to the concerns with the road proposals and the fact that the proposals do not meet Council's requirements, it is impossible for Council to evaluate the adequacy of any stormwater drainage information provided, as the design is predicated on incorrect assumptions, such as the use of kerb and gutter. Council cannot complete an assessment on, nor give any approval for, the stormwater drainage information currently provided. Council is unable to determine whether the proposed subdivision would create drainage issues for the proposed new lots or existing adjacent lots.

The Land Suitability Assessment (LSA) provided with the application states that it is based on the drainage information provided in the stormwater management plan provided with the application. As the stormwater management plan proposes incorrect methods of management that do not meet Council's standards, it follows that the portion of the LSA that addresses drainage must also be inadequate to assess the suitability of the site to provide minimum 1Ha of unconstrained land per lot.

The application requests amendments to conditions of Zone SL18 in terms of vegetation buffers. A Development Application cannot amend the NT Planning Scheme. Council does not support any changes to the required vegetation buffers as stated in the zone and considers that these vegetation buffers should be established at time of subdivision to ensure their development, as they were required for approval of the specific use zone and reduction of lot sizes.

It appears the applicant is arguing against the provision of required setbacks and buffers to future dwellings on the subdivided lots, contending that "there is no advantage to the subdivision-developers regarding setbacks to built form" and that there will be an advantage to future owners to reduce the setbacks. However, the intent of the setbacks and required vegetation buffers is typically to protect the amenity of the existing and future surrounding neighbours and thus both are essential to appropriate development of a subdivision in this locality.

It is unclear what will happen with the existing right-of-way accesses to the properties to the south of the proposed development that currently exist through the proposed development area. Support for the application should depend upon the full written support of all landowners whose lots would be affected by this proposal.

Conclusion
It is recommended that Council strongly object to the application by lodging a Section 49 objection to the proposal, detailing the series of concerns with road design, construction, and staging; legal access; stormwater drainage; and provision of vegetated buffers to protect amenity as required by the site zoning.

Links with Strategic Plan

Priority # 2 – A great place to live

Legislative and Policy Implications

Not applicable to this report.

Risks

Not applicable to this report.

Financial Implications

Not applicable to this report.

Community Engagement

Not applicable to this report.

Recommending Officer:	Wendy Smith, Acting Director of Infrastructure and Operations

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

NORTHERN TERRITORY GOVERNMENT

DEPARTMENT OF
INFRASTRUCTURE, PLANNING
AND LOGISTICS

Crown Land Estate
Level 5 Energy House
18-20 Cavenagh Street
DARWIN NT 0800

Postal Address
GPO Box 1680
DARWIN NT 0800

T 08 8999 6631
E simon.flavel.@nt.gov.au

File Ref: LD2016/0044

Jack deVries
Consulting Civil Engineer
sent via email: jack.vries@bigpond.com

Dear Mr deVries

Re: Lots 13 and 14 Hundred of Strangways from plan LTO69/009

This letter authorises Mr Jack deVries to lodge a development application over the abovementioned land (Lots 13 and 14) with the Development Consent Authority, in relation to proposed a subdivision of Sections 4185, 4579 and 4580 Hundred of Strangways, and Lots 16 and 17 Hundred of Strangways from plan LTO73/001.

The purpose of this letter is solely to provide consent to lodge the development application for consideration by the Development Consent Authority. This letter does not endorse the contents of the development application or authorise commencement of works on Lots 13 and 14.

Yours sincerely,

Simon Flavel
A/Manager Land Transactions

13 September 2017

www.ntgov.au

PLANNING REPORT

STATEMENT of EFFECT

SUBDIVISION OF:

SPECIFIC USE ZONE SL18

Lots 16 & 17 LTO 73/01 and SECTIONS 4185, 4579 & 4580

(155A, 155B, 175, 195 and 205 Lowther Road)

and

PUBLIC ROAD IN:

ZONE RL, Lot 14 LTO 69/09, Thorburn Road

(296 Bees Creek Road)

Hundred of Strangways

Bees Creek

PREAMBLE

This Report accompanies an Application for a subdivision of five of the six lots in Specific Use Zone Litchfield No. 18 (SL18)[1] located at 155 to 205 Lowther Road, Bees Creek.
The Application is also for consent to create a public road reserve, between Thorburn Road and the subdivision, on adjacent land described as Lot 14 LTO 69/09 located at 296 Bees Creek Road.

The five lots to be subdivided have an estimated, ultimate yield of 17 predominantly 1.01 hectare lots, whereas this Application is to create **11** predominantly **1.01 hectare lots** plus 2 balance-areas to be retained for a subsequent application.

The proposed development substantially comprises the *division of land into parts available for separate occupation or use, by means of sale, transfer or partition.* Accordingly, the proposal constitutes a *subdivision* pursuant to **Section 5(1)(a)** of the Northern Territory Planning Act, and thus a Development Permit is required pursuant to **Section 44(b)** of the Act.

In addition to this Report, the Application is further supported by the following, separate documents:-

1.	**Wastewater Management Plan**, incorporating[1] a Land Capability Assessment.	The WMP & LCA have been approved by the Department of Health, Environmental Health pursuant to Clause 2.(i) and subclause i. of SL18.
2.	Vulnerable flora survey.	Pursuant to Clause 2.(f) of SL18.
3.	**Stormwater Management Plan**	Prepared concurrently with the WMP & LCA pursuant to Clause 2.(i) subclause iii. of SL18**.**
4.	**Land Suitability Assessment**	Pursuant to Clauses 2. of SL18 and 11.4.5 subclause 6. of the Scheme.
5.	**Dimensioned Plan**	As per DAS guide to an application; this separate document is the current version.
6.	**Owner's Authority**	Applicable to Lot 14 LTO 69/09
7.	**Building Certifier's Report**	

The following documents are non-mandatory

8.	Infrastructure Report
9.	Statements

[1]**NOTE**: A copy of SL18 is included in the WMP.

MAIN INDEX

PART A, DETAILS OF THE LAND AND THE SUBDIVISION PROPOSAL

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PART B, INFORMATION SUPPORTING THE SUBDIVISION PROPOSAL:

See Part B for Index.

Includes statements under Sec 46(3) of the Scheme, which include commentaries to Section 11.4.5 of the Scheme at 46(3)(a).

PART C, RULES AND GUIDELINES FOR THIS SUBDIVISION and APPLICATION:

See Part C for Index.

PART D, APPENDIX: See Appendix for Index.

PART A Details

1. FIFTEEN KEY POINTS of the PROPOSAL:

The 15 points are discussed in further detail in this Planning Report and/or separate documents 1-9 listed on the PREAMBLE page.

The broad proposal is for a **SUBDIVISION**, into **11 x 1.01ha lots** plus 2 residual areas; 13 total.

Name of the development is **BEES CREEK HEIGHTS**.

A key reference document is SL18*.

This Application is the first of 3 applications.

Initial road access via Thorburn Road is proposed.

The layout responds to the physical characteristics of the land.

Land Improvements are proposed; primarily road infrastructure with services and some site works including designated wastewater envelopes.

An Approved Wastewater Management Plan forms part of this application.

A staged subdivision is proposed.

Some construction work may occur during the wet-season.

10 lots from this initial development are to be offered for sale.

Use of existing houses and ancillary buildings shall continue.

The layout is consistent with a concept plan for potential future subdivision.

Provision is made for road-extension to Lowther Road in a subsequent development application.

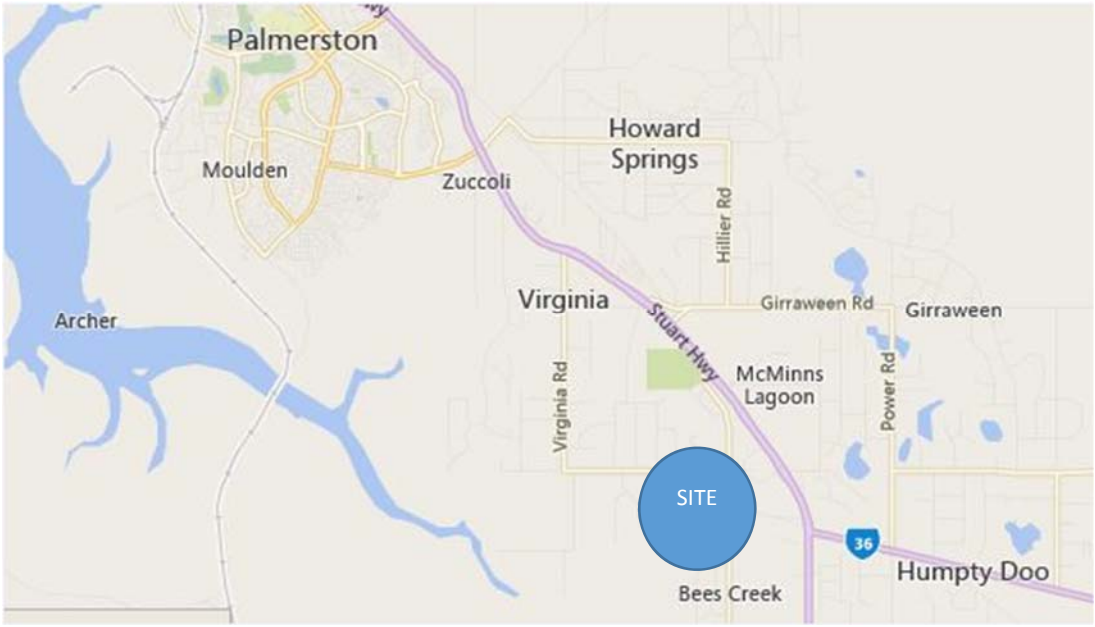
Total potential yield of the land is 17 x 1ha nominal size lots; after completion, all lots shall eventually be offered for sale.

***NOTE** re SL18: A copy of SL18 is included with the WMP in order to comply with Clause 2.(i) in respect of subclauses, particularly v., vi. and vii., which may not need to be addressed in further detail in the WMP or LCA. Subclauses 2.(c), 2.(d), 2.(i) v. and vi. may be applicable to the Development Consent Authority in respect of Conditions.

2. LOCATION:

The site is situated approximately 30 kilometres south-east of Darwin CBD, 12 kilometres south east of Palmerston CBD, 4-5 kilometres south of the commercial node within the Coolalinga Rural Activity Centre and, 5.9 kilometres north-west of the Humpty Doo village.

The Parcel of land has frontage to Lowther Road and, Lot 14 has frontage to both Bees Creek Road and Thorburn Road. **Litchfield administrative maps** reference: MAP 17, 1 & 2 : C & D.



3. PARTICULARS OF THE LAND PARCEL and INDIVIDUAL LOTS:

3.1 Land Comprising Main Parcel:

All Lots in the Main Parcel have the same zoning, which is addressed in Part B.

The following Table sets out selected particulars of the land comprising the main parcel:

LOT No.	Survey Plan	Street No.	Title CUFT	Area ha	Owner	Improvements and current Use	Encumbrance easements
Sec 4185	96/52	175	687 234	2	L J Bandias	House (rental)	[2]
Sec 4579	2001/74	195	683 986	3.72	L J Bandias	Houses, shed. Main residence and rental	Drainage, Access[3] & watersupply[3]
Sec 4580	2001/74	205	683 987	3.11[1]	L J Bandias	Vacant, parkland setting	Drainage, Access[4] & watersupply[4]
Lot 16	LTO 73/01	155A	765 152	8.09	L J Bandias	House (rental)	As below
Lot 17	LTO 73/01	155B	772 158	8.09	Bandias Investments Pty Ltd a/t	Mainly vacant, investment property	Public road access only via access-easement
			Parcel total	**25.01**			

[1] Sec 4580 is a battleaxe lot; regular area = 2.21ha
[2] Sec 4185: electricity easement on survey plan, nil on Title, no electrical infrastructure found.
[3] Sec 4579: Access and watersupply encumbrances carried over from Sec 4184 (p1 of Title), but there are no such easements delineated on diagrams of Title or survey plan. Effectively, other lots on LTO 73/01 have nil rights over Sec 4579.
[4] Sec 4580: Access and watersupply easements in favour of other lots on LTO73/01; rights have not been exercised.
Some lots in the Parcel have R.O.W. (or Access) over other lots on LTO 73/01; rights have not been exercised and shall no longer be required upon completion of a subdivision which includes Road W.

Selected pages of Titles are in the the Appendix

3.2 Land for Proposed Public Road:

3.2.1 Particulars of the Land for Public Road:

This land for Road W is adjacent to Sec 4580 and near Lot 17 of the main parcel.
It is zoned RL; zoning is addressed in Part B.

LOT No.	Survey Plan	Street No.	Area ha	Owner	Improvements and Use	Encumbrance
14	69/09	296 (Bees Ck Rd)	tba	NT Govern-ment[1]	Two watermains, two o/head electricity lines, Maintenance-tracks and minor road-encroachments. Practical access to Lots 16, 17 and 24. Occasional public use; not restricted.	Approved for use by PWC & Telstra, for utilities

[1] For confirmation of ownership, see email from Crown Land Estate, submitted as owner's consent.

3.2.2 Area Proposed for Public Road:

The minimum area required for a public road reserve is 0.77 hectares, subject to survey.
The corridor is approximately 30.17m wide and 240m long.
Only part of lot 14 is proposed as public road for Road W; options for balance area includes leaving as-is or, widening of Thorburn Road reserve; the latter option is achieved by converting all of Lot 14 to Public Road Reserve.

3.2.3 Connectivity of Maintenance Tracks

The PWC maintenance tracks within Lot 14 are sections of continuous maintenance tracks alongside infrastructure, southwards from Lowther Road and into Lot 12. The tracks link to Thorburn Road.

The tracks are part of a network of tracks and driveways which provide practical access to Lots 16 to 24 on LTO 73/01.

3.3 Aerial Photo:

Encroachments as follows can be made out:

- PWC maintenance-track link to Lowther Rd at N/East cnr of Sec 4580,
- Roadworks at west end of Thorburn Road into Lot 18.

4. MULTIPLE DEVELOPMENT APPLICATIONS and STAGES:

4.1 Multiple Development Applications:

Three Development Applications are proposed:

- DA1 (this Application); to create lots 1 to 11 in stages; all Lots in the Parcel are affected as well as Lot 14. DA1 is a joint venture between L J Bandias and Bandias Investments Pty Ltd.
- DA2, the second application, subdivision; to create lots A to E or some lesser quantity. DA2 provides a road connection to Lowther Road. The applicant in DA2 may be L J Bandias only.
- DA3, the third application, subdivision; to a create public road reserve, Road D, for direct access to Lot 24 and potential subdivision of lot 11 to create 2 (eg lots F & G) or more lots. The applicant in DA3 may be Bandias Investments Pty Ltd only or, it may be a joint application by Bandias Investments Pty Ltd and Owner of Lot 24.

Upon the completion of DA3, the Bees Creek Heights project shall be finished, except perhaps for marketing of lots.

4.2 Overall Concept Design:

DA1 arose from an overall concept design for the whole parcel.
Two principal aims were developed for the overall concept design; they are:-

- Utilize the best land for new lots and,
- An optimum alignment for the collector road (Road A) between Lowther Road and other subdividable land.

The best available land, whilst well known to the owner, was conveniently mapped using a variety of 'tools'; from government mapping through to findings of numerous on-site investigations by professional assessors.

Choices for alignment of Road A at the Lowther Road end are very limited; the intersection centreline could only vary by a few metres from the nominated position.
Whilst the southern end has very few physical limitations, it was considered inappropriate to both fix an alignment and to terminate a road at the southern boundary of Lot 17, due to the potential impacts on the adjacent land whilst that land continues to be used for its original purposes and, given that a vegetation buffer is specified for the southern boundary for the benefit of Lot 18.
The western leg of Lot 14 was identified as suitable for a road link enabling connectivity between this subdivision and Lots 19 to 23 in LTO 73/01 . (A potential local road network plan is in the Appendix). Such road link, termed Road W in this Application, intersects with the western end of Thorburn Road which currently provides sealed-road access to Lot 18. From this intersection point, there is potential for others to extend either Thorburn Road or Road W as part of a future road network serving Lots 18 to 24 in LTO 73/01.

Given the above, it was considered that the optimum alignment for Road A is from Lowther Road where nominated to an ideal point along Road W; generally as per our current, overall concept plan.

A copy of the overall concept plan is in the Appendix in two formats: a) Basic layout, and b) Contoured layout with surrounding properties and roads (1:4000 @ A3).

4.3 Development Application No. 1 (DA1):

The DA1 area was initially in various stages of the overall plan. After further analysis, it became clear that the areas should comprise the first development application.

DA1 utilizes the best land in the Parcel and, the nature of development work is relatively uniform. In particular, roadworks as proposed for Roads A, B & W have fairly consistent characteristics such as kerb & gutter and underground drainage together with only minor rural-type features.

DA1 proposes staged construction. Usual requirements for temporary ends-of-roads, services and residual land at completion of intermediate stages have been considered.

A staged DA1 also facilitates the orderly removal of existing Right Of Ways (or Access Easements) and other easements that are no longer required by services authorities; ie there should be no need to record such encumbrances on new Titles.

The five stages for DA1 are as follows:-

Stage	Lot Nos. of new lot(s)	Roads	Contributing Lot
1	9	East boundary suits future extension of Road A.	Sec 4185 only; consolidate residual with Sec 4579
2	10	Includes upgraded access; to serve north end of PWC easement. Create public road reserve over Lot 14. S/West cnr of lot 10 suits future Road C.	Sec 4580 and Lot 14. consolidate residuals of Sec 4580 with lots 16, 17 and Sec 4579A
3	1	Road W	Lot 17A and new public road reserve.
4	2 and 8	Road A from Road W to centreline of Road D.	Lot 17B and Lot 16A and/or Sec 4579B if required for watermain.
5	3, 4, 5, 6, 7 and 11	Road B and, Road A from centreline of Road D to existing boundary of Lots 16 & 17. West boundary of lot 6 suits future extension of Road A.	Lots 16B and 17C.

Staging ultimately determines the order in which new Titles are issued. Construction work is intended to proceed seamlessly in accordance with a design & construction program. For example, the draft program indicates that design work for stages 1-3 shall commence simultaneously, but construction work shall commence at lot 10 (Stage 2). This is due to longer design-time, for east boundary of lot 9 which shall involve detail design of future Road A and intersection. When that design is finished, completion of lot 9 shall be rapid; ahead of lot 10.

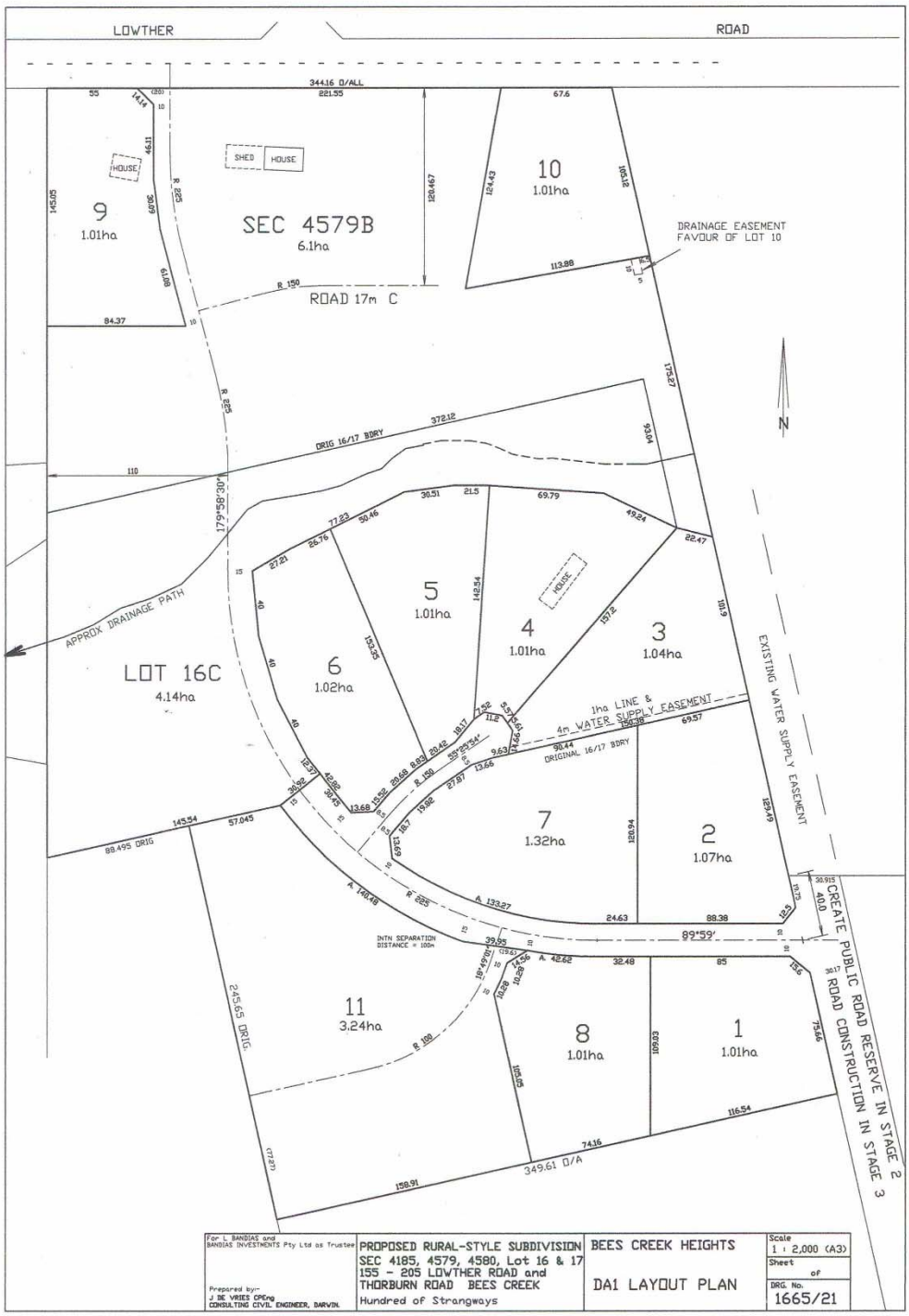
Construction Cost is a significant Variable in assessing stages; presently it is based on estimated cost, to be replaced by Contract Price(s).
If different staging becomes desirable, the Applicants can apply to vary a condition of the permit.

Cont'd

Plans in the Appendix:

- Copy of the plan below,
- Interim Lot configurations at Stages 1 – 4; ie configuration of residual areas.

The Appendix also contains a copy of the Dimensioned Plan.



5. LAND IMPROVEMENTS:

5.1 Maximum Yield with no Land Improvements:

The purpose of this clause is purely to demonstrate that Land Improvements are an essential part of a viable subdivision of the Parcel.

Only a single 1 hectare lot can be created from the parcel of 5 Lots without carrying out major Land Improvements. Such lot shall be at the north-west corner of Section 4185; the site for lot 9.
A 1ha lot at this location would still require minor land improvements including vegetation buffers of the required density & firebreaks and, upgrading of existing wastewater system to provide secondary treatment and irrigation within the designated wastewater envelope.

This quality of Land (ie of this Parcel) is recognised in FAO 1976 documents, for example "*Land in itself, without input, rarely ever possesses productive potential." (1.4 Principles)*: where 'input' generally refers to Land Improvements.
Land Improvements are therefore an essential component of a viable subdivision.

5.2 Description of Land Improvements:

Land Improvements in FOA 1976 is stated as '*an alteration in the qualities of land which improves its potential for land use'.*

Land Improvements includes works in the Provisions of Section 11.4.5 of the Scheme such as sealed roads with drainage, water reticulation and integration with local infrastructure which typically includes electricity and provision for NBN cables. It also includes additional works specified in SL18.

Land Improvements as per 11.4.5 are typical for new RR subdivisions, which in most cases is for parcels exceeding 8ha requiring roadworks.
Land Improvements also includes works proposed by the developer. This Application includes Improvements within various lots associated with roadworks as discussed in the following section.

Improvements proposed for lot 10, however, are of a type that an owner of Sec 4580 (2ha+) may choose to carry out as part of a house building project, if Sec 4580 were to remain un-subdivided. The extensive works proposed for lot 10 are designed to achieve Class S2 or better Land Suitability for at least 1ha and, shall be designed to accommodate future lots B & C and Road C. The Appendix includes a concept Plan and Section A-A of works proposed for lot 10.

Works along the east boundary of lot 9, whilst a type of Land Improvement, do not necessarily improve lot 9 but rather shall accommodate verge and footpath levels as part of future extension of Road A and, shall enable ultimate removal of an existing access strip from Lowther Road.

5.3 Extent of Earthworks for Roadworks and associated Drainage & Services:

Alignment-selection of Road A is discussed in 4.2.
Preliminary design indicates that the required footprint for roadworks shall extend beyond the road reserve boundaries in certain areas. Such work is considered in Council's guidelines in clause 14 of Part C as follows: "*Cut and fill batters may be extended into allotments where the design cross section cannot be contained within the road reserve. In these cases, the batter slope should not exceed 1 in 4 unless in special cases, geotechnical testing indicates that steeper slopes are sustainable and maintainable.*"
A minimum slope of 1% is proposed. Land immediately adjacent to the road reserve boundary is typically to be used as firebreak and, setbacks apply for buildings.

The footprint for works associated with roadworks is illustrated on the diagram below; the heavy outlines (generally) indicate toe-of-batter on low side and, intersection with natural ground on the high side. Quality of works shall be at least equal to road-subgrade quality. Final design and uses may reveal areas requiring higher standards and/or design and construction in accordance with relevant standards for site-filling; see next clause 5.4. A copy of the plan below is in the Appendix.

5.4 Use of Altered Land:

Where land is to be altered beyond road reserve boundaries as discussed in 5.3, the design of alterations shall achieve potential Land Suitability Class S2 or better when the altered land forms part of the designated 1ha area of unconstrained land. Design shall take into account proposed end-uses, both mandatory and notional, such as firebreaks and the like. Upon satisfactory completion of the works, the land shall be Class S2 or better.

5.5 Ancillary Land Improvements:

5.5.1 Essential Services:

In addition to those essential services that are specifically prescribed in SL18 and 11.4.5, the following shall be provided:

- Electricity; to serve each lot and, street lighting unless solar-powered lighting is recommended and approved.
- Pits and pipes for NBN services.

5.5.2 Lot by lot Summary of Land Improvements:

In addition to mandatory Land Improvements, the following are proposed:

Lot No.	Improvements
1	nil
2	Cut-off drain along east boundary
3	Suitable terrain for north boundary and firebreak. This lot shall contain a DN150 watermain in an easement, subject to PWC approval.
4	Suitable terrain for north boundary and firebreak
5	Suitable terrain for north boundary and firebreak. A diversion drain along east boundary if desirable.
6	Suitable terrain for boundaries and firebreaks. A diversion drain along east boundary if desirable. Ground cover for any altered land. Tree planting if desirable.
7	Suitable terrain for south/west boundaries and firebreaks. A diversion drain along east boundary if desirable. Ground cover for any altered land. Tree planting if desirable.
8	Suitable terrain for north/west boundaries and firebreaks. Ground cover for any altered land.
9	Adjust ground level along east boundary & firebreak to suit verge levels in future Road A.
10	Improve access to PWC easement and to lot. Fill, within adjacent verge of Lowther Road. Underground subsoil drain along north boundary. Diversion drain along east boundary. Material replacement wherever necessary incl cut & fill and raise and/or regrade surface levels; works shall accommodate future lots B & C and Road C. Suitable ground cover and landscaping.
11	For southern '1ha'; material replacement wherever necessary incl cut & fill and raise and/or regrade surface levels. Diversion drains along south and west boundaries and, along east boundary if desirable. All new levels to integrate with design of future Road D. Suitable ground cover and landscaping. (The current plan is to retain lot 11 and encourage development of adjacent Lot 24. A rental-house may be constructed.)

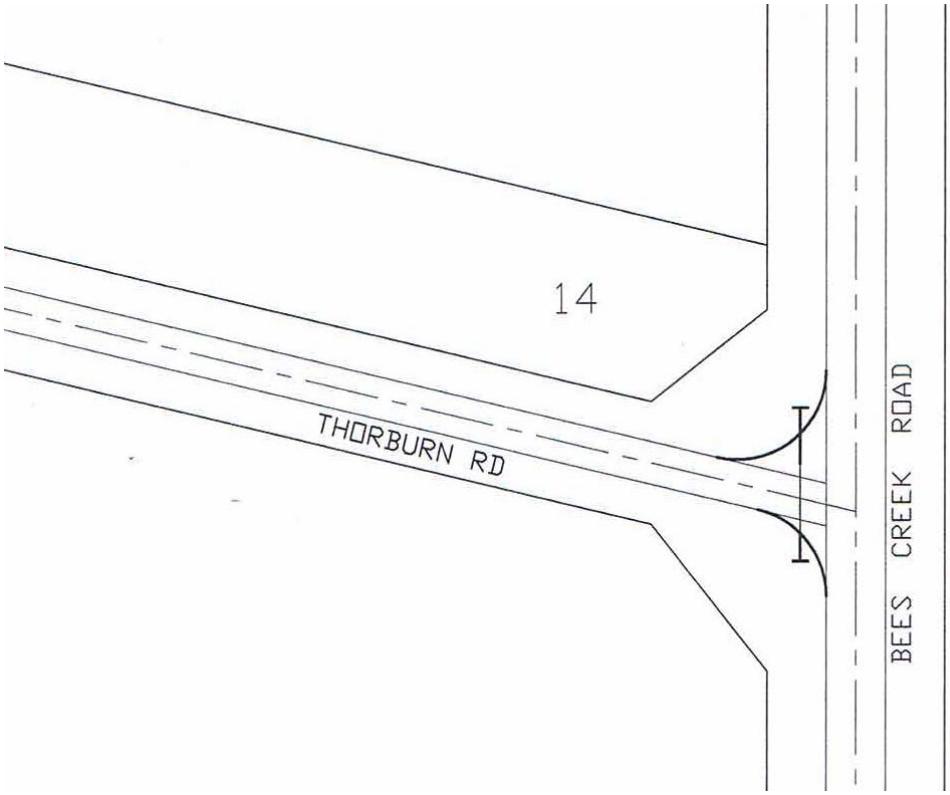
Where improvements occur along boundaries, the work shall extend into Residual areas to provide suitable terrain for firebreaks and stable batters.

Site of future culvert in Road A extension shall be utilized, if practicable, for a sediment trap during DA1 construction phase.

Where diversion drains and vegetation buffers can coincide, the design shall be for a riparian-type outcome.

5.5.3 Roadworks at a distance from the Subdivision:

It is proposed to design an interim upgrade for the Bees Creek Road/Thorburn Road intersection for turning provisions similar to a Type 1 intersection. Scope of the design shall include new signs, if warranted.
Future, additional, upgrading by others may be necessary when any of Lots 18-24 in LTO 73/01 are subdivided.



6. SIZES OF NEW LOTS:

6.1 Minimum Lot Size:

The minimum lot size is more than 1 hectare; this arises primarily from a cut-off point of exactly 1ha used by the Council to determine whether:

a) it is a subdivision that requires urban standard road facilities or, rural standard roads and,

b) if urban standard, then WSUD shall apply.

Urban standard roads and facilities, eg kerb & gutter, footpaths and underground drainage, may be used as an alternative in a rural setting but, rural standard roads cannot be used in an urban setting.

Where a subdivision comprises all or predominantly 1ha or smaller lot sizes, it is considered to be an urban setting.
Alternatively, where a subdivision comprises all or predominantly 1.01ha or larger lot sizes, it may be regarded as a rural setting.

The ideal road type for Road A is a combination of urban type and rural type. This is mainly due to certain design criteria particularly minimum slope (1%) for kerb & gutter. The central portion of Road A shall traverse 5b1 type land unit terrain which is relatively flat; generally <1%. This 5b1 type terrain is most suited to a rural-type road on an embankment particularly in the vicinity of culvert-crossings.

Rural type roads require a minimum 30m wide road reserve. Reserves for urban type roads can be less than 30m wide. Where urban type construction is used for a collector road, the road reserve may be 20m minimum width.

Minimum width road reserves, where practicable, have advantages for both the developer and the Council, for example:-

- More land is available for allotments,
- Less area to maintain.

If all other factors remain the same, a '1.01ha' subdivision is more viable than a '1ha' subdivision.

In consideration of the above, the minimum lot size in DA1 is 1.01 ha or, a measured 10,121m^2 in the layout plan to allow a margin for survey requirements (eg chords) and rounding down.

6.2 Proposed Lot Sizes:

The following table sets out proposed lot sizes:
(*italics is an administrative step; no Title issued),*
Lots or Sections with post-script letters, eg 4579A, represents a new number to be issued by SG).

lot no.	lot sizes		Residual Lots	
	ha	m^2	Lot no.	Area ha
Stage 1				
9	1.01	10,121	*Sec 4185A*	*0.99 temporary, consolidate with Sec 4579.*
			Sec 4579A	4.71
Stage 2				
10	1.01	10,122	*Sec 4580A*	*2.1 temporary, consolidate with Sec 4579A & Lots 16 & 17.*
			Sec 4579B	6.1 with drainage easement for lot 10.
			Lot 16A	8.58
			Lot 17A	8.31
Stage 3				
1	1.01	10,121	Lot 17B	7.3
Stage 4				
2	1.07	10,753	Lot 17C and 16B	4.94,
8	1.01	10,121		8.43
Stage 5				
3	1.04	10,422	Lot 16C	4.14
4	1.01	10,122		
5	1.01	10,123		
6	1.02	10,206		
7	1.32	13,253		
11	3.24	32,435		Lot 11 is residual of Lot 17C

See Appendix for lot configuration diagrams for stages 1-4; stage 5 is as per layout plan.

6.3 Lots for subsequent Development Applications:

The following table sets out lot details of Parcels for DA2 and DA3:

Development Application No.	Parcel	Area ha
DA2	Sec 4579B	6.1
	Lot 16C	4.14
	Total parcel area in DA2	10.24
DA3	lot 11, or Lot 17D	3.24

7. ALTERATIONS TO EXISTING INFRASTRUCTURE:

7.1: Within New Public Road Reserve (previously Lot 14):

Roadworks within the new public road reserve (previously Lot 14) in Stage 3 shall require alterations to existing infrastructure as follows:-

Item	Current Use	Alterations
Above Ground DN375 Steel Watermain	Gravity main, serving rural area	a) Replace sections with underground pipe; to facilitate vehicle crossings. b) replace any existing banjo connections within works areas, wherever practicable.
Underground DN1050 watermain	Rising main; from Darwin River to McMinns Pumping Station.	Design Road W to avoid infrastructure; some amended protective barriers may be warranted at installations such as airvalves.
Powerline, west	HV & LV	Survey, required offset in new verge and subsequent road- design shall determine if any existing poles need to be relocated or be provided with crash barriers.
Powerline, central	HV	Survey and subsequent road-design shall determine if any existing poles need to be relocated or be provided with crash barriers.
Incidentals	tba	Incidental services to be located by DBYD and survey; alterations to be managed as required.
Existing Thorburn Road over above-ground main.	Vehicle access to Lots in LTO 73/01 and to PWC corridor	Design of new Thorburn Rd/Road W intersection and associated buried watermain to enable vehicle access during construction phase; possibly single lane only and/or a diversion. On completion, remnants of raised-road to be removed. New intersection shall enable access to existing tracks heading south.

If any work is scheduled for wet-seasons, the aim shall be to provide a sealed carriageway to at least end of existing Thorburn Rd seal and, for unsealed carriageways in the public road reserve to be trafficable similar to existing or better.

7.2: Existing Services at Fill-site in Lowther Road:

Filling is proposed in Stage 2 along the verge in Lowther Road opposite lot 10 (mentioned in 5.5.2) to improve current drainage and in preparation for lots A & B in DA2. Details of existing and ultimate stormwater drainage is in the SWMP. Excavation is likely to be limited to topsoil. Surfaces shall be reinstated to Council satisfaction.

Item	Current Use	Alterations
Underground services in Lowther Road opposite lot 10	Grassed verge with underground watermain and phone cables	Potential alterations; proposed excavation and fill to be negotiated with Council and with PWC and phone-cable authority regarding cover over services.

8. PRELIMINARY PROPOSALS:

8.1 General:

The following proposals are preliminary. Relevant conditions in SL18 are to be conditions in a development permit. The conditions in a development permit may contain variations as discussed in Clause 12 of Part B, Clause 5 of Part C or otherwise.

8.2 Vegetation Buffers and Residual Areas:

The diagram in Appendix 13 indicates that residual areas have substantial areas of dense vegetation in areas specified as vegetation buffers in SL18.
It is proposed that improvements to vegetation buffers for residual areas are deferred until completion of subsequent development applications, DA2 and DA3.

8.3 Vegetation Buffer, Firebreak and Regrading in Lot 10:

It is proposed to provide an attractive landscape feature which incorporates stormwater drainage within the eastern vegetation buffer and, to locate the primary firebreak between the vegetation buffer and future built form.
The area selected for the eastern vegetation buffer comprises relatively dense native vegetation. Formal drainage works (eg swales, underground pipes) shall be minimised to preserve as much of the existing vegetation as possible. An accurate level survey shall be undertaken during the detail design phase to determine the minimum amount to be cleared for drainage works. Capacity of drainage works shall be designed to avoid backing up of stormwater in the adjacent PWC easement. Design levels of the offset firebreak shall prevent runon onto the remainder of lot 10. Stormwater from the vegetation buffer shall discharge at an easement in Sec 4579B. Appendix 8 & 9 refers.

Setback from the east boundary to built form shall be 16m minimum, compared to a minimum of 15m in SL18. If a future building is located between 16 and 20m setback, a relevant portion of the primary firebreak may need to be non-combustible eg paved.

Lot 10 shall be regraded to suit potential, future Road C. If practicable, compacted fill shall be limited to <400mm depth which normally does not require comprehensive testing or certification. However, if areas requiring more than 400mm depth are identified then the entire site shall be designed, tested and certified by a Geotechnical Engineer as meeting at least class S2 land suitability. In any event, an amended Land Suitability Assessment shall be submitted after completion of works confirming at least class 2 land suitability for a minimum of 1ha.

8.4 Vegetation Buffer and Firebreak in Lot 2:

Stormwater drainage within the eastern vegetation buffer, similar to lot 10, is proposed for at least 75% of the length of the east boundary together with an offset primary firebreak between the vegetation buffer and future built form. Setback for built form shall be 16m minimum, if a relevant portion of the primary firebreak is non-combustible

8.5 Vegetation Buffer and Firebreak Lots 1 and 11:

Offset firebreaks are proposed at vegetation buffers for lots 1 and 11 as a means of moving the setbacks of built form closer to the 15m specified in SL18. Setbacks shall be 16m minimum, similar to lots 2 and 10, if relevant portions of the primary firebreaks are non-combustible

The '1ha' part of lot 11 shall be regraded to suit potential, future Road D. Earthworks shall be undertaken generally as discussed for lot 10. The amended Land Suitability Assessment referred to in 8.3 above shall also cover lot 11.

Note: the firebreak arrangement and proximity of buildings proposed in 8.3 to 8.5 above is not specifically addressed in the NTFRS brochure (Appendix 11) and therefore is subject to NTFRS approval.

PART B

Information Supporting the Subdivision Proposal

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PART B Support

1. STATEMENT OF POLICY:

Statement of Policy for Residential Land Uses, Rural Residential Development 4. is:

Facilitate new areas of rural residential development close to community facilities.

SL18 complies with the principles to achieve this policy outcome.

Amongst the numerous considerations prior to creation of zone SL18, the following observations were considered important:

It is generally consistent with existing and proposed policy (ie the above, current policy) *and the provisions of the Scheme relating to subdivision of zone RR,*

It will contribute to the development of a diversity of affordable housing in close proximity to the Coolalinga Rural Activity Centre.
Since SL18 was gazetted, Coolalinga has undergone further development.

Stringent requirements in relation to building setbacks, the management of wastewater and the clearing of vegetation, which will minimise any possible impacts on adjoining lots.
Clearing refers to **preserving** existing, healthy trees of 100mm diameter or more, except as reasonably required for approved subdivisional works and, for the construction of buildings & ancillaries as improvements to the land by future lot owners. Further Land Improvements, aimed at minimising impacts on adjoining properties, comprises mandatory vegetation buffers parallel to strategic boundaries.

Clause 2.4 of the NT Planning Scheme allows the Parcel to be used or developed, subject to conditions.

The foregoing appears to satisfy part of Condition 1. in SL18 namely: *The purpose of this zone is to provide for rural residential use and development.*

2. VIABILITY:

The Parcel has a particularly high value because it consists of five, separate freehold Titles each of which can be sold independently and, it is in a sought-after location. However, the highest, aggregate sale price would be achieved by selling each property individually in about its current form. Prices for the individual properties did not significantly increase, if at all, as a result change of zoning from rural living to rural residential type use, except in the case of Lots 16 & 17 discussed below.

The value of the Parcel increased marginally as a result of zoning-change, however it remains less than the aggregate of individual properties.

The value of Lot 17 increased marginally at each of the following milestones:-

- upon confirmation that Lot 14 is available for public road purposes,
- design of a staged subdivision with initial access via Thorburn Road and new Road W,
- potential for public road frontage in Stage 2.

These values can be utilized for securing development funds when the milestones materialise.

The value of Lot 16 similarly improved:-

- firstly, by being a contributing Lot in stage 5 and secondly,
- by carefully distributing the residual area of Sec 4580 enabling public road access (or 'frontage') in stage 2.

Feasibility of the subdivision, in its various early forms through to the current layout, has been assessed using methods similar to those used by major banks. These methods reveal that when the value of the Land is high and, when development costs are substantial, profitability is marginal.

Early feasibility assessments, with initial access off Lowther Road, indicated that banks may respond to an application (which hasn't been made) with recommendations to review and optimise costs and, that the development may be of greater interest to 2nd or 3rd tier lenders.
Our latest assessment is that a staged DA1 off Thorburn Road shall ensure that the development shall fall within prudent lending guidelines of major banks and, as long as tender prices for design and construction (development costs) are within budget, the development is certain to proceed.

The incentive to proceed is enhanced by the potential to develop DA2.

3. SECTION 46(3) of the PLANNING ACT; STATEMENT OF EFFECT:

Section 46(3) requires a development application to contain information on matters specified in subclauses (a) to (h) and (j) to (l); such information is commonly referred to as a Statement of Effect. For this Application, relevant subclauses are (a) to (h) and (j) & (k); 10 off.
These subclauses of Section 46(3) are addressed in **3.1** to **3.10** below.

46(3) *A development application is to contain the following:*

3.1 SECTION 46(3)(a):

An assessment demonstrating how the proposed development will comply with any planning scheme that applies to the land.

It is considered that compliance with any provisions and/or conditions that are relevant only to preparation of this Application should not be demonstrated under this Section. It is also considered that the following provisions and/or conditions should not be demonstrated under this Section:-

- those which control future Use of new lots, under the NT Planning Scheme (ie zoning Table): and,
- conditions intended for Conditions of a Development Permit (ie by DCA).

Any Planning Scheme: A planning scheme, the Scheme, applies to this land; comprising provisions and conditions from the NT Planning Scheme that are relevant to the proposed development.

Assessment:
The current zone shall be retained which is SL18 in Schedule 1 to Clause 2.4 of the Scheme.
The proposal is to develop the land pursuant to Clause 2.4 of the Scheme.
This Application is for consent to develop the land by subdivision and consolidation pursuant to Clause 2.6 of the Scheme.
The purpose of the subdivision is to provide:

- individual lots suitable for rural residential use pursuant to a purpose of the zone at condition 1. of SL18 and,
- public road reserves with constructed roads which shall enable access to the individual lots and, accommodate services pursuant to conditions 2. and 2.(h) in SL18 respectively, AND,
- for adequate drainage within those public road reserves pursuant to provision 2.(b) in clause 11.4.5 of the Scheme.

Consolidations are for the purpose of avoiding Titles to unserviced-remnants of land resulting from subdivision. The remnants would otherwise have unsuitable configuration.

Proposed lots shall have a minimum size of 1.01 hectares, whereas the minimum size pursuant to condition 2.(a) in SL18 is 1ha.
Each proposed lot shall have a minimum of 1ha unconstrained land as intended by the Table referred to in condition 2.(a) of SL18 and, the unconstrained nature of that land is demonstrated in the accompanying Land Suitability Assessment in accordance with provision 6. in clause 11.4.5 of the Scheme.
SL18 provides a Zoning Table for the use of new lots; namely, the Table in Clause 5.18 in Part 3 of the NT Planning Scheme pursuant to condition 2. in SL18.

The Dimensioned Plan together with the overall concept plan in this Application:

- reflects measures for the management of vulnerable flora pursuant to condition 2.(f) in SL18,
- illustrates that roads are designed to interconnect with the existing road network pursuant to condition 2.(h) i. in SL18 and to provision 1.(b) in clause 11.4.5 of the Scheme,
- illustrates that roads provide for connections to potential future subdivision of adjoining lands in particular Lots 18 to 24 in LTO 73/01 pursuant to condition 2.(h) ii. in SL18,
- locates all new (vehicle) access strips in internal roads and not in major roads pursuant to condition 2.(h) iii. in SL18,
- identifies the location and size of wastewater envelopes, as designated in the approved WMP, pursuant to condition 2.(i) iii. and vi. in SL18.

The accompanying infrastructure report and this Application proposes that:

- each proposed lot with Title shall be connected to existing or new reticulated water provided by the developer as per the statement to 46(3)(g), pursuant to provision 3. in clause 11.4.5 of the Scheme,
- roads provided by the developer shall be sealed with direct access to a sealed public road pursuant to provision 4. in clause 11.4.5 of the Scheme,

A proposal for adequate drainage is demonstrated in the accompanying Stormwater Management Plan prepared pursuant to condition 2.(i) iii in SL18 and, adequate drainage shall be provided as part of roadworks within public road reserves pursuant to provision 2.(b) in clause 11.4.5 of the Scheme.

This Application includes an approved Wastewater Management (WMP) prepared pursuant to condition 2.(i) in SL18.
The WMP includes a Land Capability Assessment (LCA) for the site undertaken pursuant to condition 2.(i) i in SL18.
The LCA demonstrates that the soils, whether existing or amended, or the altered ground conditions as the case may be for particular lots, are suitable for on-site absorption of effluent without detriment to the environment and in particular, to ground or surface waters pursuant to provision 2.(a). in clause 11.4.5 of the Scheme.

End of 3.1

3.2 SECTION 46(3)(b):

An assessment demonstrating how the proposed development will comply with an interim development control order, if any, applying to the land.

There is no IDCO applicable to the land.

3.3 SECTION 46(3)(c):

PER, EIS

There have been no Public Environmental Reports or Environmental Impact Statements prepared in respect of the Land.
Formal consideration under the *NT Environmental Assessment Act* has not been required and is unlikely to be required.

3.4 SECTION 46(3)(d):

An assessment demonstrating the merits of the proposed development.

Subdivision of the land should be regarded as an opportunity to remove existing easements that serve no practical purpose.
The staged subdivision as proposed provides an opportunity to create public road access or 'frontage' to two of the Lots in the parcel, which presently rely on right-of-ways, at the earliest opportunity and at minimal cost. Also, there shall be reduction in the existing length of right-of-way access required over Lot 18 to serve Lot 24 (both neighbouring Lots).
Stage 3 of the subdivision shall provide sealed, public road access to Lots 16 and 17 (16A & 17A) in the parcel and, shall provide improved, sealed public access for Lot 18 and to the right-of-way serving Lot 24.
Road W shall eliminate the current encroachment of carriageways and vehicular tracks and verges into Lot 18 in the vicinity of the western end of Thorburn Road. This is a direct benefit for the owner of Lot 18 and, removes some uncertainty for the Council.
Road W may be the catalyst for converting Lot 12 LTO 69/09 to public road status, by others, enabling subdivision of Lots 19 LTO73/01 and beyond with corresponding reductions in right-of-way easements.
The above works are generally at no cost to services authorities; agreed costs shall be met by sales of subdivided lots.
Provision of Road W instead of terminating Road A at the southern boundary of Lot 17 respects the wishes of owner of Lot 18 to continue using the property for its present uses.

Relatively low-key Land Improvements proposed for some lots in DA1 shall serve to demonstrate design, construction, testing and certification methods as a model for lots in DA2.
Subdivision of Sec 4580 to create lot 10 shall overcome some cost-factors that would otherwise be an expense if Sec 4580 were used for rural living.

cont'd

Subdivision of the land shall create a variety of desirable, one hectare nominal size lots with very good standards of services. To date, there has been strong interest in the proposed lots including interest from spec-builders.

3.5 SECTION 46(3)(e):

A description of the physical characteristics of the land and a detailed assessment demonstrating the land's suitability for the purposes of the proposed development and the effect of development on that land and other land.

The physical characteristics are described in companion reports including the WMP/LCA, SWMP, Land Suitability Assessment 1 (LSA1) and by contours on the layout plan.
The WMP/LCA discusses suitability of proposed waste water envelopes using existing or altered soils and, effects on the underlying terrain. The SWMP discusses surface water and its proposed management. LSA1 discusses the characteristics of the land and, assesses suitability classes for those parts of identified 1ha of unconstrained land in 1ha nominal size lots that is not covered in the WMP/LCA or SWMP.
Generally, the best quality land has been earmarked for lots and, road-type selection has included selecting the best type for the terrain encountered.

Minimising or eliminating negative effect on other land has been foremost during the preliminary design phase. Certain elements of the proposal are intended to offer direct improvements.
In addition to mandatory requirements, the proposal seeks to construct roadworks and ancillaries (Road W) beyond the land, within Lot 14. Benefits shall flow onto the NTG via various services authorities and, to nearby landholders. Lot 14 is situated at a high point in the terrain and within suitable Land Units. LSA1 may not necessarily extend into Lot 14 however soil tests shall be conducted during the design phase of Road W to Council's usual requirements.

Locations of surface runon have been identified; the design of the subdivision shall enable surface flow from adjacent external Lots to continue across perimeter boundaries unimpeded. Detail design of internal stormwater drainage shall minimise any change to existing discharge from the site across the western boundary. Measures to intercept any silt produced during construction shall be addressed in a subsequent ESCP.

There should be minimal impact on traffic issues along Lowther Road during construction required in DA1; minor works proposed can be undertaken within the verge. Maintenance-access required by PWC along the watermains/powerlines corridor, particularly within Lot 14, shall be available to PWC's satisfaction.

Adjacent Lot 24 was party to the rezoning and supports this development. Approved vegetation buffers shall be established on the site adjacent to Lot 18 and the relevant 2ha rural living lots in the 'Goodenia Road' subdivision, and elsewhere.

Cont'd

Consideration has been given to potential future services by others, particularly sewerage reticulation. The subdivision layout and proposed scope of work, particularly earthworks, should enable sewerage reticulation, serving each lot, to be readily installed in future by others.

3.6 SECTION 46(3)(f):

Public facilities and open space.

The recent publication, Towards an Area Plan for the Coolalinga / Freds Pass Rural Activity Centre, provides a snapshot of existing, nearby public facilities and open space.
Section 4314 is zoned CN, it abuts the west boundary of Lot 16 in the parcel and, contains mainly native vegetation and natural drainage paths; it is impacted by 1% AEP flooding but is not subject to PEM.

Public facilities and/or open spaces are generally not required as part of rural residential subdivisions.
The developers propose no public facilities, open space or land for such purposes in DA1.

We have been instructed that the Council prefers 'drainage easements over private land' where outfall drains leading away from roads are constructed, instead of 'drainage reserves'. This is, we understand, to minimise maintenance cost burdens for Council and ratepayers. Drainage reserves tend to be accessible to the public unless measures are put in place.
(The User Guide to the NT Planning Scheme advises that the Scheme should be read in conjunction with the requirements of the local council which may have particular requirements relating to their areas of responsibility.)

However the application for SL18 mentions the possibility of a public walkway between proposed Road A and the adjacent CN land. The CN land was originally envisaged as a drainage reserve during the 'Goodenia Road' subdivision-development but has since been rezoned; first OC then CN. The desirability, or otherwise, of a walkway link shall be considered in DA2.

3.7 SECTION 46(3)(g):

A statement specifying the public utilities or infrastructure provided in the area in which the land is situated, the requirement for public facilities and services to be connected to the land and whether public utilities or infrastructure are to be provided by the developer or land is to be provided by the developer for the provision of public utilities or infrastructure;

Existing and proposed public utilities and infrastructure is discussed in the separate companion report, Infrastructure Report. Notably, there is no sewerage reticulation nearby. All proposed public utilities and infrastructure and, alterations to public utilities and infrastructure within proximity to the site and proposed Road W shall be provided by and undertaken by the developers.

Cont'd

Land for public utilities and infrastructure within the site shall be in the form of public road reserves and specific easements over parts of lots or residual areas, as part of the development.
No other land is proposed to be set aside for public utilities or infrastructure.

3.8 SECTION 46(3)(h):

An assessment of the potential impact on the existing and future amenity of the area in which the land is situated.

The site is predominantly surrounded by occupied rural living allotments. The zoning does not adequately reflect the variety of lifestyles and aspirations of landowners; views of landowners vary from pro-development through to maintaining the status-quo.
DA1 has minimal impact on the Lowther Road locality. The LTO 73/01 locality, because of its large (8ha) lot sizes and RL zoning, is destined to be subdivided in time to come.
Subdivision of individual Sections or Lots in the parcel appears to be impractical and/or unviable. Since the possibility of developing Road W became known, the minimum viable parcel would be Lot 17 together with Sec 4580. However, such subdivision could not guarantee a collector-road link to Lowther Road and thus may not suit the amenity of the locality in terms of accessibility.

The mandatory vegetation buffers should provide adequate screening for residents in the 'Goodenia Road' subdivision locality adjoining the west boundary.

The Coolalinga activity centre provides backup to the notion that development and population-increase leads to improved services which in turn enhances rural living.
The subdivision development of the land primarily contributes to increase in local population which should, as a result, see an incremental improvement to services and facilities for all residents of the district.

Rural Residential lots have only a limited range of permitted uses compared with Rural Living lots. This should mean, in many respects, that rural residential use of a lot creates a lesser impact on surrounding properties.

Section 46(3)(i) not used.

3.9 SECTION 46(3)(j):

An assessment of the benefit or detriment to the public interest of the development.

Part C of this Report covers topics associated with the subdivision. Depending on viewpoint, some topics could be considered as detrimental to the public interest.

The land in its present form, as individual lots or as one or more parcels, would only be affordable to a few. Subdivision of DA1 shall double the number of lots available for ultimate sale and, such lots shall be available at market prices; essentially, the lots should be affordable to the majority of land buyers or land/house-package buyers.

A sideline to this development is the potential reduction of bush fire risk for existing residents to the immediate west of the subdivision; given that the prevailing dry-season wind is from the south-east and, that the existing land comprises mainly grassland and bush, a substantial area of which shall become firebreaks, roads and irrigated gardens.

Security / Community Safety :
Road W provides an opportunity for improved security along the PWC easement between Lowther Road and Lot 14 (ie north end of Road W).
Access to the easement by the general public is presently unrestricted and, in fact, may be encouraged due to the presence of a reasonably good gravel track or road. As such, the easement presents a security risk for proposed lots 2, 3, 4 and 10 as well as the rural living properties to the east fronting Bees Creek Road.
Improved security could be by one or more of the following:

- road closed signs,
- fence & gates across ends,
- padlocks & master key system for PWC and emergency services.

Future development:
Successful progress on DA1 shall enable DA2 to proceed.

3.10 SECTION 46(3)(k):

Compliance with the Building Act.

Effect of existing houses and ancillaries is discussed in the separate companion report; the Building Certifier's Report.
The intention is to keep existing houses and ancillaries, as-is if possible, until the respective lots are sold inclusive of improvements.

Locations of existing houses and ancillaries marked on the layout plan are subject to survey. Setbacks (distances from proposed boundaries to features) used are as per the NT Planning Scheme or greater, except the setback at lot 9 with respect to future Road A in DA2.

(Section 46(3)(l) is not applicable).
End of section 3.

4. FUTURE ACCESS TO LOTS 9, 10, A & B:

Lots 9 and 10 have frontage to Lowther Road.

Lot 9 is in stage 1; access to lot 9 shall utilize the existing access in Lowther Road serving Sec 4185.

Lot 10 is in stage 2; access to lot 10 shall utilize the existing shared access serving Sec 4580 and the PWC easement in adjacent Section 5537. This existing access is into Sec 4580 and then continues southwards to join the maintenance track within the PWC easement; crossing the common boundary between Sec 4580 and 5537 enroute. This access was made when Lowther Road reserve was 20m wide. The road reserve is now 30m wide.

Before lot 10 is created, the encroaching access shall be eliminated. It is proposed to modify the access by aligning a trafficable pavement, in the verge of Lowther Road, with the nominal centreline of the maintenance track further along the easement; subject to consent from the Council. It is proposed to obtain consent from the owner of Sec 5537 and agreement from PWC, to carry out minor pavement and drainage works within Sec 5537 in order to provide a trafficable link between the modified access in Lowther Road reserve and the existing maintenance track further along the easement.
The above works are proposed as a goodwill gesture and, to avoid delays; otherwise it would need to be a joint project between PWC, Council and owner of Sec 5537.

Realigning of the access to the PWC easement is also partly associated with establishing mandatory vegetation buffers within lot 10 and, to manage a minor stormwater flow-path.
Lot 10 may be fenced by the developer as an improvement to the land in association with the subdivision; such fence shall also serve as protection for a water-meter upstand pipe.

Section 4579 has frontage to Lowther Road and has two existing access strips. Title of Section 4579 shall be modified as follows:
a) in Stage 1; consolidate residual area of Sec 4185,
b) in Stage 2; consolidate part of residual area of Sec 4580.
The existing accesses shall remain in use.

A subsequent Development Application, DA2, shall propose alternative accesses for lots 9 and 10 off internal roads. It is considered desirable to close (remove) the two existing accesses as part of optimum design for the CHR intersection of Lowther Road and Road A. If lots 9 and/or 10 are sold before DA2 is completed, the alternate accesses shall be a special condition in contracts of sale.

DA2 shall also propose lots A & B out of Sec 4579B. Lots A & B shall have access off Road C and, the existing accesses in Lowther Road shall be removed.

Existing accesses are maintained by the owner.

5. RELOCATION OF CYCADS:

The Vulnerable flora survey identified cycads on the property and recommended that if any were found in areas destined to be cleared, they should be relocated.

Initial clearing shall likely be associated with boundary lines followed by clearing for Road A and a substantial part of lot 10.

The proposal is to have suitable plant and equipment on site at the times of initial clearing to safely enable removal of relevant cycads.

Storage, maintenance and reuse of cycads has not yet been formulated; the developer shall likely draw on expertise within NTG for guidance. The potential for replanting cycads in vegetation buffers and, within proposed landscape-plots of lots earmarked for Land Improvements, shall be investigated. Such work is potential wet-season work.

6. WEEDS and PAST-CLEARING:

It is likely that further investigations into gamba grass and any other problem vegetation and their removal or further management, shall be carried out at about the time of initial clearing.

Management of gamba grass is carried by spraying as on ongoing exercise. If required, the owners shall prepare and submit a weed management plan prior to new clearing.

A review of aerial photos dating back to about 1980 reveals that a large portion (say, 80+/-%) of the site was cleared of low and intermediate level vegetation and perhaps 10-20% of that area was cleared of mature trees and ground cover. Clearing on the 5 individual Lots of the parcel occurred, generally, at different times and on individual Lots from time to time. Earthworks for various purposes have been carried out over about 10+/-% of the parcel.

