Shire of Mt Marshall

THE SANDALWOOD SHIRE

PUBLIC NOTICE

PROPOSED LOCAL LAW

Health Amendment Local Law 2016

At its July 2016 ordinary meeting, Council resolved to make a local law relating to Health Amendment Local Law 2016.

The purpose and effect of the law is to correct the Shire of Mt Marshall Health Local Law 2014 as required by the Joint Standing Committee on Delegated Legislation.

A copy of the proposed law may be inspected at or obtained from the Shire of Mt Marshall office at 80 Monger St, Bencubbin between the hours of 9.00am and 4.00pm Monday to Friday until 5 September 2016.

Written or emailed submissions regarding the proposed local law will be received until 4.00pm Monday 5 September 2016. They can be posted to PO Box 20, Bencubbin WA 6477 or emailed to admin@mtmarshall.wa.gov.au

Acting Chief Executive Officer
Stephen Tindale

Shire of Mt Marshall

Monthly Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

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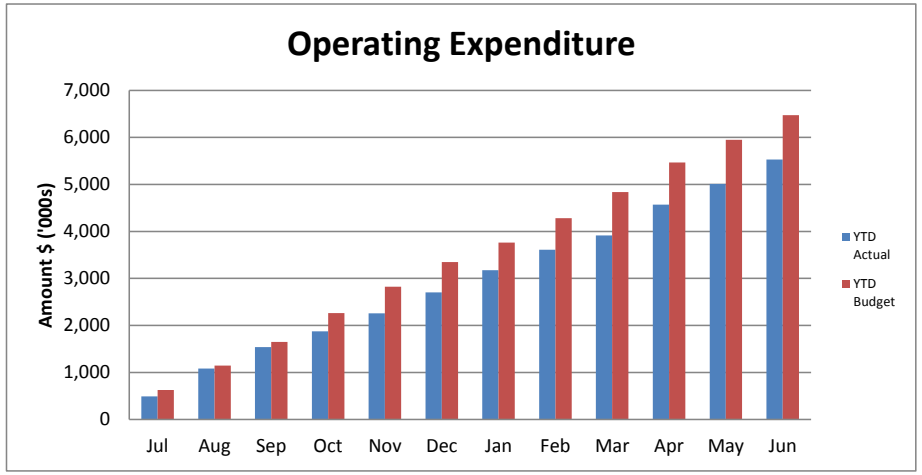
Attachment 12.3.23

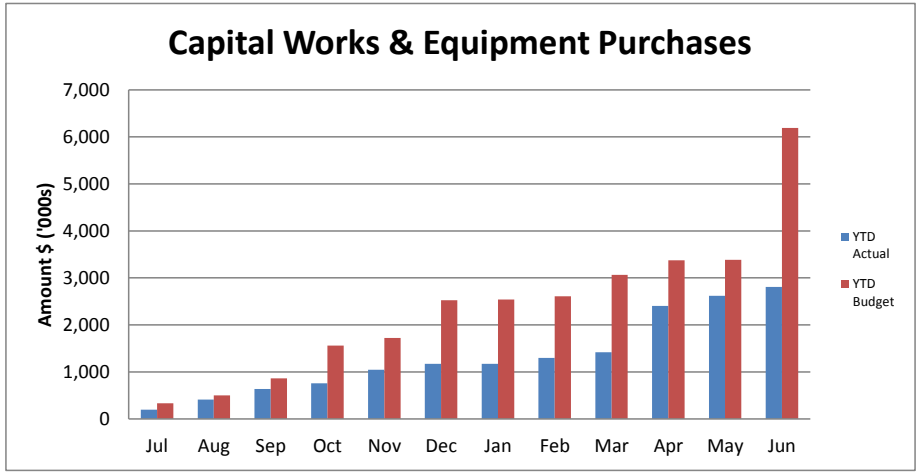
Shire of Mt Marshall
Statement of Financial Activity
For the period 1 July 2015 to 30 June 2016

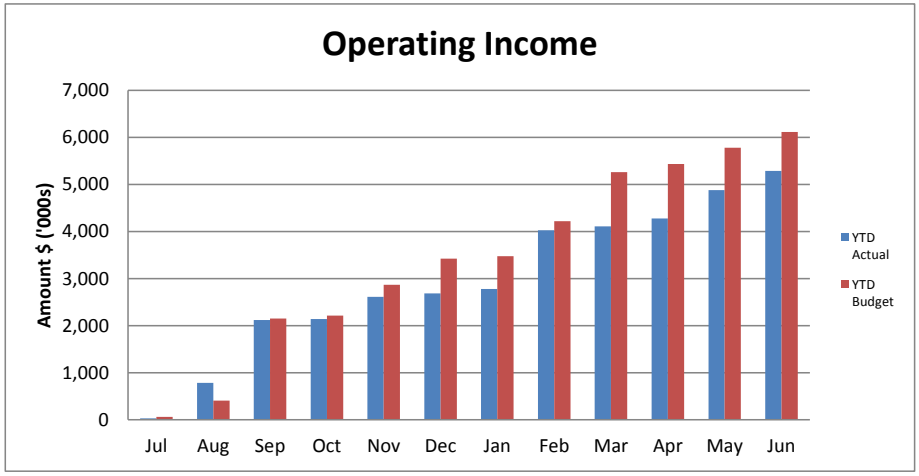
	NOTE	Actual YTD 2015/2016	Budget YTD 2015/2016	Original Full Year Budget 2015/2016	Variance Budget to Actual YTD %	$
Operating Revenue						
Governance		27,881	8,950	8,950	212%	18,931
General Purpose Funding		1,192,911	1,212,051	1,212,051	(2%)	(19,140)
Law, Order & Public Safety		18,885	19,307	19,307	(2%)	(422)
Health		0	0	0		0
Education & Welfare		62,202	57,912	57,912	7%	4,290
Housing		164,311	112,200	112,200	46%	52,111
Community Amenities		174,703	186,425	186,425	(6%)	(11,722)
Recreation & Culture		73,707	1,060,700	1,060,700	(93%)	(986,993)
Transport		1,913,570	1,857,213	1,857,213	3%	56,357
Economic Services		372,892	240,400	240,400	55%	132,492
Other Property & Services		105,996	120,900	120,900	(12%)	(14,904)
		4,107,058	**4,876,058**	**4,876,058**		
Operating Expenses						
Governance		(427,707)	(441,868)	(441,868)	(3%)	14,161
General Purpose Funding		(105,805)	(101,128)	(101,128)	5%	(4,678)
Law, Order & Public Safety		(51,859)	(61,334)	(61,334)	(15%)	9,475
Health		(138,404)	(130,859)	(130,859)	6%	(7,545)
Education & Welfare		(263,512)	(263,472)	(263,472)	0%	(40)
Housing		(278,888)	(368,642)	(368,642)	(24%)	89,754
Community Amenities		(280,867)	(282,995)	(282,995)	(1%)	2,128
Recreation & Culture		(877,403)	(863,190)	(863,190)	2%	(14,213)
Transport		(2,776,227)	(3,426,071)	(3,426,071)	(19%)	649,844
Economic Services		(378,390)	(466,698)	(466,698)	(19%)	88,307
Other Property & Services		50,294	(66,694)	(66,694)	(175%)	116,988
		(5,528,769)	**(6,472,949)**	**(6,472,949)**		
Adjustments for Non-Cash (Revenue) and Expenditure						
(Profit)/Loss on Asset Disposals	2	9,113	224,452	224,452		
Employee benefit Provisions Cash Backed		3,222	344	344		
Depreciation on Assets		2,257,411	2,850,550	2,850,550		
Capital Revenue and (Expenditure)						
Purchase Property Plant & Equipment	1	(879,798)	(3,597,900)	(3,597,900)		
Purchase Infrastructure Assets	1	(1,928,580)	(2,592,339)	(2,592,339)		
Repayment of Debenture	3	(113,145)	(113,145)	(113,145)		
Proceeds from New Debenture	3	0	1,300,000	1,300,000		
Self-Supporting Loan Principal Income		12,926	9,783	9,783		
Proceeds from Disposal of Assets	2	75,210	226,000	226,000		
Reserves and Restricted Funds						
Transfers to Reserves	4	(226,502)	(195,940)	(195,940)		
Transfers from Reserves	4	200,000	607,000	607,000		
ADD Net Current Assets July 1 B/Fwd.	5	1,663,479	1,640,146	1,640,146		
LESS Net Current Assets Year to Date	5	(830,444)	0	0		
Amount Raised from Rates	6	**(1,178,819)**	**(1,237,941)**	**(1,237,941)**		

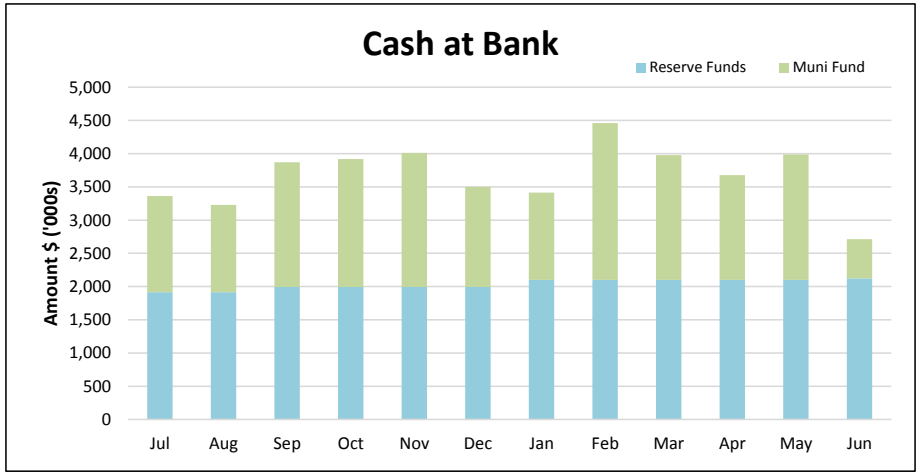
Shire of Mt Marshall

For the period 1 July 2015 to 30 June 2016









Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

1. ACQUISITION OF ASSETS	2015/16 Adopted Budget $	30-Jun-16 Actual $	30-Jun-16 Budget YDT $
The following assets have been acquired during the period under review:			
By Program			
Governance			
Administration General			
Purchase Furniture & Equipment	30,000	28,244	30,000
Housing			
Community Housing			
Land & Buildings	50,000	36,091	50,000
Community Amenities			
Protection of the Environment			
Land & Buildings - Community Amenities	56,000	21,284	56,000
Other Community Ammenities			
Beacon And Bencubbin Water Collection	271,960	40,770	271,960
Recreation and Culture			
Public Halls & Civic Centres			
Sturt Pea House Improvements	0	9,323	0
Sporting Facilities			
Land & Buildings - Sporting Facilities	60,000	56,309	60,000
Furniture & Equipment - Sporting Facilities	0	0	0
Infrastructure Other Purchases	35,000	35,516	35,000
Land & Buildings - Bencubbin Recreation	2,797,000	0	2,797,000
Transport			
Construction - Roads, Bridges, Depots			
Mrwa Direct Grant	0	0	0
Federal Funded Road Construction	0	0	0
Roads To Recovery Road Works	1,355,862	1,062,497	1,355,862
State Road Projects Grant	889,517	789,248	889,517
Footpath Construction	40,000	548	40,000
Road Plant Purchases			
Plant Purchases	170,000	194,040	170,000
Motor Vehicle Purchases	215,500	138,560	215,500
Economic Services			
Unclassified			
Set Up Workers Camp	219,400	395,502	219,400
	6,190,239	2,808,378	6,190,239

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

1. ACQUISITION OF ASSETS (Continued)	2015/16 Adopted Budget $	30-Jun-16 Actual $	30-Jun-16 Budget YDT $
The following assets have been acquired during the period under review:			
By Class			
Land Held for Resale - Current	0	0	0
Land Held for Resale - Non Current	0	0	0
Land	0	0	0
Land & Buildings	3,182,400	518,954	3,182,400
Furniture & Equipment	30,000	28,244	30,000
Motor Vehicles	215,500	138,560	215,500
Plant & Equipment	170,000	194,040	170,000
Infrastructure - Roads	2,245,379	1,851,746	2,245,379
Infrastructure - Footpaths	40,000	548	40,000
Infrastructure - Ovals & Parks	0	0	0
Infrastructure - Other	306,960	76,286	306,960
	6,190,239	2,808,378	6,190,239

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

2. DISPOSALS OF ASSETS

The following assets have been disposed of during the period under review:

By Program	Written Down Value		Sale Proceeds		Profit(Loss)	
	2015/16 Budget $	June 2016 Actual $	2015/16 Budget $	June 2016 Actual $	2015/16 Budget $	June 2016 Actual $
Housing						
House Lot 168 Collin St Bencubbin	74,396		20,000		(54,396)	0
Transport						
Backhoe Volvo BL71 2008	49,440	42,700	30,000	29,700.00	(19,440)	(13,000)
Mitsubishi 4x4 Crew Cab Utility	24,500		18,000		(6,500)	0
Mitsubishi Triton Utility	14,500		15,000		500	0
Mitsubishi Triton GLX 4x2 MM279	19,091		15,000		(4,091)	0
Mitsubishi Triton GLX 4x2 MM271	18,181	21,623	8,000	21,000.00	(10,181)	(623)
Nissan Navara 4x4 Dual Cab	20,400	20,000	25,000	24,510.00	4,600	4,510
Effluent Tank for Truck	11,600		5,000		(6,600)	0
Economic Services						
Lot 31 Monger St Bencubbin - Industrial Shed	218,344		90,000		(128,344)	0
	450,452	84,323	226,000	75,210	(224,452)	(9,113)

By Class of Asset	Written Down Value		Sale Proceeds		Profit(Loss)	
	2015/16 Budget $	June 2016 Actual $	2015/16 Budget $	June 2016 Actual $	2015/16 Budget $	June 2016 Actual $
Land & Buildings	292,740		110,000		(182,740)	0
Plant & Equipment	61,040	42,700	35,000	29,700	(26,040)	(13,000)
Motor Vehicles	96,672	41,623	81,000	45,510	(15,672)	3,887
	450,452	84,323	226,000	75,210	(224,452)	(9,113)

Summary	2015/16 Adopted Budget $	June 2016 Actual $
Profit on Asset Disposals	5,100	4,510
Loss on Asset Disposals	(229,552)	(13,623)
	(224,452)	(9,113)

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

3. INFORMATION ON BORROWINGS

(a) Debenture Repayments

Particulars	Principal 1-Jul-15	New Loans		Principal Repayments		Principal Outstanding		Interest Repayments	
		2015/16 Budget $	2015/16 Actual $	2015/16 Budget $	2015/16 Actual $	2015/16 Budget $	2015/16 Actual $	2015/16 Budget $	2015/16 Actual $
General Purpose Funding									
Loan 119 - Benny Mart *	48,878	0	0	9,783	9,783	39,095	39,095	2,448	1,928
Housing									
Loan 111 - House 229 Murray St	16,134	0	0	0	0	16,134	16,134	942	0
Loan 115 - Housing Upgrade	62,055	0	0	31,916	31,916	30,139	30,139	3,174	643
Loan 118 - Staff Housing	262,391	0	0	49,143	49,143	213,248	213,248	15,764	12,635
Recreation & Culture									
Loan 120 - Bencubbin Rec Complex Shire	0	1,000,000	0	0	0	1,000,000	0	0	0
Loan 121 - Bencubbin Rec Complex CRC*	0	300,000	0	0	0	300,000	0	0	0
(Anticipated Lending Dates 30 June 2016)									
Economic Services									
Loan 117 - Accommodation Units	54,974	0	0	22,303	22,303	32,671	32,671	3,018	890
	444,432	1,300,000	0	113,145	113,145	1,631,287	331,287	25,346	16,095

(*) Self supporting loan financed by payments from third parties.
All other loan repayments were financed by general purpose revenue.

(b) New Debentures - 2015/16

Council is currently negotiating new debentures in relation to the Bencubbin Recreation Complex Redevelopment as above.
It is anticipated that the new debentures will be taken out in June 2016 and no repayments will be made during the current financial year.

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

	2015/16 Adopted Budget $	June 2016 Actual $
4. CASH BACKED RESERVES		
(a) Plant Replacement Reserve		
Opening Balance	321,880	321,880
Amount Set Aside / Transfer to Reserve	86,438	92,283
Amount Used / Transfer from Reserve	0	0
	408,318	414,163
(b) Aged Care Units Reserve		
Opening Balance	64,386	64,386
Amount Set Aside / Transfer to Reserve	1,288	2,177
Amount Used / Transfer from Reserve	0	0
	65,674	66,563
(c) Community Housing Reserve		
Opening Balance	37,001	37,001
Amount Set Aside / Transfer to Reserve	740	1,249
Amount Used / Transfer from Reserve	0	0
	37,741	38,250
(d) Council Staff Housing Reserve		
Opening Balance	31,158	31,158
Amount Set Aside / Transfer to Reserve	623	1,613
Amount Used / Transfer from Reserve	0	0
	31,781	32,771
(e) Employee Entitlements Reserve		
Opening Balance	88,157	88,157
Amount Set Aside / Transfer to Reserve	1,763	3,222
Amount Used / Transfer from Reserve	0	0
	89,920	91,379
(f) Public Amenities & Buildings Reserve		
Opening Balance	621,406	621,408
Amount Set Aside / Transfer to Reserve	12,428	18,566
Amount Used / Transfer from Reserve	(500,000)	(100,000)
	133,834	539,974
(g) Bencubbin Aquatic Centre Development Reserve		
Opening Balance	641,044	641,044
Amount Set Aside / Transfer to Reserve	86,820	99,885
Amount Used / Transfer from Reserve	0	0
	727,864	740,929
(h) Community Bus Reserve		
Opening Balance	108,974	108,974
Amount Set Aside / Transfer to Reserve	2,179	3,591
Amount Used / Transfer from Reserve	0	0
	111,153	112,565

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

	2015/16 Adopted Budget $	June 2016 Actual $
4. RESERVES (Continued)		
(i) Bencubbin Recreation Complex Reserve		
Opening Balance	7,538	7,537
Amount Set Aside / Transfer to Reserve	151	430
Amount Used / Transfer from Reserve	(7,000)	0
	689	7,967
(j) Office Equipment Reserve		
Opening Balance	15,086	15,085
Amount Set Aside / Transfer to Reserve	302	509
Amount Used / Transfer from Reserve	0	0
	15,388	15,594
(k) Economic Development Reserve		
Opening Balance	103,116	103,116
Amount Set Aside / Transfer to Reserve	2,062	1,040
Amount Used / Transfer from Reserve	(100,000)	(100,000)
	5,178	4,156
(l) Integrated Planning/Financial Reporting Reserve		
Opening Balance	16,029	16,029
Amount Set Aside / Transfer to Reserve	321	542
Amount Used / Transfer from Reserve	0	0
	16,350	16,571
(m) Beacon Barracks Replacement Reserve		
Opening Balance	41,244	41,244
Amount Set Aside / Transfer to Reserve	825	1,395
Amount Used / Transfer from Reserve	0	0
	42,069	42,639
Total Cash Backed Reserves	**1,685,959**	**2,123,521**

All of the above reserve accounts are to be supported by money held in financial institutions.

	2015/16 Adopted Budget $	June 2016 Actual $
4. RESERVES (Continued)		
Cash Backed Reserves (Continued)		
Summary of Transfers To Cash Backed Reserves		
Transfers to Reserves		
Plant Replacement Reserve	86,438	92,283
Aged Care Units Reserve	1,288	2,177
Community Housing Reserve	740	1,249
Council Staff Housing Reserve	623	1,613
Employee Entitlements Reserve	1,763	3,222
Public Amenities & Buildings Reserve	12,428	18,566
Bencubbin Aquatic Centre Development Reserv	86,820	99,885
Community Bus Reserve	2,179	3,591
Bencubbin Recreation Complex Reserve	151	430
Office Equipment Reserve	302	509
Economic Development Reserve	2,062	1,040
Integrated Planning/Financial Reporting Reserv	321	542
Beacon Barracks Replacement Reserve	825	1,395
	195,940	**226,502**
Transfers from Reserves		
Plant Replacement Reserve	0	0
Aged Care Units Reserve	0	0
Community Housing Reserve	0	0
Council Staff Housing Reserve	0	0
Employee Entitlements Reserve	0	0
Public Amenities & Buildings Reserve	(500,000)	(100,000)
Bencubbin Aquatic Centre Development Reserv	0	0
Community Bus Reserve	0	0
Bencubbin Recreation Complex Reserve	(7,000)	0
Office Equipment Reserve	0	0
Economic Development Reserve	(100,000)	(100,000)
Integrated Planning/Financial Reporting Reserv	0	0
Beacon Barracks Replacement Reserve	0	0
	(607,000)	**(200,000)**
Total Transfer to/(from) Reserves	**(411,060)**	**26,502**

4. RESERVES (Continued)

In accordance with council resolutions in relation to each reserve account, the purpose for which the reserves are set aside are as follows:

Plant Replacement Reserve
- To fund the purchase of road construction plant, so as to avoid any undue heavy burden in a single year

Aged Care Units Reserve
- This reserve was established as per the agreement, where $500 per unit of the rental income per year is to be transferred into the reserve account, for future maintenance costs.

Community Housing Reserve
- To fund the future maintenance of Homeswest Joint Venture/Community Housing projects

Council Staff Housing Reserve
- To fund the replacement of staff housing and any major maintenance

Employee Entitlement Reserve
- To be used to fund Long Service Leave requirement / other accrued leave

Caravan Park Upgrade Reserve
- To help spread the cost of major improvements to the shire's caravan parks

Public Amenities & Buildings
- To help fund future building maintenance requirements to the shire's buildings. The building reserve is expected to be utilised in 2013/14 for the construction of a new administration centre

Land & Road Development
- To be used for residential and industrial land and road development within the shire

Television & Radio Development
- To fund new and replace obsolete re-broadcasting equipment

Bencubbin Aquatic Centre Development
- To finance future capital and maintenance upgrades for the Bencubbin Aquatic Centre

Community Bus Reserve
- To finance the replacement of the community bus

Bencubbin Recreation Complex
- To provide funding for future extensions to the Bencubbin Complex

Office Equipment
- To replace office equipment as required

Country Local Government Fund Reserve
- To be used on Country Local Government Fund projects

Industrial Shed Reserve
- To be used for the future construction of an industrial shed.

Integrated Planning/Financial Reporting Reserve
- To be used to spread the cost of the development of integrated plans, informing strategies and fair value accounting.

Beacon Barracks Replacement Reserve
- To be used for the future replacement of the Beacon Barracks

Economic Development Reserve
- To set aside funds for Economic Development initiatives.

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

	2015/16 B/Fwd Per Approved Budget $	2015/16 B/Fwd Per Financial Report $	June 2016 Actual $
5. NET CURRENT ASSETS			
Composition of Estimated Net Current Asset Position			
CURRENT ASSETS			
Cash - Unrestricted	1,992,221	1,833,186	647,764
Cash - Restricted Unspent Grants	0	159,035	0
Cash - Restricted Unspent Loans	0	0	0
Cash - Restricted Reserves	2,097,019	2,097,019	2,123,520
Rates Outstanding	89,524	89,524	120,030
Deferred Pensioner Rates	0	0	567
Sundry Debtors	173,050	173,050	449,928
Provision for Doubtful Debts	(51,895)	(56,468)	(53,673)
Gst Receivable	38,357	38,357	25,801
Accrued Income/Payments In Advance	(40,912)	2,465	(22,093)
Loans - Clubs/Institutions	9,783	0	0
Inventories	14,852	10,749	26,980
	4,321,999	4,346,917	3,318,824
LESS: CURRENT LIABILITIES			
Sundry Creditors	(348,664)	(348,664)	(151,061)
Accrued Interest On Loans	(1,772)	(1,772)	0
Accrued Salaries & Wages	(23,130)	(23,130)	0
Income In Advance	0	0	0
Gst Payable	(18,304)	(18,304)	(35,070)
Payroll Creditors	(22,887)	(22,887)	(24,417)
Accrued Expenses	0	0	0
FBT Liability	(2,745)	(2,745)	0
Current Employee Benefits Provision	(245,706)	(257,074)	(245,691)
Current Loan Liability	(113,146)	(113,146)	(1)
	(776,354)	(787,722)	(456,240)
NET CURRENT ASSET POSITION	3,545,645	3,559,195	2,862,584
Less: Cash - Reserves - Restricted	(2,097,019)	(2,097,019)	(2,123,520)
Less: Cash - Unspent Grants - Restricted	0	0	0
Less: Current Loans- Clubs / Institutions	(9,783)	0	0
Add Back : Component of Leave Liability not Required to be Funded	88,157	88,157	91,379
Add Back : Current Loan Liability	113,146	113,146	1
Adjustment for Trust Transactions Within Muni	0	0	0
ESTIMATED SURPLUS/(DEFICIENCY) C/FWD	1,640,146	1,663,479	830,444

NOTES TO AND FORMING PART OF THE STATEMENT OF FINANCIAL ACTIVITY

For the Period 1 July 2015 to 30 June 2016

6. RATING INFORMATION

RATE TYPE	Rate in $	Number of Properties	Rateable Value $	2015/16 Rate Revenue $	2015/16 Interim Rates $	2015/16 Back Rates $	2015/16 Total Revenue $	2015/16 Budget $
General Rate								
GRV	0.112928		797,910	90,106	(1,226)	0	88,880	93,184
UV	0.019384		60,521,810	1,173,155	(3,727)	79	1,169,507	1,170,077
Mining	0.019384			0	2,274	0	2,274	0
Sub-Totals		0	61,319,720	1,263,261	(2,679)	79	1,260,661	1,263,261
Minimum Rates	**Minimum $**							
GRV	360	40		14,760	0	0	14,760	14,400
UV	360	26		9,000			9,000	11,880
Mining	360	7		2,520	0		2,520	
Sub-Totals		73	0	26,280	0	0	26,280	26,280
							1,286,941	1,289,541
Discounts							(76,901)	(65,000)
Rates Written off							(1,695)	(200)
Total Amount of General Rates							1,208,345	1,224,341
Movement in Excess Rates							(43,377)	0
Ex Gratia Rates							13,851	13,600
Total Rates							1,178,819	1,237,941

All land except exempt land in the Shire of Mt Marshall is rated according to its Gross Rental Value (GRV) in townsites or Unimproved Value (UV) in the remainder of the Shire.

The general rates detailed above for the 2014/15 financial year have been determined by Council on the basis of raising the revenue required to meet the deficiency between the total estimated expenditure proposed in the budget and the estimated revenue to be received from all sources other than rates and also bearing considering the extent of any increase in rating over the level adopted in the previous year.

The minimum rates have been determined by Council on the basis that all ratepayers must make a reasonable contribution to the cost of the Local Government services/facilities.

7. TRUST FUNDS

Funds held at balance date over which the Municipality has no control and which are not included in this statement are as follows:

Detail	Balance 01-Jul-15 $	Amounts Received $	Amounts Paid ($)	June 2016 Balance $
Police Licensing	1,157	238,253	(229,895)	9,515
Aged Care Beauitification	829	0	0	829
Unclaimed Monies	159	0	0	159
Nomination Deposits	0	880	(880)	0
Prepaid Rates	0	0	0	0
Tree Planting Nursery	1,000	0	0	1,000
Sundry Creditors	745	0	0	745
Housing Bonds	10,500	3,440	(2,880)	11,060
Staff Social Club	971	7,174	(2,413)	5,732
Newroc Advance Account	0	0	0	0
Portable Toilet Bonds	0	0	0	0
Deposit on Land	1,000	0	0	1,000
Emergency Services Levy	0	0	0	0
Building Levy	0	0	0	0
Mt Marshall LCDC	0	0	0	0
Benc - Beacon Tourist Committee	0	0	0	0
	16,361	249,747	(236,068)	30,040

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

8. OPERATING STATEMENT

OPERATING REVENUES	June 2016 Actual $	2015/16 Adopted Budget $	2014/15 Actual $
Governance	27,881	8,950	12,018
General Purpose Funding	2,371,730	2,449,992	4,669,032
Law, Order, Public Safety	18,885	19,307	26,493
Health	0	0	0
Education and Welfare	62,202	57,912	107,775
Housing	164,311	112,200	109,050
Community Amenities	174,703	186,425	119,997
Recreation and Culture	73,707	1,060,700	51,763
Transport	1,913,570	1,857,213	1,116,740
Economic Services	372,892	240,400	90,130
Other Property and Services	105,996	120,900	118,781
TOTAL OPERATING REVENUE	**5,285,877**	**6,113,999**	**6,421,779**
OPERATING EXPENSES			
Governance	427,707	441,868	472,792
General Purpose Funding	105,805	101,128	90,921
Law, Order, Public Safety	51,859	61,334	56,400
Health	138,404	130,859	137,274
Education and Welfare	263,512	263,472	191,399
Housing	278,888	368,642	148,995
Community Amenities	280,867	282,995	289,168
Recreation & Culture	877,403	863,190	1,148,730
Transport	2,776,227	3,426,071	3,142,613
Economic Services	378,390	466,698	261,554
Other Property and Services	(50,293)	66,694	109,312
TOTAL OPERATING EXPENSE	**5,528,769**	**6,472,949**	**6,049,158**
CHANGE IN NET ASSETS RESULTING FROM OPERATIONS	**(242,892)**	**(358,950)**	**372,621**

Shire of Mt Marshall

Notes to and forming part of the Statement of Financial Activity

For the Period 1 July 2015 to 30 June 2016

9. BALANCE SHEET

	June 2016 Actual $	2014/15 Actual $
CURRENT ASSETS		
Cash and Cash Equivalents	2,771,284	4,089,239
Trade and Other Receivables	516,849	256,711
Inventories	26,980	10,749
TOTAL CURRENT ASSETS	3,315,113	4,356,699
NON-CURRENT ASSETS		
Other Receivables	30,399	29,831
Inventories	0	0
Property, Plant and Equipment	14,066,432	13,802,648
Infrastructure	91,351,018	91,148,157
Work in Progress	47,696	47,696
TOTAL NON-CURRENT ASSETS	105,495,545	105,028,332
TOTAL ASSETS	108,810,658	109,385,031
CURRENT LIABILITIES		
Trade and Other Payables	210,548	417,502
Long Term Borrowings	1	113,146
Provisions	245,691	257,074
TOTAL CURRENT LIABILITIES	456,240	787,722
NON-CURRENT LIABILITIES		
Trade and Other Payables	0	0
Long Term Borrowings	208,542	208,542
Provisions	11,041	11,041
TOTAL NON-CURRENT LIABILITIES	219,583	219,583
TOTAL LIABILITIES	675,823	1,007,305
NET ASSETS	108,134,835	108,377,726
EQUITY		
Trust Imbalance	0	0
Retained Surplus	77,956,828	78,226,221
Reserves - Cash Backed	2,123,521	2,097,019
Revaluation Surplus	28,054,486	28,054,486
TOTAL EQUITY	108,134,835	108,377,726

Shire of Mt Marshall

For the Period 1 July 2015 to 30 June 2016

Report on Significant Variances (greater than 10% and $5,000)

Purpose

The purpose of the Monthly Variance Report is to highlight circumstances where there is a major variance from the YTD Monthly Budget and YTD Actual figures. These variances can occur because of a change in timing of the activity, circumstances change (e.g. grants were budgeted for but not received) or changes to the original budget projections. The Report is designed to highlight these issues and explain the reason for the variance.

The Materiality variances adopted by Council are:

Actual Variance to YTD Budget up to 5%:	Don’t Report
Actual Variance exceeding 10% of YTD Budget	Use Management Discretion
Actual Variance exceeding 10% of YTD Budget and a value greater than $5,000:	Must Report

Shire of Mt Marshall
Report on Significant Variances - Operating Income & Expenditure
For the Period 1 July 2015 to 30 June 2016

	30 June 2016 YTD Actual $	YTD Budget $	Budget to Actual YTD %	Budget to Actual YTD Favourable/ (Unfavourable) $	Components of Variance Favourable/ (Unfavourable) $	
Revenues/Sources						
Governance	27,881	8,950	212%	18,931	14,207	Advertising Rebate timing difference
					4,725	*Minor Items*
General Purpose Funding	1,192,911	1,212,051	(2%)	(19,140)	24,562	Interest on Reserves higher than budget
					15,217	Interest on Investments higher than budget
					4,917	Rates Penalty Interest higher than budget
					2,574	FAGS General grant higher than budget
					(66,918)	FAGS Roads grant less than budget
					508	*Minor Items*
Law, Order, Public Safety	18,885	19,307	(2%)	(422)		
					(422)	*Minor Items*
Health	-	-	0%	-		
					-	*Minor Items*
Education and Welfare	62,202	57,912	7%	4,290	2,590	Rent Aged Care Units higher than expected
					1,700	Family Support Grant - Timing of Qtly Payments has changed
					-	*Minor Items*
Housing	164,311	112,200	46%	52,111	16,496	Community Housing rent more than budget
					20,644	Engineering Subsidy income not budgeted - Offset by expenditure
					8,701	Admin Rental Subsidy income not budgetted - Offset by expenditure
					6,493	Other Housing Rental income more than budget
					(224)	*Minor Items*
Community Amenities	174,703	186,425	(6%)	(11,722)	(16,577)	Grant - Water Projects - timing difference carried forward to 2016/17
					3,708	Community Bus Hire charges more than budget
					1,147	*Minor Items*
Recreation and Culture	73,707	1,060,700	(93%)	(986,993)	(990,000)	Bencubbin Multipurpose Complex Grant not yet received - timing
					2,000	Swimmimg Pool Government Grant more than budget
					1,007	*Minor Items*

Shire of Mt Marshall
Report on Significant Variances - Operating Income & Expenditure
For the Period 1 July 2015 to 30 June 2016

	30 June 2016		Budget to	Budget to	Components	
	YTD	YTD	Actual YTD	Actual YTD	of Variance	
				Favourable/	Favourable/	
	Actual	Budget		(Unfavourable)	(Unfavourable)	
	$	$	%	$	$	
Transport	1,913,570	1,857,213	3%	56,357	7,054	SRRG funding increased
					16,880	MRWA Black Spot Grant not budgeted
					44,919	Profit on disposal of asset not budgeted
					(12,496)	*Minor Items*

Shire of Mt Marshall
Report on Significant Variances - Operating Income & Expenditure
For the Period 1 July 2015 to 30 June 2016

	30 June 2016 YTD Actual $	YTD Budget $	Budget to Actual YTD %	Budget to Actual YTD Favourable/ (Unfavourable) $	Components of Variance Favourable/ (Unfavourable) $	
Economic Services	372,892	240,400	55%	132,492	153,905	Workers Camp Rental Income more than budget
					(15,760)	Caravan Park income less than budget
					(4,143)	Beacon Barracks Income less than budget
					(1,400)	Tourism Reimbursement & Minor Income less than budget
					(110)	*Minor Items*
Other Property and Services	105,996	120,900	(12%)	(14,904)	(16,312)	Diesel Fuel Rebate less than budget
					(16,042)	Workers Compensation reimbursements less than budget
					11,675	Private Works Income more than budget
					5,774	*Minor Items*
Total Revenues excl Rates	**4,107,058**	**4,876,058**	**(16%)**	**(769,000)**		

Amount Raised from Rates	1,178,819	1,237,941	(5%)	(59,121)	(43,377)	Rates received prior to 30 June 2015 for 2015/16
					(11,901)	Discount for early payment higher than anticipated
					(3,844)	*Minor Items*

Shire of Mt Marshall
Report on Significant Variances - Operating Income & Expenditure
For the Period 1 July 2015 to 30 June 2016

	30 June 2016 YTD Actual $	YTD Budget $	Budget to Actual YTD %	Budget to Actual YTD Favourable/ (Unfavourable) $	Components of Variance Favourable/ (Unfavourable) $	
(Expenses)/(Applications)						
Governance	(427,707)	(441,868)	3%	14,161	12,978	Councilor Expenses less than budget
					1,980	Public Relations and Donations less than budget
					(798)	*Minor Items*
General Purpose Funding	(105,805)	(101,128)	(5%)	(4,678)	(858)	Valuation Expenses - Additional Rolls Required
					(3,820)	Admin Expenses - Timing Difference
					-	*Minor Items*
Law, Order, Public Safety	(51,859)	(61,334)	15%	9,475	7,374	House numbering project timing difference - carried forward to 2016/17
					2,000	Pound Maintenance and Animal Destruction less than budget
					100	*Minor Items*
Health	(138,404)	(130,859)	(6%)	(7,545)	(14,240)	Contribution to Medical Practice additional recruitment expenses
					10,274	NEW Health Expenditure less than budget
					(1,511)	Bencubbin Silver Chain Garden Maintenance over budget
					(2,069)	*Minor Items*
Education and Welfare	(263,512)	(263,472)	(0%)	(40)	2,700	Annual Seniors Trip not taken this year
					(1,120)	Family Support Salaries less than budget
					(1,620)	*Minor Items*
Housing	(278,888)	(368,642)	24%	89,754	43,612	Community Housing Maintenance less than budget
					54,396	Loss on disposal of asset
					(6,035)	Depreciation of Staff Housing more than budget
					(2,220)	*Minor Items*
Community Amenities	(280,867)	(282,995)	1%	2,128		
					2,128	*Minor Items*

Shire of Mt Marshall
Report on Significant Variances - Operating Income & Expenditure
For the Period 1 July 2015 to 30 June 2016

	30 June 2016 YTD Actual $	YTD Budget $	Budget to Actual YTD %	Budget to Actual YTD Favourable/ (Unfavourable) $	Components of Variance Favourable/ (Unfavourable) $	
Recreation & Culture	(877,403)	(863,190)	(2%)	(14,213)	(8,321)	Beacon Hall Expenditure more than budget
					(5,407)	Sturt Pea House additional renovations for Childcare Facility
					(5,892)	*Minor Items*
Transport	(2,776,227)	(3,426,071)	19%	649,844	11,221	Depot Maintenance less than budget
					32,406	Street Beautification, street trees less than budget
					601,153	Infrastructure Depn reduced due to Fair Value revaluation
					5,064	*Minor Items*
Economic Services	(378,390)	(466,698)	19%	88,307	128,344	Loss on disposal of asset - Industrial Shed no longer to be sold
					(9,734)	Standpipe Expenditure - backflow installation and testing not budgeted
					(17,470)	Beacon Cabins Expenditure more than budget
					(12,100)	Workers Camp Cleaning offset by income
					(733)	*Minor Items*
Other Property and Services	50,294	(66,694)	175%	116,988		
					50,648	Plant Operating Costs - timing difference
					48,226	Plant Operating Depreciation - timing difference
					23,038	Workers Compensation Paid to Employees offset by income
					(4,925)	*Minor Items*
Total Expenses/Applications	**(5,528,769)**	**(6,472,949)**	**(6%)**	**48,980**		

Shire of Mt Marshall
Capital Expenditure Report on Significant Variances
For the Period 1 July 2015 to 30 June 2016

	Full Year Budget	30 June 2016 YTD Actual	30 June 2016 YTD Budget	Budget to Actual YTD	Budget to Actual YTD Favourable/ (Unfavourable)	
	$	$	$	%	$	Commentary
Capital Expenditure						
Governance						
Back up Generator	30,000	28,244	30,000	6%	1,756	
Housing						
Improvements	50,000	36,091	50,000	28%	13,909	Works under budget
Community Amenities						
Land & Buildings	56,000	21,284	56,000	62%	34,716	Cemetery Memorial Works not completed
Water Collection Projects	271,960	40,770	271,960	85%	231,190	Timing difference - currently being progressed
Recreation & Culture						
Sturt Pea House Improvements	-	9,323	-	100%	(9,323)	Final improvements pre opening of Child Care Centre
Other Infrastructure - Bencubbin						
Skate Park & Beacon Cricket Nets	35,000	35,516	35,000	100%		
Kitchen Modernisation	60,000	56,309	60,000	6%	3,691	
Bencubbin Rec Complex	2,797,000	-	2,797,000	100%	2,797,000	Timing difference - carried over to 2016/17
Transport						
Road Construction	2,245,379	1,851,746	2,245,379	18%	393,633	Timing difference - final sealing invoice yet to be received
Footpath Construction	40,000	548	40,000	99%	39,452	Construction of Footpaths allocated to Age Friendly Grant Expenditure Account
Plant Purchases	170,000	194,040	170,000	(14%)	(24,040)	Backhoe - Offset by additional price for trade in
Motor Vehicle Purchases	215,500	138,560	215,500	36%	76,940	Various changeovers postponed
Economic Services						
Set Up Workers Camp	219,400	395,502	219,400	(80%)	(176,102)	Additional costs associated with utilities (Electricity and Water and leach drains) by relocating the camp to the south east compared to the original proposal. Also, CEO met with Water Corporation who expressed concern about the original intention to provide the accommodation without verandas. In the interest of keeping the Corporate Client happy with the facility the CEO discussed the matter with the Shire President and the decision was made to commit the additional funding which will need to be adjusted in the March 2016 Budget Review. The Water Corporation has now occupied the Workers Camp through to 30 June 2016 and has confirmed that this arrangement will continue at least 5 months into 2016/17. Original budget income for 2015/16 was $147,600. Actual income for 2015/16 is now $301,505.
Total Capital Expenditure	**6,190,239**	**2,807,932**	**6,190,239**	**55%**	**3,382,307**	

Shire of Mt Marshall

THE SANDALWOOD SHIRE

Bencubbin Community Meeting Notes
7 June 2016 – Bencubbin Recreation Complex

Meeting opened at 7:04pm with Cr Callum Lumsden an apology.

Derek Clauson
The project's total budget is $2.6 million dollars. In my role at CBH we have found the cost of projects have decreased due to the mining boom being over – sometimes in the vicinity of 40%.
Will we lose any funding on a pro-rata basis if the project budget is reduced?

EP – We have been advised by WALGA that the project will likely come under budget and if that occurs then yes we will lose some funding.

DC – Is the interest on the Shire loans fixed for 20 years?

EP – Yes

Steven Chamarette
Does the SAR come off rates after 20 years? Does the $38,000 annual repayment include maintenance and operational costs over the 20 years?
EP – Yes the SAR will no longer applied after the 20 year repayment period. The $38,000 does not include maintenance and operational costs, however those costs are expected to be minimal.

Lauren Grylls
I think a fair assumption would be that the maintenance and operating costs would be less on a new building in comparison to an older one.

Deanne Breakell
The BCRC contribute to the running costs of the complex and the full burden will not be the responsibility of the Shire.

Eddie Piper (EP)
We are here to discuss the SAR tonight and find out if you are happy with it.

Louise Sellenger
Will Shire rates be going up in general by 2.5%?

EP – Yes, most LG's will raise their rates by 2.5-3% and would also expect the Shire of Mt Marshall's need to. SAR affected people will get a 2.5% rise plus the 5.8%.

LS – Couldn't the Shire cover the cost of loan repayments in their budget without the need for a rate increase seeing the annual repayment amount of $29,895 is minimal, less than the minimum wage for example? It is a pretty insignificant amount. Is it a scare tactic to list the figures in this manner?

EP – No, there are no scare tactics involved.

Paul Smith
When drawing SAR boundaries like the Shire is proposing, people on the Shire borders to the West and the East, like myself, have to pay for a facility they don't use. This is a chance for the whole Shire to band together and cover the whole loan for it to be fairer. Is it true that rates could rise as much as 10%?

EP – Yes, rates could rise by as much as 11% with all the increases included.
As an example, you may not use the facility but if you sold your property, the new owner might.

Dorothy Greenham
I agree with what Paul Smith said. We are ratepayers on the Western border and have no idea what is even being built. We have been fighting the monstrosity of a complex redevelopment in Koorda. We will have to sell everything just to pay our rates.

Peter Waters – explains a rough plan for the complex redevelopment
Sally Morgan – offers any information including drawings/plans if anyone would like to contact the Shire offices.

Brett Millar
I am a businessman and believe that a project like this helps attract people/residents to our area, helping all businesses. People who live in the North of the Shire do use the complex and all of the Shire should be paying for the redevelopment. To use the example Eddie gave earlier another way, what if someone is in the SAR catchment and uses the facility, then sells their property. Will their property have to be removed?

Sharnee Beard
I believe that we should remember that this kind of project helps keep our communities sustainable and the build is about creating a vibrant community and building something for all to enjoy.

Charisse Walker
We are here to discuss the possibility of a SAR and it feels like the Shire survey and tonight's meeting are irrelevant as it's been made clear that the SAR is happening no matter what. Why are we here tonight if this is the case? We pay rates in Trayning for projects we do not use and we don't mind.

EP – The Shire has been advised that the December decision to impose a SAR needed to be rescinded as a consultation process with the community is required before a SAR can be struck. There is a history of SAR's in the Shire including the RTC in Beacon.

Rebecca Watson – The RTC wasn't even a Shire owned building was it?
Rachel Kirby (RK) – No the Rural Transaction Centre was not a Shire owned facility, however the Shire donated the land. The SAR was levied to achieve a maintenance fund for the RTC. This ceased in 2015 as it was deemed inappropriate. There was a SAR applied on southern ratepayers for the original build of the Bencubbin complex.

Paul Smith
I am lead to believe the Shire has funds already in reserves, why doesn't the Shire use these funds to pay for this project. It is not fair on ratepayers to be imposed with a SAR if the money is already available.

RK – The Public buildings and amenities reserve is approx $533,000. Past ratepayers fund reserves, current ratepayers fund operations and future ratepayers fund loans. Council reduced the amount to be used from reserve funds after the project budget was reduced. Council has been trying to strike a balance.

Brett Millar
What happens to the reserve funds if they are considered previous ratepayers money, surely it can still be used.

Deanne Breakell (DB)
I am a previous and current ratepayer who has given the Shire hard earned money which is now sitting in reserves but you still want more? Why do we need a 2.5% increase in rates to cover the annual repayments on a loan when other large projects are approved each year without having to raise rates to be affordable? This is only $29,000 each year. 2.5% increase in rates is different to 2.5% of rate funds.

EP – That would be my recommendation to Council so it doesn't fall behind. There is nothing set by Council yet.