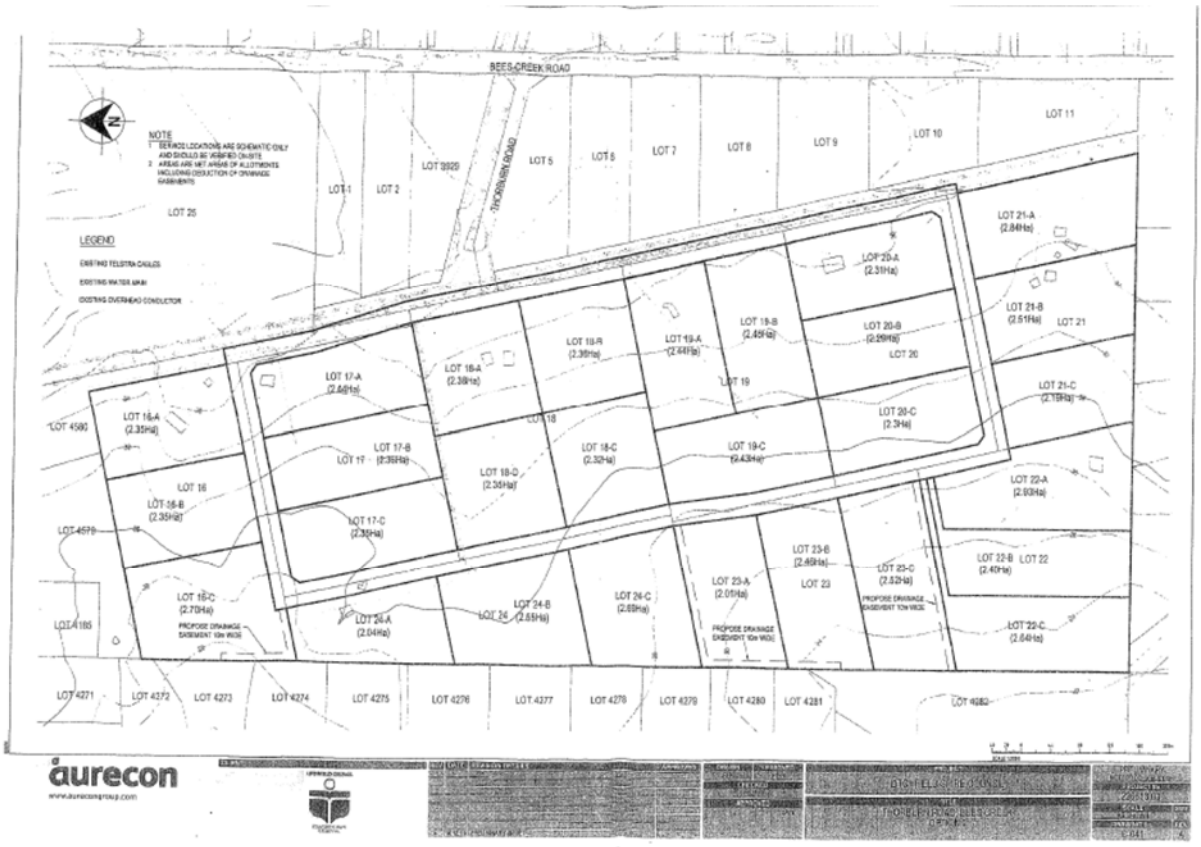
It is estimated that half the area that was once cleared is maintained by slashing and mowing and the other half comprises mainly regrowth and a few planted, introduced varieties. For example, the area within Sec 4580 for proposed lot 10 has a parkland type setting.

7. CONCEPT PLAN BY OTHERS OF LTO 73/01 AREA:

The concept plan below was supplied by a local resident with a message that the plan may have been prepared for and circulated by the Council a few years ago; say, since 2010.
Title of the plan is THORBURN ROAD BEES CREEK OPTION 2 Drg No. C-041A. The Title block has the name of the designer, Aurecon (Consulting Engineers), and the Litchfield Council logo. (The drawing Option 1 has not yet become available).

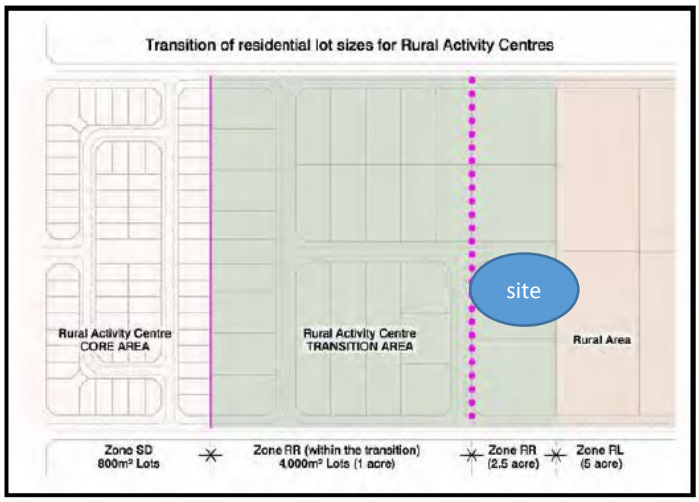
The design area covers Lots 16-24, LTO 73/01. Thorburn Road is the sole access and, proposed roads utilize parts of Lots 14 and 12, which is VCL that includes the corridor used by Powerwater infrastructure.
The plan appears to illustrate a method of converting existing right-of-ways to public roads and, the plan provides an indication of maximum possible yield under RL zoning.
This particular option does not readily allow for a connection to Lowther Road.

The plan, however, does support the concept of using Thorburn Road as access to Lots 16 and 17 which are lots in the parcel of DA1 and, it introduced the concept of utilizing at least part of Lot 14 for public road purposes. It also supports the elimination of right-of-ways.



8. PROXIMITY OF PERI-URBAN LAND:

The north/east corner of the SL18 site coincides with the south/west corner of one of the suggested boundaries of the Rural Residential Transition area of proposed nearby Area Plan.



SL18 is within a secondary transition area labelled 'Zone RR (2.5 acres)' in Fig 17 of the discussion paper for stage 1 of the Area Plan. SL18 is to be developed 'as-if' in zone RR and, 1ha as proposed equals approximately 2.5 acres.

Hence SL18 is consistent with preliminary proposals for the area plan.
The secondary transition area has no particular width and, may eventually include all Lots on LTO 73/01.

9. CONSIDERATION OF POTENTIAL FUTURE SEWERAGE RETICULATION:

Given the proximity of peri-urban land and large tracts of vacant land to the south-west of the site, there may be a time in future years that sewerage reticulation becomes available.

Consideration has been given in the design of the overall concept and in the selection of road-types and associated earthworks, for future installation of sewerage reticulation.

The current design shall enable installation of sewerage reticulation along the standard corridor allocated for sewerage reticulation within each road reserve. New reticulation can be configured to provide a connection point to each lot at the road-frontage. Apart from the connection points, it should not be necessary to carry out reticulation works within 1ha lots nor establish new easements within 1ha lots.

Earthworks for roads shall extend to road-reserve boundaries and beyond as part of subdivisional works to provide reasonable surfaces throughout to enable excavation and pipe-laying by conventional means.

10. ROAD SAFETY:

Recent road-safety audits have noted that the endwalls of traditional access-culverts constitutes a traffic hazard when endwalls are located in the specified clear zone.

This hazard is overcome by using urban-type road design at the frontage of each lot, as proposed in DA1 and shall be proposed in subsequent DA2.

11. LAND SUITABILITY ASSESSMENT UPDATES:

It is proposed to update sections of LSA1 at the following phases of the project:

- on or about the completion of detail design of a stage and,
- on or about completion of mandatory and optional construction of a stage.

The updates shall review the Suitability Class assessments made in LSA1 for relevant parts of the 1ha of unconstrained land and, any review may include advice from geotechnical specialists.
The last update shall amend the status of assessed Suitability Class from *Potential Suitability Class* to actual *Suitability Class;* the assessor may rely partly on certificates from allied professionals such as geotechnical engineers. Updates may not necessarily include roads or residual areas.

If the assessor considers that further Land Improvements or change in use are required to achieve at least Suitability Class S2, then the design and construction shall be amended, together with necessary approvals. This process is consistent with FAO methodology.

The final LSA, demonstrating that all relevant parts of unconstrained land achieve Suitability Class S2 or better shall be submitted to the consent authority together with certificates, so that the consent authority may have a very high level of confidence that the lots are suitable for the proposed uses as indicated on page 2 of the NT Land Suitability Guidelines.

12. AMEND CONDITIONS TO ENABLE FIREBREAKS AROUND STRUCTURES:

12.1 General:

This clause 12 proposes a review and amendments of relevant conditions in SL18 to enable 8m firebreaks around structures at or near minimum setbacks; for the benefit of future land owners and to simplify design and approvals for future houses and ancillaries.

If the assessment in clause 5 of part C of this report is correct, either firebreaks have not been allowed for or, the minimum setbacks cannot be achieved. This development application provides a convenient time to review and amend SL18; it is presumed that the consent authority may recommend amendments to conditions in SL18 in order to address anomalies.

12.2 Suitable Amendment:

One of the following types of amendment should be suitable for the parcel in relation to 15m setbacks:

- Vegetation buffers are required where the adjoining land is 2.5ha or less, in zone RL and used for rural living purposes.
- Vegetation buffers are not required for adjoining land to which road connectivity is required or for adjacent land used for roads or utilities.
- Existing vegetation and regrowth may be relied on between 15m and 7m offset from boundaries; an area within this zone may be cleared if required for a firebreak up to 8m wide around a structure.

The following type of amendment should be suitable in relation to 20m setbacks:

- Existing vegetation and regrowth may be relied on beyond 12m offset from the Lowther Road boundary; an area within this zone may be cleared if required for a firebreak up to 8m wide around a structure.

12.3 Effect of types of amendments:

The first type**:** current requirements shall continue for Lot 24. Buffers shall not be required along east and south boundary of the parcel.

The second type: as per first type. Road connectivity is required to Lot 18 (because of its subdivision potential) hence buffers not required along south boundary of parcel. Buffers not required along east boundary of parcel due to roads and/or utilities.

The third type: The developer is not required to densify, by additional planting, that part of the buffer which may be subject to future clearing around structures.

The fourth type: as for third type, but in relation to Lowther Road frontage.

12.4 Conditions not applicable to developer:

Conditions in SL18 in respect of firebreaks, buffers and setbacks are not applicable to the developer because they are to be replaced by Conditions in a Development Permit.

However the conditions in SL18, as-is or amended, shall be applicable to:

- the consent authority, when drafting Conditions for the Development Permit,
- future landowners and,
- Lot 24, for evaluating content of a development permit.

12.5 Special firebreaks in Appendix 13:

Special firebreak proposals for lots 1, 3 and 11 on Appendix 13 will not be necessary if SL18 is amended. Similarly, the vegetation buffers shown on Appendix 13 shall be revised.

12.6 Rules that are Easy to Follow:

This clause 12 proposes that:

- setback rules are easy to follow,
- perimeter firebreaks are in standard locations ie along boundaries (except for two special cases at lots 2 and 10 to accommodate drainage from upslope),
- vegetation buffers are created where they are needed; new planting only where future clearing is not required.

PART C

Rules and Guidelines for this Subdivision and Application

PREAMBLE: The purpose of this Part C is to discuss and demonstrate how applicable Provisions and Conditions were obtained and, to discuss interpretations of certain Provisions or Conditions. This Part C does not necessarily contain any information of the proposed development, but may be useful for technical assessments of the application.

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PART C Rules

1. ASSESSMENT OF ANY PLANNING SCHEME THAT APPLIES:

1.1 Identification of the Planning Scheme that applies to the Land:

Section 46(3)(a) of the Act requires the identification of any planning scheme that applies to the land. The Northern Territory Planning Scheme (the Planning Scheme) applies to this locality.
From consideration of the entire Planning Scheme, the applicable planning scheme (the Scheme) is identified as comprising:

- Parts 1, 2, 4 and 5,
- SL18.

It is considered that Development and Use which complies with these Parts and with zone-conditions is consistent with policies in the Litchfield Subregional Plan; therefore that Plan is not further addressed in this Report.

1.2 Hierarchy of Documents in the Scheme:

The following hierarchy of documents in the Scheme has been used in this Report:

a) Part 1,

b) SL18,

c) Parts 2, 4 and 5,

d) NT Land Suitability Guidelines (see 2.2 herein after),

e) NT Planning Scheme Fact Sheet, to Clause 11.4.1 (as if referenced).

1.3 Clauses of the Scheme Applicable in Certain Circumstances:

The Table on the next page has been used as a reference regarding particular clauses in the Scheme that apply when:-

- preparing this Application and/or,
- assessing compliance with the Scheme as required under Sec 46(3)(a), (addressed in Part B).

The Table also identifies clauses that refer to Conditions that may be imposed by the consent authority as Conditions of a Development Permit.

Certain conditions in SL18 are in respect of future use of new lots (eg the zoning Table) and improvements to such land after completion of the development. Such conditions are not necessarily addressed in this Report.

Cont'd

Matrix of Provisions and Conditions at Various Phases of the Project:

X indicates mandatory, blanks spaces indicates not applicable except as per footnote [1].

	Prepare Application	Subdivision Development ie assess in 46(3)(a)	DCA imposed conditions[1]	New lots; owners' obligations
SL18 1.	X	X		X
SL18 2.	X	X		X
SL18 2. (a)	X	X		
SL18 2. (b)				
SL18 2. (c)	X as per SL18[2]	X as per DP[3]	X	X (lots 9, 10 only)
SL18 2. (d)	X as per SL18[2]	X as per DP[3]	X	X (lots 1, 2, 3, 8, 9, 10, 11)
SL18 2. (e)				X
SL18 2. (f)	X	X		X
SL18 2. (g)		X not applicable to subdivision works for which consent and approvals are granted		X
SL18 2. (h) (i)	X	X		
SL18 2. (h) (ii)	X			
SL18 2. (h) (iii)	X	X		
SL18 2. (i)	X			
SL18 2. (i) i	X			
SL18 2. (i) ii	X	X		
SL18 2. (i) iii	X	X		X maintain drainage provided by developer
SL18 2. (i) iv	X	X		
SL18 2. (i) v		X as per DP[3]	X	
SL18 2. (i) vi as per gazette		X as per DP[3]	X	X
SL18 2. (i) vii as per gazette	X			X
Clause 1.3 2.(a)i, Part 1	X	X	X	
Clause 2.4 Part 1	X	X as per DP[3], if any	X, if any	
Clause 2.6 Part 1	X	X	X	
Clause 2.7 Part 1	X	X		X SL18 applicable in current form.
Clause 2.8 Part 1 and 11.4.5 cl 6. in Part 5	X	X		
11.4.5 1.(a)	See SL18 1.			
11.4.5 1.(b)	X	X		X (eg service pole)
11.4.5 1.(c)	X	X		
11.4.5 2. (a)	See SL18 2.(i)			
11.4.5 2. (b)	X	X		
11.4.5 3.	X	X		X (apply for meter for use of water)
11.4.5 4.	X	X		

[1]DCA imposed conditions are not limited to clauses which specifically mention DCA imposed conditions.
[2]Condition in DP not known at time of Application. [3]Unable to address compliance before DP is issued.

End of Table

1.4 Review of SL18:

The following, in respect of SL18, have been used in this Report and the Application:

1.4.1 Heading; LTO 73/01 instead of LTO 67/002,

1.4.2 Provision 2.(a) in 11.4.5 is applicable; condition 2.(b) in SL18 refers to the superseded 11.4.5,

1.4.3 Ordinary meaning for Clearing of vegetation at 2.(e); ie not a defined term,

1.4.4 In subclause 2.(e), correction; "…..*pursuant to subclauses 2(c) and 2(d)*……",

1.4.5 Ordinary meaning for 'site' in 2.(i) wherever appropriate; ie not a defined term,

1.4.6 Sub clause 2. (i) iv which reads *The identification of a wastewater treatment system and an associated sub-surface irrigation envelope for each lot that provides sufficient area and capability for onsite effluent disposal to service a single dwelling;*
The clause appears to emphasize identification & envelope and, sufficient area & single dwelling as follows:-

"Identify an envelope for each lot, that suits a 'wastewater system and associated sub-surface irrigation', that provides sufficient area and capability for onsite effluent disposal to service a single dwelling."

This appears to be practical ie the developer provides the designated disposal envelope and, the future lot-owner provides, as part of a building permit, the system & irrigation.
The current LCA Guidelines (currently under review) require, for moderate sites, a Detailed System Design. Usually, the future landowner can select one proprietary system (ie brand/model) from a range of proprietary systems that have been approved by Environmental Health.
If any existing systems at existing houses require upgrading, such work shall be done by the current owner before part V certification,

1.4.7 All conditions in Amendment 446 as gazetted; ie the on-line version of Schedule 1 does not have original sub-clause 2.(i) vi.

1.4.8 Sub clause 2.(a) refers to Clause 11.1.1; Both Clause 11.1.1 and the Table are not-applicable. Sub clause 2.(a) makes a statement that the minimum lot size shall be the same as zone RR in Litchfield in the Table; proposed unconstrained area for this project is also 1ha minimum.

1.4.9 Sub clause 2. refers to Clause 5.18; A Specific Use zone is ordinarily required to provide a zoning table, because Part 3 is not applicable pursuant to Clause 2.4. Clause 5.18 is in Part 3.
The Table only in 5.18 is applicable, but sub-clauses 1, 2 & 3 in 5.18 are not applicable, ie use the relevant conditions in SL18 instead.

1.4.10 Sub clause 2.(d): The setback for built form may not coincide with the edge of a vegetation buffer. Refer diagrams in Appendix 11, NTG/NTFRS brochure. To maximise available choices for building setback (ie minimise setback), special configurations are proposed for lots 1, 2, 10 and 11 which appear to comply with the brochure if vegetation buffers are considered as 'garden beds and trees'; but subject to approval by NTFRS. Diagrams in Appendix 12 & 13 apply.

1.5 Applicable Clause in Part 5 of the Scheme:

The applicable Clause in Part 5 of the Scheme is 11.4.5 only.
A confirmation letter is in the Appendix.
The Conditions in SL18 take precedence in the event of any conflict with a sub-clause or part of a sub-clause in 11.4.5.

Sub-clause 11.4.5 5. is no longer applicable; the Application complies with, or the development shall comply with, sub-clause 3. as required.

As to sub-clause 2.(b), consideration has been given to outcomes preferred by the Council in respect of drainage reserves. Essentially, the Council prefers not to be burdened with care and maintenance responsibility of drainage reserves, hence there should be no proposals for drainage reserves where alternatives are feasible. The preferred arrangement is to include drainage paths within private lots and, in the case of constructed drains, to provide a drainage easement that is accessible from a council-maintained road. The overall concept and DA1 comply with such preferred arrangement.

2. USEFUL PROVISIONS IN NT PLANNING SCHEME:

2.1 Provisions for Zone RL & R and General Provisions for RR:

There are various provisions in the Planning Scheme, particularly in Part 5, that are not applicable to development of this land for the purpose of Sec 46(3)(a) of the Act but which are useful as reference documents for the Application; these are:

11.1.1	The requirement for 1ha of unconstrained land
11.4.1	Site Characteristics & LSA and, Fact Sheet to 11.4.1
11.4.2	Infrastructure
11.4.3	Lot configuration
11.4.4	Resources
6.14	Land subject to flooding
6.16	Excavation and Fill, (other than roadworks)
7.3	Table C, setbacks in relation of new boundaries wrt existing buildings AND setbacks to determine land uses in respect of land suitability.
10.2	Clearing

It is an advantage to this project that subclause 11.4.1 (3) is not applicable (see section 3 hereafter).

2.2 NT Land Suitability Guidelines:

The NT Land Suitability Guidelines December 2013 (LSG), a reference document to clause 11.4.1 of the Planning Scheme, is addressed in the accompanying Land Suitability Assessment as per sub-clause 6. of 11.4.5, although sub-clause 6. has no side-note identifying the relevant LSG or Schedule. This Report and the companion documents use the LSG as if specified.
The LSA assessor is required to propose and use a system to assess 'degree of severity' of limitations and the 'aggregate of limitations' in order to assign a Suitability Class for sustained application as per page 1 of the LSG.

3. APPLYING THE NT LAND SUITABILITY GUIDELINES:

3.1 Guidelines and SL18:

Provision 6. of Clause 11.4.5 in the Scheme offers great flexibility compared to Clause 11.4.1 (3). There is no particular phase of the project as to when the final Land Suitability Assessment should be submitted other than sometime before part V certification is issued AND additionally, a Land Suitability Assessment (LSA) should be submitted with an Application to demonstrate the unconstrained nature of the land. Such LSA could be termed the initial LSA, or LSA1.

This flexibility appears to be intentional for RR subdivisions to enable Land Improvements and, it enables Suitability Classes to be re-assessed or confirmed after Land Improvements have been completed.

A section in Part B of this Report discusses the proposal to prepare and submit an initial Land Suitability Assessment 1 (LSA1) containing a mix of *actual* and *potential* Suitability Classes based on available data at the Development Application phase and to then update the LSA during the actual development phase in order to assign final Suitability Classes. This process is consistent with FAO methodology and consistent with 2(ii) in the NT Land Suitability Guidelines (LSG).

By way of comparison, subdivision of RL and R land requires an LSA to be based on the existing land and based on a broad use, typically residential or something similar, and the LSA needs to be at least substantially complete to enable it to be used in the design of a subdivision layout. Clause 11.4.1 (3) does not appear to enable additional inputs as set-out in 2(ii) in the LSG or alternatively, there is no mechanism to nominate Suitability Classes after inputs have been made. There are indications that this is intentional; eg to discourage certain land improvement proposals for RL and R land.
However, whilst Clause 11.4.1 (3) is not applicable to this project, there is a small risk that technical assessments may be made of this subdivision based on the principles embodied in Clause 11.4.1 (3) because of its wider use in the assessment process. In fact, an early land assessment was carried out on behalf of the developer in 2016 as if 11.4.1 applies.

For SL18, a unique set of circumstances exist that vary some RR provisions. In SL18 it is necessary to designate a wastewater envelope for each proposed lot. This makes it necessary to start with a subdivision layout based on the best available land information and preliminary stormwater findings. The wastewater envelope selected for each lot is a type of Land Improvement if it involves altered soils by the developer and it becomes a particular land use for a given area.
Other land uses can be identified for each lot.

An assessment for Land Suitability can then take any or all of these identified uses into account when considering the fitness of a given area for a land utilisation type; which is the basic definition of Land Suitability.

cont'd

For this site, the WMP addresses Land Suitability Category 2. in the LSG in considerable detail for each proposed lot and, from the LSA assessment mentioned before, it has been determined that Categories 4., 5. & 6. are unlikely to be applicable.
Also for this site, the SWMP addresses Category 7 and addresses part of Land Suitability Category 1 in relation to surface flow characteristics and proposed uses. LSA1 can rely on the SWMP and the approved WMP/LCA.

The remaining Categories to be addressed in LSA1 are 3. (erosion risk), the sub-surface drainage part of Category 1 plus any additional matters at the discretion of the assessor.
Land which is susceptible to erosion includes firebreaks which are themselves a type of land use and subject to Land Improvements which may include diversions in accordance with NTG Fact Sheets. Erosion risk in relation to firebreaks provides an example of a land use that may require 4 assessments; risk of existing soils/slope/vegetation; *potential* risk as per layout plan: *revised potential* risk as per ESCP: actual risk after construction. Risk typically varies during a year. Subsurface drainage needs to consider subclause 2(i) ii in SL18 in relation to *potential* characteristics.

Land left as is: land that is intended to be left substantially as-is is a particular type of land use especially where such land contains existing, approved dwellings or contains recognised drainage paths as discussed in 11.4.3 (2e). For SL18, large parcels to be left as-is includes Sec 4579/A&B and residual areas of Lots 16 & 17 after each stage. Normally, a LSA would not need to assign suitability classes to such land or to assess it in great detail. Such land may come under the second definition of Land Suitability which is 'the degree to which it satisfies the land user' which in this case is the owner/occupier/developer. Essentially, the owner regards the land as unconstrained for his particular purposes. Comments on residual areas should be at the discretion of the assessor.

Roads: roads are a specialised type of land use.
Normally, road alignments are not restricted to unconstrained land and therefore the characteristics of land within a reserve may not need to be addressed in any detail and, it should not be necessary to assign a Class of Land Suitability for land within a reserve. The Council shall provide comment regarding proposed roads.
In SL18, land suitability assessment procedure is sufficiently flexible such that assessments can be made if required:

- of the suitability existing land for the proposed roads and, *potential* suitability of roadworks for intended use and,
- revised *potential* suitability following detail design and,
- actual suitability following completion of roadworks.

In such cases, an LSA assessor should rely on advice of a civil engineer and/or geotechnical engineer or, the assessor may draw comparisons with existing nearby roads over comparable terrain such as Lowther Road and/or Goodenia Drive. For services within road reserves, the relevant services authorities specify requirements for qualities of existing ground conditions or, ground improvements in excavations and for backfill.

Soil replacement, fill or regrading in some lots: a procedure similar to discussed under 'Roads' above and as discussed in Part B of this report is proposed. Essentially, LSA1 assesses *potential* suitability classes and, revised assessments shall assign actual suitability classes following completion of works; which shall be Class S2 or better within identified 1ha areas.

3.2 Identified Uses:

The following is a list of some identified Uses that must be matched by suitable land characteristics to achieve class S2 or better. Areas within a 1ha nominal size lot may have Multiple Uses.
Uses are 'sustained applications' except overland flow which is mainly seasonal.

A. Mandatory Uses:
existing house (lots 4 & 9; option to remove applies),
wastewater envelope, some with associated stormwater-drainage diversions,
setbacks for wastewater (negative use; area with no wastewater disposal),
building setbacks (negative use; no buildings),
firebreaks,
boundary lines (for fences),
fill or cut; in support of adjacent roads/earthworks, where required as per subsequent detail design,
vegetation buffers; to lots 1, 2, 3, 8, 9, 10, 11,
cut-off or diversion drain with or without u/g pipeline, where required as per subsequent detail design,
overland flow, (may be modified by future owner, within reason),
water upstand and meter,
easements (if any),
substantial trees.

B: Notional Uses (actual location by future owner):
dwelling,
internal driveways (known start at access strip/gate, proposed alignment in lot 9 for future driveway),
garage/shed,
ancillary & general outdoor RR use; incl services, u/g & o/h, some uses may not be sustained applications.
(optional: removal of any existing house).

C. Existing Uses:
If relevant or required, lists and additional diagrams of existing uses for particular areas can be compiled.
The main existing uses (incl houses) are illustrated on the Dimensioned Plan. Existing easements are noted on Titles. Existing services shall be identified from DBYD reports during the detail design phase.
For proposed 1ha nominal size lots, uses together with areas or locations may be either:-

- ongoing, eg existing houses and ancillaries where applicable,
- to be modified, eg septic systems where applicable or,
- to cease; eg existing various easements, parts of existing services.

Before such lists and diagrams are prepared, it is necessary to know their purpose and the level of detail required.

4. CONTENT of STORMWATER MANAGEMENT PLAN:

4.1 Guidelines:

For the first phase of this project, the discretion of the stormwater-consultant is required as to the form and content of the Stormwater Management Plan.

4.2 Brief to Consultant:

The brief to the consultant includes:
a) comply with condition 2.(i) iii in SL18 together with relevant, associated conditions,
b) comply with 11.4.5,
c) liaise with consultant(s) preparing WMP/LCA,
d) consider Fact Sheet to Clause 11.4.1,
e) ascertain Council requirements for this phase of the project,
f) consider and address as appropriate, all stormwater-related provisions in Parts 4 & 5,
g) liaise with other consultants engaged for LSA, subdivision design and road design.
h) review approved WMP and ensure consistency.

4.3 Council Requirements:

4.3.1 Current Requirements:

The Fact Sheet to Clause 11.4.1 states:

- *Application Requirements: Applications are to include a stormwater management plan in accordance with Council requirements and,*
- *2. Applicants are required to prepare a stormwater management plan in respect to localised stormwater flooding. Where applicable, reference is to be made to local council subdivision guidelines.*

Council's current guidelines include:-

- *Design criteria and standards should be discussed with Council prior to and during planning submission. Preliminary design work includes but is not limited to Stormwater Drainage (on page 6 of 32),*
- *Council recommends that discussion with Council at an early stage of the proposal should be based on the presentation of a Schematic of Drainage Design including contours (on page 7 of 32).*

There are no further requirements relevant to the Application phase.

4.3.2 After Issue of Development Permit; Initial Requirements:

a) Current; *Documents, to be presented at 50% progress of design, to include A Concept Plan showing all external catchments including topographical features and Drainage Alignment (on page 8 of 32).*
b) Proposed, May 2017 Draft Guidelines, Clause 2.3.5 (page 16), *For most subdivisions, a stormwater management plan will be required; it shall be drawn to scale.* The last words indicate the plan is a drawing ie that stormwater management plan is different to the plan envisaged in SL18 or the Fact Sheet.

4.3.3 Conclusion:

The SWMP under SL18 may be in Report form but should include a Schematic (drawing) of Drainage Design with contours. For planning purposes, a Report which addresses Part 5 shall be most useful.

5. SETBACKS OF BUILT FORM AT RL BOUNDARIES

5.1 NTFRS guidelines and SL18:

15m setbacks of built form at RL boundaries cannot be achieved. This conclusion is based on a review of a NTFRS brochure attached as Appendix 11.

SL18 specifies a standard firebreak, 10m minimum width vegetation-buffer and, 15m minimum setback to built form. Restrictions apply to the clearing of vegetation buffers.

The NTFRS brochure, however, specifies an 8m firebreak around structures; with potential reduction in width if the area is non-combustible such as irrigated lawn or garden area. If paving is installed, it may also qualify for reduction.

The effective setback for built form shall in normal circumstances be approximately 4+10+8=22m minimum. A practical minimum may be 23m. Firebreaks wider than the minimum may be desirable in most circumstances.

5.2 Purpose of Vegetation Buffer:

A vegetation buffer is to provide a visual buffer to adjoining RL land.
A reason stated for the decision to approve SL18 is "*minimise any possible impacts on adjoining land".* The aim of a vegetation buffer is therefore to provide a visual barrier such that the view from adjacent land is of vegetation rather than of buildings and, in the case of open-sided structures, of contents.

5.3 DCA imposed conditions:

SL18 specifies that a visual buffer shall be a condition of a development permit for subdivision of the land.
The following could be considered when drafting the condition:-
a) the minimum setback should take into account the obligations of future owners in relation to firebreak requirements,
b) corner lots are particularly disadvantaged (lots 1, 9 & 10),
c) some RL land may regarded as special circumstances, for which the 10m minimum width of vegetation buffers may not need to apply eg:

- Lot 14; vacant VCL used for utilities, proposed public road,
- Lot 18, LTO 73/01, an 8ha rural lot, with existing vegetation surrounding a centrally located house; the land is considered to be potentially suitable for rezoning to RR or SU for subdivision into 1ha lots together with measures to remove Right of Ways which encumber LTO 73/01 lots. SL18 requires road connection to Lot 18 (if a connection was provided at its north boundary, a visual buffer would be impractical, however an alternative connection (Lot 14) has been found). A 20m nominal width corridor along north boundary of Lot 18 is cleared and used for access to Lot 24 and for overhead powerline and for underground services.
- Sec 5537 to 5540. These lots are all substantially larger than 2ha. Sec 5537 has subdivision potential (although no practical solution for a road connection from/to SL18 has been found). Sec 5538 to 5540 are relatively deep lots with frontage to Bees Creek Road. The backs of the four lots,

Cont'd

adjacent to SL18, have a 30m nominal width easement containing dual overhead powerlines and watermains. The back fences of these lots are internal fencelines along the edge of the easement (ie offset 30m from back boundary). Although the owners have Title to the 30m corridor, the corridor is not used for rural living purposes. Houses on these four lots can generally not be seen from SL18.

5.4 Advantage to Developer:

There is no advantage to the subdivision-developers regarding setbacks to built form.

There shall be an advantage to future owners of lots 1, 2 3, 8, 10 and 11 if they can build as close as 15m from a RL boundary.

As it stands at present, there is a risk that an owner may obtain a building permit and actually construct to the 15m setback, only to find that a final certificate cannot be granted because of firebreak and vegetation-buffer issues.

PART D

Appendix

INDEX:

	Description	Planning Report Ref.	Comment
1.	Title Document, 6 Selected pages	Part A, Cl 3.1	Search-copies
2.	Road Network, Possible	Part A, Cl 4.2	
3.	Overall Concept Plan	Part A, Cl 4.2	
4.	Overall Concept Plan & Adjacent Properties	Part A, Cl 4.2	
5.	DA1 Layout Plan	Part A, Cl 4.3	
6.	Interim Lot Configurations, Stages 1-4	Part A, Cl 4.3	
7.	Dimensioned Plan, Drg no. 1665/101	Part A, Cl 4.3	See Application for current version
8.	Lot 10 Concept Plan	Part A, Cl 5.2	
9.	Lot 10 Section A-A	Part A, Cl 5.2	
10.	Extent of Earthworks associated with roadworks	Part A, Cl 5.3	
11.	Definition of a Firebreak	Part C, Cl 1.4.10	part NTFRS Brochure
12.	Nominal 10m Visual Vegetation Buffers, Firebreaks & Building Line Setbacks	Part C, Cl 1.4.10	
13.	Proposed Firebreaks, 10m Visual Vegetation Buffers & Effective Building Line Setbacks	Part C, Cl 1.4.10	
14.	Letter from A/Manager	Part C, Cl 1.5	Re: Part 5 of Scheme
15.	Check-list For Dimensioned Plan		Re: appendix 7
16.	Letter from Crown Land Estate	As owner's consent	Re: Lot 14

Date Registered: 07/06/2005 **Volume** 687 **Folio** 234
Duplicate Certificate as to Title issued? No

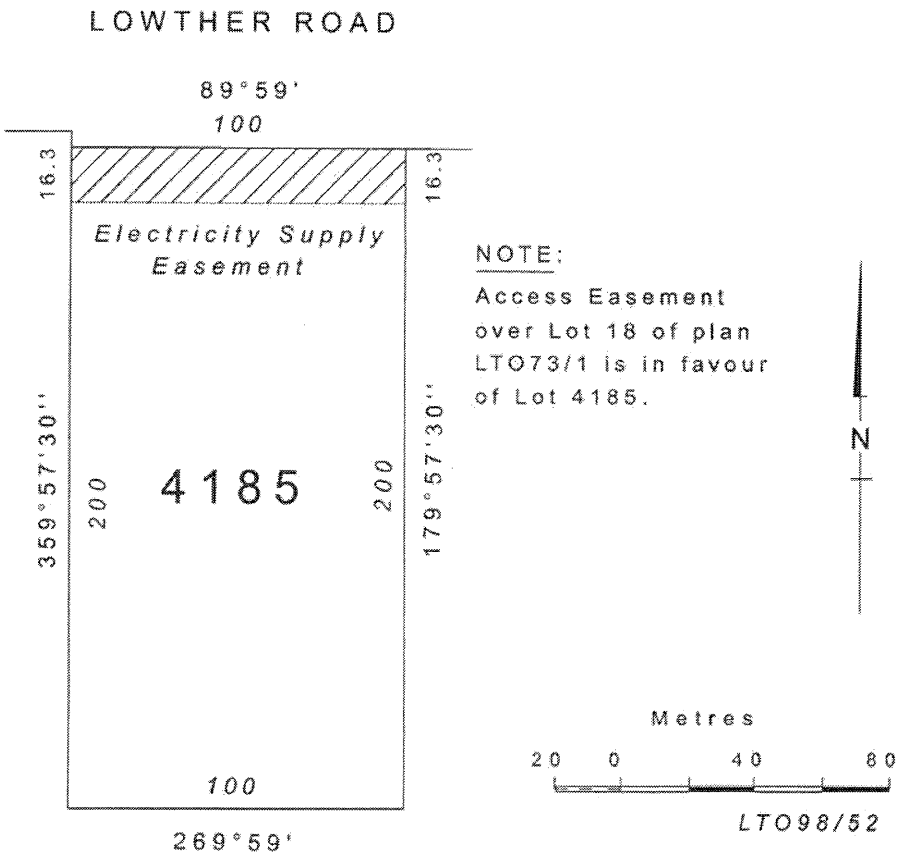
SEARCH CERTIFICATE

Section 4185 Hundred of Strangways from plan(s) LTO98/052
Area under title is 2 hectares

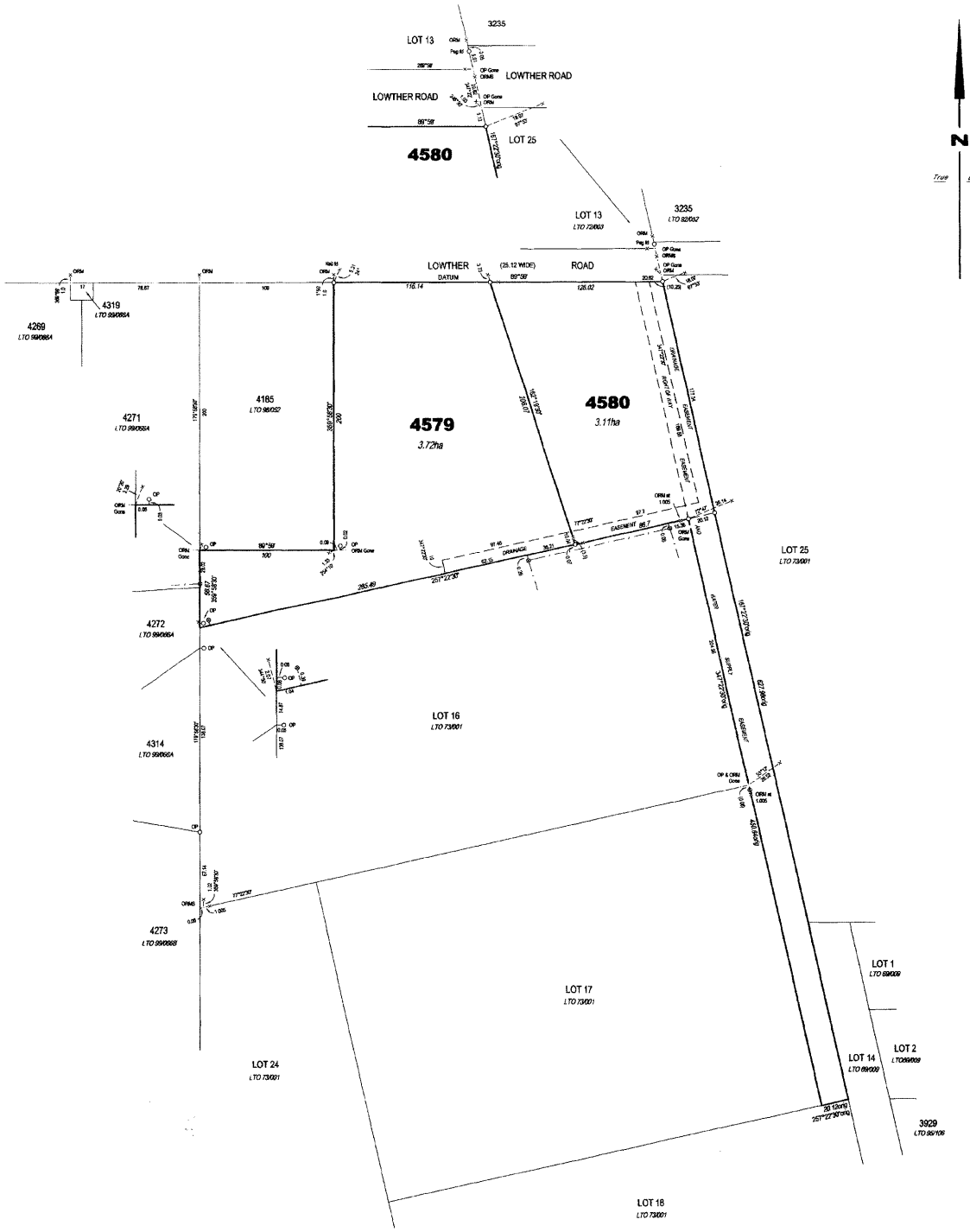
Owner:
Leo John Bandias
of PO Box 119, Palmerston NT 0831

Registered Date	Dealing Number	Description
		Previous title is **Volume** 614 **Folio** 161
01/09/2011	755867	Mortgage Bank of Queensland Limited
22/08/2011	755262	Discharge of Mortgage (417795)
22/08/2011	755261	Discharge of Mortgage (580721)
07/06/2005	580721	Mortgage Australia and New Zealand Banking Group Limited
24/02/1999	417795	Mortgage Australia and New Zealand Banking Group Limited
14/05/1987	189299	Electricity supply easement to Power and Water Authority
14/05/1987	089731	Access easement granted over LOT 18 on LTO 73/1

End of Dealings



Supersedes Part of LTO 98/052



Note
Reference marks are at one metre unless otherwise shown
Right of Way Easement and Water Supply Easement are in favour of Lots 16 to 24 of plan LTO 73/001
Drainage Easements are in favour of the Lachlan Shire Council

SURVEYOR'S CERTIFICATE

I, Keith Leslie Schulz
hereby certify that the survey represented on this plan was carried out by me or under my immediate supervision and was completed on 25.11.02
and that this survey has been executed in accordance with the Licensed Surveyors Act and the Directions thereunder.
Licensed Surveyor 19/2/02 Date

L.T.O. REGISTRATION

Lodged on ..... at .....
Instrument Number .....
Registered on ..... at .....
by me .....
Registrar-General

CONSENT OF PROPRIETOR OF REGISTERED INTEREST(S)

Consent is hereby given to the proposed subdivision as depicted hereon
Signed
Australia and New Zealand Banking Group Limited
AUSTRALIA AND NEW ZEALAND BANKING GROUP LIMITED
PP No. 22271
R.J. HOWLETT JP
No. 22271

SUBDIVISION APPLICATION TO THE REGISTRAR-GENERAL

I/We hereby apply, pursuant to section 51 of the Land Title Act for issue of new titles in accordance with the subdivision hereon.
Lee Bandas
Registered Proprietor(s)
C.T. Volume 659 Folio 76

SURVEY APPROVAL

I, Garry James West the Surveyor-General, being satisfied that Part 5 of the Planning Act has been complied with:
(i) approve the survey under section 49 of the Licensed Surveyors Act;
(ii) acknowledge, on behalf of the Service Authorities designated, the vesting of the Service Easements shown hereon; and
(iii) accept on behalf of the Service Authorities specified, the land designated as roads or reserves hereon vested pursuant to section 54 of the Planning Act and section 7 of the Control of Roads Act.
Surveyor-General 24/02/05 Date

SECTIONS 4579 AND 4580

SUBDIVISION OF SECTION 4184
HUNDRED OF STRANGWAYS

Drawn by: East James & Assoc (4081) 29.11.02	Map Reference: Middle Arm 10000 Sheet 10.98	SCALE 1:1500
Examined by: East James & Assoc 16.12.02	AZIMUTH: LTO 98/052 Assumed from / Observed at	L.T.O.2001/074

WARNING - Damaged or creased plan will be rejected

NORTHERN TERRITORY OF AUSTRALIA

Record of Administrative Interests and Information

Record of Administrative Interests and Information
The information contained in this record of Administrative Interests only relates to the below parcel reference.

Parcel Reference: Section 04579 Hundred of Strangways plan(s) LTO2001/074

(See section 38 of the Land Title Act)

Note: The Record of Administrative Interests and Information is not part of the Land Register and is not guaranteed by the Northern Territory of Australia, and the NT Government accepts no Liability for any omission, misstatement or inaccuracy contained in this statement.

Registrar General

Government Land Register
(none found)

Custodian - Registrar General (+61 8 8999 6252)

Current Title
CUFT 683 986 (order 1)

Tenure Type
ESTATE IN FEE SIMPLE

Tenure Status
Current

Area Under Title
3 hectares 7200 square metres

Owners
Leo John Bandias
PO Box 119, Palmerston NT 0831

Easements
Drainage Easement to Litchfield Shire Council
Access & water Easement to LOTS 16-24

Scheme Name
(none found)

Scheme Body Corporate Name
(none found)

Reserved Name(s)
(none found)

NORTHERN TERRITORY OF AUSTRALIA

Record of Administrative Interests and Information

Record of Administrative Interests and Information
The information contained in this record of Administrative Interests only relates to the below parcel reference.

Parcel Reference: Section 04580 Hundred of Strangways plan(s) LTO2001/074

(See section 38 of the Land Title Act)

Note: The Record of Administrative Interests and Information is not part of the Land Register and is not guaranteed by the Northern Territory of Australia, and the NT Government accepts no Liability for any omission, misstatement or inaccuracy contained in this statement.

Registrar General

Government Land Register
(none found)

Custodian - Registrar General (+61 8 8999 6252)

Current Title
CUFT 683 987 (order 1)

Tenure Type
ESTATE IN FEE SIMPLE

Tenure Status
Current

Area Under Title
3 hectares 1100 square metres

Owners
Leo John Bandias
PO Box 119, Palmerston NT 0831

Easements
Drainage Easement to Litchfield Shire Council
Access & water Easement to LOTS 16-24

Scheme Name
(none found)

Scheme Body Corporate Name
(none found)

Reserved Name(s)
(none found)

Date Registered: 28/03/2012 **Volume** 765 **Folio** 152

Duplicate Certificate as to Title issued? No

SEARCH CERTIFICATE

Lot 16 Hundred of Strangways from plan(s) LTO73/001
Area under title is 8 hectares 900 square metres

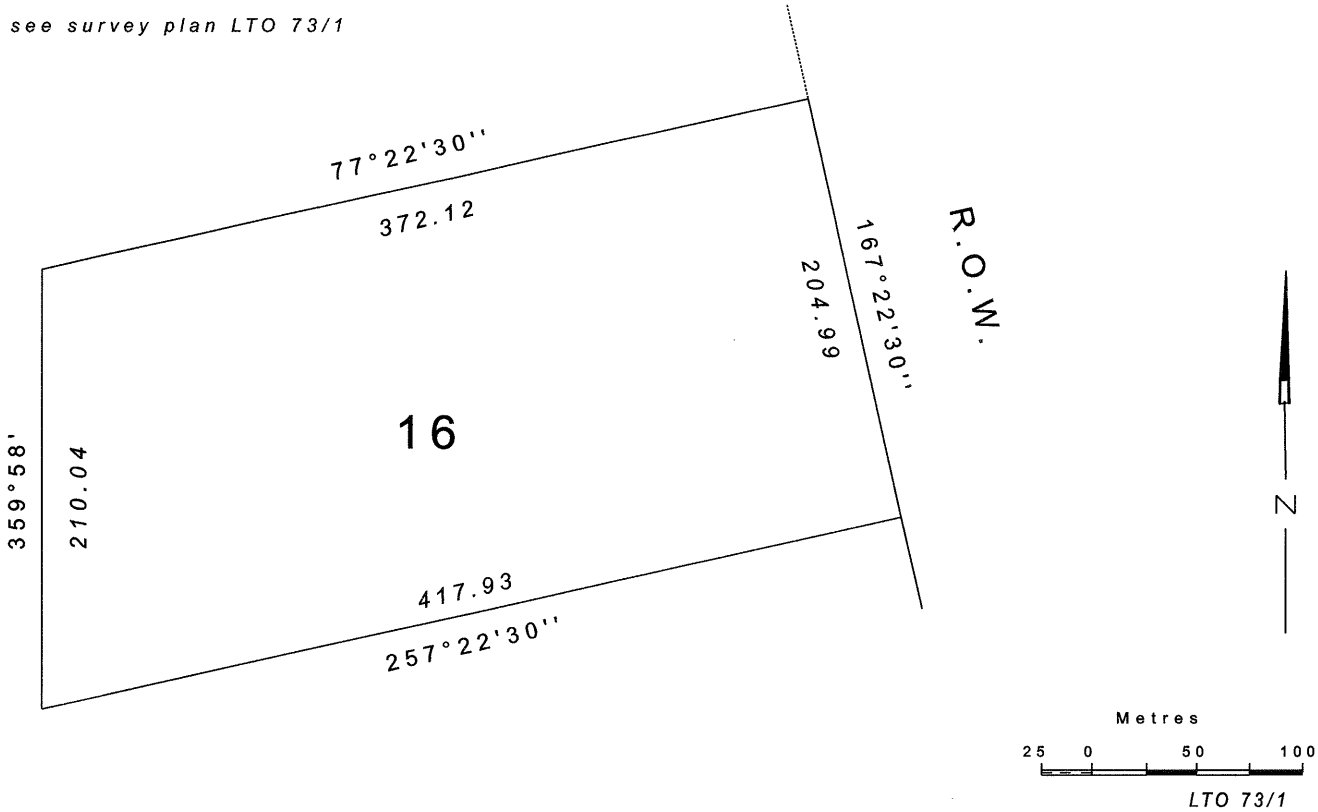
Owner:
Leo John Bandias
of PO Box 1405, Palmerston NT 0831

Easements:
Access & water Easement granted over Lot(s) 4184

Registered Date	Dealing Number	Description
		Previous title is **Volume** 757 **Folio** 672
10/04/2012	769326	Mortgage Bank of Queensland Limited
02/04/1976	057895	Right of way easement granted over lot(s) 18 on LTO 75/13

End of Dealings

For Access Easement details over lot 15
see survey plan LTO 73/1



Date Registered: 10/12/2012 **Volume** 772 **Folio** 158

Duplicate Certificate as to Title issued? No

SEARCH CERTIFICATE

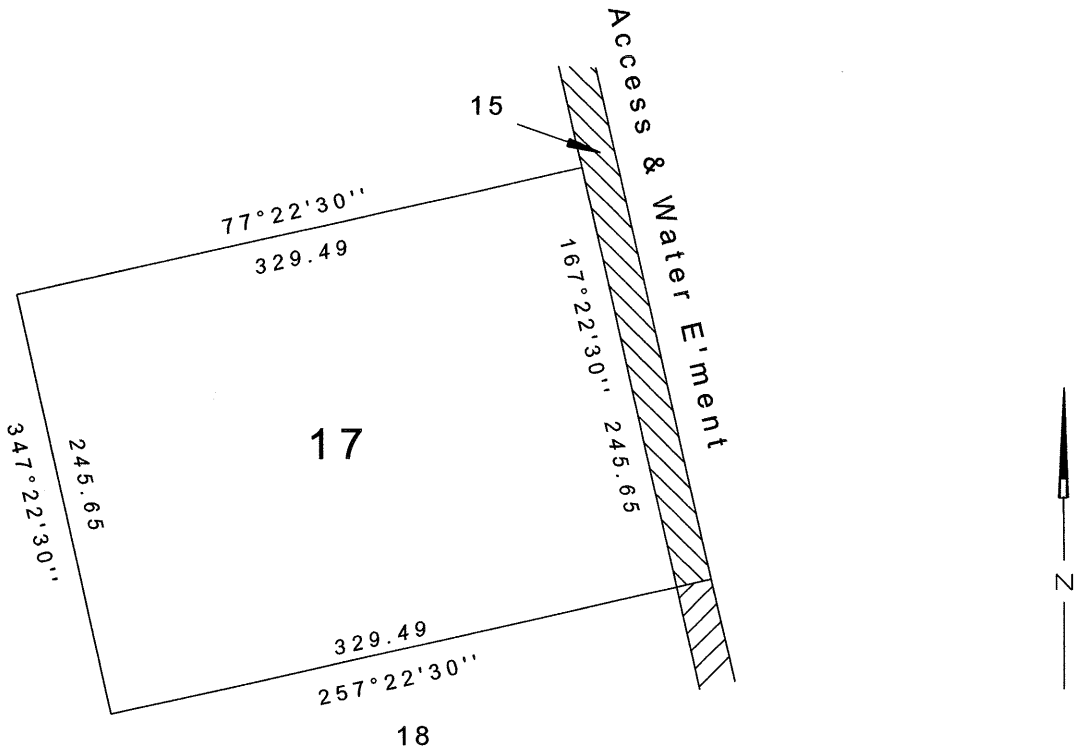
Lot 17 Hundred of Strangways from plan(s) LTO73/001
Area under title is 8 hectares 900 square metres

Owner:
Bandias Investments Pty Ltd (ACN 139 591 218) as trustee for the Bandias Investment Trust of PO Box 1405, Palmerston NT 0831

Easements:
Access & water Easement granted over Lot(s) 4184

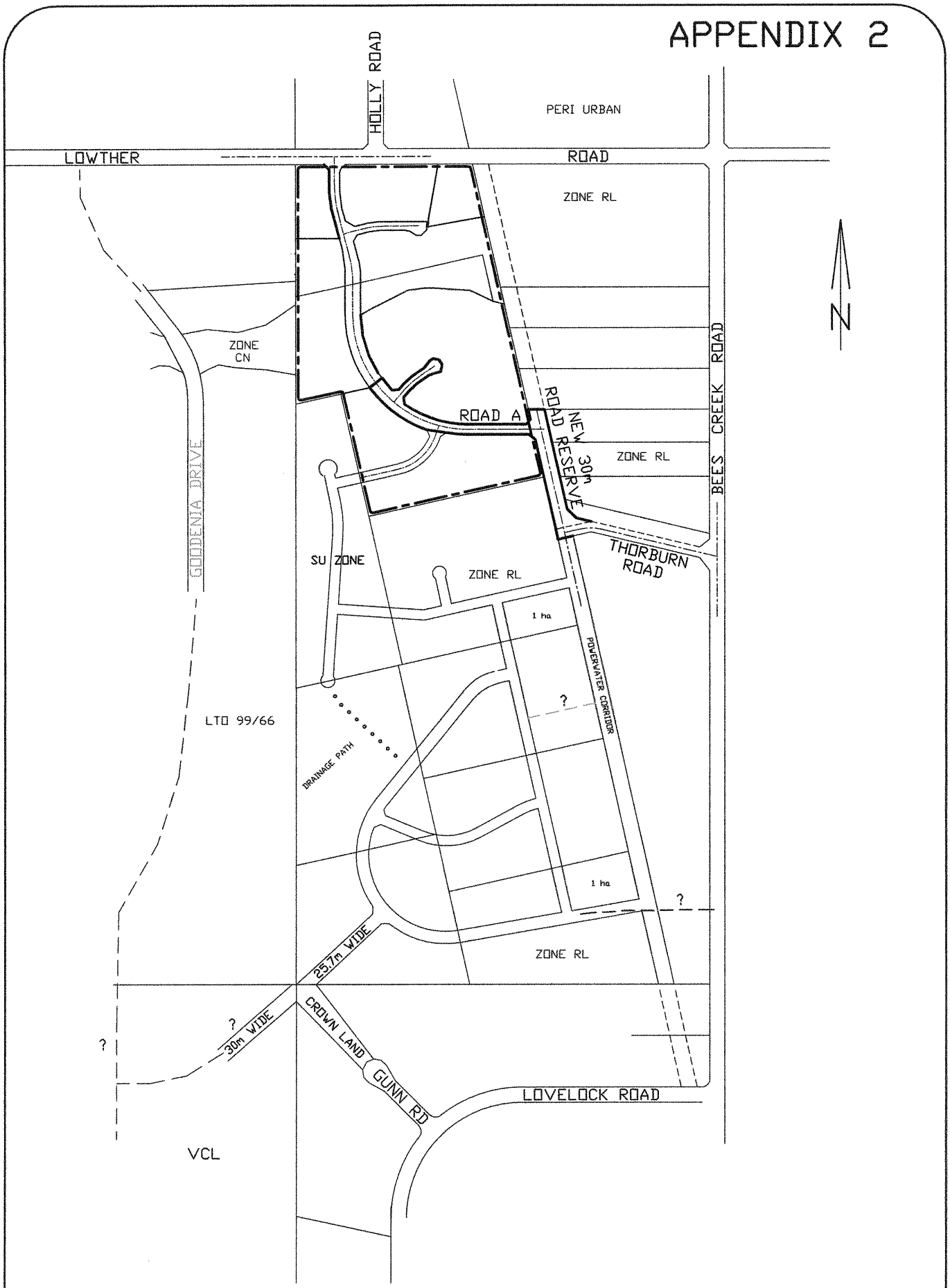
Registered Date	Dealing Number	Description
		Previous title is **Volume** 770 **Folio** 577
13/12/2012	786245	Mortgage Bank of Queensland Limited
18/12/1978	080459	Right of way easement granted over lot(s) 18

End of Dealings



NOTE: Lot 17 has right of way over lot 15 as shown on survey plan LTO 73/1
Lot 17 has right of way over lot 18 as shown on LTO instrument number 80459

APPENDIX 2



9 FEB 2017

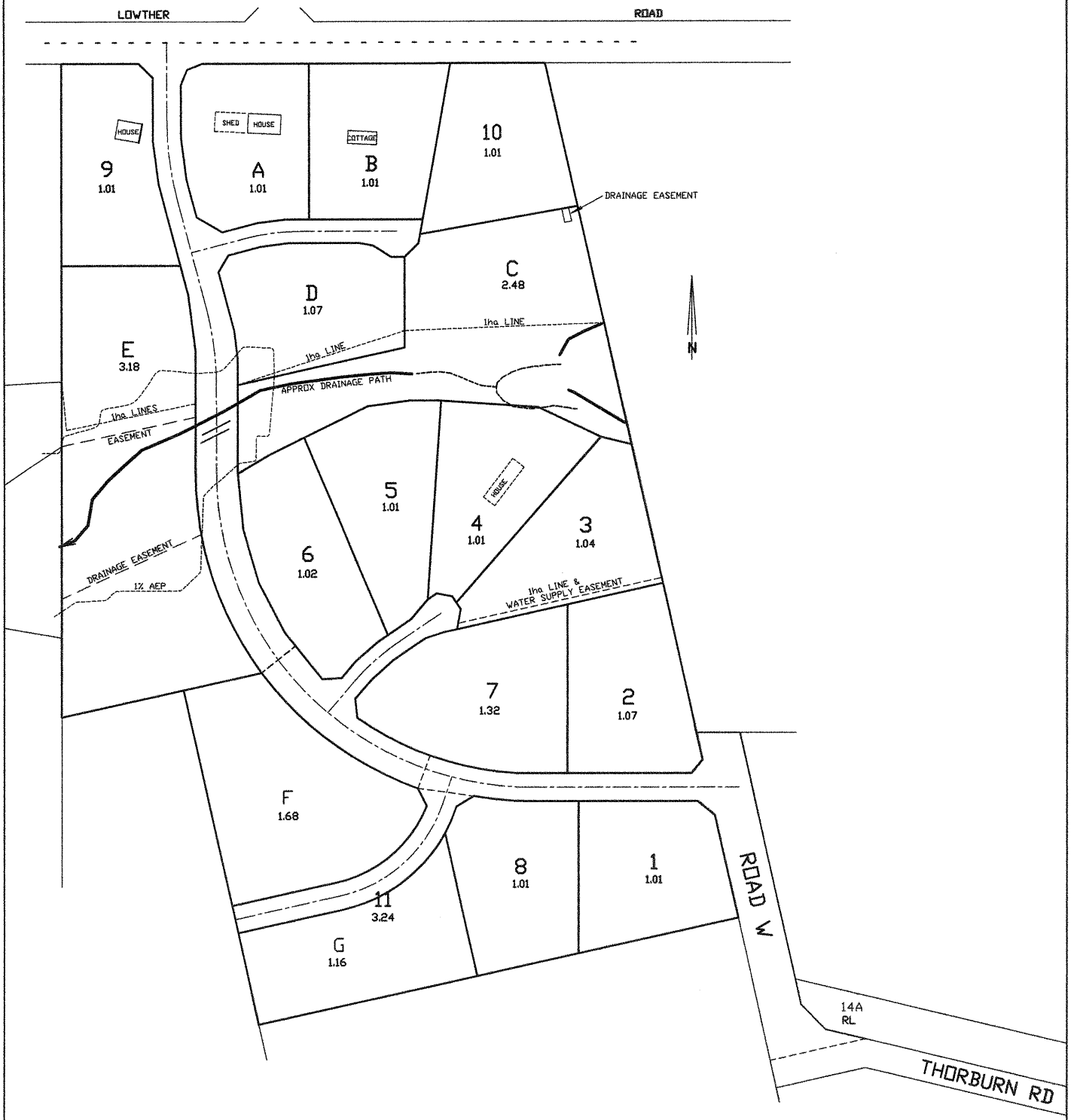
POSSIBLE ROAD NETWORK

LTO 73/1 LOCALITY NOT INCL LOT 25

1 : 10,000 (A4)

Prepared by:-
J DE VRIES CPEng
CONSULTING CIVIL ENGINEER, DARWIN.