DB – I believe this needs to be clarified, it is 2.5% of rates but it does not represent a 2.5% increase which could lead to the overall increase of 10% or 11% in the previous example given to Paul (Smith).

EP – I think you are just getting pedantic now.

Sharnee Beard
If the Shire is still managing to put money away each year into reserves then does that mean all of our rates are being expensed each year?

EP - Council operates on a balanced budget.

Steve Chamarette
Has a poll tax been considered by Council?

EP – Poll taxes are illegal. A service charge on each property is not applicable to this type of project.

Peter Waters
I'm not against a SAR being raised. I have issues however with the fact that Craig Grant from WALGA procurement told us that the amount being contributed by the community to

this project is unprecedented. The previous Council (prior to October) confirmed there was enough Shire funds to afford this project and the contribution by the community did not have to be large. Now it has all changed. Why not reduce the SAR amount by using reserve funds? Why not use $150,000 of reserves to reduce the impact on Southern ratepayers? We pay rates in other surrounding Shires and it is just considered part of being a profitable farmer.

Rebecca Watson
The WALGA representative who attended the Special Electors meeting last year advised that SAR's are not recommended for this project. Could you elaborate on why?

EP – Defining boundaries to apply SARs is very difficult. They are not uncommon in this Shire and there are others who still use them.

Gary Shadbolt
The Shire's aquatic centre reserve fund is quite large – why not use the funds from this reserve? Mukinbudin has used a voluntary pool levy which has worked well.

Charisse Walker
I feel that we here tonight are not qualified to draw boundaries to raise SARs, is there someone qualified to help make the decision?

EP – It is a decision for Council we are just trying to gauge support from this meeting.

Leeanne Gobbart (LG)
If a SAR is not raised will the project still go ahead? What other options are there?

RK – Brief explanation as to how we got to this point. The question was asked during negotiations with the BCRC, what needed to be done for the project to proceed. SAR was a compromise. Council tried to strike a balance of funding between the Federal Government, the Shire and the community – 1/3 each and not applying the SAR would leave it unbalanced.

LG – Wasn't it approved in December?

Derek Clauson
There is a duplication of facilities between Bencubbin and Beacon. BCRC should be commended for their efforts to raise funds for the project to go ahead. When taking into account the North and South of the Shire I think a SAR is fair and the key to getting an end result.

Rebecca Watson
Has Andrews Tank Road been used before as a boundary when applying SARs?

RK – No, Wards were used previously and now we have to come up with an alternative. The boundary of Andrews Tank Rd has not been adopted by Council.

Deanne Breakell
I want to reiterate what Derek Clauson said. Most of the people I have spoken with around Bencubbin want the project to go ahead and are happy to pay the SAR.

Lauren Grylls
I had difficulty answering any of the survey after Question 3.

Sharon Kett
The survey is difficult to understand and I have had to help people with responding.

EP - Explained to Mrs Grylls how to follow survey.

Brett Millar
How far North did the last SAR go? Crabb Road?
Andrews Tank Road is not half way.

Craig Walker
Did residents outside of the SAR boundary get the survey?

EP – All ratepayers got the surveys, not residents.

Sharon Kett
What % of the surveys need to be returned to make a decision on SARs?

EP – Ideally all, but it is not a vote, just something to look at and act as a guide.

Peter Waters
Should the survey have contained a question relating to whether people have used or expect to use the complex?

EP – Yes, unfortunately it was omitted but we hope to cover that as part of strategic community planning meetings coming up in July.

Peter Waters
The possible area for a SAR to be applied has been decreased causing more of an imposition on the southern ratepayers. Originally with meetings between Council and the BCRC a larger area had been agreed on meaning a SAR of less than 5%.

Courtney Millar
Does WALGA have any guidelines that we could use on how to set up a SAR boundary?

EP – No they don't.

Sharnee Beard
If some people are happy with a 5% SAR, should we work off that and use the reserves to top up the remaining loan repayments?

Adrienne Whyte
I would like to see the project go ahead but don't think we as ratepayers to the east should pay for it as we don't use the facility. If you extend the SAR boundary it will dilute the impact on individual rate payers.

EP – It is hard for Council to please everyone with their decision.

Louise Sellenger
It has been mentioned that Andrews Tank Road is apparently halfway, halfway to where? Halfway from top to bottom of the Shire? Between Bencubbin and Beacon?

RK – It has been considered the social divide between the communities and seems to be half way between the two communities of interest.

Louise Sellenger
Does the Department of Local Government have the final ruling on whether the SAR is appropriate?

EP - No, however people can apply for a State Administration Tribunal ruling after displeasure at a Council decision.

Rebecca Watson
There has been a lot of toing and froing with decisions being made about the project. I think this has created confusion. I would like to see the Shire come together as one community but I don't want the project to fall in a heap if I say no to the SAR.

Robert Grylls
Just to clarify question 9 of the survey, would it be a 3.5% increase in rates across the whole of Shire?

EP – Yes

Survey of meeting –
Q: Should the project go ahead – 100% yes
Q: Would you support a SAR if it is the only way for the project to go ahead – 95% yes
Q: Would you like to see the whole of Shire fund the project – 100% yes

Grant Whyte
The Shire seem to be overlooking the eastern and Western boundaries of the Shire when it comes to this funding. We may only visit the centre 4 times a year. There are approx 15 Mukinbudin residents along the eastern boundary. It's going to be hard to draw the boundary.
The angst between the North and the South of the Shire is well known and I think the Shire is going to have to dip into their own funds to cover the loans.

Survey of meeting –
Q: Would you support the Shire funding $150,000 of the $550,000 loan from reserves to reduce the SAR to $400,000? – 85% yes

Shire of Mt Marshall

THE SANDALWOOD SHIRE

Beacon Community Meeting Notes
8 June 2016 - Beacon Country Club

Meeting opened at 7:02pm with Cr John Beagley an apology.

Noel Miguel – President BPA
Thanks Council for holding the meeting.
We feel there is not majority support for the project and don't want Council reserves used to fund it. What process can be done to put forward a different boundary?

EP – There is no decision on a boundary as yet and the Shire is open to suggestions. Andrews Tank Road as a boundary is just an idea. Surveys close this Friday and we will need to consider the boundary soon.

NM – Who is helping analyse the surveys?

EP – Nadine or Tanika, there will be no Councillors helping that process.

NM – Due to changes the project is already $115,000 over budget. What contingencies are in place to make sure this doesn't happen again?

Rachel Kirby (RK) – There has been a change in the budget between December and April after the NSRF response to our reduced budget was to reduce their funding pro rata. It also meant some 'in kind' components weren't accepted so had to be changed to cash.

NM – If the budget goes over what contingency plan is in place as required by NSRF**?**

EP – At last night's meeting there was a point raised by someone that due to the downturn in mining causing increased competition, there may be a possible savings on the project of up to 40%. It would be good to see the budget come under by approx 10%.

NM – The My Council website has the Shire's FHI rating at 56. This does not indicate the Shire can afford this project.

EP – The website indicates a rating of 70 as being optimum. The Shire's financial position goes through ebbs and flows throughout the year depending on the timing of grants and this rating of 56 is not something to be concerned about.

Marian Kirby
What contingencies are in place if the BCRC default on their loan?

EP – The Shire will make payments on the loan and continue to invoice the BCRC so the responsibility will be with the Shire.

Clinton Poole
I was disappointed with the SAR survey in that it didn't ask the question – Do you agree with the project, yes or no. The other questions were irrelevant.

EP – I would think that would be inappropriate at this time. I take your point but it is important this survey lets Council know what area responses are from. Name and addresses will be removed from surveys once logged. The purpose for the labelling of the surveys with names and addresses was to avoid duplication.

Peter Munns
We haven't had an opportunity to answer no to this project. It was clear at the Special Electors Meeting (SEM) in September last year that the majority of people didn't want the project. We need another SEM to answer if we want it or not. We are wasting our time in meetings like this. The grant was supposed to bring communities together and it has torn it apart instead. The grant was won on a bunch of lies.

EP – *Bulleted due to unclear notes*

- These meetings are information sessions to help Council with decision making.
- I'm not fully aware of all the history.
- Should all of the Shire contribute to funding?
- I have spoken to previous Shire Clerk who was around in 1985 when the original Bencubbin Complex was being developed and he mentioned that what is going on now is a repeat of what happened at that time.
- Is this a time to heal some wounds?
- Bencubbin prepared to accept the raising of a SAR.

Petrina Poole (PP)
Can a vote be taken on whether the SAR is applied according to community of interest and not where you live?

EP – You run the risk of some people paying and some not and you will not know what you will recover. Can only be done by a SAR. It is a difficult situation.

PP – If 95% of people don't contribute/pay then doesn't that mean it's not the project is not wanted?

EP – Again, Bencubbin indicated they are prepared to pay a SAR.

John O'Neil
The Aquatic Centre Reserve is large so maybe Council could move funds around to cover the costs of this project. There are other options for funding and the Shire has a healthy reserve situation. In moving forward with reserves – if no contribution is made then no rate rises incurred. The large scope of the project has caused some angst.

EP – Funds in reserves can be moved around for other purposes. Previous Council has made a large effort to create the large reserve funds.

JO – Council could consider the aquatic centre gets used less.

Noel Miguel
So it is possible to simplify the reserve funds in to Beacon and Bencubbin reserves?

EP – It can be done yes, but reserves have to be created for a purpose.

Michelle Kirby
Needs vs want. If they (Bencubbin) want the project bad enough then they should pay for it. I can see us as a community having to pay for communications north of Scotsman Road.

EP – The community of Bencubbin already are contributing to this project. This situation can be played out in reverse and go back and forward over time.

Anna Munns
I'm concerned the project is not affordable and how it will affect the priority of other projects.

EP – There is a limit to how much the Shire can borrow, yes. Are you prepared to pay a SAR for bitumising the airstrip?

AM – Can the cost be sustained?

RK – Over 20years and taking inflation into consideration a $38,000 loan reduces greatly in value. The Shire has healthy reserves. To put it into some kind of context the total repayments for the project will be $75,000. This is less than what it costs us to run the pool so yes we can sustain the cost.

Nigel Beagley
I have played footy here for 20yrs and the league is getting smaller. What happens if there is no football league here in the future?

RK – The Bencubbin community use the complex for various purposes not just sport as they do not have a function centre as such. Your opinion is valid.

Tanya Gibson
If our hall burnt down, could we afford to rebuild it?

EP – All Shire buildings are insured so we don't need to worry about things burning down.

Jeff Munns
Who will be paying the operational costs of $140,000 per year?

EP – I don't think it will cost much more to operate than it currently does. The BCRC contribute a lot towards operational costs.

JM – Why does the current complex cost double the amount of the Beacon Complex to run?

Shane Munns
If the BCRC can't cover the operational costs, who pays?

EP – The Shire would once again cover this and charge the BCRC accordingly.

Sue Munns
Could the applied SAR be changed back to general rates?

EP – Yes it is possible
RK – We can only assume people are honourable and as history has shown that won't happen.

James Grant
Is the project going ahead or not?

EP – Yes. Tenders for the architect are open. Once again, it has been made clear by Bencubbin that they are prepared for a SAR.

Jelle De Jong
The people supporting it are probably all Shire workers living in town in Shire housing. There are less farmers in the area now.

EP – The survey was only sent to ratepayers.

Anna Munns
If the SAR doesn't go ahead, what actually happens?

EP – I can't see that happening – again, Bencubbin strongly support the SAR. The decision on the project will go back to Council.

Chris Kirby
Could Council use some of the reserve funds to reduce the $432,000 loan?

EP – It's an option yes. Interest on loans is very low currently and it's an ideal time to borrow.

John O'Neil
It would still be nett better off to use reserves.

Jelle De Jong
Maybe we should just bulldoze the pool.

EP – Every time you eliminate a facility it is rare they are ever replaced and you lose it forever. Pool is losing 17,000 – 18,000 ltrs a day which equates to a large amount of money.

Rod Munns
The pool has leaked more in the past, however there is a solution to fix it.

Tanya Piller
I have worked at Bencubbin, Gabbin and Beacon as a teacher and seen the numbers of students decline which means we have a declining population. How does the Shire sustain their rates income if the population is decreasing?

EP – Rates are struck on property values not on population. Farms are getting bigger but they still have to pay rates. Rates base remains constant.

Tamara Gibson
If population is decreasing then there will be less kids to play in the rec centre.

Megan Beagley – bulleted

- Pool plus 2.6 million Rec Centre.
- Both in southern end of Shire
- 68% of ratepayers are in Beacon.
- Beacon residents don't use except away sport fixtures.
- Users need to pay, should pick up more of cost and not less.
- We evaluate according to need and build our own.

Peter Munns
We appreciate what we have in Beacon. Beacon complex is worse than Bencubbin and would give anything to have the Benny facility. We are happy with our complex.

Jelle De Jong
Does this include a new Bowling Club building?

EP – Bowling green is completed. Bowlers will use the bar facilities and in turn generate income.

Andrew Dunne
We are paying for a drinking area for the bowlers.

RK – Explains the general plan of the complex layout including a function space.

Paul Smith
This meeting is meant to be about SARs because the project is going ahead. We occasionally use the facility but will have to pay increased rates. It's time for the Shire to come together. People on the fringes of the Shire will be affected. I pay rates which end up in Beacon.

Joel Lancaster
The project scale is too big.

Shane Munns
It's called the Bencubbin Complex. It's up to Bencubbin to decide who from other small communities use the complex and pay for it.

Peter Munns
When our complex was built we were told it was too big. We had to borrow our own money and we couldn't have a court inside it.

Sue Munns
If Bencubbin want it and believe in it good on them but let them pay for it.

Paul Smith
People who don't want it weren't in Bencubbin meeting last night.

Facilitator – Meetings were advertised and people had a chance to attend and express their opinion. Votes are with people who attend these meetings.

Anna Munns
Can the BCRC take out their own loan so it's not a cost to the Shire?

EP – It's a Shire owned facility so responsibility lies with the Shire.

Andrew Dunne
Why are we here tonight being asked this question when there is a survey out as well?

Facilitator – It is a Local Government consultation process.

Terry Bunce
Non ratepayers have their say but don't pay rates.

Megan Beagley
At the SEM in Sept it showed that majority did not want project. We are being ignored. The only thing from that meeting still standing is the SAR proposal and now it's in question.
Why are we doing this again?
Sorry administration.

Peter Munns
In a years' time the balance of power could change again and we pay for the project anyway – very concerning.

EP – Is it a serious thought to create a Bencubbin and Beacon reserve?

Rachel Kirby
If we reduce the budget we lose Federal Government funding on a pro rata basis. This is why a compromise was reached. The budget is not as close to 2 million as some had hoped but it is balanced.

Tanya Gibson
It was suggested at the SEM to use Andrews Tank Road as a boundary. Could we also bring in the boundary along the edges of the Shire, can it be considered?

EP – No decision has been made yet on the boundary. Andrews Tank Road is just an option.

TG – Most want a smaller area to have the SAR applied to.

EP – Explained what the definition of a SAR is. Bordering ratepayers could be affected.

Celine Murray
Will the rateable area remain for the 20 years?

EP - Yes, this was answered earlier.

Sue Munns
We shouldn't expect people from Mukinbudin and Koorda to pay for our projects as well. They support their own Shires already.

Noel Miguel
If the reserves are split between Beacon and Benny we may mend the rift between the two towns.

RK – Please remember that the reserves have been built up over 10 years and have not been spent on anything.

EP - The pool reserve is not big enough yet to fund a new pool. It could see the whole Shire without a pool if those funds were used.

Petrina Poole
We are worried about losing other services due to the scale of this project.

Megan Beagley
We want Bencubbin to be responsible for their own projects.

Paul Smith
Will the proposed 2 new reserve funds change if Council changes?

EP – Legally if it's named Beacon then it would have to be spent there but yes, names can be changed. Would you want the funds split separately? Whose rates would go in which reserve?

Andrew Dunne
Let the ratepayer decide.

Len Cargeeg
It would be a brave person who would go against the majority of votes at these meetings in both Bencubbin and Beacon. They would be harassed and bullied.

Adrienne Whyte
I don't want a SAR applied due to my property being in the South east corner of the Shire.

Marian Kirby
We have had quite a few SARs applied over the years and we know about them.

Peter Munns
We can't trust that they won't put a pool into the redevelopment as well which is what they want.

Len Cargeeg
Only a small portion of people in Bencubbin want the pool moved. They have lost political power.

Megan Beagley
We don't want to pay any of the loan and don't want the $432,000 across the whole of Shire. Can we have Bencubbin pay for the whole $982,000 while keeping the rate rise under 10%?

EP – There is no way the rate rise would be kept under 10% on the SARS affected people with such a large loan.

Shire of Mt Marshall

THE SANDALWOOD SHIRE

REPORT ON OUTCOMES OF PUBLIC MEETINGS
BENCUBBIN MULTIPURPOSE COMPLEX REDEVELOPMENT

Following legal advice the Shire held consultative meetings with the community in both Bencubbin and Beacon, the first being in Bencubbin on Tuesday 7 June 2016. The second was held in Beacon on Wednesday 8 June 2016 and both meetings were well attended by residents of the Shire.

The purpose of the meetings was to give those attending the opportunity to ask questions regarding the current status of the project and to discuss the matter of the Shire introducing a Specified Area Rate (SAR). It was also made clear that suggestions were welcome at the meetings regarding possible boundaries for the SAR.

Bencubbin Meeting held at the Bencubbin Sporting Complex

There were approximately 50 people in attendance and the meeting was facilitated by Ms Margo O'Byrne. Commencing at 7:04pm the President welcomed those attending and introduced Ms O'Byrne and the Acting CEO Eddie Piper. Mr Piper explained what he and Council hoped to gain from the meeting, why the meeting was necessary and the current status of the Project.

There were many questions asked and a lot of feedback received throughout the meeting. A brief summary of these along with responses provided is attached.

<u>Assessed Outcomes</u>

Various proposals were put to the meeting and responses measured by a show of hands. Approximate % of the results are as follows:

Q1. Should the project go ahead – 100% yes
Q2. Would you support a SAR if it is the only way for the project to go ahead – 95% yes
Q3. Would you like to see the whole of Shire fund the project – 100% yes
Q4: Would you support the Shire funding $150,000 of the $550,000 loan from reserves to reduce the SAR to $400,000? – 85% yes

From these results it could be safely assumed there was agreement for the project to continue in its current form and if necessary, supported by a SAR, raised to cover loan

repayments on $550,000 or less if the use of existing reserves is approved. Generally attendees agreed utilising $150,000 of reserves and establishing a SAR covering a loan of $400,000 had some merit. In terms of a SAR boundary there was general agreement to either Andrews Tank Road or Crabb Road and people south of either road "would have benefited or will benefit from the facility".

Beacon Meeting held at the Beacon Country Club

There were approximately 60 people in attendance and the meeting was facilitated by Ms Margo O'Byrne. Commencing at 7:02pm the President welcomed those attending and introduced Ms O'Byrne and the Acting CEO Eddie Piper. Mr Piper explained what he and Council hoped to gain from the meeting, why the meeting was necessary and the current status of the Project.

There were many questions asked and a lot of feedback received throughout the meeting. A brief summary of these along with responses provided is attached.

Assessed Outcomes

Whilst the facilitator, Ms O'Byrne, attempted to extract some outcomes by a show of hands as was the case in Bencubbin, there was a reluctance by attendees to follow this method.

The Acting CEO presents the following as his perception of the thoughts and outcomes of the meeting:

There was a general, although certainly not unanimous agreement, that the project should not proceed or at the very least be reduced in design. The desired result from this would be a reduction or even complete removal of the need for the Shire to raise a Shire funded loan.

When questioned if the project should proceed if a SAR was imposed the response in general was positive, providing ‘Bencubbin’ funded the project.

The use of Shire reserves was discussed to fund the project and there was a reluctance for the Shire to utilise the reserves any further unless the two (2) major reserves, being the Bencubbin Aquatic Centre Replacement and Public Amenities & Building were split to each town by including in the 2016/17 Budget two (2) new reserves and distributing the funds in the previously mentioned reserves evenly over the newly created reserves.

It is the Acting CEO's view that there would be a reluctant acceptance of the project proceeding provided a SAR was raised to fund the currently budgeted loan of $550,000, or even higher, unless the proposed new reserves were created and the Bencubbin reserve utilised only. It is his belief that creating new reserves based on ‘community of interest’ would further establish a divide between the two communities.

Facilitators Report

Multi-Purpose Complex Community Meetings

Outcomes from Bencubbin and Beacon Meetings

Margo O'Byrne
6/10/2016

Attachment 12.4.12d

Background: Prior to the community meetings, the consultant and the CEO agreed to the following...

Purpose: The purpose of both meetings was to...

1) Consult with the community about the Multi-Purpose Complex – allowing for the expression of various points of view from residents and ratepayers within the Shire.
2) Determine where there was agreement to proceed.
3) Give the community a clear indication of the pathway forward following the public meetings.

Desired Outcomes: Satisfactory outcomes from each meeting...

1) For community members to feel their point of view had been heard
2) Agreement to Proceed
3) Agreement about a Specific Area Rate

The Consultant, Margo O'Byrne, met with the acting CEO Eddie Piper, Shire President Rachel Kirby and council members Stuart Faulkner, Paul Gillett, Tony Sachse, John Beagley and Helen Shemeld at the Shire office prior to the Bencubbin meeting.

Bencubbin Meeting Tuesday 7 June 2016

The meeting was well attended and seemed to represent a variety of views from community members.

- Participants showed respect for each other, for Council members and for the work done by Shire staff.
- The CEO and the Shire President were asked questions directly and participants listened to their responses, fielded further questions for clarification and when they held different points of view to those presented by the Shire, displayed a general willingness to accept the proposals put forward.
- Questions posed by community members were well considered, reflected their concerns (particularly about rate increases).
- There was robust discussion about the use of reserve funds, the need for the facility and the contribution by the BCRC.
- The issue of applying a Specified Area Rate was openly canvassed (not an easy task) and at the conclusion of the meeting, the facilitator was able to pose a question to the group about the acceptance or otherwise of a SAR and the group was willing to vote on it.
- The issue of where to draw a boundary for the SAR was canvassed and again openly discussed, with a variety of opinions offered.
- The CEO was able to clearly state that no boundary had yet been drawn, that Shire staff would make recommendations and that Council would determine the final boundary.
- From a facilitator's point of view, I think this meeting achieved the stated outcomes.

Beacon Meeting Wednesday 8 June 2016

The meeting was well attended but from the start, there was no willingness on the part of the community to accept the proposal.

- Participants were concerned, angry, and some quite hostile to the idea of the proposal.
- Rather than being a discussion about gaining agreement to proceed and agreement to impose a SAR, questions and statements from the meeting appeared to reflect a commonly held belief from these members of the Beacon community that Bencubbin already had an adequate complex and that Beacon ratepayers and residents never agreed to an upgrade.
- This set up an 'oppositional' meeting with one speaker after another supporting that stand.
- It appeared to me, as an outsider, that the community was a close knit group, used to working together well, meeting their own needs and achieving many things – e.g. building their own recreation centre without help from the Shire.
- While the positive aspects of this are commendable, it does make it difficult for any one member to express a counter point of view in a public forum.
- There appears to be a long held disrespect for the work done by the Shire, as it is perceived as being 'Bencubbin centred'.
- There is a perception that Beacon does not receive an equal share of Shire spending.
- While that remains the perceived view, it may not be possible to achieve whole of Shire support for ANY project proposed for Bencubbin.
- The CEO and the Shire President were asked questions directly and participants listened to their responses.
- When community members held different points of view to those presented by the Shire, there was not a willingness to accept the proposals the Shire put forward.
- As the facilitator, I attempted a number of times to present the issue of applying a Specified Area Rate and gain some sort of agreement (or otherwise) about support, even asking the group to consider it as a hypothetical.
- The fact that the group were not willing to do this, suggests a VERY HIGH LEVEL OF MISTRUST.
- The issue of where to draw a boundary for the SAR was canvassed and again there was unwillingness to even entertain the idea.
- The CEO was able to clearly state that no boundary had yet been drawn, that Shire staff would make recommendations and that Council would determine the final boundary.
- From a facilitator's point of view, this meeting did not achieve the stated outcomes.

Reflections and Recommendations:

I respectfully submit these reflections as a suggested way forward, based on my many years working with community groups and the frameworks of the International Facilitators Association and International Association of Public Participation.

- In the interests of future consultation I would suggest the Shire adopt the generally accepted model of consultation proposed by the International Association of Public Participation (IAP2) (see attached)
- If you can clearly state where each consultation sits in this spectrum, it will hopefully assist residents to understand (and accept) the level of consultation.

- With trust in the Shire from a significant portion of the Shire's ratepayers being so low, I would suggest the concerns of the residents of Beacon need to be listened to as a priority.
- This cannot be done at a public meeting.
- Consider undertaking an impartial audit (either in house of external) of council services and council spending to all parts of the Shire of Mt Marshall. This would provide an unbiased framework with which to respond to the claims made by Beacon residents that most of the resources are allocated to Bencubbin.
- It might be worthwhile to seek the services of an independent community planner from another Wheatbelt Shire or a reputable service provider to undertake this audit.
- If such an audit supported the claims made by Beacon residents, then the Council could act to redress any actual balance through, for example, the allocation of Shire reserve resources to equalise services.
- This would help build trust in the elected members and the new CEO.
- If an independent audit revealed there was a reasonably even distribution, then you have good grounds to counter this perception. If not, you have good grounds to let Bencubbin residents know why you were supporting spending in Beacon - or another part of the Shire.
- Such an action might help build enough trust to enable the community to work together on joint projects such as this one and others in the future.
- Consider allocating more resources to communicate with the community about this project. Communication is the key. When trust is low, people assume the worst. Perhaps allocating space on the Shire website for the plans, project updates etc.
- I t may be worth the extra effort to keep building a whole community vision about the project so that they can 'buy into it'. Another way might be to meet with the chairs of the progress associations or other community leaders and brief them about the plans, timelines etc.
- Without dedicated extra effort, full community acceptance of the project will probably remain low.
- Actively challenge committee members to be 'advocates' and distribute information about the project.
- Find a way to inform the community about any spending variance, planning changes, options under consideration for the SAR boundary and timelines for the project.

I thank you for the opportunity to work with you and your community on this challenging project. I wish you well with its implementation. If there is any way that I could assist you in the future, please don't hesitate to contact me.

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	Bencubbin Office	Bencubbin P O	Beacon P O	Meetings	TOTAL		BENCUBBIN	BEACON	BOTH TOWNS	NON ALIGNED	TOTAL
Surveys sent to ratepayers					313						313
Surveys lodged at sites	43	38	47	7	135		69	53	3	10	135
					43%						**43%**
1 Community of Interest											
Bencubbin	27	37		4	68						0
Beacon	3	1	44	2	50						0
Both	3		3		6						0
Neither				1	1						0
Other	10				10						0
					135	(A)					**0**
2 Property South of Andrews Tank Rd											
Yes	37	36	2	5	80		67	3	2	8	80
No	6	2	45	2	55		2	50	1	2	55
					135	(A)					**135**
3 SAR South of Andrews Tank Rd											
Yes	23	23	38	1	85		40	35	2	8	85
No	20	15	9	5	49	(B)	29	17	1	2	49
Other				1	1			1			1
					135	(A)					**135**
4 SAR _ Different Boundary											
Yes	2	4	6	2	14		6	7	1		14
No	18	11	3	3	35		21	3	2	9	35
	20	15	9	5	49	(B)	27	10	3	9	49
3=Yes but Responded											
Yes	11	3	3		17		12	4		1	17
No	12		8		20		2	18		0	20
	23	**3**	**11**	**0**	**37**		**14**	**22**	**0**	**1**	**37**
5 Support SAR with Smaller Loan											
Yes	1	7	2	2	12		9	2	1		12
No	19	8	7	3	37		20	8		9	37
	20	**15**	**9**	**5**	**49**	(B)	**29**	**10**	**1**	**9**	**49**

3=Yes but Responded										
Yes	13	7			20	19	1	0	0	20
No	2	1	9	1	13	3	7	2	1	13
	15	**8**	**9**	**1**	**33**	**22**	**8**	**2**	**1**	**33**
6 All Ratepayers Pay Loan										
Yes	16	13	0	3	32	25	0	1	6	32
No	3	2	9	3	17	4	10		3	17
	19	**15**	**9**	**6**	**49** (B)	**29**	**10**	**1**	**9**	**49**
3=Yes but Responded										
Yes	10	8			18	15	0	2	1	18
No	7	0	12	1	20	8	12		0	20
	17	**8**	**12**	**1**	**38**	**23**	**12**	**2**	**1**	**38**
7 a) Min $110 and SAR 6.0%										
Yes	18	24	9	2	53	41	11	1	1	54
No	16	8	34	5	63	17	27	1	8	53
Nil Response	9	6	4	0	19	11	15	1	1	28
	43	**38**	**47**	**7**	**135** (A)	**69**	**53**	**3**	**10**	**135**
7 b) Min $80 and SAR 6.8%										
Yes	9	15	6	0	30	23	7	0	0	30
No	22	9	26	5	62	23	29	1	9	62
Nil Response	12	14	15	2	43	23	17	2	1	43
	43	**38**	**47**	**7**	**135** (A)	**69**	**53**	**3**	**10**	**135**
7 c) Min Nil and SAR 7.8%										
Yes	9	6	20	0	35	12	24	1	9	46
No	24	12	20	5	61	28	22	0	1	51
Nil Response	10	20	7	2	39	29	7	2		38
	43	**38**	**27**	**7**	**135** (A)	**69**	**53**	**3**	**10**	**135**
9 3.5% to All Ratepayers										
Yes	30	34	0	2	66	58	1	2	6	67
No	13	4	47	5	69	11	52	1	4	68
Nil Response	0	0	0	0	0	0	0	0	0	0
	43	**38**	**47**	**7**	**135** (A)	**69**	**53**	**3**	**10**	**135**

Analysis of Survey Returns
Interpreted by Acting CEO Eddie Piper

Introduction

Surveys were sent on 26 May 2016 to 313 property owners based on the Ratepayer as detailed in Council's rating data base. The closing of completed surveys was 10 June 2016 at 12.00 noon.

The Survey put to Ratepayers, a series of questions in an attempt to establish the community's thoughts on Council establishing a Specified Area Rate (SAR) and the level of acceptance of the extent and boundary of such a rate should it be imposed.
There were no questions on the level of usage by the various communities within the Shire of Mt Marshall, however, this can be addressed at public meetings scheduled in late July.

Analysis

At closing 135 surveys were returned to the various drop-off points, they being the Bencubbin Administration Office, the Bencubbin Post Office, the Beacon Post Office and at both public meetings. The 135 returns represent a 43% response which in terms of a survey response is very good. An analysis of the various lodgement points is as follows:

Bencubbin Admin Centre	43	32%
Bencubbin Post Office	38	28%
Beacon Post Office	47	35%
Public Meetings	7	5%
	135	100%

When the community of interest responses are analysed the following is revealed:

Bencubbin	68	51%
Beacon	50	37%
Both	6	4%
Other	10	7%
None	1	0%
	135	100%

Whilst emphasising at every opportunity that Council had made NO decision on a SAR boundary and the resolution of December to impose a SAR had been revoked based on legal advice and this exercise along with the 2 public meetings was part of a consultation process to gauge public opinion several questions were posed on possible boundaries. An analysis follows:

If the SAR is imposed south of Andrews Tank Road are you likely to be affected

Yes	80	59%
No	55	41%
	135	100%

Of those that responded **YES** the Community of Interest was

Bencubbin	67	84%
Beacon	3	4%
Others	10	13%
	80	100%

Of those that responded **NO** the Community of Interest was

Bencubbin	2	4%
Beacon	50	91%
Others	3	5%
	55	100%

Do you support the establishment of a SAR south of Andrews Tank Road?

Yes	85	63%
No	49	36%
No Response	1	1%
	135	100%

Of those that responded **YES** the Community of Interest was

Bencubbin	40	47%
Beacon	35	41%
Others	10	12%
	85	100%

Of those that responded **NO** the Community of Interest was

Bencubbin	29	59%
Beacon	17	35%
Others	3	6%
	49	100%

In analysing the above two (2) questions the majority of surveys indicated they would be affected. 80 responders representing 59% answered yes and of those 80, 67 or 84% were in the Bencubbin Community of Interest which is not surprising. Obviously those that indicated Beacon as the Community of Interest indicated No (91%)

The positioning of the boundary South of Andrews Tank Road was supported by 85 or 63% of responders. Of those 85 persons 40 (47%) were from Bencubbin, 35 (41%) from Beacon and 10 (12%) were not aligned to either community.

There were 80 responses to YES they were impacted by the boundary being South of Andrews Tank Road and of those 80 responders 10 did not indicated a Community of Interest of either Bencubbin or Beacon.

It is interesting to note that 40 respondents who had their community of interest listed as Bencubbin indicated they would support the Andrews Tank Road boundary which represents 60% of the 67 who indicated they were affected by a Andrews Tank Road Boundary.

50 Beacon respondents indicated they were not affected by an Andrews Tank Road boundary 35 or 41% of the supporters of the Andrews Tank Road boundary were from Beacon.

I suggest that there is a general acceptance of the Andrews Tank Road boundary.

To give support to the above statement a question was posed"would you support a SAR with a different boundary". The responses were very decidedly in the negative with 35 (71%) of 49 responders indicating NO. There were a further 37 responders who answered Yes to question 3 but wished to respond to question 4. Of those 37 responses 17 indicated Yes and 20 indicated No. Therefore of 86 responses 31 responses indicated Yes and 55 or 64% indicated No. Please refer to detailed survey returns.

The question of a SAR with a smaller loan to fund was posed and surprisingly the majority of Responders answered No (50 of 82 or 61%). Of those 23 or 45% of 51 Bencubbin responses answered No. Of the 22 responders to question 5 (Would you support a SAR funding a smaller loan?) that answered Yes to question 3 (Do you support the establishment of a SAR south of Andrews Tank Road?), 19 or 86% wanted a smaller loan. There is a strong indication that the Bencubbin supporters of a SAR want a small loan.

Do you believe all ratepayers should cover the funding (no SAR)

Yes	32	65%
No	17	35%
	49	100%

Of those that responded **YES** the Community of Interest was

Bencubbin	25	78%
Beacon	0	0%
Others	7	22%
	32	100%

Of those that responded **NO** the Community of Interest was

Bencubbin	4	24%
Beacon	10	59%
Others	3	18%
	17	100%

From the above and supported at question 9 there is support for this suggestion by Bencubbin ratepayers (40 or 47%) of 85 responders. In comparison not 1 Beacon respondee supported the notion.

Various Rating alternatives

Several options were offered and generally the $110 minimum with a 6% (approx.) SAR was supported
Please refer to detailed survey returns.

Should All Ratepayers accept a 3.5% (approx.) increase and not raise a SAR

Yes	66	49%
No	69	51%
	135	100%

Of those that responded **YES**
the Community of Interest was

Bencubbin	57	86%
Beacon	1	2%
Others	8	12%
	66	100%

Of those that responded **NO**
the Community of Interest was

Bencubbin	12	17%
Beacon	52	75%
Others	5	7%
	69	100%

The responses to this question are in alignment with the outcomes from the public meetings with support from Bencubbin and none from Beacon.

MINING PROPOSAL

PEGMATITE AGGREGATES

Lots 606, 3029 and 2643
Potts Road, Wondanning

Shire of Mt Marshall

Qstone Pty Ltd

6 July 2016

Address Manager
Qstone Pty Ltd
4 Rain Place
Bayswater WA 6053

Phone 0417 681 865

Attachment 12.6.1a

SUMMARY

The site lies on the corners of Lots 606, 3029 and 2643, Potts Road and straddles the Potts Road Reserve.

Qstone through the Director, John Guthrie holds Exploration Licence 70/4819 which covers the nearby surrounding area for the purposes of investigation for other reserves of pegmatite.

John Guthrie is an experienced driller and hard rock quarry manager who has worked for some of the larger quarrying and mining companies.

Excavation will be undertaken through an Extractive Industry under the Shire of Mt Marshall Town Planning Scheme.

The resource is centred on a small pegmatite intrusion through granite.

Couper's Potash Feldspar Project was investigated over a number of years, mainly in 1997 for feldspar.

The prospect was held under P70/1244. P/701245 and P70/1247 in the late 1990's. Some exploration work was completed before the tenements were relinquished. Previous work was completed by Commercial Minerals Ltd.

The resource area is covered by degraded native vegetation that has been disturbed by previous drill lines and exploration/mining activities and surrounded by cropped land and native vegetation.

All mining will be carried out in accordance within current Conditions and Regulations and by persons who are suitably qualified.

Qstone Pty Ltd will be responsible for all operations. The methods of extraction will be the same as similar small hard rock quarries.

Whilst around 250 000 tonnes of aggregates are interpreted to be available it is anticipated that annual production will be around 20 000 to 30 000. The resource is therefore likely to have a life of about 10 years.

At those rates of extraction this will rate as one of the smallest aggregate pits that will be operating.

DISTURBANCE TABLE

	Current Activity (ha)	**Proposed Disturbance at the end of mining**
Open pit –	nil	Pit – 0.5 rising to 3.5 ha of disturbed woodland Processing and stockpile 1.5 ha on cleared land
Cleared ahead of excavation	Partially cleared for exploration	nil
Access tracks	Partially cleared for exploration	Not specifically required
Processing	nil	included
Stockpiles		
Waste dumps	nil	nil
Rehabilitation	nil	Progressively during the life of

		the operations. Around 2.5 hectares will be open at any one time.
Total Disturbed Ground	Partially disturbed 2.5 ha	5.0 ha

Rehabilitation will be to local native vegetation and will be undertaken progressively

It is anticipated that on commencement around 20 000 tonnes pre year, rising to 30 000 tonnes.

For example for 30 000 tonnes taken, this will equate to 2 to 3 laden truck movements on average. The transport route will be existing roads that are currently used to service the agricultural lands.

Hours of operation are proposed to be daylight hours Monday to Saturday, excluding Public Holidays.

The proposed operations will consist of two small pits that could be up to 10 metres deep and will have the sides pushed down at the end of excavation and rehabilitated.

Excavation will consist of drill and blast with perhaps an average of two blasts per year with an several additional small blasts used to prepare the opening of the quarry. Blasting will be conducted under the supervision of external specialist consultants.

The rock will be crushed, sorted and screened to stockpiles from which product will be progressively removed over the next months.

Compliance with Department of Mines and Petroleum requirements will be met and the provisions of the *Mines Safety and Inspection Act 1994* will be followed.

Management Plans have been prepared for the main potential impacts and are attached.

There are no dwellings close by and no sensitive premises within 1 km.

- Site Restoration and Rehabilitation
- Water Management
- Weed Management
- Offsite Impacts – Dust, Noise, Visual Impact and Blasting.

Landform Research
Land Systems - Quarries - Environment
ABN 29 841 445 694

Lindsay Stephens BSc (Geology), MSc (Plant Ecology) 25 Heather Road Roleystone WA 6111
Mem Aus Geomechanics Soc – MEIANZ – FIQA Tel 9397 5145, landform@iinet.net.au


2 km
No nearby dwellings
POTTS ROAD
ASKEW ROAD
BEACON - BENCUBBIN ROAD
1 km

CONTENTS

1.0 BACKGROUND INFORMATION

1.1 Ownership

Lot 2643 is held by

Paul Sachse - PO Box 75 South Fremantle WA 6162

Lot 606 and 3029 is held by

Raymond, Jason and Stuart Faulkner – PO Box 2 Beacon WA 6472.

1.2 Proponent

The proponent is Qstone Pty Ltd.

Contact can be made through;

Manager
Qstone Pty Ltd
4 Rain Place
Bayswater WA 6053

Phone 0417 681 865

Existing Approvals

There are no existing approvals.

This Mining Proposal and Mine Closure Plan are provided to support the application for a pegmatite aggregate quarry.

1.3 History

The resource is centred on a small pegmatite intrusion through granite.

Couper's Potash Feldspar Project was investigated over a number of years, mainly in 1997 for feldspar.

The prospect was held under P70/1244. P/701245 and P70/1247 in the late 1990's. Some exploration work was completed before the tenements were relinquished. Previous work was completed by Commercial Minerals Ltd.

The resource area is covered by degraded native vegetation that has been disturbed by previous drill lines and exploration/mining activities and surrounded by cropped land and native vegetation.

1.4 Location

Location

The deposit is located at 597900E, 6615000N on the WA Bencubbin 1 : 250 000 Geological Sheet SH50-11, located 40 km north west from Mukinbudin, Western Australia.

The site lies on the corners of Lots 606, 3029 and 2643, Potts Road and straddles the Potts Road Reserve.

Qstone through the Director, John Guthrie holds Exploration Licence 70/4819 which covers the nearby surrounding area for the purposes of investigation for other reserves of pegmatite.

Excavation will be undertaken through an Extractive Industry under the Shire of Mt Marshall Town Planning Scheme.

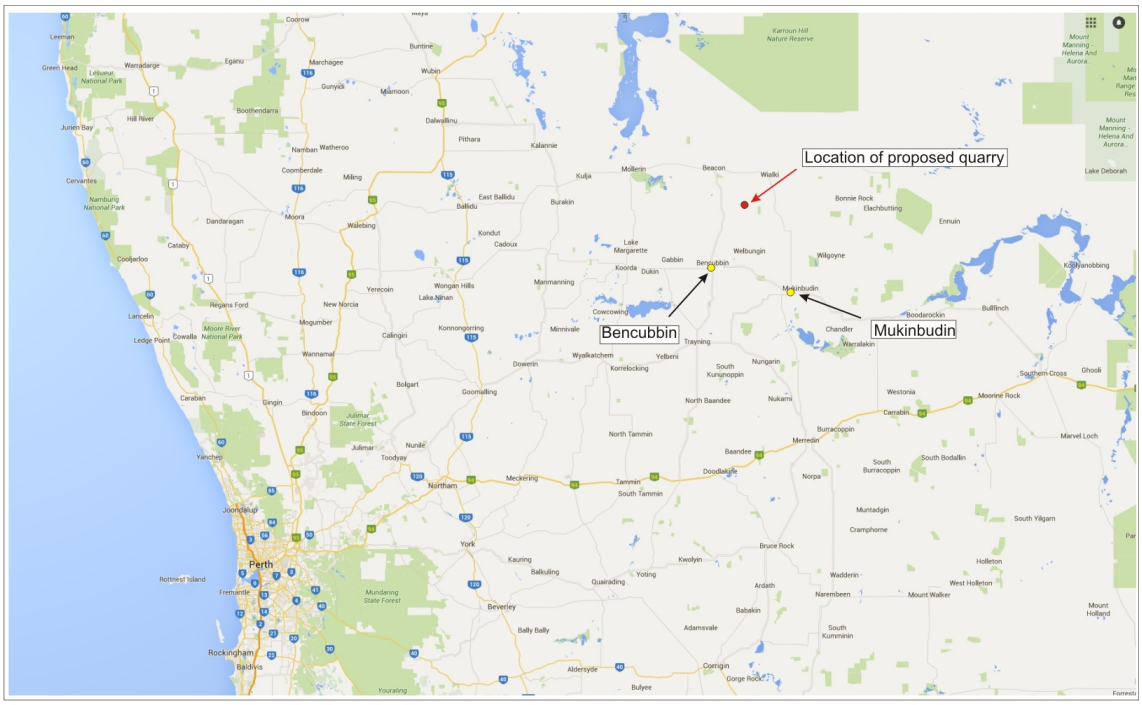

Figure 1 Location

1.5 Project Objectives

The aim of the previous exploration was for Potassium feldspar for fine china production.

The aim of this project is to extract Pegmatite aggregates for the concrete, landscaping and other industries.

1.6 Existing Facilities

There are no facilities on site.

1.7 Resource Sought

Previous exploration work conducted by Commercial Minerals Ltd consisted of geological mapping and the drilling of 36 percussion drill holes totaling 675 metres in 1997.

The drilling tested the depth and composition of part of the deposit for feldspar, but did not completely define the pegmatite laterally or to depth.

The testing also did not assess the quantity of quartz or nature and amount of accessory minerals.

In addition the drilling determined that weathering reduced the grade of the feldspar over much of the area investigated. That weathering will not have significantly altered the quartz which remains suitable for white aggregates although that needs to be tested for colour, access and extent.

A copy of an Assessment of the Quartz Reserves is attached as is a copy of Commercial Minerals Ltd annual report for 1997 is attached to this application (on the CD).

The Assessment of the Quartz Reserves contains maps sections and photographs of the resource.

The resource is small and contains in the order of 250 000 tonnes of potential aggregates that is likely to be able to be extracted.

This proposal is to extract pegmatite aggregates.

1.8 Planning Policies and Land Zonings

The Mining Act 1978 prevails over the *Planning and Development Act 2005* and therefore approval under the planning structure is not required as part of a Mining Tenement Application.

The State Planning Policy Framework provides for the implementation of a planning framework through the recognition and implementation of Regional Planning Policies above Local Planning Schemes and Policies.

Within each layer of planning, there are a number of key policies and strategies to provide guidance to planning and development to enable sustainable communities to develop, expand and prosper without compromising the environment and future generations.

Planning is governed under the *Planning and Development Act 2005.* This Act enables Government to introduce State and Regional Planning Schemes, Policies and Strategies to provide direction for future planning. The State and Regional Schemes sit above Town Planning Schemes and Strategies introduced by Local Government.

Strategies and Policies provide guidance on how planning is to be undertaken and how proposed developments are to be considered. These Strategies and Policies are at the State, Regional and Local levels.

Schemes are gazetted documents that provide for consideration and approval of proposed developments. These are normally at the Regional and Local Level.

In addition to the documents produced under the *Planning and Development Act 2005,* the *Local Government Act 1995* provides Local Governments with a mechanism to prepare Local Laws to manage issues of local significance.

With respect to the supply of hard rock, the overarching document is the;

- State Planning Policy 1.0 State Planning Framework.

A number of Regional Policies and Schemes are applicable to this location and may be referred to when advice on planning issues is provided by Government Departments and the Shire of Mt Marshall.

A summary of each of the relevant policies, strategies and schemes is provided below.

1.8.1 State Government Policies and Planning Schemes

STATE PLANNING POLICY 1.0, STATE PLANNING FRAMEWORK POLICY

A number of State Policies have been released under the State Planning Framework Policy.

- *State Planning Policy 2.0, Environment and Natural Resources Policy*
- *State Planning Policy 2.4, Basic Raw Materials*
- *State Planning Policy No 2.5, Agricultural and Rural Land Use Planning,*
- *State Planning Policy No 4.1, State Industrial Buffer Policy,*

These are considered in turn.

A number of other key State Government Policies are also relevant to the local regional planning and the construction of harbor and other coastal work to service the Central Coast Region.

- **State Planning Policy 2.0, Environment and Natural Resources Policy**

This policy provides for the protection of all natural resources under a number of sections;

5.1 General Measures
5.2 Water Quality including stormwater and wetlands
5.3 Air Quality
5.4 Soil and Land Quality
5.5 Biodiversity
5.6 Agricultural Land and Rangelands
5.7 Minerals Petroleum and Basic Raw Materials
5.8 Marine Resources and Aquaculture
5.9 Landscape
5.10 Greenhouse Gas Emissions and Energy Efficiency.

Section 5.7 of SPP 2.0, deals with Minerals, Petroleum and Basic Raw Materials.

Part of Section 5.7 states;

> *Basic raw materials include sand, clay, hard rock, limestone and gravel together with other construction and road building requirements. A ready supply of basic raw materials close to development areas is required in order to keep down the cost of land development and the price of housing.*
>
> *Planning strategies, schemes and decision making should:*
>
> *ii. Identify and protect important basic raw materials and provide for their extraction and use in accordance with State Planning Policy No 10 (2.4); Basic Raw Materials.*
>
> *iii. Support sequencing of uses where appropriate to maximise options and resultant benefits to community and the environment.*

The other factors of the natural environment are managed through the proposed operation of the hard rock quarry considering the constraints of excavating and processing the resource.

- **State Planning Policy No 4.1, State Industrial Buffer Policy**

SPP 4.1 discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as this. It suggests that consideration to conflicting land uses within 1 000 metres be considered.

The development and processing of the resource has been designed to maintain maximum buffer distances and complies with the policy.

- **State Planning Strategy, 1997**

The Western Australian Planning Commission (WAPC) released the *State Planning Strategy in 1997*. It comprises a range of strategies, actions, policies and plans to guide the planning and development of regional and local areas in Western Australia and assists in achieving a coordinated response to the planning challenges and issues of the future by State and Local Governments.

The State Planning Strategy contains the following five key principles. These are:

- Environment & resources: to protect and enhance the key natural and cultural assets of the State and to deliver to all Western Australians a high quality of life which is based on sound environmentally sustainable principles.

- Community: to respond to social changes and facilitate the creation of vibrant, accessible, safe and self-reliant communities.

- Economy: to actively assist in the creation of regional wealth, support the development of new industries and encourage economic activity in accordance with sustainable development principles.

- Infrastructure: to facilitate strategic development of regional Western Australia by taking account of the special assets and accommodating the individual requirements of each region.

- Regional Development: to assist the development of regional Western Australia by taking account of the special assets and accommodating the individual requirements of each region.

The environmental management of the quarry has been developed to minimise short and long term impacts on the local community and environment and comply with the policy.

1.8.2 Local Government Policies and Planning Schemes

- **Shire of Mt Marshall Town Planning Scheme Number 3**

The *Shire of Mt Marshall Town Planning Scheme 3* lists the location as Rural Zone.

The Rural Zone has an objective;

> "To support mining activities where an environmental management plan has been prepared and is acceptable to the Council and Environmental Protection Authority".

Industry Extractive and Industry Mining are “D” uses which means that they are not permitted unless Council has exercised their discretion by granting planning approval.

Figure 2 Pegmatite Resource

2.0 EXISTING ENVIRONMENT

2.1 Regional Setting

The geology consists of a small outcropping oval shaped pegmatite intrusion cutting through granitoid adamellite rocks of the Yilgarn basement that makes up the Kelleberrin batholith.

2.2 Geology – Geomorphology

The pegmatite consists of quartz, feldspar and mica and is expressed on the surface at Couper's Prospect. Intruded into the pegmatite is a quartz blow that outcrops over a smaller area forming a low ridge. The quartz may be a last phase crystalisation of the pegmatite magma or a separate intrusion. There is some evidence of a separate intrusion by the irregular outline of the contacts and the quartz extending to depth around Drill Holes 25 and 27.

Previous drilling determined that the pegmatite body trended approximately 120 degrees with a diameter of over 120 metres.

Field mapping of the quartz has slightly extended the outcrop.

The surface expression is in the form of a quartz/pegmatite blows, that occur approximately 60 metres apart and site slightly elevated from the surrounding land. Data from the drill holes suggests that the quartz is either intruded from below or is a reflection of a pod of quartz that was squeezed in a number of directions into a multi pronged body with irregular contacts.

The quartz bodies trend generally east west with the main body between Drill Holes 25 and 27. The quartz bodies are cut by a dolerite dyke trending around 67 degrees to the east north east and dipping around 70 degrees to the north.

The intrusion of the dolerite dyke splits and offsets the quartz bodies and provides them with sharp contacts. The nature of the dolerite dyke suggests that the intrusion occurred along a fault line with minor movement and the western body offset by about 40 metres to the north.

Outcrop of the quartz is common and around the perimeter is covered by soil.

See the attached Assessment of the Quartz Reserves contains maps sections and photographs of the resource.

2.3 Soils and Soil profiles

The soils consist of shallow brown loams over pegmatite outcrop with the soils becoming slightly deeper off the edges of the low pegmatite ridge.

Acid Sulfate Conditions

Acid Sulfate Soils can potentially form under reducing conditions when there is a source of carbon and a source of sulfur (normally from sea or saline water). Micro-organisms are thought to play an important role in reducing the sulfates within the sediments to form the iron sulfide. It is a natural phenomena, that can be exacerbated by disturbance.

Potential acid sulfate conditions most commonly form under current or past estuarine conditions, peaty conditions, and may also result from weathering of some geological formations and situations which contain sulfides.

Overall, at risk areas are geologically a minor occurrence, but in some situations can be important, and lead to acidic polluting conditions developing.

Acid conditions can form if soils containing pyrite are exposed to the air, allowing sulfuric acid to be formed. The soils most at risk are normally saline/estuarine soils, gley soils, peat and some organoferricretes.

There has been an increased interest in acid sulfate soils since the release of WAPC Planning Bulletin 64. WAPC conducted mapping of mainly coastal parts of south western Western Australia. Lot 606, 3029 and 2643 lies outside the WAPC mapping.

The most definitive survey procedure is produced by the Acid Sulfate Soil Management Advisory Committee NSW, 1998, in their *Acid Sulfate Manual.* This Manual forms the basis for much of the assessment procedures in Australia, including those adopted by the Western Australian Planning Commission and the Department of Environment Regulation. The *Acid Sulfate Manual* adopts the procedure of reviewing the published data followed up by field assessment, which has been completed for this site. If a geological risk is determined, then a Preliminary Acid Sulfate Assessment is conducted.

Acid Sulfate Soils can potentially form under reducing conditions when there is a source of carbon and a source of sulfur (normally from sea or saline water). Micro-organisms are thought to play an important role in reducing the sulfates within the sediments to form the iron sulfide. It is a natural phenomena, that can be exacerbated by disturbance.

Potential acid sulfate conditions most commonly form under reducing conditions, under current or past estuarine conditions, peaty conditions, some organoferricretes, and may also result from weathering of some geological formations and situations, that contain sulfides.

The site has been visited by Lindsay Stephens of Landform Research in May 2016, when the soils and geology were assessed. The geology was also assessed by Commercial Minerals Ltd in the 1990's.

The pegmatite has no evidence of pyrite and that is to be anticipated from the local geology and normal mineral associations.

No soils susceptible to acid sulfate conditions are present.

2.4 Climate

The climate is Mediterranean with warm summers and cool moist winters.

Data is recorded at the Bencubbin weather observation station.

Temperatures are relatively mild, and extremes above 40° Celsius in summer and below 2° Celsius in winter are uncommon.

The temperatures range from maxima of 16.4 degrees C in winter to 34.5 degrees C in summer, with minima ranging from 6.0 degrees C in winter to 18.2 degrees C in summer.

The area receives a mean annual precipitation of 315.4 mm with low peak rainfall from May to August when most of the annual rainfall is received. The driest months are during November to January when the monthly rainfall averages drop to under 10.0 mm.

The mean daily evaporation records are not recorded locally but normally exceed precipitation in all but the main winter months.

Relative humidity in the area is high, with the mean humidity ranging from 44 - 83% at 9.00 am, to 24-57% at 3.00 pm.

Summer morning winds can be moderate easterly with afternoon sea breezes from the south to south east. In winter the winds tend to be lighter and more variable depending on the winter pressure systems but are generally north westerly.

2.5 Hydrology

See the attached Water Management Plan

Surface Water

There is no surface drainage due to the resource being located on a slight rise with all water draining generally to the west east and north,

There are no nearby watercourses and no wetlands.

Groundwater

The water table was only intersected in one drill hole at a depth of 22 metres.

Government Policies currently provide for a separation of 2 metres to the water table outside Priority 1 Groundwater Protection Areas. As the natural groundwater is some 20 metres below the land surface and the resource extends to 10 – 15 metres below the surface the groundwater is unlikely to be intersected.

With such low rainfall it is anticipated that the groundwater will be brackish to saline with low recharge.

At such depths to the groundwater, it is estimated that perhaps only 2 - 5% of the rainfall will currently reach the water table based on the depth of the water table and the rainfall.

2.6 Biodiversity

2.6.1 Flora

Communities and Species

The pegmatite lies on a low ridge occupied by remnant native vegetation that extends west. The vegetation on the resource is partially degraded, having been impacted by partially lying on the Potts Road reserve and through past drillings and sampling activities and grazing.

A series of drill lines have been bulldozed across the resource in the past and these remain readily visible even though there has been some minor regrowth on them.

The vegetation was assessed on 18 March 2016. Whilst the dominant and main taxa were observed there are some smaller taxa that could not be identified due to seasonal factors. The published databases were checked to see if any of the Threatened or Priority taxa were likely to occur. See below.

The vegetation consists of *Allocasuarina – Acacia* Tall Open Thicket on the resource, grading to *Eucalyptus celastroides* subsp *celastroides* Woodland on the deeper soils off the resource.

The species richness is relatively low with little understory and ground cover due to past disturbances.

Figure 3 Vegetation of the Resource Area

Figure 4 Surrounding Disturbed Vegetation on the Resource and Processing Area

Figure 5 Disturbed Vegetation on the Processing and Stockpile Area

The dominant vegetation is *Allocasuarina acutivalis* with *Acacia acuminata, Melaleuca uncinata* over *Aristida* sp, *Calothamnus gilesii, Hemigenia dielsii, Borya sphaerocarpha, Santalum acuminate, Petrophile drummondii, Lepidosperma sp, Atriplex vesicaria, Rytidosperma caespitosa, Acacia erinacea* and *Melaleuca cardiophylla*.

The species list above is estimated to represent 50% of the total taxa on the resource area.

The vegetation is generally weed free apart from some minor pasture and crop species that has blown in from the adjoining agricultural land.

Plant Density

The plant density is low with an estimated density of 0.5 – 1 plant/m^2.

Threatened or Priority Flora - Communities

Databases held under State Legislation and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 *were searched*. *No plant communities or taxa are listed as a Threatened Ecological Community or taxa under* the Commonwealth Environment Protection and *Biodiversity Conservation Act 1999.*

The DEC Naturemap search for the local area 10 km radius identified. The taxa listed as Threatened or Priority are attached in Appendix 4.

None of the tax identified are listed as Threatened or Priority taxa. The Mukinbudin Mallee (*Eucalyptus breviceps*) was considered as potentially present but was not recorded.

Vegetation Condition - Structure

The vegetation ranges from Degraded to Good, with a shortage of understory and ground cover species and some locations of Completely Degraded. (Bush Forever Scale 2000).

Vegetation Structure	**Height**	***Allocasuarina – Acacia* Tall Open Thicket**	***Eucalyptus celastroides* subsp *celastroides* Woodland**
Overstorey	> 4 m	Absent	Generally present • *Good Condition*
Tall Shrub layer	2 – 4 m	Variable from absent to a Thicket • *Generally Good to Degraded*	Generally Absent • *Degraded to Completely Degraded*
Lower Shrub Layer	0.5 – 2 m	Variable condition from absent to Good • *Degraded*	Generally absent • *Generally Completely Degraded*
Ground Cover	<0.5 m	Isolated to scattered plants • *Condition Generally completely Degraded to Degraded*	Generally absent • *Completely Degraded*

Vegetation Representation

EPA Position Statement No 2, December 2000, *Environmental Protection of Native Vegetation in Western Australia*, specifically targets the retention of native vegetation in the Agricultural Areas in *4.1, Clearing in the agricultural areas for agricultural purposes*. In 4.3, *Clearing in other areas of Western Australia*, it is unclear what "other areas" refers to, but may refer to retention of a 30% threshold in non agricultural areas.

Section 4.3 *Clearing in other areas of Western Australia*, (EPA Position Statement No 2, December 2000) expects that clearing will not take vegetation types below the 30% of the pre-clearing vegetation as recommended by ANZECC, 1999, *National Framework for the Management and Monitoring of Australia's Native Vegetation*. The National Objectives and Targets for Biodiversity Conservation 2001 - 2005 (Commonwealth of Australia 2001) also recognise 30% as the trigger value.

The NRM databases are not available to determine the vegetation types and statistics.

The clearing of a total of 5 hectares with around 2.5 hectares open at any one time will not significantly impact on the vegetation of the Wheatbelt.

Clearing Requirements

A Clearing Permit will be required under *Environmental Protection (Clearing of Native Vegetation) Regulations 2004.*

None of the Clearing Principles are likely to be compromised by the excavation of resource.

Management During Clearing

- The resource and access road will be cleared using earthmoving equipment and will largely be cleared using a front end loader or bulldozer.

- Where practicable vegetation will be directly transferred to a disturbed area being rehabilitated. Smaller indigenous shrub material will be used in the rehabilitation process when available and suitable. Vegetation fragments will be laid on re-formed slopes to reduce wind and water erosion as well as provide a source of seeds for revegetation.

- With such small amounts of topsoil it is likely that the vegetation will have to be removed with the topsoil rather than separately. This will not affect its use in rehabilitation.

- If direct transfer is not possible the vegetation will be stored in low dumps, to ensure that the material is not wasted.

2.6.2 Fauna

Macrofauna

It is anticipated that initially around 5 ha of disturbed native woodland vegetation is to be cleared with 2.5 hectares open at any one time with rehabilitation to local native vegetation.

It is noted that the resource occupies a small partially degraded corner of a larger vegetation remnant which will be capable of maintaining local fauna.

Any fauna disturbed by the small scale clearing and excavation will be able to move to the remnant vegetation and it is unlikely to be significantly impacted.

The amount of fauna is anticipated to be restricted because of the location in a disturbed corner of remnant vegetation.

The rehabilitation of the disturbed areas to local native vegetation will compensate for the small amount of clearing to be required.

A list of fauna recorded within 10 km is attached in the NatureMap search contained in Appendix 4.

Short Range Endemics

The large remnant woodland that adjoins means that there are no isolated communities or habitats. The site does not form a significant rocky outcrop or other feature that may lead to different taxa being present.

2.6.3 Wetlands and Riparian Communities

There are no wetlands or riparian communities on or near the site.

3.0 PROJECT DESCRIPTION

3.1 Site Layout

3.2 Existing Facilities

There are currently no facilities on site.

3.3 Disturbance Table

Whilst a large area of ground will be disturbed over a long period of time the amount of ground opened at any one time is minimised through opening and closure within one season.

DISTURBANCE TABLE

	Current Activity (ha)	**Proposed Disturbance at the end of mining**
Open pit –	nil	Pit – 0.5 rising to 3.5 ha of disturbed woodland Processing and stockpile 1.5 ha on cleared land
Cleared ahead of excavation	Partially cleared for exploration	nil
Access tracks	Partially cleared for exploration	Not specifically required
Processing	nil	included
Stockpiles		
Waste dumps	nil	nil
Rehabilitation	nil	Progressively during the life of the operations. Around 2.5 hectares will be open at any one time.
Total Disturbed Ground	Partially disturbed 2.5 ha	5.0 ha

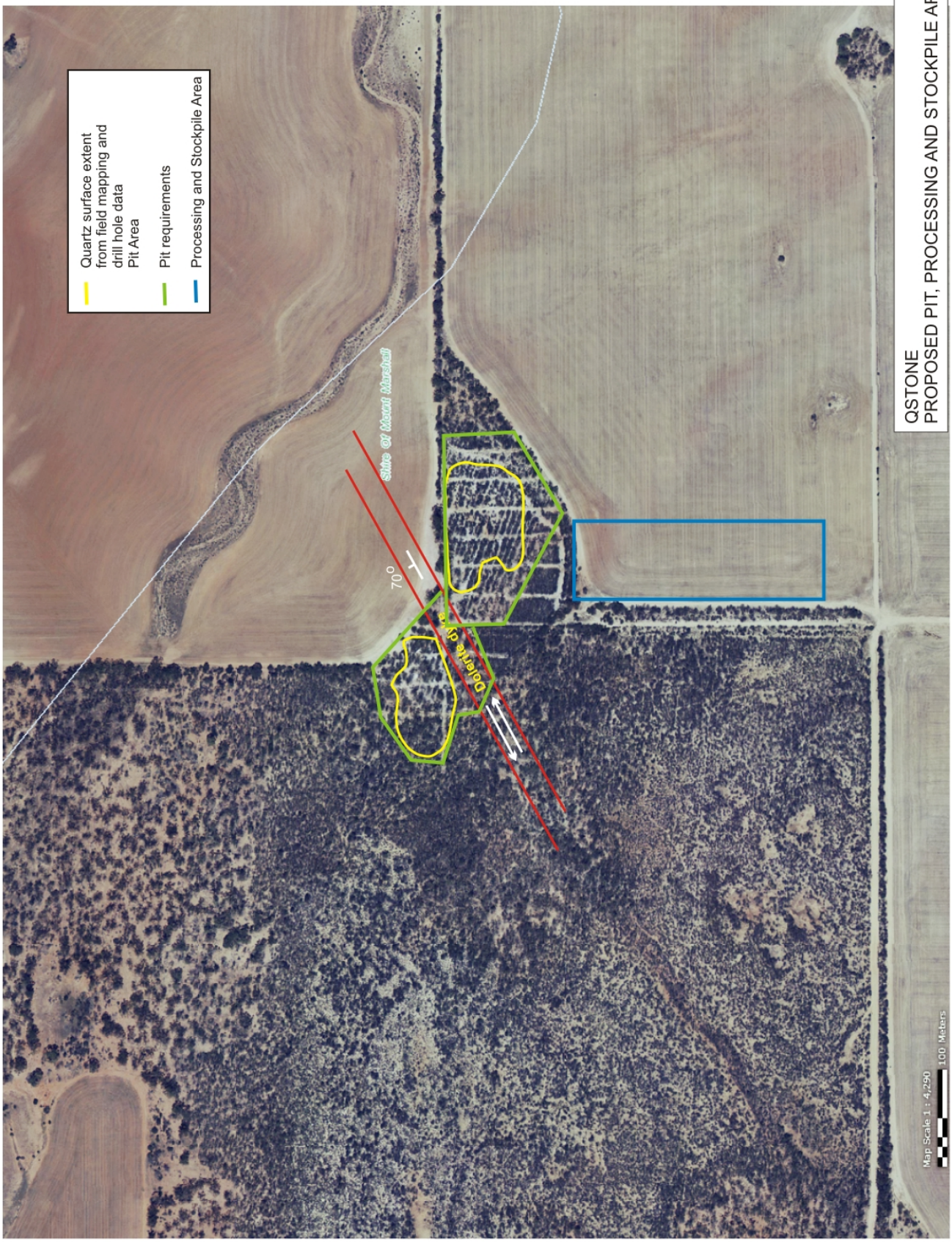

Figure 6 Proposed Pit and Processing Area

3.4 Mining Operations

3.4.1 Supervision

All mining will be carried out in accordance within current Conditions and Regulations and by persons who are suitably qualified.

Qstone Pty Ltd will be responsible for all operations.

During excavation the Quarry Manager will be located near site to provide the required supervision.

3.4.2 Excavation Methods

The methods of extraction will be the same as similar small hard rock quarries.

Whilst around 250 000 tonnes of aggregates are interpreted to be available it is anticipated that annual production will be around 20 000 to 30 000. The resource is therefore likely to have a life of about 10 years.

At those rates of extraction this will rate as one of the smallest aggregate pits that will be operating.

Preparation of the pit

The quarry is located on a gentle low ridge approximately 350 metres east west by 100 metres north south split into two pods of pegmatitie.

The resource consists of two pods as outlined in the attached Assessment of the Quartz Reserves contains maps sections and photographs of the resource.

1. The eastern portion of the ridge has the pegmatite exposed but for surrounding areas, topsoil will be stripped from the area under development and where possible spread directly onto an area to be rehabilitated, or stored in a separate dump for later use. This is normally undertaken during drier months where possible to minimise soil and overburden sticking to mobile plant. The topsoil will be used to provide a substrate for rehabilitation.

2. Topsoil is relatively thin and in the order of 100 mm.

3. Overburden will then be stripped and stockpiled for rehabilitation.

4. The subsoils across the pit and operational area will be included in the overburden as well as the substandard rock, as the pit is opened to expose the fresh hard rock. The subsoils vary from 0.5 – 2 metres. There is some weathered and subgrade rock but that may also form a usable product. Any such material that is not used will be retained for closure and rehabilitation..

5. The overburden will be used to repair and level the flat existing operational areas.

6. A one metre high perimeter bund or a fence used, for safety purposes around the edge of the pit, and the floor of the operational area will be sloped to direct surface water to a collection area with associated detention basins.

7. The construction work will be completed using a bulldozer or excavator and a loader to extract and move overburden.

8. Some substandard rock is likely to have to be blasted to enable it to be moved to create an operational face of up to ten metres high.

Hard Rock Excavation

All operations on a quarry fall under the requirements of the *Mines Safety and Inspection Act 1994*, which determines the nature of the excavation, operations, faces, vehicles and all operational procedures. All designs and operations will comply with the Act.

A Registered Quarry Manager must be either on site or within easy reach of site and all work is under the supervision of that manager. The operations will be registered under the SRS safety system of the Department of Mines and Petroleum. The Director of Qstone Pty Ltd is an experienced quarry manager for hard rock quarries.

Like all operating mines and quarries, officers from the Department of Mines and Petroleum will inspect the site regularly to ensure compliance with the *Mines Safety and Inspection Act 1994*. The design of the pit is summarised below. The figures attached to the Assessment of Quartz Reserves that is attached report should be consulted in relation to the location and design of the pit.

1. The pit will be operated as one face of up to 10 metres or two smaller faces, which ever is the most efficient.

2. A small haul road will be formed to the processing area/stockpile area, which will be relatively small but will need to be large enough to form the necessary stockpiles.

3. Small bunds will be constructed on the tops of the faces at the edges of benches to prevent surface water run off into the pit and for safety.

4. Blast holes will be drilled by a percussion drill fitted with dust extractor and collector systems. The Director of Qstone Pty Ltd is an experienced driller and shotfirer.

5. The amount of drilling will depend on the frequency of blasts and can vary depending on the nature of the rock to be removed, and operational considerations for safety, product requirements and potential blast impacts.

6. Sequential blasting techniques are to be used to make each blast effectively a series of small explosions. This will be enabled through the use of millisecond delays on the blast pattern, which lifts and breaks the rock rather than throwing it.

7. The timing of each blast will depend on the nature of the rock to be removed, operational considerations for safety, product requirements and potential blast impacts, and the contracts won.

8. See the Blast Management Plan that is included in the Offsite Impacts Management Plan

9. As pegmatitie rock is well jointed it is anticipated to readily break into small enough fragments for use without the need of further breaking for feeding to the crusher. However there are some locations where the joint pattern is much wider spaced and these areas will require closer holes to break the rock to small enough sizes to form the raw feed to the crusher.

10. The rock broken by each blast will fall in a heap at the base of the face being excavated.

11. A front end loader or excavator will be used to load the broken rock into off-highway dump trucks for transport to the crusher along the haul road. Normally an excavator is used because it has a longer reach and can operate more safely on benches.

12. At times a rock breaker may be required to break oversize rock to enable it to be fed to the primary crusher. The rock breaker will be used in the pit, low down in the landscape to minimise noise generation and carry.

13. The haul road will remain unsealed so that it can be modified from time to time as quarrying progresses, and unsealed roads provide better grip for haul trucks.

14. The haul road gradient are to be retained to the lowest practical angle to reduce truck noise, fuel usage and increase safety. The road system will have edge bunding, rock barriers and marking with delineators.

15. All haulage routes and other roads are to be continually damped down in drier conditions as required to manage dust, although this is not seen as likely to be necessary be cause of the small volumes produced.

16. A dedicated water truck will retained as required.

17. All vehicles on site and proposed for the hard rock operation will be fitted with efficient silencers and monitored to assess the noise levels. Low frequency reversing "frog" type beepers are to be used to reduce sound carry because they do not have the same potential to transmit noise over long distances. High frequency beepers will not be used.

18. All vehicles on site will be installed with flashing lights.

19. For rehabilitation, and following completion of any parts of the excavation, the faces are to be backfilled with overburden and the brow broken down.

20. The final profile of the benches/faces will be to *Mines Safety and Inspection Act 1994* as explained in documents such as *Guidelines on Safety Bund Walls Around Abandoned Open Pits (DMP 1991).* Backfill and rehabilitation of any completed faces will continue progressively as each section of the quarry face is completed.

21. Additional information on land clearing and reinstatement is contained in Section 7.0, Closure and Rehabilitation Program.

22. As the site will make water from rainfall and seepage, water management is an integral part of the excavation process. Water shed from the pit is to drain to detention basins.

Processing area

1. The processing areas are to be located on already cleared land, The processing area will be located low in the landscape on cleared land.

2. Processing areas will be located where noise can be most easily managed.

3. See the attached Figures for the concept location of the operations. The layout may change once the ground is disturbed and the resource is better defined.

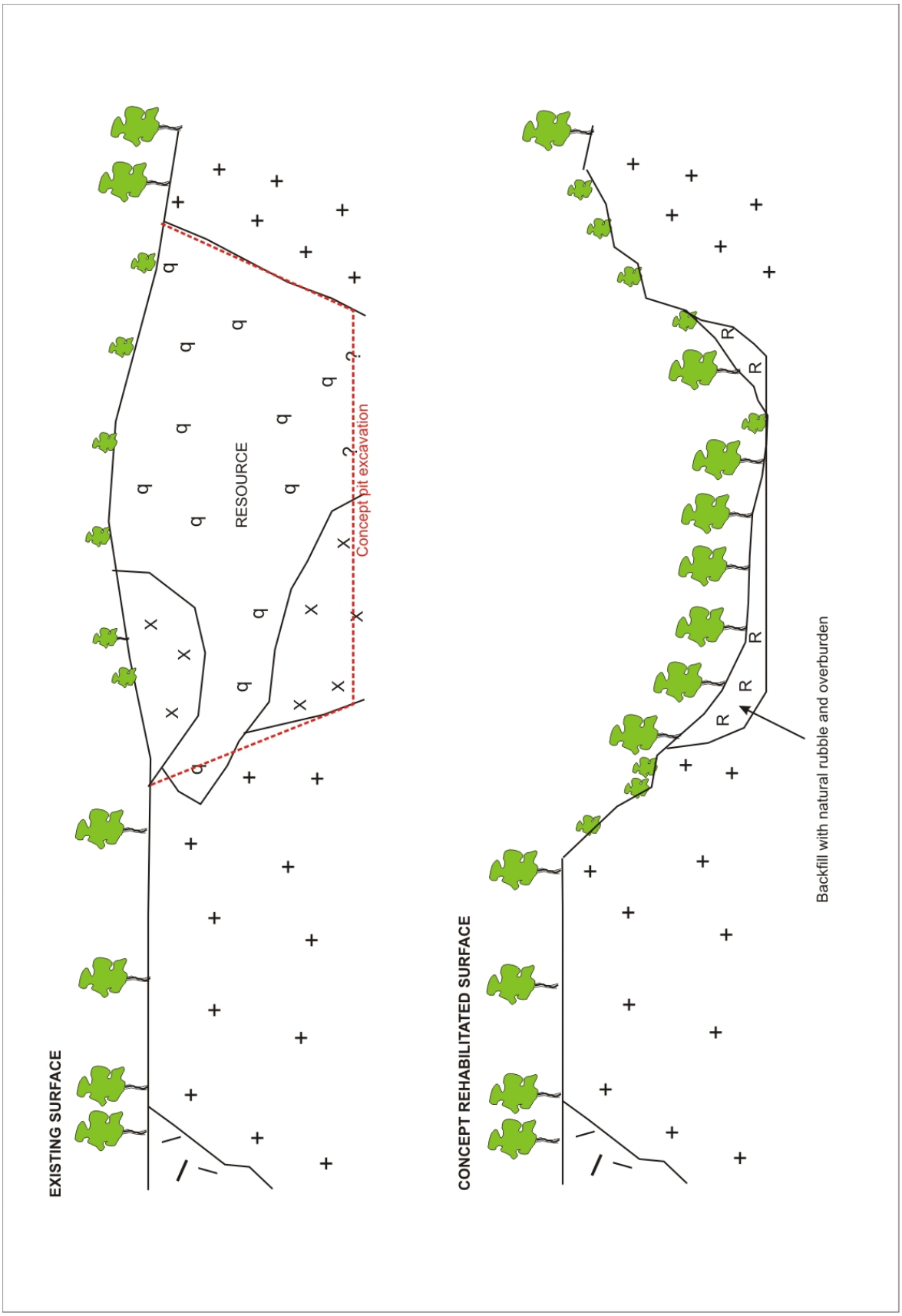

Figure 7 Concept Pit Design and Rehabilitation

4.3 Pit Design and Staging

4. The pit design is outlined above. The speed at which the pit progresses will depend on the contracts won.

5. The eastern pod of pegmatitie will be opened first, but the western pod my also be opened concurrently to supply different aggregate products.

6. Whilst around 250 000 tonnes of aggregates are interpreted to be available it is anticipated that annual production will be around 20 000 to 30 000. The resource is therefore likely to have a life of about 10 years.

7. The nature of the landform and resource will mean that daylighting through the low ridge is unlikely.

8. The pit is constrained by the limited size of the resource.

Stockpiles

The stockpiles and processing are to be located in the dedicated area south of the pit.

The stockpiles will be located so that there is no potential conflict with haul trucks either through access routes or timing.

The stockpiles will mainly consist of various grades of rock aggregate, separated by colour composition and form.

In campaigns there will be some crushing and screening of material to remove excess unsuitable material.

This will be formed to aggregates of various sizes and stockpiled until sold offsite.

A rubber tyred loader will be used to load each road truck. The loads will either be covered or wetted down as required to prevent material from being dislodged during transport.

3.4.4 Geotechnical Issues and Final Contours

Geotechnical

Geotechnically Pegmatite hard rock is stable, apart from normal barring down of loose rock from the face.

Normal best practice is for the loader to approach the face perpendicular and run in out, removing the bucket of rock.

The face will be made safe and compatible with the *"Guidelines on Safety Bund walls around Abandoned Open Pits",* January 1991.

Proposed Final Contours

The resource will be extracted to leave a depression in the ground.

These are not available at this stage apart from concept drawings and will be refined as a result of the opening of the site.

The excavation and processing areas have been selected to minimise clearing.

Batter slopes will be knocked down to 1 : 2 to 1 : 4 vertical to horizontal and backfilled with overburden, followed by topsoil.

3.4.5 Processing of the Resources

The main rock removed from pit is for specialty aggregates.

Blasting will be used to remove the rock and fracture to achieve the greatest amount of the correct sized material for feeding to the crusher.

This material will be sorted and stockpiled.

1. Processing is to be located in the dedicated area both to the north west of the pit in the area previously used for stockpiles and on the floor of the pit. In the south.

2. As noted earlier the operation of the quarry will use mobile crushing plant that is brought to site as required and removed at the end of each campaign.

3. As new technology becomes available it will be used to maximise efficiency, safety and minimise potential environmental impact.

4. The processing cycle will use a primary mobile crusher together with secondary and tertiary crushers but these will be mobile, followed by sizing screens and product washing facilities as required to produce the various grades of aggregate.

5. The crushing plant will be licensed through the Department of Environment Regulation as required, depending on the volume of crushing and screening.

6. Blending of products may be undertaken during processing, enabling products to be mixed to order. This reduces the stockpiles by allowing products to be crushed on demand.

7. All crushers, screens and stockpiles will be sprayed with water or enclosed where possible to reduce the emission of dust from all parts of the crushing plant. Even with mobile crushing and processing plant, efficient dust suppression can be achieved, with mobile plant becoming increasingly common.

8. Washing of some specialty products may be used. If required water will be brought to site and recycled through a sediment settlement basin.

9. With such a remote location the main use of water will be for occupational dust suppression, particularly for drilling and other parts of the processing cycle.

3.4.6 Waste Rock and Tailings – Waste Inventory

There is to be no waste material. The only materials remaining on site will be subgrade rock that cannot be used, some overburden of weathered rock and topsoil. All are natural products with no potential to cause pollution.

The rock has no or only traces of pyrite (iron sulfide), similar to all other hard rock quarries, at levels that cannot cause any deleterious effects.

Potential "at risk" Waste Inventory - Characterisation

Type	Comment	Treatment	Reference
Saline surface water	Not present		
Saline ground water	Not present		
Acidic materials and drainage	Not present		
Sodic or dispersive materials	Not present		
Asbestos – asbestiform minerals	None present		
Radioactive materials	Not present		
Metallic or chemical materials	Not present	If washing of specialty products is undertaken, the sediment from the filtration/recycle basin will be used as backfill in the pit.	
Tailings storage	Not required		
Ablutions waste		Serviced portable facilities	Water Management Plan – Attached.
Dangerous Goods and Hazardous Materials	***None will remain on closure***.	There are normally no hazardous materials used for mining apart from fuel, and servicing. The only other materials are for tasks such as weed management and are dealt with under those sections.	
	EXPLOSIVES ***None will be stored on site.***	Brought to site as required by Licensed contractor and consultant. No blast materials will be stored on site.	
	FUEL The various plant will be refueled from mobile tanker. ***None will remain on closure***.	Any soil or other materials with drips and spills will be removed offsite to an approved waste site or location. Fuel is discussed in the Water Management Plan, Attached.	Water Management Plan – Attached
	SERVICE MATERIALS Only minor lubrication will be conducted on site All major servicing will be conducted offsite. ***None will remain on closure***	Any wastes will be collected and removed from site promptly to an approved recycling or waste disposal area. Servicing is discussed in the Water Management Plan. Only minor servicing will be conducted on site. All major servicing will be conducted offsite.	Water Management Plan – Attached
General waste		Regularly removed from site to an approved disposal area	Water Management Plan – Attached

3.4.7 Support Facilities

There are no permanent facilities currently on site.

During operations a mobile crushing and screening plant will be utilised on site.

A serviced portable toilet system will also be required.

The only other facilities will be a locating ramp and access restrictions.

Site office/lunchroom	A mobile site office/lunchroom is potentially to be maintained on site for the management and security of small items particularly during campaigns.
Toilet system	A serviced portable toilet system is to be installed at the stockpile area when the site is manned. Serviced means they are pumped out by a licensed local contractor as required.
Storage sheds	A storage shed may be used for the storage of maintenance items during excavation campaigns.
Fenced compound	A fenced compound may be used for the storage of mobile plant during campaigns.
Fuel Storage	Vehicles will be refuelled from mobile tankers. It is anticipated that no fuel will be stored on site. However there remains the possibility that fuel might be stored for a short campaign, in approved containers to DMP and DOW Standards as outlined in the attached Water Management Plan.

3.4.8 Workforce

The site will typically be worked by 2 – 3 persons, depending on how busy the current situation is.

The operator has radio contact with any vehicles and can contact to check in regularly during the working day although vehicles are mostly within view of each other.

Truck drivers regularly arrive at the site throughout the working day.

Qstone will provide site induction and training procedures in place and the site will be registered on the Department of Mines and Petroleum SRS safety management system.

Safety will be incorporated into the existing Project Management Plans for the site.

3.4.9 Transportation Corridors

Access to the resource will be along Potts Road.

A lockable gate or barrier will be maintained at the entrance to the operations.

A range of road trucks and trailers are likely to be used to transport aggregates from the site with the most common being tuck and trailer or pocket road trains.

The number of trucks will be dependent on the contracts won.

During normal operations the truck traffic is anticipated to include;

- semi-trailer trucks with a load capacity of 20 – 25 tonnes,
- truck and dogs with a capacity of 40 – 50 tonnes may be used
- pocket road trains with a capacity of around 75 tonnes.

Which vehicles are used depends on the transport operator, the distance to the destination of the product and the nature of the contract that is being supplied.

A few points are relevant to truck transport and show that the use of smaller trucks does not necessarily benefit the community.

- Trucks are able to operate legally on the roads used and are regulated by Main Roads and the Shire on lesser roads.
- The trucks proposed have operated in the same manner during the operation of grain trucks.
- The transport of material is the greatest cost of product over longer distances with costs being 20 to 30 cents per tonne per kilometre travelled. The cheaper costs occur when larger trucks are used and all costs are reflected in the construction of developments and are ultimately borne by the community.
- Larger trucks are more fuel efficient per tonne of material carried, and therefore have significantly lower greenhouse gas emissions per tonne.

It is anticipated that on commencement around 20 000 tonnes pre year, rising to 30 000 tonnes.

For example for 30 000 tonnes taken, this will equate to 2 to 3 laden truck movements per day.

3.4.10 Hours of Operation

The quarry and processing operate to the *Environmental Protection (Noise) Regulations 1997.* Quarrying is normally restricted to daylight hours, with processing and transport during daylight and at other times as required.

Other ancillary activities such as maintenance are conducted outside these hours in line with normal industry practice. These are site restricted activities that are not likely to impact on the local community.

Wide operational hours are necessary to maximise operations and ensure that the full excavation, processing and transport times are available to satisfy community demands for products at certain times.

Typical hours of operation will likely be, in campaigns from 6.00 – 6.00 pm six days per week, Monday to Saturday excluding Public Holidays. These hours may be extended dependent on market demand.

3.4.11 Water use

There is unlikely to be washing of products. However it remains an option for some specialty productes. Water will be brought to site as required for any washing.

With such a remote location the only use of water will be for occupational dust suppression, particularly for drilling and other parts of the processing cycle.

3.4.12 Safety

All quarries operate under the provisions of the *Mines Safety and Inspection Act 1994 and Regulations 1995.* These are administered by the Department of Mines and Petroleum.

The regulation is achieved through the DMP Safety Regulations and Reporting Systems (SRS).

All quarries on commencement are required to register with the SRS system. As part of the registration a Project Management Plan is required to be produced and lodged online after all planning approvals are in place and prior to commencement.

John Guthrie, the owner of Qstone is an experienced and qualified quarry manager of hard tock quarries and is highly experienced in hard rock excavation.

The Project Management Plan will use some material from this Management Plan and concentrate on the onsite operations as they relate to health and safety. John is a licensed hard rock quarry manager.

Officers from the Safety Division of the DMP will regularly inspect the operations in relation to health and safety.

The site will operate to the *Mines Safety and Inspection Act 1994 and Regulations 1995,* which are administered by the Department of Mines and Petroleum. Inspectors will visit the site regularly.

The proponent is committed to maintaining a safe working environment.

The site is fenced with farm style fencing and locked gate. It is remote from public access points.

Warning signs will be installed to the to the Department of Mines and Petroleum specification, as approved by the district inspectors.

Completed faces will be left in a safe manner to the requirements of Department of Mines and Petroleum for the abandonment of small hard rock quarries.

Project Management Plans are used to cover operational procedures which include workforce induction and training to ensure that all employees involved in hard rock extraction are made aware of the environmental and safety implications associated with all stages of the mining activities.

Where applicable Safe Operating Procedure Sheets are in place and made available for hazards. Workers and staff will be trained in the use of the procedures and all employees provided with site induction and training as necessary prior to commencing work on the site.

The site is within mobile phone range.

Fire Management

The excavation area will form a natural firebreak; the access road will also assist. Water available on site can be used for fire fighting.

The bare rock of the pit and processing areas provide for a natural fire break, effectively stopping and running fire. The pit will be evacuated when under fire threat.

The safety of workers is managed through a Safety Management Plan developed through the *Mines Safety and Inspection Act 1994 and Regulations 1995.*

There are a number of management actions that can be taken in quarries to minimise fire risk and these will be used wherever possible. The general management actions are summarised below together with the potential issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise fire risk.

- Fire extinguishers are provided at strategic positions and in the working vehicles.
- Emergency evacuation procedural drills are to be held regularly.
- Restrict vehicles to operational area, particularly on high fire risk days
- Use diesel rather than petrol powered vehicles
- Maintain perimeter fire breaks as required

- Ensure fire risk is addressed and maintained through the site Safety Management Procedures
- Provide an emergency muster area, communications and worker induction and training
- Establish on site water supplies for potential use in extinguishing fire
- Secure the site from unauthorised access
- Public access will not be permitted.
- Stop work and prevent the movement of vehicles on days deemed to be high – extreme fire risk days, in line with normal farm practice if there is a deemed threat.
- Establish on site water supplies for potential use in extinguishing fire as required under Shire requirements
- If on site, the loader can be used to assist with emergency fire breaks.
- Compliance with the *Mines Safety and Inspection Act 1994 and Regulations 1995.*
- Fire risk is normally controlled through the *Bush Fires Act 1954* and local authority bylaws.

Flood

The site is located in an elevated position with no water courses and no potential flood risk.

Storm

Storm events may possibly impact on operations. The weather conditions will be assessed and if a severe storm warning or thunderstorms are forecast the risk will be assessed based on the operations at that time and the plant being used to determine whether operations should be temporarily shut down and the plant temporarily removed from site.

4.0 COMPLIANCE WITH LEGISLATION AND APPROVALS

A licence from the Department of Environment Regulation will be required if crushing and or screening exceeds 5 000 tonnes per year.

A Clearing Permit will be required under *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. Any Clearing Permit applied for will include the pit footprint because of the potential for scattered native plants to be present.

Relevant Legislation

Legislation	Comment	Action
Mining Act 1978	Noted	
Aboriginal Heritage Act 1972	No sites are listed on Department of Aboriginal Affairs database Any aboriginal heritage found during excavation and any ensuing conditions will be complied with.	If any heritage is found any conditions will be placed on the tenement or closure obligations.
Environmental Protection Act 1986 Part IV - Assessment	Environmental Protection Authority	Referral to the EPA is not considered necessary Because the proposed pit is so small in a remote location.
Environmental Protection Act 1986 Part V – DER LIcence	If crushing and screening are used the operation may require a Department of Environment Regulation Licence. Mobile plant will be used and licensed accordingly. The nature of the Licence depends on the volume of material to be produced and whether it exceeds 5 000 or 50 000 tonnes per year.	The operations will comply with any DER Licence Conditions.
Environmental Protection (Noise) Regulations 1997	The site is so remote from sensitive premises that no special requirements are needed,	Comply with the Noise Regulations
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Clearing Permit under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* is required *under the Regulations*.	A Clearing Permit will be applied for to cover clearing of scattered vegetation resource and processing area if native vegetation is present.
Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)	No matters of significance requiring referral have been identified.	There are no matters of National significance on site. A EPBC database search is attached.
Contaminated Sites Act 2003	No materials are present or to be used which would trigger this legislation.	Attached Water Management Plan. Section 3.4.6 Waste Rock and Tailings
Wildlife Conservation Act 1950	No matters of significance that would trigger this legislation have been identified.	Any issues will be dealt with through the Clearing Permit process.
Conservation and Land	No matters of significance that	Any issues will be dealt with

Management Act 1984	would trigger this legislation have been identified.	through the Clearing Permit process.
Heritage of Western Australia Act 1990	No matters of significance that would trigger this legislation have been identified.	
Health Act 1911	No matters of significance that would trigger this legislation have been identified.	Waste disposal and health are noted. Attached Water Management Plan for ablutions waste.
Planning and Development Act 2005	The *Mining Act 1978* prevails over Planning legislation.	The Local Authority will provide Planning consent.
Waterways Conservation Act 1976	There are no on site watercourses or waterways.	
State Agreement Acts	Not applicable	
Dangerous Goods Safety Act 2004	Refers to fuel and explosives	See; Water Management - Fuel Management Plan and blast management plan, (attached).
Rights in Water and Irrigation Act 1914	There are no on site watercourses or waterways.	See; Water Management Plan (attached)
Country Areas Water Supply (CAWS) Act 1947	The site does not lie in an identified site.	
Mines Safety and Inspection Act 1994		The site will be registered under the SRS and a Project Management Plan submitted and implemented.
Project Management Plan – SRS System	Compliance with the Project Management Plan when it is submitted and approved.	Comply with the plan and any ensuing conditions.
Approved Management Plan	Operational methods and rehabilitation outlined in the Management Plans when approved	The approvals, conditions and management plans will be complied with.
Department of Parks and Wildlife	May have some requirements relating to rehabilitation and the Clearing Permit.	Any conditions will be complied with.

5.0 ENVIRONMENTAL IMPACTS AND MANAGEMENT

5.1 Water Management

A separate Water Management Plan is attached.

Guidance on the quality of water that is aimed for can be found in;

- *Western Australian Water Quality Guidelines for Fresh and Marine Waters, EPA Bulletin 711, 1993.*
- *ANZECC, 1992, Australian Water Quality Guidelines for Fresh and Marine Waters.*

A number of documents provide guidance on the management and disposal of surface water that can lead to waterways, wetlands and underground water systems. These mainly apply to urban development but the methods are also applicable to the quarrying industry.