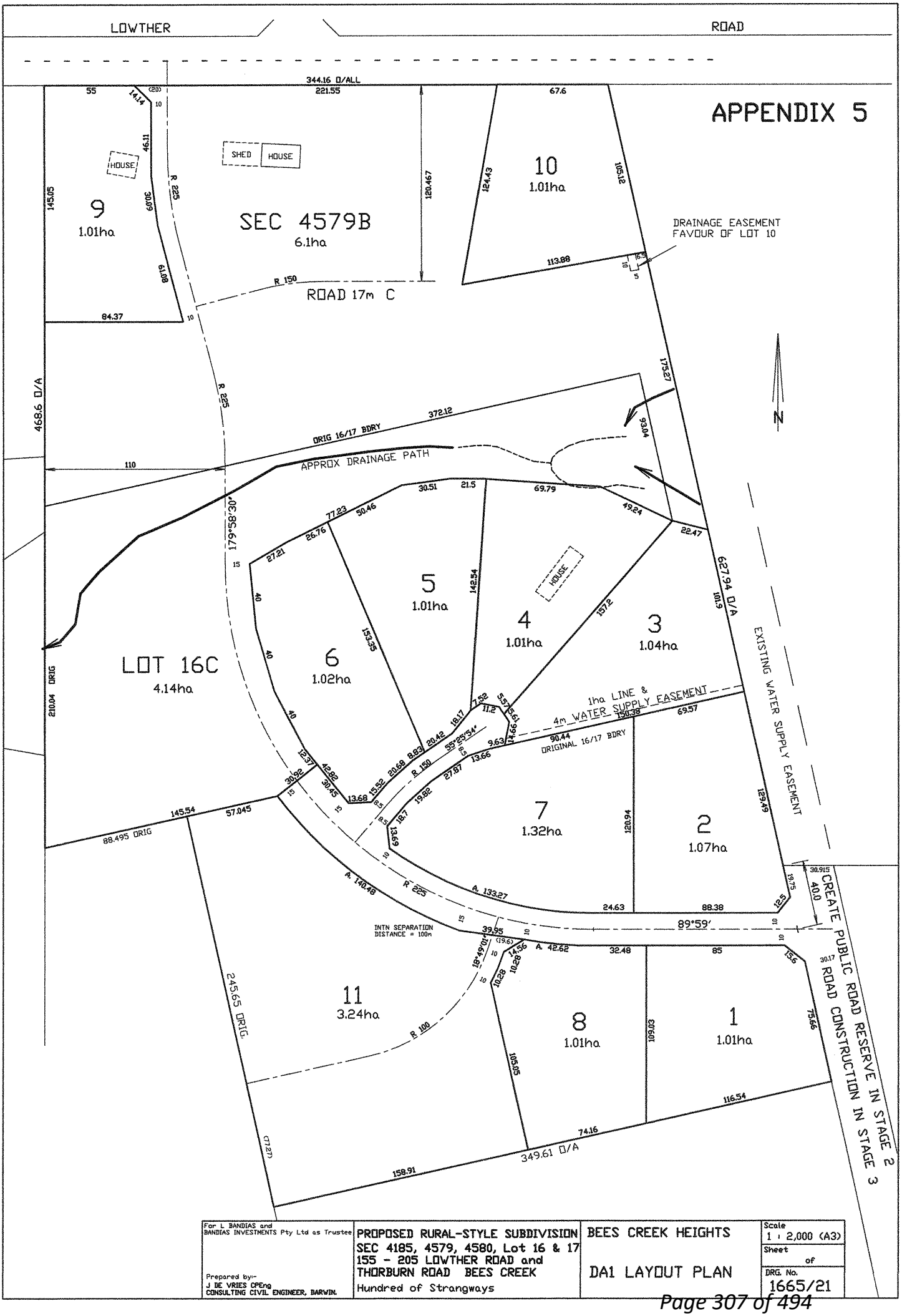
APPENDIX 3



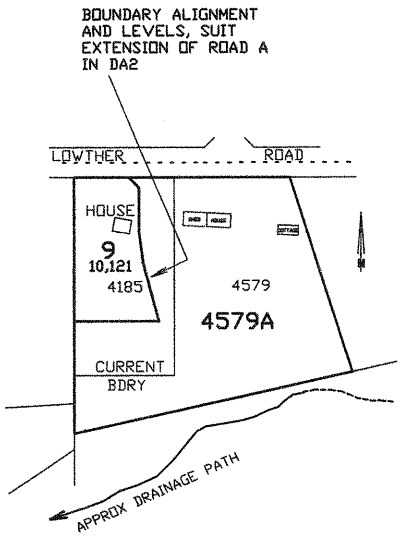
OVERALL CONCEPT ha

APPENDIX 4

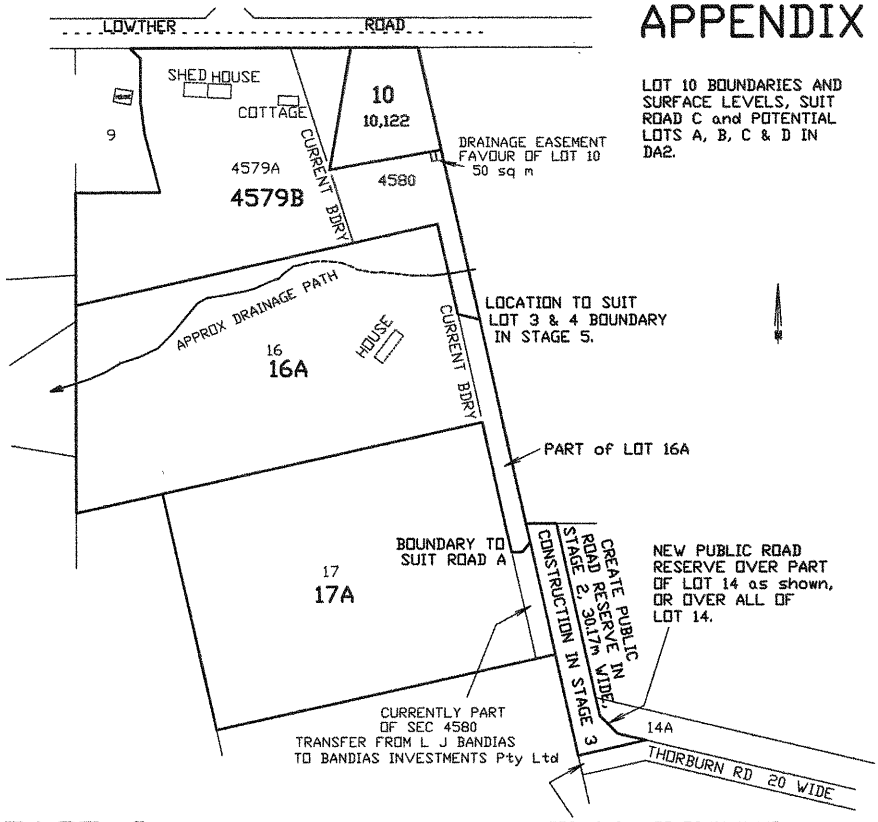
For L BANDIAS and BANDIAS INVESTMENTS Pty Ltd as Trustee	PROPOSED RURAL-STYLE SUBDIVISIONS SEC 4185, 4579, 4580, Lot 16 & 17 155 - 205 LOWTHER ROAD BEES CREEK Hundred of Strangways	BEES CREEK HEIGHTS OVERALL LAYOUT CONCEPT & ADJACENT PROPERTIES	Scale 1 : 4,000 (A3) Sheet of
Prepared by:- J DE VRIES CPEng CONSULTING CIVIL ENGINEER, DARWIN.			DRG. No. 1665 / 50


APPENDIX 5
LOWTHER ROAD
344.16 D/ALL
SEC 4579B
6.1ha
ROAD 17m C
9
1.01ha
10
1.01ha
DRAINAGE EASEMENT FAVOUR OF LOT 10
LOT 16C
4.14ha
468.6 D/A
ORIG 16/17 BDRY
APPROX DRAINAGE PATH
179°58'30"
5
1.01ha
6
1.02ha
4
1.01ha
3
1.04ha
7
1.32ha
2
1.07ha
11
3.24ha
8
1.01ha
1
1.01ha
627.94 D/A
EXISTING WATER SUPPLY EASEMENT
1ha LINE & 4m WATER SUPPLY EASEMENT
ORIGINAL 16/17 BDRY
INTN SEPARATION DISTANCE = 100m
CREATE PUBLIC ROAD RESERVE IN STAGE 2
ROAD CONSTRUCTION IN STAGE 3
349.61 D/A
245.65 ORIG.
88.495 ORIG
210.04 ORIG
For L BANDIAS and BANDIAS INVESTMENTS Pty Ltd as Trustee
Prepared by:-
J DE VRIES CPEng
CONSULTING CIVIL ENGINEER, DARWIN.
PROPOSED RURAL-STYLE SUBDIVISION
SEC 4185, 4579, 4580, Lot 16 & 17
155 - 205 LOWTHER ROAD and
THORBURN ROAD BEES CREEK
Hundred of Strangways
BEES CREEK HEIGHTS
DA1 LAYOUT PLAN
Scale
1 : 2,000 (A3)
Sheet
of
DRG. No.
1665/21

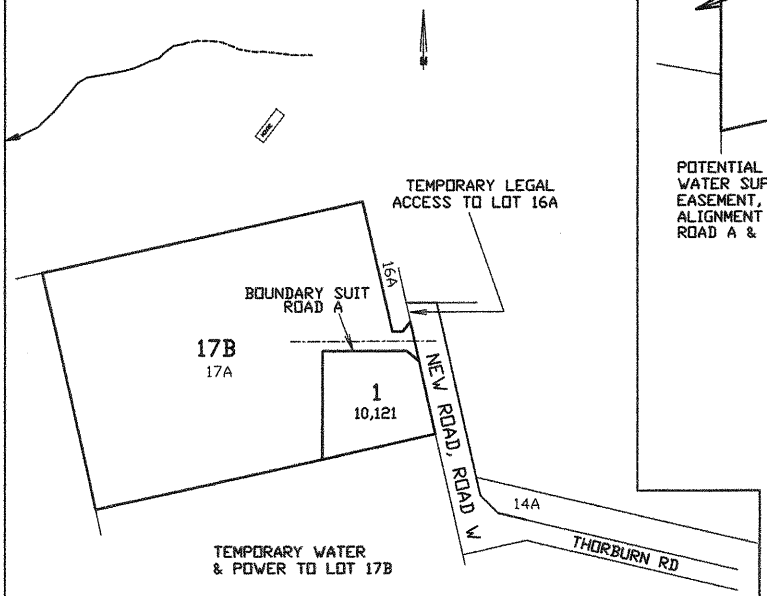
APPENDIX 6



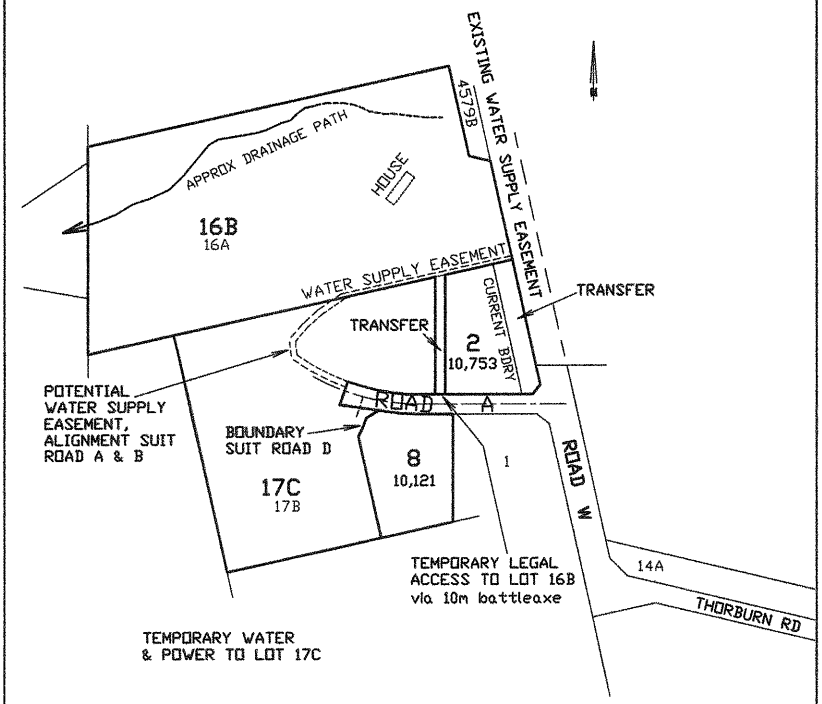
STAGE 1
LOT 9



STAGE 2
LOT 10
LOT 16A & 17A with ACCESS to PUBLIC ROAD RESERVE



STAGE 3
LOT 1

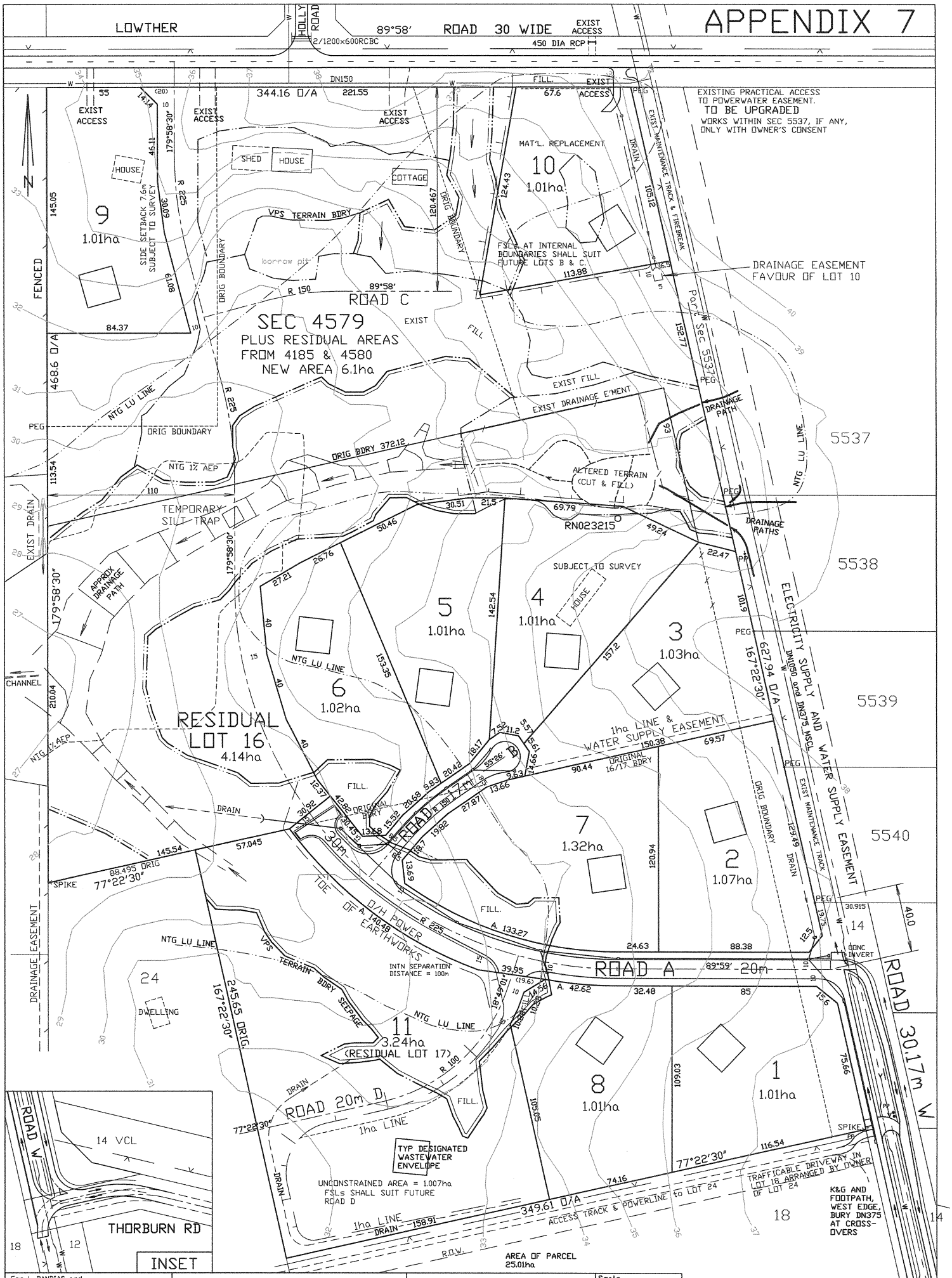


STAGE 4
LOTS 2 & 8

STAGE 5 AS PER DA1 LAYOUT

INTERIM LOT CONFIGURATIONS at STAGES 1 - 4.

APPENDIX 7



For L BANDIAS and BANDIAS INVESTMENTS Pty Ltd as Trustee

Prepared by:-
J DE VRIES CPEng
CONSULTING CIVIL ENGINEER, DARWIN.

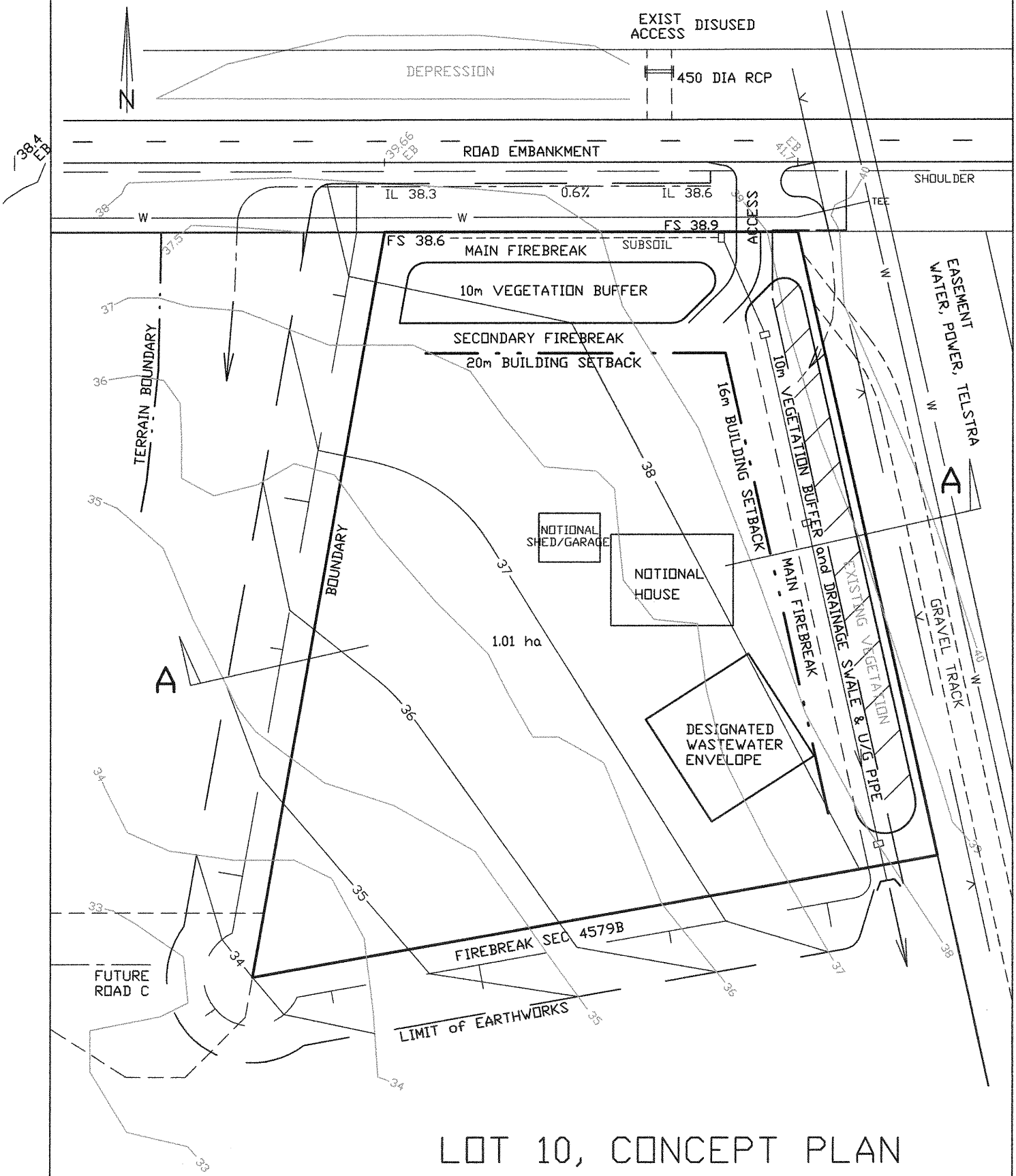
PROPOSED RURAL-STYLE SUBDIVISION
SEC 4185, 4579, 4580, Lot 16 & 17
155 - 205 LOWTHER ROAD and
THORBURN ROAD BEES CREEK
Hundred of Strangways

BEES CREEK HEIGHTS DA1

DIMENSIONED PLAN

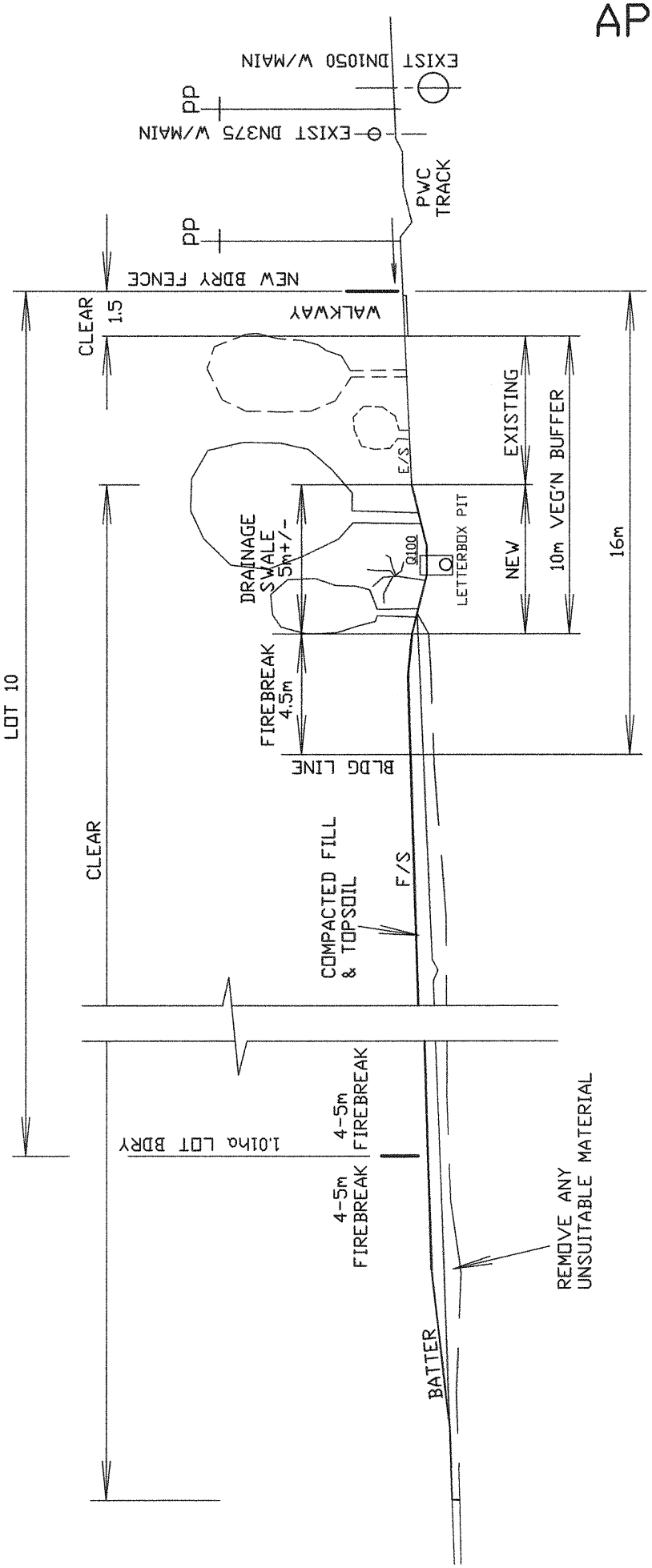
Scale	1 : 2,000 (A3)
Sheet	1 of 1
DRG. No.	1665/101

APPENDIX 8



LOT 10, CONCEPT PLAN

APPENDIX 9

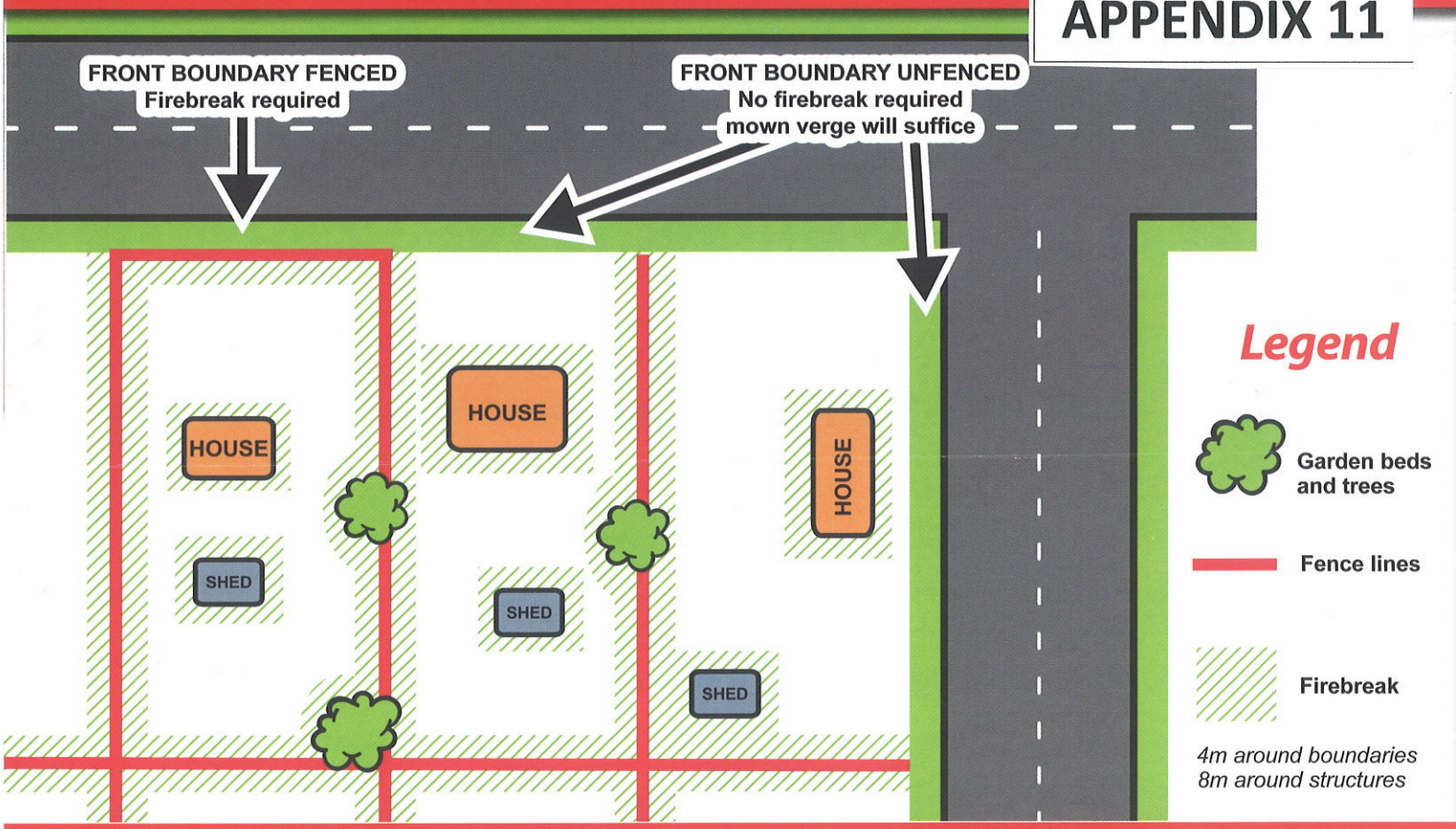


LOT 10, SECTION A - A

LOWTHER
ROAD
APPENDIX 10
HOUSE
SHED
HOUSE
COTTAGE
9
1.01
10
1.01
N
APPROX DRAINAGE PATH
5
1.01
HOUSE
4
1.01
3
1.04
6
1.02
EXTENT OF EARTHWORKS
1% AEP
1ha LINE &
WATER SUPPLY EASEMENT
1%
DRAIN
7
1.32
2
1.07
1%
ROAD
SEEPAGE LINE
DRAIN
8
1.01
1
1.01
1.5%
1ha LINE
11
3.24
1.5%
1ha LINE
THIS AREA,
ON BEHALF OF
OWNER OF LOT
24
EXTENT OF EARTHWORKS ASSOCIATED
WITH ROADWORKS
ALL TYPES eg CUT, FILL, MATERIAL REPLACEMENT, REGRADING.

AVOID A FINE | DO YOUR FIREBREAKS BEFORE 1ST JUNE ANNUALLY

APPENDIX 11



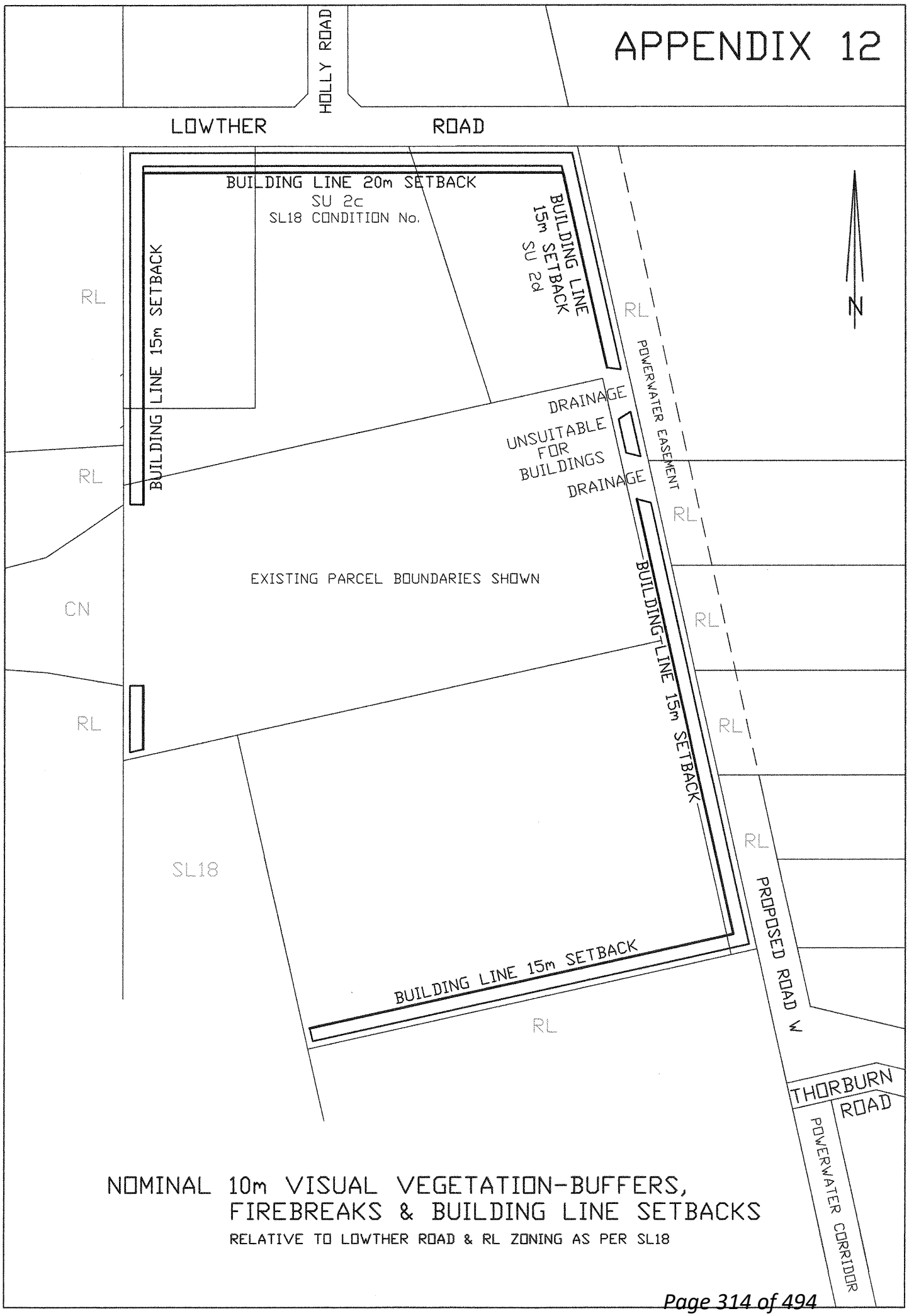
Definition of a firebreak

- The firebreak must be a minimum of 4 metres wide along all boundaries. Growth within the firebreak is to be no more than 50 millimetres in length with the resulting slash raked clear.
- Alternatively the firebreak area may contain trees or cultivated gardens, if so the area should be cleared of combustible materials and the 4 metre firebreak be constructed behind the garden or trees.
- If the property has no front fence, the verge will suffice as firebreak; in the advent of a fence being constructed the 4 metre break would have to be put in place.
- The fence line is also part of the firebreak, ensure all grass is removed.
- If a non combustible area, such as irrigated lawn or garden area is not in place a mown area of 8 metres with growth less than 50 millimetres should be in place around all dwellings and out buildings.

Northern Territory Fire and Rescue Service

It is in yours and your neighbours' best interest to maintain your property in a fire ready state. We live in the dry tropics and our environment is prone to frequent fires.

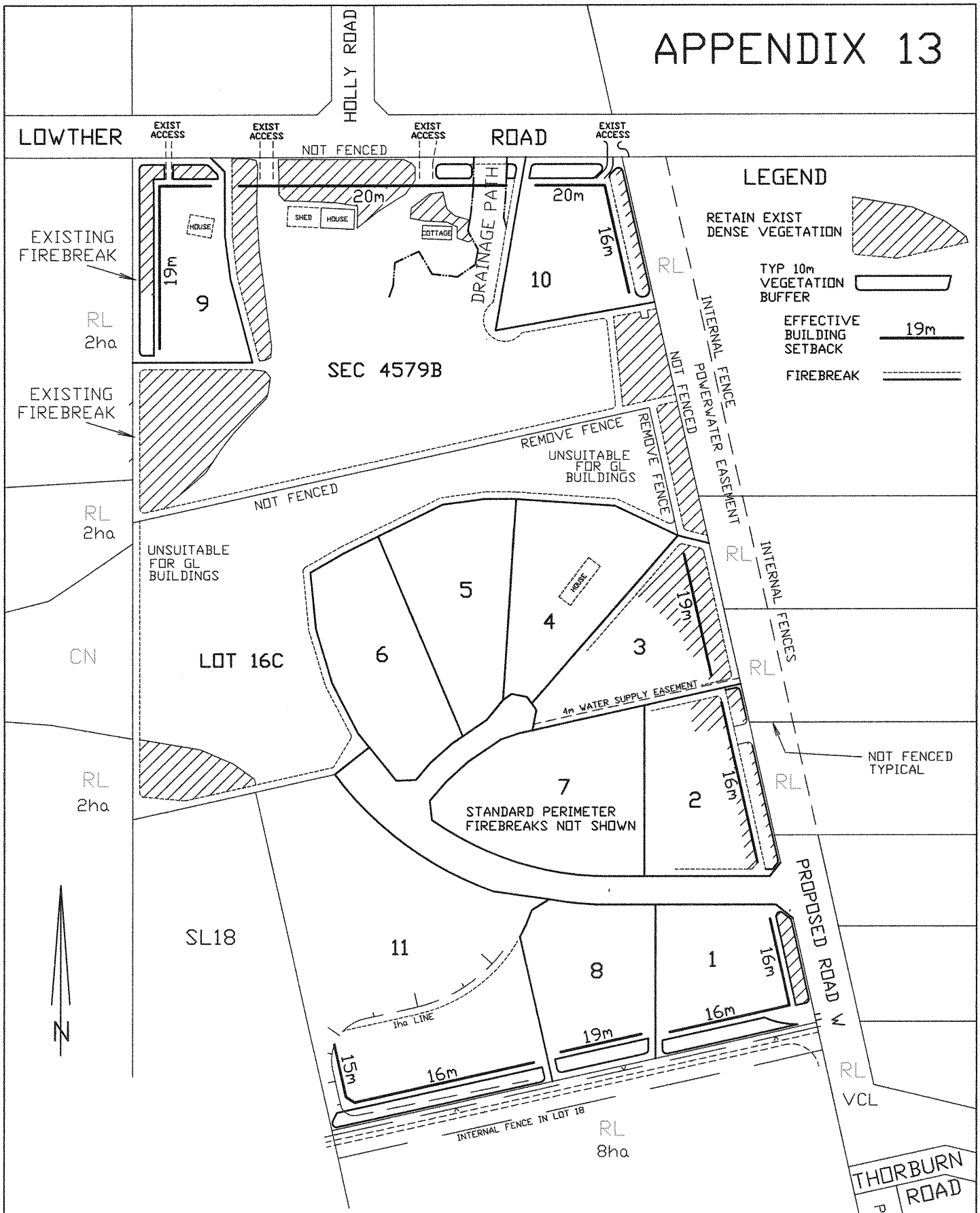
APPENDIX 12



NOMINAL 10m VISUAL VEGETATION-BUFFERS, FIREBREAKS & BUILDING LINE SETBACKS

RELATIVE TO LOWTHER ROAD & RL ZONING AS PER SL18

APPENDIX 13



STANDARD PERIMETER FIREBREAKS FOR LOTS 3, 4, 5, 6, 7, 8 & 9.
OFFSET FIREBREAKS FOR LOTS 1, 2, 10 & 11 (11.5m to 16m) WITH 1.5m WALKWAY ALONG FENCE LINE FOR INSPECTIONS & MAINTENANCE.
RETAINED-VEGETATION ONLY APPLIES UP DA1 PART V. AFTERWARDS, SL18 APPLIES.
BUILDING SETBACKS AND ASSOCIATED NON-COMBUSTIBLE FIREBREAKS SUBJECT TO NTFRS APPROVAL.

PROPOSED FIREBREAKS, 10m VISUAL VEGETATION-BUFFERS & EFFECTIVE BUILDING LINE SETBACKS

APPENDIX 14

RE: Planning Scheme Zones RR and RL

JD jack devries <jack.vries@bigpond.com>
Fri 7/04, 1:02 PM
You; jack devries (jack.vries@bigpond.com)

Reply

Good afternoon Jack

Thank you for your email. The points you make are valid and noted and I will pass on to our lands planning team for consideration in any future amendments to the Planning Scheme.

With specific reference to your current project in Specific Use Zone SL18 I can confirm that you will only need to address Clause 11.4.5 and the requirements of SL18.

Kind regards

Dawn Parkes

A/Manager Rural Planning – Development Assessment Services

Department of Infrastructure, Planning and Logistics

Northern Territory Government

APPENDIX 15

CHECK-LIST for DIMENSIONED PLAN

A.	Plans should typically be between 1:500 and 1:10,000	√ 1 : 2,000 @ A3 size
B.	Documents shall be pdf	√
1.1	North point	√
1.2	Area of the existing parcel	√
1.3	Boundary dimensions, (overall parcel)	√
2.	Approximate area of each of the proposed parcels	√
3.1.1	Existing Buildings on site	√ Aerial photo in LCA
3.1.2	Existing Buildings on adjoining properties	Plan, Appendix 4
3.2.1	Existing bores on site	√ Lot 16, to be removed
3.2.2	Existing bores on adjoining properties	Plan, Appendix 4
3.3.1	Other existing improvement on site	√
3.3.2	Other existing improvement on adjoining properties (L)	√ Selected improvements
4.1	Contours at not greater than 2 metre intervals	√ 1m contours
4.2	Flood lines	√ 1% AEP event for 2100
4.3	Tidal surge lines (L)	Incorporated in 1% AEP event
4.4	Seepage lines	√ LCA & LSA reports
4.5	Other natural features	Vegetation, Appendix 13
5.	Land units (NTG)	LSA report
6.1	Constrained land subject to waterlogging	LCA & LSA reports
6.2	Constrained land with slope exceeding 5%	Nil, LCA & LSA reports
6.3	Constrained land with rock outcrops	LCA & LSA reports
6.4	Constrained land with pavement.	nil
7.1	Areas or sites of conservation significance	Adjacent CN
7.2	Areas or sites of cultural significance	nil
7.3	Areas or sites of heritage significance	nil
8.1	Existing substations	All on overhead retic
8.2.1	Existing Services; water supply	√ post-DP DBYD search
8.2.2	Existing Services; electricity	√ post-DP DBYD search
8.2.3	Existing Services; phone cabling	Post-DP DBYD search
8.3	Existing easements	On Titles, Appendix 1
8.4	Existing reserves	nil
9.1	Proposed substations (L)	Overhead only
9.2.1	Proposed Services; water supply (L)	Along new roads & e'mnt
9.2.2	Proposed Services; electricity (L)	Along new roads
9.2.3	Proposed Services; phone cabling (L)	Along new roads
9.3	Proposed easements	√ For lot 10 only
9.4	Proposed reserves	nil
10.1.1	Dimensions of proposed lot boundaries	√
10.1.2	Bearings of proposed lot boundaries (L)	X, ACLT available
10.2.1	Dimensions of proposed roads	√
10.2.2	Bearings of proposed roads	√

Low importance items (L) have been left out to avoid clutter.

APPENDIX 16

Lot 14, LTO 69/009

Jack,

Crown Land Estate sees no issues in principle (subject to the condition below) with Lot 14 Hundred of Strangways on plan LTO 69/009 (Lot 14) becoming a public road to service, if approved, a future subdivision of adjacent land in accordance with Specific Use Zone SL 18.

A condition in this Department giving formal consent for Lot 14 becoming a road would be that the land is to be vested as road to Litchfield Council and placed under its care, control and management.

Our records indicate that Lot 14 had been held by the Commonwealth of Australia for power and water purposes but is now NT Crown land.

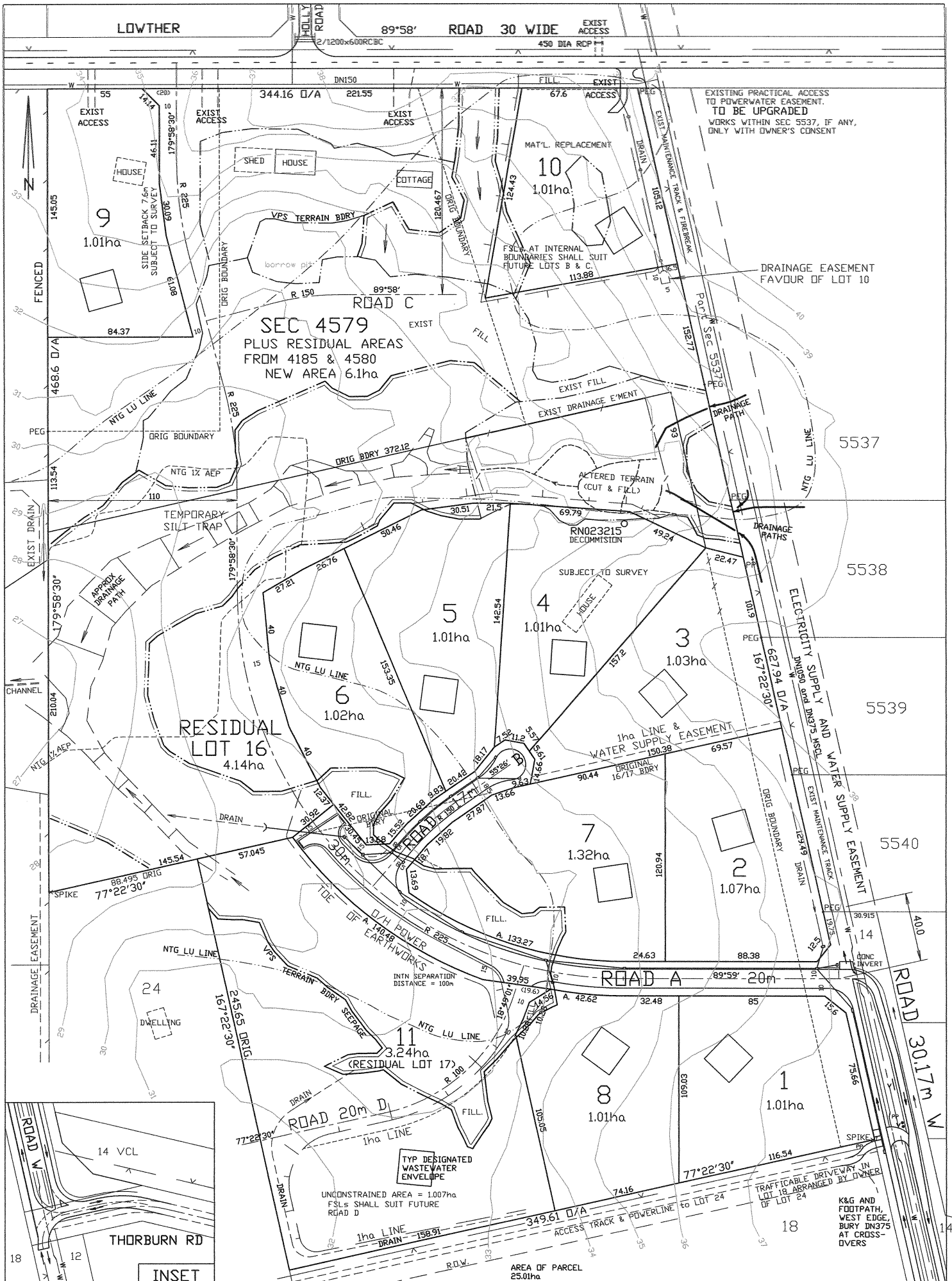
I understand you have been discussing these matters with Council and Development Assessment Services.

Kind regards,

Simon Flavel

A/Manager Land Transactions

Crown Land Estate



For L BANDIAS and BANDIAS INVESTMENTS Pty Ltd as Trustee	PROPOSED RURAL-STYLE SUBDIVISION SEC 4185, 4579, 4580, Lot 16 & 17 155 - 205 LOWTHER ROAD and THORBURN ROAD BEES CREEK Hundred of Strangways	BEES CREEK HEIGHTS DA1 DIMENSIONED PLAN	Scale 1 : 2,000 (A3) Sheet 1 of 1 DRG. No. 1665/101
Prepared by:- J DE VRIES CPEng CONSULTING CIVIL ENGINEER, DARWIN.			

PO Box 2223
Palmerston NT 0831
Mobile: 0418 89 2157
Fax: 08 8983 1285

Building One Pty Ltd

29-5-17

Jack DeVries CPEng
Consulting Civil Engineer
Jack.vries@bigpon.com

Dear Mr Devries

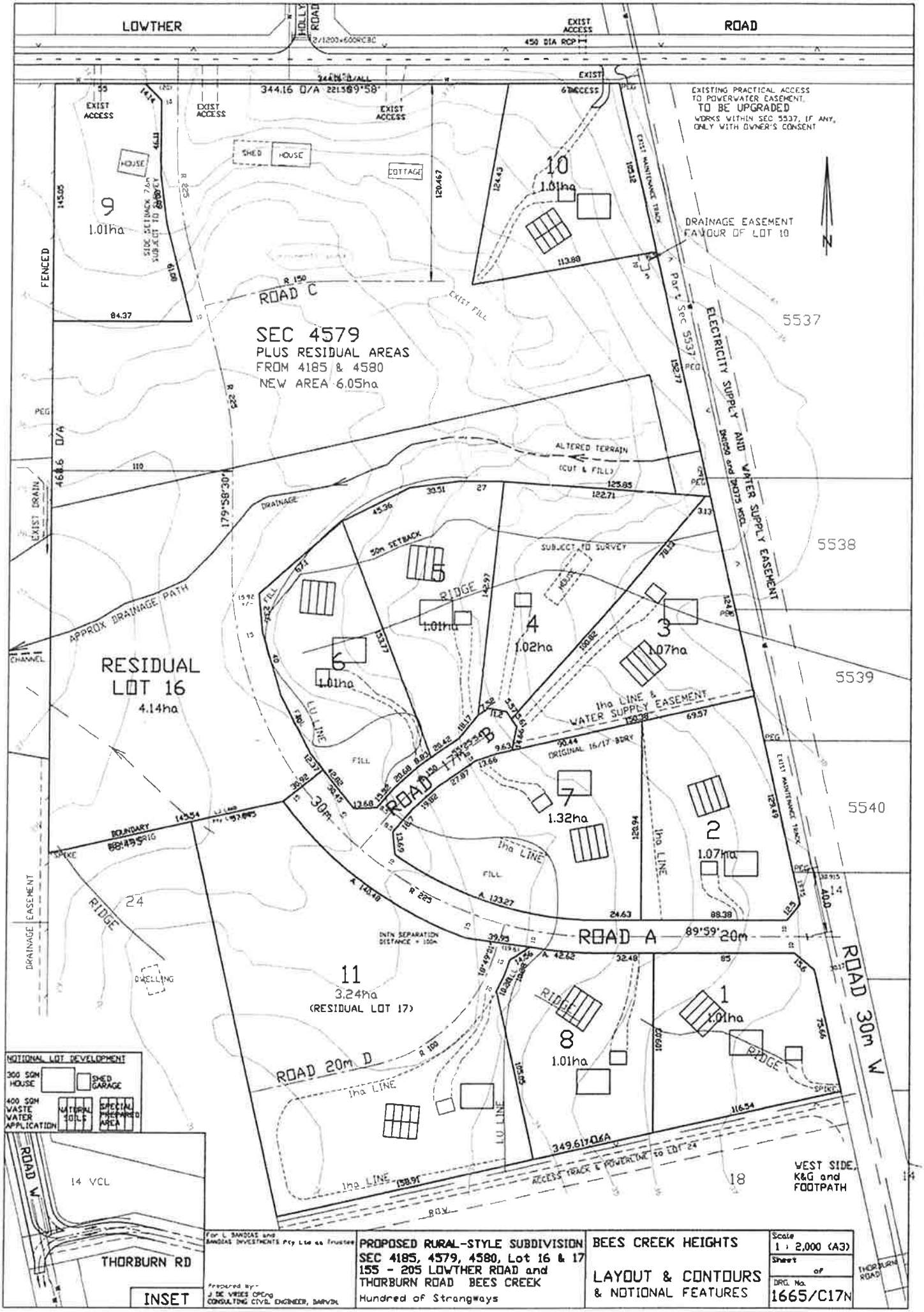
RE: SUBDIVION TITLE – SEC 4185, 4579, 4580, LOTS 16, 17, 155, & 205 LOWTHER ROAD THORBURN ROAD BEES CREEK

I confirm the proposed subdivision will not affect the compliance of the structures on these Sec 4185, 4579, 4580, Lots 16, 17, 155 & 205 Lowther Road & Thorburn Road Bees Creek with the Building Act or Building Code of Australia

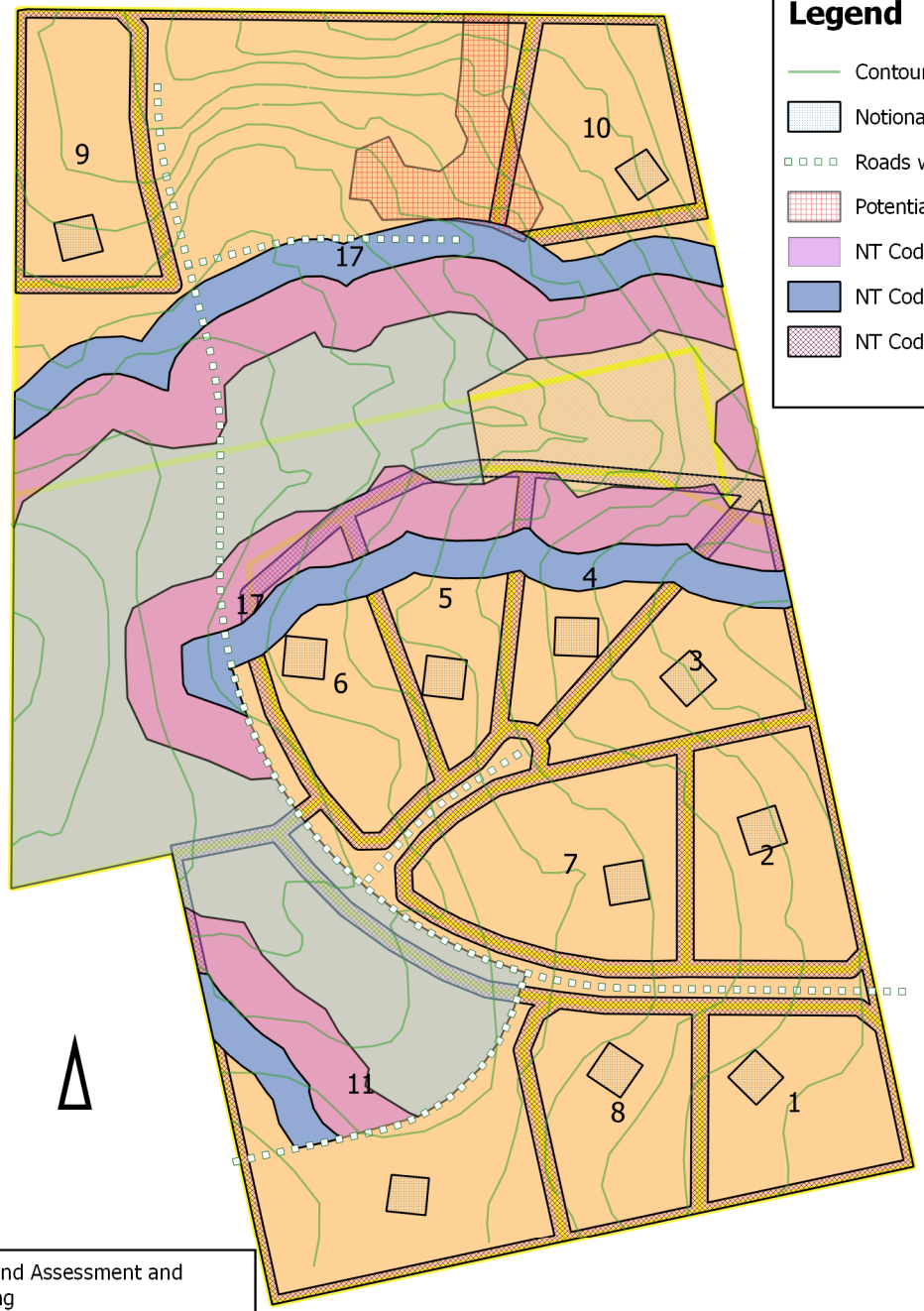
Should you have any questions in relation to the above please do not hesitate to contact me on 0418 892 157.

Regards,

Ian Izod
Building One Pty Ltd
18993BU


LOWTHER ROAD
EXIST ACCESS
450 DIA RCP
344.16 O/A 221S89°58'
EXISTING PRACTICAL ACCESS TO POWERWATER EASEMENT TO BE UPGRADED
WORKS WITHIN SEC 5537, IF ANY, ONLY WITH OWNER'S CONSENT
DRAINAGE EASEMENT FAVOUR OF LOT 10
SHED
HOUSE
COTTAGE
9
1.01ha
10
1.01ha
FENCED
ROAD C
SEC 4579
PLUS RESIDUAL AREAS
FROM 4185 & 4580
NEW AREA 6.05ha
EXIST FILL
Part Sec 5537
ELECTRICITY SUPPLY AND WATER SUPPLY EASEMENT
5537
5538
5539
5540
ALTERED TERRAIN (CUT & FILL)
DRAINAGE
30m SETBACK
SUBJECT TO SURVEY
RIDGE
APPROX DRAINAGE PATH
RESIDUAL LOT 16
4.14ha
6
1.01ha
4
1.02ha
3
1.07ha
1ha LINE & WATER SUPPLY EASEMENT
ROAD B
7
1.32ha
2
1.07ha
1ha LINE
FILL
ROAD A 89°59'20m
ROAD 30m W
24
DWELLING
11
3.24ha
(RESIDUAL LOT 17)
8
1.01ha
1
1.01ha
ROAD 20m D
349.61706A
ACCESS TRACK & POWERLINE TO LOT 24
18
WEST SIDE, K&G and FOOTPATH
NOTIONAL LOT DEVELOPMENT
300 SQM HOUSE
SHED GARAGE
400 SQM WASTE WATER APPLICATION
NATURAL SOILS
SPECIAL PREPARED AREA
ROAD W
14 VCL
THORBURN RD
INSET
For L. BANDIAS and BANDIAS INVESTMENTS Pty Ltd as Trustee
Prepared by:- J DE VRIES CPEng CONSULTING CIVIL ENGINEER, DARWIN
PROPOSED RURAL-STYLE SUBDIVISION
SEC 4185, 4579, 4580, Lot 16 & 17
155 - 205 LOWTHER ROAD and THORBURN ROAD BEES CREEK
Hundred of Strangways
BEES CREEK HEIGHTS
LAYOUT & CONTOURS & NOTIONAL FEATURES
Scale 1 : 2,000 (A3)
Sheet of
DRG. No. 1665/C17N

Lowther Road



Legend

- Contour lines 1m
- Notional wastewater envelope
- Roads with drains
- Potential land improvement area
- NT Code 30m wetland setback
- NT Code 50m wetland setback
- NT Code 4.5m boundary setback

SL18 subdivision requirements

In accordance with SL18, domestic dwellings within proposed lots are to utilise onsite wastewater treatment and disposal systems and all lots are to be connected to the reticulated water supply.

SL18 requires the development of a wastewater management plan (WMP) for any proposed subdivision.

VPS Land Assessment and Planning prepared a land capability assessment (LCA) for onsite wastewater treatment and disposal within this subdivision as per the requirements of SL18.

The LCA assessed two Department of Health (DoH) approved sub-surface irrigation systems for effluent disposal;

a) low pressure effluent distribution (LPED) shallow sub-surface drip irrigation system (WMP-02) and

b) flatbed leach drain (WMP-03).

The LCA confirmed that the land within each proposed lot 1 - 11 is capable of sustaining onsite wastewater management using a secondary effluent treatment system combined with a shallow sub-surface irrigation system.

As per SL18, a nominal wastewater disposal envelope has been identified on all proposed new lots 1 - 11 that satisfy the setback requirements in the NT code of Practice (DoH 2014). At 400m2, the wastewater disposal envelopes are sized to accommodate a large subsurface irrigation systems.

No land improvements are required within the wastewater disposal envelopes for either proposed effluent disposal system.

The wastewater disposal envelopes satisfy the requirements in relation to setbacks stated within the NT Code of Practice (2014). Setbacks shown on the WMP plan are

a. 4.5m setback from lot boundaries;

b. 30m setback from wetlands (applicable to disposal of effleunt treated by advanced secondary treatment systems); and

c. 50m setback from wetlands (applicable to disposal of effleunt treated by standard secondary treatment systems).

Where roads and associated land improvements separate a wetland from the nominated wastewater disposal envelope, the setback is applied with respect to the open road drain (3.0m) or the lot boundary (4.5m), whichever provides greatest setback.

As per SL18, no wastewater disposal envelope impinge on the 10m wide vegetated buffer (not shown) applied to the external boundaries of the subdivision.

Onsite wastewater treatment and disposal systems are to be protected from vehicular traffic.

On-site wastewater systems, including the land application areas are to be installed and certified by a self-certifying plumber in accordance with the Building Act and the NT Code of Practice for On-site Wastewater Management (DoH 2014)

Proponent: Leo Bandias
Address: Lowther Road, Bees Creek
Contact:
m: 0419 039 080
e: ljbandiasandsons@bigpond.com

VPS Land Assessment and Planning

Ph: 0408 794 368
E: vpsland@iinet.net.au
W: www.landassessplan.com.au
PO Box 78
Palmerston NT 0831

0 50 100 150 200 m

Date:	Scale:	
13 July 2017	1:4000 - A4	
VPS Project No.	Drawing No.	Rev:
	WMP-01	1

Project: Proposed subdivision - Lots 16 & 17 LTO67/002; Sections 4185, 4579 & 4580 Hundred of Strangways

Address: 155A, 155B, 175, 195 and 205 Lowther Road, Bees Creek

Title: Wastewater Management Plan Overview Map

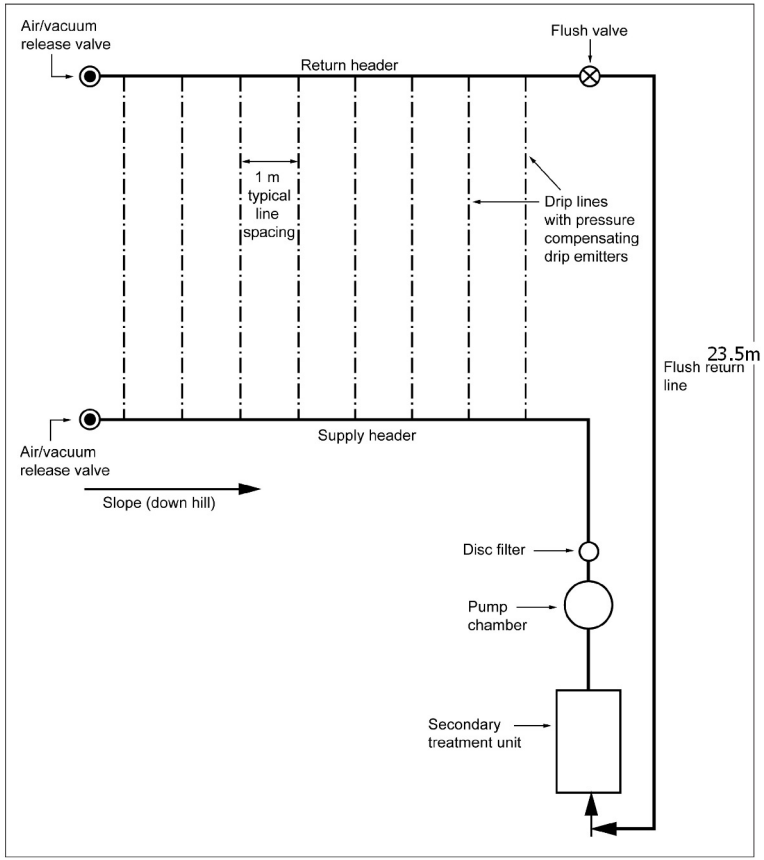


FIGURE M1 DRIP IRRIGATION SYSTEM – EXAMPLE LAYOUT OF COMPONENTS

Construction notes
- Irrigation area must comply with all relevant set-backs as required by the Code of Practice (DoH 2014).
- Irrigation area not to be used for other purposes.
- Maximum drip irrigation line spacing 1000 mm.
- Install irrigation lines along the contour within micro trenches.
- Depending on pipework manufacturer / supplier, irrigation lateral Length (L) may be equivalent to irrigation field width (W).
- All pipework shall be buried to a minimum depth of 150 - 200mm and be rated for 150 % of the pump shut-off head.
- Clay spoil shall not be placed over the constructed micro-trench.
- All drippers shall be pressure compensating.
- Micro-trenches to be covered in at least 100 mm topsoil and grassed.
- Irrigation area boundaries must be delineated by appropriate border.
- To indicate wastewater effluent, pressure compensating drip emitter lines should be purple colour.
- Irrigation area must not be paved over or built on.
- Surface stormwater and sub-surface seepage should be diverted using upslope swales if required.
- Maintenance to be carried out in accordance with manufacturers' specifications

VPS Land Assessment and Planning
PO Box 78 , Palmerston NT 0831
Ph: 0408 794 368 E: vpsland@iinet.net.au
www.landassessplan.com.au

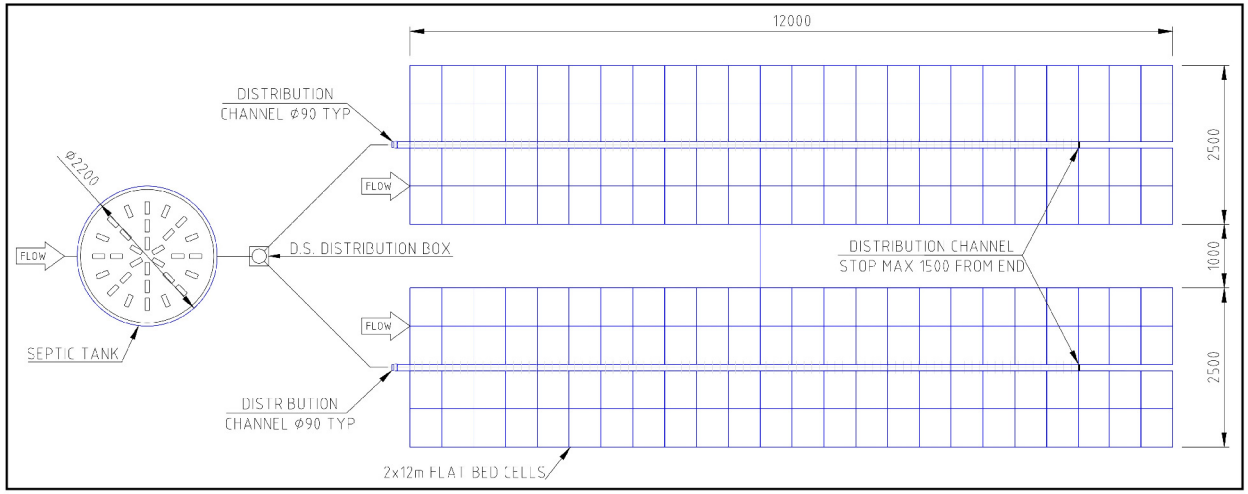
Irrigation field size calculations
Soils across the site comprise moderately deep, gravelly kandosols.
Subsoil field textures are classified as Categories 4 (Clay loam) and 5 (Silty clay) with associated design irrigation rates (DIR) of 3.5mm/day and 3mm/day respectively (AS/NZS1547:2012:).
Calculations are based on Light clay subsoil (Soil Category 5, DIR 3mm/d).
Minimum irrigation field size calculated for standard 3 and 4 bedroom houses 6/8 persons in urban/rural living zone (6 or 8 x 150 L/day/person = 900 and 1200L/day).
Irrigation field designed to a width : length ratio (R) of 1.5, with drip lines spaced (S) at 1.0 m and dripper outlets spaced (B) every 0.5 m and delivering a flow rate (F) of 4.5 L/dripper/hour.
Minimum design irrigation field sizes are 300m2 and 400m2 for 3 and 4 bedroom houses respectively.
The notional irrigation field envelopes are 400m2

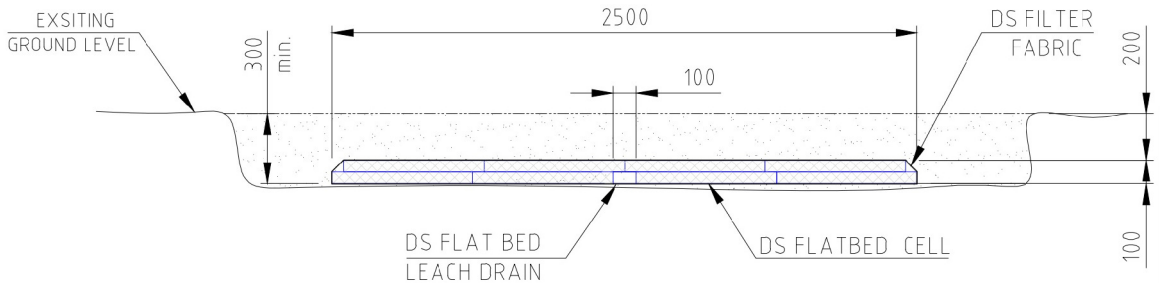
Shallow Subsurface Drip Irrigation system Hydraulic Design – after AS/NZS1547:2012:Appendix M
1. Hydraulic load (Q, L/d) based on equivalent persons (ep) as per NT Code of Practice (DoH 2014).
2. Design irrigation rate (DIR, mm/d) based on "Table M1" in AS/NZS1547:2012:page160.
3. Proposed irrigation system details:
   A. Irrigation field width : length ratio (R, typically 1-2) 1.5 recommended
   B. Irrigation drip line spacing (S, m) (typically 1.0 m) - 1.0m recommended
   C. Dripper flow rate (F, L/hour) (typically 4.5 L/hour)
   D. Dripper outlet spacing (B, m) (typically 0.5 m) - 0.5m recommended
4. Determine minimum irrigation area (A, m2): $A = Q / DIR$
5. Determine irrigation field width along contour (W, m): $W = \sqrt{A*R}$ (√ is square root)
6. Determine irrigation field distance down slope (D, m): $D = \sqrt{(A / R)}$ (√ is square root)
7. Determine irrigation lateral length L, m): $L = W - S = \sqrt{A*R} - S$ (√ is square root)
8. Determine number of irrigation laterals (N): $N = A/W*S$
9. Determine minimum pump flow rate in field (P, L/s): $P = F*L*N / 3600*B$

Note that pump head will be dependent on length of line and static head pumping requirements.

Worked example
Determine irrigation field size and dripper requirements for a 3 bedroom house assuming design capacity is 6 persons in urban/rural living zone (6 x 150 L/day/person = 900L/day). Soil type is a Kandosol with Light clay subsoil (Soil Category 5, DIR 3mm/d).
Irrigation field will be designed to a width : length ratio (R) of 1.5, with drip lines spaced (S) at 1.0 m and dripper outlets spaced (B) every 0.5 m and delivering a flow rate (F) of 4.5 L/dripper/hour.
Determine minimum irrigation area (A, m2): $A = Q / DIR = 900 / 3 = 300m2$
Determine irrigation field width along contour (W, m): $W = \sqrt{A*R} = \sqrt{300} * 1.5 = 21.2m$
Determine irrigation field distance down slope (D, m): $D = \sqrt{(A / R)} = \sqrt{(300 / 1.5)} = 14.1m$
Determine irrigation lateral length L, m): $L = W - S = \sqrt{A*R} - S = 21.2 - 1 = 20.2m$
Determine number of irrigation laterals (N) (value rounded up to next integer):
$N = A /W*S = 300 / 21.2*1 = 14.2$ rounded up to 15
Determine minimum pump flow rate in field (P, L/s):
$P = F*L*N / 3600*B = 4.5*20.2*15 / 3600*0.5 = 1363.5/1800 = 0.76$ L/s

Date:	Scale:		Project: Proposed subdivision - Lots 16 & 17 LTO67/002; Sections 4185, 4579 & 4580 Hundred of Strangways
13 July 2017	n/a - A4		
VPS Project No.	Drawing No.	Rev:	Address: 155A, 155B, 175, 195 and 205 Lowther Road, Bees Creek
	WMP-02	1	
			Title: Wastewater Management Plan - LBED & Sub Sruface Drip Irrigation System Design





Flatbed Irrigation field size calculations
Flatbed panels are 0.5m x 0.6m with a minimum footprint of 0.5m x 2.4m
Bed dimensions determined from equation L1 (AS/NZS1547:2012: Appendix L4.2):
L = Q / (DLR x W)
Where
L = bed length in m
Q = design daily flow in L/day
DLR = design loading rate (Table L1)
W = width in m (standard with for flatbed is 2.4m)
Soils across the site comprise moderately deep, gravelly kandosols.
Subsoil field textures are classified as Categories 4 (Clay loam) and 5 (Silty/light clay) with associated design loading rates (DLR) of 10mm/day and 8mm/day respectively as per Table L1 (AS/NZS1547:2012: Appendix L)
Calculations are based on Light clay subsoil (Soil Category 5, DLR 8mm/d).
Minimum irrigation field size calculated daily flow for domestic dwellings in urban / rural living zone (150 L/day/person) as per NT Code of Practice (DoH 2014).

Worked examples
Determine irrigation field size and dripper requirements for standard 3 and 4 bedroom houses 6/8 persons in urban/rural living zone (6 or 8 x 150 L/day/person = 900 L/day and 1200L/day). DLR = 8mm/day for Light clay (Soil Category 5).
3 Bedroom house with daily flow (Q) 900L/day
Determine minimum bed length (L, m): L = Q / (DLR x W)
L = 900 / (8 x 2.4) = 46.9m (rounded up to 47m) x 2.4m flatbed
Or
2 x parallel 23.5m x 2.4m flatbeds
With 1m separation between beds the system footprint is 272.6m2

4 bedroom house with daily flow (Q) 1200L/day
L = 1200 / (8 x 2.4) = 62.5m x 2.4m flatbed
Or
2 x parallel 31.5m x 2.4m flatbeds
With 1m separation between beds the system footprint is 365.4m2

Construction notes:
- Irrigation area must comply with all relevant set-backs as required by the Code of Practice (DoH 2014).
- Construction techniques as described in AS/NZS1547:2012: Appendix L 7 be observed in conjunction with the following.
- Installation to be in accordance with DS Agencies Flatbed Installation Manual.
- Ensure that the level bed is prepared to +/- 20mm tolerance and that bed is installed in such a manner that ensures even distribution throughout the entire length of the bed.
- If excavating in gravel / clay soils, use backhoe bucket teeth to scarify the floor to a minimum depth of 50mm
- Clay spoil shall not be placed over the constructed flatbed
- Installation area must not be paved over or built on and is to be protected from vehicular traffic
- Surface stormwater and sub-surface seepage should be diverted using upslope swales if required.
- System to be maintained in accordance with manufacturers' requirements

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Date:	Scale:	
13 July 2017	n/a - A4	
VPS Project No.	Drawing No.	Rev:
	WMP-03	1

Project: Proposed subdivision - Lots 16 & 17 LTO67/002; Sections 4185, 4579 & 4580 Hundred of Strangways

Address: 155A, 155B, 175, 195 and 205 Lowther Road, Bees Creek

Title: Wastewater Management Plan - Flatbed leach drain Design

Land Capability Assessment for On-site Wastewater Management Proposed Subdivision of Lots 16 & 17 LTO67/002 and Sections 4185. 4579 & 4580 – Hundred of Strangways; Lowther Road, Bees Creek

June 2017

Compiled by VPS Land Assessment and Planning

Disclaimer

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Surface and subsurface conditions are created by natural processes and the activity of man. Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. This Report is based on assumptions that the site conditions as revealed through selective sampling are indicative of conditions throughout the site. Data derived from literature and external data source review are interpreted to provide an opinion about overall site conditions and their likely impact on the proposed development. Natural landscapes are variable and actual subsurface conditions and soil depth may differ from those inferred to exist. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained.

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Signed	
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Acronyms

Aboriginal Areas Protection Authority	AAPA
Alternative Septic Treatment System	ASTS
Australian Soil Classification	ASC
Bureau of Meteorology	BOM
Building Advisory Services (DIPL)	BAS
Building Control Area	BCA
Department of Health	DoH
Department of Land Resource Management	DLRM (now DENR)
Department of Environment and Natural Resources	DENR
Department of Lands, Planning and the Environment	DLPE (now DIPL)
Department of Infrastructure, Planning and Logistics	DIPL
Environmental Protection Agency	EPA
Geographic information system	GIS
Land Capability Assessment	LCA
Land Suitability Assessment	LSA
NR Maps	Online data server managed by DENR (nrmaps.nt.gov.au)
Power and Water Corporation	PWC
Water Resources	Water Resource Division within DENR

1. Executive Summary

NT Planning Scheme Amendment No.446, dated 1 June 2016, introduced SL18 (Specific Use Zone Litchfield No. 18) which applies to Lots 16, 17 & 24 LTO 67/002 and Sections 4185, 4579 & 4580 Hundred of Strangways (155A, 155B, 155C, 175, 195 and 205 Lowther Road, Bees Creek). Lot 24 (155C Lowther Road) has not been assessed as part of this LCA.

Under SL18 at 2(i) "*an application for subdivision shall include a Waste Management Plan (WMP) approved by the Department of Health: Environmental Health*" including a Land Capability Assessment in accordance with the Environmental Health Guidelines for Land Capability Assessment for On-site wastewater Management (March 2014) and each nominated 'wastewater disposal envelope' must "*meet a minimum of moderate capability for onsite effluent disposal*". Each dwelling shall be connected to a Department of Health approved wastewater treatment system that provides secondary treatment.

To satisfy the requirements of SL18 Clause 2(i), a separate Wastewater Management Plan (WMP) will be prepared for review and approval by the NT Department of Health.

VPS Land Assessment and Planning undertook the land capability assessment (LCA) and established that

- The soil-landscape within the proposed subdivision is capable of supporting sustained on-site wastewater treatment and disposal using secondary treatment systems.

It is recommended that all new onsite wastewater treatment systems should utilise a secondary wastewater treatment system used in conjunction with either of two Department of Health (DoH) approved shallow sub-surface irrigation systems for effluent disposal systems:

a) low pressure effluent distribution (LPED) shallow sub-surface drip irrigation system; or

b) flatbed leach drain.

2. Introduction

2.1. Background

VPS Land Assessment and Planning was commissioned to conduct a land capability assessment (LCA) of a proposed subdivision of Lots 16 & 17 LTO67/002 and Sections 4185, 4579 & 4580 – Hundred of Strangways to assess the potential of the natural soil-landscape to support onsite wastewater management. The land is located at 155A, 155B, 155C, 175, 195 and 205 Lowther Road, Bees Creek and subject to the conditions associated with SL18 (Specific Use Zone Litchfield No. 18) established under NT Planning Scheme Amendment No.446, dated 1 June 2016.

There is no reticulated sewer network in the vicinity of the proposed subdivision and all proposed lots will utilise onsite wastewater treatment and disposal.

The following report represents the LCA for the proposed subdivision of Lots 16 & 17 LTO67/002 and Sections 4185, 4579 & 4580 – Hundred of Strangways.

2.2. SL 18 - Specific Use Zone Litchfield No. 18

In relation to matters affecting onsite wastewater treatment and disposal, SL18 provides the following conditions:

"2(a) The minimum lot size pursuant to the Table to Clause 11.1.1 shall be 1ha.

2(i) An application for subdivision shall include a Wastewater Management Plan (WMP) approved by the Department of Health: Environmental Health which as a minimum shall include the following:

i. Land Capability Assessment for the **site** undertaken in accordance with the Environmental Health *Guidelines for Land Capability Assessment for On-site wastewater Management* (March 2014);
ii. The identification of any proposed lots which do not achieve at least high capability for onsite effluent disposal based on physical and chemical characteristics of the **site** taking into account proposed subdivision **site** works;
iii. For all lots identified in 2 (i)(ii) the specification of works to be undertaken to introduce amended soils or alter the ground conditions as required so that the **site** physical and chemical characteristics meet the minimum of a moderate capability for onsite effluent disposal. The identification of these works is to be undertaken concurrently with, the preparation and outcomes of a stormwater management plan prepared for the **site**;
iv. The identification of a wastewater treatment system and associated sub-surface irrigation envelope for each lot that provides sufficient area and capability for onsite effluent disposal to service a **single dwelling**;
v. The requirement for all development to be undertaken in accordance with the approved WMP shall be registered as a notification on the title on the parent lot, to apply to each lot created, as a condition of a development permit for a subdivision of the land;

vi. All works identified in the approved WMP and to achieve the minimum required onsite effluent disposal capability shall be undertaken as a condition of a development permit for subdivision of the land; and

vii. Each **dwelling** shall be connected to a Department of Health approved wastewater treatment system that provides secondary treatment and, with associated sub-surface irrigation system, shall be located with the wastewater disposal envelope for that lot as designated in the approved WMP."

2.3. Scope of Report

This LCA is a moderate-scale assessment for subdivisional purposes which identifies and describes the constraints and options in relation to the capability of the soil-landscape to support sustainable on-site wastewater management within the proposed subdivision. The findings of this report are based on the assumption that the site conditions as revealed through selective sampling are indicative of conditions throughout the site.

This assessment was completed with reference to:

- NT Planning Scheme Amendment No.446, dated 1 June 2016, designated SL18 (Specific Use Zone Litchfield No. 18) and associated conditions.
- Department of Health (DoH). 2014a. *Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent*. Northern Territory Government (referred to as the *Code of Practice* in this report)* see Note below
- Department of Health (DoH). 2014b*. Environmental Health: Guidelines for Land Capability Assessment for Onsite Wastewater Management*. NT Department of Health. Released March 2014. (referred to as the *LCA Guidelines* in this report)

***Note**: At the time this document was prepared, all on-site wastewater systems must conform to NT legislation and comply with the NT Department of Health (DoH). 2014. *Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent* (Code of Practice). AS/NZS 1547:2012 "*On-site Domestic Wastewater Management*", along with other Australian Standards, is utilised as reference in the Code of Practice.

2.4. System design

In accordance with SL18 Clause 2(i)(vii), the design for onsite wastewater treatment and disposal systems in this report considers only secondary treatment systems combined with shallow, subsurface irrigation. System designs are based on Appendices L & M from AS/NZS1547:2012. Hydraulic loads are derived from the NT *Code of Practice* (DoH 2014a) for urban/rural living.

All on-site wastewater systems must be approved by the NT Department of Health with approved wastewater treatment and disposal systems listed on the Departments' website.

3. Existing Information

3.1. Site location

SL18 is located on the Lowther Road, approximately 10kms southwest of Palmerston (Figure 1). The proposed subdivision lies within the Litchfield Shire.

Figure 1: Location of land affected by SL18 in relation to the City of Palmerston

3.2. Town Planning

The five existing parcels that form the basis of the proposed subdivision are shown in Figure 2. In accordance with SL18 Clause 2(a), the minimum lot size for the proposed subdivision shall be 1ha. The proposed development involves the creation of 11 small lots, each a minimum of 1 ha in size and two residual lots each in excess of 1 ha. As part of the proposed subdivision, Section 4579 will be retained as a residual parcel.

Figure 2 Existing cadastral parcels within proposed subdivision

3.3. Climate

The Bees Creek area experiences a monsoonal climate with two broad seasons; the "Dry Season" during which little to no rainfall occurs between May and September and the "Wet Season" over summer during which maximum rainfall generally occurs between November and March. The nearest rainfall data is collected at Humpty Doo Collard Road (Station Number: 14226) (BOM 2017) and shown in Table 1. There is no site specific evaporation data available for this site however the BOM map of annual "Average pan evaporation 1975-

2005" shows the Darwin region lies within an area that experiences 2000-2400mm average annual evaporation (which exceeds annual rainfall).

Table 1 Climate data Humpty Doo Collard Road (Station No: 14226: 1987-2017 - BoM 2017)

Statistic Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean rainfall (mm)	444	362	333	96	23	0	1	5	18	75	174	312	1842
Median rainfall (mm)	410	330	315	79	5.9	0	0	0	9.2	74	171	282	1676

3.4. Water Supply

All existing and proposed lots are/will be serviced by the existing reticulated town water supply. DENR data (NR Maps) shows no bores used for potable water within 100m of the proposed subdivision boundaries.

3.5. Onsite Wastewater Management and Approvals

In accordance with SL18 Clause 2(i)(vii), onsite wastewater treatment and disposal systems within the proposed subdivision must utilise secondary treatment systems in conjunction with subsurface irrigation. All existing dwellings within the project area rely on onsite septic wastewater treatment and disposal. As such, existing septic systems will need ultimately to be either upgraded or decommissioned.

The proposed subdivision lies within the Darwin Building Control Area (BCA). Within a BCA, Environmental Health (Dept of Health) provides site specific design approval for onsite wastewater management systems while Building Advisory Services (BAS), in accordance with the Building Act, approves the actual installation of the system.

3.6. Existing land resource mapping

DENR has published land unit mapping over the subject land at 1:25,000 scale. According to Fogarty *et al* (1984), the project area comprises mostly land units 1c, 2a1 and 5b1 with a small area of 3b in the southeast corner.

According to McKenzie *et al* (2008), the smallest area feature shown on a printed map at a scale of 1:25 000 represents around 2.5ha. Land unit mapping is therefore not sufficiently detailed to identify soil-landscape features and characteristics (constraints) that are potentially important for intense land uses such as small lot subdivision. Some published map unit boundaries and/or map unit descriptions may be inaccurate due to the historical mapping processes; therefore both map unit boundaries and map unit descriptions would require field verification.

3.7. Previous investigations

A Land Suitability Assessment (LSA) was undertaken by EcOz Environmental Consultants (EcOz 2016). This report noted the presence of imported fill and modified drainage across the site. EcOz (2016) sites S2 and S3 are utilised in this report.

4. Field investigation

4.1. Methodology

Field assessment was undertaken during June 2017. Following a desktop assessment of available imagery and other data, the proposed subdivision was traversed on foot and vehicle to identify and map constraining features.

To capture and describe the variability of the soil-landscape across the proposed subdivision, detailed assessments of a number of representative soil-landscape sites was undertaken. Surface and subsurface conditions are created by natural processes and the activity of man. Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. The findings of this report are based on assumptions that the site conditions as revealed through selective sampling are indicative of conditions throughout the site.

In this report, site assessments for onsite wastewater disposal are undertaken in accordance with the NT C*ode of Practice* (DoH 2014a) and the *LCA Guidelines* (DoH 2014b). Soil and landscape characteristics have been assessed and described according to the *Australian Soil and Land Survey Handbook Third Edition* (NCST 2009). Soil profiles are classified in accordance with The *Australian Soil Classification* – ASC (Isbell 2002). Representative photographs have been taken at each site and site slope was assessed in the field using a hand held clinometer. All GPS coordinates and tracks were captured using a handheld Garmin GPS Map64s.

4.2. Mapping poorly drained land

The NT *Code of Practice* (NTG 2014a) requires that the infrastructure associated with onsite wastewater treatment and disposal must be set back from a range of natural (eg wetlands, water courses) and built features. These setbacks are summarised in Appendix 2. For the purposes of this report, the outer boundary of poorly drained land is identified in the field using a range of vegetation and soil surface indicators. VPS identified a large area of land that These boundaries were mapped using a Garmin GPSMap62S.

4.3. Soil-landscape sites

Detailed soil descriptions and site assessments were undertaken at 6 sites comprising existing soil exposures and sites where the profile was exposed using hand tools and a 75mm Jarrett hand auger. Site descriptions and assessments are provided in Appendix 1.

5. Soil-Landscape assessment

5.1. Soil sites

Table 2 contains a summary of the key features described for each representative soil and the GPS coordinates for each site. Soil site locations are shown on Figure 3. Detailed soil-landscape descriptions and site assessments are provided in Appendix 1. Soil investigation site coordinates were captured using a Garmin GPSMap62S.

Table 2 GPS coordinates and summary for soil sites (Map of Australia 1994, Zone 52)

Site	Northing	Easting	Soil	Depth (m)	Maximum % subsoil gravel	Slope %	Soil Category
1	8610654	723036	Brown Kandosol	0.28	50	1.25	4
2	8610577	723103	Brown Kandosol	0.5+	55	0	5
3	8610828	723027	Brown Kandosol	0.6	65	3	4
4	8610911	723120	Red Kandosol	0.55+	50	4	5
5	8611147	723189	Brown Kandosol	0.6	55	4	4
6 #	8611148	723163	Hydrosol	0.25	40	1.5	n/a
EcOz 2*	8611079	722957	Brown Kandosol	0.6	60	5	4
EcOz 3*	8610674	723267	Brown Kandosol	0.6	35	2	5

Not assessed for onsite wastewater disposal

* Sourced from EcOz (2016) *Land Suitability Assessment: Lowther Road*

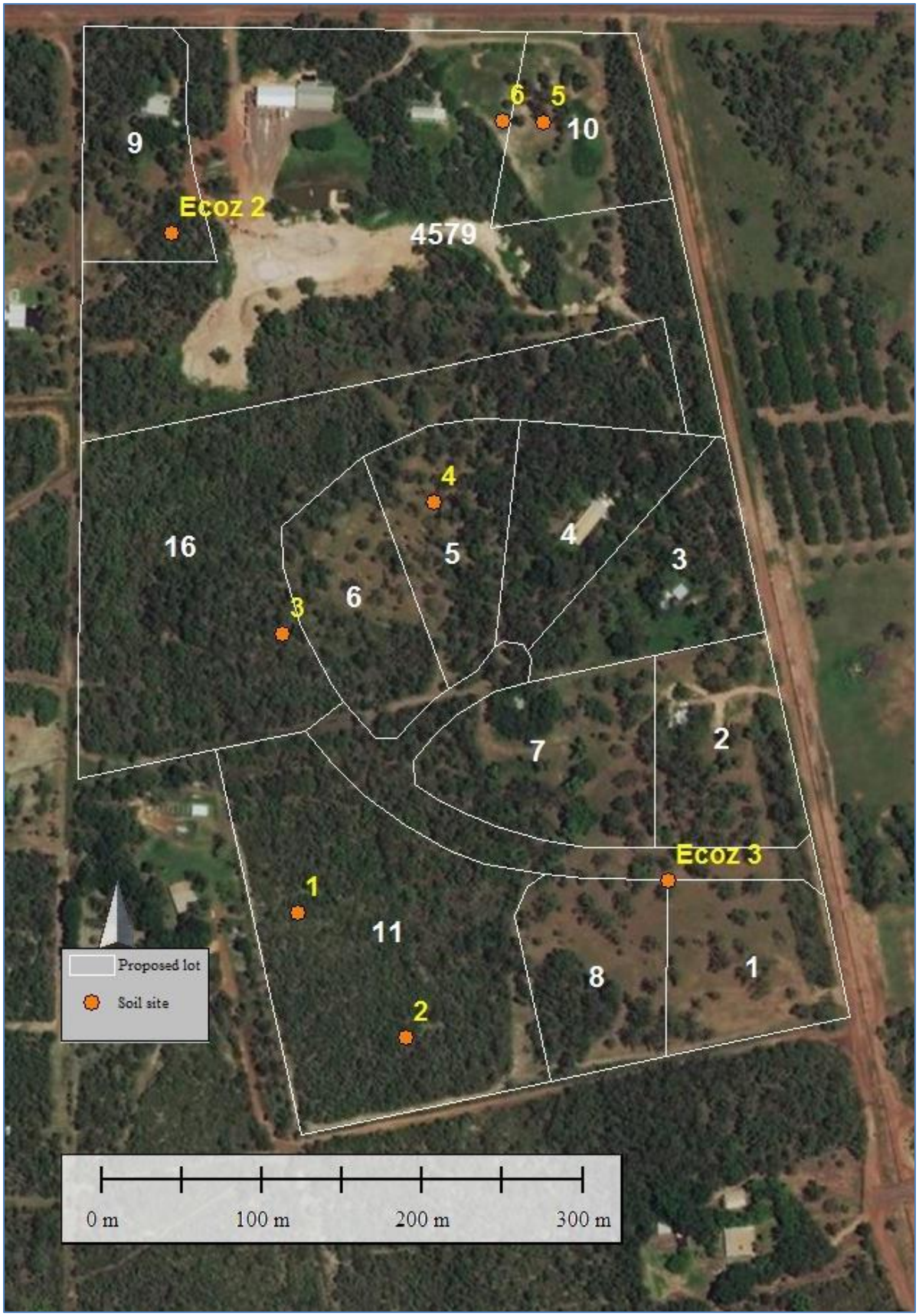

Figure 3: Soil sites with respect to proposed subdivision layout

5.2. Soil Landscape Assessment Findings

5.2.1. Soil Type

Soils from two soil orders were encountered during the field assessments (Appendix 1); Kandosols (sites 1-5, EcOz 2 & 3) which can support onsite wastewater disposal and Hydrosol (site 6) that is not considered for onsite wastewater disposal.

5.2.2. Soil Depth

Soil depth varied across the site between Shallow (0.28m – site 1 & 6 only) to Moderately deep (0.5m – 0.6m at sites 2-5, EcOz 2/3).

Substrate comprising decomposing rock was encountered at several sites.

5.2.3. Profile gravels

All soil profiles were gravelly throughout. Maximum subsoil gravel content ranges from 35% to 55%.

5.2.4. Landform and Slope

The proposed lots are located on level to gently undulating plains and rises with slopes recorded between 0 and 5%.

5.2.5. Soil pH

The general range of soil pH (5.2 to 6.3) supports a mature community of native and introduced species across the well vegetated development site.

5.2.6. Soil Salinity

All soil layers were non-saline ($EC_{1:5\ soil\ water}$ <30 uS/cm) and the proposed development site supports a mature community of native and introduced vegetation indicating that local salinity is not an issue.

5.2.7. Erosion risk and Runoff

The proposed subdivision is well vegetated and only minor sheet and rill erosion was identified associated with tracks and disturbed areas. Recorded slopes across the site range from 0 to 5%. The small footprint (<400m^2) associated with installation of subsurface irrigation areas present a low erosion risk that can be simply mitigated through timing of disturbance, re-establishing ground cover prior to onset of the wet season and diversion of stormwater flows.

5.2.8. Constrained land and Flooding

Field investigation identified the extent of land affected by poor drainage prior to land improvements (Figure 4). Review of flood risk mapping by Cardno (2014) (provided by DLRM/DENR) shows that land at risk of riverine flooding is wholly contained within the area of poorly drained land mapped shown in Figure 4. The extensive area of historical fill in residual parcel 4579 is likely to have affected the soil and site drainage within the northern part of Section 4579 and the western part of proposed lot 10.

VPS identified 1 hectare of poorly drained land along the eastern boundary that had been extensively modified with historical engineered drainage works (small dam and low bunds).

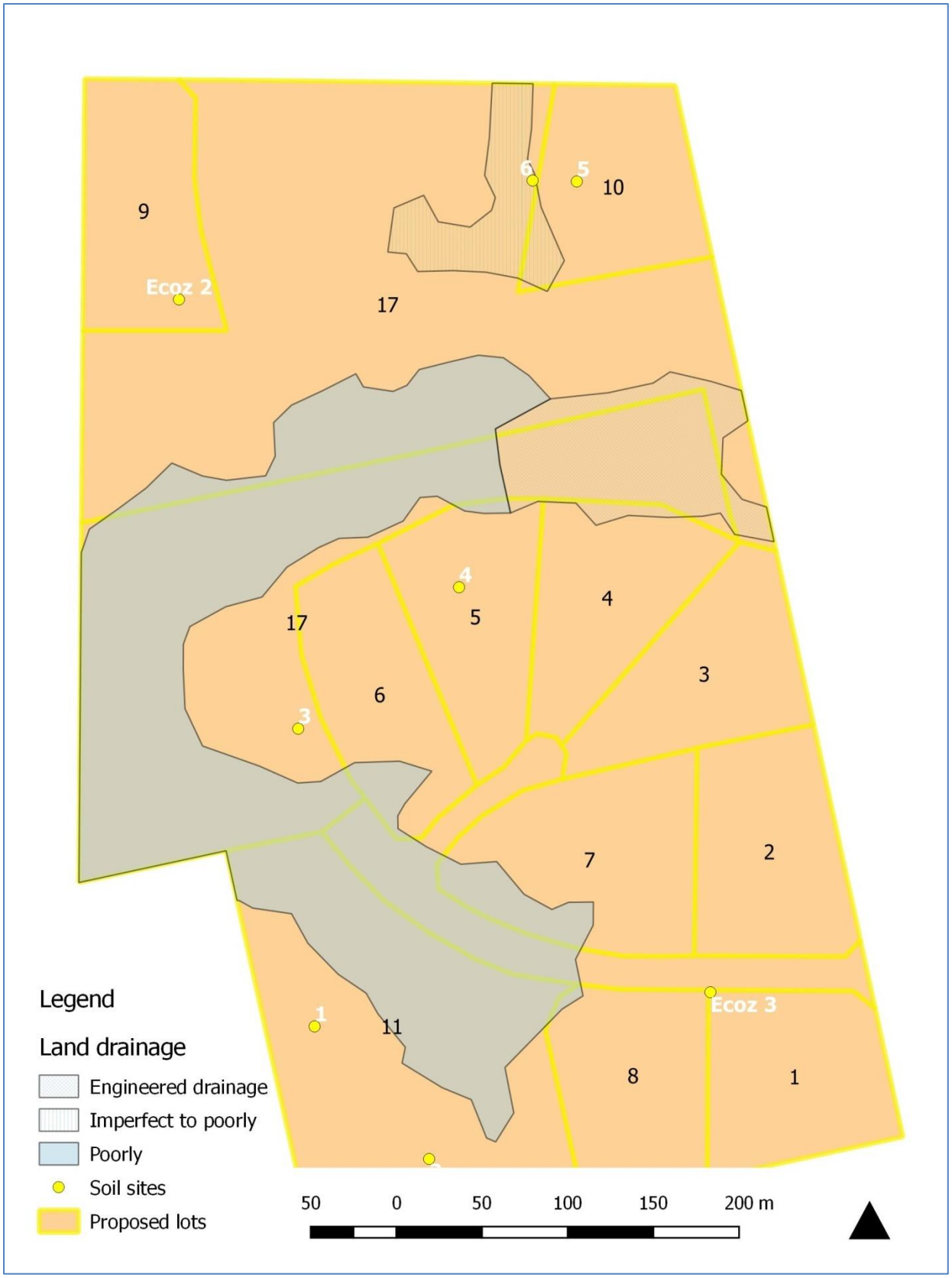

Figure 4 Extent of poorly drained land across the proposed subdivision prior to land improvements

5.2.9. Land Improvements

Land improvements associated with proposed road works will reduce the area of poorly drained land affecting proposed lots 6, 7, 8 and 11. Figure 5 shows the extent and location of land improvements.

No land improvements are required within the proposed wastewater disposal envelopes for the proposed effluent disposal systems.

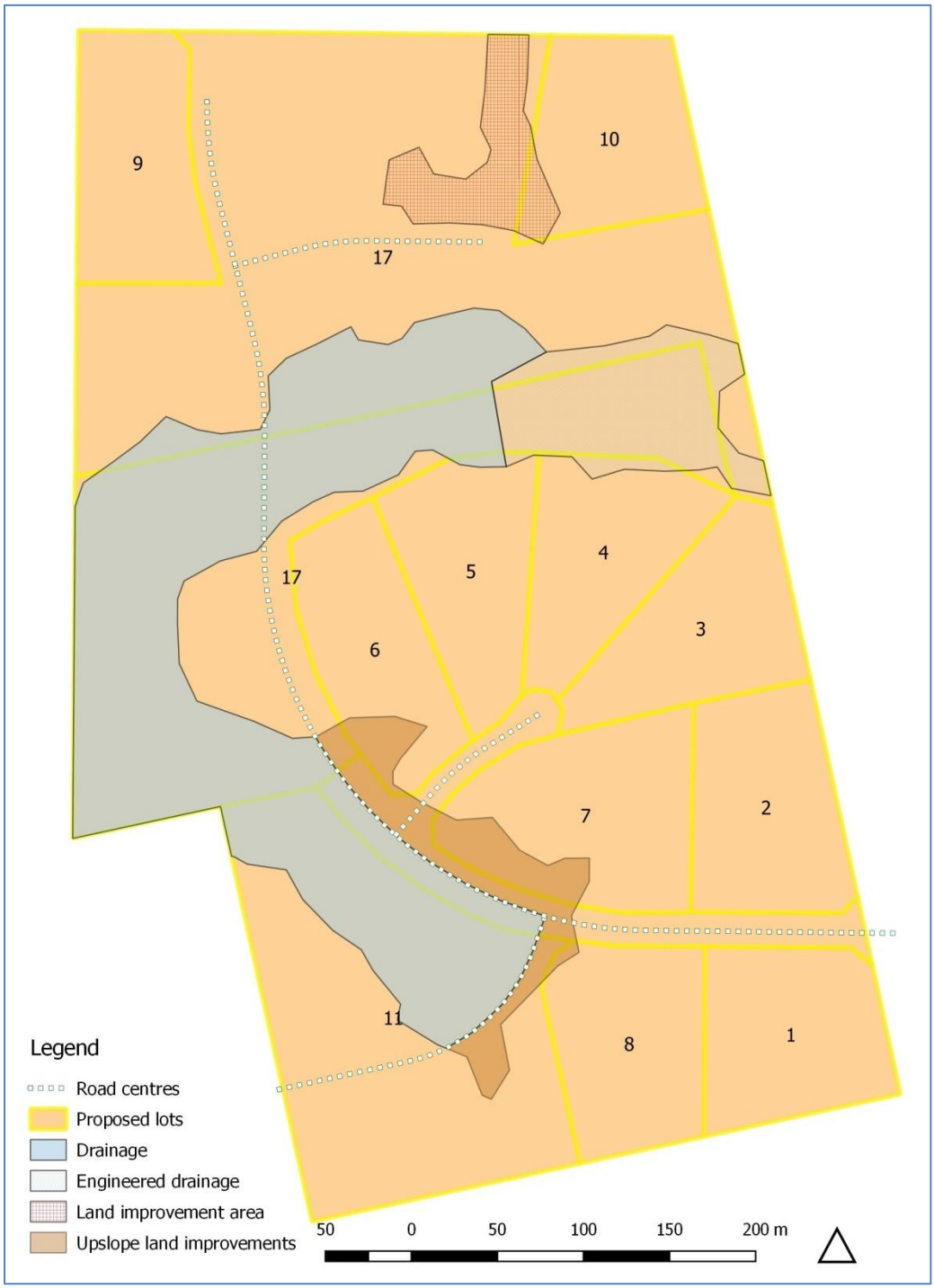

Figure 5 Proposed land improvements

5.2.10. Land available for onsite wastewater disposal

SL18 requires the nomination of wastewater disposal envelopes for each proposed new lot within the subdivision.

The wastewater disposal envelopes must satisfy the NT *Code of Practice* (DoH 2014a) setback requirements as summarised in Appendix 3. The relevant setbacks are

a. 4.5m from lot boundaries;
b. 30m setback from wetlands (applicable to advanced secondary treatment systems); and
c. 50m setback from wetlands (applicable to standard secondary treatment systems).

Where roads and associated land improvements separate a wetland from the nominated wastewater disposal envelope, the setback applied relates either to the open road drain (3.0m) or the lot boundary (4.5m) – whichever is provides greatest setback.

As per SL18, no wastewater disposal envelope impinge on the 10m wide vegetated buffer applied to the external boundaries of the subdivision.

Figure 6 shows the potential locations of wastewater disposal envelopes within each proposed lot.

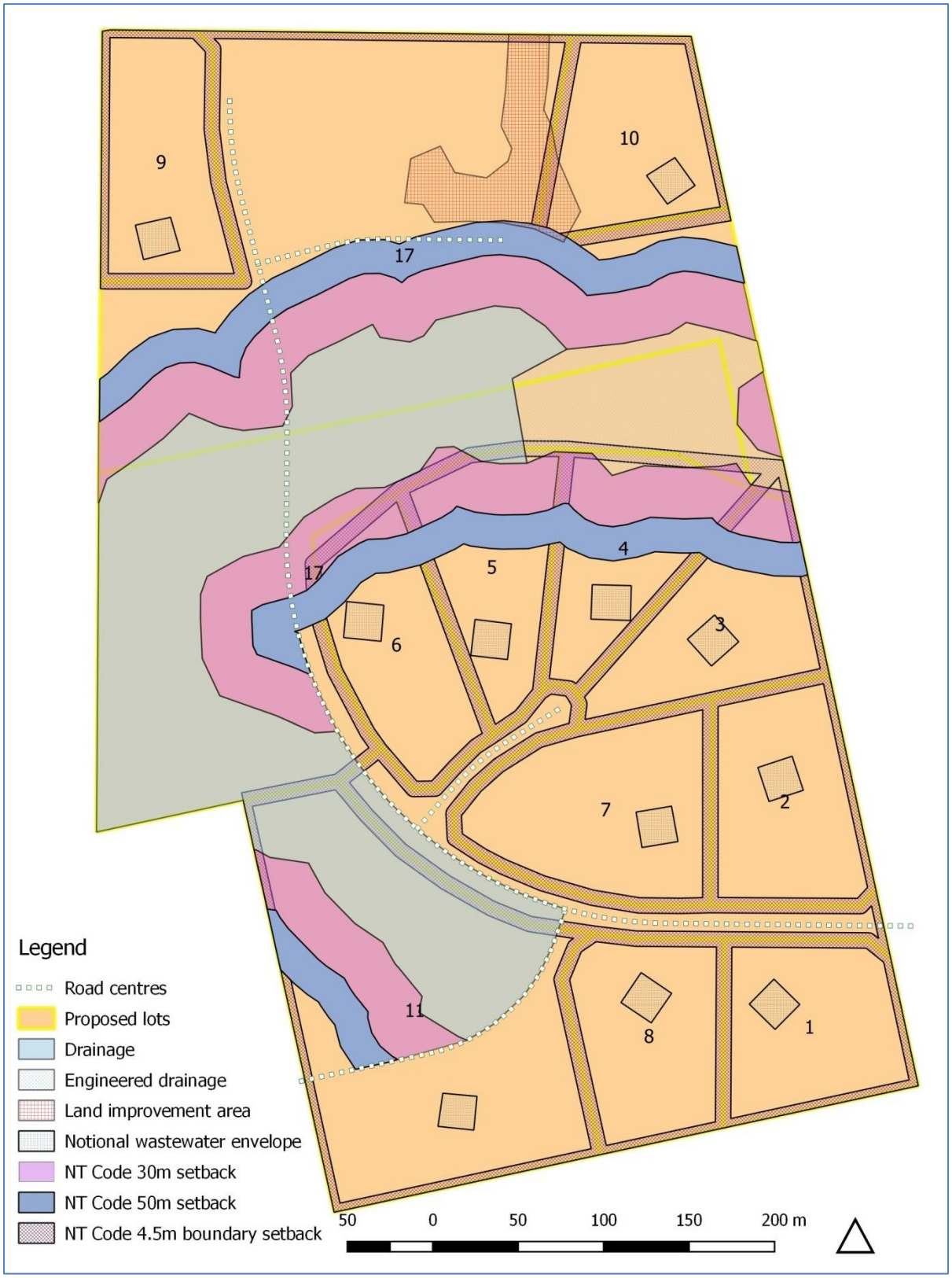

Figure 6 Potential locations of wastewater disposal envelopes

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6. On-site Wastewater Management

6.1. Wastewater Treatment System Design Criteria

The soil-landscape assessment showed that the land of the proposed subdivision comprises mostly moderately deep Kandosols that are gravelly throughout the profile. These soil characteristics are not ideal for traditional septic disposal, however, as outlined in Table A1 (AN/NZS1547:2012), a range of simple measures can be instituted to mitigate such soil conditions including:

- Secondary level of treatment – as per SL18
- LPED irrigation system – as per SL18
- Stormwater, overflow from rain water tanks, and runoff from impervious surfaces, such as driveways, to be diverted away from irrigation areas
- Conservative design criteria - design to be based on the characteristics of the most restrictive soil – gravelly light clays (Soil Category 5).

All wastewater treatment systems must comply with the NT *Code of Practice* (DoH 2014a).

The following design criteria for onsite wastewater treatment and disposal have been used:

- No specific proprietary treatment plant is recommended, however treatment plants must be approved by NT Department of Health.
- A secondary treatment system (as per SL 18) receiving all waste discharges from a residential dwelling must be designed to handle a hydraulic load of 150 litres / person / day
- Effluent disposal area calculations are based upon a 3 bedroom house with 2 persons per bedroom and utilise the criteria for Urban / Rural Housing – NT *Code of Practice* (Daily flow = 6 persons x 150 litres / person / day = 900 litres).
- Design for the subsurface drip irrigation system is based on calculations from Appendix M – AS/NZS1547:2012 with design irrigation rate (DIR) values drawn from Table M1 (summarised in Table 3 below).
- Design for the flatbed leach drain system is based on calculations from Appendix L – AS/NZS1547:2012 with design loading rates (DLR) values drawn from Table L1 (summarised in Table 3 below).
- Whilst Category 4 and 5 soils were described, the DIR / DLR for Soil Category 5 – Silty clay is used for design calculations.
- Design must ensure that domestic wastewater can be treated and retained within allotment boundaries
- It is assumed that water reduction fixtures will be used inside the home, and roof stormwater must not be disposed of in the effluent land application areas.
- All components of the wastewater management system need to be protected from vehicular traffic and land application areas in particular also need to be protected from pedestrian traffic, stormwater flows and runoff.

- Setback distances between effluent treatment/disposal areas and a range of site features are to be compliant with the NT *Code of Practice* (DoH 2014a) as summarised in Appendix 3 of this report.
- Installed systems should be maintained in accordance with the manufactures recommendations.

Table 3 shows the representative design irrigation rates (DIR / DLR – mm/d) from the Table M1 AS1547:2012:p160 to be used for effluent disposal area calculations.

Table 3 DIR / DLR values (mm/day) for design purposes based on Soil Texture Class

Soil Texture Class	Equivalent Soil Category (AS/ANZS1547:2012)	Soil field textures per Class / Category (based on NCST 2009)	Representative DIR / DLR (AS/ANZS1547:2012) DIR - M1 (mm/d)	DLR - L1
Sand	1	Sand	5	50
Sandy Loam	2	Loamy sand, Clayey sand, Sandy loam	5	50
Loam	3	Loam, Silty loam	4	30
Clay Loam	4	Sandy clay loam, Clay loam, Clay loam (Sandy), Silty clay loam	3.5	10
Silty Clay	5	Light clay, Light medium clay	3	8
Clay	6	Medium clay to Heavy Clay	2	n/a

6.2. Indicative sizing for subsurface irrigation areas

Appendix 2 of this report provides a worked example for the irrigation field size and dripper requirements for a 3 bedroom house based on the following assumptions:

- Design capacity 900L/day for 6 persons (6 x 150 L/day/person) in urban/rural living zone
- Soil type is a Kandosol with Light clay subsoil (Soil Category 5, DIR 3mm/d)
- Irrigation field designed to a width : length ratio (R) of 1.5, with drip lines spacing (S) 1.0 m and dripper outlets (B) spaced every 0.5 m and delivering a flow rate (F) of 4.5 L/dripper/hour.

Based on these assumptions, the irrigation field covers a minimum area of 300m^2 with the outer dimensions of 21.2m wide and 16m deep.

Clause 2(i)(iv) of SL18 requires:

> *The identification of a wastewater treatment system and associated sub-surface irrigation envelope for each lot that provides sufficient area and capability for onsite effluent disposal to service a single dwelling;*

To assist with lot layout design a nominal area of 400m^2 is allocated for the sub-surface irrigation envelope on each of proposed lots 1 – 11

7. Summary of Findings and Recommendations

As required under SL18, the soil-landscape of the proposed subdivision is capable of supporting sustained onsite wastewater management using secondary onsite wastewater treatment combined with shallow sub-surface irrigation disposal systems.

The following comprises a list of findings and recommendations

- Both wastewater disposal systems – shallow subsurface LPED drip irrigation and flatbed leach drains are capable of managing secondary treated onsite wastewater wholly within the 400m^2 wastewater disposal envelopes.
- Both onsite wastewater disposal systems assessed in this LCA are currently approved by the Department of Health for use in the NT
- The risk of salinity due to the accumulation of large amounts of salts in the subsoil is considered to be low as the development site comprises deep, well drained soils with naturally very low EC.
- Roof stormwater must not be disposed of in the effluent land application areas.
- All onsite systems must be installed, operated and maintained in accordance with manufacturers' requirements.
- All onsite systems must comply with the NT Department of Health (DoH). 2014a. *Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent*
- All on-site wastewater treatment systems must be approved by the NT Department of Health - approved secondary wastewater treatment systems are listed on the Departments' website.

8. References

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9. Appendices

Appendix 1 – Site and Soil-Landscape Assessments

A. Land Capability Rating Matrix

For each soil pit location the site is assessed and rated with reference to the Table 3.7 'Land Capability Rating Matrix' from DoH (2014b:32-34). The overall rating for each soil site is generally determined by the most limiting rating for a feature. However, where practical, lower capability ratings can be improved through wastewater treatment system selection, modifications to design / installation or a combination of these.

High Capability means the site is has a very good or high potential (low constraints) for effluent management.

Moderate Capability means the site has features (constraints) which impose some limitations for effluent disposal but these constraints can be managed.

Low capability means the site is not well suited for effluent disposal and advanced treatment and land application systems will need to be employed to overcome limitations.

For each site two tables are provided.

Table 1: Background Land Capability Assessment Matrix for On-site Wastewater Management from NT LCA Guidelines Table 3.7 (DoH 2014b:33-34)

This matrix is used to assess the soil and site characteristics and provide an overall rating for the site in its natural or current condition with respect to its capability to support septic onsite wastewater management.

Land capability ratings in this table do not take into consideration factors that can improve site capability.

Table 2: Interpreted Land Capability Assessment Matrix for On-site Wastewater Management

Land capability ratings in this table reflect the impact of options that will improve site capability such as changing surface and/or subsurface drainage, using imported fill, varying wastewater treatment system selection (eg installing an AWTS in place of traditional septic), modifications to design / installation or a combination.

B. Site Drainage Classes

The assessment of site drainage is an important aspect of land capability assessment for onsite wastewater management. The NT *Land Capability Assessment Guidelines* (DoH 2014) require an assessment of the existing *site drainage* and an estimation of *depth to seasonal watertable* as part of determining the site capability rating as per Table 3.7 (LCA Guidelines: p33-34).

Notes 4 and 5 from Table K - Land Application Systems – Limitations Due To Site, Soil, and Climatic Factors (AS/NZS 1547:2012:134) state that, in relation to effluent land application systems, "*The duration of a seasonal shallow water table is of much greater importance than its minimum depth at any one time. ….. (Note 4*)" and that "*Periods of continuous saturation of the upper 0.4 m of the soil should not exceed several weeks at any one time……(Note 5)"*

This is supported by van de Graaff and Brouwer (1999) who found that intermittent soil waterlogging does not inevitably lead to absorption failure, and that the maximum level to which a perched water table may rise in a soil profile has no bearing on the soil suitability for on-site effluent disposal. For onsite wastewater disposal it is therefore preferable to define the effect of the seasonal watertable in terms of soil drainage status which indicates the duration of periods of saturated conditions likely to occur in most years (AS/NZS 1547:2012:17). For most places within the Top End, the depth to watertable at the wettest time of year is not known. Depth to the seasonal or perched watertable can however, be inferred from depth and degree of mottling within the soil profile. Whilst somewhat qualitative, Wells (2001) concluded that the Drainage Classes used in Soil and Land Survey (NCST 2009) are defined in terms of approximate duration of periods of saturation (Table A), as such these classes could also be used as an indicator or substitute for 'depth to seasonal watertable' in order to derive a capability rating for a map unit or site.

Seasonal Inundation (Hydrosols) as used in Table 3.7 confuses soil drainage and flooding. For a soil to be described as a Hydrosol "*the greater part of the profile is saturated for at least 2-3 months in most years*" (Isbell 2002:45). Hydrosols are therefore *Very poorly* or *Poorly drained*. Not all soils that flood every year are Hydrosols and not all Hydrosols flood.

Table A Drainage Classes after NCST (2009:202-204)

Drainage Class	Approximate period of saturation and presence of mottling
Very poor	Water table remains at or near the surface for most of the year. Strong gleying usually a feature (greyish and bluish *colours)*.
Poor	All soil horizons remain wet for periods of several months (seasonally waterlogged). Many horizons are gleyed, mottled and/or have orange or rusty linings of root channels.
Imperfect	Some soil horizons are wet for periods of several weeks. Some horizons may be mottled and/or have orange or rusty linings of root channels.
Moderately well	Some soil horizons may remain wet for as long as one week after water addition
Well	Some site horizons may remain wet for several days after water addition
Rapid	No soil horizon is normally wet for more than several hours after water addition

Table B below shows the substitution of current Site Drainage, Seasonal Inundation (Hydrosols) and Groundwater (seasonal watertable depth) descriptions in Table 3.7 (DoH 2014b:32-34) with *Drainage Class* from NCST (2009).

Table B Current and replacement terminology in relation to Drainage Classification

Land Features	Land Capability Class Rating			Site Rating
	High	**Moderate**	**Low**	
Existing Table 3.7 Entries				
Site drainage	No visible signs of dampness	Moist soil, but no standing water in soil pit; Some moisture tolerant vegetation	Extensive moisture tolerant vegetation; Water ponding on surface	
Seasonal Inundation (Hydrosols)	Very rare flood events only	Cyclical, no more frequent than 1 in 10 years	Annual (monsoon zone)	
Groundwater (seasonal watertable depth)	>3 m	1.5-3 m	<1.5 m	
Replaced with				
Drainage (NCST 2009)	Moderately Well to Well drained	Imperfectly drained	Poorly to Very Poorly drained (Rapidly drained*)	

*** Note**: Within in the land disposal site, wastewater must move through the soil profile quickly enough to prevent water ponding at the surface (system failure) but slowly enough to ensure sufficient contact time between the effluent and soil particles to breakdown pathogens and organic contaminants (Purdue Uni. 2006). If soil permeability is high and /or drainage is too fast then it is likely that the water leaving the effluent disposal area will still contain levels of pathogens and/or organic contaminants that present risks to human and/or environmental health.
As per NCST (2009:204), in soils that are Rapidly Drained "….Excess water flows downward rapidly if underlying material is highly permeable There may be rapid subsurface lateral flow during heavy rainfall provided there is a steep gradient. Soils are usually coarse-textured, or shallow, or both."
Rapidly drained land has *Low Capability* (High Risk) for onsite wastewater with a high potential for offsite transport of pathogens and/or organic contaminants due to inadequate contact time between the wastewater and soil particles. This limitation can be addressed through wastewater treatment system selection, modifications to design / installation or a combination

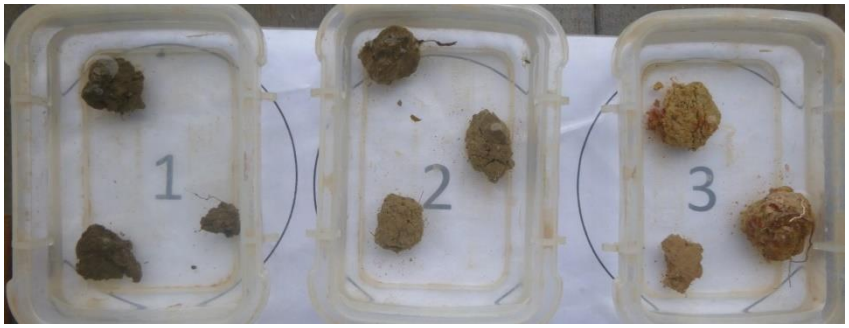
Site 1 – Shallow, Moderately well drained, Moderately gravelly, Brown Kandosol (Gravelly Yellow Earth)

Slope: 1.25%	**Erosion**: nil	**Surface gravel** (%): 35%
Landform: Plain	**Surface water** (m): >30m	**Runoff:** Slow
Fill: Nil	**Drainage**: Moderately well	**Surface**: Brown/grey termitaria
Stopped by: Weathered substrate	**Rock outcrop**: nil	
Vegetation: Woodland – *Callitris intratropica, Corymbia sp, Erythrophleum chlorostachys,* Shrubs: *Calytrix exstipulata, Buchanania obovata, Planchonia careya, Livistona humilis, Acacia sp*		

Soil Horizon (Level)	A1 (1)	B2 (2)	C/B (3)		
Depth (cm)	0 –10	10 - 28	28 – 80+		
Boundary	Clear	Gradual			
Field Texture	Sandy Loamy (Fine sand)	Clay loam	Weathered substrate		
Structure	Massive Earthy	Massive Earthy	Gravelly		
pH (1:5 H_20)	6.3	6.0	5.9		
EC dS (1:5 H_20)	0.029	0.011	0.011		
Dominant Colour	10YR 4/2 Dark Grayish Brown	10YR 4/4 Dark Yellowish Brown	10YR 7/4 Very Pale Brown		
Mottles	-	-	-		
Emerson	2 (Slaking 1)	2 (Slaking 2)	2 (Slaking 3)		
Coarse Frags (%)	20	0	0		

Site 1 Soil exposure

Soil and gravels



Emerson Test

Site 1 – Background Land Capability Assessment Matrix for On-site Wastewater Management from NT LCA Guidelines Table 3.7 (DoH 2014b:33-34)

This matrix is used to assess the soil and site characteristics and provide an overall rating for the site in its natural or current condition with respect to its capability to support onsite septic wastewater management.

Land capability ratings in this table DO NOT take into consideration factors that can improve site capability

Land Features	Land Capability Class Rating			Rating
	High	Moderate	Low	
Site Characteristics				
Drainage Class (NCST 2009)	Moderately Well to Well drained	Imperfectly drained	Rapidly drained or Poorly to Very Poorly drained	**High**
Runoff	None or low	Moderate to high, need for diversionary structures	High to very high – diversion not practical	**High**
Flood risk	Never or <1 in 100	>1 in 100 and <1 in 20	<1 in 20	**High**
Proximity to watercourses	>50 m non-potable; >100 m potable	n/a	<50 m for non-potable; <100 m potable	**High**
Slope	<5%	5-10%	>10%	**High**
Landslip	Zero actual, or low potential for failure	Moderate to high potential for failure	Present or past failure	**High**
Surface gravel (spatial cover)	<20%	25-50%	>50%	**Moderate**
Rock outcrop (spatial cover)	<10%	10-20%	>20%	**High**
Erosion potential	Zero or minor erosion potential	Moderate to high erosion potential	High to severe erosion potential	**High**
Exposure	High sun and wind exposure	Moderate sun and wind exposure	Low sun and wind exposure	**High**
Landform	Hill crests, convex side slopes and plains	Concave sideslopes and footslopes	Floodplains and incised channels	**High**
Vegetation Type	Turf or pasture	Shrubs or open woodland	Dense forest with little understorey	**Moderate**
Average Rainfall	<800 mm/year	800 - 1400 mm/year	>1400 mm/year	**Low**
Pan Evaporation	>1400 mm/year	800 - 1400 mm/year	<800 mm/year	**High**

Land Features	Land Capability Class Rating			Rating
	High	**Moderate**	**Low**	
Soil Characteristics				
Fill	No fill; or fill good quality	Some fill; or fill moderate quality	Extensive fill, or fill poor quality	**High**
Soil category * (AS1547:2013)	2 and 3	4 and 5	1 and 6	**Moderate**
Profile depth	>0.5 m	0.25-5 m	>0.25 m	**Moderate**
Presence of mottling	None	Moderate	Extensive	**High**
Coarse fragments	<20%	20-40%	>40%	**Moderate**
pH	6-8	4.5 - 6	<4.5, >8	**High**
Emerson + Aggregate Class	4,6,8	2,3,5,7	1	**Moderate**
Electrical Conductivity (ECe)	<0.8 dS/m	0.8-4 dS/m	>4 dS/m	**High**
Sodicity ESP %	<6%	6-14%	>14%	**High**
SITE RATING				**Moderate**

***** Soil Category taken from the soil layer at a depth of 60cm within the soil profile
+ Emerson Aggregate Class taken from the layer within the receiving soil 60cm below the soil surface

Site 1 - Interpreted Land Capability Assessment Matrix for On-site Wastewater Management

Land capability ratings in this table reflect the impact of options that will improve site capability such as wastewater treatment system selection (eg installing an AWTS in place of traditional septic), modifications to design / installation or a combination.