These documents are used in the development of the water management plan that is attached. The following documents are general to water management and help direct water planning.

- *Engineers Australia 2003, Australian Runoff Quality, National Committee on Water Engineering.*
- *Stormwater Management Manual for Western Australia, Department of Environment WA, 2004.*
- *Guidelines for Groundwater Protection in Australia, ARMCANZ, ANZECC, September 1995.*
- *Environmental Protection Authority Victoria/Melbourne Water, undated, Urban Stormwater, Best Practice Environmental Management Guidelines*
- *Water and Rivers Commission, 1998, Manual for Managing Urban Stormwater Quality in Western Australia.*

The following documents are specific to the mining and quarrying operations are the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing. They are used to form the basis of the Water Planning.

- *Overview*
- *Minestite water quality monitoring*
- *Minesite stormwater*
- *Mechanical servicing and workshop facilities*
- *Above-ground fuel and chemical storage*
- *Mine dewatering*

The extraction of hard rock aggregate is a chemically free operation with the only liquids used being lubricants for machinery. Extractive Industries are one of the few industries permitted to operate in Groundwater Source Protection Areas provided a 3 metre vertical buffer is in place.

Water will be brought to site as required.

The operations are designed to comply with all guidelines.

5.2 Flora, Fauna and Ecosystems

Biodiversity is considered a lower risk because the surrounding land is pasture with scattered trees and native vegetation and parkland pasture

5.2.1 Flora

The pegmatite lies on a low ridge occupied by remnant native vegetation that extends west. The vegetation on the resource is partially degraded, having been impacted by partially lying on the Potts Road reserve and through past drillings and sampling activities and grazing.

A series of drill lines have been bulldozed across the resource in the past and these remain readily visible even though there has been some minor regrowth on them.

The vegetation was assessed on 18 March 2016. Whilst the dominant and main taxa were observed there are some smaller taxa that could not be identified due to seasonal factors. The published databases were checked to see if any of the Threatened or Priority taxa were likely to occur. See below.

The vegetation consists of *Allocasuarina – Acacia* Tall Open Thicket on the resource, grading to *Eucalyptus celastroides* subsp *celastroides* Woodland on the deeper soils off the resource.

The species richness is relatively low with little understory and ground cover due to past disturbances.
The dominant vegetation is *Allocasuarina acutivalis* with *Acacia acuminata, Melaleuca uncinata* over *Aristida* sp, *Calothamnus gilesii, Hemigenia dielsii, Borya sphaerocarpha, Santalum acuminate, Petrophile drummondii, Lepidosperma sp, Atriplex vesicaria, Rytidosperma caespitosa, Acacia erinacea* and *Melaleuca cardiophylla*.

The species list above is estimated to represent 50% of the total taxa on the resource area.

None of the taxa identified are listed as Threatened or Priority taxa. The Mukinbudin Mallee (*Eucalyptus breviceps*) was considered as potentially present but was not recorded.

The vegetation ranges from Degraded to Good, with a shortage of understory and ground cover species and some locations of Completely Degraded. (Bush Forever Scale 2000).

The vegetation is generally weed free apart from some minor pasture and crop species that has blown in from the adjoining agricultural land.

Vegetation Representation

EPA Position Statement No 2, December 2000, *Environmental Protection of Native Vegetation in Western Australia*, specifically targets the retention of native vegetation in the Agricultural Areas in *4.1, Clearing in the agricultural areas for agricultural purposes*. In 4.3, *Clearing in other areas of Western Australia*, it is unclear what "other areas" refers to, but may refer to retention of a 30% threshold in non agricultural areas.

Section 4.3 *Clearing in other areas of Western Australia*, (EPA Position Statement No 2, December 2000) expects that clearing will not take vegetation types below the 30% of the pre-clearing vegetation as recommended by ANZECC, 1999, *National Framework for the Management and Monitoring of Australia's Native Vegetation*. The National Objectives and Targets for Biodiversity Conservation 2001 - 2005 (Commonwealth of Australia 2001) also recognise 30% as the trigger value.

The NRM databases are not available to determine the vegetation types and statistics.

The clearing of a total of 5 hectares with around 2.5 hectares open at any one time will not significantly impact on the vegetation of the Wheatbelt.

5.2.2 Fauna

It is anticipated that initially around 5 ha of disturbed native woodland vegetation is to be cleared with 2.5 hectares open at any one time with rehabilitation to local native vegetation.

It is noted that the resource occupies a small partially degraded corner of a larger vegetation remnant which will be capable of maintaining local fauna.

Any fauna disturbed by the small scale clearing and excavation will be able to move to the remnant vegetation and it is unlikely to be significantly impacted.

The amount of fauna is anticipated to be restricted because of the location in a disturbed corner of remnant vegetation.

The rehabilitation of the disturbed areas to local native vegetation will compensate for the small amount of clearing to be required.

Jones et al, 2016, Dust as a contributor to the road-effect zone: case study from a minor forest road in Australia Australasian Journal of Environmental Management Vol 23, No 1 recorded dust from the adjacent roads but found that "healthy and diverse communities of ground-dwelling mammals" lived adjacent to "extremely" dusty roads and did not appear to be significantly impacted by the dust.

Therefore similar situations are likely to occur on site with the fauna being able to live adjacent to dusty roads. It is likely that the fauna populations change from summer to winter or after rainfall events when dust is washed form leaves.

It is also likely that plants and perhaps fauna adjacent to the road gain an advantage with respect to water availability from the hard road surfaces.

2.6.3 Wetlands and Riparian Communities

There are no wetlands or riparian communities on or near the site.

5.2.3 Ecosystems

The vegetation around the quarry is so disturbed and altered that it is not possible to determine the original vegetation community. The vegetation on site is a small portion of a large remnant that extends to the west and north.

The resource is located on the extreme south eastern corner.

The large remnant woodland that adjoins means that there are no isolated communities or habitats. The site does not form a significant rocky outcrop or other feature that may lead to different taxa being present.

5.3 Wetlands

There are no wetlands on or nearby.

5.4 Stygofauna and Troglofauna

EPA Guidance 54, concentrates on Stygofauna, which occur in caves and "are aquatic subterranean animals, found in a variety of groundwater systems".

"Troglofauna occur in air chambers in underground caves or smaller voids".

The resource on the tenement consists of solid hard rock with minor cracks and joints at the surface that reduce in width and size with depth where cracks close and become tight, generally excluding life.

5.5 Vegetation Impacts

5.5.1 Land Clearing

Clearing is covered by the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004.*

A Clearing Permit will be applied for to cover the potential for scattered plants to be impacted.

Management During Clearing

A Clearing Permit will be required under *Environmental Protection (Clearing of Native Vegetation) Regulations 2004.*

None of the Clearing Principles are likely to be compromised by the excavation of resource.

Management During Clearing

- The resource and access road will be cleared using earthmoving equipment and will largely be cleared using a front end loader or bulldozer.
- Where practicable vegetation will be directly transferred to a disturbed area being rehabilitated. Smaller indigenous shrub material will be used in the rehabilitation process when available and suitable. Vegetation fragments will be laid on re-formed slopes to reduce wind and water erosion as well as provide a source of seeds for revegetation.
- With such small amounts of topsoil it is likely that the vegetation will have to be removed with the topsoil rather than separately. This will not affect its use in rehabilitation.
- If direct transfer is not possible the vegetation will be stored in low dumps, to ensure that the material is not wasted.
- Rehabilitation will be to local native vegetation.

5.5.2 Weed Management

Weed management is to be used to minimise impact on site remnant vegetation and on adjoining properties. Good management practices are to be used as part of the ongoing normal quarry operations.

The management of weeds is essentially similar to that for plant diseases. The impact of weeds is really the impact within the local area and the more they are controlled the better. It is desirable that the site does not become a haven for environmental weeds and therefore a management and control program is warranted in combination with normal rural farm management.

Weeds can be declared under the *Agriculture and Related Resources Protection Act 1976* which requires that Declared Weeds are eradicated. Other weeds are not Declared but may be classified as Environmental Weeds because they are well known for impacting on vegetation.

Generally if the actions taken for Dieback are applied they will also control weeds. Not all potential impacts will apply to this quarry and the main impacts affecting this site are also listed.

Weed management will be used to minimise impact on site and on adjoining properties. Good management practices will be used as part of the ongoing normal quarry operations.

This plan utilises the most appropriate on ground measures to minimise the risk of spread of Declared and Environmental weeds. The information provided here summarises the key points of the on ground management.

There is a significant amount of exotic vegetation on site including pasture and other species that can be classified as weeds to bushland. During the vegetation studies a number of exotic species were recorded. A number of these are weed species.

Weeds are most likely to impact on;

- Disturbed areas such as overburden dumps, topsoil stockpiles.
- Edges of access roads.
- Edges of firebreaks adjacent to surrounding vegetation.
- Locations accessible to the public on which rubbish is dumped.

The main sources of weeds are;

- Naturally occurring in topsoil. There is a very high exotic plant seed load with most of the vegetation being pasture and exotic species.
- Weeds from edge effects from access and local roads.
- Gradual creep of weeds along access roads.
- Rubbish dumped by the public.
- Materials or waste brought to site by employees.
- Soil and seeds from vehicles arriving at site. This often applies to trucks that have carried something else such as grain, or vehicles to be used in earthworks.
- Wind blown seed from surrounding land.
- Birds and other vectors. This is more common than is often given credit for. eg Solanum species.

Weed Management will consist of, but not be limited to, the following actions.

- The Dieback Management Actions will be used to assist weed management.
- Inspections are to be conducted to monitor the presence and introduction of Environmental and Declared Weeds on an annual or more frequent basis. On identification, Declared and significant environmental weeds will either be removed, buried, or sprayed with a herbicide.

- Large plants such as Castor Oil plants and Declared Weeds are to be periodically grubbed out or spot sprayed with a herbicide.
- Rehabilitation of the final land surface will be to interim revegetation for soil stabilisation. This will not involve the elimination of exotic species, but rather provide an interim cover that stabilises the soil. Weeds that impact on that interim cover will be treated.
- Areas of grass can be sprayed with Fusilade or similar grass selective herbicide if required. This can occur over the top of rehabilitated areas without significantly setting back the broad leafed species.
- All vehicles and equipment to be used during land clearing or land reinstatement, are to be clean and free from soil or plant material when arriving at site.
- No soil and vegetation will be brought to the site apart from that to be used in rehabilitation.
- Plants to be used in rehabilitation are to be free from weeds.
- Vegetated areas ahead of excavation will be quarantined to excavation vehicles until required.
- Unwanted access to vegetated areas is to be discouraged through signage, marking, a lack of tracks, perimeter bunding and/or external fencing.
- Weed affected top soils may need to be taken offsite, used in weed affected areas, buried by 500 mm soil/overburden or taken offsite.
- Illegally dumped rubbish is the major source of weeds and will be removed promptly.
- No weed contaminated or suspect soil or plant material is to be brought onto the site.
- When clearing land or firebreaks vehicles will work in conjunction with dieback principles and push from areas of better vegetation towards areas of lower quality vegetation.
- Weeds are to be sprayed with broad spectrum spray prior to planting or seeding in weed affected soils as required.
- Weed management will work from the least affected areas to most affected.
- Ongoing monitoring of weeds should be undertaken at least annually in autumn, prior to winter rains.

5.5.3 Dieback Management

Dieback of vegetation is often attributed to *Phytophthora cinamomi* even though there are other *Phytophthora* species and other diseases such as *Armillaria* that can cause dieback like symptoms. Microscopic soil-borne fungi of the genus *Phytophthora* kill a wide range of native plants and can cause severe damage to many vegetation types, particularly those from the families Proteaceae, Epacridaceae, Xanthorrhoeaceae and Myrtaceae.

In most cases dieback is caused by a pathogen which infests the plant and causes it to lose vigour, with leaves dying, and overtime may kill the plant. As such the management of Dieback is essentially related to plant hygiene when coming onto a site and within a site.

There are several guides to the management of Dieback.

- Department of Parks and Wildlife (CALM) Dieback Hygiene Manual 1992 is a practical guide to Dieback management.
- Department of Parks and Wildlife (CALM) Best Practice Guidelines for the Management of *Phytophthora cinamomi*, draft 2004.
- Dieback Working Group 2005, Management of Phytophthora Dieback in Extractive Industries.
- Dieback Working Group, 2000, Managing Phytophthora Dieback, Guidelines for Local Government.

Jarrah Dieback (*Phytophthora cinnamomi*) is widespread throughout this part of the State, but in many cases such as this site the vegetation is not interpretable because of the levels of disturbance.

It is unclear whether dieback or other pathogens already occur on site. With the level of disturbance, previous activities and the degree of disturbance to vegetation it is likely that pathogens already exist on site.

However as part of normal best practice, plant disease management actions will be used, therefore the following general principles are applied to Dieback management.

The aim of dieback management during excavation is to minimise the risk of entry of any additional plant pathogens to the site.

In many ways the management of the site for dieback is similar to that for the management of weeds, and the two management practices are considered together.

There is very little risk of the operations spreading dieback onto vegetation on adjoining properties as there is no access to those properties and they are cleared.

On the other hand good management practices are used as part of the ongoing normal quarry operations.

Not all potential impacts apply to all parts of the proposed quarry operations.

- DPAW and Dieback Working Group 2005, Guidelines will be followed.

Vehicles are to be prohibited from entering vegetation ahead of excavation, apart from

- normal travel along made firebreaks and roads for normal security and maintenance activities.

- Dieback diseases are more likely to be transported under moist soil conditions.

- All vehicles and equipment used during land clearing or land reinstatement, will be clean and free from soil or plant material when arriving at site.

- When removing topsoil and clearing, vehicles will run around the perimeter and then push inwards where possible.

- Remnant vegetation ahead of the stage to be excavated is proposed to be quarantined where possible to minimise vehicles from entering.

- No soil and vegetation is be brought to the site apart from that to be used in rehabilitation and that which is dieback free.

- Plants to be used in rehabilitation are to be certified as from dieback free sources.

- Unwanted access to vegetated areas is discouraged through reduced tracks, signage, site marking and or fencing as appropriate.
- Excavation vehicles will be restricted to the excavation area apart from clearing land.
- Rehabilitated surfaces will be free draining and not contain wet or waterlogged conditions.
- Illegally dumped rubbish is to be removed promptly**.**
- When clearing land or firebreaks vehicles are to work from disturbed areas towards the pit; or, in situations where dieback interpretation is not possible, from areas of higher quality vegetation to areas of lower quality vegetation.
- Roads are to be maintained as free draining and hard surfaced.
- A split operation will be worked where practicable, where the road transport vehicles only access one side of the stockpile or processing area and excavation vehicles operate on the other side of the stockpiles and processing, reducing the risk of contamination from road transport.
- DPAW has determined that material such as sand, taken from deeper in the regolith profile where there is no organic and other plant matter, carries low risk of spreading dieback. (DEC 2004).
- The Weed Management Policy will be complied with.

Quarry traffic is restricted to the designated access roads, pit and stockpile areas apart from clearing land and maintaining fire breaks.

Normally transport trucks run along the bitumen roads and formed gravel roads to their destination and return. This run is considered low risk for dieback and trucks will not require cleaning during the transport phase.

5.4 Offsite Impacts, Pollution and Noise

5.4.1 Dust

Dust can originate from a number of operations and may impact on onsite workers, or travel offsite. Potential dust impacts are addressed by reducing the dust generated from the excavation, screening and transport operations. Most dust is generated during vehicle movements.

The operations comply with the EPA generic buffer Guidelines for sensitive premises.

There are no dwellings within 2 km of the proposed operations.

The main methods of dust control are awareness of the issues on a day to day and hour to hour basis as activities on site change. The most appropriate dust management procedures are then chosen to minimise occupational dust and environmental dust. Ongoing site awareness will be combined with a commitment to take whatever action is appropriate.

The risk of dust impact on sensitive premises is low.

*Qstone is committed to minimising dust emissions and will implement the measures outlined in the **Dust Management Plan** in the Offsite Impacts Management Plan where dust is discussed.*

5.4.2 Noise

The *Environmental Protection (Noise) Regulations 1997*, require that sensitive premises including dwellings in non industrial areas are not subjected to noise levels exceeding 45 dBA for more than 10% of the time, 55 dBA for more than 1% of the time and never exceeding 65 dBA during normal working hours. There are penalties for tonality of 5 dB, modulation 5 dB and 10 dB for impulsiveness, although impulsiveness is not likely to be relevant.

Occupational noise associated with the quarrying processes falls under the *Mines Safety and Inspection Act 1994 and Regulations 1995.* The management of occupational noise is normally handled by providing all necessary hearing protection, as well as conducting worker inductions, and educational programs for all staff. Regular site audits of quarry and mining operations are normally conducted by the Department of Mines and Petroleum.

The excavation operations will incorporate procedures to minimise noise emanation from on site activities.

Methods of extraction are not expected to be any different to other small hard rock quarries.

All equipment will be fitted with noise shields and efficient silencers. Workers will be inducted and trained for operation on the site and provided with the correct noise protection equipment.

The buffers comply with the EPA generic buffers as outlined below.

Qstone is committed to minimising noise emissions and will implement the measures outlined in ***Noise Management*** *in the Offsite Impacts Management Plan.*

5.4.3 Visual

The resource is located in remote agricultural land.

WAPC 2007, *Visual Landscape Planning in Western Australia* has been viewed and the project considered against that document. The relevant section is Part Three, pages 144 to 152 of the Guideline.

That document recommends a visual impact assessment which has been completed using contours and sections, in addition to site observations and aerial photography. The context of the visual impact has been reviewed to try and maintain the undulating countryside and rural nature of the land.

The location of the pit has been considered to try and use landform screening.

Revegetation and tree belts will be used where possible as will be rehabilitation of the completed areas as soon as practicably possible.

The site is located well off formed local roads. Potts Road is unconstructed and unlikely to be developed at any future time.

The area of rock outcrop is disturbed with variable vegetation quality from partially cleared to slightly impacted. The vegetation has in the past been routinely is grazed and impacted by stock. Adjoining land is crop land.

Visual Management is considered in the Offsite Impact Management Plan.

Qstone is committed to minimising visual impacts and will implement the measures outlined in the ***Visual Management*** *attached in the Offsite Impacts Management Plan.*

5.5.4 Waste Management

The protection of water whether groundwater or surface water is an important part of the management of quarries. Different types of quarries have different potential impacts which are listed below in general terms. Not all potential impacts will apply to this quarry and the main impacts affecting this site are also listed.

Documents specific to the mining and quarrying operations are the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing have been used to design the water management which contains surface water management in addition to operational management such as fuel and wastes.

- *Overview*
- *Minesite water quality monitoring*
- *Minesite stormwater*
- *WQPN 28 Mechanical servicing and workshop (2006)*
- *Mine dewatering*
- *WQPN Landuse Compatibility in Public Drinking Water Source Areas (2004)*
- *WQPN 11 Water quality management in mining and mineral processing: mine dewatering.*
- *WQPN 15 Extractive Industries near sensitive water resources.*
- *Department of Water – Water resource considerations for extractive industries.*
- *Department of Water South West Region Guideline – Water resource considerations for extractive industries.*

Qstone is committed to minimising visual impacts and will implement the measures ***outlined in the*** attached ***Water Management Plan.***

Apart from lubricants, fuel and blasting, excavation methods are very clean with no chemicals being used. The same methods are to be used that have not resulted in any adverse spills or impacts.

Non essential or old plant and materials will be removed from the site. Locked gates and the existing fences will be maintained to prevent illegal dumping and contamination of water.

All major servicing of vehicles will continue to be conducted off site. Wastes generated on site will be collected and removed off site regularly to an approved landfill site. Regular inspections (at least weekly) will be conducted to ensure no wastes, litter and the like are present in or around the excavation area.

Vehicle and plant washdown and dewatering will not be required.

See Section 3.4.6 Waste Rock and Tailings – Waste Inventory for a list or the main waste types originating from operations,

The Water Management Plan addresses fuel management, wastes and other materials and actions that may pose a risk to the surface or groundwater.

5.4.5 Dangerous Goods and Hazardous Materials

See Section 3.4.6 Waste Rock and Tailings – Waste Inventory for a list or the main waste types and hazardous materials related to the operations. There are no hazardous materials apart from blast materials, fuels and service items.

All materials that are potential hazardous are outlined and managed according to the attached ***Water Management Plan attached.***

Blasting will be required. No blasting materials will be retained on site, but will be brought to site as required and fired as soon as the holes are primed and all preparations have been complied with.

6.0 SOCIAL IMPACTS

6.1 Alternative Resources

There are some other pegmatite resources locally, They produce similar materials but pegmatite resources are limited and eventually all resources will be taken.

6.2 Surrounding Land Use

A number of Government Policies relate to buffer distances and the protection of basic raw materials.

Statement of Planning Policy No 4.1, State Industrial Buffer Policy, (draft July 2004) discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as thIs does however recommend that consideration be given to land use conflicts within the 1 000 metre buffer zone.

State Planning Policy No 2.5, Agricultural and Rural Land Use Planning, makes provision for the extraction of basic raw materials. SPP 2.5 in Point 9 states that "The location of rural residential and rural small holdings should avoid unacceptable impacts on, or sterilisation of natural primary resources including prospective areas for mineralisation and basic raw materials".

The issue of appropriate buffers is a matter of the distance and protection measures to prevent impact on adjoining land users. This applies mainly to noise, dust and visual impact, all of which are treated separately.

EPA guidance "Separation Distances between Industrial and Sensitive Land Uses", June 2005 lists the generic buffers for hard rock quarries as 1 000 metres depending on the extent of processing.

A generic buffer relates to the distance at which there are unlikely to be any impacts without further investigations. It does not mean that smaller buffers are not acceptable. EPA Guidance for the Assessment of Environmental Factors No 3, June 2005, provides for a case by case separation, based on the potential impacts.

The proposed quarry complies with the generic buffers with minimum distances of 1000 metre separations.

Section lines have been drawn, noise modelling has been conducted, blast and dust management plans have been developed.

The other important consideration is that the pit is proposed to operate below natural ridge lines. The adjoining hills will provide significant noise and visual screening which make this operation quite different to other hard rock quarries, which often have faces above natural ground level.

On the other hand the processing area is higher in the landscape and measures are recommended to minimise dust, noise and visual impacts from that operation.

The requirement for buffers mainly relates to dust and noise. Distances to the closest sensitive premises are sufficient for the mitigation of noise and dust.

End Use

The end use will be a return of the quarry to a depression revegetated with local native vegetation.

6.3 Conservation Status

Conservation

The main conservation issues relate to the small amount of partially disturbed vegetation to be cleared and its return through rehabilitation.

The resource lies on the very edge of a larger area of remnant vegetation and that location helps to minimise any risks to conservation.

A Clearing Permit will be applied for and the issues associated with clearing and access road will be considered by Government through that process.

6.4 Research

Baseline Data Collection and Analysis

- The main research has been site inspections, sampling of the resource.
- A review of the Flora and Vegetation has been completed
- A Visual Assessment was completed from field, aerial and ground photography.
- Detailed water management and offsite impacts management has been completed See Attachments.

Gap Analysis

The main gaps are in relation to revegetation. The techniques are well known for low key mining and quarrying operations such as this.

6.5 Heritage

Indigenous Heritage

The State *Aboriginal Heritage Act 1972* and *Heritage of Western Australia Act 1990* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* have been considered within this proposal.

A search of the Department of Aboriginal Affairs database shows there are no listed sites on or near the resource.

If the site is confirmed as a site under the provisions of *Section 15 of the Aboriginal Heritage Act 1972-1980* and Amendments operations will cease pending relevant negotiations.

Should any additional evidence of early aboriginal occupation be uncovered, development will be stopped pending an assessment by a recognised consultant.

European Heritage

As far as is known, there are no known local areas of European heritage.

6.6 Stakeholder Consultation

Apart from the Shire of Mount Marshall and the local land holders there has been no need for further consultation because of the small scale of the proposed operations.

7.0 POST MINING LANDUSE AND CLOSURE OBJECTIVES

The closure planning will be updated from time to time as the excavation progresses forwards. This will include both anticipated costs and procedures.

There are a number of management actions that can be taken in quarries to maximise rehabilitation effort and these will be used wherever possible. The general management actions are summarised below and will be used where applicable and as the opportunity presents.

The site specific issues that relate to this site are also listed to explain how this site compares to the general rehabilitation guidelines.

7.1 Land Use Policies

The site lies on disturbed native vegetation with native vegetation being returned at the end of excavation.

The land is a corner of disturbed remnant vegetation and will be returned to local native woodland.

7.2 End Use

Disturbance

It is anticipated that initially around 05 ha of disturbed native woodland vegetation is to be cleared with further clearing to 3.5 hectares over a period of ten years combined with progressive revegetation.

End Use

The will be local native woodland vegetation.

Final Contours

The final contours are to a sloping land surface in compliance with the *Mines Safety and Inspection Act 1994* and DMP *Mine Closure Guidelines*.

The excavated land surface will be contoured to a similar landform to that in the pre – excavation situation except that the landform will be some 5 - 10 metres lower.

Areas excavated will be gently battered to the natural land surfaces at slopes of 1 : 2 to 1 : 4 vertical to horizontal at the natural angles of repose.

7.3 Mine Closure Considerations

The closure of completed areas of the operations will be progressive with closure of all remaining ground at the end of operations.

Maintenance and monitoring will be conducted until completion criteria is met.

Unexpected or early closure will be completed in the same way as permanent closure below but the full rehabilitation will be completed as one operation.

All Completion Criteria will be monitored and adjusted as necessary during the life of the project based on stakeholder input, data collected on the existing environment, the results of research, and any implications that arise from excavation.

The Completion Criteria are identified as auditable tasks in the attached Mine Closure Plan.

1. The rehabilitation will be directed towards a cover of local native woodland vegetation that will match the adjoining and local vegetation and be comprised of local native species.

2. The post mined land surface is proposed to have a form that is compatible with the surrounding geomorphology, and the general landform.

3. The post mined land surface is proposed to have a similar habitat and ecological function as the pre-mined habitat.

4. Rehabilitation will use best practice and be directed towards achieving a sustainable cover of local native vegetation that is capable of forming a similar species richness and diversity to the vegetation that was previously cleared.

5. All plant, foreign materials, buildings and other matter associated with mining will be removed from the completed areas.

6. The disturbed land will be made safe and in compliance with the *Mines Safety and Inspection Act 1994* and DMP *Mine Closure Guidelines*.

7. The reformed land surface will be internally draining grading to a deepened swale matching the land surface nearby.

8. All legally binding conditions and commitments relevant to mine closure and rehabilitation will be met.

9. The re-established surface will be free from Declared or Environmental weeds that could compromise the success of the rehabilitation or impact on adjoining vegetation.

The rehabilitated areas will, in time, form a sustainable habitat of local native vegetation of a similar form to that prior to mining. Seeding and planting is undertaken at the most suitable time and can vary greatly depending on individual site conditions and the season.

The key is to provide screening vegetation with some pasture areas that matches the local viewscapes.

7.4 Completion criteria – Broad Risk Consideration

The following table considers the broad closure objectives and provides completion criteria and measurement tools. These categories are considered in the Mine Closure Plan and will be modified as required during future updates of Mine Closure Planning as the pit develops.

Closure Objective	Un-managed Risk	Indicative Completion Criteria	Completion Criteria	Measurement Tool and Assessment activities	Managed Risk
All legally binding conditions and commitments	High Potential High	Comply with all legally binding conditions.	• All legally binding criteria, and conditions of approval from any agency will	• Review the latest documentation and assess compliance. • Visually audit	Low

relevant to mine closure and rehabilitation will be met.	impact		be complied with	against all conditions by establishing an Environmental Management System to AS standards.	
Comply with the conditions of the Mining Tenement.	High Potential High impact	Comply with the requirements of the Mining Tenement.	• Closure and rehabilitation is consistent with all conditions of the tenement.	• Review the latest documentation and assess compliance. • Compile an audit table of all conditions and commitments that relate to closure and conduct an audit of those items upon the completion of each stage of rehabilitation and annually until sign off.	Low
All plant, foreign materials, buildings and other matter associated with mining will be removed from the completed areas.	High Potential moderate impact	The site will be cleaned, structures and non natural materials will be removed.	• No non natural structures will be retained on site. • All hardstand and road making materials and non natural inert materials are to be removed or buried. • All non inert materials are to be removed from site. • All ground once occupied by structures are deep ripped and soils reconstructed.	• Audit of completed ground, to verify compliance.	Low
The disturbed land will be made safe and in compliance with the *Mines Safety and Inspection Act 1994* and DMP *Mine Closure Guidelines*.	Moderate Potential High impact	Surfaces will be formed to DMP Guidelines and match natural ground. Holes, sumps drains, ditches and the like will be filled and removed.	• Faces and the landform are to comply with DMP Guidelines and be stable for the long term. • The land surface is to have a landform similar to the natural form.	• Audit of completed ground, to verify compliance. • Visual observations of the landforms.	Low
The reformed land surface will be internally draining and draining to	Moderate Potential Moderate impact	Drainage will be internal or the ground sufficiently permeable to minimise or	• Slopes are to drain to areas of internal drainage.	• Audit of completed ground, to verify compliance. • Visual observations of the landforms.	Low

small infiltration basins and pools.		negate runoff.			
The land surface will be resistant to wind and water erosion.	Moderate Potential moderate impact	Slopes are to be stable and free from erosion.	• Slopes are to be stable and free from erosion and at the angle of repose with • slopes up to 1 : 2 to • 1 : 4 vertical to horizontal.	• Visual observations of the landforms.	Low
Rehabilitation vegetation will be a return to local native vegetation on reconstructed soil substrate.	High Potential high impact	The vegetation composition of the reformed surface is to be representative of the pre excavation form or adjoining habitats, in species composition, diversity and structure.	• All species used in rehabilitation are to be local provenance. • A plant density that is variable but with an average plant density of 1000 plants per hectare. • Species richness of 5 species per 500 m^2.	• Conduct an on site audit of completed rehabilitation for species richness, diversity and structure using standard visual methods of comparing rehabilitation and adjoining vegetation. • Maintain ongoing records.	Low
Rehabilitated areas will form a sustainable habitat that will be capable of improving with time as vegetation growth continues.	High Potential high impact	Over time there will be an increase in habitat values.	• Habitat values increase with time, measured by soil development, soil litter increases, increased plant matter, cover, vegetation, structure and habitat niches.	• Conduct audits of the key indicators upon the completion of each stage of rehabilitation and annually until sign off, using lists and photographic records. • Maintain ongoing records.	Low
The rehabilitated vegetation will have similar resilience to the adjoining local vegetation.	High Potential high impact	The rehabilitated vegetation will be resilient to fire impacts, seasonal changes and longer term variable weather impacts.	• The vegetation is to include a mixture of species that grow in local, substrates and be resilient to fire or readily regenerate following fire.	• Annually conduct an on site audit of completed rehabilitation for species richness, resilience. • Inspect revegetation to determine its long term survival from environmental and fire impacts.	Low
Soil properties will be appropriate to sustaining revegetated local native species.	Moderate Potential moderate impact	Soil properties will be appropriate to sustaining revegetated local native species.	• The soils are to be constructed from overburden overlain by topsoil, leaf litter, vegetation fragments as available in areas of native vegetation.	• Prior to rehabilitating land before vacating. • Annually check rehabilitated areas. • Undertake to mitigate rehabilitation areas that are deficient or not capable of	Low

				becoming compliant with the completion criteria.	
Revegetation will be free from Declared or Environmental weeds that could compromise the success of the revegetation or spread into adjoining native vegetation.	High Potential high impact	Revegetation will be free from Declared or Environmental weeds that could compromise the success of the revegetation or spread into adjoining native vegetation.	• Absence of Declared or Environmental weeds that could compromise the success of revegetation. • Exotic species to be no greater richness or density than adjoining vegetation.	• Provide annual inspections at the appropriate time of the year.	Low

7.5 Rehabilitation Procedures

7.51 Land Clearing

1. A Clearing Permit will be required for areas of native vegetation to be cleared under *Section 46 of the Environmental Protection Act 1984.*

2. Dieback management will be undertaken as outlined in the attached Dieback Management.

3. Essentially all topsoil, vegetation fragments and any overburden will be recovered from cleared areas and retained for use in rehabilitation. The vegetation will be stored with the topsoil in low dumps <1 metre high around the perimeter of the pit.

4. Topsoil clearing will be progressive and minimised to that required for each stage of excavation.

5. Smaller vegetation will be track crushed and directly transferred to areas under rehabilitation to assist soil and habitat generation. The vegetation contains a significant seed source, because of the contained seed on many species, it is also a source of microbial material for soil formation, adds to habitat and assists in managing wind erosion.

6. The vegetation will also be used on the batters to minimise soil erosion and spreading on the final land surface as part of the final rehabilitation.

7. If direct transfer is not possible the vegetation will be stored in low dumps to 1 metre high or swapped with a nearby operator to try and ensure that the material is not wasted.

8. Topsoil will be pushed to one side and formed into low storage dumps for later use for rehabilitation using either a loader or bulldozer.

9. Overburden, as brown loam and weathered rock, will then be pushed to the perimeters, normally by excavator, to form bunding around the active area.

7.5.2 Land Restoration

- Rehabilitation is to occur as soon as possible following the end of excavation and other activities or as soon as a part of the operation is completed or no longer required.
- Where possible any disturbed areas that are no longer required will be rehabilitated using the methods described above within 12 months of becoming available.
- Runoff will significantly reduce as a result of rehabilitation of the excavated land. The form of the concept final land surface has taken account of the runoff and has been designed to minimise runoff from storm events and therefore manage erosion risk. It also aims to maximise infiltration of smaller rainfall events.

Pit faces

- The pit will be prepared by pushing down, reducing and backfilling the active face with a loader and bulldozer. Blasting will be used as required to knock the crest down with the rock being used for backfill.
- As a result of past research and experience it has been found that the best method of backfill is to include a substantial proportion of rock and stone to assist stability and to leave the surface rough. This is particularly important where the overburden has a high clay content. Where the surface is smooth the surface will be worked, where possible, to form channels, furrows or small banks or rough areas to encourage the penetration of precipitation and reduce surface runoff.
- No natural soil or weathered regolith slope or batter will be greater than 1 : 3 to vertical to horizontal. Pit slopes in hard rock will be retained at safe vertical faces or slopes at 1 : 1 to 1 : 2 vertical to horizontal in compliance with the *Mines Safety and Inspection Act 1994* and DMP *Mine Closure Guidelines*.
- The floor will be formed to be internally draining, and will retain rainfall or drain to a detention basin.
- Areas of the pit floor to be vegetated will be deep ripped.
- Overburden followed by topsoil will be spread directly from an area being cleared or from overburden stockpiles and placed over the land surface being restored. Any vegetation fragments will be either spread on top of the topsoil or spread with the topsoil.
- The backfilled materials will be track rolled by bulldozer where possible and covered by 600 mm of overburden to ensure that all inert and non – natural materials are covered. Some parts of faces and boulders will be retained to provide fauna habitat.

Hardstand, roads and other such areas of the processing area

- All buildings, plant and any other foreign materials will be removed from site on closure.
- Roadbase, hardstand and any other inert materials left over from the site operations will be scraped and picked up and will be used to backfill the pit faces.

- Steep or vertical slopes will be pushed down, although the batter slopes that form the level areas will be retained for future use.

- Where backfill is not required, used hardstand will be scraped up and placed in the pit with the inert materials

- The ex-hard stand, processing, access roads, stockpile areas and other compacted ground will be deep ripped by bulldozer at intervals of 1 – 2 metres, which will rip up the subsoils that remain in those locations.

- Ripping is preferred after the spreading of overburden/topsoil, provided ripping of the base floor material can achieve the required 1 metre.

- A minimum of 300 mm of overburden will be spread over the surface where available to provide a substrate for revegetation.

- The floor and slopes will be left with a rough surface along contour as this reduces run off and encourages plant growth.

- The steeper slopes will be installed with contour banks or structures to slow the flow of surface water.

- Any materials which may have been displaced during storm events will be picked up and used for fill.

- Where possible, overburden, followed by topsoil and recovered vegetation, will be spread directly from an area being cleared to an area being rehabilitated to minimise the potential for seed loss.

- Overburden from areas of thin soil, which contains topsoil and included seed load, will be spread across the surface.

- Where separate topsoil is available it will be spread across the overburden.

- Topsoil will be spread evenly across the rehabilitated areas in summer or early autumn prior to the winter rains. Stored topsoil rapidly loses seed viability and could be expected to be less than 50% effective if stored through one winter.

7.5.3 Revegetation

1. Pre-seeding weed control is only likely to be required where topsoils are used that contain weed species.

2. If required this is normally only conducted after overburden and topsoil have been spread and any seeds have been allowed to germinate. Broadscale weed treatment can be detrimental to the germination and growth of native and some pasture species but may be required if the weed load is to be reduced.

3. Any weeds likely to significantly impact on the rehabilitation will be sprayed with Roundup or similar herbicide or grubbed out, depending on the species involved. Weed affected topsoil and overburden will be buried. The Weed Management Plan will form the basis of weed treatment. Depending on the nature of the planting substrate, a broad spectrum spraying program may be used. In areas where grass only is a potential problem grass specific sprays will be used. In some areas where topsoil from cleared native vegetation is available no spraying may be required.

4. Topsoil will be re-distributed in rehabilitated areas to depths of 50 mm where available.

5. Topsoil provides a useful source of seed for rehabilitation, when the correct handling of the topsoil is used; stripped and replaced dry (autumn direct return). Maximum depth of 50 mm can be used to optimise revegetation of species-rich plant communities. However this needs to be balanced against the weed load as described under Weed Management.

6. Native vegetation, plus leaf, root and organic matter collected from the land clearing procedures will be spread across the topsoil. This will increase the total organic carbon fraction, improving soil properties such as resistance to water and wind erosion and moisture retention. The difference in properties between existing topsoil and subsoils is not considered a major impediment to rehabilitation of native species in the area.

7. Studies have shown that topsoil stripping and placement is best undertaken in summer for maximum germination, but this raises the potential for additional dust generation from the fine humus particles.

8. Topsoil will be spread directly from an area being cleared where possible, otherwise reclaimed from a topsoil dump.

9. Topsoil will be spread at depths of 50 mm and should be spread during summer, preferably by the end of February.

10. Rehabilitation will take place during the first winter months following the restoration earth works of each particular section of quarry. Leaving the completed earth works for one season will reduce the success of rehabilitation by at least 50%, due to compaction effects.

11. If insufficient revegetation is achieved, local provenance seed will be collected from the site or purchased from commercial seed collectors.

12. Rehabilitation will consist of

    - topsoil spreading
    - seed spreading (if necessary)
    - tube plants (if necessary)

    A species list is attached in the Bio Diverse Solutions Report.

13. A combination of the three methods is always preferred by Landform Research and has proven to be the most versatile and successful.

14. Seeding conducted in summer will use scarified leguminous seeds that have been “dry smoked”. Seeding conducted in July to August will have the leguminous seeds heat treated and all seeds will be smoke treated by soaking in “smoke water” for 24 hours prior to seeding.

15. Seed spreading will be achieved either using mechanical seed dispersal equipment or using manual methods. Bulking with a spreading agent such as sawdust, vermiculite or sand is desirable.

16. Rehabilitation will progressively follow mining with completed areas of the excavation being revegetated as soon as practicable.

Weeds

1. The Weed Management Plan (attached) will form the basis of weed treatment. Depending on the nature of the planting substrate, a broad spectrum spraying program may be used. In areas where grass only is a potential problem, grass specific sprays will be used. In some areas where topsoil from cleared native vegetation is available no spraying may be required.

Erosion Control

1. Wind erosion is not likely to be applicable to restored loam soils.

2. Water erosion occurs when soil is exposed to significant water flows, which could occur on steep rehabilitated faces. These will fall to the excavated area and therefore any eroded material will be contained.

3. The soils are very permeable and runoff is normally minimal unless surface materials become non-wetting. Even so experience shows that there is minimal non wetting and surface particle movement under such conditions.

4. Water erosion on the batter slopes can be avoided by the permeability of the materials and by leaving the surface soft, rough and undulating, with the undulations running along contour. The final machinery run should be along contour and not down slope.

5. For rehabilitation areas, interim revegetation will take place as soon as possible following landform and soil reconstruction.

6. Control of wind erosion potential will be assisted by spreading brush and vegetation across the batter slopes where appropriate, and reconstructed soils where local native vegetation is to be established.

Monitoring

1. During late summer an assessment of the success of the rehabilitation will be made to determine the rehabilitation requirements for the following winter.

2. Monitoring includes visual assessments and, where necessary, counts to determine the success of the rehabilitation and restoration using 100 or larger m^2 plots as follows;

   - plant density
   - species richness
   - plant form and vegetation structure
   - plant growth
   - plant deaths
   - regeneration
   - weed infestation

3. As necessary steps will be taken to correct any deficiencies in the vegetation.

4. Rehabilitation of each stage will be monitored for a period of three years to ensure that the revegetation meets the completion criteria of providing self sustaining indigenous shrub vegetation.

5. Provide ongoing weed management to identify and treat significant environmental weeds or weeds likely to impact on the rehabilitation.

6. Plants that have not survived are to be assessed to determine the number of replacement plants required. To this is to be added the number of additional plants required to be installed in the following winter to bring any deficiencies up to the completion criteria.

7. In areas of rehabilitation that do not meet the completion criteria measures are to be taken to increase the stem density to achieve the completion criteria. This could include but not be limited to;

    - additional seeding,
    - additional brushing.

7.5.4 Temporary Closure

- A program for temporary, campaign or seasonal closure is proposed.

Tasks to be completed	**Seasonal or Campaign Closure** **Less than 12 months** **Prior to closure for each campaign**	**Care and Maintenance** **Greater than 12 months**
		Activity
• All legally binding criteria, and conditions of approval from any agency will be complied with	Prior to undertaking temporary closure. • Review the latest documentation. • Assess compliance with the conditions and commitments.	Prior to undertaking temporary closure. • Review the latest documentation. • Assess compliance with the conditions and commitments.
• Closure and rehabilitation is consistent with all conditions of the tenement.	Prior to undertaking temporary closure. • Review the latest documentation and assess compliance in conjunction with the tenement conditions.	Prior to undertaking temporary closure. • Review the latest documentation and assess compliance in conjunction with the tenement conditions.
• Secure the site against spills, leakages and the risks of other adverse impacts.	Prior to vacating; • Secure the site and any plant or structures to be left. • Remove all hydrocarbons and other fluids and other potential pollutants. • Remove contaminated soils and non inert materials. • Ensure wastes are removed or recycled.	Prior to vacating; • Secure the site and any plant or structures to be left. • Remove all hydrocarbons and other fluids. • Remove contaminated soils and non inert materials. • Ensure wastes are removed or recycled.
• Secure the safety of the site.	Prior to vacating; • Complete activities to make the site safe. • Provide fences, bunding and warning signs above faces as required. • Provide locked gates or log access restraints as required.	Prior to vacating; • Complete activities to make the site safe. • Provide fences, bunding and warning signs above faces as required . • Provide locked gates or access restraints as required. • Remove any plant susceptible to combustion, stealing or movement.
• Ensure the site is geotechnically stable	• Faces and the landform are to comply with DMP Guidelines and	• Faces and the landform are to comply with DMP Guidelines and be

	be stable for the short and long term. • Inspect all areas and ensure the land surfaces are stable to erosion from wind and water.	stable for the short and long term. • Inspect all areas and ensure the land surfaces are stable to erosion from wind and water.
• Ensure surface water is retained onsite or suitably managed.	Prior to vacating; • Slopes are to drain to areas of internal drainage and infiltration basins. • Inspect batter slopes, pools and other features and inspect drainage and provide infiltration areas as necessary.	Prior to vacating; • Slopes are to drain to areas of internal drainage and infiltration basins. • Inspect batter slopes, pools and other features and inspect drainage and provide infiltration areas as necessary.
• Rehabilitation	Prior to vacating; Rehabilitate any areas that are no longer required. Prior to vacating and during audits; • Inspect revegetation to determine its long term survival from environmental and fire impacts. • Check species diversity and composition for next excavation campaign. • Undertake to mitigate rehabilitation areas that are deficient or not capable of becoming compliant with the completion criteria.	Prior to vacating; • Ensure rehabilitation is conducted at a suitable time to achieve success. • If timing is not suitable undertake remediation earthworks such as re-ripping. Check annually. If rehabilitated areas are deficient; • Provide additional topsoil or seed to increase the number and diversity of plants. • Undertake to mitigate rehabilitation areas that are deficient or not capable of becoming compliant with the completion criteria. • Spread vegetation fragments or harvested branches capable of providing seed sources from brushing. • Be aware of and assist with actions that help facilitate habitat creation.
• Absence of Declared or Environmental weeds that could compromise the success of revegetation.	Prior to vacating and during audits; • Inspect the site for environmental and declared weeds. • If found, inspect adjoining native vegetation for edge effects. • Inspect rehabilitation and the edges of access roads.	Annually; • Remove or spray environmental or declared weeds. • Provide annual follow up inspections and treatment at the appropriate time of the year.

8.0 MONITORING AND REPORTING

Monitoring

All activities will be regularly monitored.

Dust is to be assessed continuously by all staff on site. Adverse situations are reported as soon as they are noticed to the Quarry Manager who responds by taking action to mitigate any problem. This could take the form of applying additional water, ceasing or modifying a particular activity or providing for long term changes to the way in which a particular activity is conducted, including modification or upgrade to plant and process.

Noise levels are to be measured regularly in quarries for occupational health and safety. The Department of Mines and Petroleum requires regular measurements and undertakes site inspections. Personal protection equipment is used. In noisy situations investigations are undertaken and modifications to plant or process made where possible to reduce noise impacts.

Blasting will be carried out under the supervision of external consultants and will be required about twice per year once the pit is established.

Water quality from the site will be visually monitored to ensure that fines and other materials and hydrocarbons do not escape the operations.

Weed levels will be visually monitored and treated in combination with the normal farm management.

Visual assessments are to be regularly made, particularly from the east, and actioned with the appropriate responses, such as planting additional trees, bunding, painting, relocation of offending items etc.