Site Characteristic	**Description**	**Land Capability Rating**
Climate	Site has monsoonal climate. How BOM data shows that the annual average evaporation rate (2000-2400mm/yr) exceeds the average annual rainfall.	High
Landform & Slope	Low slope (1.25%) on a plain	High
Erosion potential & Emerson Aggregate Class	Neither surface nor subsoils slake when wet (Emerson Class 8). The low slope means that risk of erosion can be managed through appropriate timing of clearing and soil disturbance and minimising the area of soil exposed at any one time during installation.	High
Seasonal waterlogging	The soil is Moderately w*ell drained* and there is no evidence of seasonal waterlogging.	High
Flood risk	According to mapping by Cardno (2014), the site is not located in an area risk of riverine flooding	High
Proximity to watercourses	No watercourses were identified within 50m of site	High
Landslip	Zero potential for landslip	High
Surface gravel & Rock outcrop	No rock outcrop encountered. Despite moderate surface gravels, advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Vegetation	Site supports a mature, mixed low woodland with an understorey of shrubs. Site will be cleared of woody vegetation with lawn or pasture like conditions maintained over the irrigation area.	High
Buffer / Setback distances	The setbacks between effluent disposal areas and other site features required in the NT *Code of Practice* (DoH 2014a) are achievable through the installation of secondary treatment systems coupled with sub-surface irrigation disposal.	High
Available land application areas (LAA)	Considering the required LAA setbacks, there is sufficient area to support proposed shallow subsurface irrigation system.	High
Soil Characteristic	Description	Land Capability Rating
Soil depth	Soil depth 0.28m. Despite shallow soil, advice from Peter Rintel (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Soil type and Drainage Class	Moderately well drained, Brown Kandosol.	High
Coarse fragments (%)	Subsoil coarse fragments up to 50%. Advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017)	High

	indicates that despite coarse fragments, the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	
Mottling & Depth to watertable	No free water (watertable) was encountered and no mottling was observed in the soil profile. There is no evidence of seasonal high watertable and perched seasonal watertable are considered very unlikely	High
LTAR	Clay loam – Soil Category 4 has a design irrigation rate of 3.5mm/day which is within the operationally effective range of values in the NT *Code of Practice* (DoH 2014a).	High
pH	pH range from 6.3 in surface soils to 5.9 in subsoils. The site supports a mature low woodland demonstrating that this range of pH values will not restrict plant growth.	High
Salinity Risk	Measured EC (electrical conductivity) was very low and according to the NT *Dryland Salinity Hazard Map* (Tickell 1994), the risk of dryland salinity at the sites is very low.	High
Sodicity ESP %	Emerson Aggregate test showed that no layers were dispersive. Exchangeable Sodium percentage (ESP) is likely to be much less than 6%	High
Overall Site Capability Rating		**High**

Effluent Disposal Area Calculations

The soil at this site is classified as a Moderately well-drained, shallow, gravelly Brown Kandosol with the deepest subsoil layer having a soil texture of Clay loam.

As per Table M1 of AS/NZS1547:2012:p160, the design irrigation rate (DIR) relating to Clay loam – Soil Category 4 (3.5mm/day) will be used for sizing of effluent disposal areas.

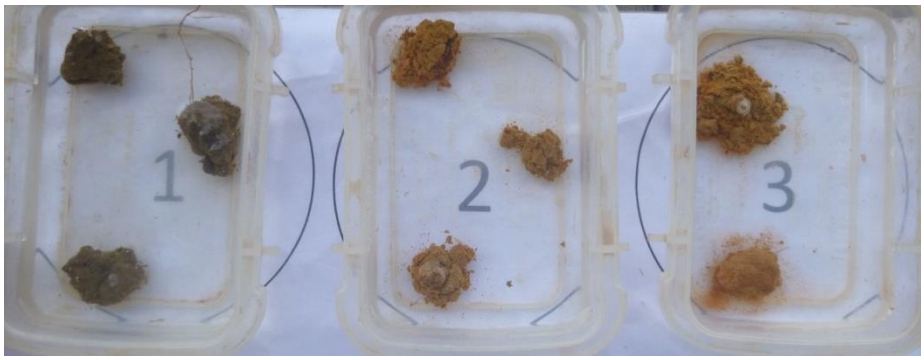
Site 2 – Moderately well drained, Moderately deep, Gravelly Brown Kandosol (Gravelly Yellow earth)

Slope: 0%	**Erosion**: nil	**Surface gravel** (%): 5%
Landform: Plain	**Surface water** (m): >30m	**Runoff:** Slow
Fill: Nil	**Drainage**: Moderately well	**Surface**:
Stopped by: Too gravelly/loose	**Rock outcrop**: nil	
Vegetation: Woodland: *Eucalyptus tectifica, Acacia sp, Xanthostemum paradoxus*, Shrubs: *Buchanania obovata, Cycas armstrongii, Pandanus spiralis, Calytrix exstipulata*		

Soil Horizon (Level)	**A1 (1)**	**B21 (2)**	**B22 (3)**		
Depth (cm)	0 –12	12 - 26	26 – 50+		
Boundary	Clear	Gradual			
Field Texture	Sandy clay loam (Fine sand)	Clay loam	Light clay		
Structure	Massive Earthy	Massive Earthy	Massive Earthy		
pH (1:5 H_20)	5.7	5.9	6.0		
EC dS (1:5 H_20)	0.014	0.007	0.007		
Dominant Colour	10YR 4/3 Brown	10YR 5/6 Yellowish Brown	10YR 5/6 Yellowish Brown		
Mottles	-	-	-		
Emerson	8	2 (Slaking 1)	2 (Slaking 2)		
Coarse Frags (%)	15	50	55		

Site 1 Soil surface

Soil and gravels



Emerson Test

Site 2 – Background Land Capability Assessment Matrix for On-site Wastewater Management from NT LCA Guidelines Table 3.7 (DoH 2014b:33-34)

This matrix is used to assess the soil and site characteristics and provide an overall rating for the site in its natural or current condition with respect to its capability to support onsite septic wastewater management.

Land capability ratings in this table DO NOT take into consideration factors that can improve site capability

Land Features	Land Capability Class Rating			Rating
	High	Moderate	Low	
Site Characteristics				
Drainage Class (NCST 2009)	Moderately Well to Well drained	Imperfectly drained	Rapidly drained or Poorly to Very Poorly drained	**High**
Runoff	None or low	Moderate to high, need for diversionary structures	High to very high – diversion not practical	**High**
Flood risk	Never or <1 in 100	>1 in 100 and <1 in 20	<1 in 20	**High**
Proximity to watercourses	>50 m non-potable; >100 m potable	n/a	<50 m for non-potable; <100 m potable	**High**
Slope	<5%	5-10%	>10%	**High**
Landslip	Zero actual, or low potential for failure	Moderate to high potential for failure	Present or past failure	**High**
Surface gravel (spatial cover)	<20%	25-50%	>50%	**High**
Rock outcrop (spatial cover)	<10%	10-20%	>20%	**High**
Erosion potential	Zero or minor erosion potential	Moderate to high erosion potential	High to severe erosion potential	**High**
Exposure	High sun and wind exposure	Moderate sun and wind exposure	Low sun and wind exposure	**Moderate**
Landform	Hill crests, convex side slopes and plains	Concave sideslopes and footslopes	Floodplains and incised channels	**High**
Vegetation Type	Turf or pasture	Shrubs or open woodland	Dense forest with little understorey	**Moderate**
Average Rainfall	<800 mm/year	800 - 1400 mm/year	>1400 mm/year	**Low**
Pan Evaporation	>1400 mm/year	800 - 1400 mm/year	<800 mm/year	**High**

Land Features	Land Capability Class Rating			Rating
	High	**Moderate**	**Low**	
Soil Characteristics				
Fill	No fill; or fill good quality	Some fill; or fill moderate quality	Extensive fill, or fill poor quality	**High**
Soil category * (AS1547:2013)	2 and 3	4 and 5	1 and 6	**Moderate**
Profile depth	>0.5 m	0.25-5 m	>0.25 m	**High**
Presence of mottling	None	Moderate	Extensive	**High**
Coarse fragments	<20%	20-40%	>40%	**Low**
pH	6-8	4.5 - 6	<4.5, >8	**Moderate**
Emerson + Aggregate Class	4,6,8	2,3,5,7	1	**Moderate**
Electrical Conductivity (ECe)	<0.8 dS/m	0.8-4 dS/m	>4 dS/m	**High**
Sodicity ESP %	<6%	6-14%	>14%	**High**
SITE RATING				**Low**

***** Soil Category taken from the soil layer at a depth of 60cm within the soil profile
+ Emerson Aggregate Class taken from the layer within the receiving soil 60cm below the soil surface

Site 2 - Interpreted Land Capability Assessment Matrix for On-site Wastewater Management

Land capability ratings in this table reflect the impact of options that will improve site capability such as wastewater treatment system selection (eg installing an AWTS in place of traditional septic), modifications to design / installation or a combination.

Site Characteristic	Description	Land Capability Rating
Climate	Site has monsoonal climate. BOM data shows that the annual average evaporation rate (2000-2400mm/yr) exceeds the average annual rainfall.	High
Landform & Slope	Flat land (0%) on a plain	High
Erosion potential & Emerson Aggregate Class	Surface soils are stable when wet (Emerson Class 8). Whilst subsoils do slake when wet, the flat land means that risk of erosion can be managed through appropriate timing of clearing and soil disturbance and minimising the area of soil exposed at any one time during installation.	High
Seasonal waterlogging	The soil is Moderately w*ell drained* and there is no evidence of seasonal waterlogging.	High
Flood risk	According to mapping by Cardno (2014), the site is not located in an area risk of riverine flooding	High
Proximity to watercourses	No watercourses were identified within 50m of site	High
Landslip	Zero potential for landslip	High
Surface gravel & Rock outcrop	No rock outcrop encountered. Very low (<5%) surface gravels.	High
Vegetation	Site supports a mature, mixed low woodland with an understorey of shrubs. Site will be cleared of woody vegetation with lawn or pasture like conditions maintained over the irrigation area.	High
Buffer / Setback distances	The setbacks between effluent disposal areas and other site features required in the NT *Code of Practice* (DoH 2014a) are achievable through the installation of secondary treatment systems coupled with sub-surface irrigation disposal.	High
Available land application areas (LAA)	Considering the required LAA setbacks, there is sufficient area to support proposed shallow subsurface irrigation system.	High
Soil Characteristic	**Description**	**Land Capability Rating**
Soil depth	Soil depth > 0.5m. Moderately deep soil indicates that the site is highly suitable for proposed sub-surface irrigation	High
Soil type and Drainage Class	Moderately well drained, Brown Kandosol.	High
Coarse fragments (%)	Subsoil coarse fragments around 50%. Advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that despite coarse fragments, the site is well suited for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Mottling & Depth to watertable	No free water (watertable) was encountered and no mottling was observed in the soil profile. There is no evidence of seasonal high watertable and perched seasonal watertable are	High

	considered unlikely	
LTAR	Light clay – Soil Category 5 has a design irrigation rate of 3mm/day which is within the operationally effective range of values in the NT *Code of Practice* (DoH 2014a).	High
pH	pH range from 5.7 in surface to 6.0 in subsoil. The site supports a mature low woodland demonstrating that this range of pH values will not restrict plant growth.	High
Salinity Risk	Measured EC (electrical conductivity) was very low and according to the NT *Dryland Salinity Hazard Map* (Tickell 1994), the risk of dryland salinity at the sites is very low.	High
Sodicity ESP %	Emerson Aggregate test showed that no layers were dispersive. Exchangeable Sodium percentage (ESP) is likely to be much less than 6%	High
Overall Site Capability Rating		**High**

Effluent Disposal Area Calculations

The soil at this site is classified as a Moderately well-drained, Moderately deep, gravelly Brown Kandosol with the deepest subsoil layer having a soil texture of Light clay.

As per Table M1 of AS/NZS1547:2012:p160, the design irrigation rate (DIR) relating to Silty Clay – Soil Category 5 (3mm/day) will be used for sizing of effluent disposal areas.

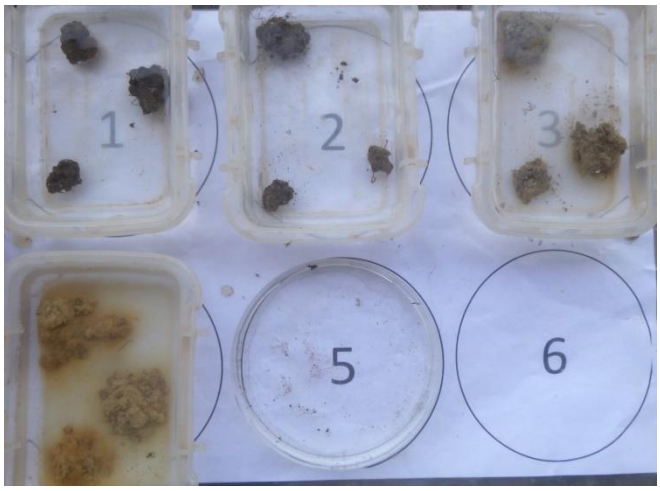
Site 3 – Moderately well drained, Moderately deep, gravelly Brown Kandosol (Moderately deep Yellow Earth)

Slope: 3%	**Erosion**: nil	**Surface gravel** (%): 20%
Landform: Side slope	**Surface water** (m): >30m	**Runoff:** Rapid
Fill: Nil	**Drainage**: Moderately well	**Surface**:
Stopped by: Weathered substrate	**Rock outcrop**: nil	
Vegetation: Woodland: *Eucalyptus tectifica, Acacia sp, Erythrophleum chlorostachys*, Shrubs: *Planchonia careya, Calytrix exstipulata, Pandanus spiralis, Cycas armstrongii, Cochlospermum fraseri, Livistona humilis*		

Soil Horizon (Level)	**A1 (1)**	**B1 (2)**	**B2 (3)**	**C/B (4)**	
Depth (cm)	0 – 8	8 - 24	24 – 60	60+	
Boundary	Clear	Gradual	Gradual		
Field Texture	Sandy Loamy	Sandy clay loam	Clay loam (Fine sand)	Weathered substrate	
Structure	Massive Earthy	Massive Earthy	Massive Earthy	Gravelly	
pH (1:5 H_20)	5.4	5.8	6.0	6.1	
EC dS (1:5 H_20)	0.024	0.010	0.07	0.07	
Dominant Colour	10YR 3/2 Very Dark Grayish Brown	10YR 3/2 Very Dark Grayish Brown	20.0 10YR 5/3 Brown	10YR 5/6 Yellowish Brown	
Mottles	-	-	-		
Emerson	8	8	2 (Slaking 1)	2 (Slaking 3)	
Coarse Frags (%)	40	45	65	70	

Site 3 Soil surface

Soil and gravels



Emerson Test

Site 3 – Background Land Capability Assessment Matrix for On-site Wastewater Management from NT LCA Guidelines Table 3.7 (DoH 2014b:33-34)

This matrix is used to assess the soil and site characteristics and provide an overall rating for the site in its natural or current condition with respect to its capability to support onsite septic wastewater management.

Land capability ratings in this table DO NOT take into consideration factors that can improve site capability

Land Features	Land Capability Class Rating			Rating
	High	Moderate	Low	
Site Characteristics				
Drainage Class (NCST 2009)	Moderately Well to Well drained	Imperfectly drained	Rapidly drained or Poorly to Very Poorly drained	**High**
Runoff	None or low	Moderate to high, need for diversionary structures	High to very high – diversion not practical	**Moderate**
Flood risk	Never or <1 in 100	>1 in 100 and <1 in 20	<1 in 20	**High**
Proximity to watercourses	>50 m non-potable; >100 m potable	n/a	<50 m for non-potable; <100 m potable	**High**
Slope	<5%	5-10%	>10%	**High**
Landslip	Zero actual, or low potential for failure	Moderate to high potential for failure	Present or past failure	**High**
Surface gravel (spatial cover)	<20%	25-50%	>50%	**Moderate**
Rock outcrop (spatial cover)	<10%	10-20%	>20%	**High**
Erosion potential	Zero or minor erosion potential	Moderate to high erosion potential	High to severe erosion potential	**Moderate**
Exposure	High sun and wind exposure	Moderate sun and wind exposure	Low sun and wind exposure	**Moderate**
Landform	Hill crests, convex side slopes and plains	Concave sideslopes and footslopes	Floodplains and incised channels	**High**
Vegetation Type	Turf or pasture	Shrubs or open woodland	Dense forest with little understorey	**Moderate**
Average Rainfall	<800 mm/year	800 - 1400 mm/year	>1400 mm/year	**Low**
Pan Evaporation	>1400 mm/year	800 - 1400 mm/year	<800 mm/year	**High**

Land Features	Land Capability Class Rating			Rating
	High	**Moderate**	**Low**	
Soil Characteristics				
Fill	No fill; or fill good quality	Some fill; or fill moderate quality	Extensive fill, or fill poor quality	**High**
Soil category * (AS1547:2013)	2 and 3	4 and 5	1 and 6	**Moderate**
Profile depth	>0.5 m	0.25-5 m	>0.25 m	**High**
Presence of mottling	None	Moderate	Extensive	**High**
Coarse fragments	<20%	20-40%	>40%	**Low**
pH	6-8	4.5 - 6	<4.5, >8	**High**
Emerson + Aggregate Class	4,6,8	2,3,5,7	1	**Moderate**
Electrical Conductivity (ECe)	<0.8 dS/m	0.8-4 dS/m	>4 dS/m	**High**
Sodicity ESP %	<6%	6-14%	>14%	**High**
SITE RATING				**Low**

***** Soil Category taken from the soil layer at a depth of 60cm within the soil profile
+ Emerson Aggregate Class taken from the layer within the receiving soil 60cm below the soil surface

Site 3 - Interpreted Land Capability Assessment Matrix for On-site Wastewater Management

Land capability ratings in this table reflect the impact of options that will improve site capability such as wastewater treatment system selection (eg installing an AWTS in place of traditional septic), modifications to design / installation or a combination.

Site Characteristic	**Description**	**Land Capability Rating**
Climate	Site has monsoonal climate. BOM data shows that the annual average evaporation rate (2000-2400mm/yr) exceeds the average annual rainfall.	High
Landform & Slope	Moderate slope (3%) on side slope	High
Erosion potential & Emerson Aggregate Class	Soil layers within 200mm of surface do not slake when wet (Emerson Class 8). The moderate slope means that risk of erosion can be managed through appropriate timing of clearing and soil disturbance and minimising the area of soil exposed at any one time during installation.	High
Seasonal waterlogging	The soil is Moderately w*ell drained* and there is no evidence of seasonal waterlogging.	High
Flood risk	According to mapping by Cardno (2014), the site is not located in an area risk of riverine flooding	High
Proximity to watercourses	No watercourses were identified within 50m of site	High
Landslip	Zero potential for landslip	High
Surface gravel & Rock outcrop	No rock outcrop encountered. Despite moderate surface gravels, advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Vegetation	Site supports a mature, mixed low woodland with an understorey of shrubs. Site will be cleared of woody vegetation with lawn or pasture like conditions maintained over the irrigation area.	High
Buffer / Setback distances	The setbacks between effluent disposal areas and other site features required in the NT *Code of Practice* (DoH 2014a) are achievable through the installation of secondary treatment systems coupled with sub-surface irrigation disposal.	High
Available land application areas (LAA)	Considering the required LAA setbacks, there is sufficient area to support proposed shallow subsurface irrigation system.	High
Soil Characteristic	Description	Land Capability Rating
Soil depth	Soil depth 0.28m. Despite shallow soil, advice from Peter Rintel (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Soil type and Drainage Class	Shallow, Moderately well drained, gravelly Brown Kandosol. Advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Coarse	Subsoil coarse fragments up to 50%. Advice from Peter Rintel	High

fragments (%)	(Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that despite coarse fragments, the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	
Mottling & Depth to watertable	No free water (watertable) was encountered and no mottling was observed in the soil profile. There is no evidence of seasonal high watertable and perched seasonal watertable are considered very unlikely	High
LTAR	Clay loam – Soil Category 4 has a design irrigation rate of 3.5mm/day which is within the operationally effective range of values in the NT *Code of Practice* (DoH 2014a).	High
pH	pH range from 6.3 in surface soils to 5.9 in subsoils. The site supports a mature low woodland demonstrating that this range of pH values will not restrict plant growth.	High
Salinity Risk	Measured EC (electrical conductivity) was very low and according to the NT *Dryland Salinity Hazard Map* (Tickell 1994), the risk of dryland salinity at the sites is very low.	High
Sodicity ESP %	Emerson Aggregate test showed that no layers were dispersive. Exchangeable Sodium percentage (ESP) is likely to be much less than 6%	High
Overall Site Capability Rating		**High**

Effluent Disposal Area Calculations

The soil at this site is classified as a Moderately well-drained, shallow, gravelly Brown Kandosol with the deepest subsoil layer having a soil texture of Clay loam.

As per Table M1 of AS/NZS1547:2012:p160, the design irrigation rate (DIR) relating to Clay loam – Soil Category 4 (3.5mm/day) will be used for sizing of effluent disposal areas.

Site 4 – Well drained, Moderately Deep, Gravelly, Red Kandosol (Gravelly Red Earth)

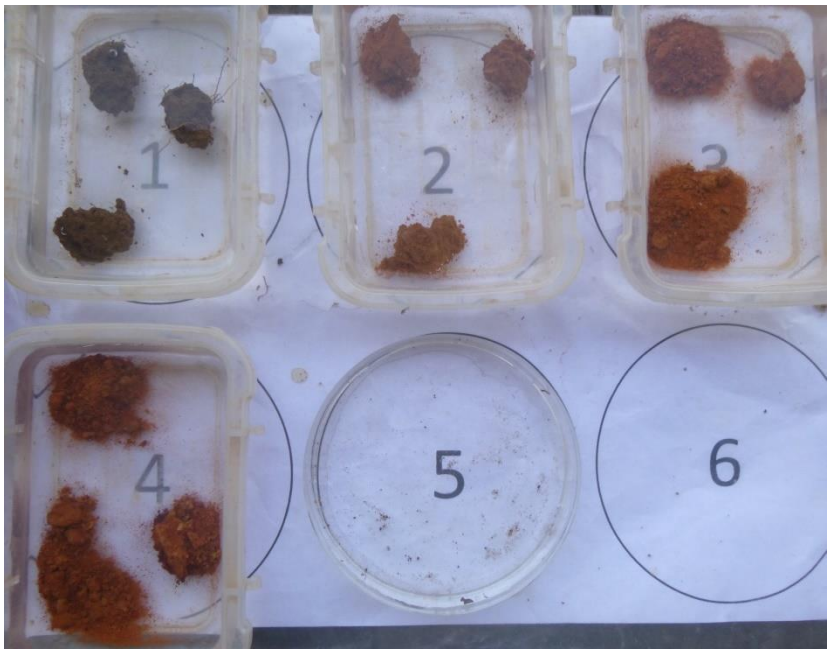
Slope: 4%	**Erosion**: nil	**Surface gravel** (%): 10%
Landform: Rise	**Surface water** (m): >30m	**Runoff:** Rapid
Fill: Nil	**Drainage**: Well	**Surface**: Brown termitaria
Stopped by: Too hard	**Rock outcrop**: 1% - laterite	

Vegetation: Open woodland: *Eucalyptus miniata, Euc. Tectifica, Euc. tetrodonta*, Shrubs: *Cochlospermum fraseri, Cycas armstrongii, Erythrophleum chlorostachys, Buchanania obovata, Lophostemum lactifluus, Strychnos lucida*, Grasses (mown): mixed native spear grass, gamba grass, mission grass

Soil Horizon (Level)	**A1 (1)**	**B1 (2)**	**B21 (3)**	**B22 (4)**	
Depth (cm)	0 –10	10 - 25	25 – 40	40 – 55+	
Boundary	Clear	Gradual	Diffuse		
Field Texture	Sandy clay loam (Fine sand)	Clay loam	Silty clay loam	Light clay	
Structure	Massive Earthy	Massive Earthy	Massive Earthy	Massive Earthy	
pH (1:5 H_20)	5.8	6.0	6.0	6.0	
EC dS (1:5 H_20)	0.014	0.007	0.007	0.007	
Dominant Colour	10YR 4/4 Dark Yellowish Brown	5YR 5/6 Yellowish Red	5YR 5/8 Yellowish Red	2.5YR 4/8 Red	
Mottles	-	-	-	-	
Emerson	8	2 (Slaking 1)	2 (Slaking 3)	2 (Slaking 3)	
Coarse Frags (%)	30	50	45	20	

Site 4 Soil surface

Soil and gravels



Emerson Test

Site 4 – Background Land Capability Assessment Matrix for On-site Wastewater Management from NT LCA Guidelines Table 3.7 (DoH 2014b:33-34)

This matrix is used to assess the soil and site characteristics and provide an overall rating for the site in its natural or current condition with respect to its capability to support onsite septic wastewater management.

Land capability ratings in this table DO NOT take into consideration factors that can improve site capability

Land Features	Land Capability Class Rating			Rating
	High	Moderate	Low	
Site Characteristics				
Drainage Class (NCST 2009)	Moderately Well to Well drained	Imperfectly drained	Rapidly drained or Poorly to Very Poorly drained	**High**
Runoff	None or low	Moderate to high, need for diversionary structures	High to very high – diversion not practical	**Moderate**
Flood risk	Never or <1 in 100	>1 in 100 and <1 in 20	<1 in 20	**High**
Proximity to watercourses	>50 m non-potable; >100 m potable	n/a	<50 m for non-potable; <100 m potable	**High**
Slope	<5%	5-10%	>10%	**High**
Landslip	Zero actual, or low potential for failure	Moderate to high potential for failure	Present or past failure	**High**
Surface gravel (spatial cover)	<20%	25-50%	>50%	**High**
Rock outcrop (spatial cover)	<10%	10-20%	>20%	**High**
Erosion potential	Zero or minor erosion potential	Moderate to high erosion potential	High to severe erosion potential	**Moderate**
Exposure	High sun and wind exposure	Moderate sun and wind exposure	Low sun and wind exposure	**High**
Landform	Hill crests, convex side slopes and plains	Concave sideslopes and footslopes	Floodplains and incised channels	**High**
Vegetation Type	Turf or pasture	Shrubs or open woodland	Dense forest with little understorey	**Moderate**
Average Rainfall	<800 mm/year	800 - 1400 mm/year	>1400 mm/year	**Low**
Pan Evaporation	>1400 mm/year	800 - 1400 mm/year	<800 mm/year	**High**

Land Features	Land Capability Class Rating			Rating
	High	**Moderate**	**Low**	
Soil Characteristics				
Fill	No fill; or fill good quality	Some fill; or fill moderate quality	Extensive fill, or fill poor quality	**High**
Soil category (AS1547:2013)	2 and 3	4 and 5	1 and 6	**Moderate**
Profile depth	>0.5 m	0.25-5 m	>0.25 m	**High**
Presence of mottling	None	Moderate	Extensive	**High**
Coarse fragments	<20%	20-40%	>40%	**Moderate**
pH	6-8	4.5 - 6	<4.5, >8	**Moderate**
Emerson Aggregate Class	4,6,8	2,3,5,7	1	**Moderate**
Electrical Conductivity (ECe)	<0.8 dS/m	0.8-4 dS/m	>4 dS/m	**High**
Sodicity ESP %	<6%	6-14%	>14%	**High**
SITE RATING				**Moderate**

Site 4 - Interpreted Land Capability Assessment Matrix for On-site Wastewater Management

Land capability ratings in this table reflect the impact of options that will improve site capability such as wastewater treatment system selection (eg installing an AWTS in place of traditional septic), modifications to design / installation or a combination.

Site Characteristic	Description	Land Capability Rating
Climate	Site has monsoonal climate. BOM data shows that the annual average evaporation rate (2000-2400mm/yr) exceeds the average annual rainfall.	High
Landform & Slope	Moderate slope (4%) on a side slope	High
Erosion potential & Emerson Aggregate Class	Neither surface nor subsoils slake when wet (Emerson Class 8). The low slope means that risk of erosion can be managed through appropriate timing of clearing and soil disturbance and minimising the area of soil exposed at any one time during installation.	High
Seasonal waterlogging	The soil is W*ell drained* and there is no evidence of seasonal waterlogging.	High
Flood risk	According to mapping by Cardno (2014), the site is not located in an area risk of riverine flooding	High
Proximity to watercourses	No watercourses were identified within 50m of site	High
Landslip	Zero potential for landslip	High
Surface gravel & Rock outcrop	1% rock outcrop encountered. Low surface gravels	High
Vegetation	Site supports a mature, mixed open woodland with an understorey of shrubs. Site will be cleared of woody vegetation with lawn or pasture like conditions maintained over the irrigation area.	High
Buffer / Setback distances	The setbacks between effluent disposal areas and other site features required in the NT *Code of Practice* (DoH 2014a) are achievable through the installation of secondary treatment systems coupled with sub-surface irrigation disposal.	High
Available land application areas (LAA)	Considering the required LAA setbacks, there is sufficient area to support proposed shallow subsurface irrigation system.	High
Soil Characteristic	**Description**	**Land Capability Rating**
Soil depth	Soil depth 0.55+m. Advice from Peter Rintel (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Soil type and Drainage Class	Well drained, Red Kandosol.	High
Coarse fragments (%)	Subsoil coarse fragments up to 50%. Advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that despite coarse fragments, the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Mottling & Depth to	No free water (watertable) was encountered and no mottling was observed in the soil profile. There is no evidence of seasonal high watertable and perched seasonal watertable are	High

watertable	considered very unlikely	
LTAR	Silty clay – Soil Category 5 has a design irrigation rate of 3mm/day which is within the operationally effective range of values in the NT *Code of Practice* (DoH 2014a).	High
pH	pH range from 5.8 to 6.0 in subsoils. The site supports a mature open woodland demonstrating that this range of pH values will not restrict plant growth.	High
Salinity Risk	Measured EC (electrical conductivity) was very low and according to the NT *Dryland Salinity Hazard Map* (Tickell 1994), the risk of dryland salinity at the sites is very low.	High
Sodicity ESP %	Emerson Aggregate test showed that no layers were dispersive. Exchangeable Sodium percentage (ESP) is likely to be much less than 6%	High
Overall Site Capability Rating		**High**

Effluent Disposal Area Calculations

The soil at this site is classified as a Well drained, Moderately deep, gravelly Red Kandosol with the maximum soil texture of Light clay.

As per Table M1 of AS/NZS1547:2012:p160, the design irrigation rate (DIR) relating to Silty clay – Soil Category 5 (3mm/day) will be used for sizing of effluent disposal areas.

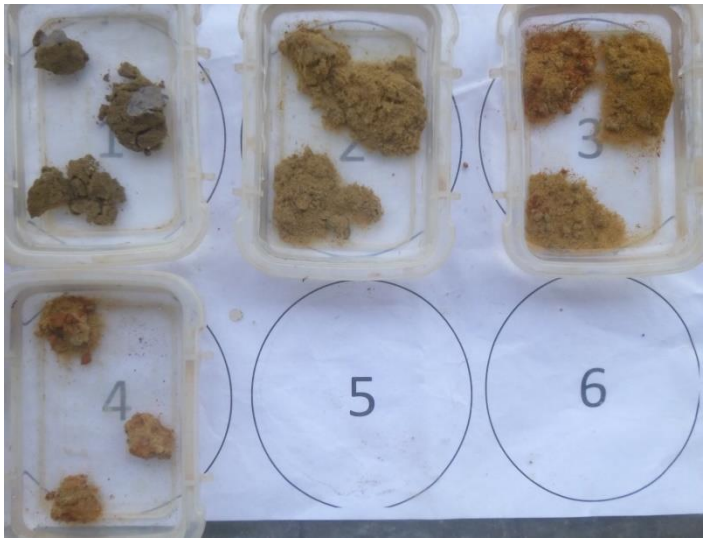
Site 5 – Moderately Deep, Well drained, Very gravelly Brown Kandosol (Gravelly Yellow Earth)

Slope: 4%	**Erosion**: nil	**Surface gravel** (%): 60%
Landform: Plain	**Surface water** (m): >30m	**Runoff:** Rapid
Fill: Nil	**Drainage**: Well	**Surface**: Red/brown termitaria
Stopped by: Weathered substrate	**Rock outcrop**: nil	
Vegetation: Open woodland: *Eucalyptus tetrodonta, Acacia auriculiformis*, Shrubs: *Planchonia careya, Buchanania obovata, Terminalia ferdinandiana, Calytrix exstipulata, Xanthostemum paradoxus, Lophostemum lactifluus*, Grasses (mown) native spear grass, Mission grass, gamba grass.		

Soil Horizon (Level)	**A1 (1)**	**B1 (2)**	**B2 (3)**	**C (4)**	
Depth (cm)	0 –15	15 - 31	31 – 60	60 – 80+	
Boundary	Clear	Gradual	Diffuse		
Field Texture	Clayey sand (Fine sand)	Sandy loam	Clay loam	Weathered substrate	
Structure	Massive Earthy	Massive Earthy	Massive Earthy		
pH (1:5 H_20)	6.1	6.0	5.2		
EC dS (1:5 H_20)	0.008	0.007	0.024		
Dominant Colour	10YR 5/3 Brown	2.5Y 6/4 Light Yellowish Brown	10YR 5/8 Yellowish Brown		
Mottles	-	-	-		
Emerson	2 (Slaking 1)	2 (Slaking 2)	2 (Slaking 3)		
Coarse Frags (%)	50	50	55		

Site 5 Soil surface

Soil and gravels



Emerson Test

Site 5– Background Land Capability Assessment Matrix for On-site Wastewater Management from NT LCA Guidelines Table 3.7 (DoH 2014b:33-34)

This matrix is used to assess the soil and site characteristics and provide an overall rating for the site in its natural or current condition with respect to its capability to support onsite septic wastewater management.

Land capability ratings in this table DO NOT take into consideration factors that can improve site capability

Land Features	Land Capability Class Rating			Rating
	High	Moderate	Low	
Site Characteristics				
Drainage Class (NCST 2009)	Moderately Well to Well drained	Imperfectly drained	Rapidly drained or Poorly to Very Poorly drained	**High**
Runoff	None or low	Moderate to high, need for diversionary structures	High to very high – diversion not practical	**Moderate**
Flood risk	Never or <1 in 100	>1 in 100 and <1 in 20	<1 in 20	**High**
Proximity to watercourses	>50 m non-potable; >100 m potable	n/a	<50 m for non-potable; <100 m potable	**High**
Slope	<5%	5-10%	>10%	**High**
Landslip	Zero actual, or low potential for failure	Moderate to high potential for failure	Present or past failure	**High**
Surface gravel (spatial cover)	<20%	25-50%	>50%	**Low**
Rock outcrop (spatial cover)	<10%	10-20%	>20%	**High**
Erosion potential	Zero or minor erosion potential	Moderate to high erosion potential	High to severe erosion potential	**Moderate**
Exposure	High sun and wind exposure	Moderate sun and wind exposure	Low sun and wind exposure	**High**
Landform	Hill crests, convex side slopes and plains	Concave sideslopes and footslopes	Floodplains and incised channels	**High**
Vegetation Type	Turf or pasture	Shrubs or open woodland	Dense forest with little understorey	**Moderate**
Average Rainfall	<800 mm/year	800 - 1400 mm/year	>1400 mm/year	**Low**
Pan Evaporation	>1400 mm/year	800 - 1400 mm/year	<800 mm/year	**High**

Land Features	Land Capability Class Rating			Rating
	High	**Moderate**	**Low**	
Soil Characteristics				
Fill	No fill; or fill good quality	Some fill; or fill moderate quality	Extensive fill, or fill poor quality	**High**
Soil category (AS1547:2013)	2 and 3	4 and 5	1 and 6	**Moderate**
Profile depth	>0.5 m	0.25-5 m	>0.25 m	**High**
Presence of mottling	None	Moderate	Extensive	**High**
Coarse fragments	<20%	20-40%	>40%	**Low**
pH	6-8	4.5 - 6	<4.5, >8	**Moderate**
Emerson Aggregate Class	4,6,8	2,3,5,7	1	**Moderate**
Electrical Conductivity (ECe)	<0.8 dS/m	0.8-4 dS/m	>4 dS/m	**High**
Sodicity ESP %	<6%	6-14%	>14%	**High**
SITE RATING				**Low**

Site 5 - Interpreted Land Capability Assessment Matrix for On-site Wastewater Management

Land capability ratings in this table reflect the impact of options that will improve site capability such as wastewater treatment system selection (eg installing an AWTS in place of traditional septic), modifications to design / installation or a combination.

Site Characteristic	**Description**	**Land Capability Rating**
Climate	Site has monsoonal climate. BOM data shows that the annual average evaporation rate (2000-2400mm/yr) exceeds the average annual rainfall.	High
Landform & Slope	Moderate slope (4%) on a side slope	High
Erosion potential & Emerson Aggregate Class	Neither surface nor subsoils slake when wet (Emerson Class 8). As shallow subsurface irrigation is laid out along the slope with minimal soil exposure, erosion risk can be managed through appropriate timing of soil disturbance and minimising the area of soil exposed at any one time during installation.	High
Seasonal waterlogging	The soil is W*ell drained* and there is no evidence of seasonal waterlogging.	High
Flood risk	According to mapping by Cardno (2014), the site is not located in an area risk of riverine flooding	High
Proximity to watercourses	No watercourses were identified within 50m of site	High
Landslip	Zero potential for landslip	High
Surface gravel & Rock outcrop	No rock outcrop encountered. Despite surface gravels, advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Vegetation	Site supports a mature, mixed woodland with an understorey of shrubs and good grass cover. Site will be cleared of woody vegetation with lawn or pasture like conditions maintained over the irrigation area.	High
Buffer / Setback distances	The setbacks between effluent disposal areas and other site features required in the NT *Code of Practice* (DoH 2014a) are achievable through the installation of secondary treatment systems coupled with sub-surface irrigation disposal.	High
Available land application areas (LAA)	Considering the required LAA setbacks, there is sufficient area to support proposed shallow subsurface irrigation system.	High
Soil Characteristic	Description	Land Capability Rating
Soil depth	Soil depth 0.60m. A, advice from Peter Rintel (Pers comm 2017) indicates that the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High
Soil type and Drainage Class	Well drained, Brown Kandosol.	High
Coarse fragments (%)	Subsoil coarse fragments up to 50%. Advice from Peter Rintel (Pers comm 2017) and Trevor Tyne (Pers comm 2017) indicates that despite coarse fragments, the site is highly suitable for proposed sub-surface irrigation providing irrigation line spacing is at least 1m.	High

Mottling & Depth to watertable	No free water (watertable) was encountered and no mottling was observed in the soil profile. There is no evidence of seasonal high watertable and perched seasonal watertable is considered unlikely	High
LTAR	Clay loam – Soil Category 4 has a design irrigation rate of 3.5mm/day which is within the operationally effective range of values in the NT *Code of Practice* (DoH 2014a).	High
pH	pH range from 6.3 in surface soils to 5.2 in subsoils. The site supports a mature open woodland demonstrating that this range of pH values will not restrict plant growth.	High
Salinity Risk	Measured EC (electrical conductivity) was very low and according to the NT *Dryland Salinity Hazard Map* (Tickell 1994), the risk of dryland salinity at the sites is very low.	High
Sodicity ESP %	Emerson Aggregate test showed that no layers were dispersive. Exchangeable Sodium percentage (ESP) is likely to be much less than 6%	High
Overall Site Capability Rating		**High**

Effluent Disposal Area Calculations

The soil at this site is classified as a Well drained, Moderately deep, Very gravelly Brown Kandosol with the deepest subsoil layer having a soil texture of Clay loam.

As per Table M1 of AS/NZS1547:2012:p160, the design irrigation rate (DIR) relating to Clay loam – Soil Category 4 (3.5mm/day) will be used for sizing of effluent disposal areas.

Site 6 – Shallow, Kandosolic Hydrosol (Yellow earth)

Slope: 1.5%	**Erosion**: nil	**Surface gravel** (%): 0%
Landform: Foot slope	**Surface water** (m): <30m	**Runoff:** Slow
Fill: Nil	**Drainage**: Imperfect to poorly	**Surface**: Brown/grey termitaria
Stopped by: Too gravelly	**Rock outcrop**: nil	
Vegetation: Grassland (Mown) Spear grass, gamba grass, mission grass, Adjoining Woodland: *Corymbia polycarpa, Eucalyptus tetrodonta,* Shrubs: *Lophostemum lactifluus, Planchonia careya, Acacia auriculiformis*		

Soil Horizon (Level)	**A1 (1)**	**A3 (2)**	**B2 (3)**	**C/B (4)**	
Depth (cm)	0 –8	8 - 15	15 – 25	25 – 41+	
Boundary	Clear	Gradual	Gradual		
Field Texture	Clayey sand	Sandy loam	Clay loam	Weathered substrate	
Structure	Massive Earthy	Massive Earthy	Massive Earthy		
pH (1:5 H_20)	5.2	5.6	5.7		
EC dS (1:5 H_20)	0.007	0.006	0.005		
Dominant Colour	7.5YR 3/4 Dark Brown	5YR 3/4 Dark Reddish Brown	2.5YR 2.5/4 Dark Reddish Brown		
Mottles	10% faint	20% faint	20% faint		
Emerson	8	2 (Slaking 1)	2 (Slaking 1)		
Coarse Frags (%)	15	10	40	70	

As this site was assessed to confirm suspect soil properties and is not being considered for onsite wastewater disposal no further assessment was undertaken

Appendix 2 – Sub-surface irrigation design

For use with *Secondary* treated effluent only.

LPED subsurface drip irrigation Hydraulic Design – after AS/NZS1547:2012: Appendix M

1. Obtain hydraulic load (Q, L/d) based on equivalent persons (ep) as per NT *Code of Practice* (DoH 2014a).
2. Obtain design irrigation rate (DIR, mm/d) based on "Table M1" in AS/NZS1547:2012:page160. May need to be adjusted to accommodate site constraints.
3. Obtain irrigation system details:

   A. Irrigation field width : length ratio (R, typically 1-2)

   B. Irrigation drip line spacing (S, m) (typically 1.0 m)

   C. Dripper flow rate (F, L/hour) (typically 4.5 L/hour)

   D. Dripper outlet spacing (B, m) (typically 0.5 m)
4. Determine minimum irrigation area (A, m^2):

   $$A = Q / DIR$$
5. Determine irrigation field width along contour (W, m):

   $$W = \sqrt{A*R} \qquad (\sqrt{} \text{ is square root})$$
6. Determine irrigation field distance down slope (D, m):

   $$D = \sqrt{(A / R)} \qquad (\sqrt{} \text{ is square root})$$
7. Determine irrigation lateral length L, m):

   $$L = W - S = \sqrt{A*R} – S \qquad (\sqrt{} \text{ is square root})$$
8. Determine number of irrigation laterals (N):

   $$N = A/W*S$$
9. Determine minimum pump flow rate in field (P, L/s):

   $$P = F*L*N / 3600*B$$

Note that pump head will be dependent on length of line and static head pumping requirements.

Worked example

Determine irrigation field size and dripper requirements for a 3 bedroom house assuming design capacity is 6 persons in urban/rural living zone (6 x 150 L/day/person = 900L/day). Soil type is a Kandosol with Light clay subsoil (Soil Category 5, DIR 3mm/d).

Irrigation field will be designed to a width : length ratio (R) of 1.5, with drip lines spaced (S) at 1.0 m and dripper outlets spaced (B) every 0.5 m and delivering a flow rate (F) of 4.5 L/dripper/hour.

Determine minimum irrigation area (A, m2):

$$A = Q / DIR = 900 / 3 = 300m^2$$

Determine irrigation field width along contour (W, m):

$$W = \sqrt{A*R} = \sqrt{300} * 1.5 = 21.2m$$

Determine irrigation field distance down slope (D, m):

$$D = \sqrt{(A / R)} = \sqrt{(300 / 1.5)} = 14.1m$$

Determine irrigation lateral length L, m):

$$L = W - S = \sqrt{A*R} – S = 21.2 – 1 = 20.2m$$

Determine number of irrigation laterals (N) (value rounded up to next integer):

$$N = A /W*S = 300 / 21.2*1 = 14.2 \text{ rounded up to } 15$$

Determine minimum pump flow rate in field (P, L/s):

$$P = F*L*N / 3600*B = 4.5*20.2*15 / 3600*0.5 = 1363.5/1800 = 0.76 L/s$$

Construction notes

- Irrigation area must comply with the *Code of Practice* (DoH 2014).including all relevant set-backs
- Irrigation area not to be used for other purposes.
- Maximum drip irrigation line spacing 1000 mm.
- Install irrigation lines along the contour within micro trenches.
- Depending on pipework manufacturer / supplier, irrigation lateral Length (L) may be equivalent to irrigation field width (W).
- All pipework shall be buried to a minimum depth of 150 - 200mm and be rated for 150 % of the pump shut-off head.
- Clay spoil shall not be placed over the constructed micro-trench.
- All drippers shall be pressure compensating.
- Micro-trenches to be covered in at least 100 mm topsoil and grassed.
- Irrigation area boundaries must be delineated by appropriate border.
- To indicate wastewater effluent, pressure compensating drip emitter lines should be purple colour.
- Irrigation area must not be paved over or built on.
- Surface stormwater and sub-surface seepage should be diverted using upslope swales if required.
- Maintenance to be carried out in accordance with manufacturers' specifications

Example subsurface drip irrigation area layout after AS/NZS1547:2012

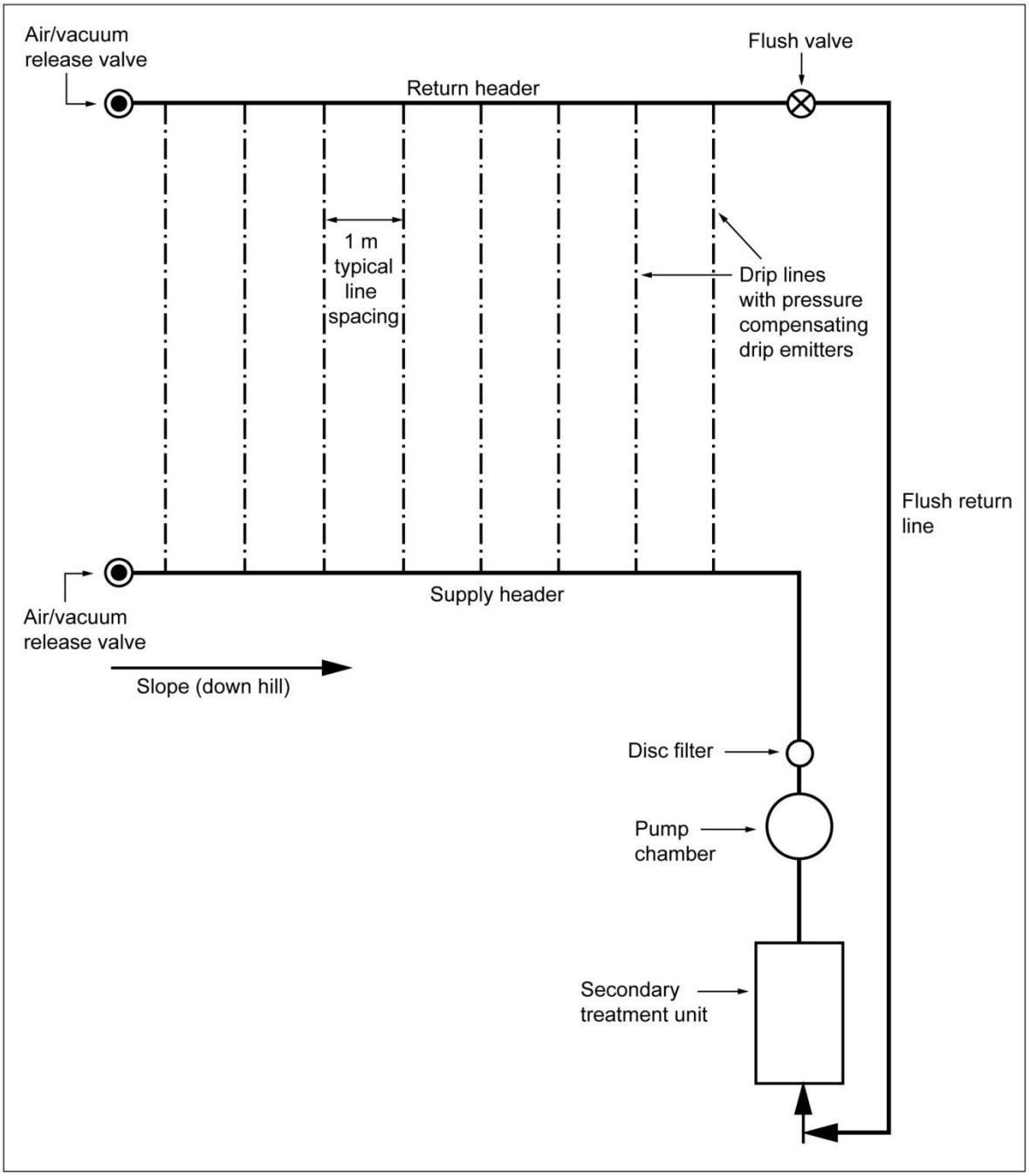


FIGURE M1 DRIP IRRIGATION SYSTEM – EXAMPLE LAYOUT OF COMPONENTS

Flatbed leach drain Hydraulic Design – after AS/NZS1547:2012: Appendix L

Flatbed Irrigation field size calculations

Flatbed panels are 0.5m x 0.6m with a minimum footprint of 0.5m x 2.4m

Bed dimensions determined from equation L1 (AS/NZS1547:2012: Appendix L4.2):

L = Q / (DLR x W)

Where

L = bed length in m

Q = design daily flow in L/day

DLR = design loading rate (Table L1)

W = width in m (standard with for flatbed is 2.4m)

Soils across the site comprise moderately deep, gravelly kandosols.

Subsoil field textures are classified as Categories 4 (Clay loam) and 5 (Silty/light clay) with associated design loading rates (DLR) of 10mm/day and 8mm/day respectively as per Table L1 (AS/NZS1547:2012: Appendix L)

Calculations are based on Light clay subsoil (Soil Category 5, DLR 8mm/d).

Minimum irrigation field size calculated daily flow for domestic dwellings in urban / rural living zone (150 L/day/person) as per NT *Code of Practice* (DoH 2014).

Worked examples

Determine irrigation field size and dripper requirements for standard 3 and 4 bedroom houses 6/8 persons in urban/rural living zone (6 or 8 x 150 L/day/person = 900 L/day and 1200L/day). DLR = 8mm/day for Light clay (Soil Category 5).

3 Bedroom house with daily flow (Q) 900L/day

Determine minimum bed length (L, m): L = Q / (DLR x W)

L = 900 / (8 x 2.4) = 46.9m (rounded up to 47m) x 2.4m flatbed

Or

2 x parallel 23.5m x 2.4m flatbeds

With 1m separation between beds the system footprint is 272.6m^2

4 bedroom house with daily flow (Q) 1200L/day

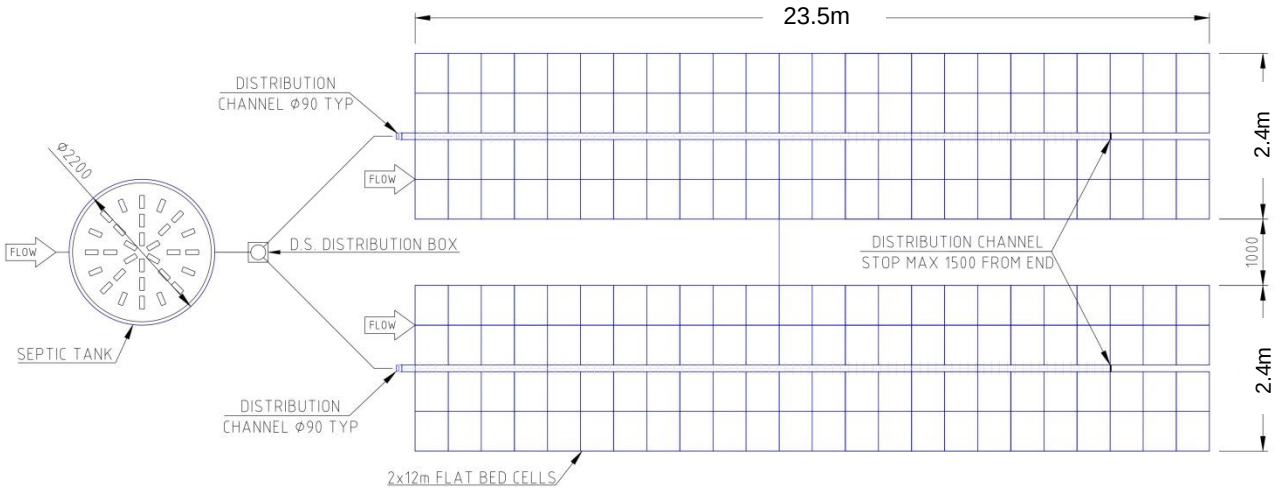
L = 1200 / (8 x 2.4) = 62.5m x 2.4m flatbed

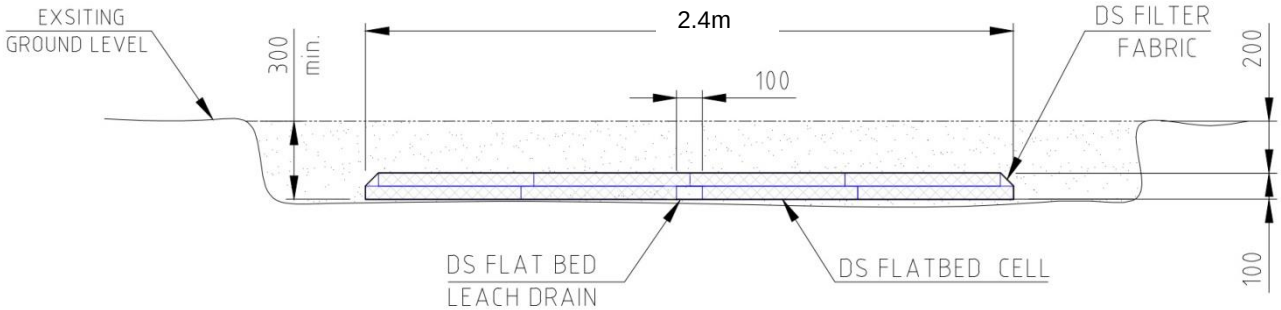
Or

2 x parallel 31.5m x 2.4m flatbeds

With 1m separation between beds the system footprint is 365.4m^2

Example of flatbed system layout as per DS Agencies Flatbed Installation Manual





Construction notes

- Irrigation area must comply with the *Code of Practice* (DoH 2014) including all relevant set-backs.
- Construction techniques as described in AS/NZS1547:2012: Appendix L 7 to be observed in conjunction with the following.
- Installation to be in accordance with DS Agencies Flatbed Installation Manual.
- Ensure that the level bed is prepared to +/- 20mm tolerance and that bed is installed in such a manner that ensures even distribution throughout the entire length of the bed.
- If excavating in gravel / clay soils, use backhoe bucket teeth to scarify the floor to a minimum depth of 50mm
- Clay spoil shall not be placed over the constructed flatbed
- Installation area must not be paved over or built on and is to be protected from vehicular traffic
- Surface stormwater and sub-surface seepage should be diverted using upslope swales if required.
- System to be maintained in accordance with manufacturers' requirements

Appendix 3 – Siting and Setback distances

Extracted and summarised from DoH 2014a. *Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent*

7.5 Proximity of Septic Tank and Disposal Area to Site Features (page 34 – Table 6)			**8.9 Siting and Setback Distances (m) for Aerated Wastewater Treatment Systems (page 76)**
Table 6 Setback Distances to Surface Feature	**Minimum distance required in metres (m) from the closest point of effluent discharge to that site feature**		**8.9.3 Sub Strata/ Shallow Sub-Surface Irrigation**
Site Feature	**1. Upslope from site feature**	**2. Downslope from site feature**	**(* Figures in brackets () from Section 8.9.2 Surface Irrigation)**
Building	6.0	3.0	1.5
Allotment boundary	4.5	2.5	0.5 (*2.5)
Swimming pool	6.0	3.0	1.0
Underground water tank	15	15	See Table 6
Bore or well	100	100	30 (chlorinated) (*30) 50 (unchlorinated) (*50)
Cutting	15	No restriction	See Table 6
Watercourse	50	30	See Table 6
Lake, swamp, etc	50	30	See Table 6
Watercourse from which water supplies extracted	200	100	30 (chlorinated) (*30) 50 (unchlorinated) (*50)
Water supply reservoir	200	100	See Table 6
Sub-surface disposal bed or trench	2.5	2.5	See Table 6
Septic tank	2.5	2.5	See Table 6
Rainwater tank			1.5 (*15)
driveway or paved surface			0.5
Open drain			3.0

NOTES.

1. For flat sites use column 2
2. Refer to Section 8.9 for exceptions to setback distances from site features for Aerated Wastewater Treatment Systems.

Appendix 4 – Glossary

Absorption trench or bed or area **(AS/NZS 1547:2012:12)**	A land application system which uses the principles of absorption (used for the treatment of effluent)
Coarse Fragments (%) **(NCST 2009:139)**	Percent volume by visual assessment of coarse fragments > 2mm diameter (Samples sieved using 2mm wire mesh sieve)
Table E2: Abundance of Coarse Fragments **(AS/NZS 1547:2012)**	Class % of coarse fragments Very few < 2 Few 2 – 10 Common 10 – 20 Many 20 – 50 Abundant 50 – 90 Profuse > 90
Cryptogam **(NCST 2009:190)**	Thin, more or less continuous crust of biologically stabilised soil material usually due to algae, liverworts and mosses
Depth of Soil (cm) **(Isbell 2002)**	Class Depth (cm) Very shallow : < 0.25 m Shallow: 0.25 - < 0.5 m Moderate: 0.5 - < 1.0 m Deep: 1.0 - < 1.5 m Very deep: 1.5 - 5 m Giant: > 5 m
Dispersive soil **(AS/NZS 1547:2012:13)**	A soil that has the ability to pass rapidly into suspension in water
DIR – Design Irrigation Rate (mm/day) **(AS/NZS 1547:2012:13)**	The loading rate that applies to the distribution of effluent to the design area of an irrigation land application system, expressed in L/m^2/day or mm/day (Table M1) DIR reductions apply for steep slopes over 10% (Table M2)
DLR - Design Loading Rate (mm/day) **(AS/NZS 1547:2012:13)**	The loading rate that applies to the distribution of effluent to the design area of an absorption trench or bed or mound land application system, expressed in L/m^2/day or mm/day, and equivalent to the LTAR of the land application system reduced by a factor of safety
Dominant Colour	Based on moist colour using Munsell Soil Color Charts
Drainage **(NCST 2009:202)**	*Drainage* is a useful term to summarise local soil wetness conditions; that is, it provides a statement about soil and site drainage likely to occur in most years. It is affected by a number of attributes, both internal and external, that may act separately or together. Internal attributes include soil structure texture, porosity, hydraulic conductivity, and water-holding capacity, while external attributes are source and quality of water, evapotranspiration, gradient and length of slope, and position in the landscape
Drainage Classes **(NCST 2009:202-204)**	*Very poorly drained* - water is removed from the soil so slowly that the water table remains at or near the surface for most of the year. Surface flow, groundwater and subsurface flow are major sources of water, although precipitation may be

	important where there is a perched water table and precipitation exceeds evapotranspiration. Soils have a wide range in texture and depth, and often occur in depressed sites. Strong gleying and accumulation of surface organic matter are usually features of most soils. *Poorly drained* - water is removed very slowly in relation to supply. Subsurface and/or groundwater flow, as well as precipitation, may be a significant water source. Seasonal ponding, resulting from runon and insufficient outfall, also occurs. A perched water table may be present. Soils have a wide range in texture and depth; many have horizons that are gleyed, mottled, or possess orange or rusty linings of root channels.. All horizons remain wet for periods of several months *Imperfectly drained* - water is removed only slowly in relation to supply. Precipitation is the main source if available water storage capacity is high, but subsurface flow and/or groundwater contribute as available water storage capacity decreases. Soils have a wide range in texture and depth. Some horizons may be mottled and/or have orange or rusty linings of root channels, and are wet for periods of several weeks. *Moderately well-drained* - water is removed from the soil somewhat slowly in relation to supply, due to low permeability, shallow water table, lack of gradient, or some combination of these. Significant additions of water by subsurface flow are necessary in coarse-textured soils. Some horizons may remain wet for as long as one week after water addition. *Well- drained* - water is removed from the soil readily but not rapidly. Excess water flows downward readily into underlying, moderately permeable material or laterally as subsurface flow. The soils are often medium in texture. Some horizons may remain wet for several days after water addition. *Rapidly drained* - water is removed from the soil rapidly in relation to supply. Excess water flows downward rapidly if underlying material is highly permeable. There may be rapid subsurface lateral flow during heavy rainfall provided there is a steep gradient. Soils are usually coarse-textured, or shallow, or both. No horizon is normally wet for more than several hours after water addition.
EC dS/m (1:5 $H_2$0)	Electrical conductivity (EC) of a soil water solution mixed at a ratio of 1 soil : 5 distilled water measured using Hanna Instruments EC Meter Model EC-3 in µS/cm (Note: To convert µS/cm to dS/m divide by 1000)
Emerson Aggregate Test (Amended) **(Patterson 2013)**	Amended Emerson Aggregate Test using distilled water Class 1 - Slaking with Complete Dispersion Class 2 – Slaking with Some Dispersion Slaking (Class 2) Class 2 Slake 1 – Slight slaking Class 2 Slake 2 – About half slaked Class 2 Slake 3 – Fully slaked Class 7 – Swelling, No Slaking Class 8 – No Swelling, No Slaking Note: 1. For wastewater management, soils are not physically disturbed (ploughed) therefore the remould component of Emmerson Test not relevant (Patterson 2013) 2. Non-dispersive, slaking subsoil are not an issue for effluent disposal (Patterson 2013)
Erosion **(NCST 2009:133-138)**	removal or transport of soil by water and/or wind *Sheet erosion* - This is the relatively uniform removal of soil from an area without

	the development of conspicuous channels. *Rill erosion* - a small channel up to 0.3 m deep, which can be largely obliterated by tillage operations *Gully erosion* - gully is a channel more than 0.3 m deep.
Field Texture **(NCST 2009:164-166)**	Behaviour of moist bolus - soil particles < 2mm diameter *S Sand* - Clay content commonly less than 5% *LS Loamy sand* - Approximate clay content about 5% *CS Clayey sand* - Approximate clay content 5%–10% *SL Sandy loam* - Approximate clay content 10%–20% *L Loam* - Approximate clay content about 25% *ZL Silty loam* - Approximate clay content about 25% with silt 25% or more. *SCL Sandy clay loam* - Approximate clay content 20%–30% *CL Clay loam* - Approximate clay content 30%–35% *CLS Clay loam, sandy* - Approximate clay content 30%–35% *ZCL Silty clay loam* - Approximate clay content 30%–35% and with silt 25% or more. *LC Light clay* - Approximate clay content 35%–40% *LMC Light medium clay* - Approximate clay content 40%–45% *MC Medium clay* - Approximate clay content 45%–55% *MHC Medium heavy clay* - Approximate clay content 50% or more. *HC Heavy clay* - Approximate clay content 50% or more.
Fine earth	Mineral soil particles less than 2 mm in diameter comprising sand, silt and clay.
GPS	Global Positioning System
Horizon Boundary **(NCST 2009:199)**	Width of boundary Sharp <5 mm Abrupt 5–20 mm Clear 20–50 mm Gradual50–100 mm Diffuse >100 mm
Impermeable layer **(AS/NZS 1547:2012:14)**	Soil layer with permeability less than 10% of that of the overlaying soil layer. The term 'impermeable' is not to be taken in a literal sense
Land unit **(Aldrick & Robinson 1970)**	"a reasonably homogeneous part of the land surface, distinct from surrounding terrain with consistent properties in landform, soils and vegetation" *a land unit* "exhibits an essentially uniform pattern on aerial photographs"
Lithosols **Stace *et al* (1968)**	Essentially stony or gravelly soils lacking horizon development … and … usually contain a large proportion of coarse-textured material.
LTAR - Long-term acceptance rate **(AS/NZS 1547:2012:15)**	The steady state rate that a land application system can absorb primary or secondary effluent for further treatment within the subsoil. It allows for loss to the soil by infiltration through the base and side walls of the system and other losses to the atmosphere by evaporation and transpiration.
LPED irrigation **(AS/NZS 1547:2012:15)**	Shallow subsurface irrigation of effluent into topsoil through low pressure effluent distribution (LPED) lines. An LPED line is a pressure line perforated with drilled squirt holes and nestled in a distribution line.

MGA94	Map Grid of Australia 1994 (MGA94) - Grid coordinates: Universal Transverse Mercator (UTM), using the GRS80 ellipsoid UTM Zones in the Northern Territory are zone 52 and zone 53
Mottles **(Moore 2004)**	Mottles can be seen as a pattern of spots or blotches of different colour interspersed within the dominant matrix soil colour. They are concentrations of iron oxides which have resulted from the redistribution of iron oxides due to alternating episodes of aerobic and anaerobic (ie oxidising and reducing) soil conditions common in seasonally waterlogged soils.
Mottles (%)	Percentage estimate by visual assessment on surface of soil ped.
On-site system **(AS/NZS 1547:2012:15)**	An on-site domestic wastewater management system that receives, treats, and applies wastewater to a land application system or a holding tank
Perched water table **(AS/NZS 1547:2012:15)**	Groundwater that has beneath it unsaturated soil material into which the groundwater drains NOTE: A perched water table is nearly always periodic or seasonal.
pH (1:5 H_20)	pH of a soil water solution mixed at a ratio of 1 soil : 5 distilled water measured using a Hanna Instruments pH Meter Model: pHep
RELN drains	A domed (plastic) leach drain installed subsurface in trenches and beds
Reserve area **(AS/NZS 1547:2012:16)**	An area set aside for future use as a land application area to replace or extend the original land application system
Runon	Overland flow (runoff) across site from land upslope
Saprolite **(NCST 2009:223)**	a particular form of decomposed rock. It is characterised by the preservation of structures (including 'texture' in the petrological sense) that were present in the unweathered rock.
Secondary treatment **(AS/NZS 1547:2012:16)**	Aerobic biological processing and settling or filtering of effluent received from a primary treatment unit
Soil Category **(AS/NZS 1547:2012)**	As per Table 5.1 (p39) – assessment based on soil drainage, structure, texture, structural stability (dispersiveness) and indicative soil permeability of the soil that is required to filter, isolate, and absorb wastewater microorganisms, nutrients, and particles, in the soil absorption zone It should be based on the most restrictive soil layer within the clearance depth set by the regulatory authority, and not the shallower soils within which the land application system is installed (Note C5..2.3.1:p40)
Soil Classification **(ASC, GSG, USC)**	**ASC** – Australian soil Classification – Isbell (2002) **GSG** – Great Soil Group – Stace *et al* (1968) Unified Soil Classification – engineering soil classification
Soil Structure / Fabric **(NCST 2009)**	*Massive* – coherent, apedal soil (lacking observable peds) *Earthy* – porous soil fabric characterised by the presence of pores (voids) but few if any peds
Surface crust **(NCST 2009)**	Distinct surface layer, often laminated, ranging in thickness from a few millimetres to a few tens of millimetres, which is hard and brittle when dry and cannot be readily separated from, and lifted off, the underlying soil material.
Waning **(AS/NZS 1547:2012:92)**	Element up-slope is steeper; element down-slope is gentler; thus water is progressively slowed down as it runs off, promoting soil wetness

Watercourse **(AS/NZS 1547:2012:18)**	A stream that: (a) Has visible bed and banks, that is, an eroded channel no matter how small but not a defined non-eroded grassy course or drainage depression; and (b) Is partially fed with water from some source other than surface water run-off (for example, springs, snowfields, or spongy soil that absorbs rainfall and then releases it into the stream over a longer period)
Watercourse Upstream Limit	The Upstream Limit of a watercourse is evident by the discontinuity of the incised channel and/or lack of riverine/riparian vegetation species.

NORTHERN TERRITORY OF AUSTRALIA

Planning Act

AMENDMENT TO NT PLANNING SCHEME

I, DAVID WILLIAM TOLLNER, Minister for Lands and Planning, under section 25(2)(c) of the *Planning Act*, amend the NT Planning Scheme by making the amendment, specified in the Schedule.

Dated 1/6/ 2016.

Minister for Lands and Planning

SCHEDULE

AMENDMENT TO NT PLANNING SCHEME

AMENDMENT No. 446

1. Citation

This amendment to the NT Planning Scheme may be cited as Amendment No. 446.

2. Definition

In this amendment –

"amending map" means the map, signed by the Minister for Lands, Planning and the Environment and marked "NT Planning Scheme Amendment No. 446", deposited in the office of the Department of Lands, Planning and the Environment, Darwin;

"zoning map" means the zoning map within the meaning of the NT Planning Scheme.

3. Amendment of Zoning Map

The NT Planning Scheme is amended by amending the zoning map relating to Litchfield to the extent of its inconsistency with the amending map in respect of the area of land shown on the amending map bounded by a thick black line and lettered **S**L18 which is Lots 16, 17 and 24 LTO 67/002 and Sections 4185, 4579 and 4580 Hundred of Strangways.

4. Amendment to Schedule 1 to Clause 2.4

The NT Planning Scheme is amended by:

(a) Amending Schedule 1 to Clause 2.4 – Specific Uses to introduce **S**L18 (Specific Use Zone Litchfield No. 18):

SL18

Lots 16, 17 and 24 LTO 67/002 and Sections 4185, 4579 and 4580 Hundred of Strangways (155A, 155B, 155C, 175, 195 and 205 Lowther Road, Bees Creek).

1. The purpose of this zone is to provide for the rural residential use and development of the land in a manner that responds to the physical characteristics of the land, its location, availability of services and the **amenity** of the locality.
2. Development shall be in accordance with Clause 5.18 and Part 5 as if the land were located in Zone RR (Rural Residential) except to the extent of any conflict with the following conditions:

   (a) The minimum lot size pursuant to the Table to Clause 11.1.1 shall be 1ha.

   (b) Clause 11.4.5 *Subdivision of Land Zoned RR,* subclause 2(a) is not applicable to the subdivision of the land.

   (c) All built form shall have a minimum 20m setback to the boundary to Lowther Road. This setback area shall be required to be re-vegetated to provide a visual buffer of a minimum width of 10m as a condition of a development permit for subdivision of the land.

   (d) All built form shall have a minimum 15m setback to the external boundaries of the subject land where the adjoining land is within Zone RL (Rural Living). This setback area shall be required to be re-vegetated to a minimum depth of 10m, located outside that area required for a firebreak, to provide a visual buffer as a condition of a development permit for subdivision of the land.

   (e) **Clearing of vegetation** retained or established pursuant to subclause 2(d) and 2(e) above is prohibited, other than for the purpose of the establishment or maintenance of a firebreak up to 5m

wide along the boundary of a lot or if the clearing is otherwise required or controlled under any Act in force in the Territory.

(f) Prior to an application for a development permit for subdivision of the land, a vulnerable flora survey shall be undertaken in accordance with the requirements of the department responsible for the implementation of the *Territory Parks and Wildlife Conservation Act* and measures for the management of any identified vulnerable species shall be reflected in the proposed subdivision plan.

(g) No substantial tree may be felled or removed except where reasonably necessary for the construction of a **dwelling** and uses ancillary to that **dwelling** or for removal of a tree that is dead, dying or dangerous.

For the purpose of this clause a substantial tree is a tree with a trunk diameter of minimum 100mm at 1m above ground level.

(h) Roads shall be designed to:
   i. interconnect with the existing road network;
   ii. provide for connections to potential future subdivision of adjoining lands; and
   iii. prevent individual lot access to major roads.

(i) An application for subdivision of the land shall include a Wastewater Management Plan (WMP) approved by the Department of Health: Environmental Health which as a minimum shall include the following:
   i. a Land Capability Assessment for the **site** undertaken in accordance with the Environmental Health *Guidelines for Land Capability Assessment for On-site Wastewater Management* (March 2014);
   ii. the identification of any proposed lots which do not achieve at least a high capability for onsite effluent disposal based on physical and chemical characteristics of the **site** taking into account proposed subdivision **site** works;
   iii. for all lots identified in 2(i)(ii) the specification of works to be undertaken to introduce amended soils or alter the ground conditions as required so that the **site** physical and chemical characteristics meet a minimum of a moderate capability for onsite effluent disposal. The identification of these works is to be undertaken concurrently with, and be consistent with, the preparation and outcomes of a stormwater management plan prepared for the **site**;
   iv. the identification of a wastewater treatment system and an associated sub-surface irrigation envelope for each lot that provides sufficient area and capability for onsite effluent disposal to service a **single dwelling**;
   v. the requirement for all development to be undertaken in accordance with the approved

WMP shall be registered as a notification on title of the parent lot, to apply to each lot created, as a condition of a development permit for a subdivision of the land;

vi. all works identified in the approved WMP to achieve the minimum required onsite effluent disposal capability shall be undertaken as a condition of a development permit for subdivision of the land; and

vii. each **dwelling** shall be connected to a Department of Health approved wastewater treatment system that provides secondary treatment and, with the associated sub-surface irrigation system, shall be located within the wastewater disposal envelope for that lot as designated in the approved WMP.

NT PLANNING SCHEME AMENDMENT No. 446
SECTIONS 4185, 4580 & 4579 & LOTS 16, 17 & 24, LTO 67/002
HUNDRED OF STRANGWAYS

MINISTER FOR LANDS AND PLANNING

Date 1/6/16

Northern Territory Government

Department of Lands, Planning and the Environment

0 80 160 240 320 400m

Scale 1: 8000 @ A4

File No. PA2014/0450
Date: 18-Apr-16
Drawing Name: Sec 4185 4579 4580 Strangways.dgn

NORTHERN TERRITORY OF AUSTRALIA

Planning Act
Section 29

Reasons for Decision

NORTHERN TERRITORY PLANNING SCHEME

AMENDMENT No. 446

Lots 16, 17 and 24 and Sections 4185, 4579 and 4580 Hundred of Strangways (155A, 155B, 155C, 205, 195 and 175 Lowther Road, Bees Creek) is suitable for rezoning from Zone RL (Rural Living) to Zone SL18 (Specific Use Zone Litchfield No. 18)

Specifically, this rezoning is suitable because:

- the amendment is generally consistent with existing and proposed policy and the provisions of the Scheme relating to subdivision of Zone RR (Rural Residential);
- the rezoning will contribute to the development of a diversity of affordable housing in close proximity to the Coolalinga and Freds Pass Rural Activity Centre; and
- the specific use zone includes stringent requirements in relation to building setbacks, the management of wastewater and the clearing of vegetation, which will minimise any possible impacts on adjoining lots.

DAVID WILLIAM TOLLNER
Minister for Lands and Planning

1 / 6 / 2016

STORMWATER MANAGEMENT PLAN, DA1

Localised Stormwater Flooding

Companion document for preliminary Wastewater Management Plan (WMP)

SUBDIVISION OF:

SPECIFIC USE ZONE SL18

Lots 16 & 17 LTO 73/01 and SECTIONS 4185, 4579 & 4580

(155A, 155B, 175, 195 and 205 Lowther Road)

and

PUBLIC ROAD IN:

ZONE RL, Lot 14 LTO 69/09, Thorburn Road

(296 Bees Creek Road)

Hundred of Strangways

Bees Creek

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1. SUMMARY:

This Report is a companion document for the WMP which was approved before the development application was submitted.

The site has no defined watercourses but has recognisable drainage paths which are to be retained in residual areas. The headwaters of the 1% AEP event for 2100, for the Burdens Creek catchment, impacts on residual areas. No mitigation measures are proposed. Internal stormwater drainage shall use a combination of overland flow across lots, kerb & gutter and underground pipes and, open drains at rural type road cross sections and as cut-off drains in selected locations. Existing flow into the site is maintained unimpeded. The original north/east external catchment is smaller; flow is partly diverted away from the site by the Lowther Road embankment. Outflow is unimpeded at existing locations with flow-rates approximating existing conditions. Proposed works are concept-only; subject to detail design and approval by Council following issue of a development permit.

2. ADEQUATE DRAINAGE:

The subdivision development is required to provide adequate drainage within road reserves and in areas reserved for drainage purposes.

3. PHASES OF THE PROJECT:

3.1 Pre-Application Phase:

Water resources of the area, including localised stormwater and riverine flooding, was one of the first considerations when identifying potential development of the parcel.

Design of the subdivision layout has considered the physical characteristics of the land and available information regarding flooding and, reflects planning provisions related to stormwater.
Input has been provided in respect of:-

- surface flow at designated wastewater envelopes,
- proposed road-types and associated stormwater drainage infrastructure,
- appropriate drainage associated with other proposed Land Improvements,
- a range of matters associated with subdivision.

Outcomes from this phase are conceptual and are subject to detail design which shall be based on accurate survey information.

3.2 Application (DA1):

This Report addresses most of those stormwater related provisions in Part 5 of the Planning Scheme that should not be addressed under 46(3)(a) of the Act. Clauses 11.4.1 to 11.4.3 have been used as references for matters of interest in respect of development assessment.
It also addresses concepts for subsequent detail design and construction.

The Title of this Report (Stormwater Management Plan, DA1) derives from SL18 Clause 2(i) and from NT-Planning Scheme Fact Sheet re Clause 11.4.1. This Report shall be partly superseded by any similarly-named stormwater management plan (drawing(s)) that may be required pursuant to Council's proposed 2017 Guidelines during the construction phase.

3.3 Active Development Phase:

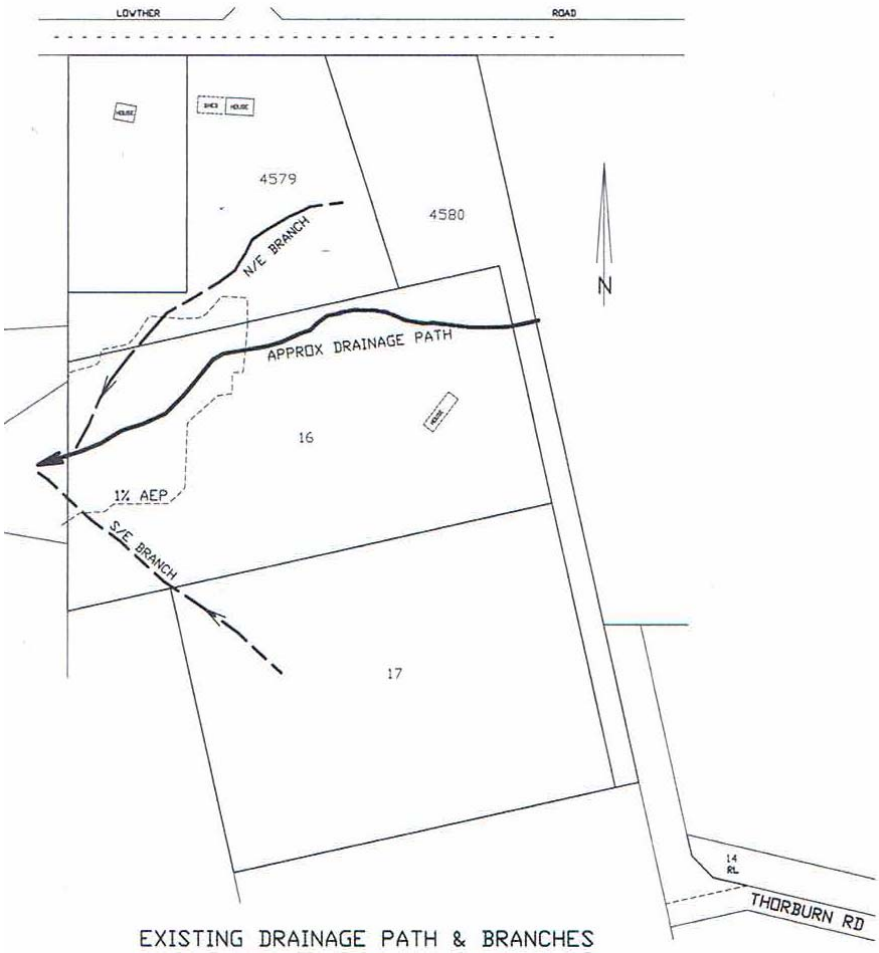
Drainage works within road reserves and easements shall be designed in accordance with Council's technical requirements. Drainage works elsewhere shall be designed to compatible standards. Detail design shall extend into subsequent stages as required to ensure the proper functioning of each stage.

Construction shall be carried out in accordance with approved design plans, specifications and any companion documents such as erosion and sediment control plans and the WMP.

On completion of each stage, relevant works shall be handed over to the Council for care and maintenance as part of roadworks.

4. BROAD DESCRIPTION OF THE SITE:

The main drainage feature of the site is a generally east to west drainage path with no defined watercourse situated mainly within Lot 16. The western end of this path is subject to the NTG 1% AEP floodline event for 2100.
There are two minor tributary-drainage-paths that join the main path near the west boundary; one from the N/E and one from the S/E.



EXISTING DRAINAGE PATH & BRANCHES

Elsewhere, the site is elevated. The site has two minor elevated areas that drain by broad surface flow across west boundaries independently of the main path.

Cont'd

The site is subject to external catchments; the largest is situated to the east and north/east. On a broad scale, external catchments as applicable after Lowther Road was constructed are able to discharge into the site unimpeded at about natural locations.
The N/E tributary has undergone significant changes; less than 5% of its original or natural external catchment contributes. Flow along this tributary is about half its natural flow.

Discharge from the site is at approximately natural locations and, flow is largely unimpeded, except as below.

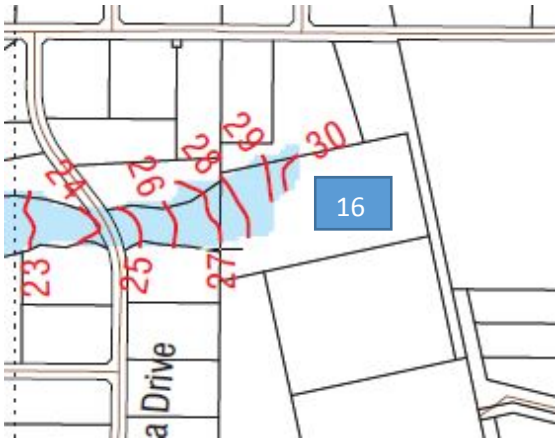
Flooding of a type predicted for the 2100 1% AEP event has not been seen locally. The predicted inundation of Lot 16 indicates that flood levels in the Burdens Creek system shall retard flow in its tributaries including at upper reaches such as at Lot 16, causing a rise in water-levels. Analysis of the prediction for this location indicates the predicted extent of flooding shall be short duration during actual rainfall; with levels receding immediately heavy rainfall ceases.

Flow along the main east to west drainage path through the site is otherwise largely unimpeded. The path, whilst not unaltered, has substantial areas of natural terrain with areas of natural vegetation some of which may be regrowth after clearing.

5. POTENTIAL IMPACT ON NEIGHBOURING DOWNSTREAM LAND:

5.1 Impact in 1% AEP Event:

The main drainage path across the site discharges from Lot 16 into Sec 4314 which is flanked by 2ha rural living lots. The 1% AEP flood line for 2100 impacts all of Sec 4314 and part of the site, mainly Lot 16. Flood levels impacting the site range from 27.0 to 30.2 (approx) AHD.



The diagram above is an enlarged excerpt from NTG flood forecast mapping; the numbers and associated lines are computed contours to AHD of forecast water surface levels in a 1% AEP event covering all of the Burdens Creek catchment. Computations consider storm surge levels for the Elizabeth River. Sec 4314 in the diagram straddles Goodenia Drive; it was set aside as a drainage reserve; since zoned CN. The level of Goodenia Drive is 25.1 AHD.
The extent of flooding as indicated by NTG mapping does not directly impact on DA1 other than the residual area of Lot 16 and consolidated Sec 4579; both of which are to be developed in DA2.
The computed flood model allows for future development in the catchment; such development includes subdivision of the subject parcel of land.
An area of about 0.5ha in the south/west corner of Lot 17 is below 30.2 AHD but it is at the headwater of a different catchment/drainage-system and not impacted by 1% AEP.

The proposal is to adopt the above extent of flooding for the DA1 Development Application and to review the need for a more accurate extent during detail design of Road A and associated drainage. (accurate extent of flooding is proposed to be determined during detail design phase of DA2; accurate ground-levels have already obtained for Sec 4314; further survey is required in Lot 16 and Sec 4579 and, certain other parameters need to be obtained before the computed model can be confidently fitted to an actual terrain model).
Flood levels computed as per Council's guidelines shall be below the 1% AEP event levels for 2100.

5.2 Impact in a Localised Stormwater Design-Event:

5.2.1 Flow Rate into Sec 4314 at West Boundary of Lot 16:

m^3/s				
	5 YR I=85 mm/hr	**10 YR** I=94 mm/hr	**50 YR** I=106 mm/hr	**100 YR** I=137 mm/hr
Existing	8.03	8.88	10.02	12.95
Post DA1	8.07	8.92	10.06	13.00

The post-DA1 increase is approximately 0.4%.

5.2.2 Extent of Flooding in Sec 4314 in Localised Stormwater Design-Events:

Water surface levels in a ARI 100 event are below the levels of 1% AEP event for 2100.
The adjacent 2ha lots have adequate freeboard enabling surface runoff into Sec 4314.
The culvert in Goodenia Road has apparently operated satisfactorily since constructed in about 2000; no overtopping or unusual maintenance issues.

5.3 Impact of lot 9 on Sec 4271:

There may be a small positive impact (improvement) as a result of the proposed vegetation buffer.

The buffer may marginally slow overland flow and also act as a filter in respect of water quality.

Otherwise, the development of lot 9 amounts to a boundary re-adjustment at an existing dwelling.

Sec 4271 could potentially discharge stormwater into Sec 4314 via an existing easement; subject to Council approval.

6. POTENTIAL IMPACT ON THE 1ha IDENTIFIED AS UNCONSTRAINED LAND:

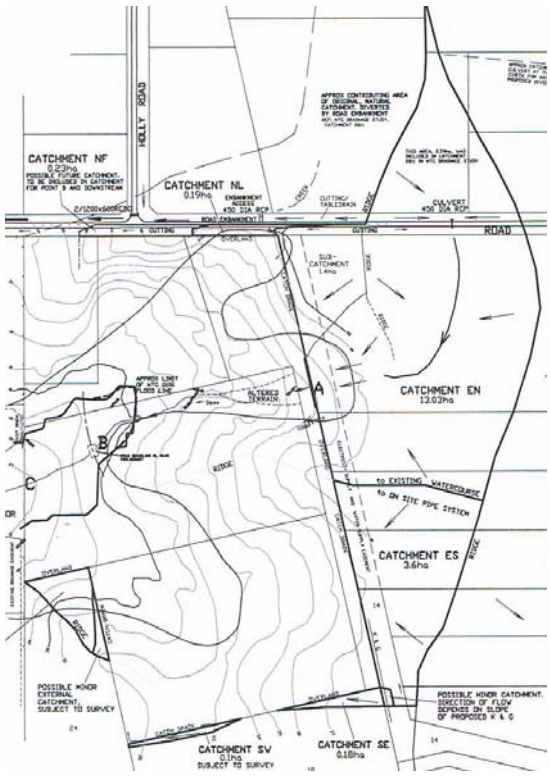
6.1 Identified One-Hectare Above 1% AEP Event:

The proposed design-parameter is for each nominal 1ha lot (lots 1-11) to have at least 1ha of land above the 1% AEP flood level (defined in Clause 6.14 in the Planning Scheme) and, that land shall be at least Land Suitability Class 2 and be adequately drained by surface flow during a Q100 design-event.
The range of 1% AEP flood levels impacting the parcel is 27.0 to 30.2 (approx.) AHD.

The natural ground levels of 1ha areas within lots 1-5 and 7-11 have adequate freeboard above 1% AEP flood levels; the lowest point is 31.1 at the west corner of lot 5 or, 0.9m freeboard.
Lot 6 is adjacent to proposed roads and is to have land improvements to enable overland flow in the lot to drain into roadside drains. The minimum finished surface levels in lot 6 shall be governed by design levels of the road-verge. The road itself is required to be above 1% AEP flood levels; the centreline may be RL30.4 however there are a number of detail design factors that need to be finalised before levels and gradients are adopted. It is anticipated that the west boundary of lot 6 shall have a minimum level of at least 30.5 and, any point along the boundary shall be above the road centreline immediately opposite such point.

6.2. External Catchments:

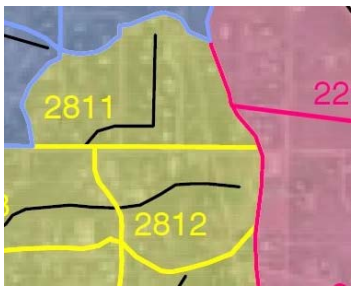
External catchments are shown on drawing no 1665/EC2, Stormwater EXTERNAL CATCHMENTS (Appendix C). External catchments have all undergone varying degrees of alteration.



Excerpt from drg no. 1665/EC2

6.2.1 Altered External Catchment EN:

Significant changes to the natural catchment north/east catchment has occurred as a result of the construction of Lowther Road in about 1985, as noted on 1665/EC2.
The original or natural north/east catchment was interpreted using a NT Government contour map pre-dating Lowther Road construction; a plan of original catchment is in Appendix B.
Current catchment EN has been checked as follows:-
a) Site visits, to confirm locations of existing culverts, embankments and other drainage features,
b) detail survey of Lowther Road immediately north of the land,
c) catchment 2811 and 2812 adopted in a Report for the NT Government, used as the basis for 1% AEP mapping.
Yellow lines indicate catchment boundaries; the east/west yellow line is Lowther Road. The eastern portion of 2811 once discharged across the Lowther Road reserve through Lot 15 LTO 73/01 (now Sec 4579 & 4580). Discharge from a near-east portion was diverted to the west as part of the construction of Lowther Rd. The most easterly portion discharges to the south via a culvert under Lowther Road.



d) meeting with Council; land north of Lowther Road is to drain to the west.

The current catchment, interpreted from the above investigations, is used for this project.

Sec 4580 was created in about 2001; external catchments had already been altered and the land, including the area of 5b1, was evidently considered suitable as a nominal 2ha rural living lot.

6.2.2 Effect of Altered External Catchment EN:

The main effect of diversion of the external catchment to the west, away from Sec 4579 & 4580, is elimination of runon from that catchment into the 5b1 type terrain within Sec 4580 and a corresponding reduction of flow in Sec 4579.
The embankment in Lowther Road has been examined for the possibility of overtopping in a 1% AEP type event; it is considered overtopping can only occur near Holly Road and, such excess shall continue west along Lowther Road and have no direct impact on the site (Sec 4158, 4579 or 4580).
Overtopping could temporarily impact on access/egress at Sec 4158.
A Land Assessment considered that the land within the regular area of Sec 4580 may be classed as S2 or better after suitable Land Improvements.

The brief for stormwater assessment included the proposal to subdivide Sec 4580 into one 1ha lot and to divert the remnant external catchment, situated next to the east boundary, to the south towards the main drainage path in Lot 16. The diversion drain shall have ARI 100 capacity without increasing existing depth of flow across the east boundary. The soils in the 1ha area shall be treated to overcome slow-infiltration through existing crusts and, finished surface levels may be increased and graded to provide the diversion drain with adequate capacity and with suitable freeboard. The diversion drain shall be incorporated into the vegetation buffer to create a riparian-type feature. Overall drainage of the 1ha area shall be towards the south/west, similar to existing, generally towards future Road C. The east firebreak shall be located along the west side of the vegetation buffer.

Cont'd

The above proposal revealed that it is desirable to divert a small external catchment, at a terrain-low-spot within the south verge of Lowther Road, to the west in stages. The first stage shall be undertaken as part of DA1 Stage 2 discharging into Sec 4579A similar to existing, and the second stage in DA2 where the table drain may connect to new underground systems.

6.2.3 Effect of Other Altered External Catchments:

All external catchments are in an altered state. The main body of external catchments have been altered in a variety of ways associated with rural living. Generally, there is a reduction in density of vegetation although grass and other ground cover overall may be on par with natural pockets. Numerous buildings and other impervious areas exist. Overall runoff may be greater than the previous natural situation.

Flow across the east boundary and across the southern boundary is no longer 'natural'. Tracks exist parallel to perimeter boundaries within neighbouring land; the east track within the PWC easement has shallow table drains with offlets into the site. Effects of tracks on flow across boundaries shall be updated and checked in more detail during the design phase.

6.3 Potential Impact of External Catchments on the 1ha Unconstrained Land:

A design-parameter for this project is to allow runon (from upslope, external catchments in RL land) to cross boundaries unimpeded. Once flow is within a lot, it can be managed, if necessary.

The following Table sets out lots that are impacted by external catchments; the largest external catchment for a 1ha lot is 1.2ha at lot 10 (discussed in 6.2.2).

Lot	Boundary	flow enabled thru' lot	Diversion inside lot, adjacent to upslope boundary	External diversion
1	Sth & east	0.16 (+/-?)ha from Lot 18	nil	east catchment captured by Road W.
2	East & nth	0.08ha, north bdry, via lot 3, top-portion of large storms	east catchment captured inside east boundary by a proposed drain.	exist shallow drain along PWC maintenance track, discharge into lot 2
3	East; a) sth of ridge, b) nth cnr.	a) S/E cnr; 0.08ha, can be captured and discharged into drain in lot 2. b) minor, can be captured and discharged into Sec 4579B.	Can be provided	exist shallow drains along PWC maintenance track
4		nil	nil	nil
5		nil	nil	nil
6		nil	nil (future downslope subsoil drains provide benefit)	nil
7	east	0.08ha, via lots 2 & 3 (see lot 3 this column (a).	Can be provided (downslope subsoil drains provide benefit)	nil
8	a) East b)east-end of sth.	0.18 (+/-)ha mainly via lot 1	nil	a) See lot 1. b) Exist track & firebreak partially divert flow.
9		Nil, incidental at nth access strip.	nil	nil
10	a) east, b) nth	Nil, except b) incidental at access strip.	a) 1.2ha, east catchment captured inside east boundary by proposed drains, discharge into Sec 4579B. b) possible subsoil drain connected to a).	a) exist shallow drain along PWC maintenance track. b) 0.19ha, new fill & table drain in road, divert to west.
11	East & sth	a) 0.18 (+/-)ha mainly via lots 1 & 8 b)0.1(+/-)ha from Lot 18	a) Can be provided. Possible subsoil drain(s) b) diversion drain around fill.	Exist track & firebreak partially divert flow.

Residual areas not included in the above Table.

6.4 Potential Impact of Upslope lots on the 1ha Unconstrained Land:

Lots which are impacted by runon from upslope lots:

Lot	Quantity of upslope lots	Sub-catchment areas, in upslope lots	Catchment areas in upslope lots	Typical ground-slope in lot, %	Approx flow path width, m & ha/m
~~1~~	0 (typ)				
~~2~~					
~~3~~					
4	1	a) south of ridge: 0.2ha b) north of ridge: 0.2ha	0.4	3	170
5	2	a) south of ridge, lot 4: 0.4ha lot 3: 0.2ha, total 0.6ha b) north of ridge, 0.3ha	0.9	3	140
6	3	a) south of ridge, lot 5: 0.4ha lot 4: 0.4ha lot 3: 0.1ha, total 0.9ha b) north of ridge: 0.3ha	1.2	2	140
7	2	a) lot 2: 0.9ha b) lot 3: 0.6ha	**1.5**	2	120 0.013ha/m
8	1	a) south of ridge: 0.4ha b) north of ridge: 0.1ha	0.5	3	100
~~9~~					
~~10~~					
11	2	south of ridge: 0.9ha	0.9	**1.5**	**90** 0.01ha/m
	Low number	Best feature in col 2, 4, 5 & 6 above	Low number	High number	Long length - Low ha/m
	lots for checking flow depth across boundary;		lot 7	lot 11	lot 11 - 7

Assess potential flow depth across upslope boundaries for lots 7 and 11; include also relevant external catchment areas (Table in 6.2); Lot 7, 0.08ha: Lot 11, 0.18ha:

Data	**Flow across upslope boundary**		
I_{100} use 300mm/hr, C=0.8, Q_{100} lot 7= 1.05, lot 11= 0.72 m^3/s	**V, possible range,** m/s	**Ave. Depth lot 7,** mm	**Ave. Depth lot 11,** mm
	0.2		40
	0.3	29	27
	0.4	22	20
	0.5	18	

Acceptable surface flow depths for well drained land is up to 50mm.

Surface flow can be reduced by cut-off drains (for say Q_5 capacity) connected to pipe system designed for no more than Q_{20} capacity. Alternatively, cut-off or diversions can be constructed as part of improvements to the land (lots) by future owners; connection to pipe system subject to Council approval. Existing vegetation may rely on maintaining adequate flow from upslope.

For other lots (4, 5, 6 & 8) calculated flow depth shall be less.

7. DRAINAGE PATHS IN SINGLE LOTS:

The purpose of this planning principle is to have no new boundaries of new lots across existing, significant drainage paths.

The main east-west drainage path is retained in a single lot; Lot 16C.
Lot 16C is the balance-area of the original Lot 16 on completion of stage 5; it has an area of 4.14ha.

Existing boundary lines for the two tributary-drainage-paths are retained; there are no new boundaries across these paths.
For the purpose of this clause, there is no drainage path in Sec 4580; drainage is by broad overland flow.

8. EXCLUDE RIPARIAN ZONES:

The subdivision layout has been designed such that the vegetation associated with the main east/west drainage path is contained within Lot 16C. The zone is excluded from subdivision into 1ha lots but is otherwise included in the development primarily as a drainage path within a single lot.

Similarly, vegetation associated with the two tributary-drainage-paths is retained in substantial areas in lot 11 (or 17D), Lot 16C and Sec 4579B. Care shall be exercised regarding location of outfall drain from the end of Road A into Lot 16C; ie minimal disturbance and, avoiding any significant vegetation.

9. POTENTIAL IMPACT ON NEIGHBOURING UPSTREAM LAND:

9.1 Design Parameter:

A design-parameter for this project is to allow runon from upslope, external catchments located in RL land to cross boundaries unimpeded. This includes broad overland flow as well is recognisable drainage paths. Presently, there are no pipe-systems that discharge into the site.

The plan, External Catchments, illustrates the locations where upslope land presently discharges into the site. The main external catchments discharge across the east boundary of the site.

Generally, no works are proposed by the developer within upslope land for the specific purpose of managing or altering existing flows, except for Fill and table drain within verge of Lowther Road reserve; opposite lot 10.
Proposed works that shall include consideration of external stormwater include:

- Road W, such as kerb & gutter with side entry pits and underground drainage,
- Modifications to existing dual access serving Sec 4580 and PWC easement; to serve new lot 10 and the PWC easement and eliminate encroachment.
- Mandatory vegetation buffer(s) within the site parallel to boundaries with upslope catchments; care shall be taken to ensure new vegetation, type, location and heights of mulch-beds, reflects the varying drainage requirements at points along the boundaries.
- Diversion drains or swales alongside boundaries within the site designed to divert runon; this drainage infrastructure shall be designed such that Q100 flows do not inundate upslope land to a greater degree. Proposed lots 2 and 10 apply.

Any fencing that may be installed by the developer along parts of the east boundary as improvements to the land prior to sale of lots shall be non-solid allowing free drainage. (the east boundary is presently unfenced).

9.2 Design Flow:

Design Flow Rate from Upslope Land at East Boundary opposite Lot 16:

m^3/s				
	5 YR	**10 YR**	**50 YR**	**100 YR**
Existing	3.01	3.33	3.77	4.72
Post DA1	No change			

Flow across the east boundary shall be allowed to continue downslope unimpeded then through Lot 16 and the final Lot 16C to Sec 4314.

Impact of external catchment areas on 1ha lots is addressed in 6.2

9.3 Potential Impact:

It is expected that there shall be no impact on neighbouring land in respect of existing flow discharging into the site.

The mandatory vegetation buffer may not be required for the battleaxe portion of Sec 4579B across the drainage path in DA1. Firebreaks shall be required for Sec 4579B and Lot 16C across the drainage path. These measures should help to ensure unimpeded flow.
Immediately upslope of east boundary of the site, PWC infrastructure including underground & above-ground watermains and maintenance track is situated across the drainage path. The east 'boundary' of the PWC easement is fenced including across the main drainage path.

Boundaries of individual lots in the parcel are unfenced in this location; it is intended to leave Sec 4579B and Lot 16C unfenced across the drainage path in DA1.

10. POTENTIAL IMPACT ON EXTERNAL ROADS:

10.1 External Roads:

External roads abutting the site are:

- Existing Lowther Road
- Proposed Road W.

External roads at a distance from the site are:

- Goodenia Drive, west, downslope,
- Holly Road, north, upslope,
- Thorburn Road, south/east, at top of catchment and into an adjoining catchment,
- Bees Creek Road, generally east, in an adjoining catchment.

10.2 Impacts:

Lowther Road: The verge opposite lot 10 presently discharges into Sec 4580; an existing drainage easement is located upslope of the low point and hence is of limited potential use. It is proposed to reconstruct the verge by filling and provision of a table drain flowing to the west and, to eliminate the unused drainage easement within Sec 4580. In DA1, the table drain shall terminate and discharge through Sec 4579B. In DA2 the table drain shall discharge into an underground system associated with future intersection of Road A & Lowther Road. All proposals are subject to Council approval during the detail-design phase.

Road W: the new road shall be designed with underground drainage which shall continue downslope along Road A and ultimately discharge into Lot 16C. Future detail survey may show that the southern part of Road W at intersection with Thorburn Road actually flows to the south, away from Road A. If so, drainage for those sections of road shall be by overland flow into the adjoining catchment (eg VCL Lot 12 LTO 69/09).

No adverse impacts have been identified for Goodenia Drive, Holly Road, Thorburn Road or Bees Creek Road.

11. NEW ROADS ABOVE 1% AEP LEVELS and ABOVE the LEVELS of any SEEPAGE LINE:

11.1 Roads above 1% AEP Level

See 5.1 for 1% AEP levels. All surface elements of new carriageways shall above 1% AEP event levels. A 1% AEP level of 30.2 AHD shall be adopted as the design flood level unless a lower level can be demonstrated.
The lower reaches of inverts of open drains and underground drainage shall likely be partly of wholly below RL 30.2. Any water backing up from flooding in the Burdens Creek system shall be fresh water, consequently no protection measures shall be required against saline water.

All roads with kerb and gutter (k & g) are expected to be substantially above 30.2.

For rural type road cross sections, the edge of shoulders shall not be below the design flood level.. It is expected that the rural type section for Road A in DA1 shall be well above 30.2. If in DA2, it is found that a floodway is desirable at about the crossing of Road A with the main drainage path, shoulder levels lower than 30.2 may be proposed at the floodway; subject to Council approval during the DA2 detail-design phase.

Road C: The levels and gradient of Road A shall be selected such that all surface elements of the intersection of Roads A & C shall be above 30.2 including low points. The remainder of Road C shall be well above 30.2.

Road D: The levels and gradient of Road A shall be selected such that future Road D (in DA3) can be constructed with k & g having approved longitudinal slopes and with underground drainage and that all surface elements of Road D within the Burdens Creek catchment are above 30.2. Design levels for Road D are to be established in DA1 to ensure adequate drainage, by surface flow into the future road, of the 1ha area within lot 11.

Road W is above RL 37.0.

11.2 Roads above Levels of any Seepage Line:

Both Goodenia Drive and Lowther Road have lengths of road that traverse the same 5b1 land unit encountered on the site and, both roads have underground services across the 5b1 type of terrain. Both roads employ a rural type cross section throughout, without land improvements in verges. Apparent seepage in Lowther Road at the 5b1 terrain turned out to be, after closer examination, a film of slow moving surface-water due to flat slope and a crust in the top layer of soil.

Proposed roads with k & g shall have side entry pits connected to underground stormwater with features to enable the pipe-trench to act as a subsoil drain. Subsoil drainage primarily serves the subgrade and basecourses of the road but also benefits adjacent land. Alignments selected for future roads C & D are for roads with similar sub-soil drainage.

Road W shall have k & g on at least the west side. Road W way not need subsoil drainage and, it is unlikely to have underground drainage for its full length.

Road A shall have k & g at elevated terrain and then transition to rural-type cross-section where it encounters 5b1 type terrain. The reason for changing to rural type cross section is to a large extent in consideration of pavement drainage ie the 5b1 terrain is quite flat which does not suit requirements for adequate longitudinal slope of the gutter-part of k & g.

Cont'd

For rural type cross section, unsuitable soils are excavated to depths where sound material is encountered and replaced with compacted fill to subgrade level. Open drains, where used and where sufficiently deep, tend to act as subsoil drains for basecourses.

Excavation for fill and soil-replacement in Road D and in lower sections of Roads A & C shall be extended into verges and further into lots. This shall provide sound material in verges suitable for services & ground-maintenance and, along transition lengths in Road A, shall provide positive crossfall for footpath and nature strip.

Seepage lines mapped by professional assessors from surface indicators (eg vegetation types) for companion land assessments shall provide target locations for the review of adequacy of designed subsoil drainage when excavations for roadworks have been carried out. Normally, Council approval is required during the construction phase before proceeding with Fill in excavated areas.

The foregoing is consistent with Condition 2(i) ii in SL18 where design and construction of subdivision site works are taken into account when assessing land suitability or capability.

12. POTENTIAL IMPACT on INTERNAL ROADS:

12.1 Design Parameter:

The design parameter in relation to lots and internal roads is to enable surface flow from each lot into the road reserve.

In most cases, the lots shall comprise natural (existing) surfaces and, verges shall slope down to the top of kerb-section of k & g. Side entry pits shall be placed to collect water when calculated flow reaches a certain depth (or spread on the pavement). There may be instances where it is considered desirable to divert some flow to a collection point in the firebreak area; particularly if excessive flow across the footpath is predicted. There may also be lengths of firebreak that require diversions to control erosion; in such instances it may not be suitable for the diversion to discharge concentrated flow across the footpath or verge and instead may require a collection pit.

There shall be areas, particularly for lots 6, 7 and 11, where it is necessary to extend earthworks into allotments to achieve the above outcome and avoid low-spots.

Vehicle access strips are proposed to be constructed as part of subdivision works. Accordingly, predictions of the effect of access strips and notional internal driveways can be made in respect of altered surface flows and potential impact on the carriageway.

Powerpoles are proposed along the low side of rural-type road construction in land-improved verges; land improvements is partly for better maintenance-access.

12.2 Two-way Crossfalls:

All roads are proposed to have two-way crossfall. This should side-step some of the stormwater issues that are inherent with one-way crossfall including superelevation.

12.3 Design Standards for Drainage:

Design standards setout in Council's Guidelines are intended to be used. This should assist with providing a uniform standard of service throughout the shire. The standard of service for roads with k & g should be comparable with standards in Darwin's urban areas.

12.4 Impact of Road D on Adjacent lot 11:

The portion of lot 11 to the south of Road D shall be graded to suit Road D, as discussed in section 11. Associated drains in lot 11 shall daylight within the northern part of lot 11; flow shall continue downslope into Lot 16C.

13. MINIMISE ALTERATION TO NATURAL DRAINAGE SYSTEMS:

The site contains no recognisable watercourses. Area of potential semi-permanent springs have been checked; no springs have been found.

The site has recognisable drainage paths, as discussed in 4., and drainage areas associated with drainage paths.
A depression on Sec 4579, presently used as an ornamental pond, is a borrow-pit within a recognisable drainage area. It is intended to back-fill the borrow-pit as the water in the borrow-pit has a marginal impact on drainage of lawns and groundwater on the upslope side; backfilling may be deferred until DA2 proceeds.

No works or lots are proposed in drainage areas that are subject to significant depth of flow of, say >50mm. The three recognisable drainage paths are clear of proposed works, except if parts of these areas are selected for temporary sediment traps in DA1.

14. MINIMISE IMPACTS ON WATERCOURSES:

14.1 Design Intent:

There are no defined watercourses within or immediately downslope of the site but instead there are drainage paths within the site leading to a single drainage path in Sec 4314.

The design intent is to minimise erosion hazard, sedimentation and pollution of watercourses, in particular the drainage path within downslope Sec 4314.

DA1 on completion should have minimal impact on the drainage path in Sec 4314. A single endwall with outfall drain is proposed in DA1 which directs water into Lot 16C which discharges into Sec 4314.

Sediment traps shall be installed prior to major earthworks or clearing. The area earmarked for extension of Road A in DA2 shall be the first choice for location of sediment trap(s), if practical. This is to avoid unnecessary clearing elsewhere for such installations.

14.2 Pollution Control:

Large lot subdivisions, for lots 1.01ha and over, in the rural area do not normally require a formal WSUD analysis.

All disturbed, unpaved areas shall be grassed together with occasional plants such as street trees and, the developer proposes landscaped patches of trees and shrubs within parts of lots that have needed regrading. Unlined parts of open drains shall be grassed in accordance with Council's Guidelines.
There are only a limited number of uses permitted without additional consent under RR zoning; most are related to rural residential use. If a new lot owner wishes to apply for consent for another use, such owner may have to demonstrate pollution-control.

Whilst not directly related to stormwater, the installation of waste water systems on individual lots must be in accordance with the accompanying Waste Management Plan approved by Environmental Health. Stormwater consideration of individual lots includes construction of diversions upslope of designated wastewater envelopes wherever considered necessary. Surfaces of diversion works shall be treated as for other disturbed areas.

15. MINIMISE EROSION AND MAINTENANCE OF DISCHARGE DRAINS:

A single endwall with a constructed outfall drain is proposed in DA1, discharging into Lot 16C. The end of the constructed drain shall daylight in an area of reasonably dense vegetation situated approximately 110m from Sec 4314.

The system downslope of the endwall shall include energy dissipaters as considered necessary to reduce velocities of flow. Location of dissipaters shall consider access requirements for grassed areas of the drain.

Unlined parts of the outfall drain and any access track shall be grassed as per Council's Guidelines for open drains.

16. NO MITIGATION MEASURES:

There are no mitigation measures proposed in DA1 of a type that retains significant water or retards the rate of natural flow.

Proposed drainage system comprises a combination of urban-style piped-system and rural-style open drains and endwall. The drainage system shall rely on gravity flow and shall not be designed to slow the rate of flow or to pressurize the system for increased velocity.
Unlined open drains shall be velocity-limited to minimise erosion but shall be sized to cope with the design rate of flow.

Elements that may retain nominal water such as sediment traps, shall be of a temporary nature primarily during the construction phase.

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APPENDIX to SWMP

A.	Check list of matters that should be addressed in this SWMP
B.	Plan, original (natural) north/east external catchment, circa 1980.
C.	Copy of drg no. 1665/EC2, Stormwater EXTERNAL CATCHMENTS
D.	Schematic – proposed Stormwater Drainage works

APPENDIX A

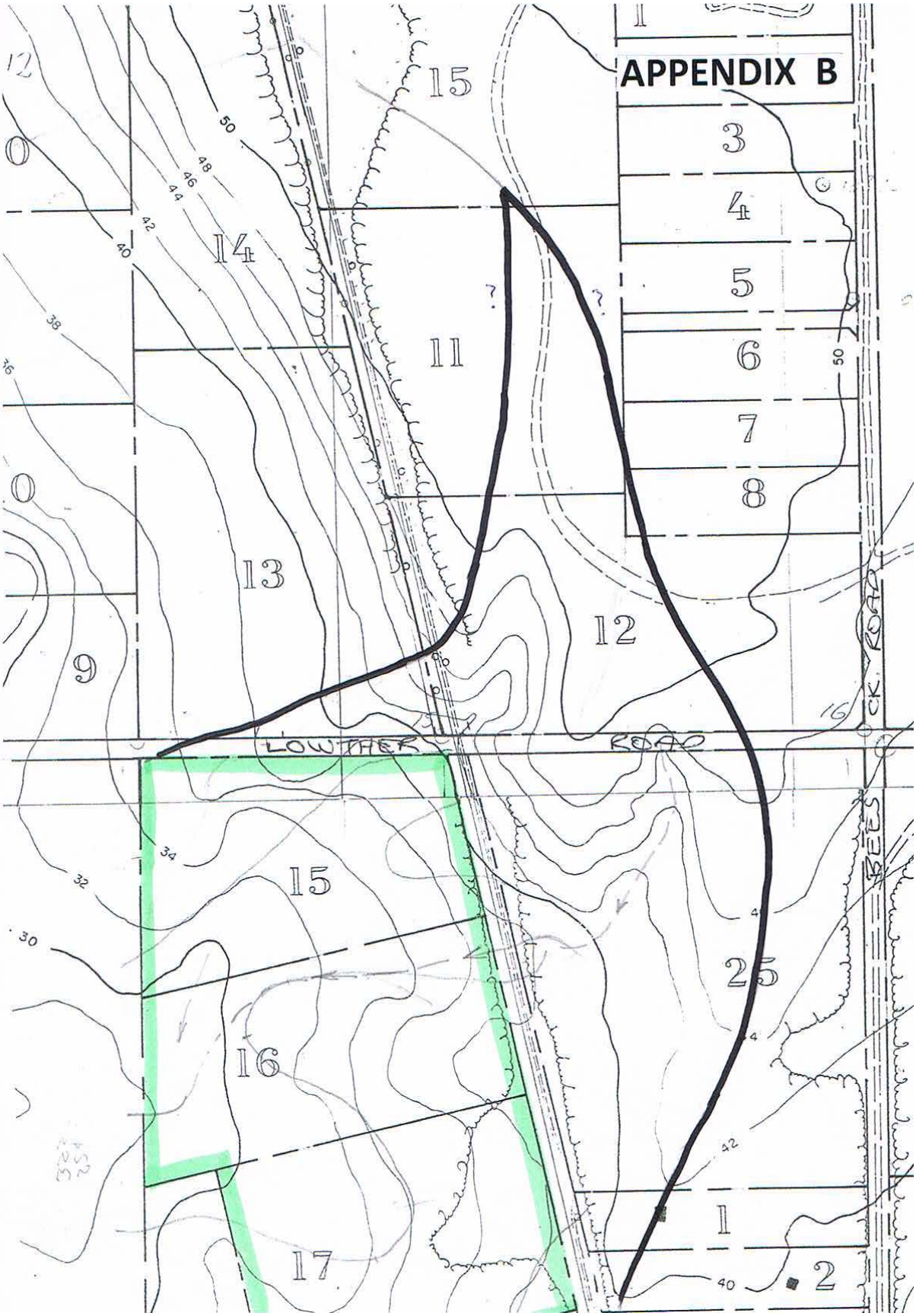
Check List of matters that should be addressed in this SWMP

A. Mandatory

Scheme no.	Brief description
SL18 2(i) iii	SWMP to be consistent with WMP
11.4.5 2(b)	Adequate drainage
6.14	definitions

B. Planning Scheme provisions for RL and R land

11.4.1 2(b), 11.4.3 2(d) and 6.16	potential impact on neighbouring land, including a hydrological assessment with flows (i) downstream
ditto	Ditto (ii) upstream
11.4.2 3(d)	Roads located above 1% AEP or any seepage line
11.4.1 (b)	potential impact on external roads (Lowther)
	potential impact on internal roads
11.4.3 2(d), 11.4.2 3(d) and 11.4.1 5.	potential impact on the 1ha identified as unconstrained, 1ha lots above 1% AEP DCA must consider formal comments on riverine flooding and localised stormwater flooding of the identified 1ha of land.
11.4.1 2(b),	potential impact of any proposed mitigation
11.4.2 3(e)	Discharge drains, minimise erosion & maintenance
11.4.3 7 (e)	Drainage paths in single lots
11.4.1 9 (b)	Subdvn design should exclude riparian zones
11.4.1 9 (c)	Minimise alteration or disturbance to natural drainage systems including drainage areas, recognisable watercourses and semi-permanent springs.
11.4.1 9 (d)	Minimise erosion hazard, sedimentation and pollution of watercourses.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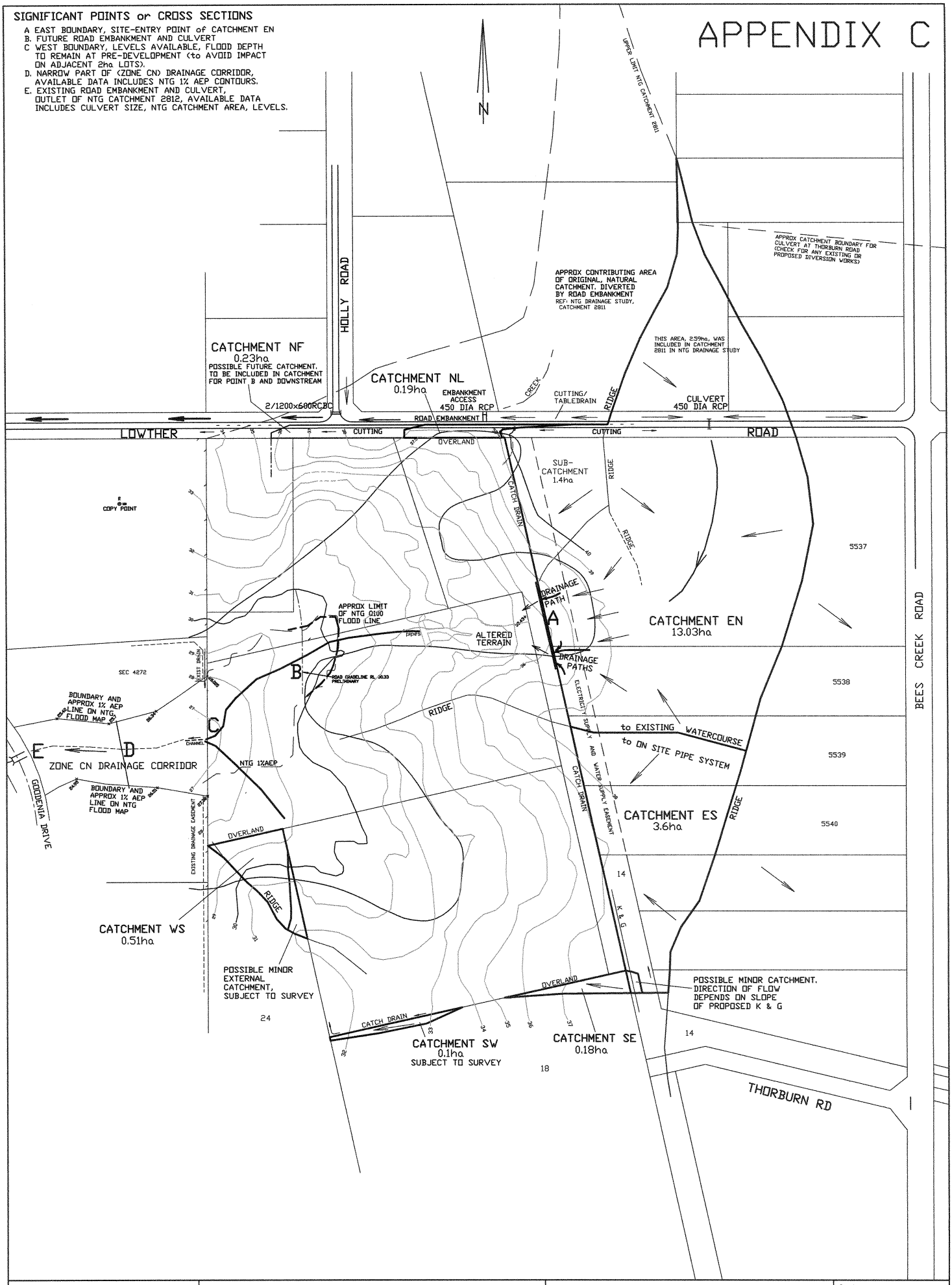
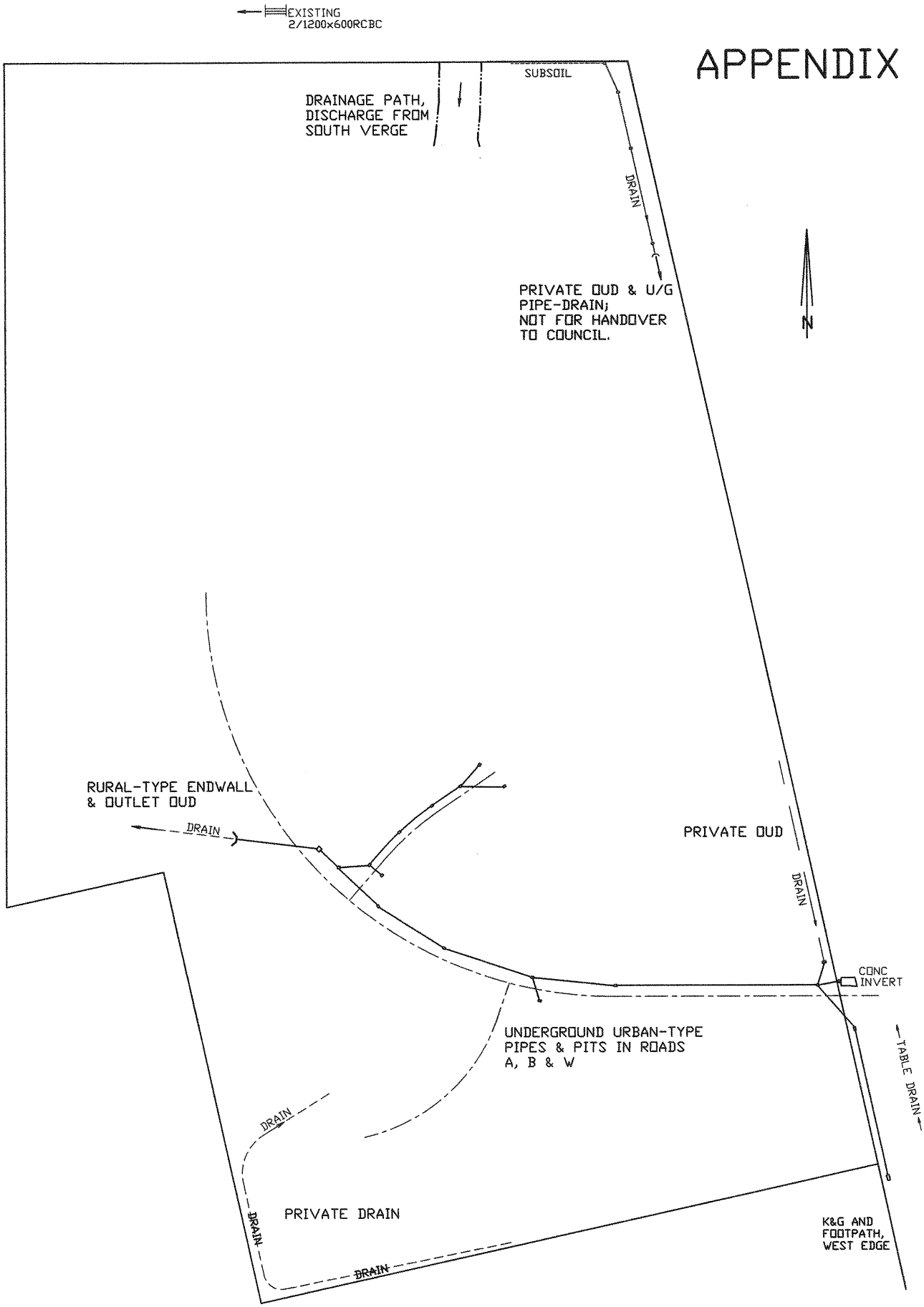


For L BANDIAS and BANDIAS INVESTMENTS Pty Ltd as Trustee	PROPOSED RURAL-STYLE SUBDIVISION SEC 4185, 4579, 4580, Lot 16 & 17 155 - 205 LOWTHER ROAD BEES CREEK Hundred of Strangways	BEES CREEK HEIGHTS STORMWATER EXTERNAL CATCHMENTS	Scale 1 : 4,000 (A3) Sheet 1 of 1 DRG. No. 1665 / EC2
Prepared by:- J DE VRIES CPEng CONSULTING CIVIL ENGINEER, DARWIN.			