Revegetation is to be monitored in autumn with respect to survival rates and weeds. Actions are to be taken as appropriate such as the most efficient weed control and additional planting.

- During autumn an assessment of the success of the rehabilitation will be made to determine the rehabilitation requirements for the following months.
- Monitoring includes visual assessments and, where necessary, counts to determine the success of the soil stabilisation including vegetation cover and soil stability.
- As necessary steps will be taken to correct any deficiencies in the vegetation.
- Rehabilitation of each stage will be monitored for a period of three years to ensure that the revegetation meets the completion criteria of providing self sustaining vegetation cover.
- In areas of rehabilitation that do not meet the completion criteria measures are to be taken to increase the stem density to achieve the completion criteria. This could include but not be limited to;
    - additional seeding

- additional tube planting.

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Appendix 1

Offsite Impacts Management Plan

Lots 606 and 3029
Potts Road, Wondanning

Shire of Mt Marshall

Qstone Pty Ltd

July 2016

Landform Research
Land Systems - Quarries - Environment
ABN 29 841 445 694

ATMOSPHERIC POLLUTION AND NOISE

1.0 VISUAL MANAGEMENT PLAN

Visual Impact can occur in a number of circumstances, by the operation being set too high in the landscape, by being too close to neighbours and by insufficient visual protection.

There are a number of management actions that can be taken in quarries to minimise visual impact and these will be used wherever possible. The general management actions are summarised below together with the visual impact issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise visual impact.

The site lies on farm land well set back from constructed public roads.

The rock will be white, like other pegmatite deposits and will potentially stand out against the natural soils and vegetation. However the design of the pit and stockpile areas combined with their orientation will minimise external views from distance.

There are no nearby dwellings or sensitive premises within 1 kilometres.

A number of Government Policies relate to buffer distances and the protection of basic raw materials. State Planning Policy No 4.1, State Industrial Buffer Policy, (draft July 2004), EPA Draft 2015 and DER Draft 2015, discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as this.

It specifically discusses the need for on site and offsite buffers when buffers cannot be contained on the subject land. The policy also requires that new industries provide either a sufficient buffer or studies to demonstrate that the quarry will not impact on sensitive premises.

On the other hand the Policy requires any new application for a sensitive premises to provide either sufficient buffer or scientific studies to show that the construction of the sensitive premises will not compromise the quarry.

EPA guidance "Separation Distances between Industrial and Sensitive Land Uses", June 2005 lists the generic buffers for hard rock quarries as 1000 metres depending on the extent of processing.

A generic buffer relates to the distance at which there are unlikely to be any problems without some further investigations and does not mean that smaller buffers are not acceptable. EPA Guidance for the Assessment of Environmental Factors 3 June 2005 provides for a case by case separation, based on the potential impacts.

The proposed pit complies with the 1000 metre buffer and considering its small size there is not anticipated to be any impacts on sensitive premises.

The proposed excavation complies with the EPA generic buffer.

OPERATIONAL PROCEDURES	COMMITMENTS ON ACTIVITIES CONDUCTED ON SITE
• Locate exposed features behind natural barriers and landform.	• Even though the operations will be location on a very low ridge, the pit be below natural ground level facing west into the trees. • The existing trees and vegetation provide screening and the distance to roads and sensitive premises provide further screening. • The project has been designed to minimise visual impacts.
• Operate from the floor of the pit below natural ground level.	• The quarry be located below natural ground level.
• Avoid breaks in the skyline due to	• Unlikely to be visible above the skyline

workings and haul roads.	because the ridge is so low and covered by low trees and vegetation.
• Push overburden and interburden dumps into positions where they will not be seen or can form screening barriers.	• This is used, and the bunds pushed in during rehabilitation.
• Stage workings and progressive rehabilitation to provide visual protection of later activities.	• This is considered during the development of mine planning.
• Cover barriers and landscaping with forms, colours and textures compatible with the natural environment.	• Not really applicable or necessary for this operation because the excavation will be below natural ground level, and away from sensitive land uses.
• Adopt good house cleaning practices such as orderly storage and removal of disused equipment or waste.	• Qstone will maintain a tidy work environment. • Waste is to be regularly removed off site to an approved waste facility. • Where possible, used products will be recycled.
• Provide progressive rehabilitation of all completed or disturbed areas.	• This is proposed.
• Minimise the amount of ground used at any one time.	• This is proposed with around 3.5 hectares open at any one time.
• Install fences and gates which are compatible with the style of the area.	• Gates and/or barriers are to be installed as required at the entrance when plant is on site.
• Minimise offsite impacts of night lighting.	• Night operations are not proposed.
• Paint and maintain buildings exposed, plant and equipment with low impact colours.	• This will be used as applicable to minimise visual impact.
• Locate roads and access to prevent direct views into the site	• There are no proposed changes to the access roads or farm roads.
• Locate buildings, plant and stockpiles in areas of low visual impact and maintain appropriate size.	• This will be used.
• Provide temporary revegetation of road embankments and disturbed areas as soon as practicable.	• This is proposed.
• Control weeds and maintain amenity planting.	• A weed control program is proposed, tied into normal farm weed management.
• Ensure transport vehicles do not spill material on public roads and ensure prompt cleanup if it occurs.	• Company practices and drive/operator training address the need to minimise spill by ensuring the trucks are not overloaded or material is not left on the outside of trays. • Collection of spills will carried out when reported. • Drivers are to be instructed to be responsible for their loads. • All loads are to be required to be covered by company policy when likely to blow or dislodge.

Light Overspill

It is not proposed that the facility will operate at night.

Excavated areas will be progressively rehabilitated as they are completed.

Summary

Visual impact is regarded as low.

Qstone is committed to minimising visual impacts and will implement the measures outlined.

2.0 NOISE MANAGEMENT PLAN

Offsite noise is governed by the *Environmental Protection (Noise) Regulations 1997.*

The *Environmental Protection (Noise) Regulations 1997*, require that sensitive premises including dwellings in non industrial areas are not subjected to noise levels exceeding 45 dBA for more than 10% of the time, 55 dBA for more than 1% of the time and never exceeding 65 dBA during normal working hours. There are penalties for tonality of 5 dB, modulation 5 dB and 10 dB for impulsiveness, although impulsiveness is not likely to be relevant.

Occupational noise associated with the quarrying processes falls under the *Mines Safety and Inspection Act 1994 and Regulations 1995.* The management of occupational noise is normally handled by providing all necessary hearing protection, as well as conducting worker inductions, and educational programs for all staff. Regular site audits of quarry and mining operations are normally conducted by the Department of Mines and Petroleum.

Noise can originate from a number of operations and may impact on onsite workers, or travel offsite and impact on external sensitive premises. Both potential noise impacts are addressed by reducing the noise generated from the quarrying and processing operations.

There are a number of management actions that can be taken in quarries to minimise noise generation or travel and these will be used wherever possible. The general management actions are summarised below together with the potential noise impact issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise noise on this site.

The *Environmental Protection (Noise) Regulations 1997*, require that sensitive premises including dwellings in non industrial and rural areas, are not subjected to general noise levels (excluding blasting), during the hours 7.00 am to 7.00 pm Monday to Saturday that exceed 45 dBA. Allowable noise to 55 dBA is permitted for up to 10% of the time and to 65 dBA for 1% of the time. Noise levels are not to exceed 65 dBA during normal working hours.

Between 9.00 am and 7.00 pm on Sunday and Public Holidays and between 7.00 pm and 10.00 pm on all days the base level is 40 dBA.

At night, between 10.00 pm and 7.00 am Mondays to Saturday and before 9.00 am on Sundays and Public Holidays, the permitted level drops to 35 dBA.

The 10% and 1% “time above” allowances apply at night and on Sundays and Public Holidays as well.

There are penalties for tonality of 5 dB, modulation 5 dB and 10 dB for impulsiveness, that are added to the permitted levels. That is, if the noise is tonal or modulated the permitted levels drop by 5 dB. Impulsiveness is not likely to be relevant for the quarry under normal circumstances.

Influencing factors are external noise and nearby land uses such as busy roads, and industrial properties. *Schedule 1 of the Environmental Protection (Noise) Regulations 1997* provides for the premises of excavations to be provided with an industrial influencing factor in the calculation of assigned noise levels, by way of the 100 and 450 metre influencing factor circles.

Under *Schedule 1 of the Noise Regulations* the premises on which the extraction of basic raw materials, such as sand and limestone, is occurring is classified as Industrial Land for the purposes of calculating influencing factors. This was defined as the whole cadastral boundaries in State Administrative Tribunal decision *{2013} WASAT 139, Bushbeach v City of Mandurah*.

At a distance greater than 15 metres from the sensitive premises (eg dwelling), and commercial premises a base level of 60 dBA applies at all times with the 10% time permitted to be up to 75 dBA and the 1% permitted to be up to 80 dBA. For Industrial premises the base level is 65 dBA at all times with the 10% time permitted to be up to 80 dBA and the 1% permitted to be up to 90 dBA.

Sound travels mostly similar to lines of sight; that is solid barriers significantly reduce or attenuate noise travel.

The excavation operations will incorporate the procedures listed below wherever possible to minimise noise emanation from on site activities.

Methods of extraction are not expected to be any different to past or current operations of pegmatite production in the Wheatbelt, apart from this being a much smaller operation.

All equipment will be fitted with noise shields and efficient silencers. Workers will be inducted and trained for operation on the site and provided with the correct noise protection equipment.

There are no nearby sensitive premises within 1 km of the site.

The operations are proposed to be small, located below the general elevation of the land and use minimal and relatively quiet equipment based on the scale of the operation.

The issue of appropriate buffers is a matter of the distance and protection measures to prevent impact on adjoining land users. This applies mainly to noise, dust and visual impact, all of which are treated separately.

A number of Government Policies relate to buffer distances and the protection of basic raw materials. State Planning Policy No 4.1, State Industrial Buffer Policy, (draft July 2004) discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as this.

EPA guidance "Separation Distances between Industrial and Sensitive Land Uses", June 2005 lists the generic buffers for hard rock quarrying as 1000 metres depending on the extent of processing. A generic buffer relates to the distance at which there are unlikely to be any problems without some further investigations and does not mean that smaller buffers are not acceptable. EPA Guidance for the Assessment of Environmental Factors No 3 June 2005 provides for a case by case separation, based on the potential impacts.

The issue of appropriate buffers is a matter of the distance and protection measures to prevent impact on adjoining land users. This applies mainly to noise, dust and visual impact, all of which are treated separately.

Based on the size and scale of the proposed hard rock quarry, nature of the equipment used and excavation methods proposed, the extraction would have the smallest buffer and would therefore comply with the EPA Guidelines.

The walls of the pit form natural barriers that reduce noise transmission.

Blasting

Blasting will be used and is addressed in the Blast Management Section of this document.

Normal Quarry Management

There are a number of management actions that can be taken in quarries to minimise noise generation or travel and these will be used wherever possible. The general management actions are summarised below together with the potential noise impact issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise noise on this site.

The following table summaries the methods that are normally used in quarries to minimise unacceptable noise generation.

OPERATIONAL PROCEDURES	COMMITMENTS ON ACTIVITIES CONDUCTED ON SITE
• Comply with the *Environmental Protection (Noise) Regulations 1997.*	• Qstone will maintain compliance. • There are no sensitive premises within 1 km.
• Maintain adequate buffers to sensitive premises.	• The operations will comply with the EPA generic buffer guidelines.
• Locate exposed features behind natural barriers and landform.	• The operations will be below natural ground level, away from sensitive land uses.
• Operate from the floor of the pit below natural ground level.	• See above.
• Push overburden and interburden dumps into positions where they can form screening barriers.	• This is proposed.
• Design site operations to maximise the separation and protection from sensitive premises.	• See above.
• Maintain all plant in good condition with efficient mufflers and noise shielding.	• Qstone has modern equipment that is maintained in good condition.
• Maintain haul road and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades.	• The access roads exist as gazetted and farm roads. • The access road network will be maintained in good condition during operations.
• Implement a site code outlining requirements for operators and drivers.	• Qstone will maintain site induction and training for all personnel for all parts of the operations.
• Design the operations to provide enhanced landform and constructed noise screening.	• See above.
• Shut down equipment when not in use.	• Qstone will use this best practice policy to save fuel and maintenance costs in addition to noise minimisation.
• Scheduling activities to minimise the likelihood of noise nuisance.	• The operations will comply with the EPA generic buffer guidelines.
• Fit warning lights, rather than audible sirens or beepers, on mobile equipment wherever possible.	• Lights or low frequency frog beepers are to be used rather than high pitched beepers to restrict noise intrusion.
• Use transport routes that minimise community disruption.	• The access roads exist as gazetted and farm roads. • The access road network will be maintained in good condition during operations.
• Avoid the use of engine braking on product delivery trucks in built up areas.	• The surrounding area is relatively flat with reduced gradients. Air brakes are unlikely to be required and will not be used.
• Minimise and conduct at the least disruptive times, non day to day activities such as vegetation, topsoil or overburden stripping on exposed ridgelines.	• Major earthworks will be programmed where possible to coincide with the best timing where possible to try and reduce dust and other impacts and fire risk.
• Provide a complaints recording, investigation, action and reporting procedure.	• Qstone will institute a complaints recording and investigation to cover all site activities.
• Conduct training programs on noise minimisation practices.	• Qstone will conduct site induction and training for all personnel. • The Director of Qstone is a qualified experienced hard rock quarry manager.
• Provide all workers with efficient noise protection equipment.	• All personal noise protection equipment will be provided to staff.

Summary

The risk of noise impact on sensitive premises is low.

Qstone is committed to minimising noise emissions and will implement the measures outlined.

3.0 DUST MANAGEMENT PLAN

Excessive dust has the potential to impact on both the workers and the adjoining land.

Dust can originate from a number of operations and may impact on onsite workers, or travel offsite. Potential dust impacts are addressed by reducing the dust generated from the quarrying, processing and transport operations.

Occupational dust associated with the quarrying processes falls under the *Mines Safety and Inspection Act 1994 and Regulations 1995* overseen by the Department of Mines and Petroleum.

There are a number of management actions that can be taken in quarries to minimise dust generation or travel and these will be used wherever possible. The general management actions are summarised below together with the potential dust issues that relate to this site. The actions will be used where applicable and as the opportunity presents to minimise dust on this site.

Environmental Dust

- **Background**

Although excessive dust has the potential to impact on both the workers and the adjoining land the potential generation of dust must be taken in context.

There are a number of key aspects to dust impacts;

- What is the source of particles?
- What is the potential for the particles to be disturbed?
- What is the nature of the particles and how are they likely to behave?
- What types of impacts are the particles likely to have if they move?
- What management actions can be used to mitigate or reduce dust impacts?

Fine particles are a natural part of our environment and are present in soils, pollens, fragments of vegetation and many other sources. It is when the fine particles are excessively disturbed that there becomes concern for the potential impacts, whether they are nuisance or health risks.

The most common form of disturbance is by human impacts. In this local area agricultural soils and gravel roads have the most potential to expose fine particles to disturbance by machinery and vehicles.

In many situations the fine particles are stablised by vegetation, soil microbial materials and reactions and interactions between particles. Once disturbed however dust can be generated and may continue to be a problem until the fine particles are wetted down or return to a relatively stable condition.

The risk of dust assumes no treatment. With effective treatment of dust by water, which is proposed, the risks of onsite, and consequently offsite, dust are minimised.

When occupational dust is managed then environmental dust is also minimised.

The other main dust risk is from vehicle movements on the stockpile areas and access road which is no different to any other unsealed rural road along which whet trucks and other vehicles travel, servicing the agricultural or pastoral industries.

The main methods of dust control are awareness of the issues on a day to day and hour to hour basis as activities on site change. The most appropriate dust management procedures are then chosen to minimise occupational dust and environmental dust. Ongoing site awareness will be combined with a commitment to take whatever action is appropriate.

- **Assessment of Dust Risk**

Dust Guidelines

Dust management is an integral part of the extraction and processing of hardrock. Facilities and procedures are updated as better technology becomes available.

Dust emissions fall under the *Guidance for the Assessment of Environmental Factors, EPA, March 2000*. Assessments of the potential dust risk are normally made using the Land development sites and impacts on air quality, *Department of Environmental Protection and Conservation Guidelines, November 1996.*

These are still in place but are incorporated into the *DEC (DER) 2011 Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and other Related Activities.*

The *DEC (DER) in 2008* released a *draft Guideline for the Development and Implementation of a Dust Management Plan.*

The key Environmental Objectives for the operations are;

- Manage the potential for the generation of dust.
- Visually monitor dust levels and take steps to reduce the potential impact of dust on occupational and environmental aspects of the operation and local area.

Onsite Risks

The nature of the low ridge landform and native vegetation form natural barriers to minimise dust during extraction, whilst distance is the main management for the stockpile areas and access road.

The operations and access roads all comply with the EPA generic buffer Guidelines for sensitive premises.

Excavation will be worked from inside out on the floor of the pit working below natural ground level. There are no sensitive premises within 1 km.

The category of dust risk is included in *DER 2011 Guideline for Managing the Impacts of Dust and Associated Contaminants from Land Development Sites, Contaminated Sites Remediation and other Related Activities.* This document is not really applicable to mining because it is to be used to assess the mitigation required based on no mitigation.

It must be remembered that this guideline is not really appropriate for quarries. It was developed for subdivision earthworks at a time when dust management was a lower priority.

All quarries have active and comprehensive dust management procedures in place and are required to do so to protect visual amenity and their staff. The Guidance has been used, but factored in is a reasonable amount of dust management. Using the normal dust management there is a negligible risk of dust impacting on sensitive premises west of the quarry.

The prevailing winds are the summer easterly and south easterly winds. In winter, winds tend to be more variable in speed and direction.

- Dust risk is generally only in the dry summer months.
- Best practise dust management procedures apply to quarries and proposed for this site.
- The trigger for dust management is the generation of visual dust.

- The site supervisor is normally the loader driver or site manager/leading hand, who is in the best position to assess dust generation and to direct remediation.
- No visible dust will impact on dwellings.
- On site operators are to be instructed to visually monitor dust, report and treat any visible dust.

Tree Belt - Buffers

Dust particles are readily stopped by tree belts and distance, with which the site complies. Tree belts slow the wind and allow the dust to settle. See *Planning Guidelines Separating Agricultural and Residential Land Uses, Department of Natural Resources Queensland 1997(Pages 65 – 111) and Department of Health WA, 2012, Guidelines for Separation of Agricultural and Residential Land Uses which uses the same criteria (Pages 112 – 118).*

The Queensland Guidelines predominantly relate to agricultural spray drift, but based on particle size also relate to dust.

The Guidelines provide for a buffer of 300 metres for open agricultural land, dropping down to 40 metres where an effective tree belt is in place. The Western Australian Department of Health also uses the same guidelines.

The Guidelines are based on field studies and demonstrate the effectiveness of tree belts and distance in providing screening against particulate travel.

The proposed operations comply with the Western Australian Department of Health and Queensland Guidelines.

Access Road Dust

The impact of dust from transport along the unsealed access roads does not appear to occur to any significant or noticeable extent. For example the vegetation adjacent to the roads, whether it be rehabilitation or native vegetation does not appear to show any effects from dust fall out.

This is no different to the normal rural transport of goods. In addition the number of truck movements will be small of about 2 – 3 loaded truck movements per day on average.

Jones et al, 2016, Dust as a contributor to the road-effect zone: case study from a minor forest road in Australia Australasian Journal of Environmental Management Vol 23, No 1 recorded dust from the adjacent roads but found that “healthy and diverse communities of ground-dwelling mammals” lived adjacent to “extremely” dusty roads and did not appear to be significantly impacted by the dust.

Therefore similar situations are likely to occur on site with the fauna being able to live adjacent to dusty roads. It is likely that the fauna populations change from summer to winter or after rainfall events when dust is washed form leaves.

It is also likely that plants and perhaps fauna adjacent to the road gain an advantage with respect to water availability from the hard road surfaces.

Management

A water tanker or other dust management mechanisms will be maintained on site during excavation when there is a risk of generating excessive dust. The water will be used to settle dust on the access road and stockpile area. Water will be brought to site as required.

The quarry is situated in a remote location. There are no dwellings in the local area.

In the event of dust management not being able to be achieved, such as a water source breakdown or exceptional weather conditions, the dust generating activities will be stopped until conditions improve.

The trigger for unacceptable dust will be excessive visible dust as determined by the site manager or loader driver, or excessive occupational dust as determined by any worker.

All complaints relating to dust will be investigated immediately on receipt of a complaint. Appendix 3 of *Land development sites and impacts on air quality*, Department of Environmental Protection Guidelines, November 1996, (or similar) will form the basis of the methods on which a complaint on dust is dealt with.

A record of all dust complaints will be retained together with the mitigation measures used to reduce the dust impacts.

A summary of the main methods that Qstone will use to manage dust are listed in the table below.

OPERATIONAL PROCEDURES	**COMMITMENTS ON ACTIVITIES CONDUCTED ON SITE**
General	
• Comply with the provisions of the *Mines Safety and Inspection Act 1994 and Regulations 1995.*	• Qstone will comply with the Act.
• Maintain adequate buffers to sensitive premises.	• The operations will comply with the EPA generic buffer guidelines. • Buffers of over 1 km are available.
• Locate activities behind natural barriers, landform and vegetation.	• This is used.
• Work below natural ground level.	• This is to be used.
• Push overburden and interburden dumps into positions where they can form screening barriers.	• This is to be used.
• Design operational procedures and staging, to maximise the separation to sensitive premises.	• As the buffers are large this does not really apply, but the principle will still be used.
• Design the excavation to provide enhanced landform and constructed dust screening.	• As the buffers are so large this does not really apply, but the principle will still be used.
• Schedule activities such as vegetation, topsoil or overburden stripping on exposed ridgelines at times when the materials are less likely to blow or during suitable wind conditions.	• This is proposed where possible.
• Treat access roads, hardstand and stockpile transport and loading areas with dust suppression sealant, water or seal coat.	• Water and/or road sealant will be used to suppress dust. • A dedicated water truck or other mechanism is to be available during operations when dust lift off is a potential hazard as required.
• Use landscape screening, wind breaks and tree belts.	• This is not required because of the natural vegetation existing around the site.
• Provide a complaints recording, investigation, action and reporting procedure such as Appendix 3 of Land development sites and impacts on air quality, Department of Environmental Protection Guidelines, November 1996.	• A record of all dust complaints will be maintained together with the mitigation measures to be used to reduce the dust impacts. • All complaints relating to dust will be investigated immediately on receipt of a complaint. Appendix 3 of *Land development sites and impacts on air*

	quality, Department of Environmental Protection Guidelines, November 1996, will form the basis of the methods on which a complaint on dust is dealt with.
• When winds are sufficiently strong to negate the effects of dust management, operations will cease until conditions improve and compliance can be achieved.	• This policy is to be implemented and is normal company policy. • In the event of dust management not being able to be achieved, such as a pump breakdown or exceptional weather conditions, the dust generating activities will be stopped until conditions improve.
• Conduct training programs on dust minimisation practices.	• Qstone will use on site induction and training for all personnel at all operations.
Quarrying	
• Ensure the drill is provided with dust extraction and shielding.	• Dust collection and extraction will be used.
• Maintain haul road and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades.	• Haul roads are to be regularly graded and maintained. They will have speed limits imposed.
• Provide air conditioned closed cabins on plant.	• All vehicles operating on site are to be air conditioned.
• Limit speed on haul roads.	• Speed limits are to be imposed on the haul roads as normal quarry practice.
Plant - Processing	
• Maintain haul road and hardstand surfaces in good condition (free of potholes, rills and product spillages) and with suitable grades.	• Effective maintenance of the hardstand combined with water or other treatment will be used to minimise dust.
• Treat processing areas with water sprays.	• Not applicable to all screening operations as the screens can block.
• Provide air conditioned closed cabins on plant	• These are used for on site operational mobile plant.
• Limit speed on haul road	• Strict speed limits will be applied for safety and site management through signage and/or staff induction.
• Maintain all plant in good condition.	• Qstone will have new/modern equipment that is maintained in good condition.
• Ensure mobile and static plant is provided with dust extraction, shielding or filtration systems or wetting down as appropriate.	• Qstonewill have new/modern equipment that is maintained in good condition including the maintenance of dust minimisation measures.
• Shut down equipment when not in use.	• Qstone will use this policy to save fuel and maintenance costs in addition to noise minimisation.
• Limit drop heights from conveyors and dump trucks.	• This will be implemented. It is a good safety and site management procedure.
• Provide monitoring and supervision of the processing and other practices on site.	• Operators are instructed to visually monitor dust, report and treat any visible dust. • Faults will be repaired promptly. • Regular maintenance programs for all dust suppression equipment will be used. • Regular emptying of any dust collection devices and the renewal of any filter devices will be used. • Dust management and monitoring will form part of the site induction programs.
• In the event of dust management not being able to be achieved, such as a bore breakdown or exceptional weather conditions, the dust generating activities will be stopped until conditions improve.	• This is committed to.
Transport	
• Maintain a Dust Management Plan.	• This section constitutes the Dust Management plan.

• Maintain access roads in good condition (free of potholes, rills and product spillages).	• This is committed to.
• Water and/or treat access and haul roads and paved areas using a water tanker or sprinkler system.	• A water truck or similar plant will be will be available and used when dust lift off is a potential hazard as required.
• Wet down or cover loads on trucks that are likely to blow during transport.	• This will be used for road haulage trucks. • Trucks will be required to install tarpaulins or cover prior to exiting the quarry.
• Implement a site code outlining requirements for operators and drivers.	• A site code and induction system is proposed for the quarry.
• Maintain road trucks in a clean condition.	• Road trucks are to be maintained in a clean condition. Individual contractors will be encouraged to do likewise.
• Reduce the length of the internal roads by maximising internal servicing efficiency.	• This is proposed.
• Providing speed management on hardstand and the road network. •	• Qstone will maintains speed restrictions for safety and site management on all sites.
• Avoid spillages on roads and clean up promptly.	• Qstone will implement a policy of covering loads and instructs drivers to report and clean up spillages.
• Ensure that during loading, product does not become lodged on the sides of trucks from where it can fall off during transport.	• This forms part of Qstone normal operational procedures.
• Drivers are to inspect trucks prior to leaving site. Any product not correctly located and secured is to be removed prior to exit from the site.	• This forms part of Qstone normal operational procedures.
• Use wetting and sealing agents to bind unsealed road.	• A dedicated water truck will be retained on site to manage dust as required.
Stockpiles	
• Wet down stockpiles using water canon or sprinklers as required.	• Stockpiles will be assessed for their dust lift off potential and treated accordingly.
• Locate stockpiles behind bunds/ windbreaks or other screening barriers	• This is normal practice.
• Reduce the height of stockpiles. Low flat stockpiles are less likely to be disturbed by wind than high conical ones.	• Stockpiles are to be located in a situation where they will be less visible and subject to wind impacts.
• Wash crushed or other products where possible.	• Washing may be used for some specialty products using water brought to the site.
• Locate coarser products around fine materials to assist wind protection of the finer products that are more likely to blow or contain greater amounts of dust.	• This is normal practice.
• Provide bunding, fencing and windbreaks around stockpiles and along the tops of bunds.	• As the buffers are so large this does not really apply, but the principle will still be used
• Plant the bunds with trees and provide wind breaks.	• As the buffers are so large this does not really apply.
• Seal the stockpiles with spray on sealant.	• With large buffers and the particle size, this is not necessary.
• In extreme conditions stockpiles can be covered although this is often not practical.	• With large buffers and the particle size, this is not necessary.

A dust risk assessment is summarised in the table below, which assesses the risk and summaries the management actions that will be used to minimise dust generation and travel.

DUST RISK MATRIX

OPERATION - ACTION	FREQUENCY OF RISK	DUST RISK	MANAGEMENT	RISK AFTER MANAGE MENT
Topsoil and overburden excavation and placement	Very Low	Low	• Occurs only at development and rehabilitation of the stockpile and processing area.	• Low
Drilling	Low about two campaigns per year	Low	• Drilling will take place for a few weeks about twice per year. • The drill will be equipped with dust extraction and collection facilities and little dust will be generated.	• Low
Blasting	Blastiing will be used approximately twice per year	Low	• A separate Blast Management Plan is attached. • Blasting will be infrequent and the effect of dust will occur for a couple of minutes after each blast.	• Low
Loading from the face	Low	Low	• Normal management procedures listed above.	• Low
Primary crushing	Moderate to high	Moderate to High	• With a maximum of 30 000 tonnes per year crushing will be in campaigns. • The primary and other crushers will be mobile plants. • Screening, water and other dust management will be applied. • Approaching and loading the plant from upwind. • Air conditioned cabs on mobile plant. • Ceasing activities when conditions make dust management difficult. • The greatest risk is to staff whose health and safety are strictly controlled under the *Mines Safety and Inspection Act 1984* and must be managed If occupational dust is controlled so is environmental dust. • Dust must be controlled to low levels as it is at all mine sites and quarries.	• Low
Secondary crushing	Moderate to high	Moderate to High	• See above	
Screening of aggregates	Low	Moderate	• See above	• Low
Recovery and loading from the stockpiles	Moderate	Low	• Normal management procedures listed above.	• Low
Transport dust	Moderate	Low - moderate	• Normal management procedures listed above.	• Low
Lift off from stockpiles	Moderate	Low	• Can occur sporadically throughout the year. • Once the stockpiles have been exposed to rain any dust is washed from the exposed surfaces. • Normal management	• Low

			procedures listed above.	
Occupational Dust	Moderate - high	Low	• Use all Dust Suppression Management techniques listed below as applicable. • Provide air conditioned enclosed cabins for workers. • Provide all necessary personal dust protection equipment. • Controlled under the *Mines Safety and Inspection Act 1994 and Regulations 1995* overseen by the Department of Mines and Petroleum.	• Low

Dust Monitoring

The most effective dust monitoring is the generation of visible dust.

The auditable condition is visible dust crossing the boundary of the premises; the lot boundary. This is the condition used on Department of Environment Regulation Licences and all other quarries such as sand, limestone and hard rock quarries in Western Australia and has worked well in the past.

It is also the method used by the Department of Mines and Petroleum to rapidly assess occupational dust on site.

As invisible dust can be generated with the visible dust, recognising and dealing with visible dust is a very effective instantaneous method of recognizing excessive dust.

There are a number of mechanical dust monitors but only two are approved under Australian Standards. The mechanical measurement of dust can be difficult to obtain accurate results and a number of systems provide retrospective measurements only.

Most dust generated from processing and vehicle movements has a very large visible component. Lesser risks emanate from excavation and land clearing.

The quarry manager and leading hand are ultimately responsible for site supervision of dust. They will travel around the operations and pit frequently and are in two way radio contact with all mobile plant.

All operators on site are instructed to be vigilant to dust generation and management and report any excessive dust or potential dust management issues.

When trigger conditions are detected and/or alerted, relevant action is taken. This can include additional water suppression, modification of procedure, delay until more favourable conditions are present, use of alternative equipment etc.

Human monitoring can detect potential dust risks prior, and take action prior, to the dust being generated. They also notice dust immediately such as from tyres, whereas machine monitoring has to rely on significant dust being generated, travelling to the boundaries of the premises and triggering an alarm.

Visual monitoring is even more effective when complemented by a reporting and complaints process.

Greenhouse Gas

Over the years trucks have become more efficient with respect to greenhouse gas emissions, particularly with the use of truck and trailer and road train configurations.

Qstone will seek ways to reduce the amount of fossil fuels used, and has obtained more efficient mobile plant and equipment when this has become economically available.

The internal design of the operations attempts to minimise the haulage route to save energy use and potential impacts.

Complaints procedure

Visual monitoring is more effective when complemented by an extensive reporting and complaints process.

That reporting mechanism is enhanced by liaison with the closest sensitive premises and land owners who are in a position to alert the operators as required.

An effective complaints mechanism is an essential part of the dust identification and management and is proposed.

A complaints book that lists the items below will be used.

- The complaint,
- Nature of the complaint, time and date,
- Source of the complaint,
- Investigations of the complaint,
- Results of the investigation,
- If the complaint is valid, any mitigation actions that result,
- Any communication with the complainant.

5.0 BLAST MANAGEMENT

Need for Blasting

There is a proposal to extract up to 30 000 pegmatite hard rock from Lots 606 and 3029 Wondanning.

The area selected for the pit is a small pegmatite outcrop located low in the landscape, to provide visual and noise protection.

Geology

The pegmatite consists of quartz, feldspar and mica and is expressed on the surface at Couper's Prospect. Intruded into the pegmatite is a quartz blow that outcrops over a smaller area forming a low ridge.

Previous drilling determined that the pegmatite body trended approximately 120 degrees with a diameter of over 120 metres.

The surface expression is in the form of a quartz/pegmatite blows, that occur approximately 60 metres apart and site slightly elevated from the surrounding land. Data from the drill holes suggests that the quartz is either intruded from below or is a reflection of a pod of quartz that was squeezed in a number of directions into a multi pronged body with irregular contacts.

Discussion of Blasting Techniques

Blasting is used to break the rock from the face. This is achieved by drilling holes into the rock in a defined pattern. The holes are then filled with explosive and capped. An electric detonator is used to remotely detonate the charge by triggering the chemical reaction within the explosive. This produces a very large volume of gas in a very short time which places pressure on the sides of the drill hole, fracturing and breaking the adjoining rock.

Blasts are normally designed in a rectangular pattern of multiple holes that are fired with milli-second delays in a particular pattern that lifts and pushes the rock from the face in a sequence. The pattern of blasting can be designed to maximise the production of a certain sized rock fragment which can assist in reducing the amount of crushing or secondary breaking that is required.

Blast impacts consist of air blast overpressure and ground vibration. Ground vibration tends to push back into the face whereas airblast is an air pressure wave that emanates forwards out into the quarry, usually in the opposite direction to ground vibration. Both ground vibration and air blast spread out in a spherical manner and, with the same impact spreading out in an increasingly large volume or area, both dissipate quickly with distance.

For ground vibration there is also normally a distinct drop off of impact with distance, although occasionally the geology can reduce this drop off impact under certain conditions or may even lead to an enhancement of ground vibration. There are certain situations such as a particular geological structure or land surface that may lead to an impact travelling further in one direction than another.

Generally there is a distinct drop off of blast effects with distance. This is most pronounced with airblast. However there can be times when airblast carries further, such as the direction of the blast, or under conditions when the airblast is restrained such as under a temperature inversion. The nature of the blast in terms of the degree of fracturing of the rock to be moved, the orientation of the face, the size of the blast and the weather conditions can all influence the potential impact of a blast. Therefore it is not uncommon for each blast to appear different in character.

Therefore potential blast impacts consist of air blast overpressure and ground vibration.

Changes to the blast levels of air blast overpressure and ground vibration, received at a particular sensor, depend on which face is being excavated.

With progress of the proposed pit, and the orientation of the face, it can be expected that when the northern face is fired, airblast will have a greater tendency to travel south. Ground vibration from the northern face blast will have a greater tendency to travel north.

Sometimes it is difficult for residents to distinguish between air blast or ground vibration because both can make windows rattle under certain conditions. The Statutory Blast limits are set at levels that will not lead to structural impacts but yet may still be heard.

Therefore monitoring of blast impacts by various means is undertaken to provide better design of the succeeding blasts and better management of potential impacts.

Trial Blast

All blasts will be designed and conducted by John Guthrie a Licensed and experienced Hard Rock Quarry Manager and driller and shotfirer, in conjunction with consultants who will determine the drill patter, load, fire and monitor the blasting.

Trial blasts will be used starting with a small blast and gradually increasing to determine the most efficient and effective blast techniques.

Normal Blasting Procedures used at Quarries

Blasting today is much better understood and controlled than previously, with good control of blast design, strength of the blast and potential impacts.

Nowadays consultants and good operators are able to closely predict the likely implications after several test blasts, and design the drilling and blasting pattern accordingly. This will be undertaken on this site.

Blasts are designed with millisecond delays so they do not go off with one bang but are sequential and provide heave to the rock. The blast also has to be designed to provide the correct fracturing and the desired rock size for the purpose.

However normal procedure is to undertake several test blasts and monitor the blast levels. From the data, adjustments, as necessary, can be made to the drilling and blasting pattern.

Considering the distances, and the geology as known, it is unlikely that any blast will have significant impact on sensitive premises. In any event the blast design can be used to mitigate any such impacts.

Mitigation can, for example, include which face is fired, the design of the excavation, the amount of rock fired, the depth of drill holes, the spacings of the drill patterns, the number of blasts, time of firing and the time delay patterns.

Explosives will not be stored on quarry site, but will be brought to site as required. The materials commonly used are fertiliser and petroleum substances that only become explosive when mixed in a particular ratio and manner and when triggered by a detonator in an enclosed situation. Detonators will be brought to site as required for each blast.

Explosives management procedures are required. People using explosives are required to hold a Shotfirer's Licence through the Department of Mines and Petroleum. John Guthrie, director of Qstone is a licensed and experienced Shotfirer.

Regulation

Blasting noise (airblast overpressure) is controlled by the Department of Environment Regulation under the *Environmental Protection (Noise) Regulations 1997.*

The Environmental Protection (*Noise Regulations 1997*) were changed on 5 December 2013, *Environmental Protection (Noise) Amendment Regulations 2013 – gazetted on 5 December 2013*, and state that no blast should exceed 120 dB for a sensitive premises and 125 dB for a non sensitive location. In addition nine in every 10 consecutive blasts are required to be below 115 dB for a sensitive premises and 120 dB for a non sensitive premises. These levels do not appear to apply when a person is not present at the receiving premises.

Prior to 5 December 2013 the levels of air blast were 5 dB higher.

AS2187 Explosives Storage Transport and Use also provides control on the transport, storage and use of explosives. Storage and Transport and use of explosives is controlled by the Department of Mines and Petroleum and there are several Guidelines and Regulations relating to them, for example *Dangerous Goods Handling and Storage Regulations 1992.*

Blasting controls are also covered by *the Mines Safety and Inspection Act 1994 and Regulations 1995.* These are now covered by compliance with *Australian Standard AS2187 Explosives Storage Transport and Use.*

DER Licence requirements normally require blasts to comply with 9 out of 10 blasts below 5mm/sec with none above 10mm/sec. Where peak particle velocity exceeds 5mm/sec, notification of the Director of the DER is normally required within 24 hours.

Even though the Statutory Blast limits are set at levels that will not lead to structural impacts they may still be heard or felt.

Ground vibration is often set in Western Australia at 5mm/s with only one in every 10 consecutive blasts being permitted above that level. The Australian Standard for dwellings is 10mm/s for which no blast is to exceed.

Existing Quarry data

John Guthrie, the Director of Qstone is a licensed and experienced hard rock quarry manager who has worked and managed large hard rock quarries and mines on the Darling Scarp, Pilbara, Yilgarn and Goldfields region.

He has extensive experience in extraction of basic raw materials and quarries, and in particular the removal of granite and other hard rock.

Qstone will use the assistance of consultants to plan the quarry and design the blasting and operation of the hard rock quarry.

Required Buffer

A study of the buffer requirements for the Gelorup Area was commissioned by the Western Australian Planning Commission; *Orica, 2001, Gelorup Basalt Quarry Buffer Study – Bunbury WA*.

Whilst the rock types are different, basalt versus pegmatite and quartz,, the principles are the same. Orica concluded that it was likely that at distances of less than 1 000 compliance was likely to be able to be achieved and this has generally proven to be the case. There is a risk, that occasional blasts may exceed the recommended limits.

In 2000 the WAPC released the Greater Bunbury Region Scheme. In the Strategic Minerals and Basic Raw Materials Resource Policy of the Greater Bunbury Region Scheme, the WAPC nominated a 1 000 metre buffer referral area in Section 3.0 Application and Figure 1.

A number of other Government Policies relate to buffer distances and the protection of basic raw materials. State Planning Policy No 4.1, State Industrial Buffer Policy, (draft July 2004) discusses the need to consider adjoining land uses when locating buffers but does not prescribe set buffers for operations such as this.

EPA guidance No 3, "Separation Distances between Industrial and Sensitive Land Uses", June 2005 lists the generic buffers for hard rock quarries as 1000 metres depending on the extent of processing. A generic buffer relates to the distance at which there are unlikely to be any problems without some further investigations and does not mean that smaller buffers are not acceptable.

The proposed pit exceeds the generic buffers by substantial margins.

As is normal practice, blasting consultants are proposed to be used to design and monitor blasts, to ensure that the most efficient, safe and environmentally sensitive blasting techniques are used.

There is no means of definitively modeling blast impact prior to blasting occurring, because the geology cannot be intimately known until the quarry commences and faces of rock are exposed.

However current knowledge of blasting has reached a level of sophistication that quarry operators and Blast Management Consultants can be confident that blasts can be designed and fired in compliance with the regulations and standards, and that potential impacts are minimised.

Normal practice when opening a quarry is to use small blasts to check compliance. When monitored results are available, and the first faces are exposed, the design of the blasts can be adjusted and increased, to the point where greater production efficiency is achieved whilst maintaining compliance and minimising any blast impacts on local residents.

Blasts at the large hard rock quarries in the south west of Western Australia are normally in the range of 95 to 115 dB for airblast and < 2mm/sec for ground vibration, at the monitoring stations which are normally located at the closest dwellings.

The existing hard rock quarries demonstrate that blasting can be managed within the buffer distances available. In addition Qstone is committed to minimising any adverse impact on the existing local residents and will work with them to ensure a satisfactory outcome is achieved.

Proposed Blast Methodology

When blasting is required, a section of the face will be pattern drilled and then blasted with explosives. Millisecond delays are used on all blasts to reduce both the air blast over-pressure and the ground vibration.

All drilling equipment will be fitted with noise suppression features and regularly checked to ensure compliance with all safety standards.

No explosives are to be kept on site. They will be brought to site as required by the explosives contractor/consultant.

Blasts will be designed with advice from consultants where appropriate. The same consultants will be available as required to monitor blasting and provide written documentation to the company.

The blast holes are to be located in the patterns and spacings, combined with blast design using various combinations of airdecks, charging and stemming to produce the best outcome with the least impact. The blasts will then be fired using millisecond delay detonators to reduce noise and ground vibration.

At the time of each blast, the weather conditions are to be recorded. The main weather conditions of concern are the wind speed and direction, and the possibility of a temperature inversion in the atmosphere, which may have the potential to reflect blast noise downwards.

To minimise these features the shots will be fired, wherever possible, around midday, when temperature inversions have broken up and when the wind is most commonly from the south west, blowing away from the main settled areas to the west of the quarry.

Blasting will be conducted below the surrounding level of the ground, located low in the landscape, with the adjoining ridges adding to the shielding of adjoining properties.

It is anticipated that blasting will be in the order of twice per year but a number of smaller blasts may be required initially to break into the resource and form a workable face.

The Shire of Mt Marshall and the nearest residences will be rung prior to each blast as a matter of courtesy.

A complaints register will be maintained and all complaints will be investigated.

Potential Blast Impacts

For normal operations it is anticipated that 20 000 – 30 000 tonnes of resource will be removed from the pit annually. It is anticipated that up to 4 blasts will be used per year, at least initially. When testing and opening the pit there may be several more smaller blasts.

However when the faces have been formed the number of blasts per year are likely to reduce to two.

The design of the pit is summarised below. The figures attached to the main report should be consulted in relation to the location and design of the pit.

The pit will be operated as one bench to a depth of around 10 metres or two benches in areas that are deeper. The bench will be the natural floor that will be cut into the resource.

Compliance of Blasts - Dwellings

The site is isolated and there are no nearby dwellings.

Management of Blasting

Qstone is committed to minimising any risk of impact on local residents or structures and will ensure that the concerns of residents are noted and incorporated into all operational and blast procedures.

A number of mechanisms are available to minimize blast impact from airblast and ground vibration. These are summarised from *Orica, 2001, Gelorup Basalt Quarry Buffer Study – Bunbury WA* and current practices.

- Use smaller diameter drill holes.
- Reduce the height of benches.
- Use blast initiation sequences that drive away from areas of concern.
- Achieve the best firing time by delaying the blast, if necessary. This can raise other issues and is not always available.

- Increase stem lengths in blast holes.
- Splitting charges in half to reduce the kg of explosives per delay.
- Manipulate the delay sequences and point of initiation.
- Use greater front row burdens.
- Generate ground vibration reduction trenches, although this may not be possible in all situations on site.
- Firing more holes less frequently, because it is found the local people generally prefer less blasts rather than more blasts even if they are smaller.
- Use of pre-splitting or line drilling to create a smooth face and reduce impacts.
- Use of air decks to manipulate the blast.

The following Blast Management is proposed.

1. No explosives or detonators will be stored on site. Blasting materials will only be brought to site by a licensed supplier. The materials will be blended on site, only at the time of charging the blast holes; the same practice used in all hard rock quarries.

2. Qstone will inform the nearby residents prior to the commencement of blasting.

3. Qstone will undertake blasting in compliance with *Australian Standard 2187* which sets out good management practices and procedures for blasting.

4. Qstone will comply with the *Environmental Protection (Noise) Regulations 1997* for air blast over pressure and *Australian Standard AS2187 Explosives Storage Transport and Use* for ground vibration. They will also comply with any Department of Environmental Regulation Licences, if they condition blasting.

5. Blasting consultants will be consulted for the design of blasting, to assist and ensure that the most efficient, safe and environmentally sensitive blasting techniques are used.

6. All drilling equipment will be fitted with noise suppression devices and regularly checked to ensure compliance with all standards.

7. All blasts will be designed to heave the rock with millisecond delays in firing to reduce the impacts. This produces a slightly extended rumble rather than a loud bang.

8. There is potential to have smaller more frequent blasts or larger less frequent blasts. At other quarries residents prefer larger less frequent blasts and Qstone will use this procedure.

9. For each blast an assessment of the risks from fly rock will be made to determine what management is required for each individual blast for site operations.

10. All initial blasts will be monitored by a consultant. Later blasts will be monitored either by consultants or by Qstone staff under the supervision of consultants depending on the frequency of blasts.

11. Initial blasts will be small, with blast size increasing only gradually. The blasts will be monitored and the size of subsequent blasts will only be increased when Qstone and the consultants are confident that impacts of a larger blast can be maintained within the required levels.

12. Blast monitoring stations will be established at strategic locations around the pit.

13. Qstone will have in place an operational Blast Management Plan that will detail, among other procedures, that only a licensed Shotfirer will be permitted to use explosives, and the procedures for on site warning of an impending blast, traffic and road management. This will be based on an appropriate guideline such as *The Institute of Quarrying Australia, Explosives Management.*

14. A record will be kept of all blast monitoring and the weather conditions at the time of blasting.

15. Blasts will normally be conducted between 11.00 am and 2.00 pm.

16. During normal operations, the Shire of Mt Marshall and any of the four closest residences who wish to be informed will be notified 24 hours prior to a blast occurring.

17. A complaints register will be maintained and all complaints will be investigated. Records will be kept of all complaints and the results of the investigations into those complaints.

Summary

Blasting impacts is regard as low.

Qstone is committed to minimising blasting impacts and will implement the measures outlined above.

Appendix 2

Water Management Plan

Lots 606 and 3029

Potts Road, Wondanning

Shire of Mt Marshall

Qstone Pty Ltd

Landform Research
Land Systems - Quarries - Environment
ABN 29 841 445 694

CONTENTS

WATER QUALITY MANAGEMENT

FIGURES

See the figures attached to the main report.

WATER QUALITY MANAGEMENT

1.0 BACKGROUND

1.1 Preamble to updated Water Management Plan

The site has been investigated a number of times by drilling and other means and mapped by geologists, most recently during 2016

The extent of the hard rock, the soils and the hydrogeology have been examined in various seasons.

In the scale of things this is a very small pit and operation compared to other hard rock quarries, only producing 20 000 to 30 000 tonnes of rock per year.

The hydrogeology of such operations is well known and they operate with very effective water management. The same methods are to be used on this site.

The proposed hard rock quarry is designed to comply with the Department of Water, 2013, *Western Australian water in mining guideline*.

1.2 Water Quality Protection Guidelines

The protection of water whether groundwater or surface water is an important part of the management of quarries. Different types of quarries have different potential impacts which are listed below in general terms. Not all potential impacts will apply to this quarry and the main impacts affecting this site are also listed.

Guidance on the quality of water can be found in;

- *Western Australian Water Quality Guidelines for Fresh and Marine Waters, EPA Bulletin 711, 1993.*
- *ANZECC, 1992, Australian Water Quality Guidelines for Fresh and Marine Waters.*

A number of documents provide guidance on the management and disposal of surface water that can lead to waterways, wetlands and underground water systems. These mainly apply to urban development but the methods are also applicable to the quarrying industry.

- *Engineers Australia 2003, Australian Runoff Quality, National Committee on Water Engineering.*
- *Stormwater Management Manual for Western Australia, Department of Environment WA, 2004.*
- *Guidelines for Groundwater Protection in Australia, ARMCANZ, ANZECC, September 1995.*

Documents specific to the mining and quarrying operations are the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing.

- *Overview*
- *Minesite water quality monitoring*
- *Minesite stormwater*
- *WQPN 28 Mechanical servicing and workshop (2006)*
- *Mine dewatering*
- *WQPN Landuse Compatibility in Public Drinking Water Source Areas (2004)*
- *WQPN 11 Water quality management in mining and mineral processing: mine dewatering.*
- *WQPN 15 Extractive Industries near sensitive water resources.*
- *Department of Water – Water resource considerations for extractive industries.*

- *Department of Water South West Region Guideline – Water resource considerations for extractive industries.*
- *Department of Water, Western Australian water in mining Guideline, 2013.*

The continued excavation complies with all the documents above. The most relevant documents are WQPN 15 *Extractive Industries near sensitive water resources* and *South West Region Guideline – Water resource considerations for extractive industries.*

A water monitoring program is proposed. See the end of the Water Management Section.

Potable water will be brought to the site. Serviced portable support facilities and ablutions are to be at the western end of the site.

1.3 Overview of Operations

Pegmatite hard rock is a valuable community resource and quarries have operated in the area discontinuously for many years and currently operate in the Shire of Mt Marshall.

Excavation is anticipated to be 20 000 – 30 000 tonnes of product per year which is a very small hard rock operation.

The pit lies on a very low gentle ridge, only some 10 metres above the surrounding plain.

1.4 Water Source Protection Areas

There are no water source protection areas nearby.

2.0 PHYSICAL ATTRIBUTES

2.1 Geology and Geomorphology

The pegmatite consists of quartz, feldspar and mica and is expressed on the surface at Couper's Prospect. Intruded into the pegmatite is a quartz blow that outcrops over a smaller area forming a low ridge. The quartz may be a last phase crystalisation of the pegmatite magma or a separate intrusion. There is some evidence of a separate intrusion by the irregular outline of the contacts and the quartz extending to depth around Drill Holes 25 and 27.

Previous drilling determined that the pegmatite body trended approximately 120 degrees with a diameter of over 120 metres.

Field mapping of the quartz has slightly extended the outcrop.

The surface expression is in the form of a quartz/pegmatite blows, that occur approximately 60 metres apart and site slightly elevated from the surrounding land. Data from the drill holes suggests that the quartz is either intruded from below or is a reflection of a pod of quartz that was squeezed in a number of directions into a multi pronged body with irregular contacts.

The quartz bodies trend generally east west with the main body between Drill Holes 25 and 27. The quartz bodies are cut by a dolerite dyke trending around 67 degrees to the east north east and dipping around 70 degrees to the north.

The intrusion of the dolerite dyke splits and offsets the quartz bodies and provides them with sharp contacts. The nature of the dolerite dyke suggests that the intrusion occurred along a fault line with minor movement and the western body offset by about 40 metres to the north.

Outcrop of the quartz is common and around the perimeter is covered by soil.

2.2 Regolith and Soils

The soils consist of shallow brown loams over pegmatite outcrop with the soils becoming slightly deeper off the edges of the low pegmatite ridge.

2.3 Climate

The climate is Mediterranean with warm summers and cool moist winters.

Data is recorded at the Bencubbin Weather Observation Station.

Temperatures are relatively mild, and extremes above 40° Celsius in summer and below 2° Celsius in winter are uncommon.

The temperatures range from maxima of 16.4 degrees C in winter to 34.5 degrees C in summer, with minima ranging from 6.0 degrees C in winter to 18.2 degrees C in summer.

The area receives a mean annual precipitation of 315.4 mm with low peak rainfall from May to August when most of the annual rainfall is received. The driest months are during November to January when the monthly rainfall averages drop to under 10.0 mm.

The mean daily evaporation records are not recorded locally but normally exceed precipitation in all but the main winter months.

Relative humidity in the area is high, with the mean humidity ranging from 44 - 83% at 9.00 am, to 24-57% at 3.00 pm.

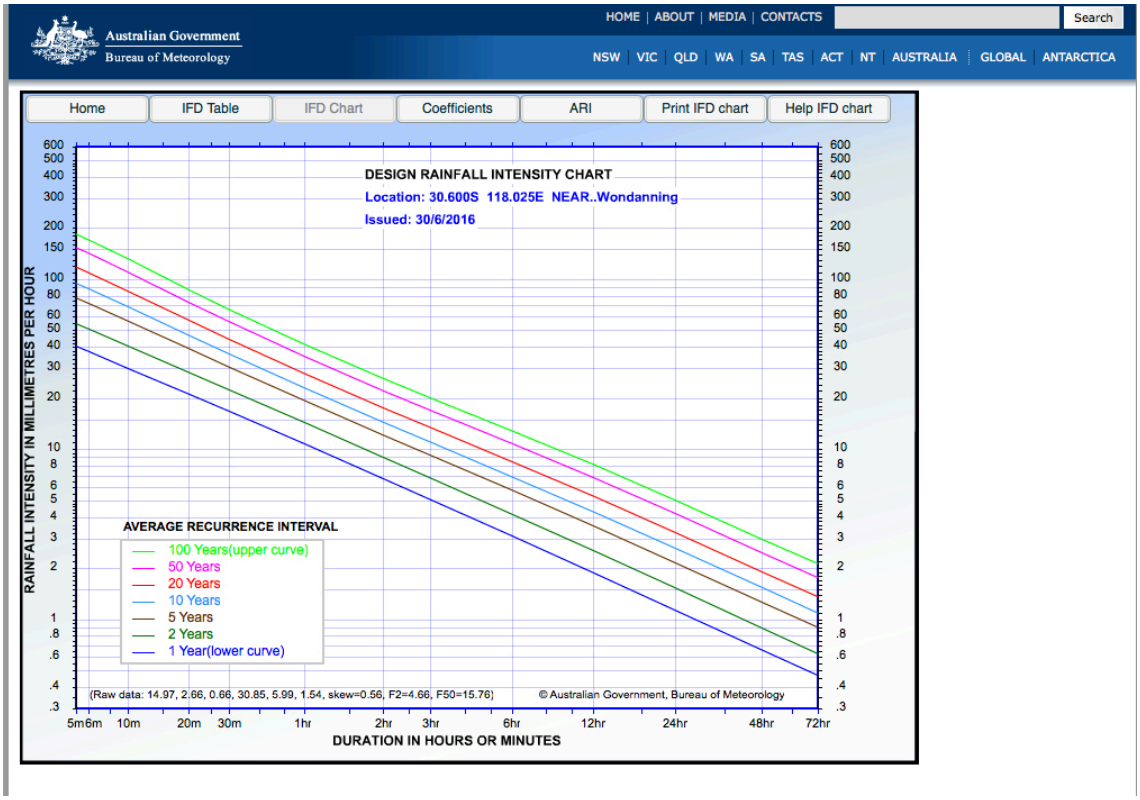

Figure 1 Rainfall Intensity Chart

2.4 Hydrogeology – Surface Water

- ***Local Drainage***

There is no surface drainage due to the resource being located on a slight rise with all water draining generally to the west, east and north,

There are no nearby watercourses and no wetlands.

Groundwater

The water table was only intersected in one drill hole at a depth of 22 metres.

Government Policies currently provide for a separation of 2 metres to the water table outside Priority 1 Groundwater Protection Areas. As the natural groundwater is some 20 metres below the land surface and the resource extends to 10 – 15 metres below the surface the groundwater is unlikely to be intersected.

With such low rainfall it is anticipated that the groundwater will be brackish to saline with low recharge.

At such depths to the groundwater, it is estimated that perhaps only 2 - 5% of the rainfall will currently reach the water table based on the depth of the water table and the rainfall.

Hydrogeology

Hard rock is tight and has some fractures. The elevation of the proposed pit is well above creek elevation so the water table will not be intersected.

The groundwater is not permanent but runs along the top of the granite/pegmatite at the base of the soil.

For the pit, the area of catchment is small being almost only the small low peak of the gentle ridge.

As noted above the granite is tight and there is minimal seepages into the pits in such situation. All the existing hard rock quarries are located in a similar hydrogeological situation where the base of the pit is at or lower than the nearby creeks and yet seepages are minimal.

Landform Research works with the main hard rock quarries which all operate without significant water inputs and no issues from the groundwater even though ephemeral and some permanent creeks are located nearby. For example Hanson Red Hill and Byford Quarries, Boral Orange Grove Quarry, WA Bluemetal Whitby Quarry, Hanson Bunbury and Mt Barker Quarries and Italia Roelands quarries.

There may be some minor perched or trapped water occurring in fractures of the hard rock, but this does not constitute the water table.

There is almost no upslope catchment distance upslope from the quarry and therefore little or no potential for springs or water seepages of any consequence to occur or impact on the operations.

2.6 Recharge

Recharge Changes

There will be no changes to recharge from rainfall or flow as there are no creeklines or wet areas nearby.

In the pit itself all water will be directed to the base from which it will be used for dust suppression if sufficient or it more likely will evaporate. That water will reduce with respect to recharge by a minute fraction, however much of the water will be generated from the greater runoff from bare excavated rock compared to pasture or native vegetation on natural soils

2.7 Wet Site Flora

There are no wet sites or wet site flora on or near the proposed quarry.

2.8 Wet Site Fauna

Fauna will not be dependent on wet site conditions. See above

2.9 Wetlands

There are no on site or nearby wetlands that will be impacted.

3.0 EXTRACTION METHODS

The methods of extraction will be the same as any small local hard rock quarry and are described in the Excavation and Rehabilitation Management Plan

The processes to prepare the processing area and the pit are similar.

3.1 Proposed Operations

Preparation of the pit

The quarry is located on a gentle low ridge approximately 350 metres east west by 100 metres north south split into two pods of pegmatite.

1. The eastern portion of the ridge has the pegmatite exposed but for surrounding areas, topsoil will be stripped from the area under development and where possible spread directly onto an area to be rehabilitated, or stored in a separate dump for later use. This is normally undertaken during drier months where possible to minimise soil and overburden sticking to mobile plant. The topsoil will be used to provide a substrate for rehabilitation.

2. Topsoil is relatively thin and in the order of 100 mm.

3. Overburden will then be stripped and stockpiled for rehabilitation.

4. The construction work will be completed using a bulldozer or excavator and a loader to extract and move overburden.

5. Some substandard rock is likely to have to be blasted to enable it to be moved to create an operational face of up to ten metres high.

Hard Rock Excavation

All operations on a quarry fall under the requirements of the *Mines Safety and Inspection Act 1994*, which determines the nature of the excavation, operations, faces, vehicles and all operational procedures. All designs and operations will comply with the Act.

1. The pit will be operated as one face of up to 10 metres or two smaller faces, which ever is the most efficient.

2. Small bunds will be constructed on the tops of the faces at the edges of benches to prevent surface water run off into the pit and for safety.

3. Blast holes will be drilled by a percussion drill fitted with dust extractor and collector systems. The Director of Qstone Pty Ltd is an experienced driller and shotfirer.

4. Sequential blasting techniques are to be used to make each blast effectively a series of small explosions. This will be enabled through the use of millisecond delays on the blast pattern, which lifts and breaks the rock rather than throwing it.

5. As pegmatite rock is well jointed it is anticipated to readily break into small enough fragments for use without the need of further breaking for feeding to the crusher. However there are some locations where the joint pattern is much wider spaced and these areas will require closer holes to break the rock to small enough sizes to form the raw feed to the crusher.

6. The rock broken by each blast will fall in a heap at the base of the face being excavated.

7. A front end loader or excavator will be used to load the broken rock into off-highway dump trucks for transport to the crusher along the haul road. Normally an excavator is used because it has a longer reach and can operate more safely on benches.

8. At times a rock breaker may be required to break oversize rock to enable it to be fed to the primary crusher. The rock breaker will be used in the pit, low down in the landscape to minimise noise generation and carry.

9. The haul road will remain unsealed so that it can be modified from time to time as quarrying progresses, and unsealed roads provide better grip for haul trucks.

10. The haul road gradient are to be retained to the lowest practical angle to reduce truck noise, fuel usage and increase safety. The road system will have edge bunding, rock barriers and marking with used delineators.

11. All haulage routes and other roads are to be continually damped down in drier conditions as required to manage dust, although this is not seen as likely to be necessary be cause of the small volumes produced.

12. A dedicated water truck will retained as required.

13. For rehabilitation, and following completion of any parts of the excavation, the faces are to be backfilled with overburden and the brow broken down.

14. The final profile of the benches/faces will be to *Mines Safety and Inspection Act 1994* as explained in documents such as *Guidelines on Safety Bund Walls Around Abandoned Open Pits (DMP 1991).* Backfill and rehabilitation of any completed faces will continue progressively as each section of the quarry face is completed.

Preparation of the processing area

1. The processing areas are to be located on already cleared land, The processing area will be located low in the landscape on cleared land.

2. Processing areas will be located where noise can be most easily managed.

3.2 Water Source for Operations

Washing of some specialty products may be used. If required water will be brought to site and recycled through a sediment settlement basin.

With such a remote location the main use of water will be for occupational dust suppression, particularly for drilling and other parts of the processing cycle.

Potable water is to be brought to site as needed.

4.0 PROTECTION OF WATER QUALITY

The location and design of the pit and the processing/stockpile area provides substantial buffers to the watercourse, and naturalised dam, and is designed to comply with Department of Water, *Water resource considerations for extractive industries,* DOW South West Region Guideline.

4.1 Pit and Processing Selection

There are no water courses that will be impacted on by the pit or proposed processing area.

4.2 Dewatering

No dewatering is proposed. Water collecting in the pit will be directed to a sump and used for dust suppression. The source of this water is surface water runoff generated by the hard surfaces of the pit.

4.3 Recharge

Surrounding Landuse Changes

There will be no changes to recharge from rainfall or flow in the creeklines on the non disturbed areas.

In the pit itself all water will be directed to the sump from which it will be used for dust suppression. That water will reduce with respect to recharge.

The surrounding land will remain as a productive agricultural property used for cropping.

Water management features such as contour banks, sediment trapping and infiltration facilities and farm dams have been developed as part of good management of grazing land on slopes and in conjunction with the approved gravel operations. As such there will be no change to the recharge and flows from the surrounding land.

There will be minor clearing so there will be little increase in recharge from clearing. Tree planting and revegetation of the upper bench will be undertaken when it is rehabilitated and this will compensate for any clearing with respect to recharge.

Over time, as the quarry is worked and revegetated, the recharge will drop slightly.

Water generated from hard surfaces

The small area to be opened of up to 5 hectares will not provide any significant change to the recharge on site.

At the end of excavation there will be revegetation planted on the slopes that will include trees and shrubs which will in turn reduce the recharge on those areas.

Water Use

There will be minimal

4.4 Management of Surface Water Quality

The surrounding land is relatively flat to very gently sloping and there are no close watercourses.

On site water management will be achieved through the use of contour banks, small detention and soakage dams and other measures to ensure that surface water and or sediment will not impact on agricultural land.

The extraction of hard rock is a chemically free operation with the only liquids used being lubricants for machinery. Extractive Industries are one of the few industries permitted to operate in Groundwater Source Protection Areas.

4.5 Groundwater Protection

The hydrogeology of such operations is well known and they operate with very effective water management. The same methods are to be used on this site and comply with best practice. For example *Department of Water, Western Australian water in mining Guideline, 2013* and Beale and Read, 2013, *Guidelines for Evaluating Water in Pit Slope Stability*, CSIRO Publishing.

The granite basement rock is very tight and only minor water will seep through joints and weak structures. There is no evidence of water seepages in the rock faces apart from small surface water flows. The water table is not intersected and not likely to be because the winter water table is at the base of the watercourses.

There are minor surface water flows and seepages in winter from water infiltrating through the soils and then running along the less permeable subsoils and hard rock, particularly north of the pit. These dry up in spring. In the pit itself there are no seepages, even in winter.

Tight granite and pegmatite rock like this normally prevents groundwater flows in or out apart from minor surface seepages through fractured areas as is well known.

Little water will infiltrate through the base of the pit, access roads or processing/stockpile area because of the hard surface. Any such water will be filtered by the water flowing through the regolith medium.

The main water management therefore relates to surface water.

Quarrying is a clean industry, well known for minimal risk to aquifers. For example sand excavation is able to be conducted within Priority Groundwater Areas when a separation of 3 metres to the water table is maintained.

4.6 Salinity Protection

The quality of water that will collect in the base of the pit will be fresh.

The only potential changes to salinity is through use of water, over pumping of groundwater or evaporation. None of these scenarios occur as a result of hard rock excavation and therefore there will be no change to salinity.

Sub surface salinity can, in some parts of the State, be mobilised when vegetation is cleared from deep laterite profiles particularly in lower rainfall areas, because of increased recharge of subsoil moisture. There is no salt stored in the hard rock regolith on site because the high basement is so shallow.

No clearing of laterite profiles is proposed for the hard rock quarry.

The amount of clearing is minimal, the vegetation is very sparse and there is no evidence of subsurface salinity. Therefore the proposed clearing will not change the local recharge.

4.7 Acid Sulfate Risk

There has been an increased interest in acid sulfate soils since the release of WAPC Planning Bulletin 64. However the interest has been over reactive and conditions and risk applied in many areas where there is no geological risk or evidence of acid sulfate.

Definitive survey procedure is produced in DEC (DER) 2013, *Identification of Acid Sulfate Soils and acidic Landscapes* and within document Acid Sulfate Soil Management Advisory Committee NSW, 1998, *Acid Sulfate Manual.* This information forms the basis for much of the assessment procedures in Australia, including those adopted by the Western Australian Planning Commission and the Department of Environment Regulation.

The *Acid Sulfate Manual* adopts the procedure of reviewing the published data followed up by field assessment, which has been completed for this site. If a geological risk is determined, then a Preliminary Acid Sulfate Assessment is conducted.

Acid Sulfate Soils can potentially form under reducing conditions when there is a source of carbon and a source of sulfur (normally from sea or saline water). Micro-organisms are thought to play an important role in reducing the sulfates within the sediments to form the iron sulfide. It is a natural phenomena, that can be exacerbated by disturbance.

Potential acid sulfate conditions most commonly form under current or past estuarine conditions, peaty conditions, and may also result from weathering of some geological formations and situations which contain sulfides.

The soils most at risk are normally saline/estuarine soils, gley soils, peat and some organoferricretes when exposed to the atmosphere.

Acid sulfate only becomes a potential risk when a number of circumstances are present.

- There is rock, soil or regolith present that is carrying sulfides.
- Sulfide carrying materials from below the water table are to be exposed to the atmosphere.
- Excavation below the water table is to be carried out exposing the sulfide carrying materials to oxygen in the atmosphere.
- Dewatering of the sulfide carrying materials is proposed, exposing them to oxygen.
- Exposure of peat or organoferricrete materials, that were permanently under reducing conditions, to the air.

None of these at risk conditions occur on site.

An examination of the granitic and pegmatitic hard rock does not reveal any significant sulfides that would form acidic conditions on oxidation. In fact the presence of sulfide is detrimental to the use of hard rock in a number of cases and such rock is therefore not selected for extraction.

Therefore there is no risk of acid sulfate conditions.

4.8 Waste Rock and Tailings Management

Waste and Tailings management is considered in;

- *Department of Mines and Petroleum, 1999, Mining Environmental Management Guidelines, Safe Design and Operating Standards for Tailings Storage.*

As all the rock is used in one type of product or another there is no waste rock or tailings. Overburden is used to provide a physical and landscape banks barrier around the site, along the west and now extending to the north.

Partially weathered or subgrade hard rock is in this case going to be utilised and used in blended construction and road making products.

Subgrade materials will be incorporated into the bunding or used by inclusion into one of the quarry products. Quarry fines will be used in products.

Potential "at risk" Waste Inventory - Characterisation

Type	Comment	Treatment	Reference
Saline surface water	Not present		
Saline ground water	Not present		
Acidic materials and drainage	Not present		
Sodic or dispersive materials	Not present		
Asbestos – asbestiform minerals	None present		
Radioactive materials	Not present		
Metallic or chemical materials	Not present	If washing of specialty products is undertaken, the sediment from the filtration/recycle basin will be used as backfill in the pit.	
Tailings storage	Not required		

Ablutions waste		Serviced portable facilities	Water Management Plan – Attached.
Dangerous Goods and Hazardous Materials	***None will remain on closure***.	There are normally no hazardous materials used for mining apart from fuel, and servicing. The only other materials are for tasks such as weed management and are dealt with under those sections.	
	EXPLOSIVES ***None will be stored on site.***	Brought to site as required by Licensed contractor and consultant. No blast materials will be stored on site.	
	FUEL The various plant will be refueled from mobile tanker. ***None will remain on closure***.	Any soil or other materials with drips and spills will be removed offsite to an approved waste site or location. Fuel is discussed in the Water Management Plan, Attached.	Water Management Plan – Attached
	SERVICE MATERIALS Only minor lubrication will be conducted on site All major servicing will be conducted offsite. ***None will remain on closure***	Any wastes will be collected and removed from site promptly to an approved recycling or waste disposal area. Servicing is discussed in the Water Management Plan. Only minor servicing will be conducted on site. All major servicing will be conducted offsite.	Water Management Plan – Attached
General waste		Regularly removed from site to an approved disposal area	Water Management Plan – Attached

- Wastes generated will be recycled wherever possible and periodically disposed of at an approved landfill site.

4.9 Unauthorised Access and Illegal Dumping

The potential for rubbish to be dumped relates mainly to unauthorised access and is low as the site is set back from roads.

The site lies well off public roads. Even so access restrictions such as gates or barriers will be installed when the site is unmanned and equipment retained on site.

- Any illegally dumped materials are to be removed promptly to an approved landfill or other suitable site, depending on the nature of the material.

4.10 Solid Domestic and Light Industrial Wastes

Non essential or old plant and materials will be removed from the site. Locked gates and the existing fences will be maintained to prevent illegal dumping and contamination of water.

All solid domestic and light industrial wastes will be stored in commercial waste storage containers and/or removed to an approved landfill facility. There will be no waste disposal on site. Waste storage containers will be sealed so that rainfall cannot enter, therefore preventing the formation of leachates.

Wastes generated will be recycled wherever possible and periodically disposed of at an approved landfill site. Any illegally dumped materials are to be removed promptly to an approved landfill or other suitable site, depending on the nature of the material.

Regular inspections (at least weekly) are conducted to ensure no wastes, litter and the like are present in or around the excavation and processing area.

4.11 Wastewater Disposal

A service portable toilet system will be used when the site is manned. Serviced means they are pumped out by a licensed contractor.

4.12 Refuelling

The protection of water from fuels and other chemicals is an important part of the management of quarries. Different types of quarries have different potential impacts which are listed below in general terms. Not all potential impacts will apply to this quarry and the main impacts affecting this site are also listed

Extraction of hard rock is a clean operation similar to sand excavation in the nature of the risk to groundwater. Similar quarries have operated locally for many years with no known significant pollution incidents.

No chemicals are used apart from normal lubricants, which is similar to sand excavation, and sand excavation is one of the few industries that are permitted to operate in a Priority 1 Public Drinking Water Source Area, indicating the clean nature of the activity. See Department of Water *Land Use Compatibility in Public Drinking Water Source Areas.*

All spills are to be cleaned up in accordance with the summarised procedures following.

> *Documents specific to the fuel and maintenance are the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing*
>
> - *Mechanical servicing and workshop facilities*
> - *Above-ground fuel and chemical storage*
> - *WQPN 28 Mechanical servicing and workshop (2006)*
> - *WQPN 15 Extractive Industries near sensitive water resources.*
> - *Department of Water – South West Region Guideline – Water resource considerations for extractive industries.*

A list of the management actions for maintenance is provided. The actions will be used where applicable and as the opportunity presents to maintain water quality on this site.

> **Fuel Management Plan**
>
> ***Fuel Storage***
>
> Currently it is proposed to use mobile tankers to refuel mobile and fixed plant when the site is manned.
>
> However for an excavation campaign, fuel storage may be required, using a mobile self contained double skinned facility located in a bunded and lined enclosure in accordance with DOW - DMP Water Quality Protection Guidelines for Mining and Mineral Processing, *Above-ground fuel and chemical storage.* See Servicing and Maintenance and Fuel Spill Management Plan below.

Fuel Spill Management Plan

- Fuel and maintenance will be carried out in accordance with the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing, *Mechanical servicing and workshop facilities* and *Above-ground fuel and chemical storage*.

- Diesel fuel will be stored in either a bunded lined approved tank or a double lined tank or transported to site as required by mobile tanker.

- Soils and roadbase hardstand such as those on this site are adsorptive. The main risk of contamination is the minor drips that occur during the removal of hoses etc. Minor spills are quickly degraded by soil microbial matter.

- Refuelling and lubricating activities only occur in designated areas. Equipment for the containment and cleanup of spills is to be provided in these areas.

- Spillage will be contained in plant and working areas by shutting down plant or equipment if the plant or equipment is the source of the spill (provided it is safe to do so).

- In the event of a spill or adverse incident, activities will be stopped in that area until the incident is resolved.

- Any spills will be contained by the excavation or processing area. A fluid spill emergency response kit is proposed. For larger spills soil and resource will quickly be placed around the spill to contain it in as small an area as possible. When contained, the contaminated aggregate/loam soils will be scooped up and removed to an approved landfill or other approved site.

- All significant adverse incidents (such as a fuel spill of >5 litres) in one dump, are recorded, investigated and remediated. A record is to be kept of incidents and the Local Authority and Department of Environment Regulation notified within 24 hours.

- The only other risk is from a tank rupture, but tanks are designed to manage this eventuality. A commitment is made to notify Department of Environment Regulation/Department of Water, the Shire of Mt Marshall and the landholder of any spill greater than 5 litres in one dump. This is much less than the DOW requirement trigger of 100 litres. Soil contaminated by large spills will be removed from the site to an approved disposal area.

- Spillage will be contained in plant and working areas by shutting down plant or equipment if the plant or equipment is the source of the spill (provided it is safe to do so).

- Transport chemicals in accordance with the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

4.13 Dangerous Goods and Hazardous Substances

There is no transport, storage or handling of hazardous materials involved in hard rock extraction apart from fuels and explosives which will only be on site for a small amount of time.

4.14 Servicing and Maintenance

Documents specific to the fuel and maintenance are the DOW – DMP Water Quality Protection Guidelines for Mining and Mineral Processing

- *Mechanical servicing and workshop facilities*
- *Above-ground fuel and chemical storage*

The main risk of contamination comes from tank or hose rupture on earth moving machines. A spill kit containing absorbent granules will be located on site for emergency use. A commitment is made to notify Department of Water and DMP of any spill greater than 5 litres. DER Guidelines suggest 100 litres but this is felt to be too high.

- All major servicing of vehicles will be conducted off site.
- Servicing plant and equipment will be in accordance with a maintenance schedule.
- Lubricating and maintenance activities are to occur in designated areas in the processing area and pit. Equipment for the containment and cleanup of spills is to be provided.
- Spillage will be contained in plant and working areas by shutting down plant or equipment if the plant or equipment is the source of the spill (provided it is safe to do so).
- Waste substances and chemicals will be stored in accordance with the Site Waste Guidelines.
- Waste oil and other fluids derived from the routine maintenance of mobile machinery, will be transported off site and disposed off at an approved landfill site. Grease canisters, fuel filters, oil filters and top-up oils will be stored in appropriate containers in a shed or brought to the site as required.
- Vehicle washdown is not proposed.
- Regular inspections and maintenance of fuel, oil and hydraulic fluids in storages and lines will be carried out for wear or faults.
- Accidental spill containment and cleanup protocol will be implemented as necessary.
- Any waste chemicals derived during routine maintenance activities will be stored in appropriate sealed containers within a designated storage area or taken from site and disposed of at an approved facility.
- Rubbish generated is to be recycled wherever possible and periodically disposed of at an approved landfill site.
- The site will be maintained in a tidy manner by removing all rubbish regularly offsite.

5.0 Monitoring

Water Monitoring

As there are no waterways, not monitoring will be possible apart from stormwater collecting in the base of the pit which will be used on site and not released, or evaporate.

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Appendix 3

Landform Research
Land Systems - Quarries - Environment
ABN 29 841 445 694

QUARTZ RESERVES
COUPER'S PROSPECT
MUKINBUDIN

20 April 2016

1.0 Background and Location

Couper's Potash Feldspar Project was investigated over a number of years, mainly in 1997 for feldspar.

The deposit is located at 597900E, 6615000N on the WA Bencubbin 1 : 250 000 Geological Sheet SH50-11, located 40 km north west from Mukinbudin, Western Australia.

The prospect was held under P70/1244. P/701245 and P70/1247 in the late 1990's. Some exploration work was completed before the tenements were relinquished. Previous work was completed by Commercial Minerals Ltd.

The resource area area is covered by degraded native vegetation that has been disturbed by previous drill lines and exploration/mining activities and surrounded by cropped land and native vegetation.

2.0 Aims

The aim of the previous exploration was for Potassium feldspar for fine china production.

The aim of this exploration is for quartz for the white aggregates market, feldspar for potential fine china and investigation of the accessory minerals for a range of potential uses including rare earths.

4.0 Previous Work

Previous exploration work conducted by Commercial Minerals Ltd consisted of geological mapping and the drilling of 36 percussion drill holes totaling 675 metres in 1997. Data is taken from Commercial Minerals Ltd annual report for 1997.

The drilling tested the depth and composition of part of the deposit for feldspar, but did not completely define the pegmatite laterally or to depth.

The testing also did not assess the quantity of quartz or nature and amount of accessory minerals.

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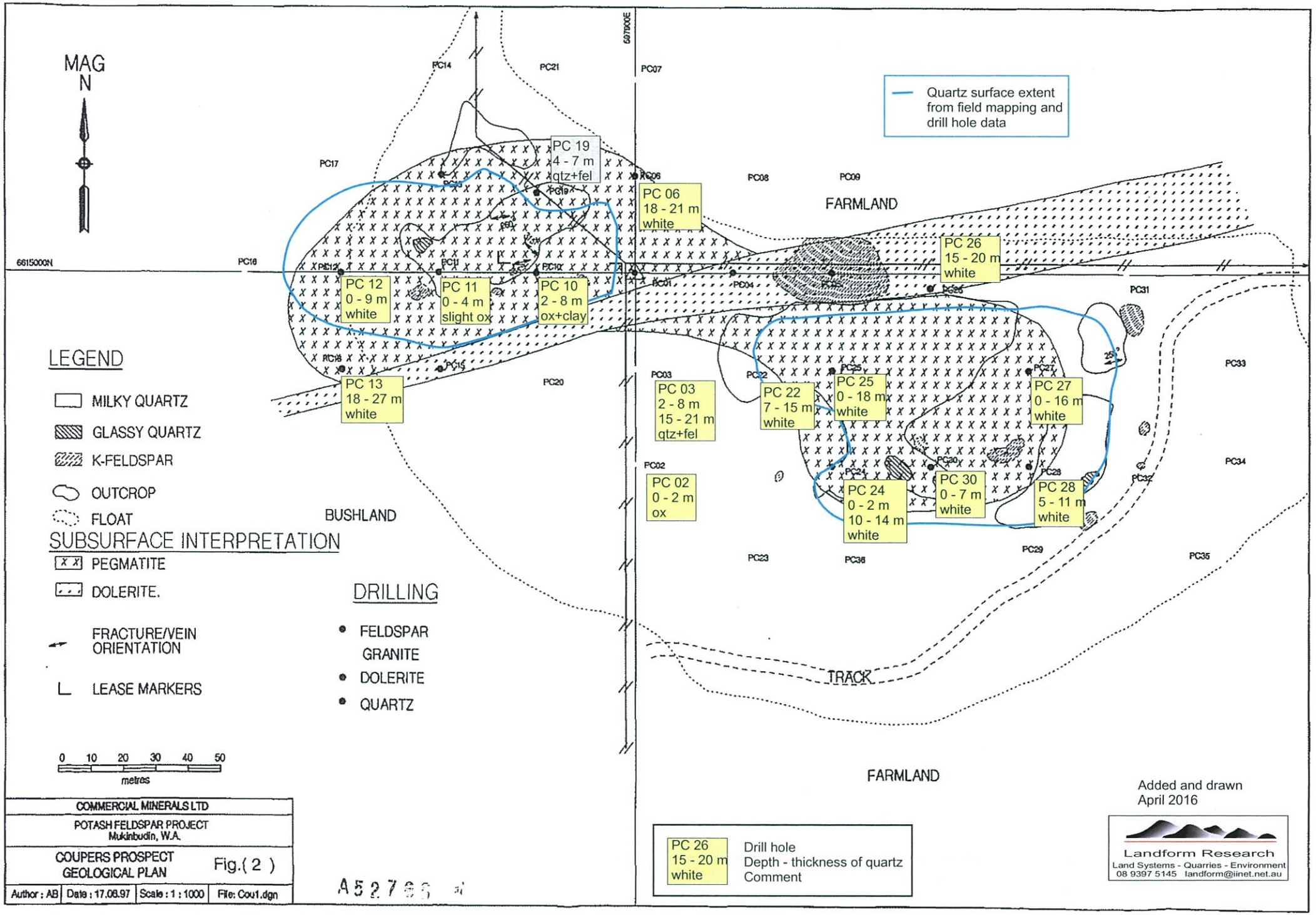
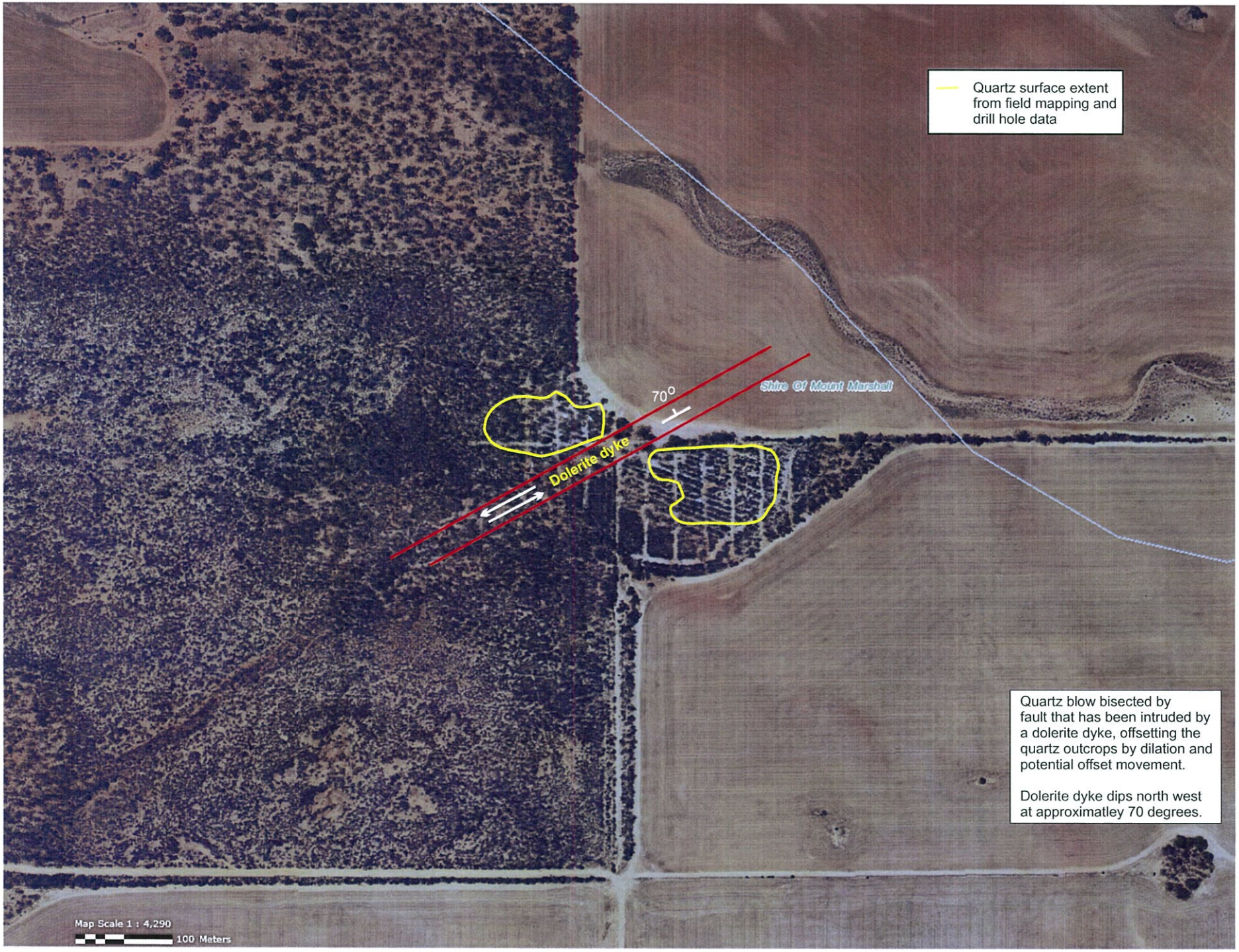
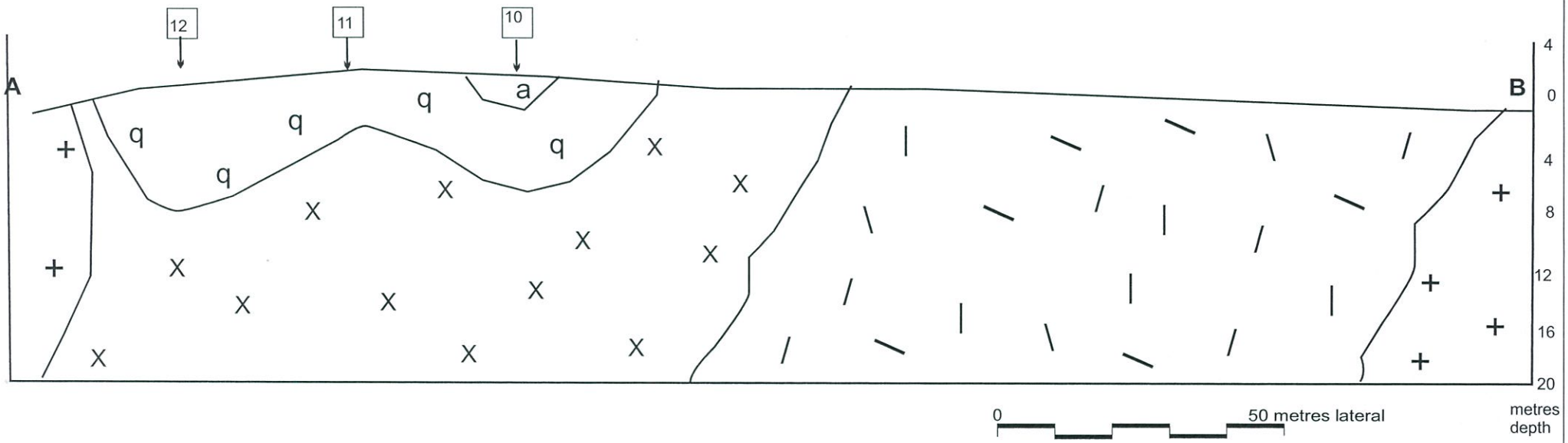
Mem Aus Geomechanics Soc – MEIANZ – FIQA Tel 9397 5145, landform@iinet.net.au


MAG
N
Quartz surface extent from field mapping and drill hole data
PC 19
4 - 7 m
qtz+fel
PC 06
18 - 21 m
white
FARMLAND
PC 26
15 - 20 m
white
PC 12
0 - 9 m
white
PC 11
0 - 4 m
slight ox
PC 10
2 - 8 m
ox+clay
PC 13
18 - 27 m
white
PC 03
2 - 8 m
15 - 21 m
qtz+fel
PC 22
7 - 15 m
white
PC 25
0 - 18 m
white
PC 27
0 - 16 m
white
PC 02
0 - 2 m
ox
PC 24
0 - 2 m
10 - 14 m
white
PC 30
0 - 7 m
white
PC 28
5 - 11 m
white
BUSHLAND
TRACK
FARMLAND
LEGEND
MILKY QUARTZ
GLASSY QUARTZ
K-FELDSPAR
OUTCROP
FLOAT
SUBSURFACE INTERPRETATION
PEGMATITE
DOLERITE.
FRACTURE/VEIN ORIENTATION
LEASE MARKERS
DRILLING
FELDSPAR GRANITE
DOLERITE
QUARTZ
0 10 20 30 40 50
metres
PC 26
15 - 20 m
white
Drill hole
Depth - thickness of quartz
Comment
Added and drawn
April 2016
Landform Research
Land Systems - Quarries - Environment
08 9397 5145 landform@iinet.net.au
COMMERCIAL MINERALS LTD
POTASH FELDSPAR PROJECT
Mukinbudin, W.A.
COUPERS PROSPECT
GEOLOGICAL PLAN
Fig.(2)
Author : AB
Date : 17.08.97
Scale : 1 : 1000
File: Cou1.dgn
A52766

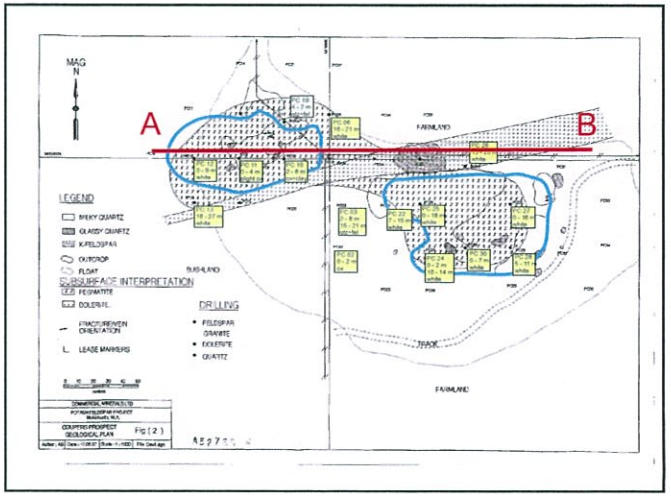

Quartz surface extent from field mapping and drill hole data
70°
Shire Of Mount Marshall
Dolerite dyke
Quartz blow bisected by fault that has been intruded by a dolerite dyke, offsetting the quartz outcrops by dilation and potential offset movement.
Dolerite dyke dips north west at approximatley 70 degrees.
Map Scale 1 : 4,290
100 Meters



+	Granite
X	Pegmatite
q	Quartz
/ | \	Dolerite dyke
10	Drill hole
a	Alluvium - colluvium
?	Uncertain

Note

It is difficult to distinguish pegmatite from granite from the drill logs. The holes were drilled for feldspar and not quartz



Section lines based on drill logs and ground observations.

Ground contours are estimated

Geological boundaries are plotted or interpreted.