APPENDIX D



SCHEMATIC - STORMWATER DRAINAGE

PROPOSED DRAINAGE WORKS

Land Suitability Assessment: Proposed Subdivision of Lots 16 & 17 LTO73/001 and Sections 4185. 4579 & 4580 – Hundred of Strangways; Lowther Road, Bees Creek

July 2017

Compiled by VPS Land Assessment and Planning

Disclaimer

Certain information contained in this report is based on sources believed to be reliable. VPS Land Assessment and Planning is not in a position to, and has not, verified the accuracy or completeness of such information. Accordingly, VPS Land Assessment and Planning takes no responsibility for, and assume no liability in respect of, any information provided to it by others for the purpose of preparing this report, or the consequences of the use of such information.

Surface and subsurface conditions are created by natural processes and the activity of man. Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. This Report is based on assumptions that the site conditions as revealed through selective sampling are indicative of conditions throughout the site. Data derived from literature and external data source review are interpreted to provide an opinion about overall site conditions and their likely impact on the proposed development. Natural landscapes are variable and actual subsurface conditions and soil depth may differ from those inferred to exist. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained.

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Prepared by	**Graeme Owen**
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Signed	
Date	July 2017

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Acronyms

Australian Soil Classification	ASC
Bureau of Meteorology	BOM
Building Advisory Services (DIPL)	BAS
Building Control Area	BCA
Department of Health	DoH
Department of Land Resource Management	DLRM (now DENR)
Department of Environment and Natural Resources	DENR
Department of Lands, Planning and the Environment	DLPE (now DIPL)
Department of Infrastructure, Planning and Logistics	DIPL
Environmental Protection Agency	EPA
Geographic information system	GIS
Land Capability Assessment	LCA
Land Suitability Assessment	LSA
NR Maps	Online data server managed by DENR (nrmaps.nt.gov.au)
Power and Water Corporation	PWC
Water Resources	Water Resource Division within DENR

Executive Summary

NT Planning Scheme Amendment No.446, dated 1 June 2016, introduced SL18 (Specific Use Zone Litchfield No. 18) which applies to Lots 16, 17 & 24 LTO 73/001 and Sections 4185, 4579 & 4580 Hundred of Strangways (155A, 155B, 155C 175, 195 and 205 Lowther Road, Bees Creek).

A land suitability assessment (LSA) was undertaken for the proposed subdivision of Lots 16 & 17 LTO 73/001 and Sections 4185, 4579 & 4580 Hundred of Strangways under SL18. The proposed subdivision proposes to create 11 small lots and two residual lots from the original 5 land parcels.

SL18 requires the submission of specific documents and/or plans that address several criteria within NT Land Suitability Guidelines (NTG 2013):

- Onsite wastewater management is addressed by an LCA and wastewater management plan to be approved by Environmental Health
- The Stormwater Management Plan addresses the Storm water and Riverine flooding criteria.

This LSA has determined that following land improvements, each proposed new lot 1-11 will comprise at least 1 hectare of unconstrained land.

An erosion and sediment control plan (ESCP) for the development of the proposed roads and lot boundaries will be prepared once the subdivision has been approved.

1. Introduction

VPS Land Assessment and Planning was commissioned to conduct a land suitability assessment (LSA) of a proposed subdivision of Lots 16 & 17 LTO73/001 and Sections 4185, 4579 & 4580 – Hundred of Strangways to assess the potential of the land for subdivision. The land is located at 155A, 155B, 155C, 175, 195 and 205 Lowther Road, Bees Creek and subject to the conditions associated with SL18 (Specific Use Zone Litchfield No. 18) established under NT Planning Scheme Amendment No.446, dated 1 June 2016.

This report presents the results of the LSA. It provides an assessment of the issues and opportunities of the site in the context of the NT *Land Suitability Guidelines* (NTG 2013) and identifies other issues that may affect the suitability of the site for subdivision.

The *Land Suitability Guidelines* (NTG 2013) define land suitability as:

> *The fitness of a given area for land utilisation type (or land use), or the degree to which it satisfies the land user.*

The *Guidelines* address seven land suitability categories. These categories are:

- Drainage
- On-site wastewater management
- Erosion risk
- Soil salinity
- Acid sulphate soils
- Storm tide flooding
- Riverine flooding.

These categories are then assigned *suitability classes* in accordance with Table 2 of the *Guidelines* following assessment of the *relevant* characteristics identified through a review of existing land information and field investigations. Suitability classes 1-2 are considered to be generally ‘unconstrained’, while suitability classes 3-5 are considered to varying degrees to be ‘constrained’. Land classified as suitability class 3-5 (constrained) may prevent development from proceeding or require additional inputs in terms of design, planning and on-going management (NTG 2013).

2. Existing Information

2.1. Site location

SL18 is located on the Lowther Road, approximately 10kms southwest of Palmerston (Figure 1). The proposed subdivision lies within the Litchfield Shire.

Figure 1: Location of SL18

2.2. Existing land use and SL18

The five existing parcels that form the basis of the proposed subdivision are shown in Figure 2. All lots are serviced by the reticulated town water supply and all proposed lots will also be connected. There are not bores on the subject land used for potable water supply and no bores on adjoining lots within 100m of any property boundaries. The area is not serviced by

a reticulated sewer network and the current lots and all proposed lots will require onsite wastewater treatment and disposal.

The proposed development involves the creation of 11 small lots, each a minimum of 1 ha in size and two residual lots each in excess of 1 ha.

There has been considerable historical modification to the natural landscape and drainage with extensive areas of imported fill and drainage modifications involving constructed bunds, small dams and channels.

SL18 provides the following conditions relevant to the LSA:

1. The purpose of this zone is to provide for the rural residential use and development of the land in a manner that responds to the physical characteristics of the land, its location, availability of services and the amenity of the locality
2. Development shall be in accordance with Clause 5.18 and Part 5 as if the land were located in Zone RR (Rural Residential) except to the extent of any conflict with the following conditions
   (a) The minimum lot size pursuant to the Table to Clause 11.1.1 shall be 1ha.
   (b) Clause 11.4.5 Subdivision of Land Zoned RR, subclause 2(a) is not applicable to the subdivision of the land
   …
   (h) Roads shall be designed to:
      i. interconnect with the existing road network;
      ii. provide for connections to potential future subdivision of adjoin lands; and
      iii. prevent individual lot access to major roads.
   (i) An application for subdivision shall include a Wastewater Management Plan (WMP) approved by the Department of Health: Environmental Health which as a minimum shall include the following:
      i. Land Capability Assessment for the **site** undertaken in accordance with the Environmental Health *Guidelines for Land Capability Assessment for On-site wastewater Management* (March 2014);"

Figure 2 Existing cadastral parcels within proposed subdivision

3. Desktop Assessment

3.1. Climate

The Bees Creek area experiences a monsoonal climate with two broad seasons; the “Dry Season” during which little to no rainfall occurs between May and September and the “Wet Season” over summer during which maximum rainfall generally occurs between November and March. The nearest rainfall data is collected at Humpty Doo Collard Road (Station Number: 14226) (BOM 2017) and shown in Table 1. There is no site specific evaporation data available for this site however the BOM map of annual “Average pan evaporation 1975-2005” shows the Darwin region lies within an area that experiences 2000-2400mm average annual evaporation (which exceeds annual rainfall).

Table 1 Climate data Humpty Doo Collard Road (Station No: 14226: 1987-2017 - BoM 2017)

Statistic Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean rainfall (mm)	444	362	333	96	23	0	1	5	18	75	174	312	1842
Median rainfall (mm)	410	330	315	79	5.9	0	0	0	9.2	74	171	282	1676

3.2. Water Supply

All existing and proposed lots are/will be serviced by the existing reticulated town water supply. DENR data (NR Maps) shows no bores used for potable water are within 100m of the proposed subdivision boundaries.

3.3. Onsite Wastewater Management and Approvals

A land capability for onsite wastewater treatment and disposal has been prepared. In accordance with SL18, the LCA report and Wastewater Management Plan have been provided to Environmental Health for approval. There will be no further discussion of onsite wastewater in this LSA.

The proposed subdivision lies within the Darwin Building Control Area (BCA). Within a BCA, Environmental Health (Dept of Health) provides site specific design approval for onsite wastewater management systems while Building Advisory Services (BAS), in accordance with the Building Act, approves the actual installation of the system.

3.4. Riverine Flooding, Storm Surge and Stormwater Management

As per the conditions at subclause 2(1)i a stormwater management plan must be prepared for any proposed subdivision within SL18. The stormwater management plan will address issues relating to storm tide flooding and riverine flooding and these issues will not be discussed further in this report.

3.5. Existing land resource mapping

DENR has published land unit mapping over the subject land at 1:25,000 scale. According to Fogarty *et al* (1984), the project area comprises mostly land units 1c, 2a1 and 5b1 with a small area of 3b in the southeast corner.

According to McKenzie *et al* (2008), the smallest area feature shown on a printed map at a scale of 1:25 000 represents around 2.5ha. Land unit mapping is therefore not sufficiently detailed to identify soil-landscape features and characteristics that are potentially important for intense land uses such as small lot subdivision. Some published map unit boundaries and/or map unit descriptions may be inaccurate due to the historical mapping processes; therefore both map unit boundaries and map unit descriptions require field verification.

Mapping associated with the report of “Acid Sulfate Soils of the Darwin Region” (Hill and Edmeades 2008) shows that the land within SL18 is well away from any areas associated with a risk of acid sulfate soils.

Review of recent imagery indicates that the northern half of the site has been extensively modified through earthworks and the placement of imported fill.

3.6. Previous investigations

A preliminary Land Suitability Assessment (LSA) was undertaken by EcOz Environmental Consultants (EcOz 2016). This report noted the presence of imported fill and modified drainage across the site. EcOz (2016) sites S2 and S3 are utilised in this report.

4. Field investigation

4.1. Methodology

Field assessment was undertaken during June 2017. Following a desktop assessment of available imagery and other data, the proposed subdivision was traversed on foot and vehicle to identify and map constraining features.

To capture and describe the variability of the soil-landscape across the proposed subdivision, detailed assessments of a number of representative soil-landscape sites was undertaken. Surface and subsurface conditions are created by natural processes and the activity of man. Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. The findings of this report are based on assumptions that the site conditions as revealed through selective sampling are indicative of conditions throughout the site.

Soil and landscape characteristics have been assessed and described according to the *Australian Soil and Land Survey Handbook Third Edition* (NCST 2009). Soil profiles are classified in accordance with The *Australian Soil Classification* – ASC (Isbell 2002). Representative photographs have been taken at each site and site slope was assessed in the field using a hand held clinometer. All GPS coordinates and tracks were captured using a handheld Garmin GPS.

4.2. Representative Soil-landscape sites

Detailed soil descriptions and site assessments were undertaken at 6 representative sites comprising existing soil exposures and sites where the profile was exposed using hand tools and a 75mm Jarrett hand auger. Site descriptions and assessments are provided in Appendix 1.

4.3. Mapping land types

The site was traversed to identify the land types across the site. Field investigations confirmed that land in the northern part of the proposed subdivision is affected by modifications to the natural soil-landscape and drainage whilst, other than some clearing, the soil-landscape and drainage in southern part of the site was essentially in a natural state.

The outer boundary of the differing land types was identified in the field using a range of vegetation and soil surface indicators. These boundaries were mapped using a Garmin GPS. Representative and other validation sites were used to confirm the soil-landscape characteristics of the land unconstrained by drainage.

5. Soil-Landscape assessment

5.1. Soil sites

Table 2 contains a summary of the key features described for each representative soil and the GPS coordinates for each site. Soil site locations are shown on Figure 3. Detailed soil-landscape descriptions and site assessments are provided in Appendix 1. Soil investigation site coordinates were captured using a Garmin GPS.

Areas comprising imported fill were not assessed as these will require geotechnical assessment.

Table 2 GPS coordinates and summary for soil sites (Map of Australia 1994, Zone 52)

Site	Northing	Easting	Soil	Depth (m)	Maximum % subsoil gravel	Slope %
1	8610654	723036	Brown Kandosol	0.28	50	1.25
2	8610577	723103	Brown Kandosol	0.5+	55	0
3	8610828	723027	Brown Kandosol	0.6	65	3
4	8610911	723120	Red Kandosol	0.55+	50	4
5	8611147	723189	Brown Kandosol	0.6	55	4
6	8611148	723163	Hydrosol	0.25	40	1.5
EcOz 2*	8611079	722957	Brown Kandosol	0.6	60	5
EcOz 3*	8610674	723267	Brown Kandosol	0.6	35	2

* Sourced from EcOz (2016) *Land Suitability Assessment: Lowther Road*

Soils from two soil orders were encountered during the field assessments (Appendix 1); Kandosols (sites 1-5, EcOz 2 & 3) and Hydrosol (site 6).

Soil depth varied across the proposed subdivsion between Shallow (0.28m – sites 1 & 6 only) to Moderately deep (0.5m – 0.6m at sites 2-5, EcOz 2/3). Substrate comprising decomposing rock was encountered at all sites.

All soil profiles were gravelly throughout. Maximum subsoil gravel content ranges from 35% to 55%.

The proposed lots are located on gently undulating plains and rises with slopes recorded between 0 and 5%. Other than some areas of fill, the proposed subdivision is well vegetated and only minor sheet and rill erosion was identified associated with some tracks and disturbed areas.

All soil layers were non-saline ($EC_{1:5\ soil\ water}$ <30 uS/cm) the presence of a mature community of native and introduced vegetation indicating that local salinity is not an issue.

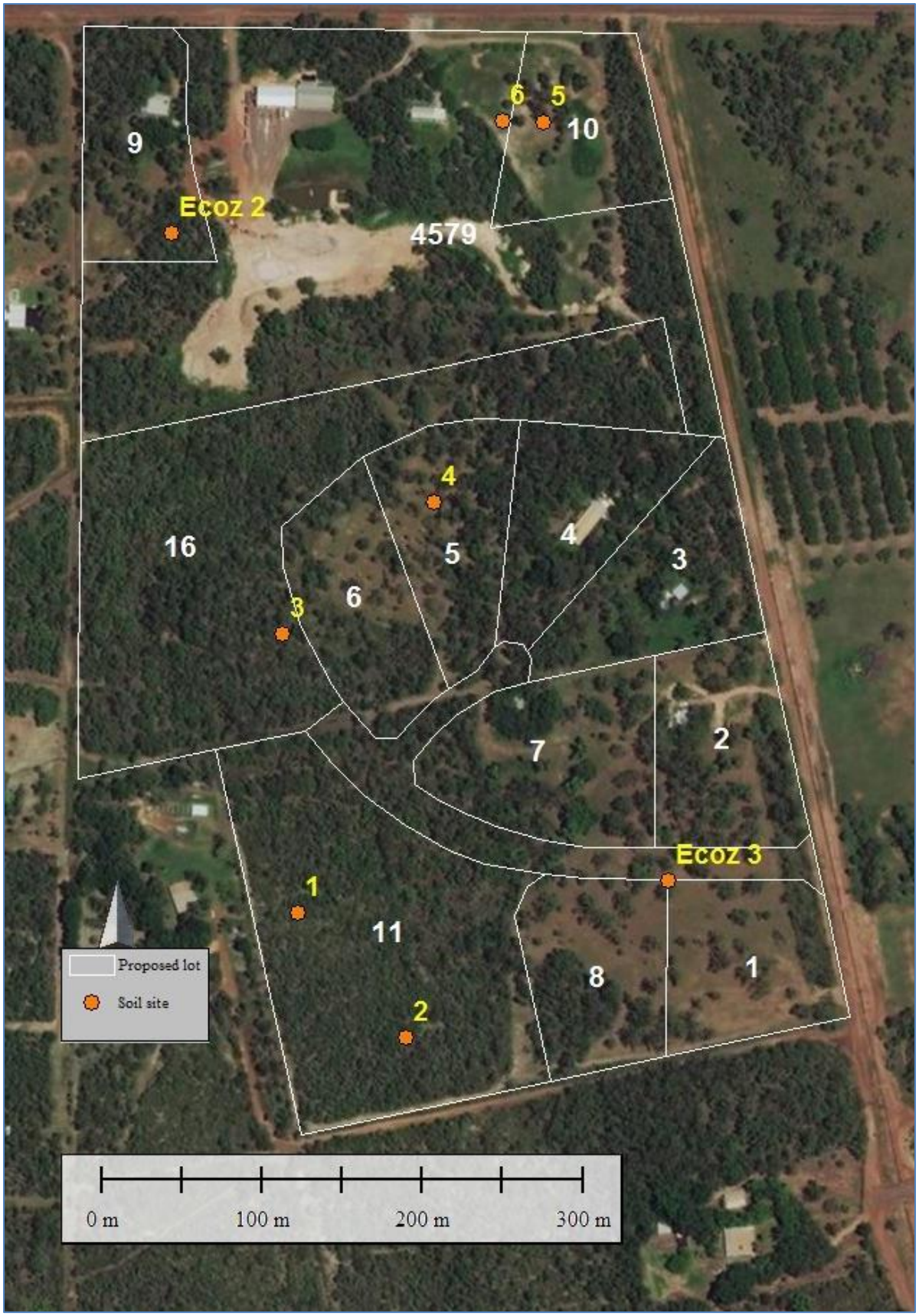

Figure 3: Soil sites with respect to proposed subdivision layout

5.2. Soil Landscape Assessment Findings

5.2.1. Modified areas

Field mapping identified several areas that have been modified by imported fill and / or earthworks that have affected soil type and drainage (Figure 4). The majority of modified land will be included in two residual lots 16 and 17 and will not impact the proposed new lots 1- 11.

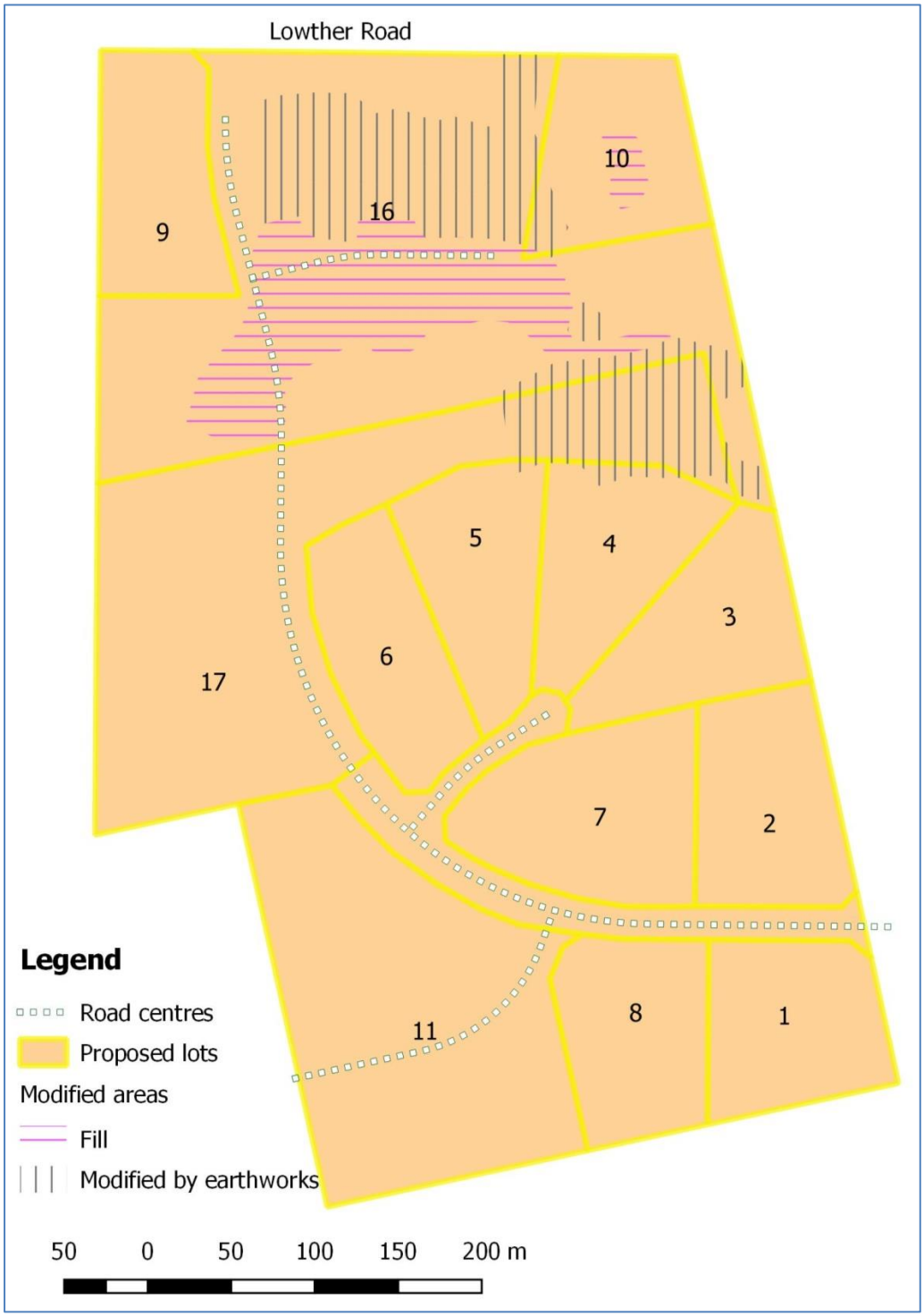

Figure 4 Modified areas withn the propsoed subdivsion

5.2.2. Drainage

Field investigation identified that drainage across parts the proposed subdivision had been extensively modified (Figure 5)

As shown in Figure 5

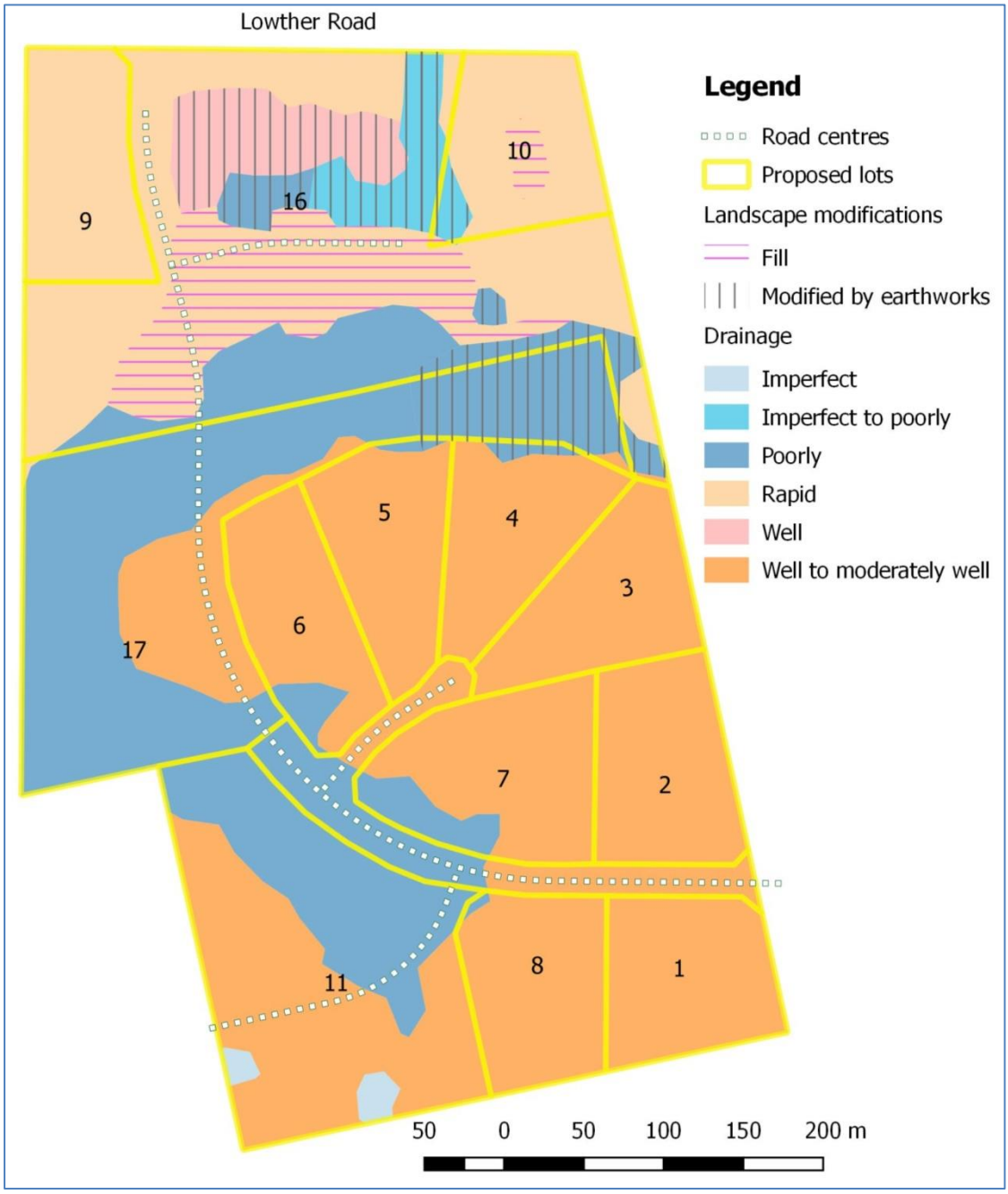

Figure 5 Drainage and modified land across the proposed subdivision

6. Land Suitability Assessment

6.1. Land improvements

Land improvements associated with proposed road works will reduce the area of poorly drained land affecting proposed lots 6, 7, 8 and 11. Figure 6 shows the extent and location of land improvements. The small areas of land within proposed lots 3-5 and 10 affected by poor drainage due to earthworks may also benefit from improvement. All areas of soil / drainage improvement will be assessed by a suitably qualified geotechnical engineer.

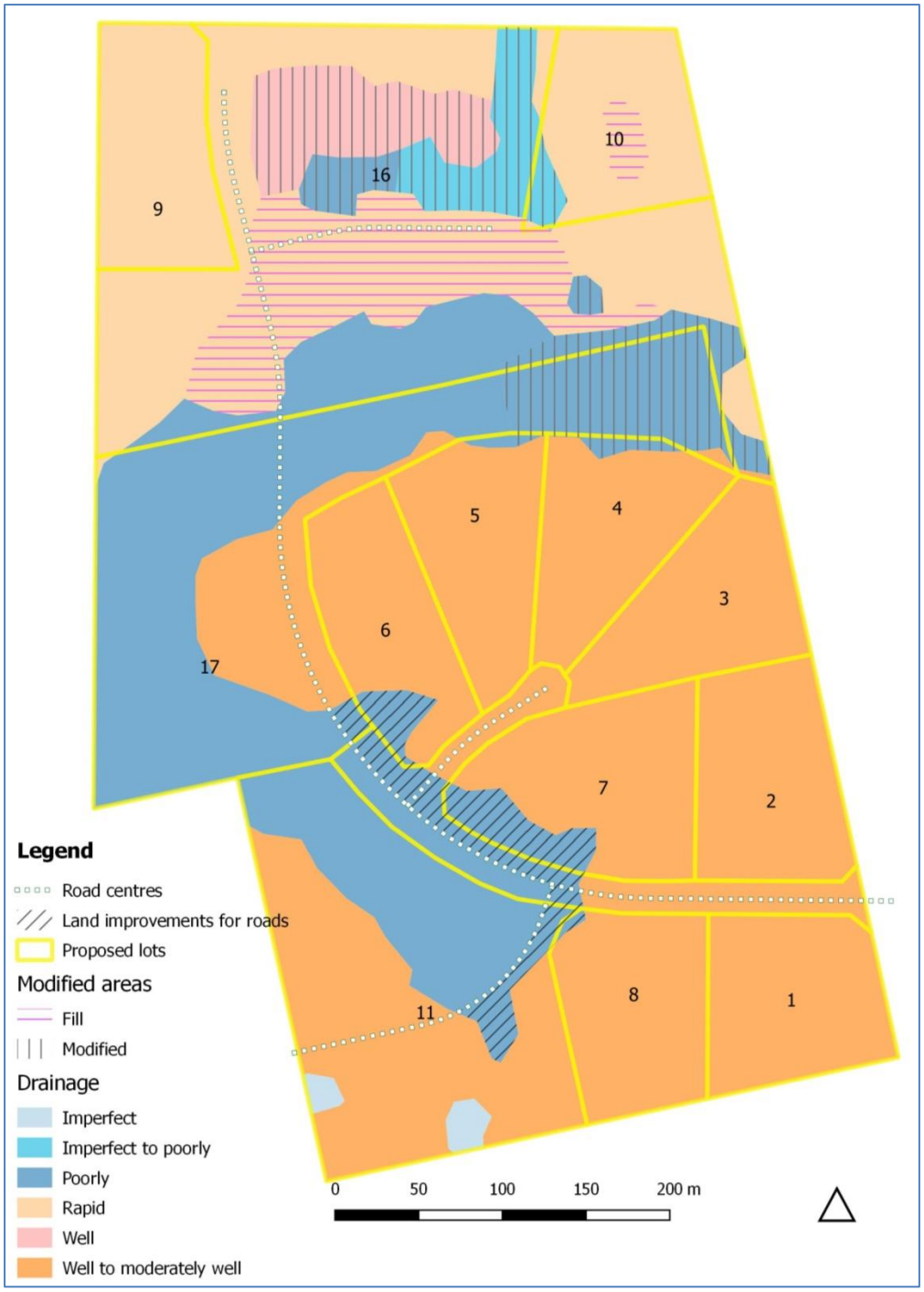

Figure 6 Proposed land improvements affecting proposed lots 1-11

6.2. Drainage

The land improvements outlined in Section 6.1 and shown in Figure 6 will ensure that all improved land is free draining and not subject to seasonal waterlogging or flooding. As such, all proposed lots will have at least 1ha of land is unconstrained by drainage. The unconstrained land will be rapidly, well or moderately well drained.

6.3. Onsite Wastewater management

Approval through Environmental Health - The soil-landscape is capable of supporting onsite wastewater treatment and disposal.

The land capability assessment (LCA) and associated Wastewater Management Plan have been provided to Environmental Health for approval as per SL18.

6.4. Erosion risk

ESCP to be prepared – Low risk - Field assessment and site data found that the land slope across the proposed subdivision ranges from 0 - 5%. No broad scale land disturbance is required to establish the lot boundaries plus associated fire breaks and the proposed roads.

The measures to control erosion and sediment during development are well established with relevant technical notes available at the NT Government website at https://nt.gov.au/environment/soil-land-vegetation/soil-management-erosion-sediment-control .

As per the NT Land Suitability Guidelines (NTG 2013) for land with slopes between 0.75 – 5% slope, an erosion and sediment control plan (ESCP) will be developed for the subdivision following approval. Proposed land improvements and road construction will affect final levels so an ESCP will be prepared once the subdivision has been approved.

6.5. Soil salinity

No risk - All soil layers were non-saline ($EC_{1:5\ soil\ water}$ <0.03 dS/m) and the proposed development site supports a mature community of native and introduced vegetation indicating that local salinity is not an issue.

6.6. Acid sulfate soils

No risk - Mapping associated with the report of “Acid Sulfate Soils of the Darwin Region” (Hill and Edmeades 2008) shows that the land within SL18 is well away from any areas associated with a risk of acid sulfate soils.

6.7. Storm tide and Riverine flooding

Refer to Stormwater Management Plan - As per the conditions at subclause 2(1)i a stormwater management plan must be prepared for any proposed subdivision within SL18.

6.8. Proposed subdivision following land improvements

Following land improvements, the proposed subdivision will comprise 13 lots, small lots 1-11 with 2 residual lots. All lots will comprise at least 1 hectare of unconstrained land.

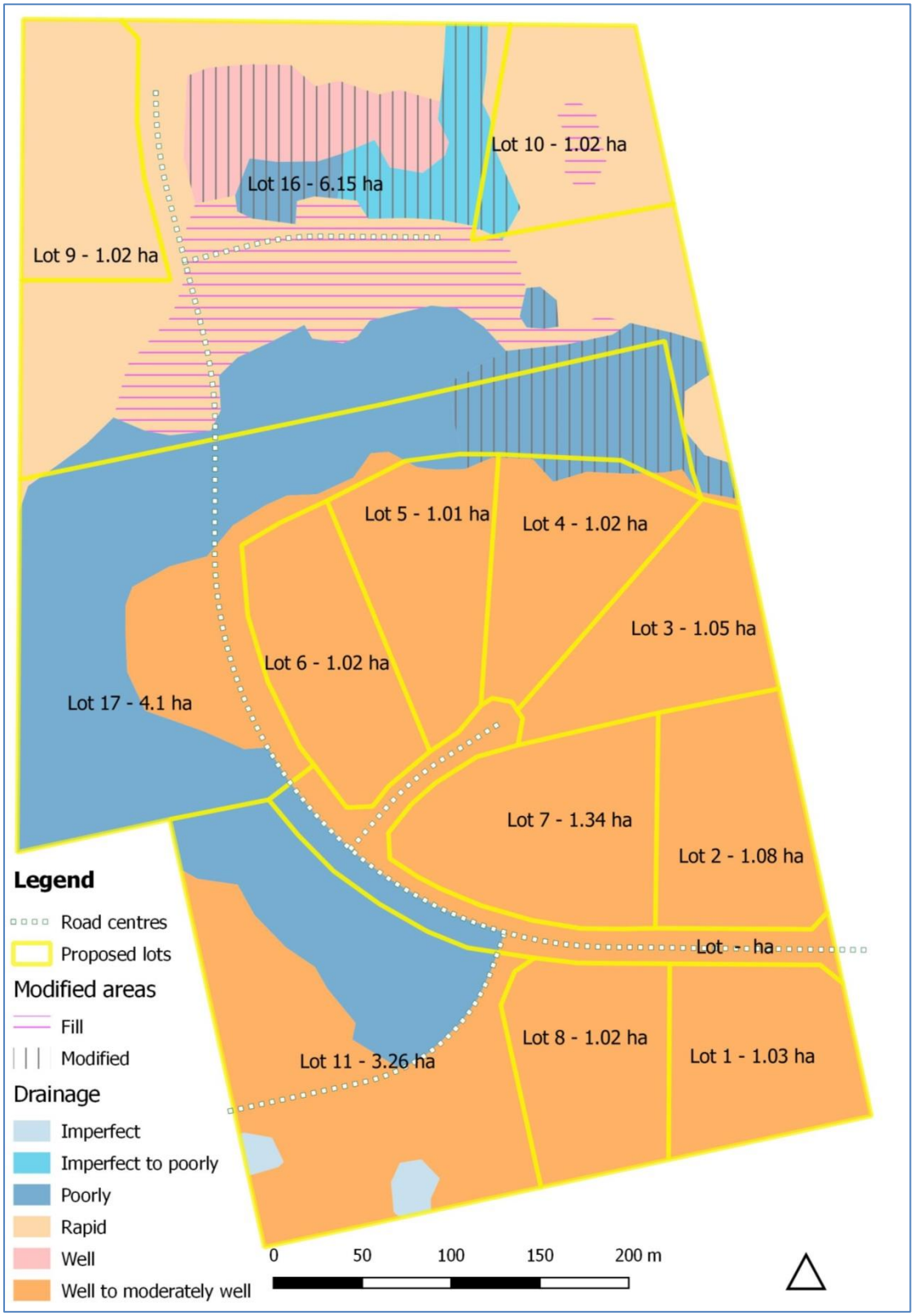

Figure 7 Final Lot layout following land improvements

7. Summary of Findings

As required under SL18, several criteria within this LSA are covered by specific documents and/or plans:

- Onsite wastewater management is addressed by an LCA and wastewater management plan to be approved by Environmental Health
- Storm water and Riverine flooding are addressed in the Stormwater Management Plan.

An erosion and sediment control plan (ESCP) for the development of the proposed roads and lot boundaries will be prepared once the subdivision has been approved.

This LSA has determined that following land improvements, each proposed lot 1-11 will comprise at least 1 hectare of unconstrained land.

8. References

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9. Appendices

Appendix 1 – Site and Soil-Landscape Assessments

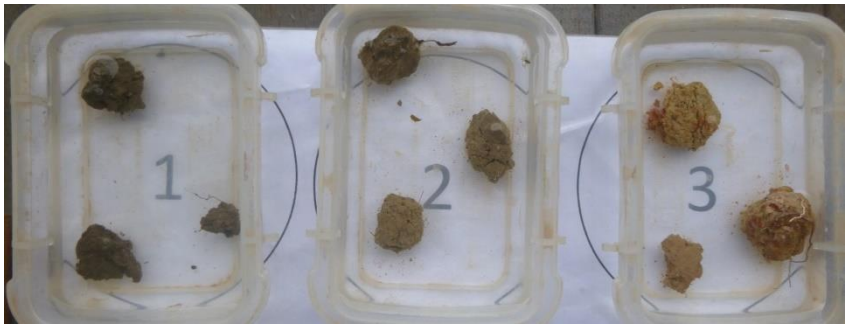
Site 1 – Shallow, Moderately well drained, Moderately gravelly, Brown Kandosol (Gravelly Yellow Earth)

Slope: 1.25%	**Erosion**: nil	**Surface gravel** (%): 35%
Landform: Plain	**Surface water** (m): >30m	**Runoff:** Slow
Fill: Nil	**Drainage**: Moderately well	**Surface**: Brown/grey termitaria
Stopped by: Weathered substrate	**Rock outcrop**: nil	
Vegetation: Woodland – *Callitris intratropica, Corymbia sp, Erythrophleum chlorostachys,* Shrubs: *Calytrix exstipulata, Buchanania obovata, Planchonia careya, Livistona humilis, Acacia sp*		

Soil Horizon (Level)	A1 (1)	B2 (2)	C/B (3)		
Depth (cm)	0 –10	10 - 28	28 – 80+		
Boundary	Clear	Gradual			
Field Texture	Sandy Loamy (Fine sand)	Clay loam	Weathered substrate		
Structure	Massive Earthy	Massive Earthy	Gravelly		
pH (1:5 H_20)	6.3	6.0	5.9		
EC dS (1:5 H_20)	0.029	0.011	0.011		
Dominant Colour	10YR 4/2 Dark Grayish Brown	10YR 4/4 Dark Yellowish Brown	10YR 7/4 Very Pale Brown		
Mottles	-	-	-		
Emerson	2 (Slaking 1)	2 (Slaking 2)	2 (Slaking 3)		
Coarse Frags (%)	20	0	0		

Site 1 Soil exposure

Soil and gravels



Emerson Test

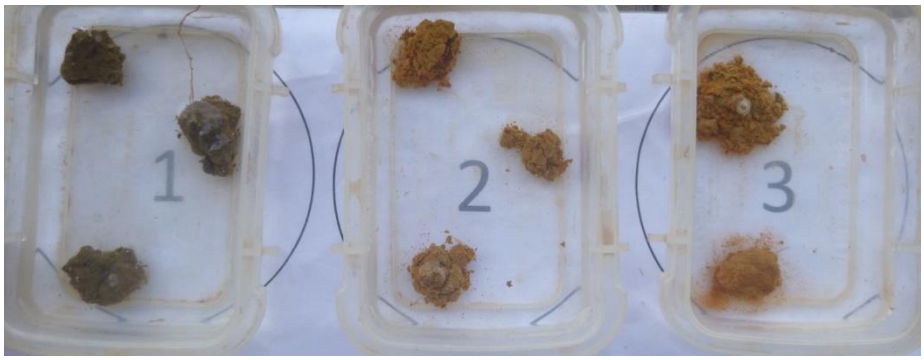
Site 2 – Moderately well drained, Moderately deep, Gravelly Brown Kandosol (Gravelly Yellow earth)

Slope: 0%	**Erosion**: nil	**Surface gravel** (%): 5%
Landform: Plain	**Surface water** (m): >30m	**Runoff:** Slow
Fill: Nil	**Drainage**: Moderately well	**Surface**:
Stopped by: Too gravelly/loose	**Rock outcrop**: nil	
Vegetation: Woodland: *Eucalyptus tectifica, Acacia sp, Xanthostemum paradoxus*, Shrubs: *Buchanania obovata, Cycas armstrongii, Pandanus spiralis, Calytrix exstipulata*		

Soil Horizon (Level)	**A1 (1)**	**B21 (2)**	**B22 (3)**		
Depth (cm)	0 –12	12 - 26	26 – 50+		
Boundary	Clear	Gradual			
Field Texture	Sandy clay loam (Fine sand)	Clay loam	Light clay		
Structure	Massive Earthy	Massive Earthy	Massive Earthy		
pH (1:5 H_20)	5.7	5.9	6.0		
EC dS (1:5 H_20)	0.014	0.007	0.007		
Dominant Colour	10YR 4/3 Brown	10YR 5/6 Yellowish Brown	10YR 5/6 Yellowish Brown		
Mottles	-	-	-		
Emerson	8	2 (Slaking 1)	2 (Slaking 2)		
Coarse Frags (%)	15	50	55		

Site 1 Soil surface

Soil and gravels



Emerson Test

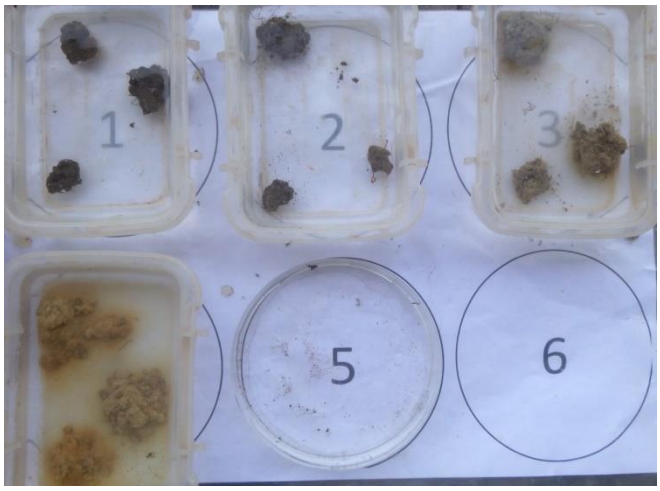
Site 3 – Moderately well drained, Moderately deep, gravelly Brown Kandosol (Moderately deep Yellow Earth)

Slope: 3%	**Erosion**: nil	**Surface gravel** (%): 20%
Landform: Side slope	**Surface water** (m): >30m	**Runoff:** Rapid
Fill: Nil	**Drainage**: Moderately well	**Surface**:
Stopped by: Weathered substrate	**Rock outcrop**: nil	
Vegetation: Woodland: *Eucalyptus tectifica, Acacia sp, Erythrophleum chlorostachys*, Shrubs: *Planchonia careya, Calytrix exstipulata, Pandanus spiralis, Cycas armstrongii, Cochlospermum fraseri, Livistona humilis*		

Soil Horizon (Level)	**A1 (1)**	**B1 (2)**	**B2 (3)**	**C/B (4)**	
Depth (cm)	0 – 8	8 - 24	24 – 60	60+	
Boundary	Clear	Gradual	Gradual		
Field Texture	Sandy Loamy	Sandy clay loam	Clay loam (Fine sand)	Weathered substrate	
Structure	Massive Earthy	Massive Earthy	Massive Earthy	Gravelly	
pH (1:5 H_20)	5.4	5.8	6.0	6.1	
EC dS (1:5 H_20)	0.024	0.010	0.07	0.07	
Dominant Colour	10YR 3/2 Very Dark Grayish Brown	10YR 3/2 Very Dark Grayish Brown	20.0 10YR 5/3 Brown	10YR 5/6 Yellowish Brown	
Mottles	-	-	-		
Emerson	8	8	2 (Slaking 1)	2 (Slaking 3)	
Coarse Frags (%)	40	45	65	70	

Site 3 Soil surface

Soil and gravels



Emerson Test

Site 4 – Well drained, Moderately Deep, Gravelly, Red Kandosol (Gravelly Red Earth)

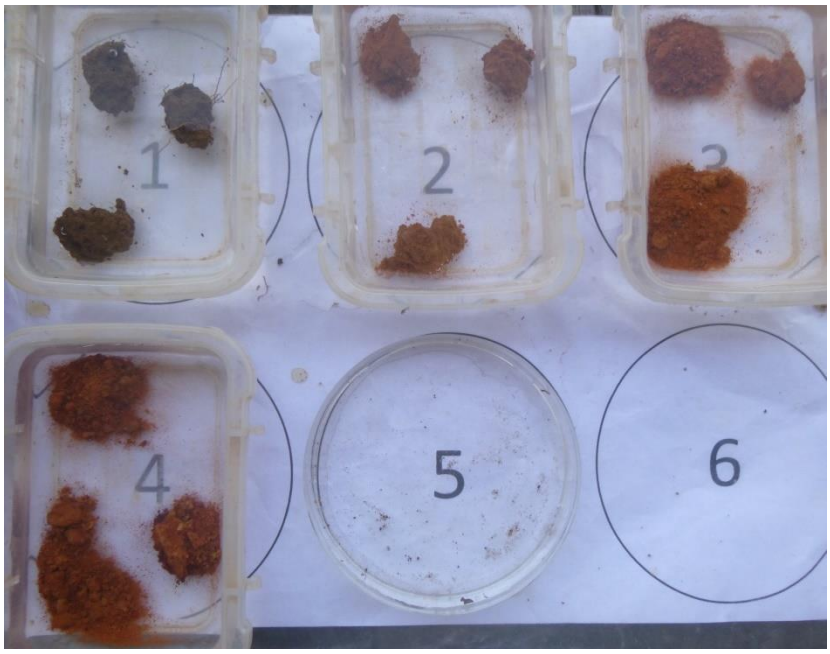
Slope: 4%	**Erosion**: nil	**Surface gravel** (%): 10%
Landform: Rise	**Surface water** (m): >30m	**Runoff:** Rapid
Fill: Nil	**Drainage**: Well	**Surface**: Brown termitaria
Stopped by: Too hard	**Rock outcrop**: 1% - laterite	

Vegetation: Open woodland: *Eucalyptus miniata, Euc. Tectifica, Euc. tetrodonta*, Shrubs: *Cochlospermum fraseri, Cycas armstrongii, Erythrophleum chlorostachys, Buchanania obovata, Lophostemum lactifluus, Strychnos lucida*, Grasses (mown): mixed native spear grass, gamba grass, mission grass

Soil Horizon (Level)	**A1 (1)**	**B1 (2)**	**B21 (3)**	**B22 (4)**	
Depth (cm)	0 –10	10 - 25	25 – 40	40 – 55+	
Boundary	Clear	Gradual	Diffuse		
Field Texture	Sandy clay loam (Fine sand)	Clay loam	Silty clay loam	Light clay	
Structure	Massive Earthy	Massive Earthy	Massive Earthy	Massive Earthy	
pH (1:5 H_20)	5.8	6.0	6.0	6.0	
EC dS (1:5 H_20)	0.014	0.007	0.007	0.007	
Dominant Colour	10YR 4/4 Dark Yellowish Brown	5YR 5/6 Yellowish Red	5YR 5/8 Yellowish Red	2.5YR 4/8 Red	
Mottles	-	-	-	-	
Emerson	8	2 (Slaking 1)	2 (Slaking 3)	2 (Slaking 3)	
Coarse Frags (%)	30	50	45	20	

Site 4 Soil surface

Soil and gravels



Emerson Test

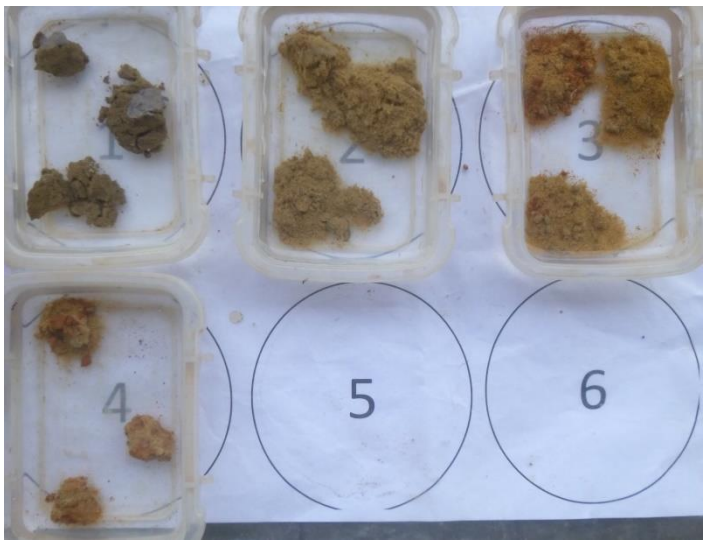
Site 5 – Moderately Deep, Well drained, Very gravelly Brown Kandosol (Gravelly Yellow Earth)

Slope: 4%	**Erosion**: nil	**Surface gravel** (%): 60%
Landform: Plain	**Surface water** (m): >30m	**Runoff:** Rapid
Fill: Nil	**Drainage**: Well	**Surface**: Red/brown termitaria
Stopped by: Weathered substrate	**Rock outcrop**: nil	
Vegetation: Open woodland: *Eucalyptus tetrodonta, Acacia auriculiformis*, Shrubs: *Planchonia careya, Buchanania obovata, Terminalia ferdinandiana, Calytrix exstipulata, Xanthostemum paradoxus, Lophostemum lactifluus*, Grasses (mown) native spear grass, Mission grass, gamba grass.		

Soil Horizon (Level)	**A1 (1)**	**B1 (2)**	**B2 (3)**	**C (4)**	
Depth (cm)	0 –15	15 - 31	31 – 60	60 – 80+	
Boundary	Clear	Gradual	Diffuse		
Field Texture	Clayey sand (Fine sand)	Sandy loam	Clay loam	Weathered substrate	
Structure	Massive Earthy	Massive Earthy	Massive Earthy		
pH (1:5 H_20)	6.1	6.0	5.2		
EC dS (1:5 H_20)	0.008	0.007	0.024		
Dominant Colour	10YR 5/3 Brown	2.5Y 6/4 Light Yellowish Brown	10YR 5/8 Yellowish Brown		
Mottles	-	-	-		
Emerson	2 (Slaking 1)	2 (Slaking 2)	2 (Slaking 3)		
Coarse Frags (%)	50	50	55		

Site 5 Soil surface

Soil and gravels



Emerson Test

Site 6 – Shallow, Kandosolic Hydrosol (Yellow earth)

Slope: 1.5%	**Erosion**: nil	**Surface gravel** (%): 0%
Landform: Foot slope	**Surface water** (m): <30m	**Runoff:** Slow
Fill: Nil	**Drainage**: Imperfect to poorly	**Surface**: Brown/grey termitaria
Stopped by: Too gravelly	**Rock outcrop**: nil	
Vegetation: Grassland (Mown) Spear grass, gamba grass, mission grass, Adjoining Woodland: *Corymbia polycarpa, Eucalyptus tetrodonta,* Shrubs: *Lophostemum lactifluus, Planchonia careya, Acacia auriculiformis*		

Soil Horizon (Level)	**A1 (1)**	**A3 (2)**	**B2 (3)**	**C/B (4)**	
Depth (cm)	0 –8	8 - 15	15 – 25	25 – 41+	
Boundary	Clear	Gradual	Gradual		
Field Texture	Clayey sand	Sandy loam	Clay loam	Weathered substrate	
Structure	Massive Earthy	Massive Earthy	Massive Earthy		
pH (1:5 H_20)	5.2	5.6	5.7		
EC dS (1:5 H_20)	0.007	0.006	0.005		
Dominant Colour	7.5YR 3/4 Dark Brown	5YR 3/4 Dark Reddish Brown	2.5YR 2.5/4 Dark Reddish Brown		
Mottles	10% faint	20% faint	20% faint		
Emerson	8	2 (Slaking 1)	2 (Slaking 1)		
Coarse Frags (%)	15	10	40	70	

As this site was assessed to confirm suspect soil properties and is not being considered for onsite wastewater disposal no further assessment was undertaken

VULNERABLE FLORA SURVEY

SUBDIVISION OF:

SPECIFIC USE ZONE SL18

Lots 16 & 17 LTO 73/01 and SECTIONS 4185, 4579 & 4580

(155A, 155B, 175, 195 and 205 Lowther Road)

and

PUBLIC ROAD IN:

ZONE RL, Lot 14 LTO 69/09, Thorburn Road

(296 Bees Creek Road)

Hundred of Strangways

Bees Creek

The next page contains excerpts relevant to Vulnerable Flora. A survey of vulnerable flora was required to be undertaken pursuant to Condition 2. (f) of SL18. The excepts have been taken from a preliminary report by Ecoz prepared for L J Bandias in 2016 regarding land suitability. The Table in the excepts also covers Fauna which was not specified in SL18.

Findings of the survey (Table 3 under Group: "Plants") are reflected in the subsequent subdivision layout design and, management of identified vulnerable species (cycads) which occur on the Parcel is discussed in the Planning Report for DA1 at Clause 5 in Part B.

Excerpts from a site investigation report for the Parcel by Ecoz in 2016.

2.1.5 Potential threatened species

A database search for listed threatened species was undertaken for the Property. A search of the Protected Matters database identified threatened species listed under the *EPBC Act* that could potentially be found on the property and/or the surrounding area (within a 10 km Buffer zone). The search tool 'NT Infonet' was used to identify species listed under the *Territory Parks and Wildlife Conservation Act* (*TPWC*) that have been recorded on the property and/or its immediate surroundings. The searches identified 16 listed threatened species (Table 3).

Cycas armstrongii was observed during the survey and is a locally common species under threat by development within the Litchfield Shire. There is currently no translocation requirement for this species during development activities, however the proposed development of the lots should try to avoid clearing this species if possible.

A targeted *Typhonium praetermissum* survey has also been conducted on this Property by EcOz Environmental Consultants during a wet season survey (EcOz 2016). The survey did not locate the species within the Property.

No additional targeted threatened species surveys have been undertaken and therefore additional threatened species may be present in the area, but have not been recorded. However, the Property in its current state is highly impacted by Gamba grass and Perennial Mission grass, with large areas of native vegetation having undergone selective clearing of the midstrata. Therefore, the Property is unlikely to provide significant habitat for threatened species within the area.

EcOz Environmental Consultants

Table 3. Potential threatened species based on database searches

Group	Species	Common Name	TWPC Status	EPBC Status
Plants	*Typhonium praetermissum*	Typhonium	Endangered	Endangered
	Cycas armstrongii	Armstrong's Cycad	Vulnerable	Not listed
Amphibians	*Uperoleia daviesae*	Howard Springs Toadlet	Vulnerable	Not listed
Reptiles	*Varanus mertensi*	Martens Water Monitor	Vulnerable	Not listed
	Varanus panoptes	Yellow-spotted Monitor	Vulnerable	Not listed
Birds	*Limosa lapponica*	Bar-tailed Godwit	Vulnerable	Not listed
	Geophaps smithii smithii	Partridge Pigeon	Vulnerable	Vulnerable
	Rostratula australis	Australian Painted Snipe	Vulnerable	Endangered
	Tyto novaehollandiae kimberli	Masked Owl	Vulnerable	Vulnerable
	Numenius madagascariensis	Eastern Curlew	Vulnerable	Critically Endangered
	Calidris ferruginea	Curlew Sandpiper	Vulnerable	Critically Endangered
Mammals	*Antechinus bellus*	Fawn Antechinus	Endangered	Vulnerable
	Dasyurus hallucatus	Northern Quoll	Critically Endangered	Endangered
	Macroderma gigas	Ghost Bat	Not listed	Vulnerable
	Saccolaimus saccolaimus nudicluniatus	Bare-rumped Sheathtail Bat	Not listed	Critically Endangered
	Mesembriomys gouldii	Black-footed Tree-rat	Vulnerable	Not listed
	Rattus tunneyi	Pale Field-rat	Vulnerable	Not listed

Details of reference document.

EcOz Environmental Consultants

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1.0	12 August 2016	Issue document to client	D. van den Hoek
1.1	27 September 2016	Incorporated client changes	D. van den Hoek
1.2	27 September 2016	Submitted final to client	N. Bancroft

Recipients are responsible for eliminating all superseded documents in their possession.

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Infrastructure Report

Proposed

SUBDIVISION OF:

SPECIFIC USE ZONE SL18

Lots 16 & 17 LTO 73/01 and SECTIONS 4185, 4579 & 4580

(155A, 155B, 175, 195 and 205 Lowther Road)

and

PUBLIC ROAD IN:

ZONE RL, Lot 14 LTO 69/09, Thorburn Road

(296 Bees Creek Road)

Hundred of Strangways

Bees Creek

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1. INTRODUCTION:

This Infrastructure Report of proposed works is a companion-document to the Planning Report which accompanies Application DA1 for Development Consent. The Planning Report covers planning aspects of roads and services, whereas the infrastructure report primarily addresses technical matters.

Proposals are concept-only based on the proposed layout in the Dimensioned Plan which is subject to approval by the consent authority and, based on standards of services normally provided in RR subdivisions as varied, if any, by SL18.

2. PROPOSED INFRASTRUCTURE:

Infrastructure that is proposed to be provided by the developers may be summarized as follows:-

a) Roads with Stormwater Drainage,

b) Town-Water Supply connected to lots,

c) Town-Electricity within public road reserves, accessible to individual lots,

d) NBN type pits and pipes, generally within public road reserves,

e) Onsite Wastewater Disposal sites within individual lots and Works within Lots.

3. TECHNICAL REQUIREMENTS:

Most of the proposed infrastructure is intended for handover to relevant services authorities for care and maintenance. The Development Permit typically contains Conditions such as:

- Works to be handed over shall be in accordance with the technical requirements of the services authority and to the satisfaction of the consent authority,
- Certain other works shall be to the satisfaction of specified government departments and/ or the consent authority.

Technical standards to be used on the project are typically firmed-up after issue of a Development Permit, using standards that shall be current at the time of detail design.