Added and drawn
April 2016

GEOLOGICAL MAPS - SECTIONS
COUPER'S PROSPECT MUKINBUDIN

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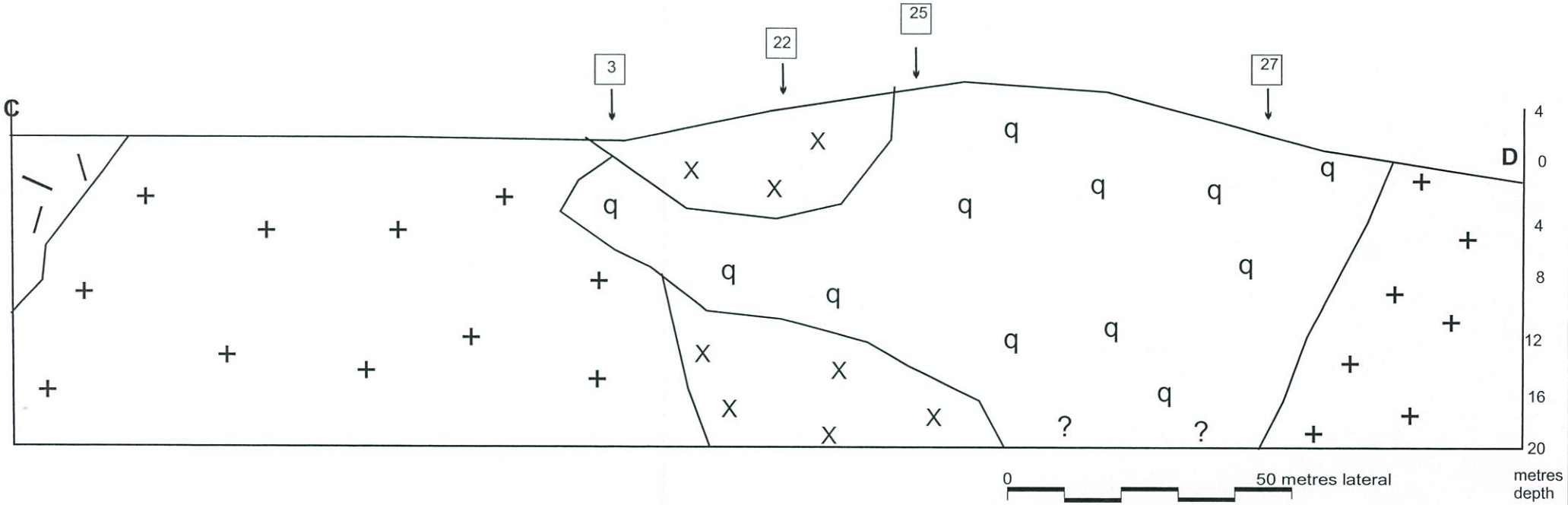

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X	Pegmatite
q	Quartz
/ | \	Dolerite dyke
10	Drill hole
a	Alluvium - colluvium
?	Uncertain

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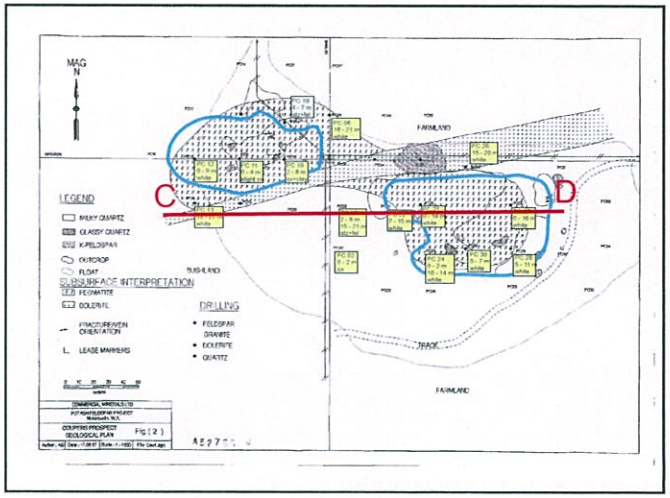

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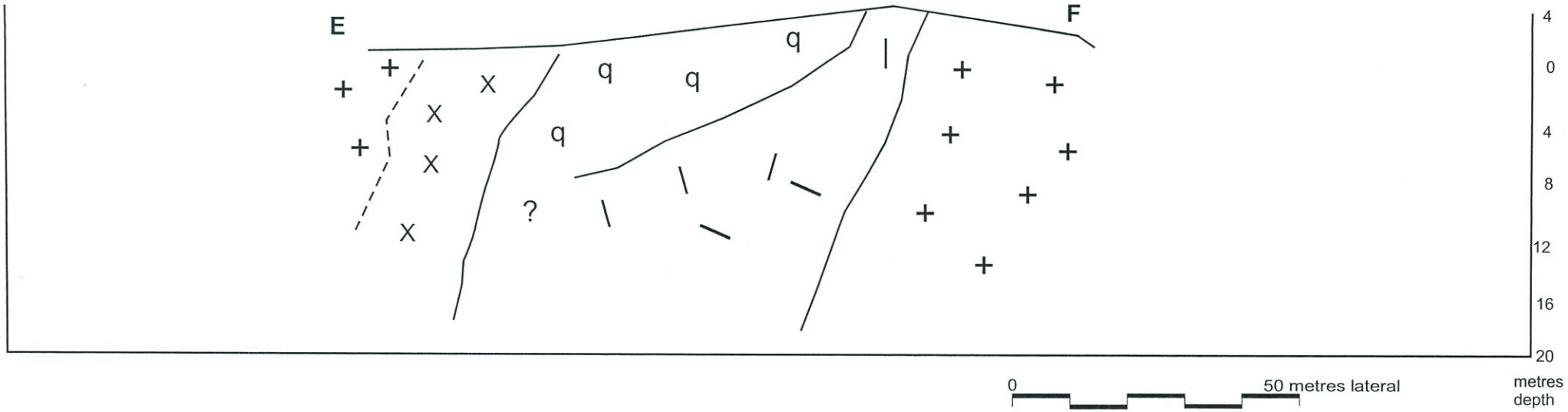
COUPER'S PROSPECT MUKINBUDIN



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X	Pegmatite
q	Quartz
/ | \	Dolerite dyke
10	Drill hole
a	Alluvium - colluvium
?	Uncertain

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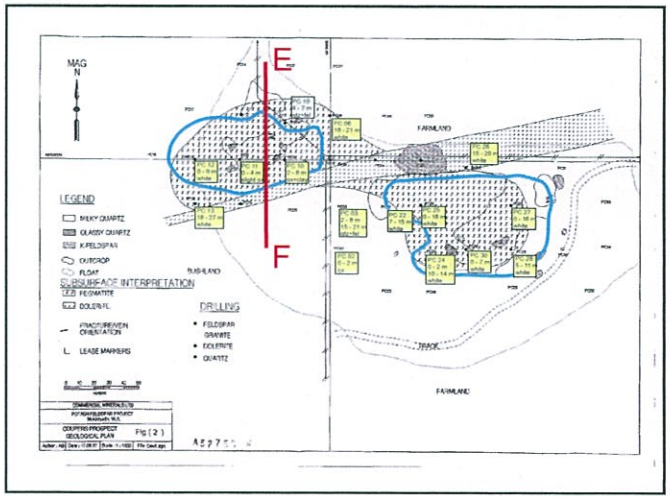

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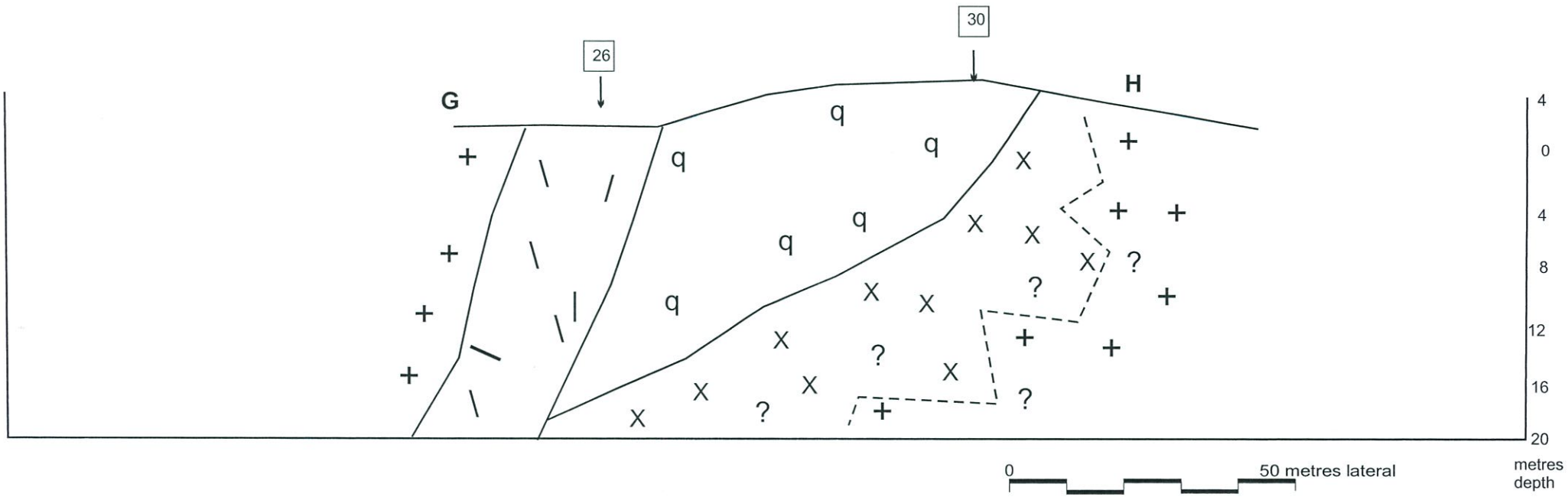
GEOLOGICAL MAPS - SECTIONS
COUPER'S PROSPECT MUKINBUDIN



+	Granite
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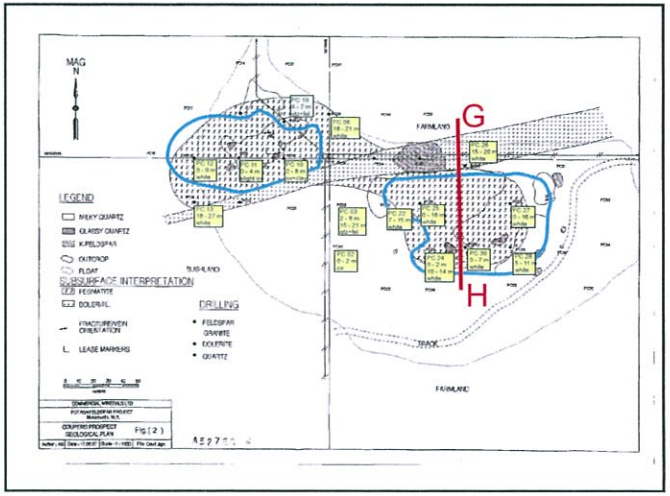
q	Quartz
/ | \	Dolerite dyke
10	Drill hole
a	Alluvium - colluvium
?	Uncertain

Note

It is difficult to distinguish pegmatite from granite from the drill logs. The holes were drilled for feldspar and not quartz



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GEOLOGICAL MAPS - SECTIONS
COUPER'S PROSPECT MUKINBUDIN

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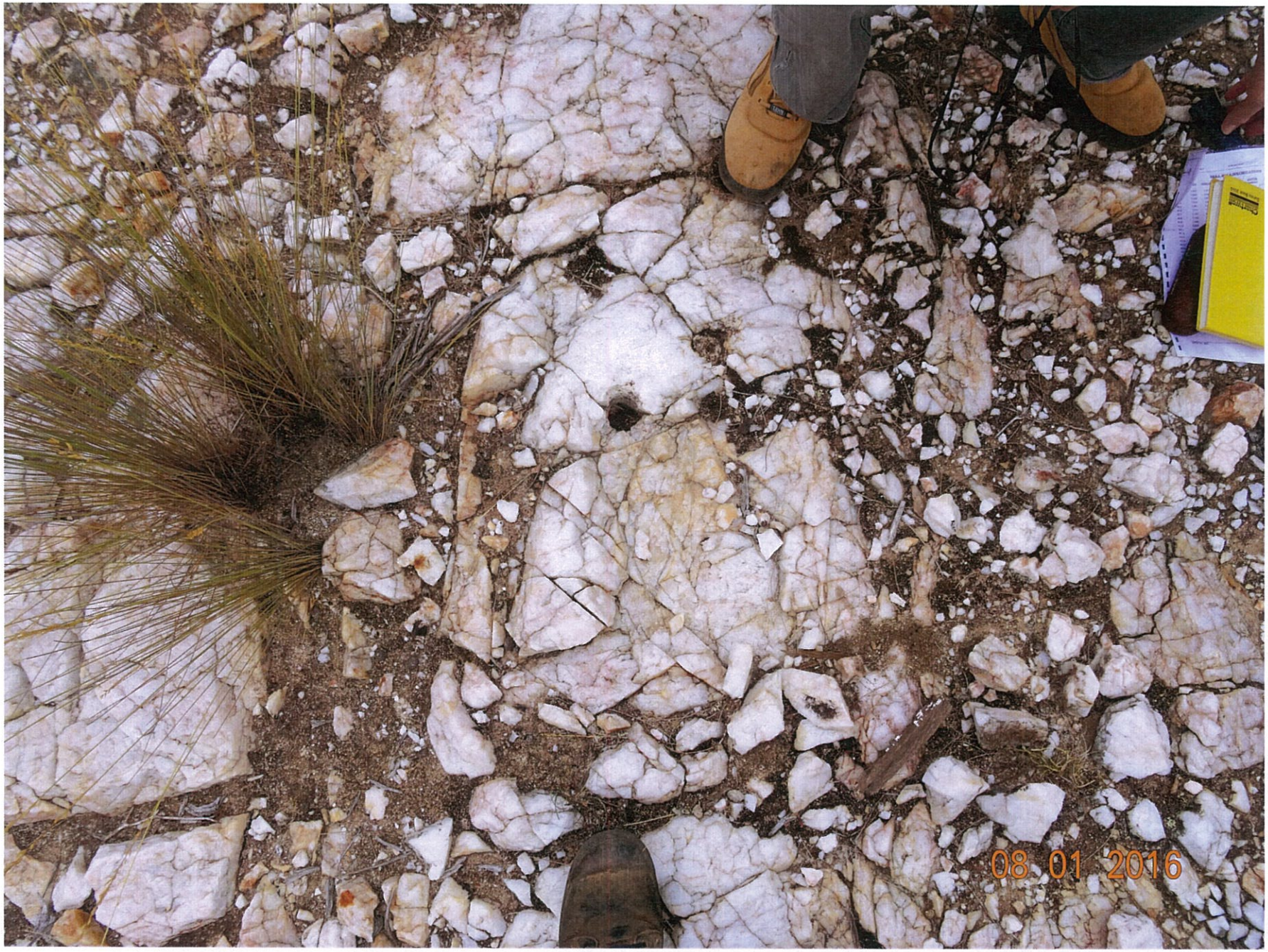
Main quartz blow near Drill Hole 22 looking east

Typical quartz outcrops in the eastern blow between Drill Holes 27 and 27

Close up of the quartz outcrop near Drill Hole 25



Outcrop of Quartz at Drill Hole 25

Appendix 4

Home > Map > Species Distribution By Area

Register Forgot Password

Species By Area

Specify a user-defined or predefined area to select.

Show optional criteria

Selection Type ○ Predefined ◉ User-defined

Circle

Search Radius 20 km

Latitude 30 ° 35 ' "S

Longitude 118 ° 10 ' "E

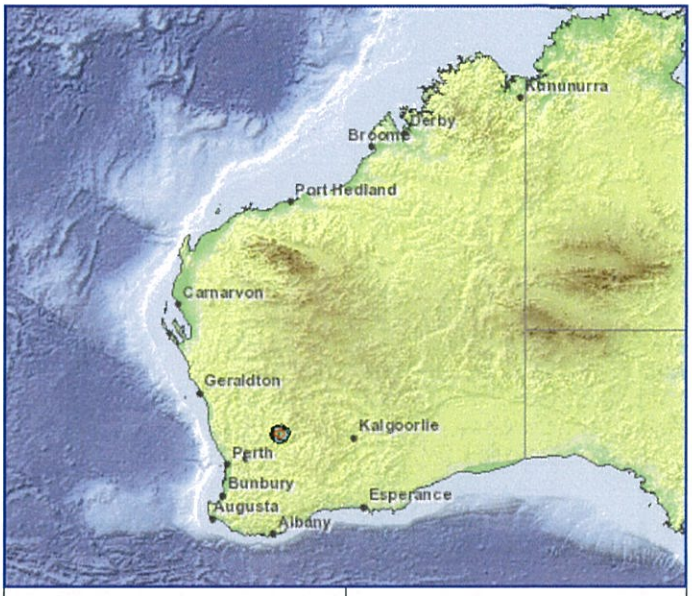
Submit Precise Coordinates

Group Results By Family

Species Symbol Classification ○ Default ○ Unique ◉ Group By

Zoom to selected species

Create Report Print Map



Customise Map

Search Results

Method='By Circle'; Centre=118° 10' 00" E,30° 35' 00" S; Buffer=20km; Current Names Only=Yes; Core Datasets Only=Yes; Group By=Family;

Family	Names	Records
Acanthizidae	6	43
Acarosporaceae	1	1
Accipitridae	3	11
Aegothelidae	1	2
Agamidae	2	5
Aizoaceae	1	1
Amaranthaceae	4	5
Anatidae	2	4
Apiaceae	1	4
Apocynaceae	1	3
Araliaceae	3	6
Ardeidae	2	3
Artamidae	2	6
Asparagaceae	6	13
Asteraceae	33	52
Boidae	1	1
Boraginaceae	2	2
Boryaceae	2	2
Bothriuridae	1	1
Brassicaceae	1	1
Buprestidae	14	24
Cacatuidae	1	16
Cactaceae	1	1
Campanulaceae	1	1
Campephagidae	1	9
Castniidae	1	1
Casuariidae	1	6
Casuarinaceae	1	1
Celastraceae	2	2
Charadriidae	1	3
Chenopodiaceae	12	22
Chrysomelidae	1	1
Coenagrionidae	1	1
Colletidae	2	3
Columbidae	2	21
Corvidae	2	17
Cracticidae	4	26
Crassulaceae	1	1
Cuculidae	1	2
Cupressaceae	1	1
Curculionidae	7	7
Cyperaceae	2	2
Dasyuridae	1	1
Dicranaceae	1	2
Dicruridae	3	23
Dilleniaceae	6	9
Diplodactylidae	1	1
Dipluridae	1	1
Droseraceae	1	1
Ecdeiocoleaceae	1	2
Elapidae	5	10

Ericaceae	5	10
Erythraeidae	1	1
Estrilidae	1	4
Euphorbiaceae	3	3
Fabaceae	55	155
Falconidae	3	14
Gekkonidae	3	8
Geraniaceae	1	1
Goodeniaceae	12	17
Grimmiaceae	1	1
Halcyonidae	1	3
Hemerocallidaceae	2	5
Hirundinidae	2	6
Hypoxidaceae	1	1
Idiopidae	1	5
Iridaceae	1	1
Juncaceae	1	3
Juncaginaceae	1	1
Lamiaceae	11	14
Lecideaceae	1	1
Lestidae	2	3
Libellulidae	2	3
Limnodynastidae	2	4
Loganiaceae	1	1
Lycosidae	1	1
Macropodidae	2	2
Maluridae	3	4
Malvaceae	5	7
Megapodiidae	1	11
Meliphagidae	10	56
Meropidae	1	2
Myrtaceae	75	213
Orchidaceae	4	5
Otididae	1	1
Pachycephalidae	4	35
Pardalotidae	1	14
Parmeliaceae	4	6
Petroicidae	3	12
Phasianidae	1	2
Pileolariaceae	1	2
Pittosporaceae	3	4
Plantaginaceae	1	1
Poaceae	16	25
Podargidae	1	1
Polygalaceae	2	3
Pomatostomidae	1	6
Portulacaceae	3	3
Proteaceae	26	47
Psittacidae	6	31
Pteridaceae	1	2
Pygopodidae	1	1
Rhamnaceae	2	2
Rubiaceae	1	1
Rutaceae	20	46
Santalaceae	4	9
Sapindaceae	4	8
Scarabaeidae	1	3
Scincidae	6	7
Scrophulariaceae	6	20
Siphulaceae	1	1
Solanaceae	2	2
Stenotritidae	1	1
Strigidae	1	1
Stylidiaceae	2	2
Sylviidae	2	5
Targioniaceae	1	1
Teloschistaceae	1	1
Thymelaeaceae	2	3
Turnicidae	1	1
Tytonidae	1	1
Urocystidaceae	1	1
Urticaceae	1	2
Varanidae	1	2
Violaceae	2	2
Xanthorrhoeaceae	1	3
Zygophyllaceae	1	1
TOTAL	513	1272

Acanthizidae
Acanthiza apicalis Broad-tailed Thornbill, Inland Thornbill
Acanthiza chrysorrhoa Yellow-rumped Thornbill
Acanthiza uropygialis Chestnut-rumped Thornbill
Gerygone fusca Western Gerygone
Pyrrholaemus brunneus Redthroat
Smicrornis brevirostris Weebill
6 names, 43 records

Acarosporaceae
Acarospora citrina
1 names, 1 records

Accipitridae
Aquila audax Wedge-tailed Eagle
Circus assimilis Spotted Harrier
Elanus axillaris
3 names, 11 records

Aegothelidae
Aegotheles cristatus Australian Owlet-nightjar
1 names, 2 records

Agamidae
Ctenophorus scutulatus Lozenge-marked Dragon
Pogona minor subsp. minor Dwarf Bearded Dragon
2 names, 5 records

Aizoaceae
*Cleretum papulosum subsp. papulosum
1 names, 1 records

Amaranthaceae
Ptilotus drummondii Narrowleaf Mulla Mulla
Ptilotus humilis
Ptilotus nobilis Tall Mulla Mulla
Ptilotus obovatus Cotton Bush
4 names, 5 records

Anatidae
Chenonetta jubata Australian Wood Duck, Wood Duck
Tadorna tadornoides Australian Shelduck, Mountain Duck
2 names, 4 records

Apiaceae
Daucus glochidiatus Australian Carrot
1 names, 4 records

Apocynaceae
Alyxia buxifolia Dysentery Bush
1 names, 3 records

Araliaceae
Hydrocotyle pilifera var. glabrata
Trachymene cyanopetala
Trachymene ornata Spongefruit
3 names, 6 records

Ardeidae
Ardea pacifica White-necked Heron
Egretta novaehollandiae
2 names, 3 records

Artamidae
Artamus cinereus Black-faced Woodswallow
Artamus personatus Masked Woodswallow
2 names, 6 records

Asparagaceae
Arthropodium dyeri
Chamaexeros fimbriata
Dichopogon preissii
Lomandra effusa Scented Matrush
Thysanotus manglesianus Fringed Lily
Xerolirion divaricata Basil's Asparagus
6 names, 13 records

Asteraceae
Actinobole uliginosum Flannel Cudweed
Bellida graminea Rosy Bellida
Brachyscome ciliaris
Brachyscome iberidifolia
Brachyscome perpusilla
Calocephalus multiflorus Yellow-top
Calotis hispidula Bindy Eye
Cephalipterum drummondii Pompom Head
Chthonocephalus pseudevax Woolly Groundheads
Gilruthia osbornei
Helichrysum luteoalbum Jersey Cudweed
Hyalosperma demissum
Hyalosperma glutinosum subsp. glutinosum
Hyalosperma zacchaeus
Lawrencella rosea
*Monoculus monstrosus
Olearia muelleri Goldfields Daisy
Olearia pimeleoides Pimelea Daisybush, Burrobunga
Podolepis aristata subsp. affinis
Podolepis capillaris Wiry Podolepis
Podolepis lessonii
Podolepis tepperi
Podotheca gnaphalioides Golden Long-heads
Rhodanthe citrina
Rhodanthe laevis
Rhodanthe pygmaea
Rhodanthe rubella
Schoenia cassiniana Schoenia
Senecio lacustrinus
Senecio pinnatifolius
Senecio pinnatifolius var. pinnatifolius
Waitzia acuminata Orange Immortelle
Waitzia acuminata var. acuminata
33 names, 52 records

Boidae
Aspidites ramsayi Woma S
1 names, 1 records

Boraginaceae
Halgania cyanea var. cyanea
Halgania lavandulacea Blue Bush
2 names, 2 records

Boryaceae
Borya constricta
Borya sphaerocephala Pincushions
2 names, 2 records

Bothriuridae
Cercophonius michaelseni
1 names, 1 records

Brassicaceae
Menkea australis Fairy Spectacles
1 names, 1 records

Buprestidae
Castiarina clancula
Castiarina decemguttata
Castiarina elderi
Castiarina ferruginea
Castiarina macmillani
Castiarina mansueta
Castiarina parallela
Castiarina pictipennis
Castiarina radians
Castiarina recta
Castiarina simulata
Castiarina subacuticeps
Castiarina trifasciata
Diphucrania cyanea
14 names, 24 records

Cacatuidae
Eolophus roseicapillus
1 names, 16 records

Cactaceae
*Opuntia engelmannii
1 names, 1 records

Campanulaceae
Isotoma petraea Rock Isotome, Tundiwari
1 names, 1 records

Campephagidae
Coracina novaehollandiae Black-faced Cuckoo-shrike
1 names, 9 records

Castniidae
Synemon heliopis
1 names, 1 records

Casuariidae
Dromaius novaehollandiae Emu
1 names, 6 records

Casuarinaceae
Allocasuarina acutivalvis subsp. prinsepiana
1 names, 1 records

Celastraceae
Psammomoya choretroides
Stackhousia sp.
2 names, 2 records

Charadriidae
Vanellus tricolor Banded Lapwing
1 names, 3 records

Chenopodiaceae
Enchylaena lanata
Maireana carnosa Cottony Bluebush
Maireana georgei Satiny Bluebush
Maireana marginata
Maireana thesioides Lax Bluebush
Maireana trichoptera Downy Bluebush
Maireana triptera Threewinged Bluebush
Rhagodia drummondii
Rhagodia preissii subsp. preissii
Sclerolaena diacantha Grey Copperburr
Sclerolaena drummondii
Sclerolaena gardneri
12 names, 22 records

Chrysomelidae
Cryptocephalus sp.
1 names, 1 records

Coenagrionidae
Xanthagrion erythroneurum
1 names, 1 records

Colletidae
Euryglossa sp.

Eulyglossa sp.
Leioproctus (leioproctus)
2 names, 3 records

Columbidae
Ocyphaps lophotes Crested Pigeon
Phaps chalcoptera Common Bronzewing
2 names, 21 records

Corvidae
Corvus coronoides Australian Raven
Corvus sp.
2 names, 17 records

Cracticidae
Cracticus nigrogularis Pied Butcherbird
Cracticus tibicen Australian Magpie
Cracticus torquatus Grey Butcherbird
Strepera versicolor Grey Currawong
4 names, 26 records

Crassulaceae
Crassula colorata var. colorata
1 names, 1 records

Cuculidae
Cacomantis pallidus Pallid Cuckoo
1 names, 2 records

Cupressaceae
Callitris canescens
1 names, 1 records

Curculionidae
Aonychus hopei
Catasarcus rugulosus
Catasarcus spinipennis
Leptopius contrarius
Listroderes sp.
Myllocerus varius
Titinia bicolor
7 names, 7 records

Cyperaceae
Lepidosperma sp. Wolga Rock (S.D. Hopper 6513)
Schoenus armeria
2 names, 2 records

Dasyuridae
Dasyurus geoffroii Chuditch, Western Quoll T
1 names, 1 records

Dicranaceae
*Campylopus introflexus
1 names, 2 records

Dicruridae
Grallina cyanoleuca Magpie-lark
Rhipidura albicauda
Rhipidura leucophrys Willie Wagtail
3 names, 23 records

Dilleniaceae
Hibbertia exasperata
Hibbertia lividula
Hibbertia montana P4
Hibbertia rostellata
Hibbertia stenophylla
Hibbertia stowardii
6 names, 9 records

Diplodactylidae
Diplodactylus pulcher
1 names, 1 records

Dipluridae
Cethegus fugax
1 names, 1 records

Droseraceae
Drosera macrantha subsp. macrantha
1 names, 1 records

Ecdeiocoleaceae
Ecdeiocolea monostachya
1 names, 2 records

Elapidae
Pseudechis australis Mulga Snake
Pseudonaja mengdeni Western Brown Snake
Pseudonaja modesta Ringed Brown Snake
Simoselaps bertholdi Jan's Banded Snake
Suta fasciata Rosen's Snake
5 names, 10 records

Ericaceae
Leucopogon glaucifolius
Leucopogon sp.

Leucopogon sp.
Leucopogon sp. Coolgardie (M. Hislop & F. Hort MH 3197)
Leucopogon sp. Yanneymooning (F. Mollemans 3797) P3
Melichrus sp. Bungalbin Hill (F.H. & M.P. Mollemans 3069) P3
5 names, 10 records

Erythraeidae
Charletonia buforania
1 names, 1 records

Estrilidae
Taeniopygia guttata Zebra Finch
1 names, 4 records

Euphorbiaceae
Calycopeplus paucifolius
Monotaxis bracteata
Monotaxis grandiflora var. obtusifolia
3 names, 3 records

Fabaceae
Acacia acuminata Jam, Mangard
Acacia acutata
Acacia andrewsii
Acacia anfractuosa
Acacia assimilis subsp. assimilis
Acacia beauverdiana Pukkati
Acacia burkittii Sandhill Wattle
Acacia chrysella
Acacia colletioides Wait-a-while
Acacia consanguinea
Acacia coolgardiensis Spinifex Wattle
Acacia densiflora
Acacia denticulosa Sandpaper Wattle T
Acacia erinacea
Acacia exocarpoides
Acacia fauntleroyi
Acacia hemiteles
Acacia heteroneura var. heteroneura
Acacia heteroneura var. jutsonii
Acacia jibberdingensis
Acacia lasiocalyx Silver Wattle, Wilyurwur
Acacia longispinea
Acacia mackeyana
Acacia murrayana Sandplain Wattle
Acacia neurophylla subsp. erugata
Acacia neurophylla subsp. neurophylla
Acacia nigripilosa subsp. nigripilosa
Acacia obtecta
Acacia prainii Prain's Wattle
Acacia resinimarginea
Acacia restiacea
Acacia sessilispica
Acacia sp.
Acacia stereophylla var. stereophylla
Acacia tetragonophylla Kurara, Wakalpuka
Acacia tratmaniana
Acacia yorkrakinensis
Acacia yorkrakinensis subsp. acrita
Daviesia incrassata subsp. incrassata
Daviesia nematophylla
Gastrolobium aculeatum
Gastrolobium bennettsianum Cluster Poison
Gastrolobium parviflorum
Gastrolobium trilobum Bullock Poison
Gompholobium hendersonii
Isotropis juncea Slender Lamb Poison
Jacksonia arenicola
Labichea lanceolata Tall Labichea
Mirbelia trichocalyx
Senna artemisioides
Senna artemisioides subsp. filifolia
Senna charlesiana
Senna pleurocarpa var. angustifolia
Senna stowardii
Templetonia ceracea
55 names, 155 records

Falconidae
Falco berigora Brown Falcon
Falco cenchroides Australian Kestrel
Falco longipennis Australian Hobby
3 names, 14 records

Gekkonidae
Gehyra variegata
Heteronotia binoei Bynoe's Gecko
Underwoodisaurus milii Barking Gecko
3 names, 8 records

Geraniaceae
Erodium cygnorum Blue Heronsbill
1 names, 1 records

Goodeniaceae
Brunonia australis Native Cornflower
Dampiera eriocephala Woolly-headed Dampiera
Dampiera juncea Rush-like Dampiera

Dampiera lavandulacea
Dampiera oligophylla Sparse-leaved Dampiera
Dampiera sp. Wialki (B.H. Smith 482) P2
Dampiera wellsiana Wells' Dampiera
Goodenia berardiana
Lechenaultia galactites P3
Scaevola restiacea subsp. restiacea
Scaevola spinescens Currant Bush, Maroon
Velleia cycnopotamica
12 names, 17 records

Grimmiaceae
Grimmia laevigata
1 names, 1 records

Halcyonidae
Todiramphus pyrrhopygius Red-backed Kingfisher
1 names, 3 records

Hemerocallidaceae
Dianella revoluta Blueberry Lily
Stypandra glauca Blind Grass
2 names, 5 records

Hirundinidae
Cheramoeca leucosterna
Hirundo neoxena Welcome Swallow
2 names, 6 records

Hypoxidaceae
Pauridia glabella
1 names, 1 records

Idiopidae
Aganippe castellum Tree-stem Trapdoor Spider P4
1 names, 5 records

Iridaceae
Patersonia drummondii Drummond's Patersonia
1 names, 1 records

Juncaceae
Juncus aridicola
1 names, 3 records

Juncaginaceae
Triglochin isingiana
1 names, 1 records

Lamiaceae
Cyanostegia angustifolia Tinsel-flower
Cyanostegia microphylla Tinsel Flower
Dasymalla teckiana
Dasymalla terminalis Native Foxglove
Dicrastylis rugosifolia
Hemigenia dielsii
Hemiphora elderi Red Velvet
Pityrodia lepidota
Prostanthera eckersleyana Crinkly Mintbush
Prostanthera prostantheroides
Westringia cephalantha
11 names, 14 records

Lecideaceae
Lecidea sp.
1 names, 1 records

Lestidae
Austrolestes annulosus
Austrolestes aridus
2 names, 3 records

Libellulidae
Orthetrum caledonicum
Pantala flavescens
2 names, 3 records

Limnodynastidae
Neobatrachus kunapalari Kunapalari Frog
Neobatrachus sutor Shoemaker Frog
2 names, 4 records

Loganiaceae
Logania flaviflora Yellow Logania
1 names, 1 records

Lycosidae
Hoggicosa forresti
1 names, 1 records

Macropodidae
Macropus robustus subsp. robustus
Onychogalea lunata Crescent Nailtail Wallaby, Wurrung X
2 names, 2 records

Maluridae
Malurus leucopterus White-winged Fairy-wren

Malurus pulcherrimus Blue-breasted Fairy-wren
Malurus splendens Splendid Fairy-wren
3 names, 4 records

Malvaceae
Androcalva cuneata
Brachychiton gregorii Desert Kurrajong, Ngalta
Keraudrenia velutina subsp. velutina
Thomasia sarotes
Waltheria indica
5 names, 7 records

Megapodiidae
Leipoa ocellata Malleefowl T
1 names, 11 records

Meliphagidae
Acanthagenys rufogularis Spiny-cheeked Honeyeater
Anthochaera carunculata Red Wattlebird
Epthianura albifrons White-fronted Chat
Epthianura tricolor Crimson Chat
Lichenostomus leucotis White-eared Honeyeater
Lichmera indistincta Brown Honeyeater
Manorina flavigula Yellow-throated Miner
Melithreptus brevirostris Brown-headed Honeyeater
Purnella albifrons White-fronted Honeyeater
Sugomel niger Black Honeyeater
10 names, 56 records

Meropidae
Merops ornatus Rainbow Bee-eater IA
1 names, 2 records

Myrtaceae
Aluta aspera subsp. localis P2
Baeckea grandibracteata
Baeckea muricata
Baeckea sp.
Baeckea sp. Barbalin (B.L. Rye & M.E. Trudgen BLR 241022)
Baeckea sp. Bencubbin-Koorda (M.E. Trudgen 5421)
Baeckea sp. Wialki (G.M. Storr s.n. 4/10/1958) P1
Balaustion pulcherrimum Native Pomegranate
Beaufortia interstans
Calothamnus gilesii
Calothamnus quadrifidus One-sided Bottlebrush, Kwowdjard
Calothamnus quadrifidus subsp. angustifolius
Calothamnus quadrifidus subsp. petraeus
Calytrix leschenaultii
Calytrix plumulosa P3
Chamelaucium drummondii subsp. Carnamah (R.J.Cranfield & P.J. Spencer 7966)
Chamelaucium sp.
Chamelaucium sp. Mukinbudin (M. Squire 007) P1
Darwinia purpurea Rose Darwinia
Ericomyrtus serpyllifolia
Eucalyptus brevipes Mukinbudin Mallee T
Eucalyptus capillosa subsp. capillosa Wheatbelt Wandoo
Eucalyptus celastroides subsp. virella
Eucalyptus crucis subsp. lanceolata
Eucalyptus crucis subsp. praecipua T
Eucalyptus flocktoniae subsp. flocktoniae
Eucalyptus horistes
Eucalyptus kochii subsp. plenissima
Eucalyptus leptopoda subsp. leptopoda
Eucalyptus leptopoda subsp. subluta
Eucalyptus loxophleba subsp. lissophloia
Eucalyptus loxophleba subsp. loxophleba York Gum
Eucalyptus loxophleba subsp. supralaevis
Eucalyptus moderata
Eucalyptus oldfieldii Oldfield's Mallee
Eucalyptus petraea Granite Rock Box
Eucalyptus rigidula Stiff-leaved Mallee
Eucalyptus salmonophloia Salmon Gum, Wurak
Eucalyptus salubris Gimlet
Eucalyptus sheathiana Ribbon-barked Gum
Eucalyptus sp.
Eucalyptus staeri Albany Blackbutt
Eucalyptus subangusta subsp. cerina
Eucalyptus subangusta subsp. subangusta
Eucalyptus wubinensis
Eucalyptus yilgarnensis Yorrell
Euryomyrtus leptospermoides
Homalocalyx coarctatus
Homalocalyx thryptomenoides
Kunzea pulchella Granite Kunzea
Leptospermum erubescens Roadside Teatree
Malleostemon roseus
Malleostemon tuberculatus
Melaleuca acuminata subsp. acuminata
Melaleuca atroviridis
Melaleuca cordata
Melaleuca eleuterostachya
Melaleuca hamata
Melaleuca protrusa
Melaleuca scalena
Melaleuca sciotostyla Wongan Melaleuca T
Melaleuca sp.
Melaleuca vinnula

Melaleuca zeteticorum
Micromyrtus racemosa
Micromyrtus redita P1
Rinzia carnosa
Thryptomene kochii
Thryptomene sp.
Verticordia auriculata
Verticordia chrysanthella
Verticordia interioris
Verticordia picta Painted Featherflower
Verticordia rennieana
Verticordia roei subsp. meiogona P1
75 names, 213 records

Orchidaceae
Caladenia dimidia
Caladenia incensa
Diuris hazeliae
Spiculaea ciliata Elbow Orchid
4 names, 5 records

Otididae
Ardeotis australis Australian Bustard
1 names, 1 records

Pachycephalidae
Colluricincla harmonica Grey Shrike-thrush
Oreoica gutturalis Crested Bellbird
Pachycephala pectoralis Golden Whistler
Pachycephala rufiventris Rufous Whistler
4 names, 35 records

Pardalotidae
Pardalotus striatus Striated Pardalote
1 names, 14 records

Parmeliaceae
Xanthoparmelia neorimalis
Xanthoparmelia reptans
Xanthoparmelia sp.
Xanthoparmelia verrucella
4 names, 6 records

Petroicidae
Drymodes brunneopygia Southern Scrub-robin
Eopsaltria australis subsp. griseogularis Western Yellow Robin
Petroica goodenovii Red-capped Robin
3 names, 12 records

Phasianidae
Coturnix pectoralis Stubble Quail
1 names, 2 records

Pileolariaceae
Uromycladium tepperianum
1 names, 2 records

Pittosporaceae
Bursaria occidentalis
Marianthus erubescens
Pittosporum angustifolium
3 names, 4 records

Plantaginaceae
Plantago debilis
1 names, 1 records

Poaceae
Amphipogon caricinus Long Greybeard Grass
Amphipogon caricinus var. caricinus
Aristida contorta Bunched Kerosene Grass
Austrostipa elegantissima
Austrostipa eremophila
Austrostipa macalpinei
Austrostipa nitida
Austrostipa scabra
Austrostipa trichophylla
Cymbopogon ambiguus Scentgrass
Monachather paradoxus
*Pentameris airoides False Hairgrass
Rytidosperma caespitosum
Rytidosperma setaceum
Spartochloa scirpoidea
Tragus australianus Small Burrgrass
16 names, 25 records

Podargidae
Podargus strigoides Tawny Frogmouth
1 names, 1 records

Polygalaceae
Comesperma drummondii Drummond's Milkwort
Comesperma integerrimum
2 names, 3 records

Pomatostomidae
Pomatostomus superciliosus White-browed Babbler

1 names, 6 records

Portulacaceae
Calandrinia calyptrata Pink Purslane
Calandrinia eremaea Twining Purslane
Calandrinia granulifera Pygmy Purslane
3 names, 3 records

Proteaceae
Grevillea didymobotrya subsp. didymobotrya
Grevillea eremophila
Grevillea eriobotrya Woolly Cluster Grevillea
Grevillea eryngioides Curly Grevillea
Grevillea excelsior Flame Grevillea
Grevillea hookeriana subsp. apiciloba
Grevillea huegelii
Grevillea levis
Grevillea minutiflora P1
Grevillea paniculata
Grevillea paradoxa Bottlebrush Grevillea
Grevillea petrophiloides subsp. remota P3
Grevillea shuttleworthiana subsp. shuttleworthiana
Hakea francisiana Emu Tree
Hakea invaginata
Hakea minyma
Hakea recurva subsp. recurva
Hakea rigida P2
Hakea scoparia
Hakea scoparia subsp. scoparia
Isopogon gardneri
Persoonia inconspicua
Persoonia leucopogon P1
Persoonia quinquenervis
Persoonia saundersiana
Persoonia trinervis
26 names, 47 records

Psittacidae
Barnardius zonarius
Cacatua pastinator Western Long-billed Corella
Cacatua sp.
Calyptorhynchus banksii Red-tailed Black-Cockatoo
Melopsittacus undulatus Budgerigar
Nymphicus hollandicus Cockatiel
6 names, 31 records

Pteridaceae
Cheilanthes lasiophylla Woolly Cloak Fern
1 names, 2 records

Pygopodidae
Delma grayii
1 names, 1 records

Rhamnaceae
Cryptandra minutifolia subsp. minutifolia
Cryptandra nutans
2 names, 2 records

Rubiaceae
Opercularia vaginata Dog Weed
1 names, 1 records

Rutaceae
Boronia adamsiana Barbalin Boronia T
Boronia coerulescens subsp. spinescens
Drummondita hassellii
Microcybe ambigua
Phebalium canaliculatum
Phebalium drummondii P3
Phebalium filifolium Slender Phebalium
Phebalium megaphyllum
Phebalium sp.
Phebalium tuberculosum
Philotheca brucei
Philotheca brucei subsp. brucei
Philotheca deserti
Philotheca deserti subsp. deserti
Philotheca langei P1
Philotheca rhomboidea
Philotheca sp.
Philotheca sp. Mukinbudin (M. Hancock s.n. 08/09/1999) P1
Philotheca thryptomenoides
Philotheca tomentella
20 names, 46 records

Santalaceae
Exocarpos aphyllus Leafless Ballart
Leptomeria preissiana
Santalum acuminatum Quandong, Warnga
Santalum spicatum Sandalwood, Wilarak
4 names, 9 records

Sapindaceae
Dodonaea adenophora
Dodonaea bursariifolia
Dodonaea inaequifolia

Dodonaea viscosa subsp. angustissima
4 names, 8 records

Scarabaeidae
Automolius sp.
1 names, 3 records

Scincidae
Ctenotus atlas
Egernia stokesii subsp. badia Western Spiny-tailed Skink (interior WA & Shark Bay), Gidgee Skink T
Lerista kingi
Lerista macropisthopus subsp. macropisthopus
Liopholis inornata Desert Skink
Morethia butleri
6 names, 7 records

Scrophulariaceae
Eremophila clarkei Turpentine Bush
Eremophila drummondii
Eremophila granitica Thin-leaved Poverty Bush
Eremophila oppositifolia subsp. angustifolia
Eremophila papillata
Eremophila virens Campion Eremophila T
6 names, 20 records

Siphulaceae
Siphula coriacea
1 names, 1 records

Solanaceae
Solanum lasiophyllum Flannel Bush, Mindjulu
Solanum nummularium Money-leaved Solanum
2 names, 2 records

Stenotritidae
Ctenocolletes albomarginatus
1 names, 1 records

Strigidae
Ninox novaeseelandiae Boobook Owl
1 names, 1 records

Stylidiaceae
Stylidium nungarinense Nungarin Triggerplant
Stylidium yilgarnense Yilgarn Triggerplant
2 names, 2 records

Sylviidae
Cincloramphus cruralis Brown Songlark
Cincloramphus mathewsi Rufous Songlark
2 names, 5 records

Targioniaceae
Targionia hypophylla
1 names, 1 records

Teloschistaceae
Caloplaca sp.
1 names, 1 records

Thymelaeaceae
Pimelea angustifolia Narrow-leaved Pimelea
Pimelea avonensis
2 names, 3 records

Turnicidae
Turnix velox Little Button-quail
1 names, 1 records

Tytonidae
Tyto alba subsp. delicatula Barn Owl
1 names, 1 records

Urocystidaceae
Urocystis tritici
1 names, 1 records

Urticaceae
Parietaria cardiostegia
1 names, 2 records

Varanidae
Varanus tristis Racehorse Monitor
1 names, 2 records

Violaceae
Hybanthus epacroides Spiny Hybanthus
Hybanthus floribundus subsp. floribundus
2 names, 2 records

Xanthorrhoeaceae
Xanthorrhoea nana Dwarf Grasstree
1 names, 3 records

Zygophyllaceae
Zygophyllum apiculatum Gallweed

1 names, 1 records

Conservation Status

T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

Australian Government

Department of the Environment

EPBC Act Protected Matters Report

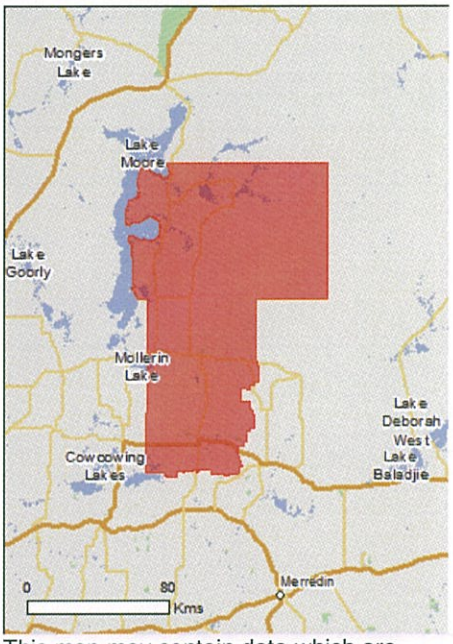
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

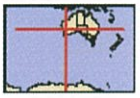
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

LGA SHIRE OF MOUNT MARSHALL, WA

Report created: 14/06/16 17:35:22





Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://environment.gov.au/protection/environment-assessments

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Threatened Ecological Communities:	1
Threatened Species:	33
Migratory Species:	6

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.au/epbc/permits-and-application-forms

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	8
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	18
Regional Forest Agreements:	None
Invasive Species:	15
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Community likely to occur within area

Threatened Species [Resource Information]

Name	Status	Type of Presence
BIRDS		
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
MAMMALS		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat known to occur within area
OTHER		
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat known to occur within area
PLANTS		
Acacia cochlocarpa subsp. velutinosa Velvety Spiral Pod Wattle [65112]	Critically Endangered	Species or species habitat may occur within area
Acacia denticulosa Sandpaper Wattle [20600]	Vulnerable	Species or species habitat known to occur within area
Acacia lobulata Chiddarcooping Wattle [55567]	Endangered	Species or species habitat likely to occur within area
Acacia sciophanes Wundowlin Wattle, Ghost Wattle [17877]	Endangered	Species or species habitat known to occur within area
Boronia adamsiana Barbalin Boronia [16935]	Vulnerable	Species or species habitat likely to occur within area
Caladenia drakeoides Hinged Dragon Orchid [68687]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence within area
Dasymalla axillaris Native Foxglove [38829]	Critically Endangered	Species or species habitat may occur within area
Eremophila pinnatifida Pinnate-leaf Eremophila [64894]	Endangered	Species or species habitat may occur within area
Eremophila resinosa Resinous Eremophila [11735]	Endangered	Species or species habitat known to occur within area
Eremophila virens Campion Eremophila, Green-flowered Emu bush [21433]	Endangered	Species or species habitat known to occur within area
Eremophila viscida Varnish Bush [2394]	Endangered	Species or species habitat likely to occur within area
Eucalyptus brevipes Mukinbudin Mallee [7495]	Endangered	Species or species habitat likely to occur within area
Eucalyptus recta Silver Mallet [56430]	Endangered	Species or species habitat likely to occur within area
Eucalyptus synandra Jingymia Mallee [3753]	Vulnerable	Species or species habitat likely to occur within area
Frankenia conferta Silky Frankenia [6074]	Endangered	Species or species habitat likely to occur within area
Gastrolobium diabolophyllum Bodallin Poison [78384]	Critically Endangered	Species or species habitat likely to occur within area
Gastrolobium hamulosum Hook-point Poison [9212]	Endangered	Species or species habitat may occur within area
Grevillea dryandroides subsp. hirsuta Hairy Phalanx Grevillea [64577]	Endangered	Species or species habitat likely to occur within area
Grevillea pythara Pythara Grevillea [64525]	Endangered	Species or species habitat may occur within area
Gyrostemon reticulatus Net-veined Gyrostemon [8491]	Critically Endangered	Species or species habitat likely to occur within area
Hybanthus cymulosus Ninghan Violet [2803]	Critically Endangered	Species or species habitat may occur within area
Philotheca basistyla White-flowered Philotheca [64941]	Endangered	Species or species habitat may occur within area
Rhizanthella gardneri Underground Orchid, Western Australian Underground Orchid [20109]	Endangered	Species or species habitat likely to occur within area
Ricinocarpos brevis [82879]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species habitat likely to occur within area
Symonanthus bancroftii Bancrofts Symonanthus [12837]	Endangered	Species or species habitat may occur within area
Verticordia staminosa subsp. staminosa Wongan Featherflower [55825]	Endangered	Species or species habitat may occur within area
REPTILES		
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area

Migratory Species

[Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species

[Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur

Name	Threatened	Type of Presence
		within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Beebeegnying	WA
Danjinning	WA
Gabbin	WA
Herndermuning	WA
Karroun Hill	WA
Marindo	WA
Mollerin	WA
Mungarri	WA
North Beacon	WA
North Wallambin	WA
Unnamed WA17771	WA
Unnamed WA18950	WA
Unnamed WA19036	WA
Unnamed WA24534	WA
Unnamed WA27913	WA
Unnamed WA38574	WA
Unnamed WA39703	WA
Wundowlin	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Mammals		
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Carrichtera annua Ward's Weed [9511]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining oigations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environment and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-Forestry Corporation, NSW
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

Department of the Environment
GPO Box 787
Canberra ACT 2601 Australia
+61 2 6274 1111

Shire of Mt Marshall

Application for development approval

Owner details		
Name: Raymond, Jason + Stuart Faulkner		
ABN (if applicable):		
Address: P.O. Box 2		
Beacon W.A.		Postcode: 6472.
Phone: Work: 96862024	Fax:	Email: raytan7@activ8.net.au.
Home:		
Mobile: 0427868006		
Contact person for correspondence : Raymond.		
Signature:		Date: 3/2/2016
Signature:		Date: 3/2/2016

The signature of the owner(s) is required on all applications. This application will not proceed without that signature. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 clause 62 (2).

Applicant details (if different from owner)		
Name: JOHN RICHARD GUTHRIE		
Address: 4 RAIN PLACE, BAMSWATER		
		Postcode: 6053
Phone: Work:	Fax:	Email: Johnguthrie@iaapt.net.au
Home: 08 9272 4487		
Mobile: 0417 681 865.		
Contact person for correspondence : JOHN GUTHRIE.		
The information and plans provided with this application may be made available by the local government for public viewing in connection with the application. ☑ Yes ☐ No		
Signature:		Date: 3/2/2016.

Property details		
Lot No: 606 + 3029	House/Street No:	Location No:
Diagram or Plan No:	Certificate of Title Vol. No: 1252 (LOT 606) 1973 (LOT 3029)	Folio: 656 (LOT 606) 813 (LOT 3029)
Title encumbrances (e.g. easements, restrictive covenants):		
Street Name:	Suburb: Shire of Mount Marshall	
Nearest street intersection: Potts Road		

Proposed development	
Nature of Development	☐ Works ☐ Use ☐ Works and use
Is an exemption from development claimed for part of the development? ☐ Yes ☑ No	
If yes, is the exemption for	☐ Works ☐ Use
Description of proposed works and/or land use:	Extractive Industry.
Description of exemption claimed (if relevant):	
Nature of any existing buildings and/or land use:	
Approximate cost of proposed development:	$600K. — To be advised.
Estimated time of completion:	2 years from approval date.

OFFICE USE ONLY

Acceptance Officer's initials: gw Date Received: 7/7/2016.
Local government reference No:

Shire of Mt Marshall

Application for development approval

Owner details		
Name: Paul Sachse		
ABN (if applicable):		
Address: 426 South Tce PO Box 75 South Fremantle.		
		Postcode: 6162
Phone: Work: 0893361238	Fax:	Email: paulsachse@hotmail.com
Home:		
Mobile:		
Contact person for correspondence : Paul Sachse		
Signature: P.A. Sachse.		Date: 10-2-2016
Signature:		Date:

The signature of the owner(s) is required on all applications. This application will not proceed without that signature. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 clause 62 (2).

Applicant details (if different from owner)		
Name: JOHN RICHARD GUTHRIE		
Address: 4 RAIN PLACE, BAYSWATER		
		Postcode: 6053.
Phone: Work:	Fax:	Email: Johnguthrie@aapt.net.au
Home: 08 9272 4487		
Mobile: 0417 681 865		
Contact person for correspondence : JOHN GUTHRIE		
The information and plans provided with this application may be made available by the local government for public viewing in connection with the application. ☑ Yes ☐ No		
Signature: Joe Guthrie.		Date: 5/02/2016.

Property details		
Lot No: 2643	House/Street No:	Location No:
Diagram or Plan No: 150837	Certificate of Title Vol. No: 179	Folio: 86A
Title encumbrances (e.g. easements, restrictive covenants):		
Street Name:	Suburb: Shire of Mount Marshall	
Nearest street intersection: Potts Road.		

Proposed development	
Nature of Development	☐ Works ☐ Use ☐ Works and use
Is an exemption from development claimed for part of the development? ☐ Yes ☑ No	
If yes, is the exemption for	☐ Works ☐ Use
Description of proposed works and/or land use:	Extractive Industry.
Description of exemption claimed (if relevant):	
Nature of any existing buildings and/or land use:	
Approximate cost of proposed development:	$600 K. — To be advised
Estimated time of completion:	2 years from approval date.

OFFICE USE ONLY

Acceptance Officer's initials: JW

Date Received: 7/7/2016.

Local government reference No:

WHEATBELT NORTH-EAST SRRG

Chairman: Cr R Storer
Deputy Chairman: Cr E O'Connell

Secretary: Mr R Munns
R Munns Engineering Consulting Services
PO Box 19
BEACON WA 6472
Ph : (08) 9686 1181

Unconfirmed Minutes of the Sub Regional Road Group meeting held at the Merredin Community Leisure Centre on Monday the 27th June 2016 at 12.07pm.

1. DECLARATION OF OPENING/ANNOUNCEMENT OF VISITORS

The Chairman declared the meeting open at 12.07pm, and welcomed everyone in attendance.

2. ATTENDANCE/APOLOGIES

Attendance

Cr Ricky Storer	Shire of Koorda	(Chairman)
Cr Eileen O'Connell	Shire of Nungarin	
Cr Geoff Waters	Shire of Trayning	
Cr Campbell Jones	Shire of Wyalkatchem	(@ 12.40pm)
Cr Steven Palm	Shire of Mukinbudin	
Cr Wayne Della Bosca	Shire of Yilgarn	(Voting Delegate)
Cr Stuart Faulkner	Shire of Mt Marshall	(Voting Delegate)
Cr Brian Close	Shire of Yilgarn	
Cr Callum Lumsden	Shire of Mt Marshall	
Mr Bill Fensome	CEO – Shire of Nungarin	
Mr Ian McCabe	CEO - Shire of Wyalkatchem	(@ 12.40pm)
Mr Jamie Criddle	CEO – Shire of Westonia	
Mr David Burton	CEO – Shire of Koorda	
Mr Stuart Billingham	CEO – Shire of Mukinbudin	
Mr Dirk Sellenger	Acting CEO - Shire of Trayning	
Mr Rob Bosenberg	Manager of Works – Shire of Yilgarn	
Mr Darren West	Manager of Works – Shire of Koorda	
Mr Keith Mills	Manager of Works - Shire of Mukinbudin	
Mr Judd Hobson	Manager of Works – Shire of Westonia	
Mr Rod Munns	Consulting Engineer - RMECS	(Secretary)

Apologies

Cr Karen Day	Shire of Westonia
Cr Onida Truran	Shire of Yilgarn
Mr Trevor Webb	Manager of Works – Shire of Wyalkatchem
Mr Rob Tanner	Manager of Works – Shire of Trayning
Mr Greg Willis	Secretary WN RRG – MRWA

Attachment 15.1.1a

3. CONFIRMATION OF MINUTES OF MEETING 15th February 2016

RESOLUTION 1

That the minutes of the WNE SRRG Meeting, held on the 15th February 2016, be confirmed as a true and correct record of proceedings.

Moved Cr E O'Connell **Seconded Cr G Waters** **Carried 7/0**

4 BUSINESS ARISING FROM PREVIOUS MINUTES

Nil.

5 CORRESPONDENCE

5.1 Correspondence In

a) Minutes of SAC Meeting held 23rd March 2016 – via Email from Greg Willis received 2nd May 2016 – (Att 2a)
b) Requirements for Additional Staff for WAANDRA - via Email from Greg Willis received 2nd May 2016 – (Att 2b).
c) 2017/18 Yr Blackspot Powerpoint Presentation - via Email from Greg Willis received 4th May 2016 - (Att 2c).
d) Draft Wheatbelt Freight Plan Letter - via Email from Cr Ricky Storer received 4th May 2016 - (Att 2d).
e) Advice of Next WN RRG Meeting date on 25th July 2016 - via Email from Greg Willis received 17th May 2016 - (Att 2e).
f) 2017/18 Yr Funding Program Submission Due Dates – via Email from Greg Willis received 17th May 2016 – (Att 2f).
g) 2015/16 WN RRG Funding Recoup Register & Status Report – Current at 16-6-16 – via Email from Greg Willis received 16th June 2016 – (Att 2g).
h) June 2016 RRG Report – via Email from Greg Willis received 17th June 2016 – (Att 2h).
i) Updated WN RRG MCA User Manual, MCA Input Form and Policy & Procedure Manual to be used for coming 17/18 Yr SRFTLGA Road program submissions – via Email from Greg Willis received 20th June 2016 – (Att 2i).

5.2 Correspondence Out

Nil.

RESOLUTION 2

That the Incoming Correspondence be accepted.

Moved Cr W Della Bosca **Seconded Cr S Faulkner** **Carried 7/0**

6 BUSINESS ARISING FROM CORRESPONDENCE

Nil.

7 GENERAL BUSINESS

7.1 Review of Current 2015/16 Yr Project Funding & Recoup Register

A representative from each Council advised the status of their existing road program projects to be as tabulated below:

Council	Road	Original Project SLKs	Original Project Km	Project Description	Funding Type	Recoup Status	Comment
Koorda	Koorda - Bullfinch Rd	0.00 - 5.00	5.00	Shoulder Widen and Primerseal shoulders to achieve a 7.0m seal width and Minm 10m carriageway on straights and 8.0m width seal and Minm 11m carriageway width on curved sections.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Koorda	Koorda - Mollerin Rd	33.00 - 36.70	3.70	Shoulder Widen and Primerseal shoulders to achieve a 7.0m seal width and Minm 10m carriageway on straights and 8.0m width seal and Minm 11m carriageway width on curved sections.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Koorda	Koorda - Mollerin Rd	11.30 - 16.30	5.00	Reseal	**SRFTLGA**	**100%**	Complete & Fully Recouped
Koorda	Dukin West / Boyne / Remnant / Inman Rds	0.0 - 11.50	11.50	WIDEN PAVEMENT FROM 10.0m TO 14.0m ROAD TYPE 3	**Commodity Route**	**100%**	Complete & Fully Recouped
Mt Marshall	Kellerberrin - Bencubbin Rd	0.0 - 1.50	1.50	Reconstruct section to Type 5 sealed pavement - to Minm 10m wide carriageway width & 7.0m primerseal width.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Mt Marshall	Burakin - Wialki Rd	44.56 - 47.78	3.22	Shoulder Widen and Primerseal shoulders to achieve a 7.0m seal width and Minm 10m carriageway from SLK 44.56 - 45.75 (1.19km length) and Reconstruct section to Type 5 sealed pavement - to Minm 10m wide carriageway width & 7.0m primerseal width from SLK 45.75 - 47.78 (2.03 km length).	**SRFTLGA**	**100%**	Complete & Fully Recouped
Mt Marshall	Koorda / Bullfinch Rd	40.29 - 41.89 & 43.29 - 44.64	2.95	Reconstruct section to Type 5 sealed pavement - to Minm 10m wide carriageway width & 7.0m primerseal width.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Mt Marshall	Koorda / Bullfinch Rd	31.74 - 32.0	0.26	WIDEN CARRIAGEWAY THROUGH 'S' BENDS CENTRED AROUND RAILWAY CROSSING. EXTEND 2 CULVERTS. APPLY EDGE LINES & INSTALL NEW SIGNAGE, RPMs, GUIDEPOSTS (NOT STAGED RESERVE PROJECT)	**STATE BLACKSPOT**	**40%**	**GREG WILLIS HAS APPROVED CARRYOVER TO ADD TO PROJECT SCOPE**
Mukinbudin	Mukinbudin / Wialki Rd	0.40 - 3.90	3.50	Reconstruct type 5 road & primerseal to achieve 7.0m wide sealed surface and Minm 10m wide carriageway (Type 5 road). Build up pavement and cement stabilise 600m long low lying section from SLK 1.20 - 1.80.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Nungarin	Nungarin North Rd	16.20 - 20.30	4.10	Shoulder Widen and Primerseal shoulders to achieve a 7.0m seal width and Minm 10m carriageway width.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Trayning	Kellerberrin - Bencubbin Rd	9.05 - 11.55	2.50	Reconstruct section to Type 5 sealed pavement - to Minm 10m wide carriageway width & 7.0m primerseal width.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Trayning	Kellerberrin - Bencubbin Rd	2.55 - 4.85	2.30	Final Seal - 10mm cutback bitumen seal.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Westonia	Westonia - Carrabin Rd	1.38 - 4.58	3.20	Reconstruct existing Type 4 failed section to Type 5 sealed pavement - to Minm 10m carriageway width & 7.0m primerseal width.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Westonia	Carrabin South Rd / Carrabin Bin Rd Intersection	VARIOUS	VARIOUS	REALIGN, CONSTRUCT & SEAL CARRABIN SOUTH RD TO INTERSECT WITH PROPOSED RE-ALIGNMENT OF CARRABIN SIDING RD. REMOVE BIN RD	**STATE BLACKSPOT**	**35%**	**GREG WILLIS HAS APPROVED CARRYOVER DUE TO LAND TENURE AND D.E.R. CLEARING PERMIT ATTAINMENT.**
Wyalkatchem	Koorda - Wyalkatchem Rd	8.30 - 10.80	2.50	Recondition shoulders on existing type 4 road to achieve a minm 10m carriageway (in preparation for a future shoulder primerseal)	**SRFTLGA**	**100%**	Complete & Fully Recouped
Wyalkatchem	Nembudding South Rd	14.10 - 17.64	3.54	Final Seal - 10mm cutback bitumen seal.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Wyalkatchem	Tammin - Wyalkatchem Rd	14.21 - 16.36	2.15	Widen shoulders & primerseal to achieve 7.0m wide sealed surface and Minm 10m wide carriageway - Type 5 standard.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Yilgarn	Koolyanobbing Rd	20.50 - 23.50	3.00	Reconstruct type 4 road & primerseal to achieve 7.0m wide sealed surface and Minm 10m wide carriageway (Type 5 road).	**SRFTLGA**	**100%**	Complete & Fully Recouped
Yilgarn	Bodallin North Rd	10.60 - 15.60	5.00	Final Seal - 10mm cutback bitumen seal.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Yilgarn	Koolyanobbing Rd	17.00 - 20.00	3.00	Final Seal - 10mm cutback bitumen seal.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Yilgarn	Moorine Rock South Rd	58.30 - 62.30	4.00	Final Seal - 14mm cutback bitumen seal.	**SRFTLGA**	**100%**	Complete & Fully Recouped
Yilgarn	Parkers Range Rd	20.50 - 24.50	4.00	Reseal - 10mm cutback seal.	**SRFTLGA**	**100%**	Complete & Fully Recouped

Apart from the carryover of two (2) x State Blackspot funded projects that have been delayed due to unforeseen circumstances (and MRWA have verbally approved carryover of the funding for these projects), all other SRFTLGA road projects have been completed by our SRRG in this current financial year.

RESOLUTION 3

That the current Status Report & Forecast Recoup Schedule for the 2015/16 Program (as above) be accepted.

Moved Cr E O'Connell **Seconded Cr G Waters** **Carried 7/0**

7.2 Alterations to the 2016/17 Yr SRFTLGA Road Program

At the last meeting, the Shire's of Mt Marshall and Mukinbudin advised that they would like to extend the scope of works on existing endorsed 2016/17 YR SRFTLGA projects to take up parts of the $50,992 of unallocated funding. The Shire of Mt Marshall have provided a revised MCA submission for their Reconstruction project on the Mukinbudin / Wialki Rd reflecting an extension to the scope of works by 400m, now from SLK 4.40 – 7.0 and utilizing $ 31,000 of this unallocated funding.

The Shire of Mukinbudin have provided a revised MCA submission for their Reconstruction project on the Mukinbudin / Wialki Rd reflecting an extension to the scope of works by 180m, now from SLK 4.74 – 8.24 and utilizing $ 19,992 of this unallocated funding.

The Shire of Mt Marshall have also requested a small change to the section SLK's of one of the three (3) sections to be sealed on their already endorsed Bencubbin / Beacon Rd Seal project. This is to change the section from SLK 25.47 – 26.22 to the adjacent same length section immediately to the south from SLK 24.72 – 25.47. This has been requested since due to preservation reasons, the section from SLK 25.47 – 26.22 was sealed via other funding earlier this year.

A revised MCA submission has been provided reflecting this change to scope of works (no change to project TEC). These Shire's are requesting endorsement of these additions / alterations to their 2016/17 Yr SRFTLGA road programs.

RESOLUTION 4

That in relation to changes to our 2016/17 Yr SRFTLGA Road Program, the following alterations / additions be made:

a) The Shire of Mt Marshall's Seal Project scope of works on the Bencubbin / Beacon Rd be altered from SLK 25.47 – 26.22 to the adjacent same length section immediately to the south from SLK 24.72 – 25.47 – with no changes to the projects TEC.

b) The Shire of Mt Marshall's Reconstruction project scope of works on the Mukinbudin / Wialki Rd be altered from SLK 4.40 – 6.60 to SLK 4.40 – 7.00 and the projects TEC be increased by $46,500 to $ 296,850 to take up $31,000 of the unallocated SRFTLGA funding.

c) The Shire of Mukinbudin's Reconstruction project scope of works on the Mukinbudin / Wialki Rd be altered from SLK 4.74 – 8.06 to SLK 4.74 – 8.24 and the projects TEC be increased by $29,988 to $ 479,988 to take up $19,992 of the unallocated SRFTLGA funding.

Moved Cr E O'Connell **Seconded Cr G Waters** **Carried 7/0**

7.3 Wheatbelt Freight Plan

MRWA in conjunction with the WN and WS RRG's have circulated a letter relating to a Wheatbelt Freight Plan (attachment 2d) outlining three (3) workstreams they would like to see progressed to address a number of cross-Shire boundary RAV access issues, with an aim to create a clearer continuous freight network in the Wheatbelt. Each SRRG has been requested to produce a plan for a secondary road freight network within their road network. It appears that road funding over and above our SRFTLGA funding may be available to fund any required improvements to allow better, more consistent RAV access than is current. The following guideline points have been provided to assist us in providing these secondary freight routes (the MRWA controlled roads within our SRRG being the primary freight routes – ie the Great Eastern Highway and the Goomalling / Merredin Rd):

Each route must connect to the Main Roads network,
Each Sub-Group must identify no more than 10 collector routes
Parallel collector routes must be at least 20km apart

MRWA would like each SRRG to agree on these routes by the end of June 2016, so that they can be considered for endorsement at the July 2016 RRG meetings, to enable MRWA to prepare a business case for required improvements to the Secondary Freight Network by September / October 2016.

The Group discussed these Wheatbelt Freight Plan (WFP) "collector" routes in detail and came up with the following list of eight (8) collector routes from within our WNE SRRG road network:

1) Wyalkatchem to Southern Cross Route
2) Cunderdin to Wyalkatchem Route
3) Wongan Hills to Koorda Route
4) Hines Hill to Burakin Route
5) Kulja to Dalwallinu Route
6) Kellerberrin to Beacon Route
7) Warralakin to Burracoppin Route
8) Bruce Rock to Moorine Rock Route

The Group also discussed in detail what level or levels of RAV Access and AMMS, should be applied to these secondary strategic freight routes. After a lengthy discussion it was agreed that it should be one level of RAV Access and one level of AMMS, being Network 7 RAV Access and Level 2 AMMS. The Shire of Mukinbudin advised that they have two (2) roads within their road network, being the Mukinbudin / Wialki Rd and Wilgoyne Rd that they have agreed to remain at level 3 AMMS. All member Councils have not thus far advised MRWA of what level of AMMS they would like applied to their road network, and therefore they are defaulted at Level 1. The Mukinbudin / Wialki Rd forms part of the Hines Hill to Burakin Route and so it was agreed that this should remain at level 3 AMMS. It was also realized that bordering SRRGs and RRGs will need to have some input into our final WFP "collector" route plan to ensure that there is some level of continuity of RAV Access and AMMS at SRRG and RRG boundaries.

The member Councils 2030 roads that make up these eight (8) WFP "collector" routes were discussed and also black spots on some of these roads where there may be issues where Network 7 RAV access could be attained. These issues were listed. I advised that I would email out a sheet showing the eight (8) WFP "collector" routes, the affected 2030 roads in each route, and existing levels of RAV access and comments / issues column included, so that member Councils could peruse and make sure all information is correct. It was also suggested and

discussed that freight demands on each of the "collector" route roads be included on this sheet. This sheet is to be completed and circulated immediately after the meeting.

The topic of seeking the possibility of ongoing preservation road funding was also stated, to maintain this wheatbelt freight network into the future.

There was a short lunch break from 1.20pm to 1.40pm during the discussion of this item.

RESOLUTION 5

That:

a) The following "Collector" Routes within the WNE SRRG road network:
1 Wyalkatchem to Southern Cross Route
2 Cunderdin to Wyalkatchem Route
3 Wongan Hills to Koorda Route
4 Hines Hill to Burakin Route
5 Kulja to Dalwallinu Route
6 Kellerberrin to Beacon Route
7 Warralakin to Burracoppin Route
8 Bruce Rock to Moorine Rock Route
be endorsed as our Wheatbelt Freight Plan routes.

b) All of the 2030 roads within these eight (8) WFP "collector" routes be allocated a single RAV access level of Network 7.

c) All of the 2030 roads within these eight (8) WFP "collector" routes be allocated an AMMS level of 2, except for the Mukinbudin / Wialki Rd within the Shire of Mukinbudin from SLK 0.0 – 25.00 (Mukinbudin – Bonnie Rock Rd intersection), which is to be kept at its current level 3.

Moved Cr E O'Connell **Seconded Cr G Waters** **Carried 8/0**

7.4 2017/18 Yr SRFTLGA Road Program

Full project submissions including two (2) hard copies of MCA submission sheets, relevant road count/s and project plans with project start and end SLKs and Road Counter location SLK clearly marked on the plan – are to be sent to the Sub Group Secretary by 31st August 2016. As agreed at our last Group meeting, this submission is to include a 5 Yr SRFTLGA Road Program from each Member Council.

8 OTHER BUSINESS

Nil.

9 NEXT MEETING DATES

9.1 Next WN RRG Meeting

The next WN RRG meeting is to be held 25th July 2016, at the Shire of Northam's Office, commencing at 10.00am.

9.2 Next WN RRG Technical Committee Meeting

The next WN RRG Technical Committee meeting is TBA.

9.3 Next WNE SRRG Meeting

The next meeting needs to be scheduled around early September 2016 to consider our 2017/18 Yr SRFTLGA Road Program (including 5 Yr SRFTLGA Road Programs). This meeting date to be advised closer to this time.

10 CLOSURE OF MEETING

The Chairman thanked everyone for their attendance.

There being no further business, the meeting was closed at 2.08pm.

WNE SRRG - DRAFT LIST OF WHEATBELT FREIGHT PLAN "COLLECTOR" ROUTES - Rev 1 - Current at 27-6-16												
Start / End Point Information						RAV Access Information				Road Standard Information	Freight Task Information	
Route No.	**Collector Route Name**	**Road Name**	**SRRG**	**Start Point**	**Terminus Point**	**Existing RAV Network Level**	**SRRG Endorsed RAV Network Level**	**Existing AMMS Level**	**SRRG Endorsed AMMS Level**	**Comments / Upgrades Required**	**Existing Freight Tasks**	**Potential Additional Future Freight Tasks**
1	**Wyalkatchem to Southern Cross Route**	Town Access Rd (Wyalkatchem Shire)	WNE	Goomalling / Merredin Rd (MRWA Controlled Rd - Wyalkatchem)	Railway Avenue (Wyalkatchem)	Nil	7	1	2	A Heavy Vehicle Bypass Rd is required around the eastern side of Wyalkatchem townsite to remove heavy vehicles from passing the Hospital and High School, link this bypass to the Wyalkatchem CBH Facility to allow better access, and remove RAV Access issues from the Goomalling / Merredin Rd to the Wyalkatchem CBH Facility (no RAV Access on Town Access Rd due to Swept Path issues at Goomalling / Merredin Rd intersection) - this bypass would remove Heavy vehicles from Honour Ave, Railway Avenue east from Gamble St, and Town Access Rd.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Railway Avenue (Wyalkatchem Shire)	WNE	Town Access Rd (Wyalkatchem)	Honour Ave (Wyalkatchem)	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Honour Ave (Wyalkatchem Shire)	WNE	Railway Avenue (Wyalkatchem)	Wyalkatchem / Koorda Rd (Wyalkatchem)	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Wyalkatchem / Koorda Rd (Wyalkatchem Shire)	WNE	Honour Ave (Wyalkatchem)	Wyalkatchem / Koorda Shire Bdy	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Wyalkatchem / Koorda Rd (Koorda Shire)	WNE	Wyalkatchem / Koorda Shire Bdy	Aitken Rd (Koorda)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Aitken Rd (Koorda Shire)	WNE	Wyalkatchem / Koorda Rd (Koorda)	Railway St (Koorda)	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Railway St (Koorda Shire)	WNE	Aitken Rd (Koorda)	Haig St (Koorda)	6	7	1	2	The Railway St and Haig St intersection requires realigning to make safer and allow to continue Haig St onto Railway St north and onto the Cadoux/ Koorda Rd and entrance to the Koorda CBH Facility. This would make the section of Railway St south of Haig St the minor road that terminates at the new alignment.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Haig St (Koorda Shire)	WNE	Railway St (Koorda)	Koorda / Bullfinch Rd (Koorda)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Koorda / Bullfinch Rd (Koorda Shire)	WNE	Haig St (Koorda)	Koorda / Mt Marshall Shire Bdy	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Koorda / Bullfinch Rd (Mt Marshall Shire)	WNE	Koorda / Mt Marshall Shire Bdy	Mt Marshall / Mukinbudin Shire Bdy	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Koorda / Bullfinch Rd - West (Mukinbudin Shire)	WNE	Mt Marshall / Mukinbudin Shire Bdy	Strugnell Rd (Mukinbudin)	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Strugnell Rd (Mukinbudin Townsite Heavy Vehicle Bypass - Mukinbudin Shire)	WNE	Koorda / Bullfinch Rd - West (Mukinbudin)	Mukinbudin / Wialki Rd (Mukinbudin)	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	Uranium - from north east area of Mukinbudin Shire to Perth.

		Mukinbudin / Wialki Rd (Mukinbudin Townsite Heavy Vehicle Bypass - Mukinbudin Shire)	WNE	Strugnell Rd (Mukinbudin)	Koorda / Bullfinch Rd - East (Mukinbudin)	7	7	3	3	The entrance to the Mukinbudin CBH Facility is off this Mukinbudin / Wialki Rd.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	Uranium - from north east area of Mukinbudin Shire to Perth.
		Koorda / Bullfinch Rd - East (Mukinbudin Shire)	WNE	Mukinbudin / Wialki Rd (Mukinbudin)	Mukinbudin / Nungarin Shire Bdy	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	
		Koorda / Bullfinch Rd (Nungarin Shire)	WNE	Mukinbudin / Nungarin Shire Bdy	Nungarin / Westonia Shire Bdy	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	
		Koorda / Bullfinch Rd (Westonia Shire)	WNE	Nungarin / Westonia Shire Bdy	Westonia / Yilgarn Shire Bdy	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	
		Koorda /	WNE	Westonia / Yilgarn	Bullfinch /	7	7	1	2		Grain, Fertiliser, Lime, Livestock,	
		Bullfinch / Southern	WNE	Koorda / Bullfinch Rd	Three Boys Rd	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum,	
		Three Boys Rd (Yilgarn Shire)	WNE	Bullfinch / Southern Cross Rd (Southern Cross)	Great Eastern Highway (MRWA Controlled Rd - Southern Cross)	7	7	1	2	The entrance to the Southern Cross CBH Facility is off this Three Boys Rd.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials, and part Salt.	
2	**Cunderdin to Wyalkatchem Route**	Baxter St (Cunderdin Shire)	Kellerberrin	Great Eastern Highway (MRWA Controlled Rd - Cunderdin)	Cunderdin / Wyalkatchem Rd (Cunderdin)	2	TBA	TBA	TBA	The entrance to the Cunderdin CBH Facility is off this Baxter Rd, via Olympic Ave. This will allow the Goomalling / Merredin Rd at Wyalkatchem to be linked to the current Network 7 Gt Eastern Highway at Cunderdin and beyond to Northam ONLY. **Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	
		Cunderdin / Wyalkatchem Rd (Cunderdin Shire)	Kellerberrin	Baxter St (Cunderdin)	Cunderdin / Wyalkatchem Shire Bdy	2	TBA	TBA	TBA	**Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	
		Cunderdin / Wyalkatchem Rd (Wyalkatchem Shire)	WNE	Cunderdin / Wyalkatchem Shire Bdy	Goomalling / Merredin Rd (MRWA Controlled Rd - Wyalkatchem)	2	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
3	**Wongan Hills to Koorda Route**	Manmanning Rd (Wongan Hills Shire)	Moora	Northam / Pithara Rd (MRWA Controlled Rd – Wongan Hills)	Oliver Rd	6	TBA	TBA	TBA	**Moora SRRG to be requested to consider this road be upgraded to Network 7 - to link to the Northam / Pithara Rd (MRWA controlled road that is currently a Network 7 road).**	TBA	
		Oliver Rd (Wongan Hills Shire)	Moora	Manmanning Rd	Hospital Rd	6	TBA	TBA	TBA	**Moora SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	
		Hospital Rd (Wongan Hills Shire)	Moora	Oliver Rd	Wongan Hills / Cadoux Rd	6	TBA	TBA	TBA	**Moora SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	
		Wongan Hills / Cadoux Rd (Wongan Hills Shire)	Moora	Hospital Rd	Dowerin / Kalannie Rd (Cadoux)	6	TBA	TBA	TBA	**Moora SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	
		Dowerin / Kalannie Rd (Wongan Hills Shire)	Moora	Wongan Hills / Cadoux Rd (Cadoux)	Cadoux / Koorda Rd (Cadoux)	6	TBA	TBA	TBA	**Moora SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	
		Cadoux / Koorda Rd (Wongan Hills Shire)	Moora	Dowerin / Kalannie Rd (Cadoux)	Wongan Hills / Koorda Shire Bdy	6	TBA	TBA	TBA	**Moora SRRG to be requested to consider this road be upgraded to Network 7, Level 2 AMMS.**	TBA	

		Cadoux / Koorda Rd (Koorda Shire)	WNE	Wongan Hills / Koorda Shire Bdy	Railway St (Koorda)	6	7	1	2	The entrance to the Koorda CBH Facility is off this Cadoux / Koorda Rd.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Railway St (Koorda Shire)	WNE	Koorda / Cadoux Rd (Koorda)	Haig St (Koorda)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
4	**Hines Hill to Burakin Route**	Hines Hill North Rd (Merredin Shire)	Kellerberrin	Gt Eastern Highway (MRWA Controlled Rd – Hines Hill)	Merredin / Nungarin Shire Bdy	5	TBA	TBA	TBA	**Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS.**	TBA	
		Danberrin Rd (Nungarin Shire)	WNE	Merredin / Nungarin Shire Bdy	Goomalling / Merredin Rd (West of Nungarin)	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Nungarin North Rd (Nungarin Shire)	WNE	Goomalling / Merredin Rd (West of Nungarin)	Nungarin / Mukinbudin Shire Bdy	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Nungarin North Rd (Mukinbudin Shire)	WNE	Nungarin / Mukinbudin Shire Bdy	McGregor South Rd (Mukinbudin)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		McGregor South Rd (Mukinbudin Shire)	WNE	Nungarin North Rd (at Mukinbudin / Kununoppin Rd Intersection)	Koorda / Bullfinch Rd - West (approx 5 km west of Mukinbudin)	4	7	1	2	McGregor South Rd is currently an unsealed (Type 3 standard road). It is 2.51km long and needs to be upgraded to a type 5 standard sealed road. Also the intersection with the Koorda / Bullfinch Rd on the north end at SLK 2.51 also requires realigning to make safer.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Koorda / Bullfinch Rd - West (Mukinbudin Shire)	WNE	McGregor South Rd	Strugnell Rd (Mukinbudin)	7	7	1	2	This is part of the Wyalkatchem to Southern Cross Route	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Strugnell Rd (Heavy Vehicle Bypass - Mukinbudin Shire)	WNE	Koorda / Bullfinch Rd - West (Mukinbudin)	Mukinbudin / Wialki Rd (Mukinbudin)	7	7	1	2	This is part of the Wyalkatchem to Southern Cross Route	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Mukinbudin / Wialki Rd (Mukinbudin Shire)	WNE	Strugnell Rd (Mukinbudin)	Mukinbudin / Mt Marshall Shire Bdy	7	7	3 from Mukinbudin to Bonnie Rock Rd Intersection 1 from Bonnie Rock Rd Intersection to Wialki	3 from Mukinbudin to Bonnie Rock Rd Intersection 2 from Bonnie Rock Rd Intersection to Wialki		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	Uranium - from north east area of Mukinbudin Shire
		Mukinbudin / Wialki Rd (Mt Marshall Shire)	WNE	Mukinbudin / Mt Marshall Shire Bdy	Burakin / Wialki Rd (Wialki)	7	7	1	2	There is currently 5.85km of this 10.25km section that is a Type 4 standard road with seal width = 3.8m and carriageway width = 8m. It is expected this "narrower than surrounding" road section will be widened to type 5 standard in the next 2-3 years.	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	
		Burakin / Wialki Rd (Mt Marshall Shire)	WNE	Mukinbudin / Wialki Rd (Wialki)	Mt Marshall / Koorda Shire Bdy	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	

		Kirby St (Mt Marshall Shire)	WNE	Burakin / Wialki Rd (Beacon)	Entrance to Beacon CBH Facility	6	7	1	2	Kirby St links the Beacon CBH Facility with both the Burakin / Wialki Rd and Bencubbin / Beacon Rd - and therefore is a side route off both the Hines Hill to Burakin Route and the Kellerberrin to Beacon Route respectively - to ensure access to Beacon CBH Facility is included in this WFP.	Grain, Fertiliser, Lime, Livestock, Fuel, Gypsum.	
		Burakin / Wialki Rd (Koorda Shire)	WNE	Mt Marshall / Koorda Shire Bdy	Koorda / Wongan Hills Shire Bdy	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	
		Burakin / Wialki Rd (Wongan Hills Shire)	Moora	Koorda / Wongan Hills Shire Bdy	Dowerin / Kalannie Rd (Burakin)	6	TBA	TBA	TBA	Burakin is a junction point for RAVs to go to either Wongan Hills and westwards via Hospital Rd or Dalwallinu and the Gt Northern Highway via the Dowerin / Kalannie Rd and Dalwallinu / Kalannie Rd. **Moora SRRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS.**	TBA	
5	**Kulja to Dalwallinu Route**	Kalannie / Kulja Rd (Koorda Shire)	WNE	Burakin / Wialki Rd (4km east of Kulja)	Koorda / Dalwallinu Shire Bdy	6	7	1	2	This route has been added as this route is the shortest and currently safest route for Mining freight from Southern Cross (the Gt Eastern Highway - from parts of the Wyalkatchem to Southern Cross Route and Hines Hill to Burakin Route) to Dalwallinu (the Gt Northern Highway).	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum, Mining Equipment & Materials.	
		Kalannie / Kulja Rd (Dalwallinu Shire)	Moora	Koorda / Dalwallinu Shire Bdy	Roche St (Kalannie)	7	TBA	TBA	TBA	**This road is already a Network 7 road but unsure of current AMMS level. Moora SRRG to be requested to consider this road be upgraded to Level 2 AMMS (if currently at Level 1).**	TBA	
		Roche St (Dalwallinu Shire)	Moora	Kalannie / Kulja Rd (Kalannie)	Dalwallinu / Kalannie Rd (Kalannie)	7	TBA	TBA	TBA	**This road is already a Network 7 road but unsure of current AMMS level. Moora SRRG to be requested to consider this road be upgraded to Level 2 AMMS (if currently at Level 1).**	TBA	
		Dalwallinu / Kalannie Rd (Dalwallinu Shire)	Moora	Roche St (Kalannie)	Gt Northern Highway (MRWA Controlled Rd - Dalwallinu)	7	TBA	TBA	TBA	**This road is already a Network 7 road but unsure of current AMMS level. Moora SRRG to be requested to consider this road be upgraded to Level 2 AMMS (if currently at Level 1).**	TBA	
		Steelweld Rd (Kellerberrin Shire)	Kellerberrin	Gt Eastern Highway (MRWA Controlled Rd - 2km east of Kellerberrin)	Mather Rd (Kellerberrin)	4	TBA	TBA	TBA	There is a swept path issue for RAV's > 27.5m long where Steel Weld Rd meets the Great Eastern Highway. **Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS.**	TBA	
		Mather Rd (Kellerberrin Shire)	Kellerberrin	Steelweld Rd (Kellerberrin)	Dowding St (Kellerberrin) & Entrance to Kellerberrin CBH Facility	4	TBA	TBA	TBA	**Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS.**	TBA	
		Dowding St (Kellerberrin Shire)	Kellerberrin	Mather Rd (Kellerberrin) & Entrance to Kellerberrin CBH Facility	Kellerberrin / Bencubbin Rd (Kellerberrin)	6	TBA	TBA	TBA	The entrance to the Kellerberrin CBH Facility is from off this Dowding St and Mather St Intersection. **Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS.**	TBA	
		Kellerberrin / Bencubbin Rd (Kellerberrin Shire)	Kellerberrin	Dowding St (1km north of Kellerberrin)	Kellerberrin / Trayning Shire Bdy	6	TBA	TBA	TBA	**Kellerberrin SRRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS.**	TBA	
6	**Kellerberrin to Beacon Route**	Kellerberrin / Bencubbin Rd - South (Trayning Shire)	WNE	Kellerberrin / Trayning Shire Bdy	Twine St (Trayning)	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	

		Twine St (Trayning Shire)	WNE	Kellerberrin / Bencubbin Rd - South (Trayning)	Kellerberrin / Bencubbin Rd - North (Trayning)	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Sutherland St (Trayning Shire)	WNE	Kellerberrin / Bencubbin Rd - North (Trayning Shire)	Goomalling / Merredin Rd (MRWA Controlled Rd - Trayning)	5	7	1	2	Sutherland St links the Trayning CBH Facility with both the Kellerberrin / Bencubbin Rd and the Goomalling / Merredin Rd - and therefore is a side route off the Kellerberrin to Beacon Route to ensure access to Trayning CBH Facility is included in this WFP.	Grain, Fuel.	
		Kellerberrin / Bencubbin Rd - North (Trayning Shire)	WNE	Twine St (Trayning)	Trayning / Mt Marshall Shire Bdy	5	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Kellerberrin / Bencubbin Rd (Mt Marshall Shire)	WNE	Trayning / Mt Marshall Shire Bdy	Koorda / Bullfinch Rd (approx 2.5 km south of Bencubbin)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Koorda / Bullfinch Rd (Mt Marshall)	WNE	Kellerberrin / Bencubbin Rd (Mt Marshall)	Monger St (Bencubbin)	6	7	1	2	This is part of the Wyalkatchem to Southern Cross Route	Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Monger St (Mt Marshall Shire)	WNE	Koorda / Bullfinch Rd (Bencubbin)	Bencubbin / Beacon Rd (Bencubbin)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
		Watson's Crt (Mt Marshall Shire)	WNE	Monger St (Bencubbin)	Entrance to Bencubbin CBH Facility	4	7	1	2	Watson's Crt links the Bencubbin CBH Facility with Monger St - and therefore is a side route off the Kellerberrin to Beacon Route to ensure access to Bencubbin CBH Facility is included in this WFP. There may be a swept path issue for RAVs > 27.5m where Watson's Crt intersects with Monger St.	Grain	
		Bencubbin / Beacon Rd (Mt Marshall Shire)	WNE	Monger St (Bencubbin)	Burakin / Wialki Rd (Beacon)	6	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, General Freight, Gypsum.	
7	**Warralakin to Burracoppin Route**	Warralakin Rd (Westonia Shire)	WNE	Koorda / Bullfinch Rd (Warralakin)	Leaches Rd	7	7	1	2	The entrance to the Warralakin CBH Facility is from off this Warralakin Rd.	Grain, Fertiliser, Lime, Livestock, Fuel, Gypsum.	
		Leaches Rd (Westonia Shire)	WNE	Warralakin Rd	Rabbit Proof Fence Rd	7	7	1	2		Grain, Fertiliser, Lime, Livestock,	
		Rabbit Proof Fence Rd (Westonia Shire)	WNE	Leaches Rd	Great Eastern Highway (MRWA Controlled Rd - east of Burracoppin)	7	7	1	2	The entrance to the Burracoppin CBH Facility is from off this Rabbit Proof Fence Rd.	Grain, Fertiliser, Lime, Livestock, Fuel, Gypsum.	
8	**Bruce Rock / Moorine Rock Route**	Crampthorne Rd (Bruce Rock Shire)	WS RRG	Bruce Rock / Merredin Rd (MRWA Controlled Road)	Bruce Rock / Narembeen Shire Bdy	5	TBA	TBA	TBA	**Wheatbelt South RRG to be requested to consider this road be upgraded to Network 7, level 2 AMMS - although the MRWA controlled Bruce Rock / Merredin Rd is currently a Network 6 road ONLY.**	TBA	
		Crampthorne Rd (Narembeen Shire)	WS RRG	Bruce Rock / Narembeen Shire Bdy	Narembeen / Yilgarn Shire Bdy	7	TBA	TBA	TBA	**This road is already a Network 7 road but unsure of current AMMS level. Wheatbelt South RRG to be requested to consider this road be upgraded to Level 2 AMMS (if currently at Level 1).**	TBA	
		Crampthorne Rd (Yilgarn Shire)	WNE	Narembeen / Yilgarn Shire Bdy	Moorine South Rd	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, Gypsum, Mining Equipment & Materials.	
		Moorine South Rd (Yilgarn Shire)	WNE	Crampthorne Rd	Gt Eastern Highway (MRWA Controlled Rd - Moorine Rock)	7	7	1	2		Grain, Fertiliser, Lime, Livestock, Fuel, Gypsum, Mining Equipment & Materials.	