4. PROPOSED TECHNICAL STANDARDS for WORKS to be HANDED OVER:

Traditional or commonly-used standards for works to be handed over that are current at the time of detail design are proposed throughout the parcel.
These standards include:-

- Bitumen sealed roads, to Litchfield Council technical requirements,
- Both urban-type and rural-type road cross-sections, using City of Darwin and Litchfield Council standards respectively,
- Overhead electricity, with minimum-standard street lighting, to PWC standards and Litchfield Council approved proposal respectively,
- Normal new underground watermains and fittings, to PWC standards.

Technical standards for Road W shall be developed after issue of a Development Permit. The current proposal is for a divided carriageway so that the existing DN1050 underground watermain shall be within a central median, rather than beneath a carriageway. An existing overhead powerline adjacent to the watermain shall also be within the proposed median. It is expected that

requirements of PowerWater in respect of the DN1050 watermain shall influence the technical standards for the road and associated services.

5. PROPOSED TECHNICAL STANDARDS for WORKS within LOTS:

The draft WMP indicates that no onsite work is required in respect of soils within designated wastewater envelopes; the developers may elect to clear these areas.

Other proposed works within lots includes:

- Fill (including cut) associated with roadworks applicable to lots 6, 7, 10 & 11 and minor areas in lots 8 & 9,
- Drainage works within lots 2, 10 and 11,
- Visual vegetation buffers and associated firebreaks within lots 1, 2, 3, 8, 9, 10 & 11 and a potential minor area in Sec 4579B,
- Firebreaks elsewhere,
- Potential decommissioning of existing reln drains in lots 4 & 9 and, installation of secondary treatment systems and irrigation in designated envelopes,
- Decommissioning of an unused bore in or near lot 4.
- Ground cover and/or revegetation to disturbed areas within lots, other than firebreaks or opposite access strips.

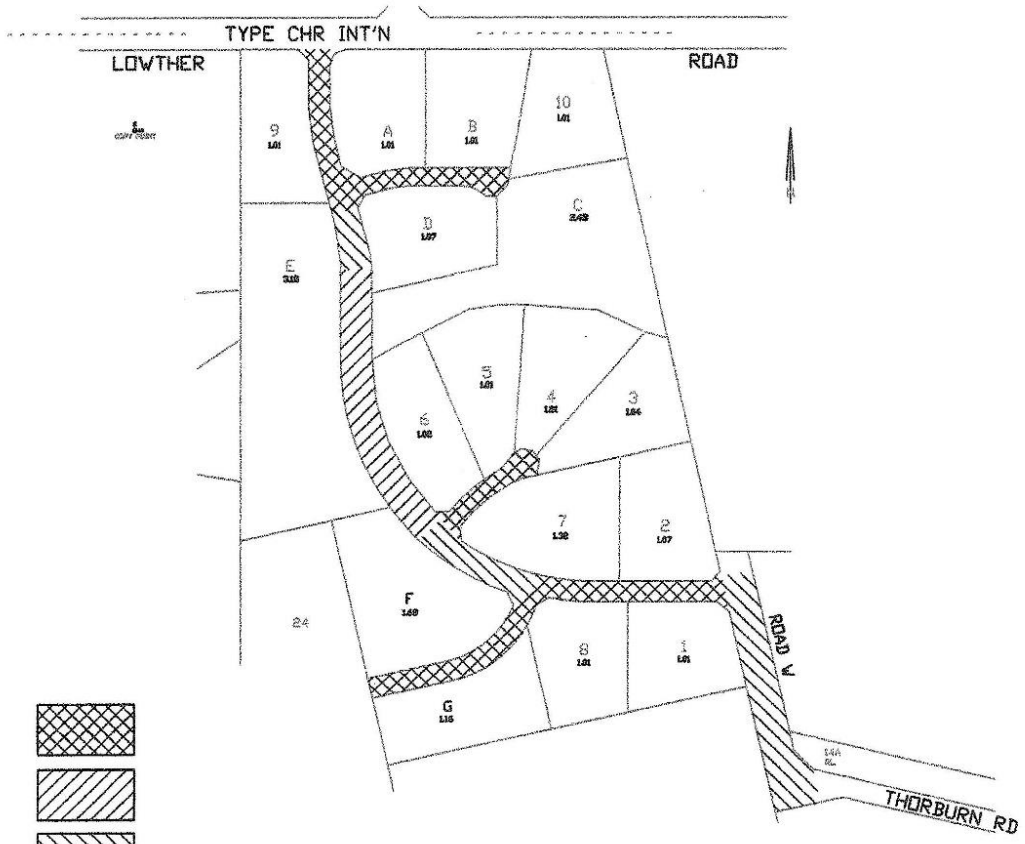
Proposed technical standards for the above are summarized as follows:

- Depth of fill in lots: finished surfaces shall drain towards adjacent road; depths of fill shall be a function of verge levels, desirable slope and surface levels after excavation. If depth in any lot exceeds 400mm then design, supervision and certification shall be by a Geotechnical Engineer. The design and completed construction shall be subject to amended LSA's confirming Suitability Class 2 or better for the identified 1ha areas. Amended LSA's can be submitted to the consent authority if required.
- Drainage works within lots 2 & 11 shall discharge into works to be handed over to Council in DA1 and DA3 respectively. The design standard for lot 2 shall be at least Q5 and the standard for lot 11 shall be Q100 adjacent to fill. Drainage works for lot 10 shall be privately maintained and designed for Q100.

6. ROADWORKS:

6.1 Types of Roads and Extents:

The diagram on the next page illustrates the extents of proposed urban type roads and rural type roads together with transition types between urban and rural.
The western verge of Road W is proposed urban type with footpath.
Existing roads (Thorburn & Lowther) are rural type.



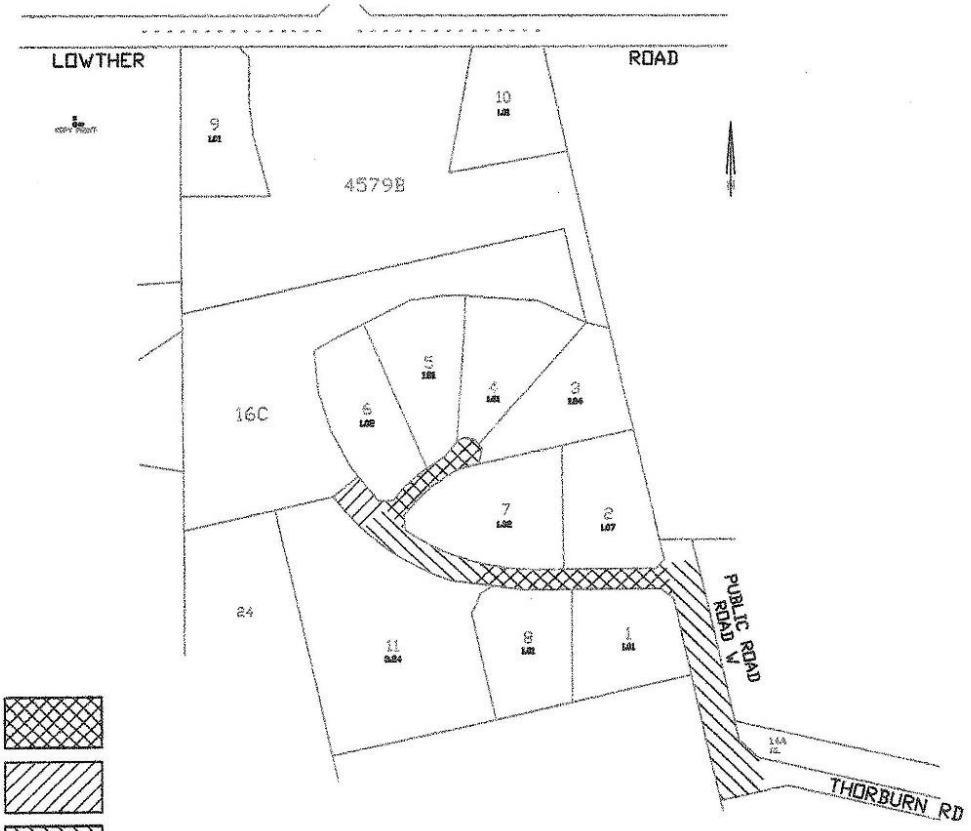
LEGEND

URBAN TYPE

RURL TYPE

TRANSITION PART URBAN, PART RURAL

ULTIMATE DA1, DA2 & DA3



LEGEND

URBAN TYPE

RURL TYPE

TRANSITION PART URBAN, PART RURAL

DA1 CONSTRUCTION, STAGES 3, 4 & 5
STAGE 5 LAYOUT SHOWN

ROAD TYPES, EXTENTS

6.2 Ends of Roads at Various Stages:

Staging involves end-of-road at three locations. Two ends at stages 3 and 4 shall be temporary. The road-end at the final stage 5 may be in place for a longer time; subject to progress on DA2. The design objective shall be to provide fit-for purpose roads with suitable turn-around provision and end-of-road signage.
Actual detail configuration of temporary ends depends on progress of subsequent stages. Temporary ends shall utilize subsequent intersections namely Road A in stage 3 and Road D in stage 4. End of stage 5 is envisaged to be a hammer-head configuration in Road A including a temporary access strip for Lot 16C.

6.3 Longitudinal Grading:

Longitudinal grading of Roads A and C in DA2 and Road D in DA3 shall be designed to an advanced stage in DA1 in order to confidently design aspects of DA1 in particular:-

- Road A in stages 4 and 5 in DA1,
- Works within lot 6, 9, 10 and 11.

Longitudinal grading of Road A in DA2 shall also require advanced design of the future culvert in the main drainage path.

6.4 Intersection of Thorburn Road and Road W:

Elements of existing road (eg bitumen surface) appear to encroach into Lot 18. Gravel tracks beyond the bitumen seal head into Lot 12 (VCL) and elsewhere.

Proposed intersection shall be contained within the new public road reserve created from Lot 14. It may be desirable for some elements of the new intersection to be constructed within Lot 12, particularly gravel tracks which link up with existing tracks.

Currently, there is no proposal to remove any existing construction from Lot 18; any such work shall normally be at the request of the owner of Lot 18 and, perhaps at the request of the Council if in the event there is an agreement in place regarding the encroachment.

A proposal for a new access serving Lot 18 shall form part of the design of Road W. The proposal shall include location and type. In the event of delays, construction of such access should not form part of handover of Road W to the Council. Fencing of Lot 18 is not considered to be part of DA1 development.
Similarly, any delays resulting from proposals by others to develop any Lot within LTO 73/01 should not impact on scope of work, approvals or handover of DA1 works.

7. STORMWATER DRAINAGE:

A schematic of proposed stormwater drainage is in the Appendix of the SWMP.

8. WATER RETICULATION:

The diagram on the next page illustrates the proposed layout for new watermains.

8.1 Timing:

Design of new mains and services for DA1 shall be undertaken in Stage 3.

Design of sections of DN375 to be lowered shall be designed and constructed in Stage 3 in association with design of roadworks and accesses in Road W.
One lowered section opposite Road A shall have a Tee and an appropriate length of new main with a temporary dead-end.

New reticulation shall otherwise be wholly constructed in Stage 4. The loop-connection (Tee) to the above ground DN375 near lot 3 occurs within the Electricity and Water Supply Easement within Sec 5539, which is otherwise a privately owned property not part of the development-Parcel. Services-connections for stage 5 lots can be installed in stage 4 or as otherwise directed by PWC.

8.2 New Services:

Service for Lot 6 (a stage 5 lot) shall be off the main in Road C (not off the temporary dead-end).
Service for lot 1 (and Lot 24) in Stage 3 is proposed off a new underground section of the DN375 main.
Service for lot 11 is proposed off the branch-main intended for Road D in DA3. The service shall be relocated in DA3 as part of DA3 development. The meter may also need to be relocated.

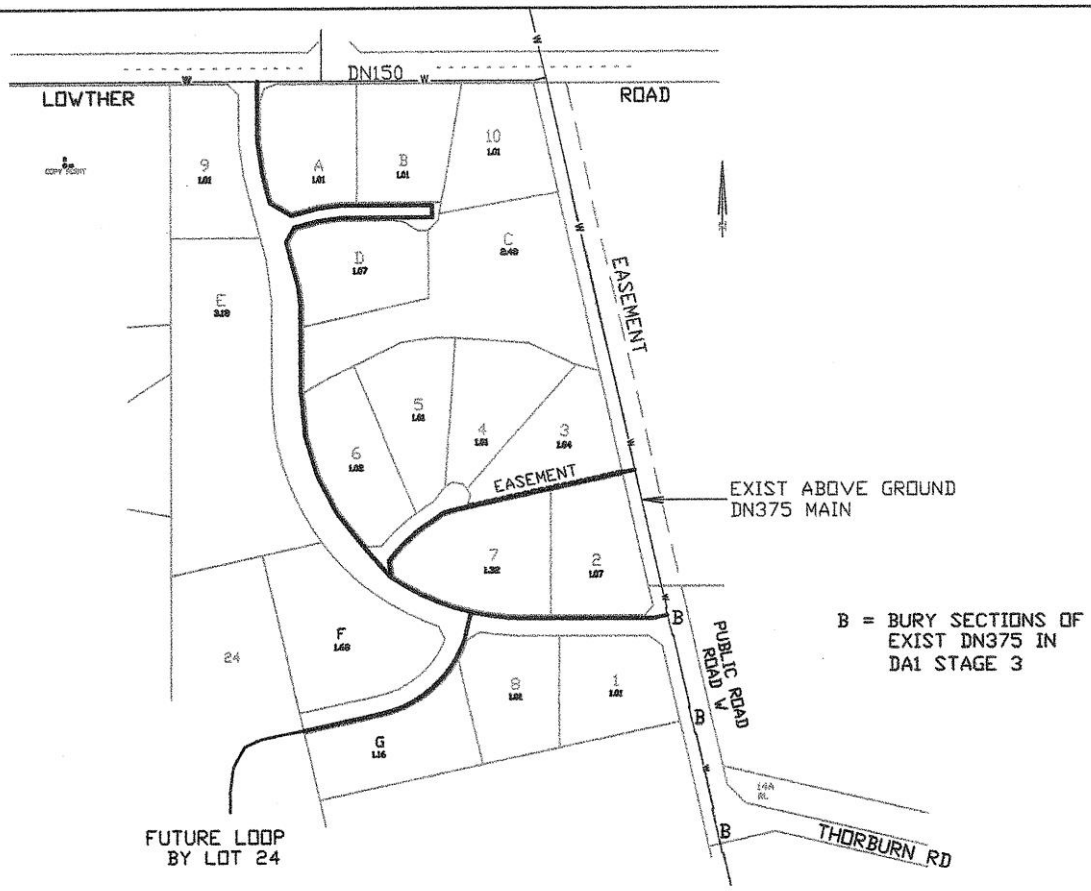
8.3 Easements:

Easements shall be offered to PWC along the new watermain within residual areas (Lots 17C and 16B) after completion of the new main; effective when new Titles are issued. Parts of the easements shall be extinguished in Stage 5 associated with new road reserves for Road C and extension of Road A. The section of easement within lot 3 shall remain indefinitely; it shall also be used as a firebreak. Widths of easements and, location and protection of hydrants or valves within easements, shall be to PWC satisfaction.

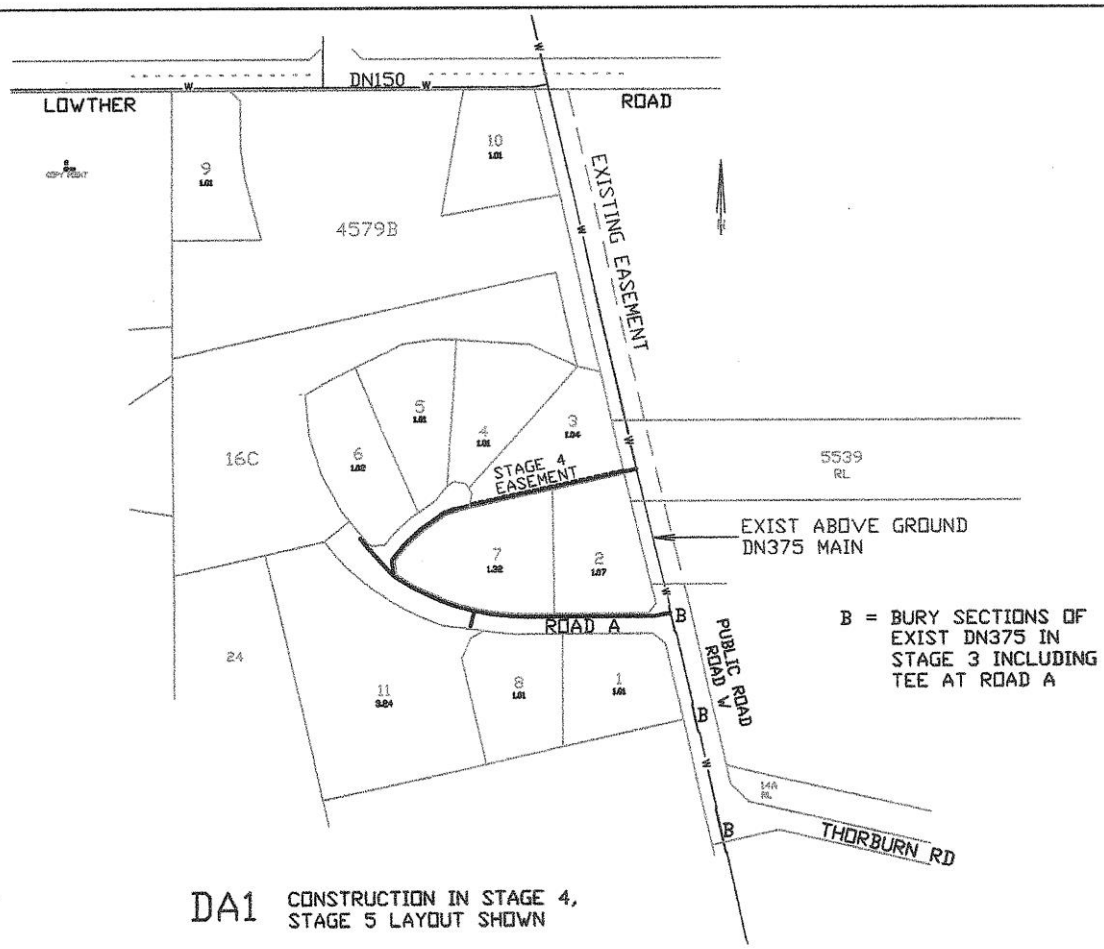
8.4 Lowering Sections of DN375:

Clauses 8.4 to 8.6 are mainly related to design of Road W roadworks and the associated alterations to existing infrastructure. The matters are discussed under Water Reticulation because it is envisaged that designs shall be submitted to PWC along with designs for new water reticulation.

It is envisaged that new, underground sections of DN375 pipe shall be installed next to and parallel with the existing above-ground main. Once these sections have been tested and approved, sections of the existing DN375 can be cut out and removed and, suitable bends and fittings installed to join underground pipe to above-ground pipe.



ULTIMATE DA1, DA2 & DA3



DA1 CONSTRUCTION IN STAGE 4, STAGE 5 LAYOUT SHOWN

NEW WATERMAIN RETICULATION, LAYOUT CONCEPTS

8.5 Existing Banjo Connections:

Banjo connections may exist within Road W, but have not yet been surveyed. Lots which currently rely on banjo connections within Road W have not yet been identified.

The intention is to work with PWC for the orderly replacement of any existing banjo connections within Road W with standard-type underground services with standard cover and alignment within the road reserve. Such work shall be completed no later than stage 3.

8.6 Existing Valves and Barriers serving DN1050 main:

Two above-ground valves with barriers occur within Road W.
The intention is to work with PWC and Council during the detail design of Road W to achieve satisfactory outcomes and to nominate elements of infrastructure (eg barriers) which are to be maintained by PWC or Council. Requirements for the existing HV powerline shall also be addressed.

9. ELECTRICAL RETICULATION:

The diagram on the next page illustrates the proposed layout for new overhead electrical reticulation.

9.1 Timing:

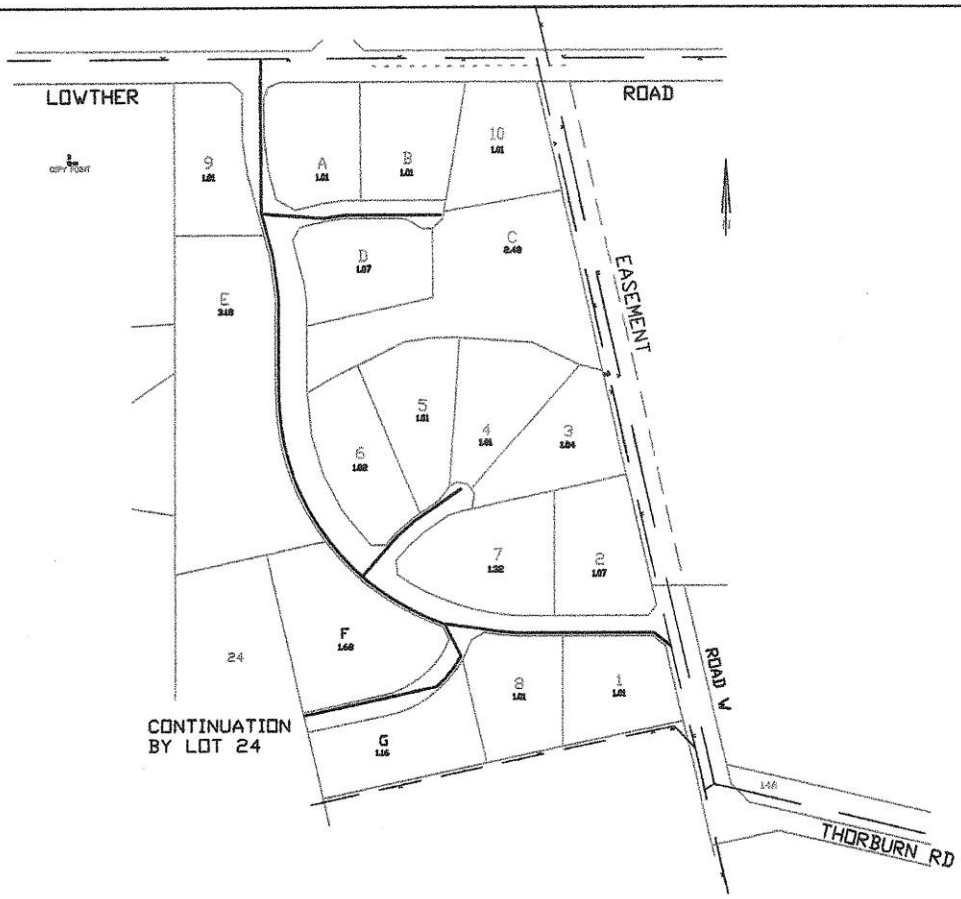
Design of new reticulation for DA1 shall be undertaken in Stage 3. This is to ensure that the proposed relocation of existing HV/LV within the west verge of Road W shall address all requirements for tee-off into Road A. If desirable, one or more spans into proposed Road A shall be constructed in stage 3 at the time of relocating the existing HV/LV.
Street lighting required in Road W shall be provided in Stage 3.
Service to Lots 18 and 24 may be temporarily interrupted during Stage 3 as part of relocation works.
Certain works, as nominated by PWC, shall be undertaken by PWC personnel or contractors.
An existing link-span between the central HV line and the west HV/LV line at intersection of Thorburn Road and Road W is affected; increased span.

Reticulation for Road A in stages 4 & 5 is proposed to be undertaken in stage 4.
Reticulation for stage 5 along Road C is proposed to be constructed in stage 5.

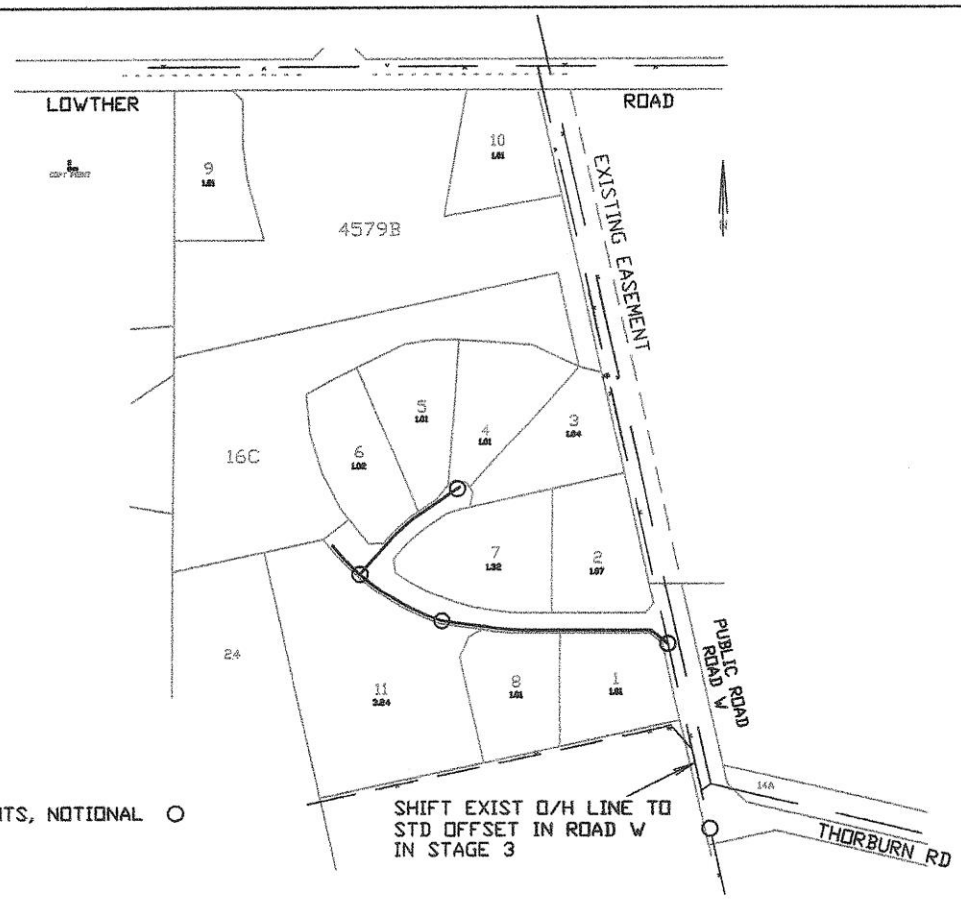
Design and construction in Road A in the vicinity of future Road D shall take into account the requirements for future reticulation in Road D and further extension into Lot 24; it shall also take into account service aerials for the 1ha area within lot 11 and the future needs of potential lot G.

9.2 General:

The design of reticulation generally and pole locations in particular, should take into account other services, property accesses and road safety issues.
Underground power could be evaluated for urban type roads to satisfy road safety issues.
Land improvements within rural type lengths of road shall extend to at least the road reserve boundary to provide a high standard of access. Clearances should be based on design surface levels where fill is proposed.
Solar street lighting proposals may be submitted; proposals shall address all issues that may be raised by PWC and the Council.



ULTIMATE DA1, DA2 & DA3; STREET LIGHTS NOT SHOWN



LEGEND

STREET LIGHTS, NOTIONAL ○

DA1 CONSTRUCTION IN STAGES 4 & 5
STAGE 5 LAYOUT SHOWN

NEW ELECTRICAL RETICULATION, LAYOUT CONCEPTS

STATEMENTS

Companion document for Planning Report

SUBDIVISION OF:

SPECIFIC USE ZONE SL18

Lots 16 & 17 LTO 73/01 and SECTIONS 4185, 4579 & 4580

(155A, 155B, 175, 195 and 205 Lowther Road)

and

PUBLIC ROAD IN:

ZONE RL, Lot 14 LTO 69/09

(296 Bees Creek Road & Thorburn Road)

Hundred of Strangways

Bees Creek

CONTENTS

1. **Traffic**
2. **Existing Road Network**
3. **Thorburn Road**
4. **Easements**

1. TRAFFIC

T1. DAILY VOLUMES at NEAREST SIGNIFICANT INTERSECTION

Current, daily traffic volumes at the intersection of Bees Creek Road and Lowther Road are about 1,510 vehicles per day.

The daily volumes are projected to grow to about 2,090 vehicles per day over the next decade.

This growth of 580 vpd takes into account proposed subdivisions such as SL18 and potential future subdivisions.

The volumes are low for collector roads.
As such, a further traffic study shall not likely be warranted.
For comparison, Bees Creek Road from the highway to Sattler Crescent is projected to grow to 17,710 vpd. Growth to this volume is predominantly generated by an increased use of Freds Pass Recreation Reserve and developments of further community-purpose facilities in the vicinity of Sattler Crescent.

T2. VOLUMES at INTERSECTION of BEES CREEK ROAD and THORBURN ROAD

No current figures have yet been obtained.

It is surmised that a large percentage of traffic using Thorburn Road also uses the above intersection, in T1. Most of the remainder would use Bees Creek Road south of Thorburn Road.
Through traffic is estimated to be significantly less than 1,510 vpd.

Thorburn Road serves Lot 16 to 24 (9 properties) plus a small number of other lots as well as occasional maintenance-traffic for PWC assets. DA1 in SL18 shall generate predictable growth in traffic from the occupation and use of an additional eight 1ha lots.

It is considered that a traffic study is not warranted for the intersection of Bees Creek Road and Thorburn Road.

T3. VOLUMES at INTERSECTION of THORBURN ROAD and PROPOSED ROAD W

Daily volumes shall largely be generated by the 17 (+/-) properties that it serves; some are presently unoccupied.

Normally, a traffic study would be considered unnecessary for the given number of properties.

T4. VEHICLE SIZE

A standard single unit truck is typically used, however consideration shall be given to special vehicles (ie larger) if details are provided by PWC. Turn-around room for single unit truck to be provided at the DA1-end of Road A.

T5. INTERSECTION TYPES

Type 1 intersections are considered suitable for intersections of Thorburn Road with Bees Creek Road and Road W.

May 2017.

2. EXISTING ROAD NETWORK

Preamble

Any new road in a proposal to subdivide land zoned SL18 must be designed to interconnect with the existing road network (clause 2 h (i) refers).
Applicants therefore need to identify or nominate the relevant, existing road network.

N1. Existing Road Network (as at July 2017)

After inquiry, the identified road network comprises:-

- Lowther Road,
- Thorburn Road (diagram in Cl 3.2.1, page 7 of DA1 Part A).

N2. Status of Network-Roads (as at Sep 2017)

Item	Lowther Rd	Thorburn Rd
Gazetted Public Road Reserve	yes	X
Land vested in a council at commencement of *Local Government Act*	yes, LSC	X (crown land)
Purpose of Land	Road reserve	Proposed public road reserve (Lot 13, ref note on LTO 69/09)
Sealed (bitumen) road, open to traffic	yes	yes
Tax-payer and/or rate-payer funded existing construction	yes	yes
Road construction arranged by:-	Council	Not known
Care control and management of:-	Council	The Territory
Provides practical access to following lots in parcel	4185, 4579 & large part 4580	16, 17 and narrow part of 4580
Provides practical access to other lots on LTO 73/01 and 69/09.	X	12 (crown land), 4, 18 to 24 and 3929
Provides legal access to:-	4185, 4579, 4580 and 16 to 24	12 (crown land)
Lots & ROWs with frontage to network roads	4185, 4579, 4580 and ROW	4, 12 & 14 (crown land) 18, 3929 and ROW
Recognised Road Name	yes	yes
zone	multiple	RL

Thorburn Road has been identified as a road on crown land that is not presently or formally under the care control or management of the Litchfield Council.
The following Statement 3. discusses handover to the Council.

N3. No Defined Terms

The requirement to interconnect with the existing road network does not contain any defined terms under the NT Planning Scheme; ordinary meaning applies.

N4. Land not part of Road Network

The land comprising right of way easements on LTO 73/01 is considered as not being part of the road network.

N5. Interconnect

Interconnect is considered to mean:-

- A road serving a large number of lots should be able to be extended to a second existing road. The extension may be part of future development of adjoining land by others.
- Whereas, a permanent cul-de-sac may be suitable for a small number of lots.

Roads shall interconnect in DA2 when Road A is extended to Lowther Road.

N6. Proposed Network-Road; Road W

The subdivision proposes creating a public road in part of Lot 14 LTO 69/09 (crown land) to provide a link between the Parcel and Thorburn Road. Survey and Gazetted Public Road Reserve status is proposed in Stage 2 of DA1 and construction in Stage 3.
The Table in Clause 7.1 of Part A describes alterations to existing infrastructure located in Lot 14; in addition, air valves may be relocated to maximise the width available for new roadworks.

N7. Alternative meaning of Interconnect and Existing Road network.

N7.1 Alternative meaning of Interconnect:- one only connection of a road in SL18 to existing network and, ultimately, only a single intersection to serve all of LTO 73/01.
N7.2 Alternative view of Existing Road Network:- Thorburn Road should be regarded as a private road for which access is currently not restricted but which could change in future.
N7.3 Alternative view of Lot 13, Proposed Future Public Road:- There is no obligation for the Territory to carry out the proposal, made in 1969, at any time in the near future.

The Applicant to DA1 does not agree with the above alternatives.

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3. THORBURN ROAD

This Statement concerns Public Road Reserve status and the placing of Thorburn Road under the care control and management of the Litchfield Council or another suitable authority.

L1. No Subdivision

The entire Lot 13 LTO 69/09 effectively comprises the 'road reserve' of Thorburn Road. Lot 13 is to be placed with the Council as a single piece of land without subdivision or consolidation.

L2. Use or Development of Land as a Road

There are circumstances where a road can be used or developed without a DA or DP; Clause 1.3.2(a)(i) of the Scheme refers. Notwithstanding this clause, Crown Land Estate would like the DCA to determine the future of Thorburn Road in association with determination of DA1.

L3. Transferring Control to Council

Clause 185 in Part 12.3 of the *Local Government Act* sets out a number of ways that land for roads can be assigned to the Council under the *Local Government Act* or some other Act. The procedures involved are generally well known to senior Council staff.

It is proposed that Thorburn Road (Lot 13) should be handed over to the Litchfield Council during Stage 1 of the proposed subdivision. Steps that need to be taken should be permitted and commenced at the earliest opportunity and should be independent of Conditions Precedent (if any) in respect of the subdivision.

L4. Technical Details of Thorburn Road

L4.1. Nominal width of Lot 13.

Lot 13 is approximately 20m wide which was the typical road reserve width in 1969.
The sealed carriageway is approximately along the centreline.

L4.2. Desirable width of Thorburn Road reserve.

There is potential to increase the width of the road reserve during Stage 2 by utilizing part or all of adjoining Lot 14 (crown land) as 'road widening'.

Desirable width of Thorburn Road reserve should be ascertained from usual parameters (eg stormwater drainage, lane widths etc) rather than adopting a 'standard 30m' or other width.

L4.3 Offset carriageway after road-widening

If the road reserve is widened, the carriageway shall be 'offset'. An offset carriageway is acceptable in many situations (eg on curves, large drain on one side, steep crossfall) including reuse of existing, sound traffic lanes after road reserve widening.

L4.4 Zoning
Lot 13 is zoned RL; the same as adjoining land.

L5. Council Agreement with Transfer

There may have been reasons why Lot 13 was not part of the land vested in the Litchfield Shire Council at the commencement of the *Local Government Act* or, within a reasonable period thereafter.
The Applicant does not know which Authorities were involved in:-

- construction of roadworks within Lot 13,
- associated intersection works, stormwater drainage and signage in Bees Creek Road,
- the road name.

The Applicant does not know which Authority maintains roadworks in lot 13 or associated works in Bees Creek Road.
The Council has indicated that there may be conditions of acceptance such as upgrades of roadworks to Council's satisfaction.

L6. Neighbour's View

DAS recommended the Applicant obtain written evidence of the view of arms-length, property owners affected by Thorburn Road.
There are 7 affected property owners; viz owners of Lots 18 to 24 LTO 73/01; Lot 24 is zoned SL18 and may in some instances not be entirely independent.

From meetings over past years, most owners would prefer a conventional road layout for access to their lot. A smaller number indicated an interest in subdivision whilst another small number insisted that Thorburn Road is already a public road. This trend seems to be applicable today. Sealed dust-free access was mentioned a few times as a desirable improvement whilst Lot 18 already has dust-free access to the front boundary via Thorburn Road.

Summary of neighbours' view as at 22 Oct 2017:-

Lot, LTO 73/01	18	19	20	21	22	23	24
In Favour of Public Road	yes	yes	yes	yes	apparently yes, nil written reply, yet	absent	yes

A standard form was provided to each neighbour (see Sample, at end of Statement 4.)).
Completed form supplied by neighbours have been forwarded to DAS; neighbours' details/signatures remain nfp.
Neighbours may make fresh submissions once the DA is advertised.

4. EASEMENTS

This Statement concerns the future of those parts of existing Right of Way Access Easements and Water Supply Easements that are situated within the Parcel for DA1.

The Applicant proposes to obtain consent from each property owner once all Conditions of the DP become known and, where such consent is not forthcoming, to apply for the removal of such easements.

E1. Strategic View of Right of Ways

Battleaxe lots have been discussed in Planning Concepts and Land Use Objectives over several decades and, measures to overcome problems have been proposed. Measures in certain locations have been carried forward into current policy documents for Litchfield. There are more battleaxe lots than Lots with ROWs. Lots with ROWs are not addressed in current policies however the problems identified for battleaxe lots generally apply also to ROWs. The strategic aim is to convert lots with ROWs to conventional layouts (ie normal public road frontage & access); with conversions done as part of redevelopment particularly subdivision.
Currently, there appears to be no easy pathway to remove easements; developers only have the tools and means that are available to everyone.

E2. Neighbour's View

DAS recommended the Applicant obtain written evidence of the view of arms-length, property owners with rights over easements. There are 7 affected property owners; viz owners of Lots 18 to 24 LTO 73/01; Lot 24 is zoned SL18 and may in some instances not be entirely independent.

Lot, LTO 73/01	18	19	20	21	22	23	24
In Favour of removal		yes	yes	yes	apparently yes; nil written reply, yet	absent	yes
Not in favour	yes					absent	

The project could only be described to neighbours in general terms; in particular, Conditions that can be made by the consent authority could not be foreshadowed.

E3. Relative Importance

The Applicant recognises the importance of removing easements at appropriate times. However the Applicant considers that the 'easement-issue' does not need to be resolved at the planning-application phase of the project, but should be undertaken soon after a DP is issued.

Next page: Sample of form supplied to neighbours.

PROPOSAL:

1. Thorburn Road to be formally recognised as a Public Road.
2. Right of Way easement, in favour of Lots 18 to 24, over Sections 4579 and 4580 to be cancelled.
3. Water Supply easement, in favour of Lots 18 to 24, over Sections 4579 and 4580 to be cancelled.

Effect of Proposal:

Once Thorburn Road becomes a Public Road, Lots 18 to 24 shall have certainty for vehicle access to and from the rest of the NT road network. Lot 18 shall have direct access while Lots 19 to 24 shall continue to have access via the remaining Right of Way easement network.

Arrangements for ongoing water supply, made between PWC and consumers, are not affected. New water connections may only occur in locations approved by PWC, as at present. Applications to the Registrar of Titles for extinguishing or removal of easements are intended to be made after PA2017/0401 has been determined by the Development Consent Authority.

Background:

The land, now known as Thorburn Road, was transferred to the government for the purpose of future public road in late 1969 or early 1970.

The Right of Way easement and the Water Supply easement to be cancelled was first created in 1973; the easements have not been utilised for the specified or other purposes. The Right of Way easement has remained virgin bush and is impassable for practical vehicle or pedestrian access.

Any town water supply to Lots 18 to 24 have been installed at locations approved by PWC.

Easements are not delineated on Sec 4579 and may not in fact exist.

YOUR VIEW

Proposal 1. Thorburn Road to be formally recognised as a Public Road.	
	Please tick one box
a) In favour	√
b) Don't know or unsure	
c) Not in favour	

Proposal 2. R.O.W.s, in favour of Lots 18 to 24, over Sections 4579 and 4580 to be cancelled.	
	Please tick one box
a) In favour	√
b) Don't know or unsure	
c) Not in favour	

Proposal 3. Water easements, in favour of Lots 18 to 24, over Sec 4579 & 4580 to be cancelled.	
	Please tick one box
a) In favour	√
b) Don't know or unsure	
c) Not in favour	

Signed

…… Owner of Lot 18, 19, 20, 21, 22, 23, 24. Date: ……. Sep 2017

(please circle your Lot)

(please send one completed form or a photocopy) SAMPLE ONLY

J deVRIES Consulting Civil Engineer

mailing address: J deVRIES
GPO Box 2110
DARWIN NT 0801

ABN: **92 909 708 074**

To: DAS, Darwin

Re: DA for Bees Creek Heights,

This letter is an Attachment under 'Statement of Effect' in online application.

Multiple Lots in Parcel:
Lots are described on cover of Planners Report and in Part A.

Dual Applicants:
Owner of Lot 17 is one of two Applicants (ie in addition to L J Bandias):
Bandias Investments Pty Ltd as Trustee
ABN: 66150469247

Owners Consent:
Lot 14 (proposed public road) is Crown Land.
Letter from Crown Land Estate, as owners consent, is attached. A copy of the letter is also included in the Appendix to Planners Report (Part D).

The Online system does not appear to cater for the above complexity.

Yours faithfully

J deVries CPEng 17 Aug 2017.

LITCHFIELD COUNCIL

Community effort is essential

17 November 2017

Development Assessment Services
Department of Infrastructure, Planning and Logistics
GPO Box 1680
Darwin NT 0801

RE: Letter of Comment Development Application

PA2017/0401
Section 4185 (205) Lowther Road,
Section 4579 (195) Lowther Road,
Section 4580 (175) Lowther Road,
Lot 13 (298) Bees Creek Road,
Lot 14 (296) Bees Creek Road,
Lot 16 (155A) Lowther Road,
Lot 17 (155B) Lowther Road,
Bees Creek, Hundred of Strangways
Subdivision to create 13 lots in 5 stages

Thank you for the Development Application referred to this office on 03/11/2017, concerning the above. This letter may be tabled at Litchfield Council's next Council Meeting. Should this letter be varied or not endorsed by Council, you will be advised accordingly.

The following issues are raised for consideration by the Authority:

Council wishes to lodge the following submission under Section 49 of the NT *Planning Act*, in which Council objects to the granting of a Development Permit for the following reasons:

The application is manifestly unclear in what is actually being proposed, and at which stages different portions of the proposal are expected to occur, including references within the application to additional future applications expected to be lodged in the future and requests to amend the NT Planning Scheme within this Development Application. It is not considered that the application fully or adequately lays out the proposal in a manner that allows complete assessment of the proposal. At a minimum, the following items must be addressed for Council to be able to assess the application and determine whether or not any support can be given at any time for the proposal.

a) Thorburn Road exists as a sealed strip of land through a parcel of Crown land – Lot 13. While commonly referred to a "Road", this land has no legal road status and is not owned by Council. This entire proposal relies on getting legal access from Bees Creek to service the newly proposed lots. At the moment, the application does not appear to propose to construct Thorburn Road or to create a road reserve or any other legal right of way access in this location. Council will not accept access to multiple new lots within this subdivision without legal access to the site and formal

construction of a road within either Lot 14 or part Lot 13 and part Lot 14 to Council's satisfaction. A road reserve must be created as part of this subdivision to allow the subdivision to move forward. It is unclear whether or not the Northern Territory Government has given permission for this road reserve to be created over their land (Lot 13 and Lot 14).

b) Plans for the upgrading of Thornburn Road, and the likely relocation of pavement seal to Lot 14, as well as the necessary upgrades to the Bees Creek Road intersection must be reviewed immediately with Council. A full upgrade of Thorburn Road and the intersection with Bees Creek Road will be required as part of this subdivision, to Council's standards, prior to issuing any titles for the any new lots, and at no cost to Council.

c) Council is concerned about how a road reserve would be created over the north-south portion of Lot 14, which contains an above ground pipeline. The application does not give suitable attention to this impediment to a road and proposes that the road may be able to built with a divided carriageway around the pipeline. The road reserve provided is not adequate to provide for such a design and Council will not accept a pipeline through the middle of a Council road. Council has no confirmation from the application as to whether or not Power and Water Corporation would allow for the pipeline to be buried beneath the road. Immediate further discussion is required between the applicant, Power and Water Corporation, and Council prior to any plans for this road or this subdivision moving ahead.

d) Further, the application appears to state that even if a road reserve is created from Bees Creek road to the southern portion of the subdivision that this road reserve would not be created until Stage 2 and that a road would not be constructed until Stage 3. Council will not sign off on any lots within the subdivision or allow titles to be granted for new lots until such time as a road is constructed within a legal road reserve, to Council's standards.

e) The application proposes a mixture of 20m and 30m wide road reserves and indicates the intention for kerb and gutter. Council's standards for one hectare lots is a rural road profile, without kerb and gutter, of a minimum of 30m in width. Plans must be amended to address that requirement. Further, the application proposes to use City of Darwin cross-sections for roads within this subdivision, which is not appropriate or acceptable in the Litchfield Council area.

f) All roads proposed within the subdivision must be constructed to Council's requirements as stated in Council's latest Development and Subdivision Standards. All roads must be constructed at no cost to Council, as is common to all subdivisions within the municipality. All roads must be created within legal road reserves dedicated to Council.

g) Further, Council's standards do not encourage the use of cul-de-sacs and the NT Planning Scheme and Litchfield Subregional Land Use Plan 2016 require an interconnected local road network. Therefore, it is considered that a development of this size should consider an additional connection to Lowther Road, in coordination with Council.

h) Due to the concerns with the road proposals and the fact that the proposals do not meet Council's requirements, it is impossible for Council to evaluate the adequacy of any stormwater drainage information provided, as the design is predicated on

incorrect assumptions, such as the use of kerb and gutter. Council cannot complete an assessment on, nor give any approval for, the stormwater drainage information currently provided. Council is unable to determine whether the proposed subdivision would create drainage issues for the proposed new lots or existing adjacent lots.

i) The Land Suitability Assessment (LSA) provided with the application states that it is based on the drainage information provided in the stormwater management plan provided with the application. As the stormwater management plan proposes incorrect methods of management that do not meet Council's standards, it follows that the portion of the LSA that addresses drainage must also be inadequate to assess the suitability of the site to provide minimum 1Ha of unconstrained land per lot.

j) The application requests amendments to conditions of Zone SL18 in terms of vegetation buffers. A Development Application cannot amend the NT Planning Scheme. Council does not support any changes to the required vegetation buffers as stated in the zone and considers that these vegetation buffers should be established at time of subdivision to ensure their development.

It appears the applicant is arguing against the provision of required setbacks and buffers to future dwellings on the subdivided lots, contending that "there is no advantage to the subdivision-developers regarding setbacks to built form" and that there will be an advantage to future owners to reduce the setbacks. Council contends that the intent of the setbacks and required vegetation buffers is to protect the amenity of the existing and future surrounding neighbours and thus both are essential to appropriate development of a subdivision in this locality.

k) It is unclear what will happen with the existing right-of-way accesses to the properties to the south of the proposed development that currently exist through the proposed development area. Council does not support any application that does not have the full written support of all landowners whose lots would be affected by this proposal.

Should the application be approved, the Council requests the following condition(s) be included as Condition(s) Precedent in any Development Permit issued by the consent authority:

a) All roads and driveway crossovers shall meet Litchfield Council's requirements, and the following changes to the proposed plans are required:
   i. Roads must be minimum 30m in width, to Council's rural standard, and must be located within a road reserve dedicated to Council.

b) Prior to the endorsement of plans and prior to the commencement of works, a schematic plan demonstrating the on-site collection of stormwater and its discharge into Litchfield Council's stormwater drainage system shall be submitted to and approved by Litchfield Council. The plan shall include details of site levels and Council's stormwater drainage connection point(s).
   i. The plan shall demonstrate that stormwater run-off is capable of being discharged across the lot surface to the main drainage system or to an approved alternate connection.
   ii. Litchfield Council stormwater discharge guidelines do not allow concentrated discharge of stormwater from rural lots to adjoining properties or the road reserve. All stormwater is to be channelled, piped or dispersed via sheet flow to the road reserve.

iii. The plan shall demonstrate that the drainage system is designed to cater for both initial storm events (Q5) and major storm events (Q100).

iv. The applicant's plans shall demonstrate that no contaminated water shall enter any waterway or Litchfield Council's drainage system.

c) A Traffic Management Plan for the construction phase of the development shall be submitted to and approved by Litchfield Council. The plan must address traffic control and haulage routes proposed for the development.

d) A Traffic Impact Assessment Report, prepared by a suitably qualified traffic engineer in accordance with the AustRoads Document Guide to Traffic Management Part 12: Traffic Impacts of Developments, in the report structure provided as Appendix C of that document, with particular attention to vehicular, pedestrian, cyclist and public transport issues and opportunities shall be submitted to and approved by Litchfield Council. The Traffic Impact Assessment report is to also include swept paths for any vehicles Class TB2 or larger (as defined in AustRoads 94) entering and exiting the site.

The report should identify any necessary upgrades to the surrounding street network as a result of the implications of the development to the requirements of Litchfield Council. The developer will be required to institute all required upgrade measures at no cost to Litchfield Council.

Should the application be approved, the following condition(s) pursuant to the *Planning Act* and Council's responsibility under the *Local Government Act* are also recommended for inclusion in any Development Permit issued by the consent authority:

a) **A monetary contribution is required to be paid to Litchfield Council in accordance with its development contribution plan for the upgrade of roads and drainage infrastructure as a result of this development.** The contribution payable is in accordance with that for Catchment Area **13C**, in which the site falls within the Council's *Developer Contributions Plan for Roads and Drainage*.

b) Engineering design and specifications for the proposed and affected roads, street lighting, stormwater drainage, vehicular access, pedestrian/cycle corridors, and streetscaping shall be to the technical requirements and approval of Litchfield Council, with all approved works constructed at the developer's expense.

Note: Design drawings should be approved by Litchfield Council prior to construction of the works.

c) Prior to finalisation of engineering design and specifications for the proposed and affected roads, a Road Safety Audit, prepared by a suitability certified traffic auditor, shall be approved by Litchfield Council.

d) Soil erosion control and dust control measures must be employed throughout the construction stage of the development to the satisfaction of the consent authority.

e) All existing or proposed easements or reserves required for the purposes of stormwater drainage, roads, access or for any other purpose, shall be made available free of cost to, and in favour of, Litchfield Council and/or neighbouring property owners.

Should the application be approved, the following notes are recommended for inclusion in any Development Permit issued by the consent authority:

a) Inspection fees and charges may apply in accordance with Litchfield Council's current Fees and Charges. Additional information can be found at www.litchfield.gov.nt.au.

b) A *Works within a Road Reserve Permit – Works Associated with a Development Permit* is required from Litchfield Council before commencement of any work within the road reserve, which would include creation of any driveway crossover connecting to Litchfield Council's road network.

c) Notwithstanding any approved plans, signs within Litchfield Council's municipal boundaries are subject to approval under Clause 6.7 of the NT Planning Scheme.

If you require any further discussion in relation to this application, please contact **Litchfield Council's Planning and Development division** on 08 8983 0600 and you will be directed to the appropriate officer to address your query.

Yours faithfully

Kaylene Conrick
Chief Executive Officer

COUNCIL REPORT

Agenda Item Number:	15.8
Report Title:	Abandoned Vehicles Policy
Report Number:	17/00
Meeting Date:	13/12/2017
Attachments:	LC18 Abandoned Vehicles Policy

Purpose

This report proposes that Council rescinds the out of date LC18 Abandoned Vehicles policy.

Summary

LC18 Abandoned Vehicle Policy (attached) was first adopted by Council in August 2012 and included the procedure for dealing with abandoned vehicles.

It is proposed to rescind LC18 Abandoned Vehicle Policy as;

a) The procedure for Council to deal with abandoned vehicles is set out clearly in the Northern Territory Traffic Act, *Traffic Regulations* and is catered for in the Regulatory Services Standard Operating Procedures.
b) The current policy duplicates sections of the Northern Territory Traffic Act, *Traffic Regulations.*
c) It is best practice to avoid duplication of legislation in Council policy.
d) The driving of unregistered vehicles is covered under section 33 of the Northern Territory Traffic Act and is not enforceable by Council Authorised Officers. The release of abandoned vehicle form has been updated to ensure the person who the vehicle is being released to understands that it is an offence to drive an unlicensed vehicle without an appropriate permit on Northern Territory roads.
e) Removal of the policy has no impact on Council Regulatory Services operations. Removal of abandoned vehicles will remain a Council function.

Recommendation

That Council rescinds LC18 Abandoned Vehicle policy.

Background

The issue of abandoned vehicles in the Litchfield Municipality is minor component of the work carried out by the Regulatory Services team. Abandoned vehicles are catered for under Part 5 of the Northern Territory Traffic Act, *Traffic Regulations*, which prescribes the handling of abandoned vehicles including the recoupment of costs associated with their removal and storage.

Links with Strategic Plan

Priority # 2 – A great place to live

Legislative and Policy Implications

Litchfield Council is deemed a Competent Authority under the Northern Territory Traffic Act and has delegated authorised officers who have the power to implement Part 5 of the Northern Territory Traffic Act, *Traffic Regulations*. Dealing with abandoned vehicles is the only part of the Northern Territory Traffic Act which the Litchfield Council authorised officers currently implement.

Risks

NIL

Financial Implications

Sections 66 – 70 of the Northern Territory Traffic Act, *Traffic Regulations* prescribe how Council can recoup costs of removing, storing and disposing of abandoned vehicles.

Community Engagement

Not required as there will be no change to current operating procedure.

Recommending Officer: **Silke Maynard, Director Community and Corporate Services**

Any queries on this report may be directed to the Recommending Officer on telephone (08) 8983 0600.

Any member of Council who may have a conflict of interest, or a possible conflict of interest in regard to any item of business to be discussed at a Council meeting of a Committee meeting should declare that conflict of interest to enable Council to manage the conflict and resolve it in accordance with its obligations under the Local Government Act and its policies regarding the same.

LITCHFIELD COUNCIL

Community effort is essential

POLICY TITLE:	**ABANDONED VEHICLE POLICY**
POLICY NUMBER:	**LC18**
CATEGORY:	**COUNCIL**
CLASSIFICATION:	**ADMINISTRATIVE**
STRATEGIC PLAN REFERENCE:	**1 Effective leadership and governance**
CORPORATE GOVERNANCE AND PERFORMANCE :Provide systems of council governance and service delivery that are financially sustainable, accountable, equitable and efficient	
STATUS: Approved	**Council Resolution PA12/CAM/030**

Date Approved:	**12/08/2009**	**Approved By:**	**PA09/CAM/030**	**Date for review:**	**01/03/2012**
Date Approved:	**11/10/2012**	**Approved By:**	**PA12/CAM/030**	**Date for review:**	**March 2016**
Date Approved:		**Approved By:**		**Date for review:**	
Date Approved:		**Approved By:**		**Date for review:**	

2. PURPOSE:

To provide Council Officers with direction and procedures to ensure correct legal process occurs with regards to the removal of abandoned vehicles pursuant to Council's responsibility under the Local Government Act and Part 5 of the Traffic Regulations.

3. SCOPE

Council may be required or requested to remove a vehicle in various circumstances:

a) Abandoned (Section 63 of the Traffic Regulations)
b) At the written request of landowner of 'public' facility (ie: recreation reserve, other council land, etc – not private residence)

Council Officers will follow the process and procedures attached to this policy to ensure that necessary checks, notifications and legal process are complied with.

Collection of Abandoned Vehicles

Whilst having regard to the process and procedures attached to this policy, Council Officers will not allow an abandoned vehicle that is unregistered to be taken from its care unless that vehicle is transported on a truck, trailer, etc. Under no circumstances will a Council Officer allow an unregistered vehicle to be driven from the Council Pound as this places an unreasonable onus on Council and public safety.

Delegation:

1. Authorised Officers as appointed by Council will have the required delegation to act upon this policy.

2. Fees and costs may be waived by the Chief Executive Officer, or a delegated officer upon written application from the registered owner of the abandoned vehicle.

Form(s):
Impounding Vehicles Procedures
Impounding Vehicles Details

4. POLICY REVIEW

This policy is to be reviewed within four months after the next Local Government elections.

5. REFERENCES:

Policy Number:	**LC18**
Policy Owner:	**Graeme Francis**
Endorsed by:	**CEO**
Final Approval:	**Council**
Date Approved:	**11/10/2012**
Revision Date:	**March 2016**
Amendments:	
Related Policies:	
Related Publications:	

6. CONTACT PERSON:

Contact Person	**Graeme Francis**	**Derrick Tranter**
Position	**Director of Planning & Works**	**Governance Manager**
Extension	**624**	**631**
Email Address	graeme.francis@lc.nt.gov.au	derrick.tranter@lc.nt.gov.au

ABANDONED VEHICLES PROCEDURE

1. If a vehicle has been left on the side of the roadway for not less than 24 hours, a warning is to be affixed to the windscreen explaining that if the vehicle is not removed within 24 hours the vehicle will be impounded.

2. If a vehicle has been left on Council property for not less than 24 hours, follow step 1.

3. Contact contractor and request them to tow the vehicle to the Council location.

4. Complete an **Abandoned Vehicle form** and fax to NT Police to check that the vehicle has not been stolen.

5. Carry out a search through the Motor Vehicle Registry to ascertain vehicle registered owner details.

6. The registered owner of the vehicle must be given written notice as soon as practicable after removal of the vehicle. Details of written notice should have regards to Section 64 (4) and (5) the Traffic Regulations.

If the owner of a vehicle cannot be ascertained or found for the purpose of serving a notice, the Council must cause notice of the removal of the vehicle to be published:

(a) in an advertisement appearing for 2 successive weeks in a newspaper circulating in the Territory; or
(b) in any other manner that the competent authority determines appropriate,

having regard to the likely or presumed whereabouts of the owner.

7. The competent authority may sell by public auction an abandoned vehicle if the owner of the vehicle has not taken possession of it and paid to the competent authority all reasonable costs incurred in:

(a) moving the vehicle;

(b) storing the vehicle (if applicable); and

(c) serving or publishing the notice under Traffic Regulation 65,

within 28 days after service or second publication of that notice.

Disposing of abandoned vehicle

Despite Traffic Regulation 67, if an abandoned vehicle:

(a) is immobile and apparently cannot be repaired at a cost that does not exceed its value; or

(b) in the opinion of the competent authority – has a value of less than $200, the competent authority may dispose of the vehicle in a manner that it determines appropriate.

Proceeds of sale

(1) All money received from selling or disposing of a vehicle is to be applied in paying, in the following order:

(a) the costs incurred by the competent authority in selling or disposing of the vehicle;

(b) the costs of removing and storing the vehicle;

(c) the costs of serving or publishing the notice.

(2) The residue of the money, if any, is to be paid, on demand, to the owner of the vehicle immediately after its sale or disposal.

(3) If, after 6 months after a vehicle is sold or disposed of, any money from the sale or disposal remains in the possession of the competent authority and is unclaimed by the owner of the vehicle or any person claiming through the owner, the money becomes the property of the competent authority.

(4) A sale or disposal of a vehicle is valid against all persons

Claim against owner

1) The owner of a vehicle moved under Traffic Regulation 65 is liable to a competent authority for the reasonable expenses incurred by the competent authority in removing, storing, selling or attempting to sell the vehicle or disposing of the vehicle.

2) The competent authority may recover, as a debt due and payable to it, any of those expenses incurred by it that are not satisfied from the proceeds of the sale or disposal.

ABANDONED VEHICLE FORM

Location: _____

Request From: _____ Date Received: ___ / ___ / ___

Inspected by: _____ Date: ___ / ___ / ___

Warning Notice Affixed: Yes / No Photograph Taken: Yes / No

In Breach Of: Part 5 of the Traffic Regulation
Abandoned 24 Hours

Vehicle Details

Registration No: _____ State: _____ Reg. Type/Code: _____

Label No: _____ Colour: _____ Make: _____

Body Type: _____ Model: _____ Engine No.: _____

Vin No.: _____ Chassis No.: _____ Est. alue:_____

Impound Details

Impounded at: _____ am/pm On: ___ / ___ / ___ By: _____

Towing Agent: _____ Order No. _____

Cost: _____

Vehicle Condition/Damage Details
(Photographs should be taken and attached to this form)

_____

_____

_____

Police Use Only
Return to: Litchfield Council Fax: (08) 8983 1165

As at: ___ / ___ / ___ Vehicle Registration No/Engine No: _____

Impounded by your Council on: ___ / ___ / ___ has / has not been reported stolen.

_____ _____ _____
Name **Rank** **ID**

16 Common Seal

17 Other Business

18 Public Questions

19 Confidential Items

19.1 Application to Write Off Rates on Assessment 10046068

Regulation 8(b) reason - information about the personal circumstances of a resident or ratepayer}.

20 Close of Meeting